

Project 1: Pandas Visualization

The Economic Impact of Covid-19

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Covid-19 has stifled global economies since the beginning of 2020. Cases rose to insurmountable levels at a rapid pace and economies were forced to shut down in the efforts to control the spread of the virus.

This lead the team to discuss and ask how the pandemic has affected a country's mobility and GDP.



Questions

How do the countries compare in regards to Covid-19 cases, related deaths and vaccination?

To figure out the effects of the pandemic, we needed a case count that can be referenced. We believe that knowing each country's case numbers can help find correlations to the changes in an economy. Also, the case numbers can help us understand, if the citizens of the country are more willing to take the vaccine if the cases are higher.

How has the pandemic affected us in terms of mobility?

To further discuss the impact of the pandemic towards the changes in day-to-day human activities and how it might impact the economy, we extracted informations in several industries that we believe plays a big role in a country's GDP.

How has Covid-19 affected the labour force and a country's GDP?

How has Covid-19 affect the global economy, and how were specific global measures impacted. The data showed that there were significant declines in Global GDP during 2020, however the reason for the decline could not be adequately determined without sufficient research and available data. It was also significantly necessary to analyze the effects of covid on the labour force since mobility was affected by the pandemic.

The Data

The data used throughout the project consisted of:

- Data on the number of cases, deaths, and vaccinations
- Latitude and Longitude
- Data on the mobility activities of a country's citizens
 - Retail and Recreation, Groceries, Pharmacies, Workplaces, Transit Stations, and Driving
- Data on a country's change of GDP
- Data on Employment Rates

Data Cleanup and Exploration

Cases Dataset

- Read through the dataset and checked the values of each column
- Original dataset had 40+ columns.
- Decided which columns to use
- Datasets contained irrelevant information and columns had to be dropped
- Certain datasets carried NaNs, kept due to keeping the datasets true to form
- Columns were grouped to show desired outcomes for plots
- Datasets were filtered to show a particular set of countries
- Latitude and longitude dataset

Data Analysis

How do the countries compare in regards to Covid-19 cases, related deaths and vaccination?

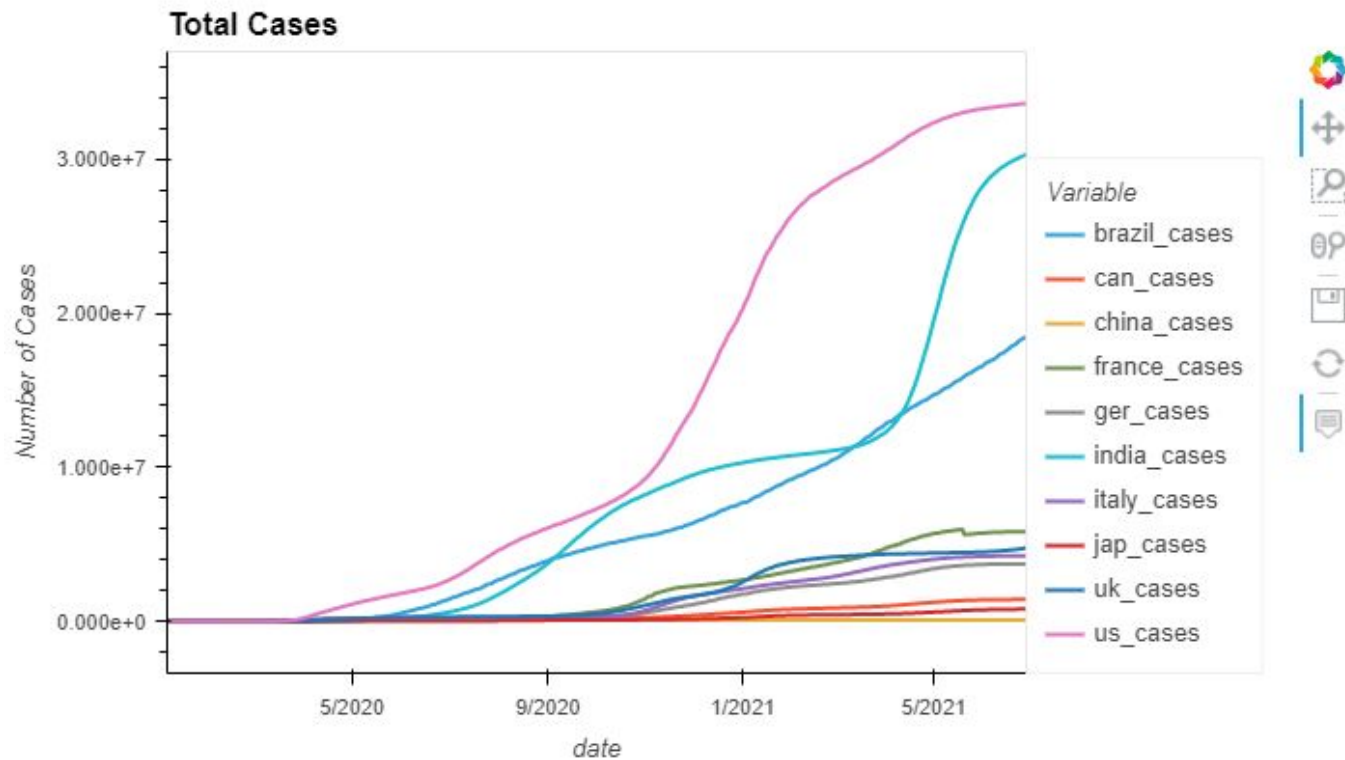
- Total cases shows 3 countries with the most amount of cases compared to the other 7 countries
 - United States, India, Brazil
- Citizens were quick to accept the vaccines right at rollout.
 - India's cases continue to rise
- The amount of people vaccinated is almost double that of people fully vaccinated
 - Except for the United States and United Kingdom.

