**Walking through different seasons**

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• Explain what your study is about and what you are investigating. Use things such as graphs, charts, tables etc… to help you. -- Make it interesting & informative!

Project Walking through different seasons is a project about comparing the mean steps of walking difference between the summer season and winter seasons. In my assumption that most people have a regular daily routine, for example, on average I am walking through the day on mostly the same amount of steps. Walking through the house, going to work or study, walking a dog 3 times a day, going to the gym with the same weekly schedule and I would think that during the winter season and summer seasons I would walk the same amount of steps. Therefore, I also have my everyday walking daily routine. My study would be based on a Garmin watch which are counting steps through the day. I am wearing a watch from morning until night every day. Data collecting into the app where I have access to the walking history.

• Explain why you think the data you collected is a good representative sample of the population(s) and how you went about collecting it.

Collected data is a good representative sample because:

1. Two random samples are randomly selected in an independent manner from the two target populations, which was built on Garmin mobile app, days of data entry were not repeated.

2. Both sampled populations have distributions that are "approximately" normal.

3. The population variances are equal. (This requirement can be "relaxed" as long as the sample sizes are equal, which is our case).

• Show your work in constructing confidence intervals and in running any tests. Excel/ Calculator output is sufficient in helping you do this.

1. What are the two populations being studied? Define one of them as population 1 and the other population 2.

|  |  |
| --- | --- |
| **Summer** | **Winter** |
| 43899 | 42145 |
| 62126 | 40109 |
| 50634 | 39110 |
| 54399 | 45252 |
| 47951 | 51820 |
| 56991 | 35983 |
| 51801 | 52590 |
| 50404 | 51770 |
| 39043 | 43267 |
| 51127 | 49395 |
| 45689 | 45867 |
| 54090 | 43632 |

Population1 = count of steps walked through June, July, August (Summer)

Population2 = count of steps walked through December, January, February (Winter)

2. What about these populations is being measured? (Define the population means using the correct symbols.)

µ1 = mean of steps that were made through the summer season

µ2 = mean of steps that were made through the winter season

3. What are the sample estimates for the means you defined above? (Use the correct symbols.)

X1(bar) = 50679.5 is mean estimate of µ1(steps through the summer season)

X2(bar) = 45078.33 is mean estimate of µ2(steps through the winter season)

4. Formulate the hypotheses that can be used to determine if the sample data support the hypothesis the mean population steps/walking are different for summer and winter seasons. Let α = .05. Clearly state your conclusion in the context of the problem.

Please see the attachment.

5. Run the T-TEST in Calculator. What is the p-value?

p-value = 0.0267

6. Construct a 95% confidence interval to estimate the difference in the population means and explain what the results tell you. (Show your work using the formulas.)

Please see the attachment

• Summarize your findings and any recommendations or suggestions for changes in processes or ways of thinking etc.

Summarizing: there is statistical evidence that provides sufficient evidence to reject the null hypothesis, so we support the alternative hypothesis that the population mean of steps of walking during the summer season is different from the average steps of walked during the winter season.

Recommendations or suggestions: The more data we collect the smaller the confidence interval gets because the more values in our sample the bigger amount of total values will be close to the population total values, therefore we will have less error because our bigger sample will be closer to the population size.

For more accurate results we need to collect bigger data, because the data is bigger the more accrued it is. The more data we got the more accurate result we will get, therefore we are going to get closer to the expected/actual outcomes of our walking experiment.

• Note any cause/effect issues.

Cause or effect issues could be that during the winter season in Ohio, the winter temperature is going below 30 degrees and most people become less active and want to spend more time indoors with friends and family.

• Draw a conclusion.

Initially, my assumption was that walking through the winter season and summer seasons would be the same because mainly people have the same daily routine, such as jobs, gym, walking dogs, children, etc therefore amount of steps would be mainly the same. However, in conclusion, there is statistical evidence that provides sufficient evidence to reject the null hypothesis, so we support the alternative hypothesis that the average steps of walking during the summer season is different from the average steps of walking during the winter season.

Statistically different, but practically according to the confidence interval there is not much difference in the steps count, but it is not much because it can be one extra short walk with my dog or an extra trip to Walmart because the interval is between 708 and 10493 steps.

• Make note of questions that came up during your study and suggest what further studies could be made etc…

That study was performed only one 1 year of data collection.

Collect data in different states, especially in states with warmer winter weather.

Collect data and compare the difference for sprint and fall seasons, and see in which season I walk more.

How some sparks(days will a lot unusual steps a day) would affect data.

• Include all the raw data that was collected.

Please see all attachments

• Turn in your work electronically to your instructor in the Final Project Dropbox located in Week 16. The project is due by the end of the course.

Thank you for a such great course! You are the best professor which I have ever had!