

## Practical Task 1

1.

a) The three countries with the lowest gender gap are:

1. Costa Rica
2. Belgium
3. Denmark

b)

1. Korea
2. Japan
3. Chile

c) Costa Rica's low gender wage gap in 2015 can be attributed to comprehensive national policies, targeted programs, and concerted efforts from both public and private sectors. The National Women's Institute (INAMU) developed policies aimed at ensuring equal rights, eradicating violence against women, and enhancing women's economic autonomy. The National Policy for Effective Equality between Women and Men emphasized reducing gender gaps and strengthening economic autonomy for women, including equitable pay. Additionally, Costa Rica's Investment Promotion Agency (CINDE) worked to integrate gender equality into the economic agenda, focusing on inclusive hiring practices, expanding the local talent pool, and improving data on gender equality. Programs like "SYKES Women in Technology" significantly increased women's participation in technical fields, further contributing to the reduction of the gender wage gap. These initiatives, combined with Costa Rica's commitment to the "Gender Parity Initiative," showcase a strategic approach to reducing the wage gap and promoting gender equality.

2.

- a) The graph shows a dramatic spike in isopropanol prices in March 2020. This surge likely corresponds to the increasing demand for sanitizing products due to the onset of the COVID-19 pandemic. Isopropanol, commonly known as isopropyl alcohol, is a key ingredient in hand sanitizers and disinfectants, whose usage skyrocketed during this period as a preventive measure against the virus. The steep increase reflects a sudden surge in market demand outstripping supply.
- b) The likely reason for the surge in isopropanol sales in March 2020 is the global onset of the COVID-19 pandemic. Isopropanol is a key ingredient in hand sanitizers, which became highly sought after for virus prevention measures. As public awareness and concern about the pandemic grew, individuals and healthcare facilities increased their purchases of sanitizing products, leading to a sharp rise in isopropanol demand and consequently its sales.

3.

The bubble plot shows a relationship between CO2 emissions per person and GDP per capita across different continents. Generally, there is a positive correlation; as GDP per capita increases, so does CO2 emissions per person. This suggests that wealthier countries, with higher GDPs per capita, tend to have higher carbon footprints.

In Africa, the data points, primarily in the lower left, indicate low GDP per capita and low CO2 emissions per person. This suggests African countries have smaller economies and lower industrial activities, leading to lower emissions. The small dot sizes also point to smaller populations relative to other continents.

For the Americas, we see a broader distribution, stretching towards the upper right, indicating a mix of countries with both low and high GDP per capita and corresponding CO2 emissions. The size of the dots suggests a diverse range of population sizes.

Asian countries show a large range of GDP per capita, but most dots are centered in the middle of the plot, suggesting moderate CO2 emissions per person across varying economic statuses. Populations in Asia are significant, as seen in the larger dot sizes, especially where the GDP per capita is higher.

European countries mostly cluster towards the upper middle and right, suggesting higher GDP per capita and moderate to high CO2 emissions per person, aligning with their developed economies and industrial activities. The dot sizes vary, indicating a range of population sizes.

Lastly, Oceania's data points are fewer but are scattered towards the higher end of both GDP per capita and CO2 emissions per person, indicating that these countries, while fewer and with varied populations, tend to have higher economic output per person and correspondingly higher carbon footprints.

## **Practical Task 2**

### **1. Population Representation and Crime Rate:**

None of the individual graphs directly represents the population of Boston as a whole, as they each show different aspects of housing data. However, the graph that plots the Crime Rate against itself shows a histogram along the diagonal, which gives an impression of the distribution of crime rates across census tracts. If the histogram shows many areas with low crime rates and fewer areas with high crime rates, we might infer that, overall, Boston has a low crime rate.

## 2. Average Number of Rooms per Dwelling:

The average number of rooms per dwelling in Boston can be estimated by looking at the histogram of Rooms per Dwelling, which is also on the diagonal of the scatterplot matrix. The average would be around the peak of the histogram. A precise average would require calculating the mean from the dataset but based on the data shown it would seem 6.2

## 3. Correlation between Rooms per Dwelling and Median House Value:

There is a positive correlation between Rooms per Dwelling and Median House Value, indicated by a trend where dots representing higher values of rooms per dwelling also have higher median house values.

## 4. Age of Housing Units:

Based on the histogram for the Percentage of Units built before 1940, the majority of the bars are high on the right side of the graph, indicating that a larger percentage of the units were built before 1940, suggesting that the majority of houses are relatively old.

## 5. Correlation between the Percentage of Units Built before 1940 and Median House Value:

Based on the respective scatterplot in the bottom middle plot, the scattered data points indicate a slight downward trend, indicating a negative correlation. This shows that as the percentage of older units increases, the median house value decreases.