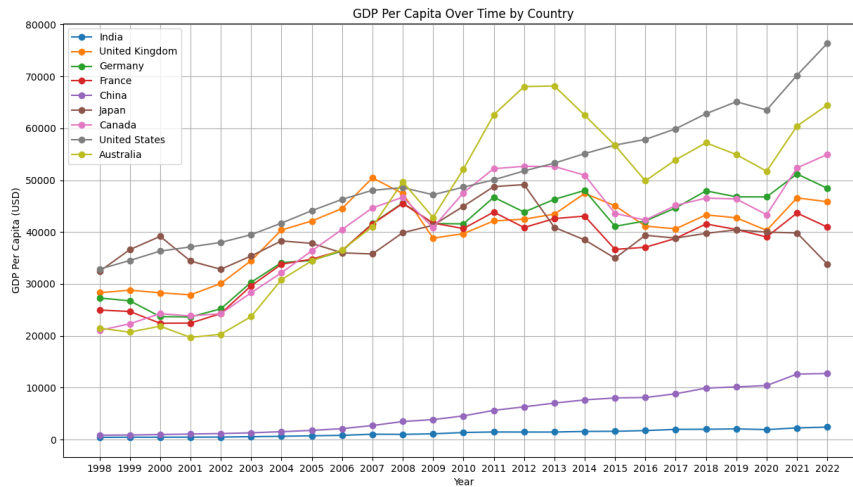


# INFSCI 2310 Final Report

## GDP per capita in current USD from 1998 to 2022

Figure 1: Time Series Plot



### Legend explanation

- Different colors represent nine different countries.
- Each line represents the trend of GDP per capita for each country from 1998 to 2022.

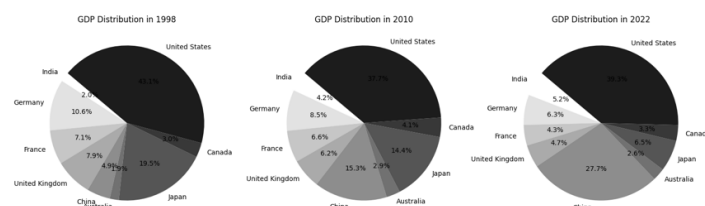
### Findings text introducing highlights of the produced figure.

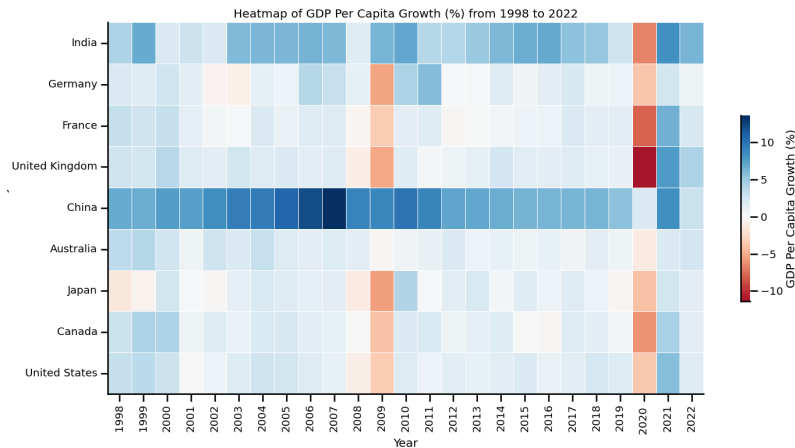
- The overall trend for most countries shows an increase in GDP per capita over time.
- Notable exceptions include dips during global economic events such as the 2008 financial crisis and the 2020 COVID-19 pandemic.

### Significance statement on why the presented figure is important.

- GDP per capita is a widely recognized measure of a country's standard of living. The timing of fluctuations in GDP per capita can be correlated with significant global or local events, offering a historical perspective on how such events shape economic outcomes.
- Comparative analysis of different countries' economic trajectories enables policymakers, investors, and researchers to assess global economic dynamics and make informed decisions.

Figure 2: Heat Map/Pie Chart





### Legend explanation

- In Heat Map, the color intensity reflects the growth rate: dark blue indicates higher growth, white represents neutral growth, and dark red indicates negative growth. Each cell represents the GDP per capita growth rate for a given country and year.
- In Pie Chart, each slice represents the percentage share of global GDP of a particular country. The size of each slice is proportional to the country's GDP relative to the total GDP of the countries presented.

