

Data Visualization

ISM6419 spring 2023

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Project Report

financial implications of covid

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Introduction

The COVID-19 pandemic has had far-reaching consequences across the globe, with the first wave of the pandemic resulting in a significant increase in cases, leading to the implementation of lockdown measures in many countries. As a result, many businesses were forced to close, leading to significant economic losses at both the individual and national levels.

One of the most affected sectors was world trade, with the pandemic disrupting the supply chains of many countries and resulting in a decrease in trade volumes. For instance, the gas and oil trades were hit hard, with oil prices falling to record lows due to a decrease in demand. Similarly, gold trades were impacted by the economic uncertainty resulting from the pandemic, causing fluctuations in prices.

The effects of the pandemic on world trade during the first wave of the pandemic were particularly severe, and many countries struggled to cope with its impact. However, some countries were able to adapt quickly and implement measures to mitigate its effects. For example, many countries have developed online trading platforms to facilitate trade and reduce the need for face-to-face interactions.

This project aims to analyze the data and visualize the impact of the pandemic on trade during the first wave. This project will examine how different countries were affected and how they coped with the pandemic's effects. This project will also investigate whether countries were able to recover from the impact of the pandemic on their economies and trade volumes. Ultimately, this project's analysis will provide insights into the pandemic's impact on world trade and help us understand how countries can better prepare for similar events in the future.

Here are some research questions that I have formulated before starting this project.

- How has the COVID-19 pandemic affected world trade, including the supply chains of different countries and the trade volumes of different commodities?
- What impact has the COVID-19 pandemic had on the world's major currencies, such as the dollar and the euro, and how has this affected global financial markets?

- How has the COVID-19 pandemic affected stock indexes in different countries, and is there any evidence of recovery for these indexes in the future?
- What has been the impact of the COVID-19 pandemic on the GDP of the world's top countries, and has it had a significant impact on the top 5 countries with the highest GDP?

Methodology:

Official sources like the World Health Organization (WHO) and The World Bank Data provide the datasets used in this project. These datasets have been extracted in real-time and are updated regularly to ensure that the analysis is based on the latest available data.

The World Covid Data and World vaccination data:

The WHO website provides the dataset used in this project to track the COVID-19 cases and deaths, as well as the data set containing the count of vaccinations administered in the regions and countries under the WHO. This dataset is regularly updated to ensure that the analysis is based on the latest available data.

Data source link :

- <https://covid19.who.int/data>

The Natural Gas Prices dataset:

The dataset utilized in this project includes gas prices during the initial COVID-19 pandemic period. To analyze this data effectively, a calculation was performed to convert the gas price per gallon to the price per barrel. This conversion ensures that the analysis is consistent and can provide insights into the fluctuations in gas prices during the pandemic.

Data source link:

- <https://datahub.io/search>

The Gold Prices dataset:

The dataset used in this project comprises gold prices during the pandemic, with the price of gold calculated per ounce. This data provides insights into the fluctuations in gold prices during the pandemic, which can help to understand its impact on the global economy and trade.

Data source link:

- <https://datahub.io/search>

The U.S dollars to Euro exchange rates dataset:

The dataset utilized in this project contains the exchange rates of the US dollar to Euro, which are two of the most powerful currencies in the world. The data was manipulated to convert the columns with years to rows, and the prices for each year were transformed into a single column labeled "Dexuseu." This data enables an analysis of the fluctuations in exchange rates between these two currencies during the pandemic and their potential impact on the global economy.

Data source Link:

- <https://fred.stlouisfed.org/series/DEXUSEU>

Stocks Indexes Data:

The dataset used in this project includes the gains and losses of points for various stock indexes worldwide, obtained from the World Bank data server. This data allows for an analysis of the performance of different stock indexes during the pandemic, providing insights into the impact of COVID-19 on the global stock market.

Data Source link:

<https://databank.worldbank.org/source/world-development-indicators>

The GDP Dataset:

The dataset used in this project contains GDP data for countries worldwide, sourced from an official database of The World Bank. This data allows for an analysis of the impact of the COVID-19 pandemic on the GDP of countries, providing insights into how the pandemic has affected global economic performance.

Data Source Link:

- <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2021&start=2014&view=chart>

The CBOE volatility Index:

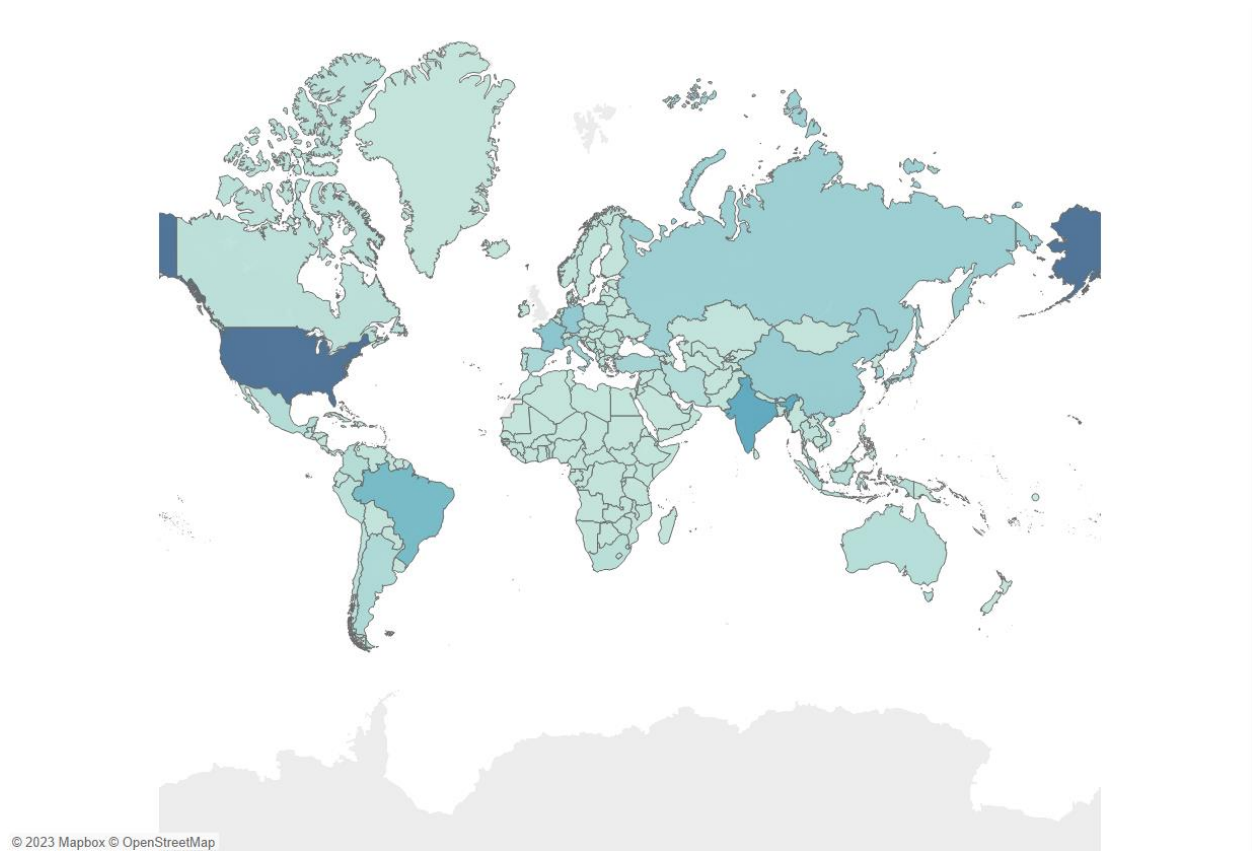
The CBOE volatility index, also known as the VIX, is a measure of expected price fluctuations in the S&P 500 index options over the next 30 days. It is commonly used as an indicator of investor sentiment and market volatility.

