Compulsory Task 1

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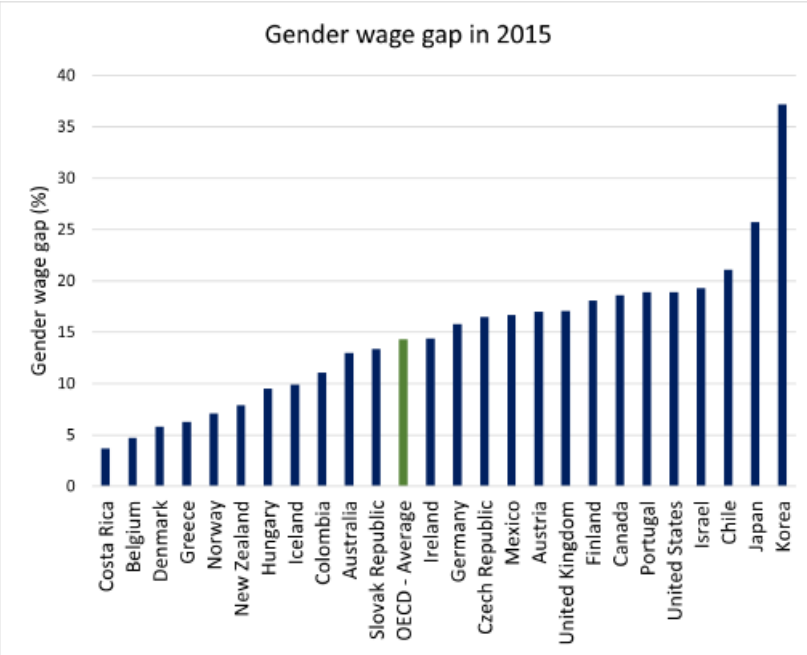
1. Analysis of Gender Wage Gap Data

This dataset contains information about the gender wage gap in 26 countries for the year 2015. To calculate the gap, the difference between male and female median wages was divided by male median wages and expressed as a percentage.



1.1 Based on the dataset provided above, following are three countries with the lowest gender wage gap as of 2015:

Based on the graph, the three countries with the lowest gender pay gap are

- Costa Rica (2.5%)
- Belgium (5.8%)
- Denmark (7.8%)

1.2 Based on the dataset provided above, following are three countries with the highest gender wage gap as of 2015:

- South Korea (35.7%)
- Japan (24.5%)
- Chile (21.3%).

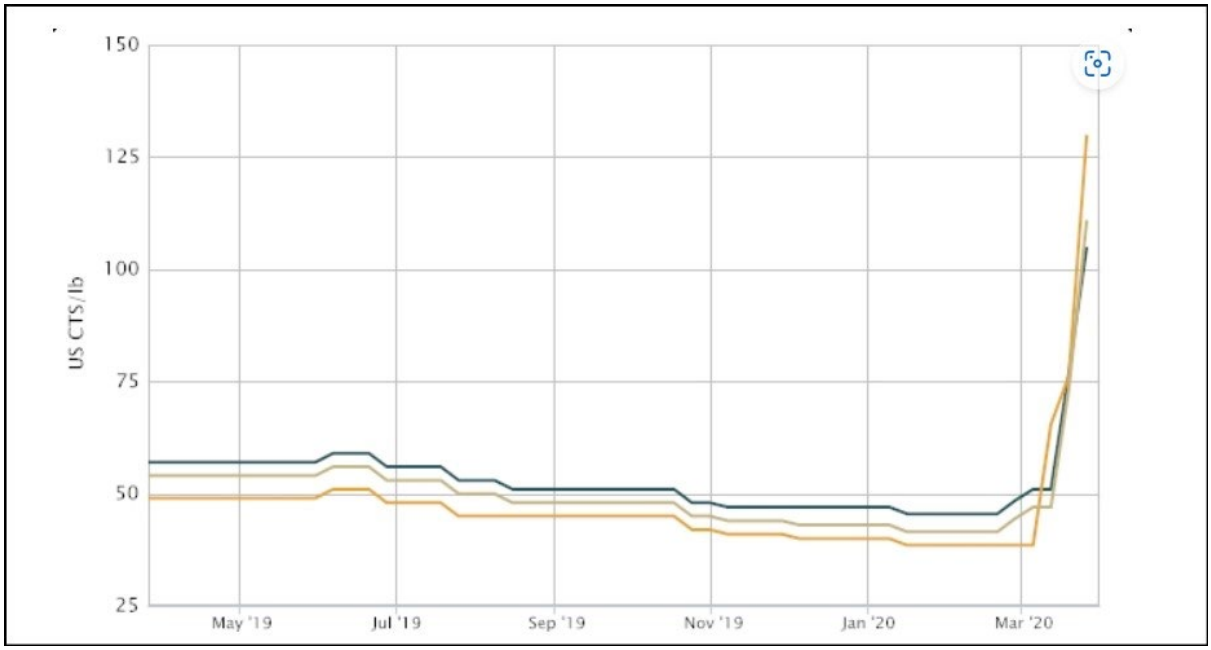
Costa Rica has been recognized for its relatively low gender wage gap among Latin American and Caribbean countries. According to a 2015 report by the Economic Commission for Latin America and the Caribbean (ECLAC), women in Costa Rica earned about 97.5% of what men earned in that year, making it the country with the lowest gender pay gap in the region.

