BOTTLED WATER CONSUMPTION

All data was collected from Statista: https://www.statista.com/outlook/cmo/non-alcoholic-drinks/bottled-water.

QUESTION: Is there a significant relationship between average temperature and the amount of bottled water consumption in countries both closer and further away from the equator?

Introduction & Aim:

Water is essential for survival. It is the one substance that every single country has some degree of access to. But there are numerous different factors, that affect the consumption of bottled water across the world.

Our aim is to discover the correlation between bottled water consumption and average temperatures in countries closer and further away from the equator.

Hypothesis:

It is hypothesised that bottled water consumption will also increase as the average temperature increases. Countries closer to the equator will have an increased average temperature, so these countries will have a higher bottled water consumption rate.

Analysis:

Unravelling the complex relationship between environmental factors and consumer choices, there is a compelling link between higher average temperature and an escalated demand for bottled water in countries, particularly those in closer proximity to the equator. When conducting further analysis of our calculations we observed many different things. The mean of the bottled water consumption in countries further from the equator is significantly higher than the mean of the countries closer. This further implies the notion that not only climate conditions affect bottled water consumption, but there are also many other external factors.

However, our data also underscores the complexity of this relationship, as it acknowledges the influence of multifaceted factors beyond temperature fluctuations. From our data there is a significant difference between the average bottled water consumption in countries closer and further away from the equator. This could be due to many external factors, such as, population, access, quality etc. Additionally, the outliers highlight the effect of these factors even greater since population could be one of the drivers of the increased bottled water consumption. This recognition prompts a deeper exploration of the intertwined factors shaping consumer behaviour in the beverage industry.

Conclusion:

To conclude, our hypothesis was somewhat supported as there was a correlation between climate conditions and water consumption, but it also shed light on the numerous other factors that affect bottled water consumption.

Our Method:

We brainstormed many different ideas such as Yes or No to the Voice and bottled water consumption.

Secondary statistical data was collected from numerous reliable sources, one being Statista.

Graphs were constructed through Excel. Data and findings were then thoroughly analysed.

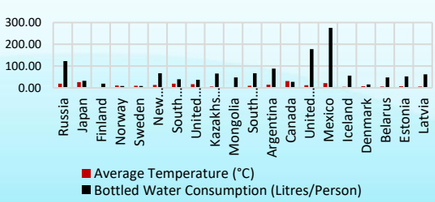
Completion of poster, conclusion was written, and final review of project was conducted.

Other Factors that affect bottled water consumption:

Water Quality | Price and financial stability. | Access to water sources | Public awarenes s of the benefits of drinking

	Average Temperature - Countries close to equator (°C)	Average Temperature - Countries away from equator (°C)	Bottled water consumption - Countries close (Litres)	Bottled water consumption - Countries far (Litres)
Mean	25.08	12.16	36.75	66.03
Median	25.25	10.50	24.77	50.13
Mode	28	No mode present.	No mode present.	No mode present.
MAX	28.00	31.00	90.43	275.80
MIN	19.10	0.20	11.10	8.82
Range	8.90	30.80	79.33	266.98
Q1	23.38	5.975	18.12	30.94
Q3	27.2	17.675	53.0975	67.115
IQR	3.83	11.7	34.9775	36.175
Upper Bound	32.94	35.225	105.56375	121.3775
Lower Bound	17.64	-11.575	-34.34625	-23.3225
Outliers	FALSE	FALSE	FALSE	TRUE
Standard Deviation	2.565068995	8.040258899	23.41219774	63.56937116

Avg. Temperature and Botttled Water Consumption in Countries Away from Equator



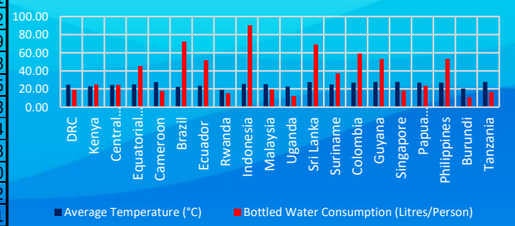
It is clear from the graph that Mexico and the US have the highest consumption, more that 150L and almost 300L for Mexico. Visibly, Canada is the only country with an average temp higher than their water consumption.