Data source Link:

- <https://datahub.io/search>

Visualizations

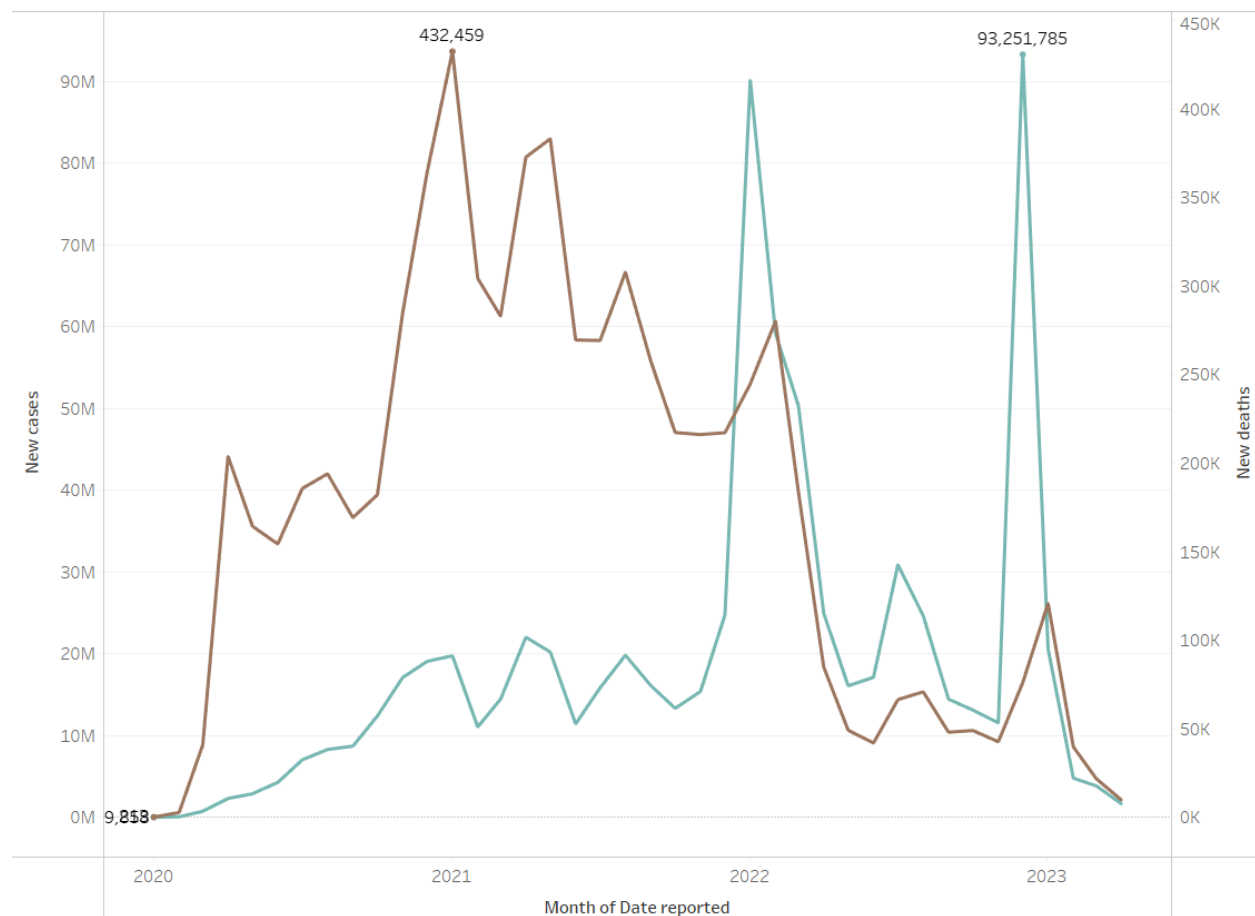
COVID-19 Global Impact Map



This visualization would show the number of confirmed cases and deaths caused by COVID-19 in different countries around the world. The visualization could use a color-coded map, where darker shades indicate a higher number of cases or deaths. Users could hover over each country to see the

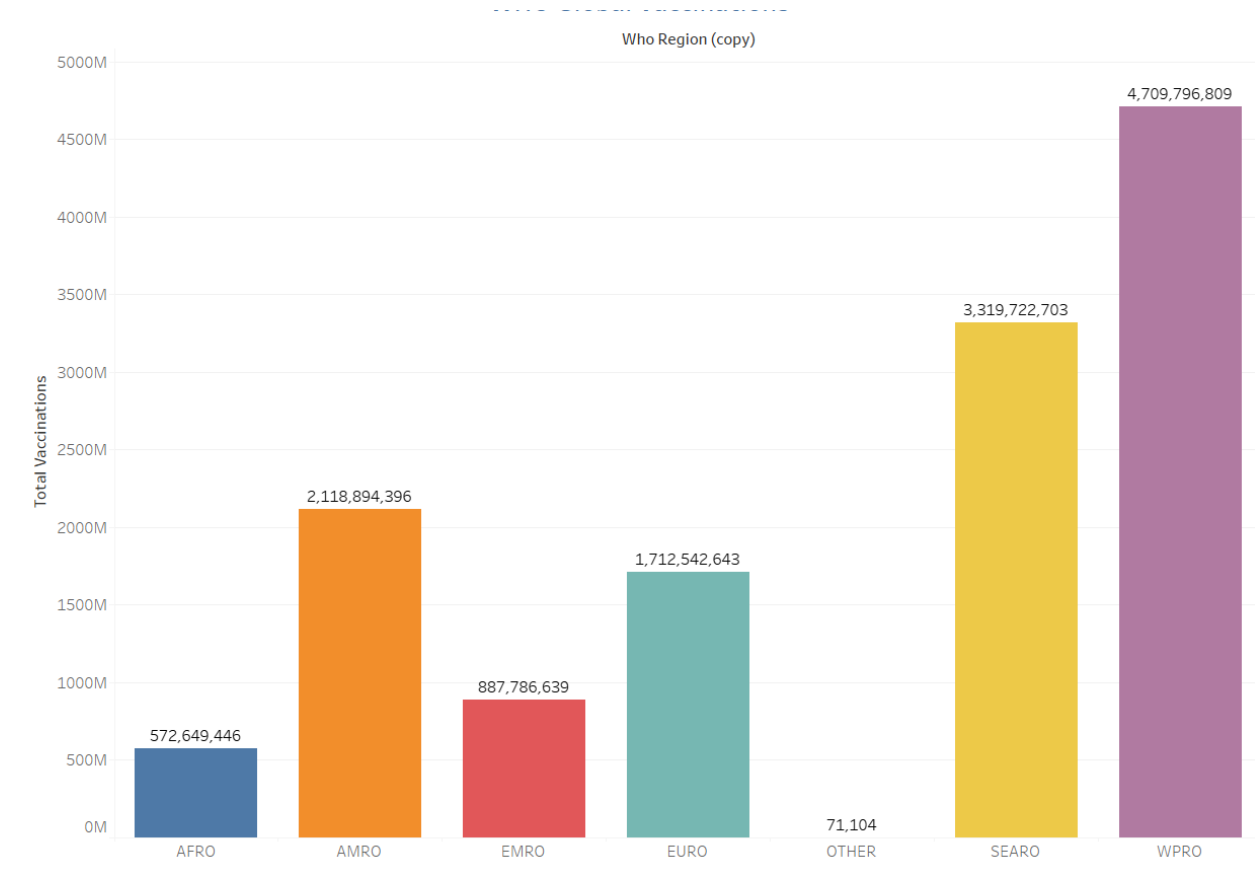
exact numbers, and the map could be interactive, allowing users to zoom in and out and filter by date range. The goal of the visualization would be to provide a comprehensive overview of the global impact of COVID-19 and to raise awareness about the ongoing pandemic.