World Map

Covid-19 Cases/Deaths/Vaccinations

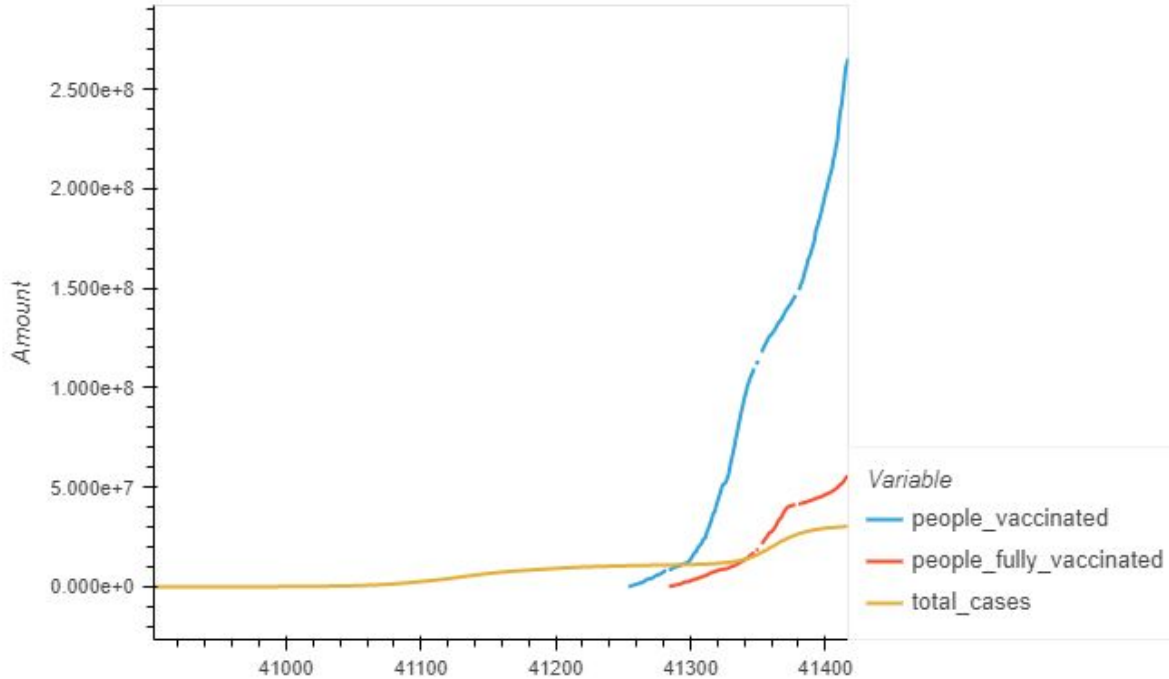


Total Cases



Vaccinations

Vaccinations vs Covid-19 Cases



