

Examine the following graphs and answer the questions associated with them.

1. The following bar graph shows the gender wage gap in 26 countries based on data collected by the [OECD](#). The gender wage gap is calculated by finding the difference between male and female median wages and dividing it by male median wages. It is represented as a percentage in this graph.

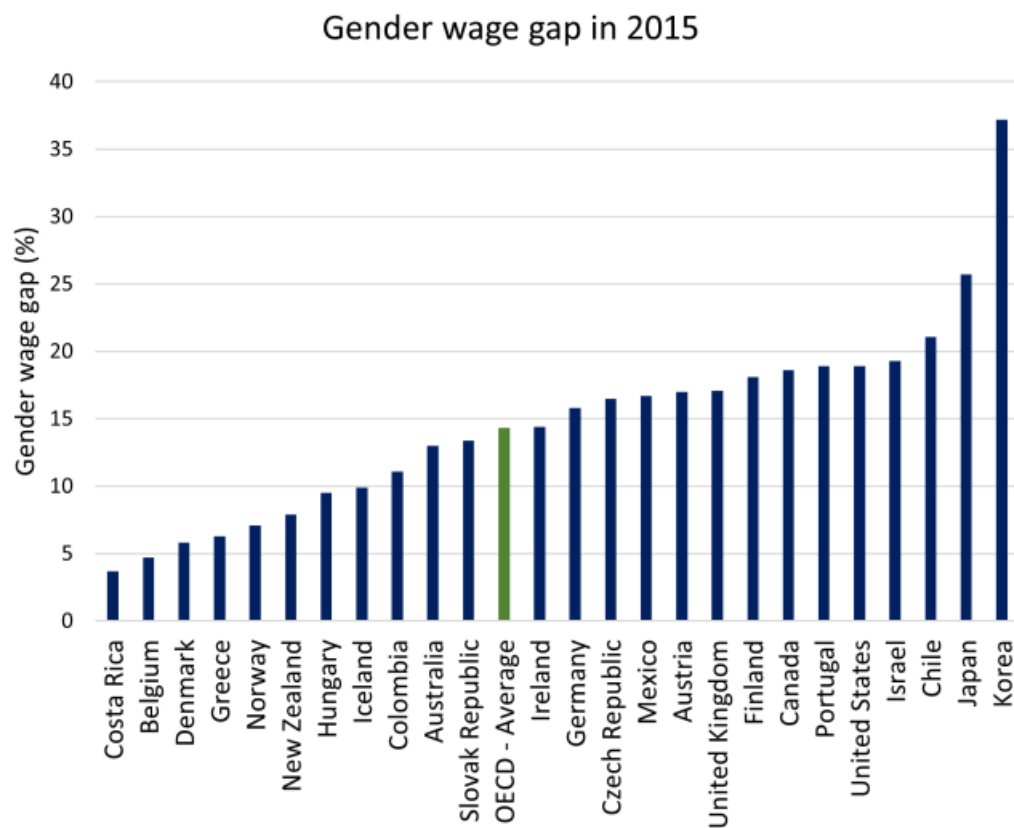


Figure 1: Gender wage gap in 2015 ([Source1](#), [Source2](#))

- a. Which three countries have the lowest gender wage gap?

Based on our graph, the three countries with the lowest gender wage gap are: *Costa Rica, Belgium and Denmark*.

- b. Which three countries have the highest gender wage gap?

Looking at our graph, we can see that *Korea* has the highest gender wage gap, followed by *Japan* and *Chile*.

- c. Do some research on the country with the lowest gender wage gap and comment on why you think it succeeded in achieving a low gender wage gap in 2015.

According to the World Economic Forum, Costa Rica has shown significant improvement in the gender wage gap after they've nearly doubled the representation of women in ministerial positions, rising from 25% to 41% ([Source](#)).

Additionally, T. H. Gindling, Nadwa Mossaad and Juan Diego Trejos (2015) credit the success in establishing a decreased gender wage gap in Costa Rica to one additional aspect. The researchers examined the impact of Costa Rica's minimum wage compliance programme and discovered that women received bigger salary increases than males (Gindling et al., 2015). According to this study, the programme may have helped to close the gender pay gap in the nation as a whole by lowering salary differences between the sexes ([Source](#)).