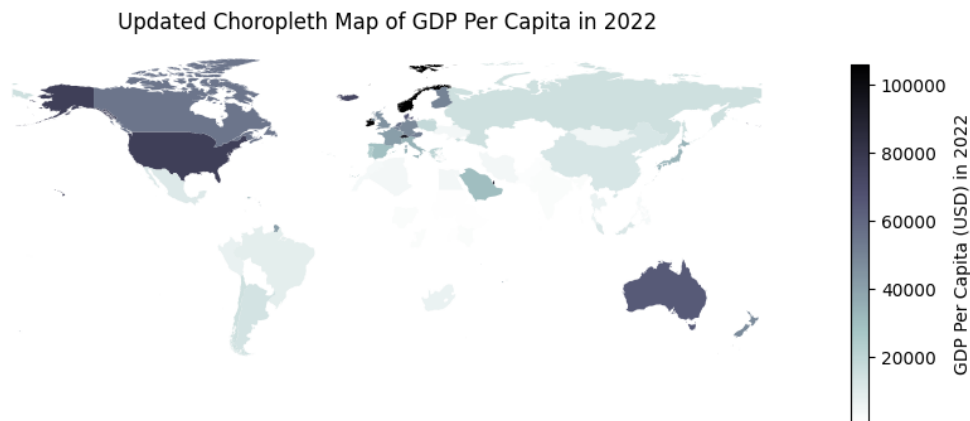
### Findings text introducing highlights of the produced figure.

- Rapidly developing countries like China and India show high growth rates. Developed countries like the United States, Germany, and France show more stable but lower growth rates, which is typical for mature economies.
- China's share increased dramatically, indicating significant economic growth. Japan's share decreased, while India's share increased, suggesting a shift in economic power within Asia. European countries' shares (Germany, France, United Kingdom) show a relative decline.
- China has a very high GDP, making it one of the largest economies in the world, second only to the United States. This is due to its massive production capacity and large population. However, the figure of GDP per capita is much lower than that of developed countries, indicating that the individual average income is less compared to more developed countries, reflecting the disparities in wealth distribution, and living standards.

### Significance statement on why the presented figure is important.

- The Heat Map allows for the comparison of economic performance across different countries, highlighting which economies are growing faster or facing challenges, presenting complex data across multiple dimensions.
- These figures underscore the dynamic nature of the global economy. They serve as a stark illustration of the changing landscape of global economic dominance and are a testament to the interconnectedness of the world's economies.

Figure 3: Choropleth Map



### Legend explanation

- The choropleth map uses shading to represent GDP per capita in USD for the year 2022.
- The color intensity represents the value of the data metric being visualized: darker colors represent higher values, while lighter colors represent lower values.

### Findings text introducing highlights of the produced figure.

- The darker areas, such as North America (presumably the United States) and parts of Europe, suggest a high GDP per capita. Regions in lighter shades, such as much of Africa, South America, and parts of Asia, suggest a lower GDP per capita.
- The map shows that wealth, as measured by GDP per capita, is not evenly distributed across the globe. It tends to be concentrated in certain regions, such as North America, Europe, and certain countries in the Asia-Pacific region like Australia.

### Data and method used in this process.

- The GDP per capita data are merged with a shapefile that contains the geographic boundaries of countries.
- Utilizing GeoPandas and Pandas for data manipulation and geographical plotting.
- `Gdf.plot()` is used to create the choropleth map. Then the map is displayed using `matplotlib.pyplot.show()` function.
- Use `colormap` to color the data. Countries without data are displayed in white, the color legend's size is adjusted with the `shrink` parameter.

### Significance statement on why the presented figure is important.

- This map is a powerful visual tool that illustrates the disparities in wealth and economic productivity across the globe. It can help identify which countries may need more economic development and aid and can also serve as a basis for investment decisions and geopolitical analysis.

Data gathered from: <https://databank.worldbank.org/home> and <https://www.naturalearthdata.com/>  
<https://github.com/llaaakid/invis-final>