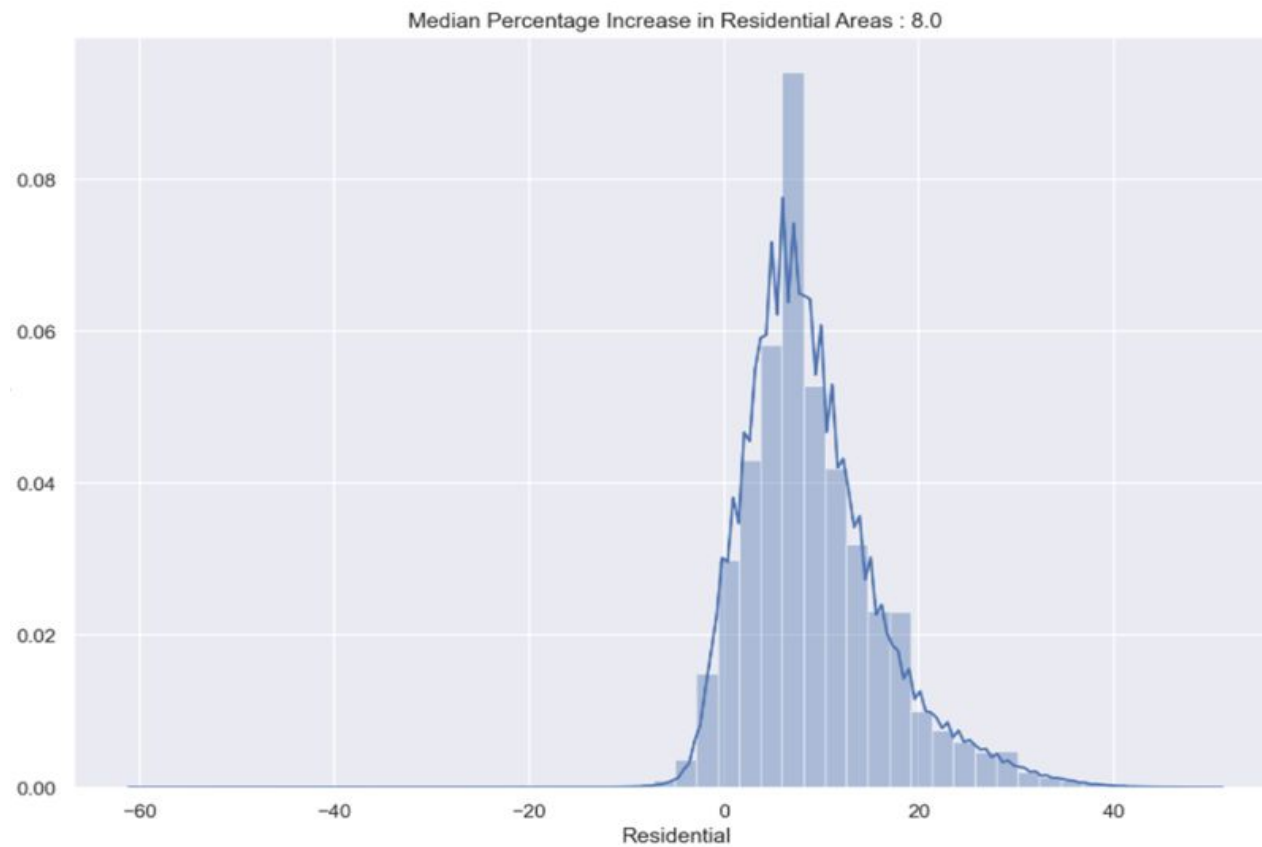
location

India

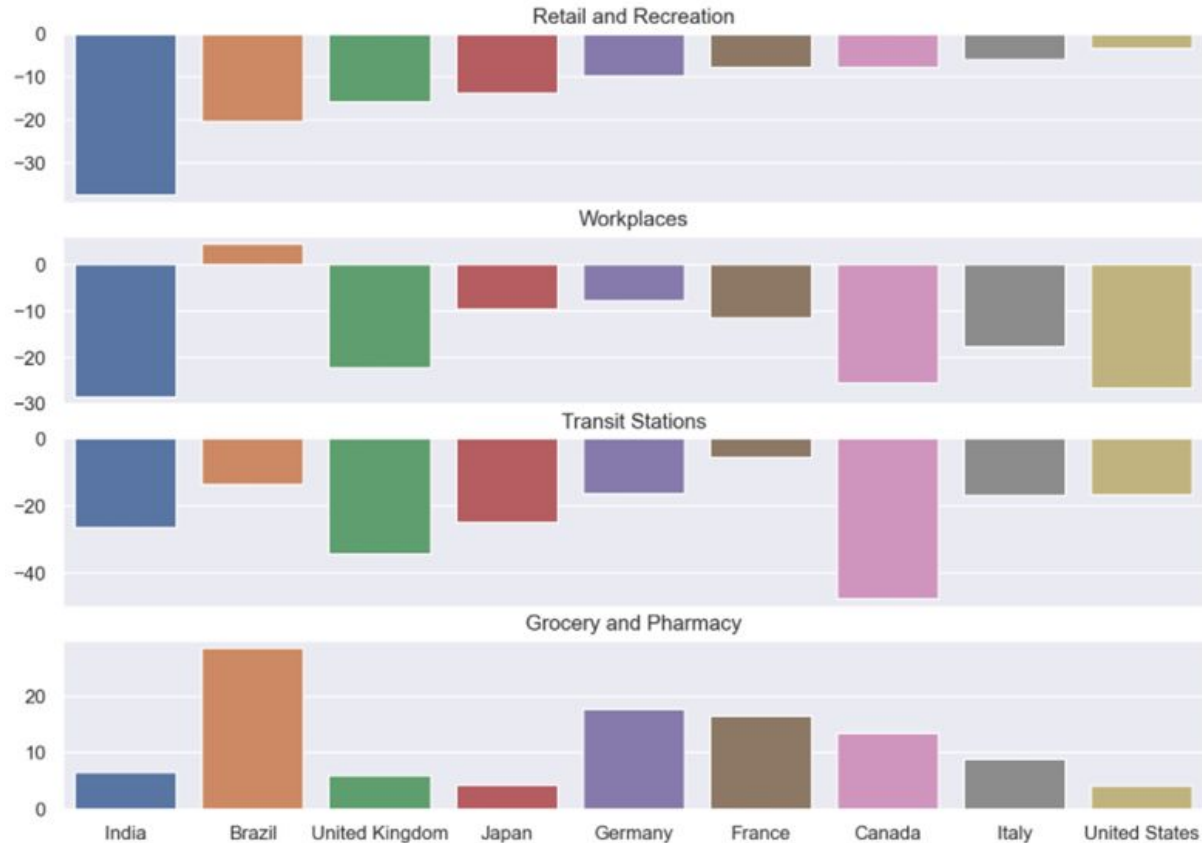
Are We Becoming Less Mobile?