Finally, this study by Amazon Aws emphasised the crucial role of education in diminishing the gender wage gap, identifying it as the primary determinant in closing the earnings gap and favouring women ([Source](#)).

2. The following line graph shows the sale of isopropanol from May 2019 to March 2020 in the United States of America. The sales are measured using US cents per weight (lb) of product (US CTS/lb). Focus on the general trend of the three lines on the graph rather than what each of the lines refers to specifically when answering the questions.

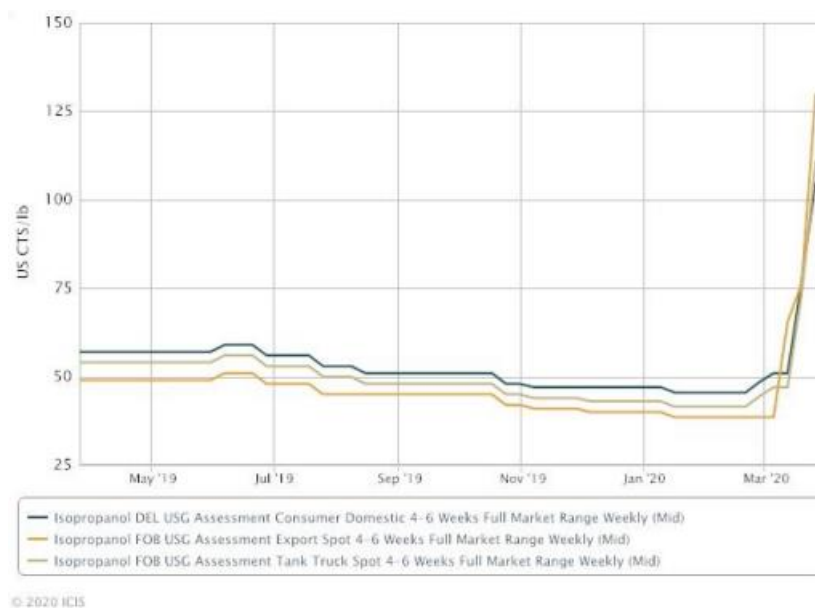


Figure 2: Isopropanol sales from May 2019 to March 2020 ([Source1](#), [Source2](#))

- a. Explain what is happening in the graph during March 2020 with regards to isopropanol sales.

At a quick look we can see that in March 2020 the sales skyrocketed from somewhere between 30 to 50 US cents per pound of isopropanol to around 100-130 US cents per pound of product, leading us to see more than 150% increase in sales. Now, if we look at the graph closer, we can see on our independent x-axis that from the end of October 2019 – the beginning of November 2019, the sales decreased slowly until the beginning of March 2020 - the end of February 2020, estimating a decrease of more than 40% of their usual sales.

- b. Describe a possible reason for the observation you made about isopropanol sales in March 2020. **Hint:** Isopropanol is the main ingredient in hand sanitiser

A possible reason for the skyrocketing sales from March 2020 of isopropanol can be because of the Covid-19 pandemic. According to this technical brief by the World Health Organization to help prevent the spread of the virus, regular handwashing is crucial in helping to fight COVID-19 infection, as it is considered one of the essential measures. WASH professionals can play a vital role by implementing effective behaviour change techniques to encourage increased frequency and consistency of hand hygiene practices ([Source](#)). The main ingredient in the hand sanitiser is isopropanol, leading the sales to a sudden growth as people from anywhere tried to prevent the disease.

3. Below, the bubble plot (a scatter plot with variable dot size) shows carbon dioxide (CO₂) emissions per person in tonnes vs. the gross domestic product (GDP) per capita (average per person). No unit is given for the GDP per capita, however, the US dollar is typically used when comparing different countries (Callen, n.d.). Each dot represents a country. The colours of the dots refer to the continent to which the country belongs. The size of the dot refers to the size of the population in the country. The larger the dot, the larger the population.