Trends of the cases and the deaths in the world



The visualization portrays the trend of the rise of COVID-19 cases and deaths from the time when the pandemic was officially announced by the World Health Organization (WHO). This is a dual axis visualization. The trend highlights that there was a sudden increase in the death count during March, followed by a gradual decrease over time. On the other hand, the number of new cases kept increasing every month. The visualization provides a clear picture of the impact of the pandemic, enabling users to understand the timeline of the spread of COVID-19 and the associated fatalities.

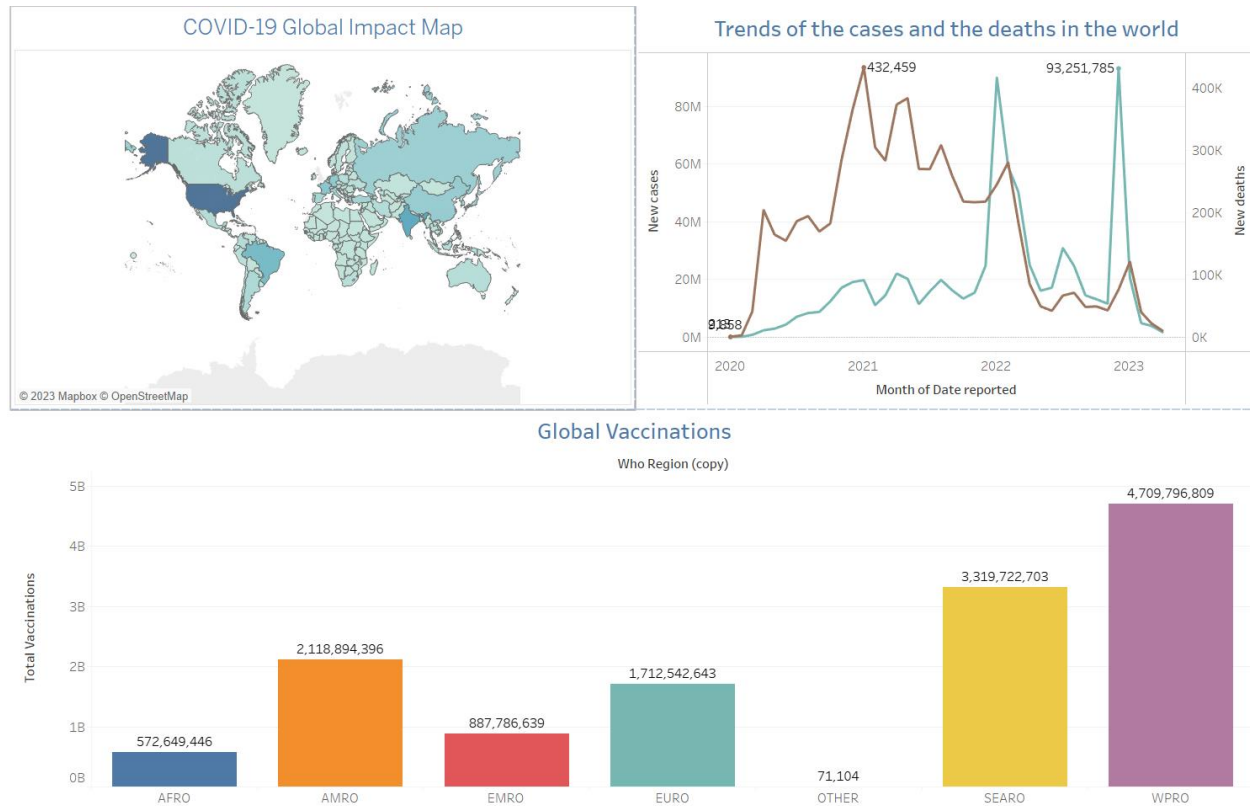
Covid vaccinations across the Who Regions



The visualization consists of a bar graph with a drill-down feature that enables users to view the total number of COVID-19 vaccinations administered in each World Health Organization (WHO) region and the countries within it. The drill-down feature allows users to view the total number of vaccinations by WHO region and by country, providing a comprehensive overview of the vaccination efforts worldwide. The main objective of this visualization is to provide insights into how countries have vaccinated their populations to reduce the effects of COVID-19. Based on the above visualization, it is evident that the African region (AFRO), with a population of over 1 billion, has administered only 572,649,446 COVID-19 vaccinations. In contrast, the Southeast Asia (SEARO), Americas (AMRO), and European (EURO) regions, within the Western Pacific

(WPRO) region, have the highest number of vaccinations. This information provides valuable insights into the progress of vaccination efforts across different WHO regions.

An Overview of Covid across the world

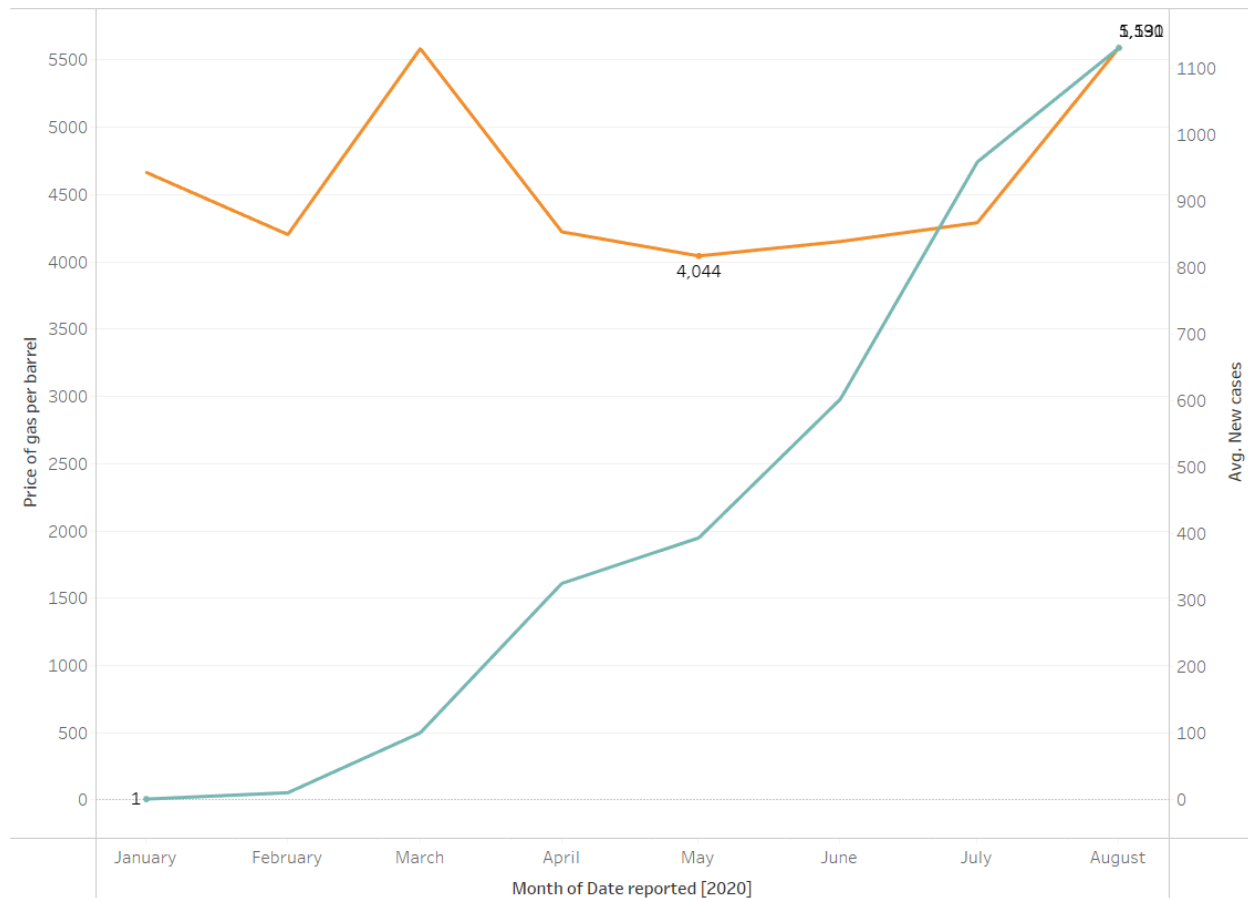


This dashboard gives a comprehensive overview of the global impact of COVID-19. It includes a COVID-19 Global Impact Map, a COVID-19 Impact Map of India, a COVID-19 Confirmed Cases Trend in India and World, and a Bar Graph with Drill-Down Feature to View Total Vaccinations by WHO Region and Countries Under It.