One factor contributing to Costa Rica's success in achieving a low gender wage gap is its strong social welfare state. The country has implemented policies that support working mothers, such as maternity leave, childcare subsidies, and flexible work arrangements. Additionally, Costa Rica has implemented pay equity laws and measures that promote equal pay for work of equal value and prohibit discrimination based on sex or gender.

Furthermore, Costa Rica has significantly invested in education and training, particularly for women and girls. This has helped to challenge traditional gender roles and stereotypes and enable women to enter male-dominated fields and earn higher wages.

Overall, Costa Rica's success in achieving a low gender wage gap highlights the importance of supportive policy environments and investments in education and training for promoting greater gender equality in the labour market.

2 Analysis of Isopropanol sales from May 2019 to March 2020



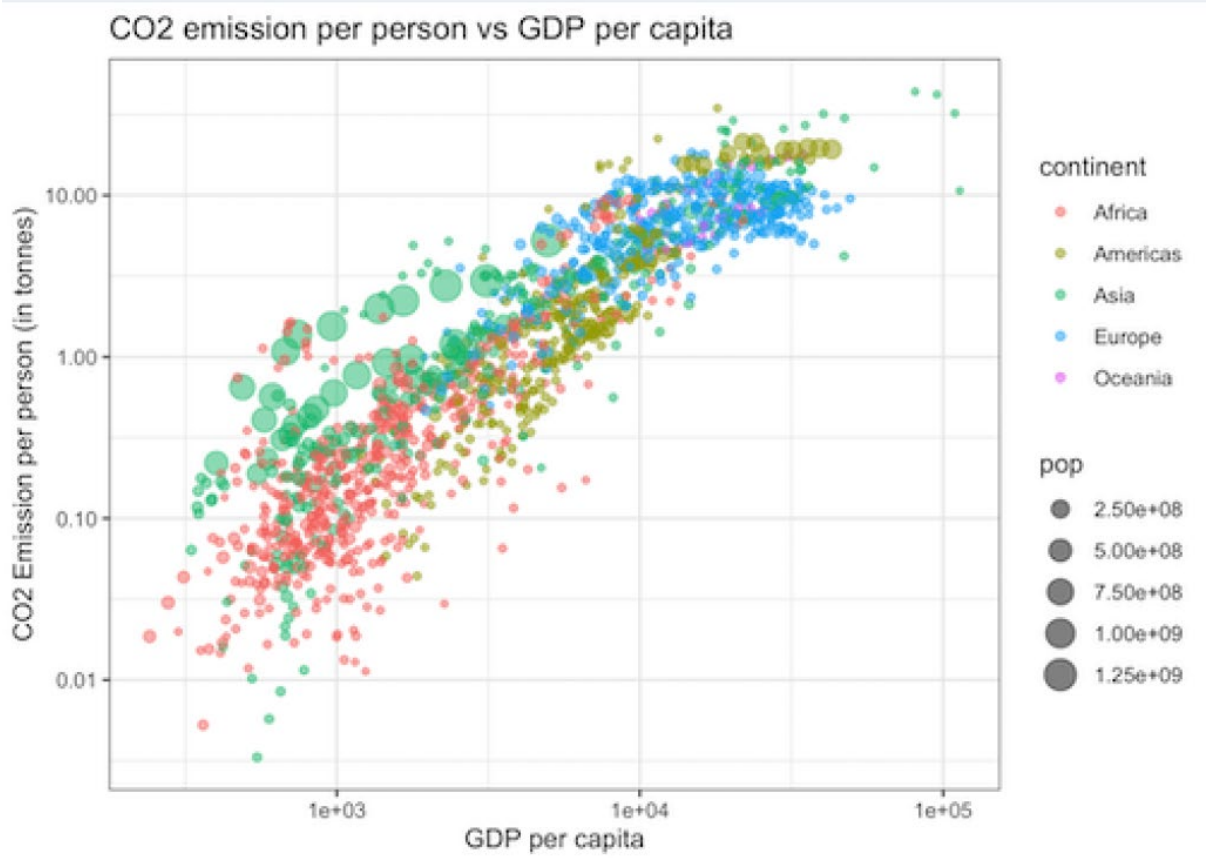
2.1 Explain what is happening in the graph during March 2020 with regards to isopropanol sales