Residential Activities



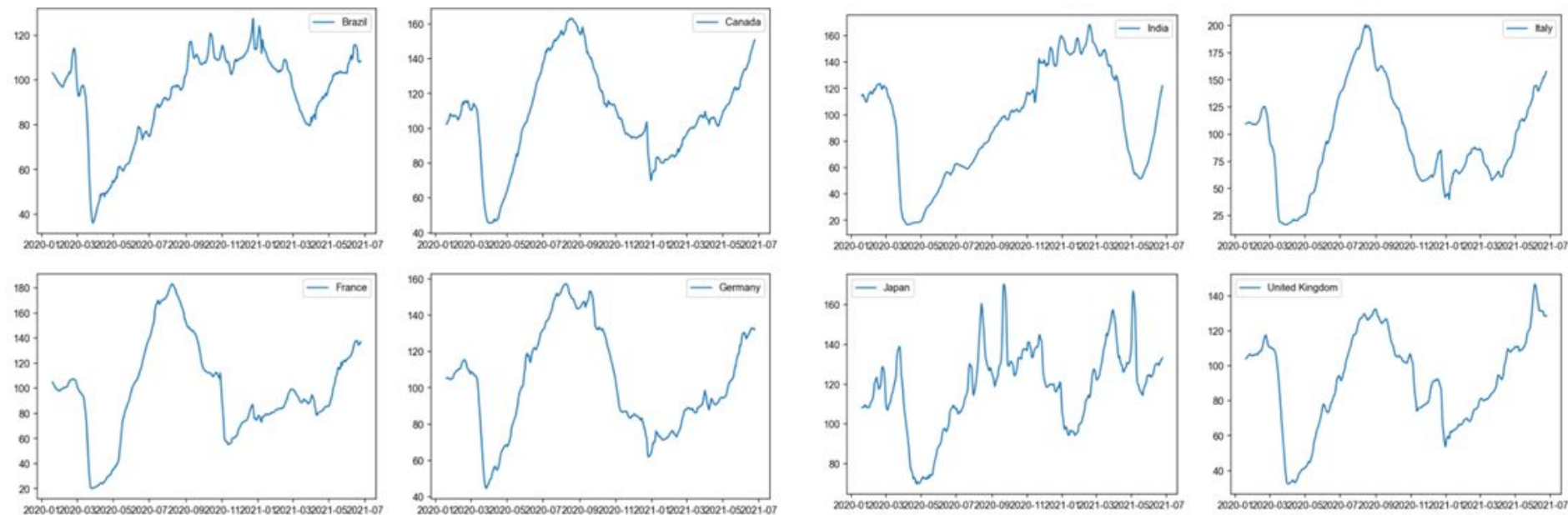
Changes in Visits to Other Activities



- Fewer visits to retail and recreational places, workplaces, transit stations
- More visits in groceries and pharmacies
- A drop in Canada's transit usage following the pandemic.

Commuting Trends in All Countries

Significant drops in driving are seen when the pandemic began. As we get closer to the current date, we see trends in all countries of people being more confident commuting.



How is a country's economy measured?