The maps are color-coded to indicate the severity of the outbreak in each country or state, and the trend chart shows the rise of COVID-19 cases and deaths during the first wave.

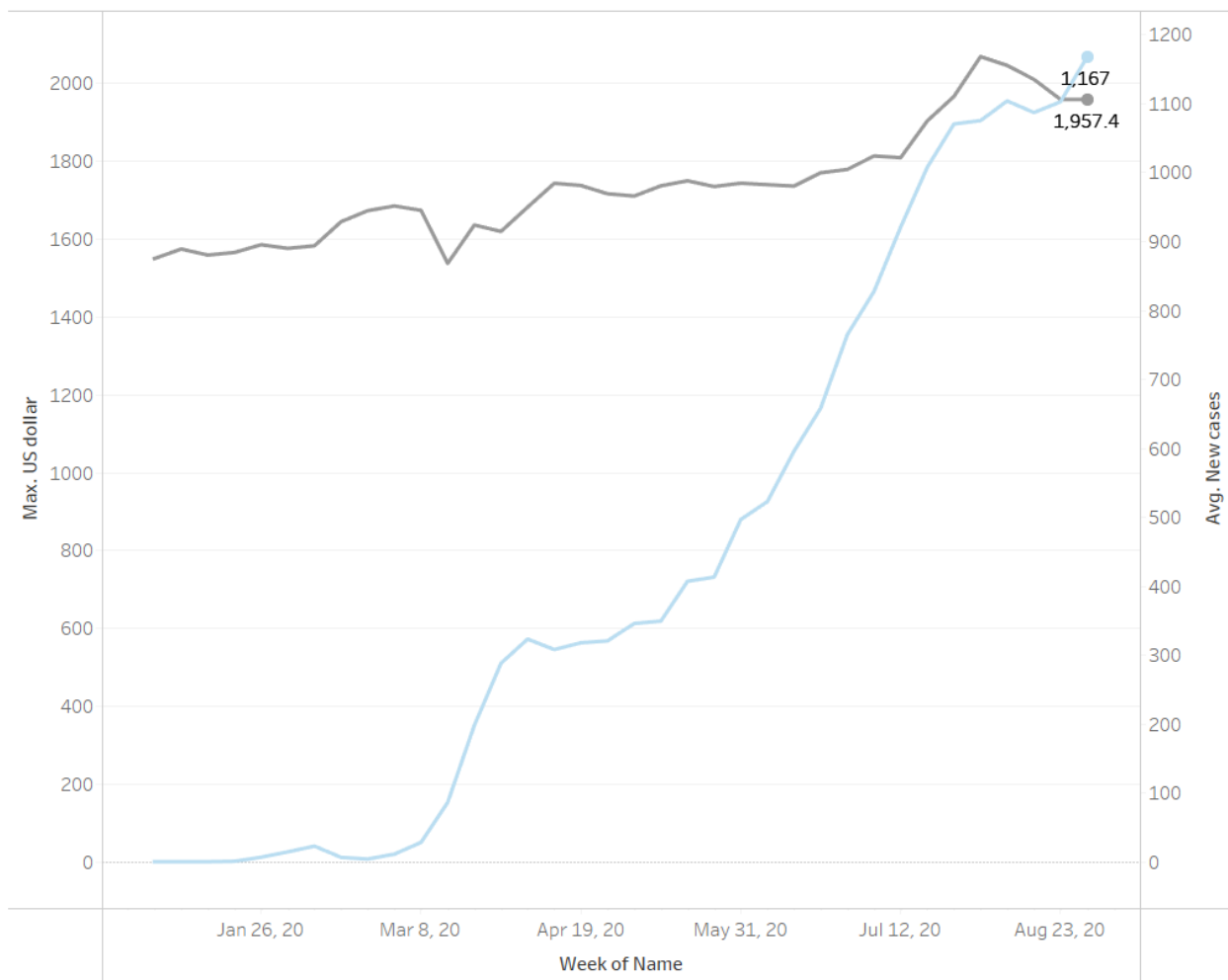
The final visualization provides an overview of the progress of COVID-19 vaccination efforts across different WHO regions and countries. This dashboard aims to provide insights into the pandemic and measures taken by countries to overcome it.

The Covid 19 impact on natural gas trade.



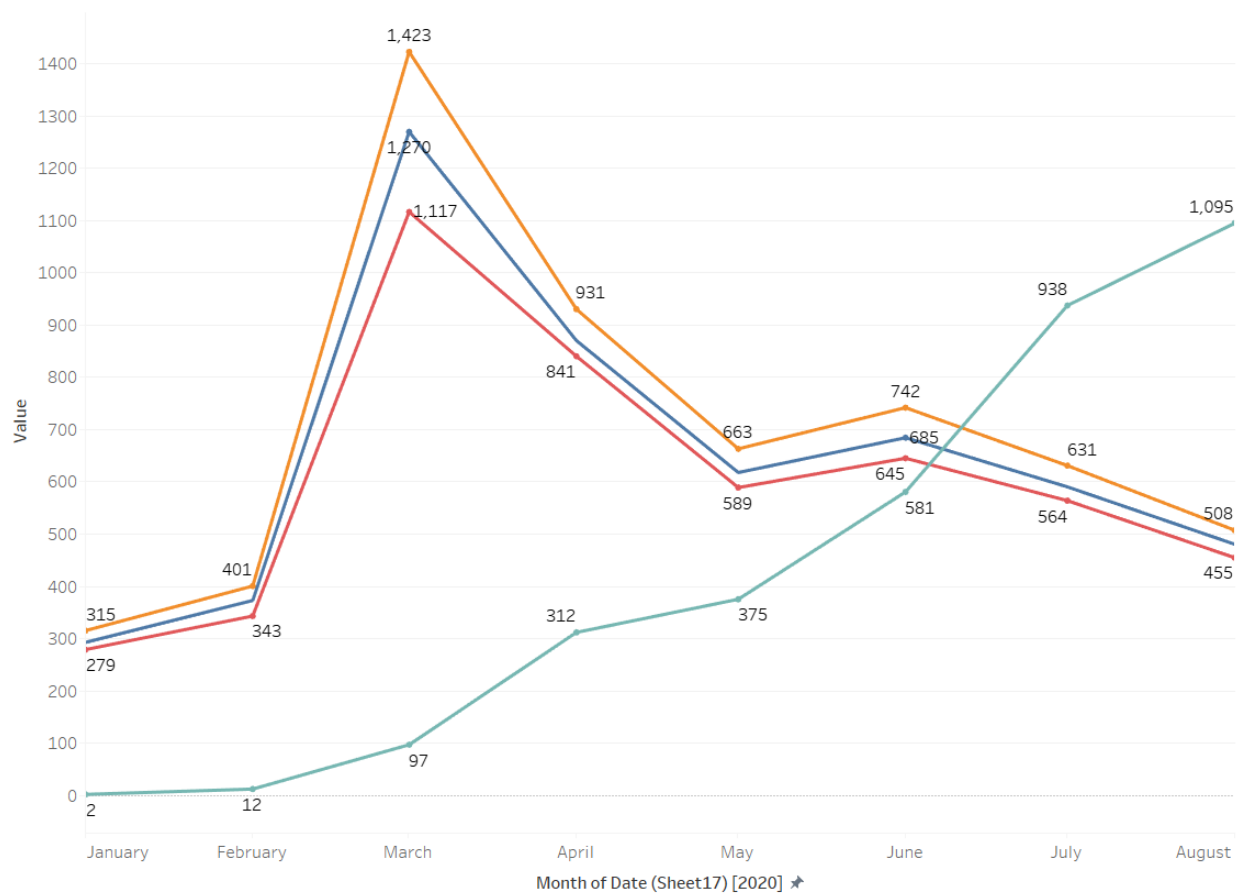
This dual-axis visualization depicts the correlation between gas prices and gold prices. The orange line indicates the trend of gas prices, while the blue line represents the trend of new COVID-19 cases. The visualization highlights a significant drop in gas prices from \$5585 to \$4044 per barrel during March to May, corresponding to the rise of new cases. However, the gas prices bounced back to approximately \$5591 in August due to the lifting of lockdown restrictions in many countries and demand got increased. This indicates a deviation from earlier trends due to people being less cautious.