Origin of our idea / Limits:

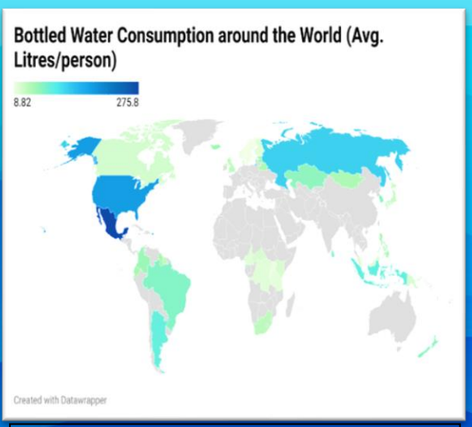
Our idea originated from the mutual interest in researching about topics associated with the environment. We decided on which countries to use, with the aid of Google Maps, which allowed us to manoeuvre, visualise and easily determine which countries to collect data on. We grouped the countries into 2 separate groups so that it created two comparable data sets, which made it significantly easier to analyse and determine trends in the data. Some obstacles that we faced was sourcing and access to reliable data. To overcome this, we tried to find all our data from the same source.

Countries (Away from the equator):	Average Temperature (°C)	Bottled Water Consumption (Litres/Person)	Countries (Close to the equator):	Average Temperature (°C)	Bottled Water Consumption (Litres/Person)
Russia	19.00	123.40	DRC	24.60	18.97
Japan	26.00	32.22	Kenya	23.00	25.01
Finland	2.10	19.53	CAR	24.50	24.52
Norway	11.00	8.88	Equatorial Guinea	25.00	45.49
Sweden	9.30	8.82	Cameroon	27.50	17.88
New Zealand	13.00	67.09	Brazil	22.50	72.25
South Africa	18.80	38.98	Ecuador	23.50	51.73
United Kingdom	17.30	37.00	Rwanda	19.10	15.24
Kazakhstan	6.00	66.20	Indonesia	25.50	90.43
Mongolia	0.20	47.69	Malaysia	25.40	19.70
South Korea	10.00	67.19	Uganda	22.80	12.42
Argentina	15.00	88.86	Sri Lanka	27.50	69.21
Canada	31.00	27.10	Suriname	25.10	37.43
United States	11.90	177.91	Colombia	27.00	59.04
Mexico	21.10	275.80	Guyana	28.00	53.07
Iceland	4.60	56.22	Singapore	28.00	18.20
Denmark	7.70	15.69	PNG	27.00	23.51
Belarus	5.80	47.42	Philippines	27.10	53.18
Estonia	7.40	52.56	Burundi	20.50	11.10
Latvia	5.90	62.07	Tanzania	28.00	16.69

Avg. Temperature and Botttled Water Consumption (Per Person) in Countries Close to Equator



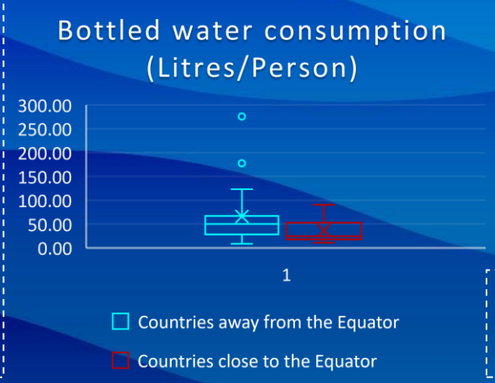
Indonesia, Brazil, and Sri Lanka are the only countries that have consumption over 60L, with Indonesia being above 80L too. Most African countries also have average temperature being higher than their consumption, Uganda and Burundi visibly having the most severe imbalance.



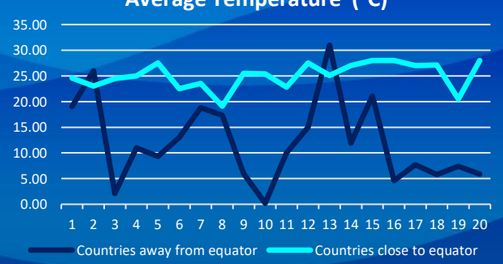
This Choropleth map was manually created through the aid of the digital platform, Datawrapper.

Box plot analysis:

For the countries away, the min and the max whiskers are wider than the countries closer. This indicates that there is more spread for the countries away, meaning that there are countries with very high and very low consumption. Also, the mean and median for countries closer are lower than countries away, meaning the countries closer have less consumption.

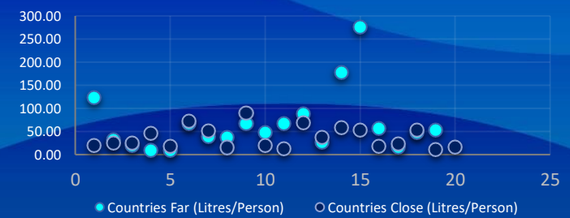


Average Temperature (°C)



This graph shows a significant difference as the countries close have a smoother line with less variation than the countries away which have sharp inclines and declines with much variation. Also, the countries close, have a seemingly higher average then countries away.

Bottled Water Consumption (Litres/Person)



This plot has multiple obvious outliers with the countries away from the equator, with the three highest dots being far from the rest of the plot. Also, much of the data points are quite close together, being below the 100L mark.