

Project 2: Baked Potato

A potato chip company has three different manufacturing methods that they use to produce their chips. They have collected data on each of these manufacturing methods and have hired you to determine which method produces the most consistent chip.

General:

You will work through the project at your own pace. The project will often ask you to do things that you do not know how to do. Do not worry, this is intentional. Any time you feel stuck, ask a TA or the instructor for help. Alternatively, use Google/YouTube/Canvas to find resources to help you.

Instructions:

- 1.) All of the projects in this course will use [Office 365](#) to make online documents. Use the embedded link to go sign into Office 365 and create a new document where you will record answers to this project. In the top left corner, click **File -> Save as -> Save a copy online**. Name the file “P2WriteUp_FirstName_LastName”, and then click **Save**.
- 2.) Go to Canvas -> Files -> Project 2 and download a copy of PotatoChipManufacturingData.xlsx. Import this into your Office 365 account by going to [Office 365](#) -> Home -> Upload (you may have scroll down a little bit to find the “Upload” tab)
- 3.) Clean all of the data in the tables just like you did in Project 1. Hint: there are two spots that need cleaning. Record what data you cleaned (do this in your P2 Word Document).
- 4.) If you don’t remember what measures of central tendency are (or how to compute them) watch this [video](#). Next watch this [video](#) about measures of data dispersion. What is the difference between measures of central tendency and measures of data dispersion? (Respond in your P2 Word Document).

STOP: Check in with TA or instructor before continuing

5.) Manually compute the mean, median, mode, range, variance, and standard deviation for each column in the mini data table. “Manually” means you cannot use Excel formulas. For each calculation you make (12 in total), copy and paste your math into your P2 Word Document. Here is an example of what your calculations might look like when you type them into a cell -

50
90
60
75

Mean: $=(90+60+75+50)/4$

Median: $=(60+75)/2$

Mode: None

Range: $=90-50$

Variance: $=(50-68.75)^2+(90-68.75)^2+(60-68.75)^2+(75-68.75)^2$

Std. Dev: $=\text{sqrt}(918.75)$

6. Compute the mean, median, mode, range, variance, and standard deviation for each column in the manufacturing data tables. Here you may use Excel’s built-in formulas. Analyze your results. Which type of measurement (measures of central tendency or measures of dispersion) would be better to use to determine which manufacturing method produces the most consistent chips? (Respond in your P2 Word Document).

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7. Choose one column (either weight, thickness, roast factor, or area) and use the data in that column to make a histogram for each table. This means that you will make three histograms in total. (Recommended resources: [Histograms](#), [Creating Histograms in Excel](#))

8. Choose a different column than the one you chose in **7.** and use the data in that column to make a box-and-whisker plot for each table. This means that in this step you will make three box-and-whisker plots in total. (Recommended resources: [Box-And-Whisker Plots](#), [Creating Box-And-Whisker Plots in Excel](#))

9. Which manufacturing method should the potato chip company use to make the most consistent chips? Consistent in this case means that the chips are all close in size, weight, thickness, and “roastedness”. Use your mathematical calculations from **6.** and your six plots from **7.** and **8.** to justify your answer. (Respond in your P2 Word Document).

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10. Read this [article](#) about misleading data visualizations. Think about the data visualizations you have made so far in this course. Pretend you wanted to be a malicious data analyst. What is one way you could have modified one of the graphs in Project 1 or Project 2 to be misleading? (Respond in your P2 Word Document).

Congratulations, you have completed Project 2! Submit your work on Canvas -> Assignments -> Project 2. You should turn in your P2 Word Document and your Excel sheet with the manufacturing data and your six graphs.