The Covid19 impact on the Gold Trade:



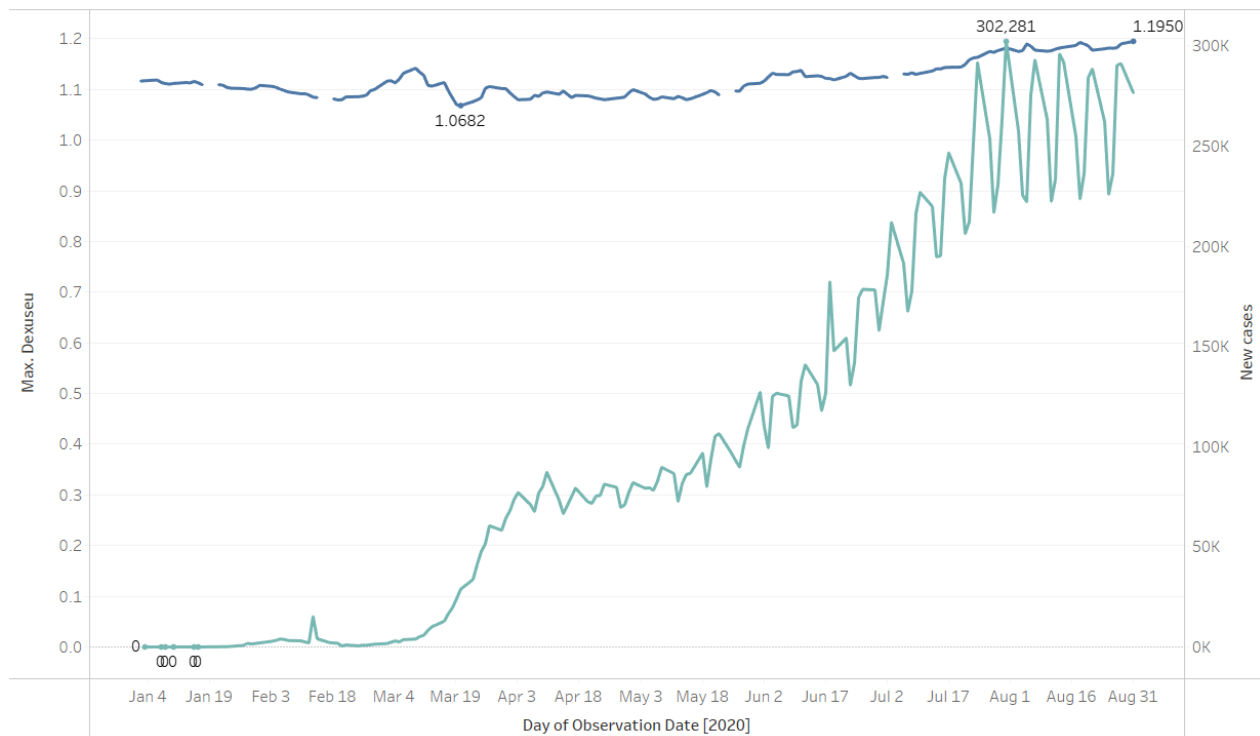
This visualization is a dual-axis chart that displays the trends of gold prices and the average number of new cases per week. The chart shows that the price of gold per ounce initially decreased and then picked up again. In comparison to gas prices, the drop in gold prices was not as drastic but showed some signs of a decline. The gold price peaked in the last week of July and then decreased slightly. These observations suggest that there was an impact on the gold price, but it eventually recovered.

The Covid19 impact on the CBOE volatility index



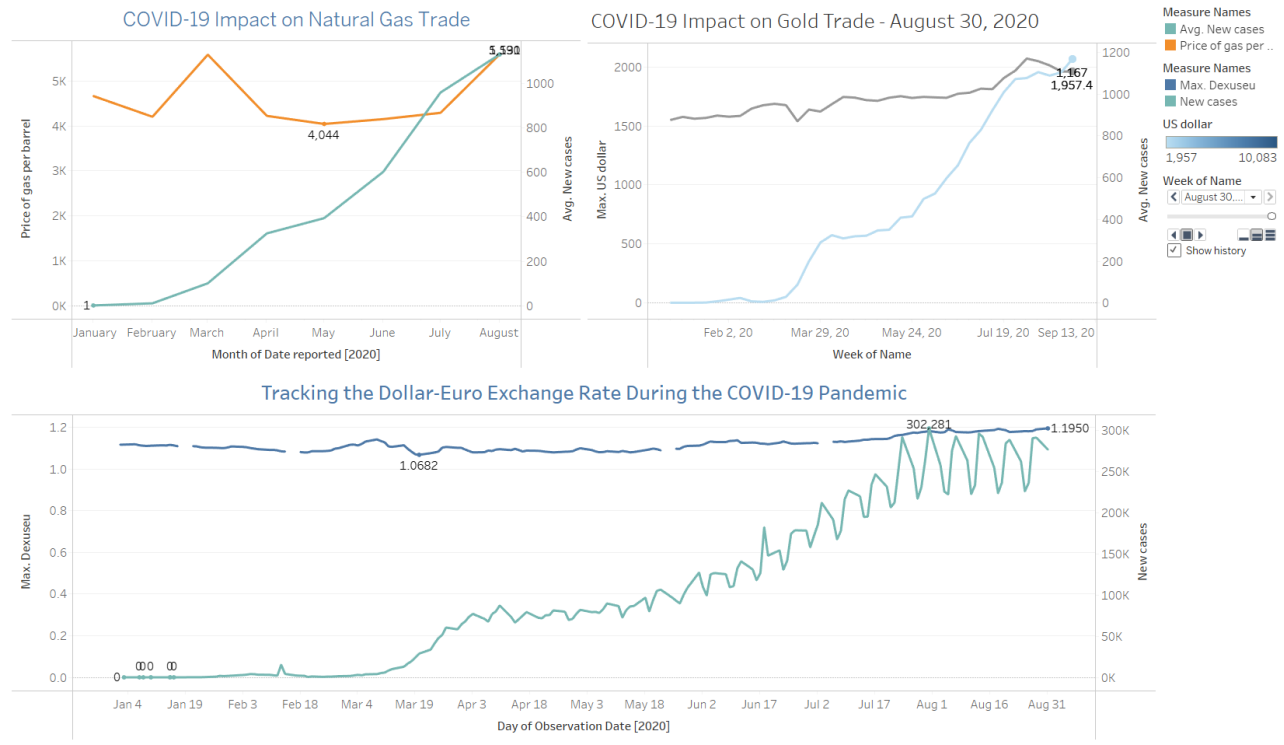
The CBOE volatility index, also known as the fear index, is presented as a line graph that shows the fluctuations in the market for the upcoming months. This visualization is compared to the rise of COVID-19 cases, and it indicates that the market shares of the S&P 500 companies will experience fluctuations with the increase of cases.