To answer this question and to further describe Covid-19's impact on the global economy we have taken an in depth look at five economic measures in relation to the pandemic.

1. GDP
2. GDP growth rate
3. Inflation Rate
4. GDP per Capita
5. Employment Rate

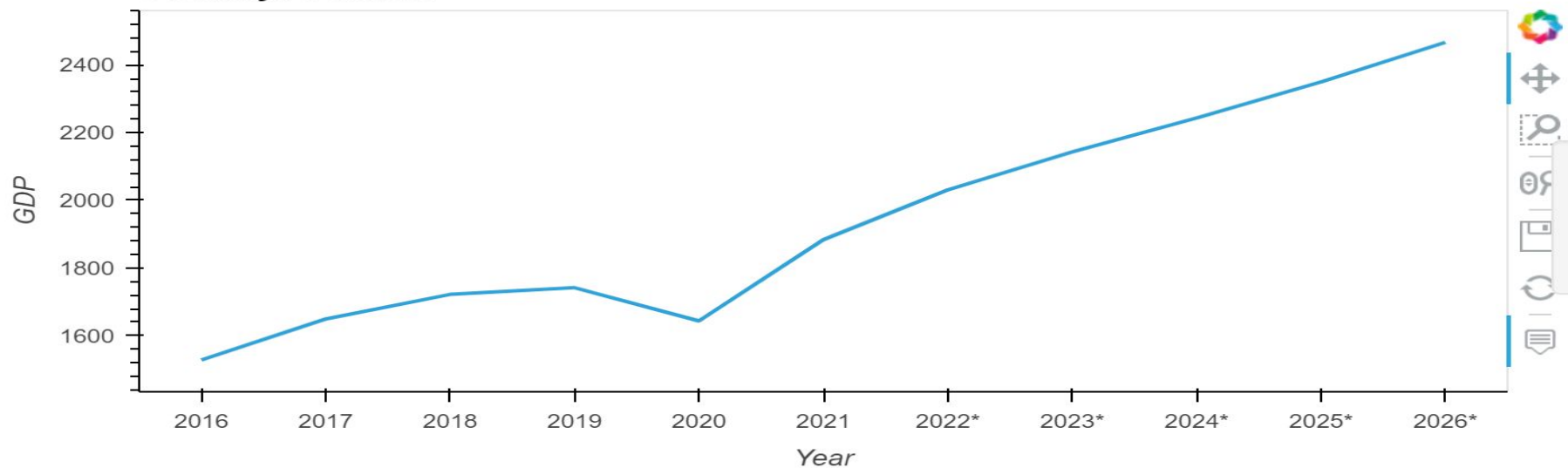


Gross Domestic Product (GDP) (in Trillion U.S. dollars)

GDP, or gross domestic product, is effectively a count of the total goods and services produced in a country over a certain period. It is calculated by first adding together a country's total consumer spending, government spending, investments, and exports; and then deducting the country's imports.

