

SOCI 213/4 A – Statistics II Assignment 3

This assignment is due on March 25, 2021. You must upload your assignment to Moodle by clicking on the **Assignment 3 Upload link** no later than 1:15 pm on March 25. Late assignments will not be accepted.

It is expected that your assignment be word-processed. If this poses a problem, please see me prior to the due date. Include your name and student ID number on every page and number each page.

Be sure to show all of the steps and the details of your calculations.

Problem 1. Hypothesis Testing I: The one-sample case

Solve each of the two following problems (**a** and **b**) using the five-step model for hypothesis testing (**excluding** the first step). Use an alpha level of 0.10 for problem **a**. and an alpha level of 0.01 for problem **b**.

- a.** The average annual income calculated from a random sample in an urban municipality was found to be \$49,400 ($s = \$6,335$; $N = 3000$). The average annual income in the population is \$28,165. Is this municipality significantly different from the rest of the population on the measure of annual income? Be sure to frame your interpretation (step 5) in the context of the original question. (**worth 4.5%**)
- b.** A researcher hypothesized that individuals with chronic diseases would have a lower quality of life than healthy individuals. The astute researcher collected data from a random sample using a *Satisfaction with Life* scale and found that the average score of 450 randomly selected chronically ill patients was 65, with a standard deviation of 10.5. The researcher knew that in the population, the average score is 77.8. Do chronically ill patients have a significantly lower level of satisfaction in life than the rest of the population? (Quality of Life is an interval-ratio variable that ranges from 0 to 100). Be sure to frame your interpretation (step 5) in the context of the original question. (**worth 4.5%**)

Problem 2. Hypothesis Testing I: The one-sample case (worth 3.5%)

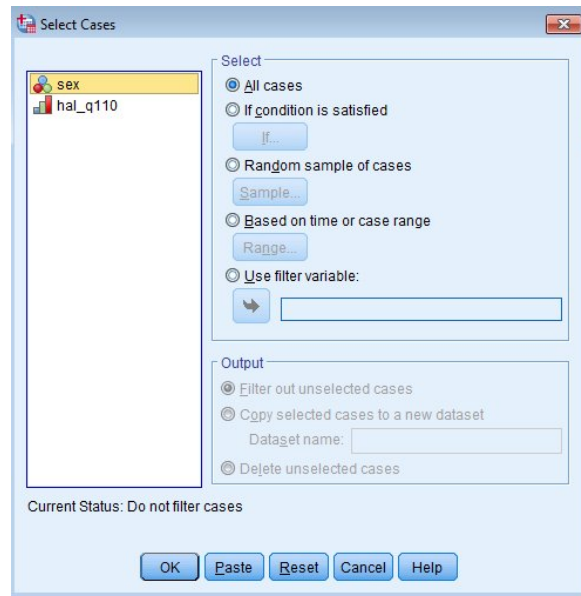
A team of researchers is interested in examining psychological and physical health of men. Their main hypothesis states that men's perceived physical health is likely to differ from the overall reported health in the general population. Generally, the Canadian population reports an average level of perceived physical health of 2.41 (on a scale ranging from 1 to 5, where 1 is excellent and 5 is poor).

Using a representative sample of 10,167 men from the GSS (General Social Survey), apply the five-step model for hypothesis testing (**excluding** the first step) to determine whether men's self-reported level of physical health is significantly different from the perceived physical health in the Canadian general population.

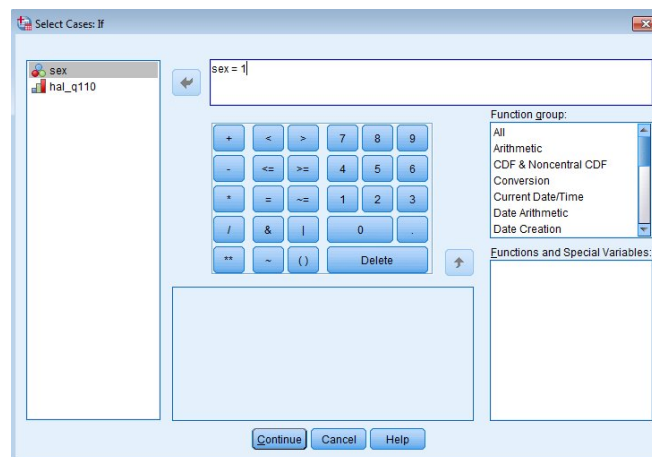
For this problem, download the dataset **assign3-213.sav** from the Moodle site and follow the procedures below to select **ONLY** men.

From the menu in SPSS:

1. Click on the **Data** menu.
2. Click on **Select Cases** from the Data menu.
3. From the **Select Cases** dialog box, click the **If condition is satisfied** radio button and click the **IF** button below it.



4. Double-click the variable **sex** and either enter $= 1$ or use the keypad below to add $= 1$.



5. Click **Continue**.
6. Click **OK**.

Now, when you perform a t test, only those cases where the **sex** variable is equal to 1 (male) will be selected.

Perceived physical health is stored in the variable **hal_q110**.

Requirements for problem 2.

1. Complete step two of the five-step model.
2. Complete step four of the five-step model. Use SPSS to find the mean and standard deviation and calculate **$t(\text{obtained})$** . **Show all steps in the calculation.**

Use SPSS to conduct a One-Sample T Test and verify that the **$t(\text{obtained})$** that you calculated in 2 above is the same (within rounding) as the **t** value that SPSS calculated. (Include the SPSS table in your assignment)

3. Report the alpha level (Sig. (2-tailed) from the SPSS table.
4. Complete step five of the five-step model. What is your conclusion and interpretation? Be sure to frame your interpretation (step 5) in the context of the original question.