Tracking the Dollar-Euro Exchange Rate during the Covid-19 Pandemic



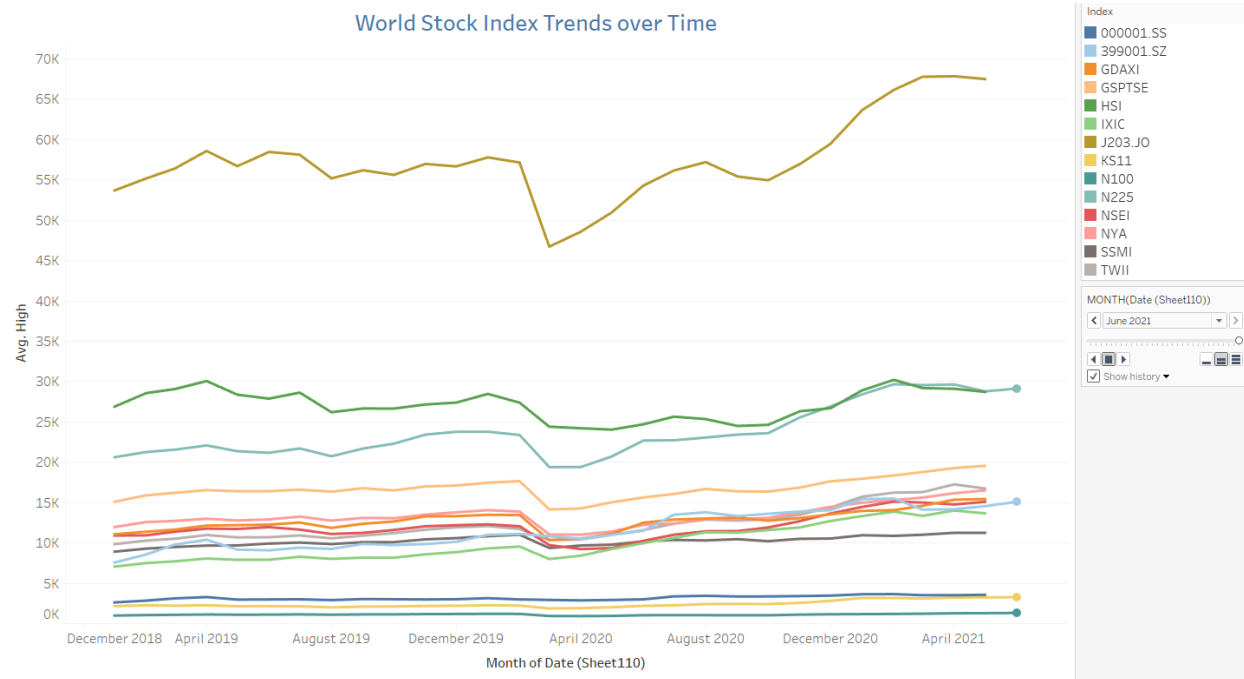
This dual axis visualization displays the fluctuations in the exchange rate between the US dollar and the euro currency on a weekly basis. Despite the rise in COVID-19 cases, the exchange rate has not been significantly impacted. The minimum value during this period was around 1.0682, while the maximum value was 1.1950. Thus, it can be inferred that COVID-19 did not have a major effect on the exchange rate between the US dollar and the euro.

Covid 19 effect on world economy



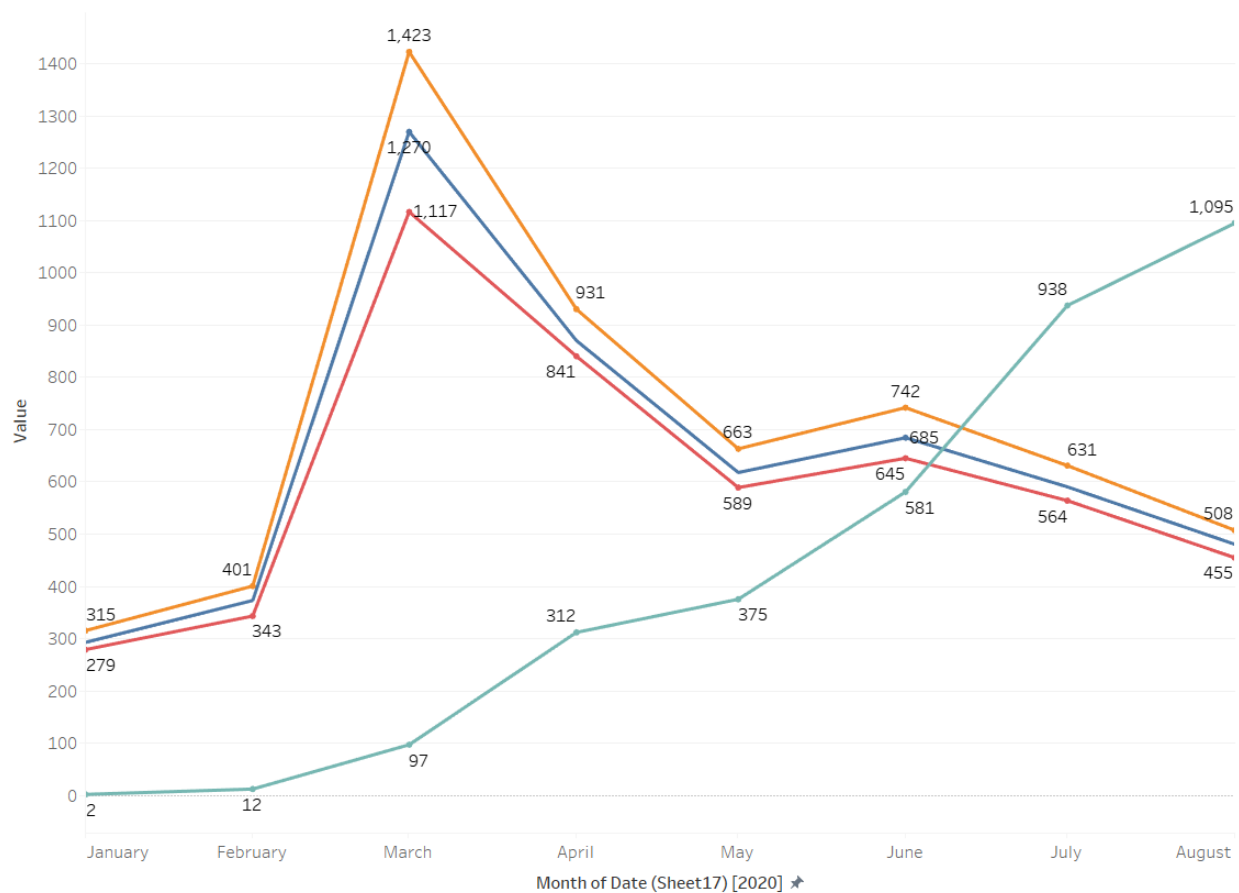
The Covid 19 effect on world economy dashboard provides a comprehensive overview of the effects of COVID-19 on different aspects of the global financial market. The dashboard reveals that natural gas prices have been most affected by the rise of COVID-19 cases, while gold prices and currency exchange rates have seen minimal impact.