GDP per Country

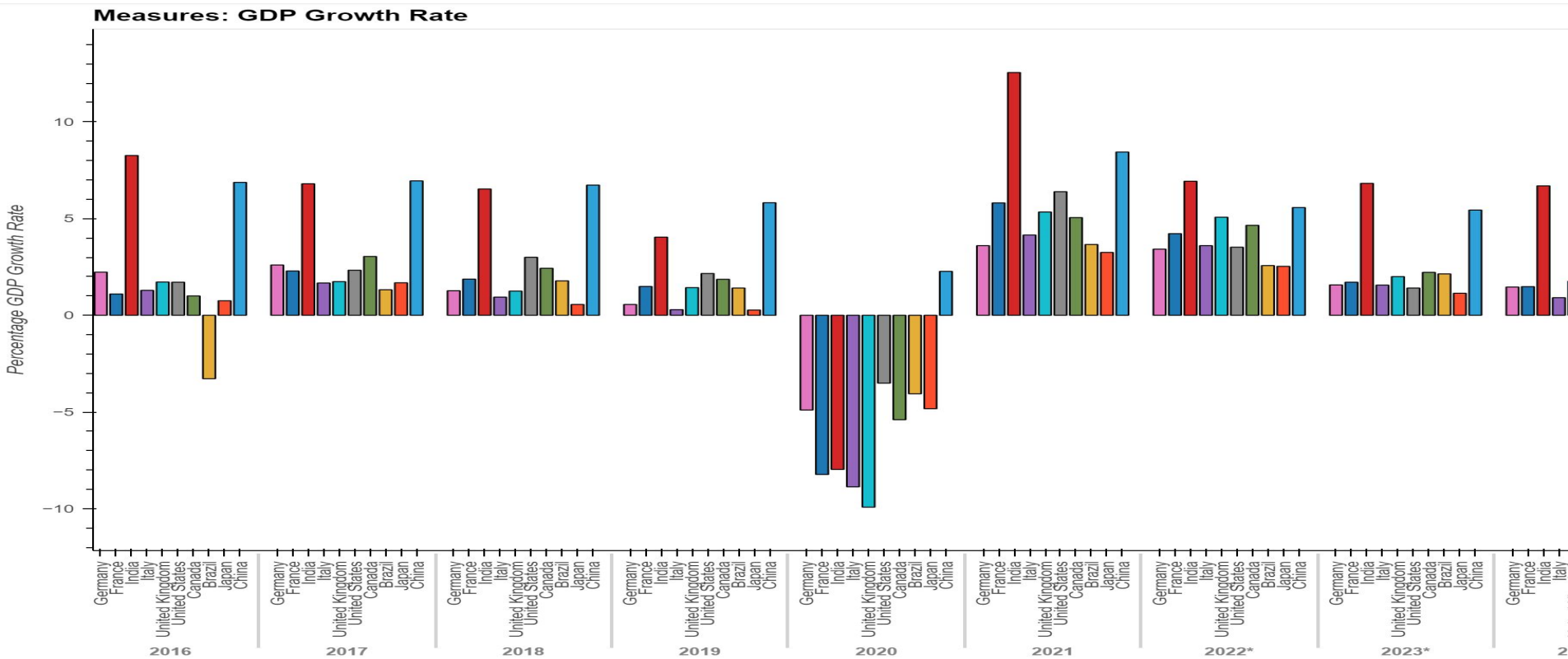
Country: Canada



The GDP for the 9 biggest economies and Canada for 2020 were as follows:

1. United States (GDP: 20.93 trillion)
2. [China](#) (GDP: 14.72 trillion)
3. Japan: (GDP: 5.048 trillion)
4. [Germany](#): (GDP: 3.80 trillion)
5. [United Kingdom](#): (GDP: 2.71 trillion)
6. France: (GDP: 2.60 trillion)
7. [India](#): (GDP: 2.71 trillion)
8. [Italy](#): (GDP: 1.88 trillion)
9. [Brazil](#): (GDP: 1.43 trillion)
10. Canada: (GDP: 1.64 trillion)

GDP Growth Rate (%) In comparison, Covid-19 impact on GDP on the Global Economy can also be illustrated by the GDP growth rate and it is illustrated as follows:

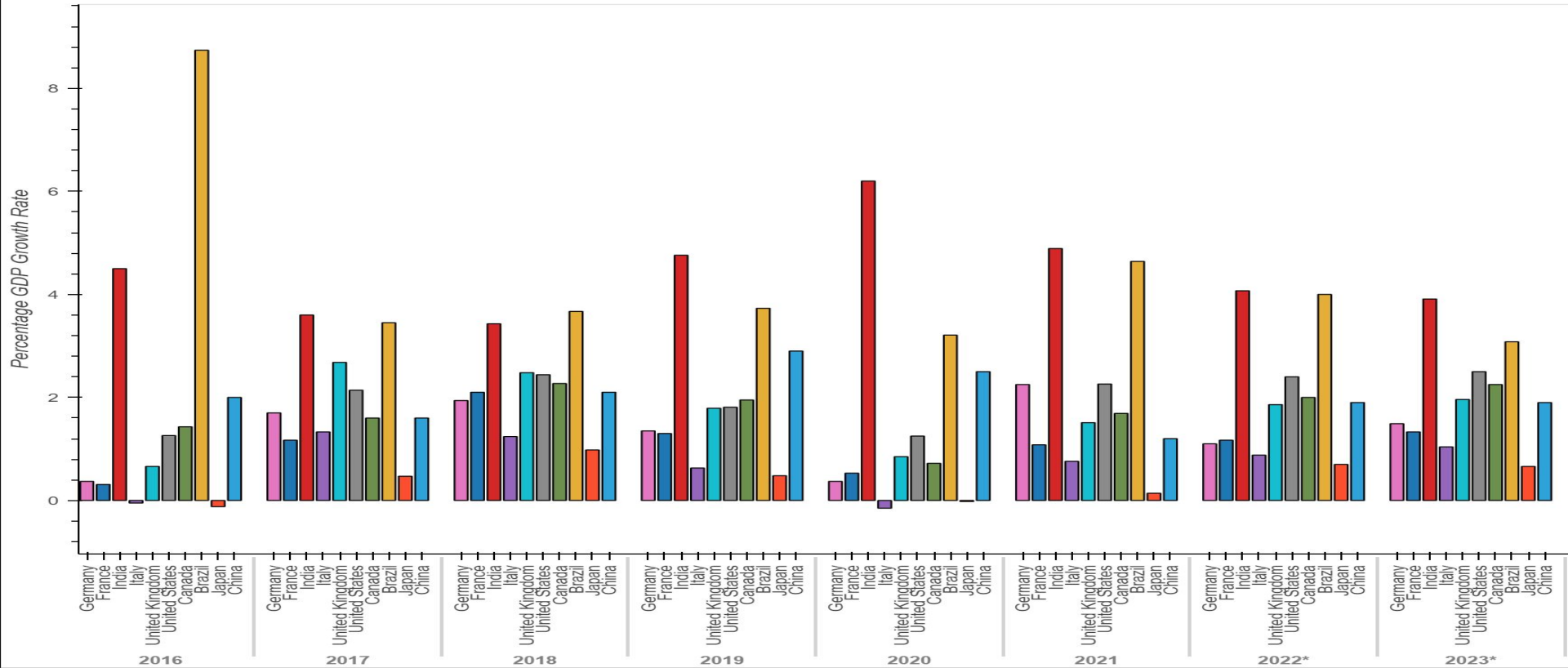


Inflation Rate (%)

Inflation is the rate at which the value of a currency is falling and consequently, the general level of prices for goods and services is rising.

Inflation Chart

Measures: Inflation



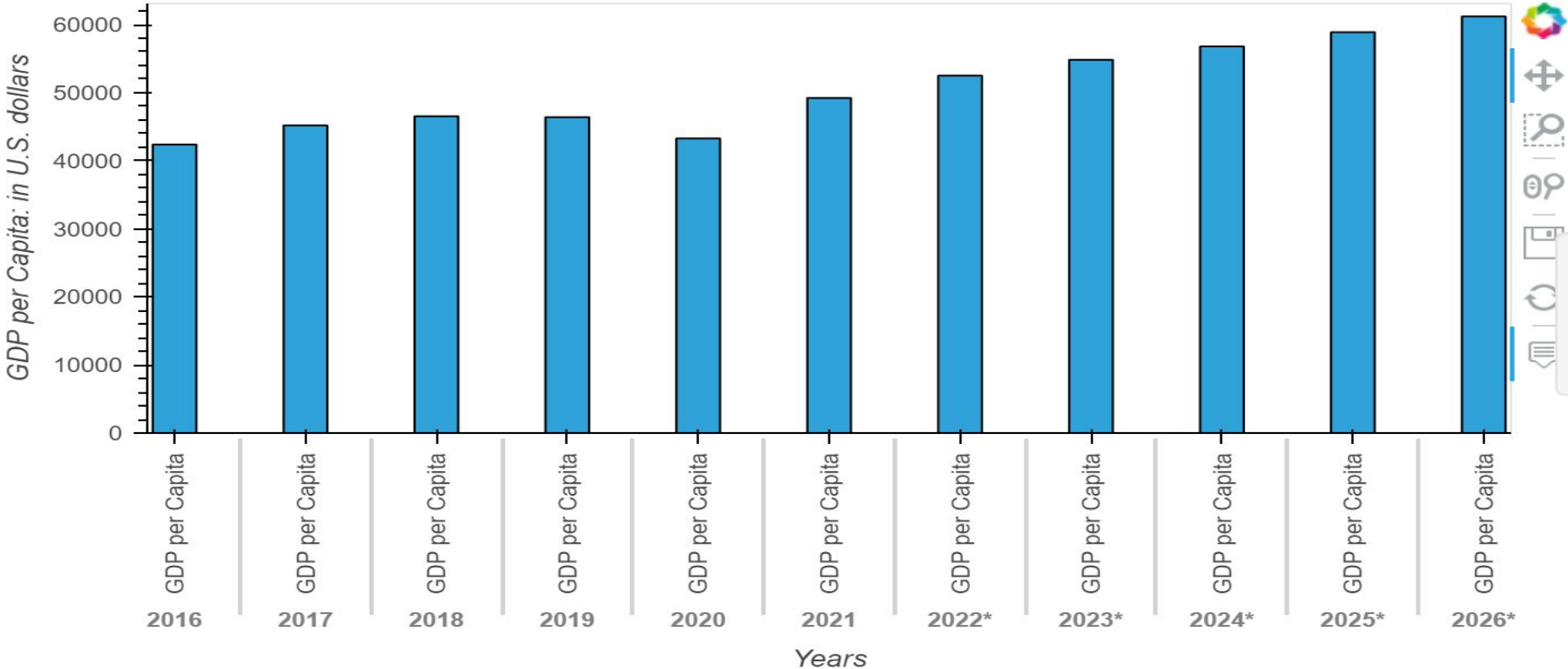
GDP per Capita (In U.S. dollars)

Another noticeable measure of the coronavirus' impact on the global economy is the GDP per Capita.