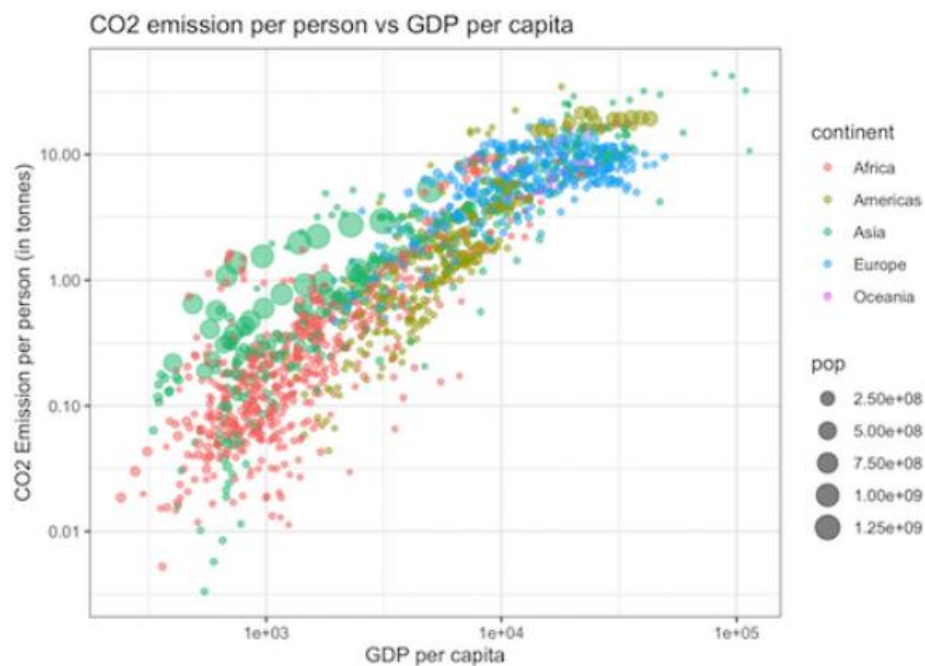


Figure 3: CO2 emissions per person vs GDP per capita ([Source](#))

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

Let's first talk about what is on x-axis:

$1e+03$ = indicates that the number is multiplied by 10 raised to the power of 3 = 1000, $1e+04$ = 10000, $1e+05$ = 100000.

The sizes of population:

$2.50e+08$ = the number is multiplied by 10 raised to the power of 8 = 250 million, $5.00e+08$ = 500 million, $7.50e+08$ = 750 million, $1.00e+09$ = 1 billion, and last one is $1.25e+09$ = 1.25 billion.

The graph is following a positive trend, going from the bottom left to top right.

([Source](#))

Africa: In our graph, Africa is represented by the pink colour. As we can see if the average income per person (GDP per capita) is small, the CO2 emissions are small, both increasing at the same time, meaning that the higher the standard of living the higher the CO2 emissions are. Factors such as the level of industrialisation, energy sources utilised, and economic development can influence this relationship.

Americas: Although America is following the same trend as Africa, we can see that it is more developed as their income per person starts from 1200 ending at around 60000. They are also producing more CO2 emissions as when it reaches 60000 GDP per capita, the size of the dots (population) is a lot bigger, most likely between 500-750 million, meaning that America has got a big impact on pollution.

Asia: As we already know, Asia is the continent with the highest population, so therefore we can expect to be all over our graph, starting with smaller GDP per capita to the highest GDP per capita and unfortunately highest CO2 emissions per person. Interestingly enough, there are high numbers of populations with small incomes per person but with high CO2 emissions.

Europe: Possibly because of industrialisation and consumption patterns, Europe has a significant number of high CO2 emissions per person where GDP per capita is higher than 10000. Overlapping occurs between 9000-60000 GDP per capita and 5-11 CO2 emissions per person (in tonnes).

Oceania: Having the smallest population out of all the other continents, we would expect to have the smallest CO2 emissions per person, but surprisingly, they are racing with the other top polluters' continents, at 10 tonnes per person of CO2 emissions.