World Stock Index Trends Over Time



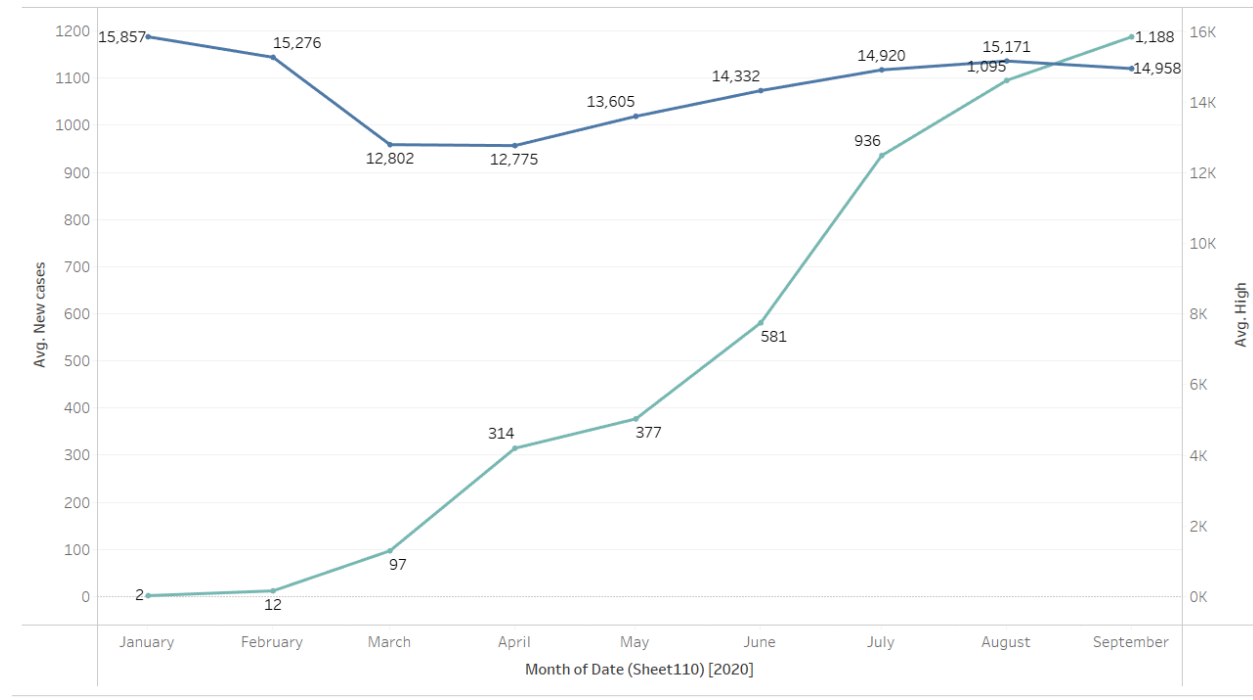
This animated line chart showcases the trends of different stock indexes worldwide. The chart illustrates a significant drop in most indexes in March, followed by a recovery later on. The Bombay Stock Exchange also experienced a sharp decline during the pandemic due to the rise in cases, but it managed to recover eventually. It's noteworthy that the overall trend for most stock indexes is a decline in March followed by a gradual recovery, indicating the impact of the pandemic on the global stock market.

The Covid19 impact on the CBOE volatility index



The CBOE volatility index, also known as the fear index, is presented as a line graph that shows the fluctuations in the market for the upcoming months. This visualization is compared to the rise of COVID-19 cases, and it indicates that the market shares of the S&P 500 companies will experience fluctuations with the increase of cases.

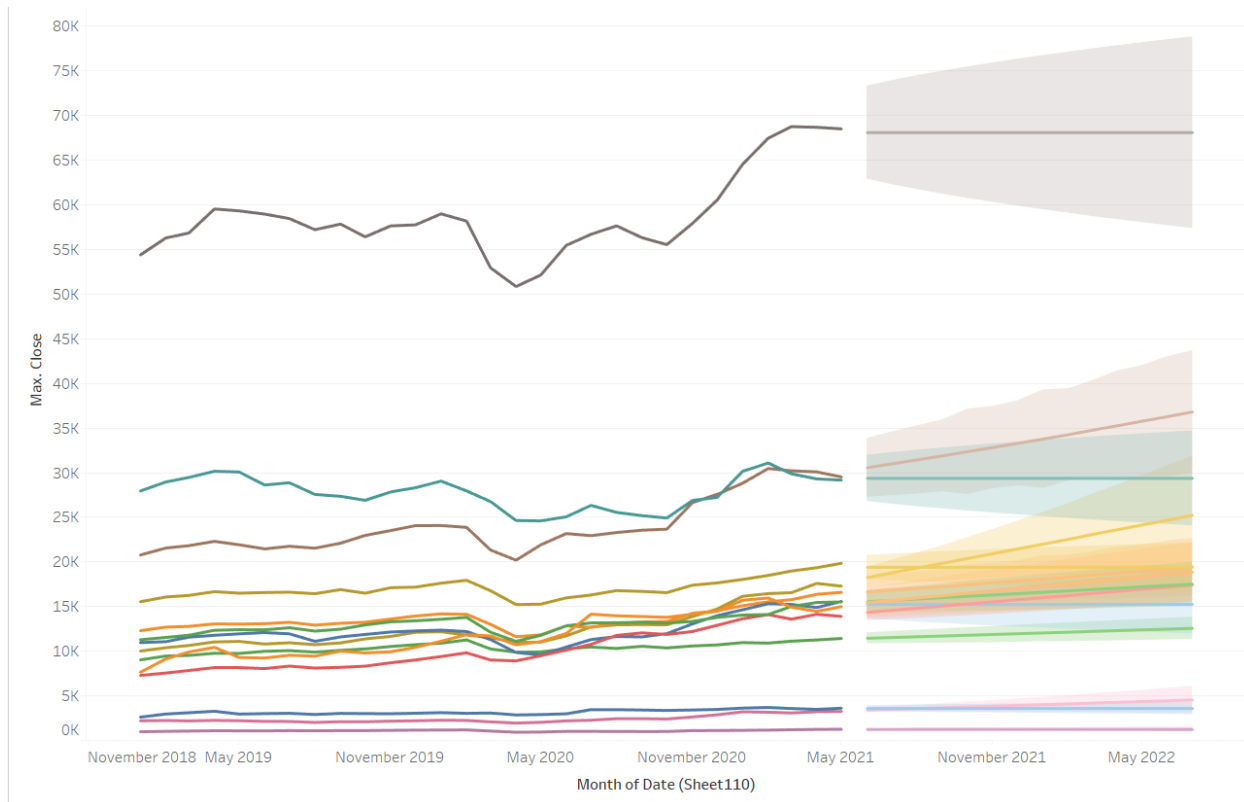
Covid cases and the index highs.



This visualization displays the trends of the Frankfurt Stock Exchange with the rise in new COVID-19 cases around the world. In January, the market was performing well, but it experienced a significant drop of around 3000 points in March due to the pandemic. However, it later recovered and became stable. The dip in the market can be attributed to the uncertainty and fear among investors about the impact of the pandemic on the economy, leading them to hold off on investing.

