**Practical Task 1**

1. Gender wage gap

Which three countries have the lowest gender wage gap

- Costa Rica
- Belgium
- Denmark

Which three countries have the highest gender wage gap

- Chile
- Japan
- Korea

- According to ntaccounts.org, women in Costa Rica have higher education than men, which has led to an increase in labour income and a narrowing of the wage gap. Besides, Costa Rica's government has a very good minimum wage policy covering informal employment. This has played a significant role in reducing the risk of women being in low-paid work. Finally, in terms of labour market dynamics, gender pay gaps have been reduced due to an increase in women's labour income and a reduction in men's labour income, reflecting changing labour market dynamics that favour gender wage parity.

2. Sale of isopropanol

- In March 2020, there was a sharp and sudden increase in price across all 3 lines, with the yellow line reaching over 125 US CTS/lb.

- Firstly, isopropanol serves as a key ingredient in the production of hand sanitiser and disinfectants. Therefore, the sudden spike in demand during March 2020 may be attributed to the COVID-19 pandemic, which greatly increased the need for isopropanol. Additionally, supply chain disruptions and panic buying of disinfectants are likely to have contributed to the significant rise in prices.

3. CO2 Emission per person vs GDP per capita

There is a positive correlation between CO2 emissions per capita and GDP per capita. As economic prosperity increases, so do carbon emissions. However, this trend varies across continents due to differences in industrialisation, energy policies, and population sizes. Africa (red dots) has low GDP per capita and low CO2 emissions. Most African countries exhibit minimal industrial activity and low energy consumption, resulting in relatively small carbon footprints.

The Americas (green dots) show a wide range of GDP per capita and CO2 emissions. North American countries such as the USA and Canada present high emissions per capita, whereas Latin American nations with lower GDP levels demonstrate moderate emissions. Industrialisation and a reliance on fossil fuels contribute to North America's substantial carbon footprint.

Asia (blue dots) is highly diverse, encompassing both low and high emission countries. Wealthier nations such as Japan, South Korea, and those in the Middle East exhibit high emissions alongside a high GDP per capita, while developing countries like India and those in Southeast Asia show moderate emissions despite having larger populations. Notably, China, with its rapid industrialisation, produces significant CO2 emissions even with a moderately high GDP per capita.

Europe (yellow dots) maintains a high GDP per capita with comparatively lower CO2 emissions per person than North America. Many European countries have adopted sustainable energy policies, energy-efficient technologies, and carbon reduction strategies, moderating emissions while sustaining economic growth.
Oceania (pink dots), particularly Australia, exhibits high emissions per capita attributed to energy-intensive industries, whereas smaller island nations maintain low levels of both GDP and emissions.

To summarise, the data supports the argument that economic growth drives higher emissions; however, factors such as energy efficiency, reliance on fossil fuels, and government policies affect the extent of emissions. Europe serves as an example of economic success with relatively controlled emissions, whereas North America and certain parts of Asia demonstrate high emissions alongside high GDP.

**Practical Task 2**

- The graphs along the diagonal are histograms representing the distribution of each variable. These show how the values for each feature (e.g., size of the living area, size of the garage, year built, and sale price) are distributed across the dataset.

- From the histogram for Size of Garage, most values are concentrated below 1000 $ft^2$, suggesting that most garages in Ames are smaller than 1000 $ft^2$.

- The scatterplot comparing Year House was Built vs. Sale Price shows that the most expensive houses tend to be built after 1950, with many high-priced homes appearing in more recent years.

- The scatterplot between the Size of the Living Area and the Sale Price indicates a strong positive correlation. As the size of the living area increases, the sale price also tends to increase. The pattern suggests that larger homes generally sell for higher prices, though there is some variability, possibly due to other factors such as location, condition, and amenities.