In the graph, there is a significant and noticeable spike in isopropanol sales during March 2020. This indicates a sharp increase in sales volume compared to previous months.

2.2 Describe a possible reason for the observation you made about isopropanol sales in March 2020

One possible reason for this observation is the COVID-19 outbreak. The surge in isopropanol sales in March 2020 can be attributed to the increased demand for cleaning products and hand sanitizers. Isopropanol is a key ingredient in hand sanitizers, which experienced a surge in demand due to the global emphasis on hygiene and sanitation to combat the spread of the virus. As a result, the high demand for hand sanitizers during this period likely drove the spike in isopropanol sales.

3 Analysis of carbon dioxide (CO2) emissions per person in tonnes vs. the gross domestic product (GDP) per capita (average per person).



3.1 Discuss the relationship between CO2 emissions per person and GDP per capita for each continent listed in the figure legend

The bubble plot visually represents the relationship between carbon dioxide (CO2) emissions per person and Gross Domestic Product (GDP) per capita across different continents. The plot incorporates population size through the bubble size and distinguishes countries based on geographical location using different colours.

Upon analysing the plot, a general trend emerges, indicating a positive correlation between increasing GDP per capita and CO2 emissions per person. This trend is particularly evident in the Americas, Europe, and Oceania. In these regions, countries with higher GDP per capita tend to exhibit higher CO2 emissions per person levels than those with lower per capita GDP. The underlying factors contributing to this correlation

include rapid industrialization, economic development, and urbanization in these regions, which lead to increased CO2 emissions as countries develop.

Conversely, countries in Africa and Asia demonstrate a weaker correlation between CO2 emissions and GDP per capita. These regions often exhibit lower GDP per capita and relatively lower CO2 emissions per person, with few outliers. This observation could be because many African and Asian countries are still in the early stages of economic development. They may have yet to fully utilize their resources to drive industrialization and generate substantial CO2 emissions. Furthermore, some countries in these regions rely more heavily on agriculture, forestry, and fishing, which typically result in lower levels of CO2 emissions compared to industrial sectors.

The bubble plot clearly illustrates a positive correlation between CO2 emissions per person and GDP per capita in most countries, with a few exceptions. The level of economic development emerges as a significant factor influencing a country's carbon footprint and CO2 emissions. However, it is essential to consider various contributing factors when analysing the relationship between CO2 emissions and GDP per capita, as it is a complex interplay of economic, social, and environmental dynamics.