Global Stock Index Open and Close Trends Forecast: Insights into Future Market

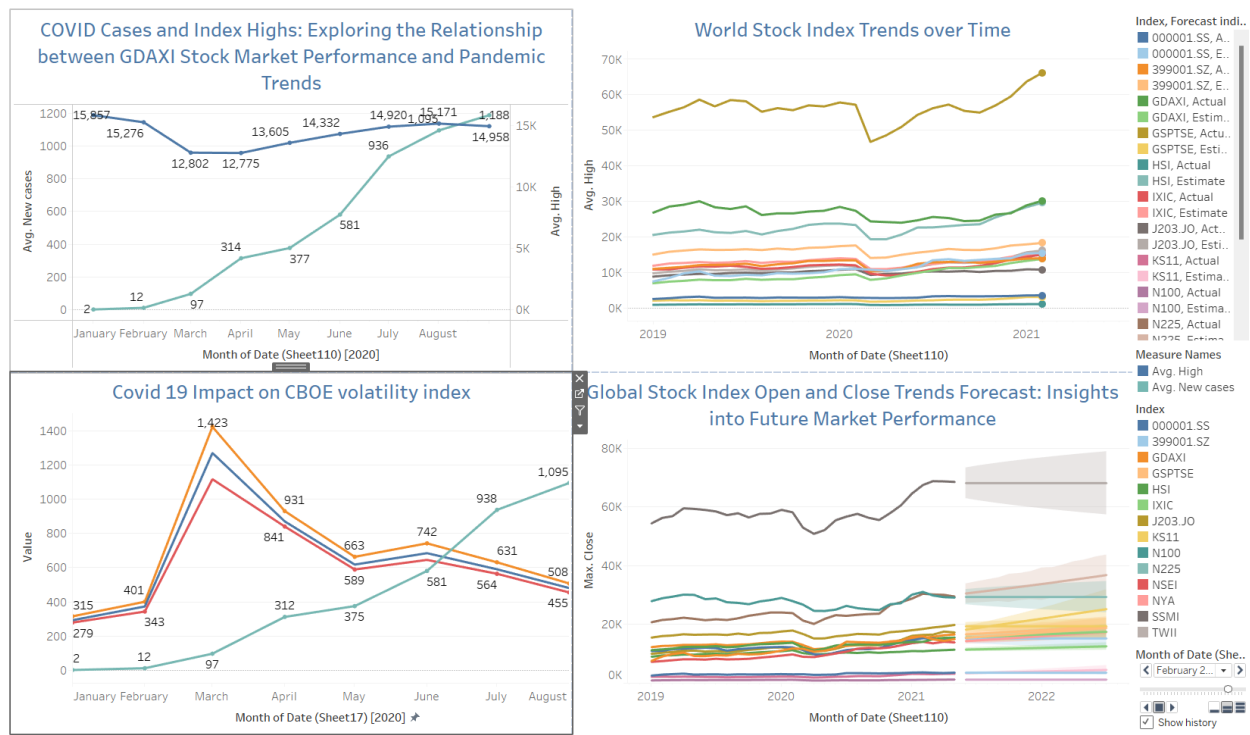
Performance



This is a line chart that displays multiple global stock indexes and their forecasted trends. The chart indicates that most of the indexes have seen an increase and will eventually stabilize. This forecast suggests that the market will recover from the effects of the pandemic, and people will likely be looking forward to investing in the stock market again. The predicted stabilization and eventual rise of these indexes will give investors hope and confidence in the market's resilience in the face of such global crises.

COVID-19 Impact on Global Stock Markets: Analyzing the Effects of the Pandemic on

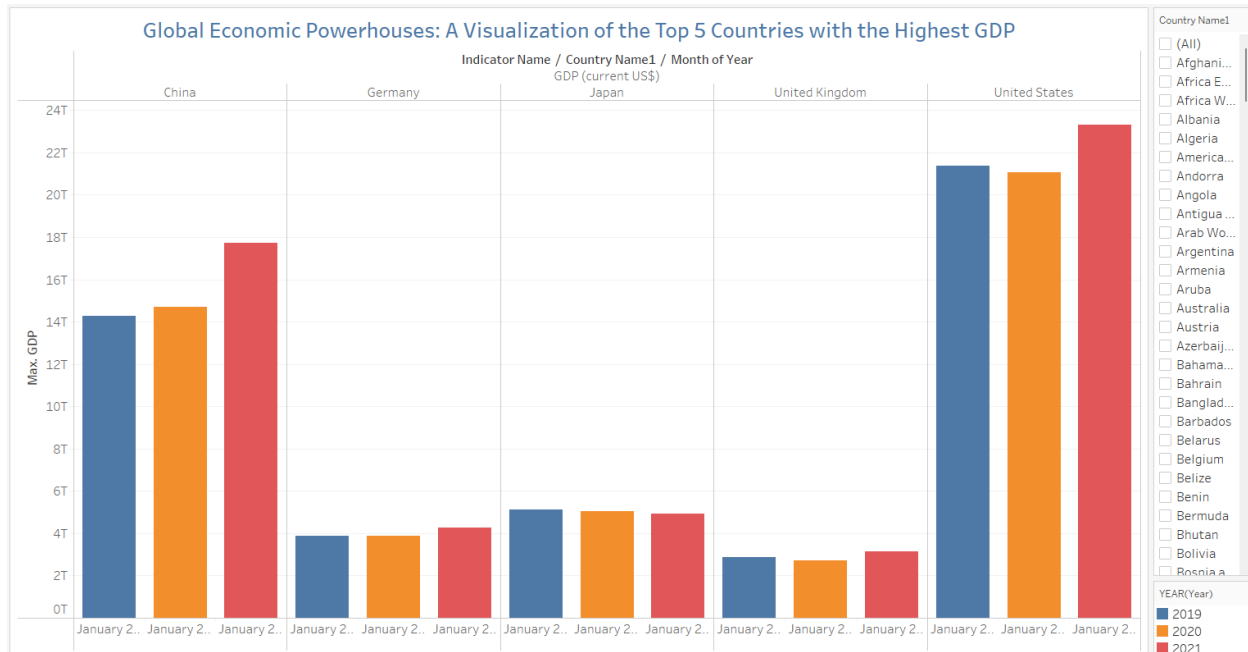
Stock Trading Trends



This dashboard provides an overview of the impact of the COVID-19 pandemic on various stock indexes in the world. As we can see from the visualization, the stock indexes around the world experienced a decline in March, which was due to the sudden rise in COVID-19 cases globally. However, later on, the indexes began to recover and returned to a stable state. When considering the CBOE volatility index, we can observe that the sudden increase in COVID-19 cases caused panic among the people, leading to a temporary negative impact on the market. However, as the market trends show, people started investing in the companies and most of them managed to get back on track by implementing work from home policies. This dashboard is an excellent representation of how the COVID-19 pandemic affected the stock market. Although there was an initial decline, it eventually recovered and continues to do well. This shows the resilience of the

market and how it adapts to adverse situations, highlighting the importance of having a diversified investment portfolio to weather unforeseen events like the pandemic.

Global Economic Powerhouses: A Visualization of the Top 5 Countries with the Highest GDP



This visualization presents a comparison of the Gross Domestic Product (GDP) of the top 5 countries with the highest GDP. The interactive filter allows the user to select the country of interest for the comparison. The GDP of all the countries had a significant decrease in 2020, except for China, which had a slight increase in GDP. However, in 2021, all the countries displayed an upward trend in GDP, except Japan, whose GDP slightly decreased compared to the pre-pandemic year of 2019. The graph indicates that the pandemic had a substantial impact on the economies of all countries, and recovery varied among them.

Conclusion:

we can see that the COVID-19 pandemic has had a significant impact on the global economy. The stock markets of various countries experienced a drastic dip in the month of March 2020, but they have gradually recovered and stabilized over time. Natural gas was one of the most affected sectors, while gold prices and currency exchange rates were minimally impacted. The rise in COVID-19 cases also had an effect on the CBOE volatility index, which caused panic among investors.

In terms of GDP, all the top 5 countries experienced a decrease in GDP in 2020 except for China, which saw a slight increase. However, in 2021, all the countries witnessed an increase in GDP except for Japan, which saw a slight decrease compared to 2019. Overall, the visualizations suggest that the global economy has been resilient in the face of the pandemic, with gradual recoveries and stabilization across various sectors and countries.

Future research questions:

1. How has COVID-19 impacted the imports and exports of different countries?
2. What is the average amount of investment in the stock market before and after the pandemic?
3. What is the impact of the pandemic on the unemployment rate in different countries?
4. How has the COVID-19 pandemic affected the financial budgets of different countries, and are governments investing in precautionary measures to prevent future pandemics?