The gross domestic product per capita, or GDP per capita, is a measure of a country's economic output that accounts for its number of people. It divides the country's gross domestic product by its total population.

Countries GDP per Capita Chart

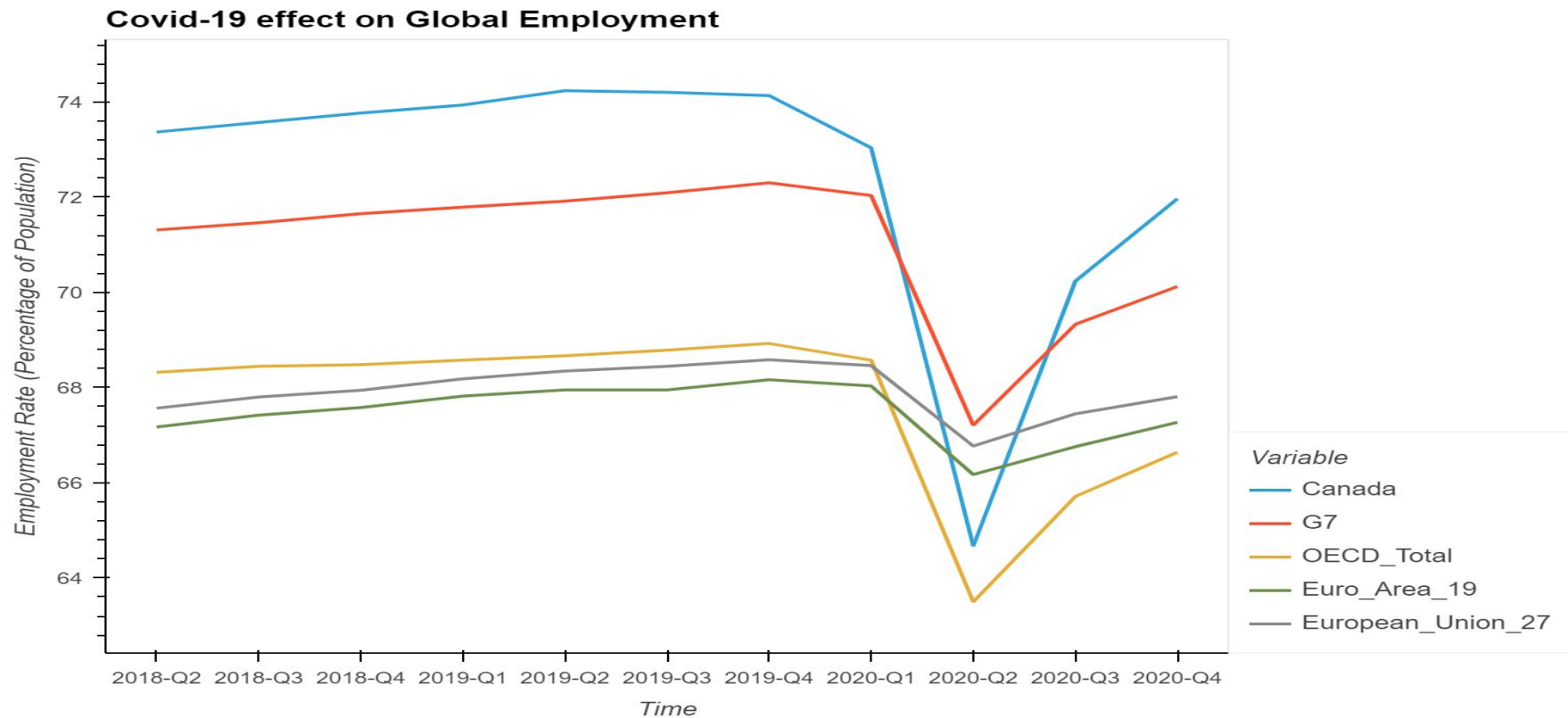
Country: Canada



Employment rate (%)

The unemployed are people of working age who are without work, are available for work, and have taken specific steps to find work. The uniform application of this definition results in estimates of unemployment rates that are more internationally comparable than estimates based on national definitions of unemployment. This indicator is measured in numbers of unemployed people as a percentage of the labour force, and it is seasonally adjusted. The labour force is defined as the total number of unemployed people plus those in employment.

Covid-19 Impact on Global Employment: Chart



Postmortem

- Lack of data from countries
- A big question we really wanted answered was:
 - How did Covid-19 affect the emergence of new technologies and what has been adopted to combat the virus?
 - Scarce datasets
 - With more time, we can research individual technologies and come up with our own dataset to find relationships.