1. Gender Wage Gap in 2015

Which three countries have the lowest gender wage gap?

- Costa Rica
- Belgium
- Denmark

Which three countries have the highest gender wage gap?

- Korea
- Japan
- Chile

Research on the country with the lowest gender wage gap (Costa Rica):

Costa Rica has achieved a low gender wage gap through a combination of legal frameworks, social policies, and cultural factors. The country has implemented strong gender equality laws that mandate equal pay for equal work and provide protections against workplace discrimination. Additionally, Costa Rica offers extensive social support programs, including universal healthcare and childcare services, which enable greater workforce participation by women. The government's commitment to education and gender equality in schools also plays a crucial role in promoting gender parity in the labour market. These efforts have contributed to Costa Rica's low gender wage gap in 2015.

2. Isopropanol Sales from May 2019 to March 2020

Explanation of what is happening in the graph during March 2020:

In March 2020, the graph shows a significant spike in isopropanol sales prices. This sharp increase indicates a dramatic rise in demand for isopropanol.

Possible reason for the observation:

The sudden surge in isopropanol sales prices in March 2020 can be attributed to the onset of the COVID-19 pandemic. Isopropanol is a key ingredient in hand sanitizers, and as the pandemic spread, the demand for hand sanitizers skyrocketed. This unprecedented demand led to a substantial increase in the price of isopropanol as manufacturers and consumers sought to secure supplies for hygiene and disinfection purposes.

3. CO2 Emissions per Person vs GDP per Capita

Discussion on the relationship between CO2 emissions per person and GDP per capita for each continent:

- **Africa:** Countries in Africa generally show low CO2 emissions per person and low GDP per capita. The smaller dots indicate smaller populations. This trend reflects limited industrialization and lower economic development, leading to fewer emissions but also lower economic output per capita.
- **Asia:** Asian countries present a wide range of GDP per capita and CO2 emissions per person. Dots representing populous countries like China and India are larger, indicating their substantial populations. High GDP per capita and emissions in some Asian countries, such as Japan and South Korea, reflect advanced industrial activities, whereas less developed nations have lower values for both metrics.
- **Europe:** European countries tend to have higher GDP per capita with varying CO2 emissions per person. Western European countries, with advanced economies, show high GDP and moderate CO2 emissions due to stringent environmental regulations. Eastern European countries may exhibit higher emissions relative to their GDP, reflecting older industrial bases.
- **North America:** North America, particularly the USA and Canada, shows high GDP per capita and high CO2 emissions per person. This is indicative of highly industrialized economies with significant energy consumption and emissions, despite efforts to adopt cleaner technologies.
- **Oceania:** Oceania, primarily represented by Australia and New Zealand, shows high GDP per capita and moderate to high CO2 emissions per person. These countries have developed economies with considerable energy consumption, largely due to industrial activities and transportation.
- **South America:** South American countries generally display moderate GDP per capita and moderate CO2 emissions per person. Economic activities in these countries are growing, leading to increased emissions, but they remain lower compared to more industrialized regions.

Overall, the trend generally shows that as GDP per capita increases, CO2 emissions per person also tend to increase, reflecting higher industrial activity and energy use. However, the relationship can be influenced by factors such as population size, energy efficiency, and environmental policies.

Practical Task 2

Analysis of the Ames Housing Dataset Scatterplot Matrix

What do the graphs along the diagonal represent?

The graphs along the diagonal of the scatterplot matrix represent the distribution (histograms) of each individual variable: sale price, year the house was built, size of the garage, and size of the living area. These histograms show the frequency of different values for each variable, providing insight into their distribution.

Are most garages in Ames larger or smaller than 1000 ft^2?

Most garages in Ames are smaller than 1000 ft^2. This conclusion is based on the histogram along the diagonal for the 'Size of Garage' variable, where most data points fall below the 1000 ft^2 mark.

Are the most expensive houses in Ames built before or after 1950?

The most expensive houses in Ames are generally built after 1950. This is observed in the scatterplot comparing 'Sale Price' and 'Year House was Built,' where higher sale prices tend to be associated with houses built in the latter half of the 20th century and onwards.

Describe the relationship between 'Size of Living Area' and 'Sale Price'.

There is a positive relationship between the size of the living area and the sale price. As the size of the living area increases, the sale price tends to increase as well. This trend is evident in the scatterplot comparing 'Size of Living Area' and 'Sale Price,' where data points show an upward trend, indicating that larger homes generally sell for higher prices.