# Data Analytics Assignment-5 Report

* Research Paper discussed: Chocolate Consumption, Cognitive Function,

and Nobel Laureates (Author: Franz H Messerli, M.D.)

* Tools used: Anaconda Navigator 1.6.2: Jupyter Notebook
* Language used: Python 3
* Csv file attached: da\_ass5\_country23.csv

: noble\_prize.csv

* Jupyter files attached:

data\_analytics\_Assignment5\_part-1.ipynb

data\_analytics\_Assignment5\_part-2.ipynb

1. The csv file contains data for 23 countries, used in the research paper(mentioned above) to find co-relation between number of noble laureates in a country and the chocolate consumption per head in the respective country.
2. For the purpose of uniformity, laureates/10 million was calculated per country.
3. On computing, the correlation between laureates/10 million and chocolate consumption per head comes out to be: 0.707389538766
4. The correlation when we eliminate Sweden from the list of countries: 0.812814718485
5. The correlation is measured between -1 and +1. The more its value is near to 1, the higher the co-relation between variables and vice-versa. If the value is negative, that means, that if there is increase in the value of one variable, the other’s value will decrease.
6. There is a weird correlation published in a reputed medicine journal. It assumes that intelligence is measured on cognitive abilities. The author gave reasoning that eating chocolate improves one’s cognitive abilities. Therefore, eating chocolates will improve intelligence. He supports his claim by providing data of chocolate consumption across the world. He connects it with the number of people per country who won a noble prize in science.
7. Factors supporting his claim: flavonoids found in chocolate do improve cognitive abilities. The graph between chocolate consumption and noble laureates also shows a positive linear relation.
8. Factors doubting the claim: tea and red wine also have flavonoids. So an analysis was made on impact of tea towards the number of noble laureates. The correlation came out to be : -0.0879555516563. This shows that there is a negative co-relation between the consumption of tea and the number of noble laureates. This brings into doubt that flavonoidshave any role in bringing noble prizes.
9. The number of noble laureates is taken from 1900 to 2011. Afterwards, there has been substantial growth in the world population. So the hypothesis might not stand any worth today.
10. The data for chocolate consumption is taken only for 4 years. That too from only 2 sources, Caobisco and Chocosuisse. This might not provide the entire data of chocolate consumption.
11. The author had analyzed data only for 23 countries. In the report, we have tested data for nearly 70 countries. This can be taken as more robust analysis.
12. As part of the assignment, we were asked to test the results of other commodities as well. There was not sufficient data on education and coffee consumption to plot the analysis. They are there in the csv file, but not analyzed.
13. The data for tea, coffee, alcohol, onion and education was taken from different sources. In fact they range from years 2011-2015. There can be a lot of discrepancies in the results. But, it does give a rough picture of the relations between the consumption of these commodities and the intelligence level of the countries, if any.
14. Other common commodities like chocolate were analyzed. These are: tea, alcohol and onion. The co-relations are as follows:

Alcohol = 0.151733029905

Tea= -0.0879555516563

Onion= -0.403575131675

These are the most commonly consumed items all across the world. They had very little co-relation with generating noble laureates.

Tea and onion have negative co-relation with the number of noble laureates. This shows, that the countries with high tea and onion consumption should have produced less intelligent people. There isn’t much impact of drinking alcohol on intelligence.

These relations point towards a third factor.

Onion and tea have a positive co-relation. They both have a negative co-relation with alcohol.

15. To understand the difference in number of noble laureates based on country, we should check the factors like, education per capita, the gdp, socio-economic factors. The author does mention these, but dismisses them without providing any proof at all.

16. High consumption of chocolate points towards affluence. The countries with high chocolate consumption actually have high HDI and high per capita income. This might lead to the availability of better education resources, institutes and research labs.

17. The data for Germany points back to the time of world war. Did people have the money to buy chocolates? This also weakens the author’s claim that chocolate improves cognition and intelligence.

18. If chocolate consumption had any impact on intelligence, Sweden should have produced lesser number of laureates as compared to 32.

19. There must be some under-lying third factor connected with chocolates and intelligence, which has made this linear co-relation.

20. This is a case of co-relation without any causation.

21. Figure-1 shows a probable graph of causation can be between chocolates, per capita income and noble laureates. It is as follows:

High per capita income

Better education and amenities

High consumption of chocolates

Better research and high number of noble prize

**Figure-1**

References:

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| 1. https://en.wikipedia.org/wiki/List\_of\_countries\_by\_tertiary\_education\_attainment |
| 1. https://www.caffeineinformer.com/caffeine-what-the-world-drinks |
| 1. https://en.wikipedia.org/wiki/List\_of\_countries\_by\_tea\_consumption\_per\_capita |
| 1. https://en.wikipedia.org/wiki/List\_of\_countries\_by\_alcohol\_consumption\_per\_capita#cite\_note-2 |
| 1. <https://www.statsmonkey.com/bar/20599-list-of-countries-by-onion-consumption-per-capita.php> 2. <https://www.r-bloggers.com/nobel-laureates-a-closer-look-at-the-data/> 3. <https://blogs.scientificamerican.com/the-curious-wavefunction/chocolate-consumption-and-nobel-prizes-a-bizarre-juxtaposition-if-there-ever-was-one/> 4. <http://www.telegraph.co.uk/news/health/news/12187042/Chocolate-makes-you-smarter-study-suggests.html> 5. https://www.huffingtonpost.com/randi-hutter-epstein/why-chocolate-makes-you-smarter-its-proven\_b\_2018728.html |