

## **Compulsory Task 1.**

### **Question 1.**

1. Costa Rica, Belgium, and Denmark.
2. China, Japan, and Korea.
3. According to the 2015 Global Gender Gap Report, Costa Rica's improvements are due to the doubling of women in ministerial positions. It also fully closed its gender gap on the educational Attainment subindex, reflecting a large gender education gap where women outperform men. High female enrolment and achievement in education led to a growing number of women entering the workforce in various sectors, including traditionally male-dominated ones.

### **Question 2.**

1. After March 2020, there was a significant surge in Isopropanol sales. Initially, the yellow line graph experienced the most rapid increase, surpassing both the blue and green line graphs. Shortly thereafter, the yellow, blue, and green line graphs crossed each other within the range of 75 to 100 US CTS/lb. The yellow line illustrates that there was a higher demand for exports as sales continued to rise.
2. A possible reason for this significant surge was due to the COVID-19 pandemic. As the virus spread globally, there was a heightened awareness of the importance of hand hygiene and sanitization measures. This led to an increase in demand for sanitizers leading to the increased sales. This surge in exports can be attributed to the heightened global demand for Isopropanol.

### **Question 3.**

Africa – It is evident that an increase in the GDP per capita causes an increase in the CO<sub>2</sub> Emissions per person. Most African countries are clustered between 0.01 and 1.00 CO<sub>2</sub> Emissions per person, with a few African countries outside of this range.

America – America follows the same trend as Africa. However, the points are clustered on top. They are mainly clustered between 0.50 and 10.00 CO<sub>2</sub> Emissions per person, with the maximum above 10.50. The larger population is concentrated on top, leading to an increased GDP per capita, causing an increase in the CO<sub>2</sub> Emissions per person.

Asia – CO<sub>2</sub> Emissions per person for large populations are concentrated between 0.10 and 10.00, while smaller populations contribute both more and less CO<sub>2</sub> Emissions per person. Asia has the highest CO<sub>2</sub> Emissions and the highest GDP per capita. The larger population have a less GDP per capita compared to the smaller population.

Europe – The dots are clustered together at high points. This relationship indicates that the higher the GDP per capita, the higher the CO<sub>2</sub> Emission per person.

Oceania – There is a notable relationship between GDP per capita and CO<sub>2</sub> emissions per person. Specifically, this region exhibits a pattern where a high GDP per capita tend to have correspondingly high CO<sub>2</sub> emissions per person. This suggests that as GDP per capita increases in Oceania, so do the carbon emissions produced by each individual in the region.

## **Compulsory Task 2.**

### **Question 1.**

Yes, Boston exhibits a notable level of crime based on the data represented in the scatter matrix. The top-left graph demonstrates this with the crime rate reaching 90%. Upon closer examination of the other graphs, which plot crime rate against factors such as rooms per dwelling, the percentage of units built before 1940, and median house value, we can observe a general trend where the majority of data points cluster below a 30% crime rate. However, it's important to note that there are a few data points that appear as outliers, surpassing the 30% threshold. These outliers suggest that, while crime rates are generally below 30%, there are specific areas or instances within Boston that indeed experience a high crime rate.

### **Question 2.**

From the graph's bell-shaped curve, it appears that the average number of rooms in Boston dwellings is around 6. This observation is based on the graph's central tendency, as indicated by the median values. The bell-shaped curve suggests that most data points cluster around this average room count, with relatively fewer dwellings having significantly more or fewer rooms.

### **Question 3.**

Yes, there appears to be a relationship between the number of rooms per dwelling and house value in Boston. The majority of data points cluster around an average of 6 rooms, and the corresponding house values are also clustered around this average. However, as you move towards dwellings with more rooms, there is a noticeable increase in house value. This suggests that, in general, as the number of rooms per dwelling increases, the house value tends to rise, although there are some outliers in the data that do not follow this trend.

### **Question 4.**

No, houses in Boston are not generally new. The chart illustrates that there is a high percentage of units built before 1940.

### **Question 5.**

Yes, modern day neighbourhoods are pricier than old neighbourhoods. As the percentage of units built before 1940 decreases, there is a corresponding increase in house values. Notably, the data points do not appear to go below a certain threshold on the graph, suggesting that once a neighbourhood reaches a certain age, there is a consistent floor on house values, indicating that older neighbourhoods may have a lower limit on their house prices..