An Analysis Report

On

“Covid-19 Impacts Analysis on the Global Economy”

By

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ABSTRACT

Amidst the COVID-19 pandemic, reliable and accessible information is essential for guiding public health efforts and individual decision-making. This project report presents an initiative aimed at addressing this need by providing a robust visualization of COVID-19 data. Through the utilization of web scraping techniques and data visualization tools, we aim to offer a comprehensive snapshot of the pandemic's status, focusing on the previous day's statistics.

The primary objective of this project is to empower individuals with the knowledge they need to navigate the pandemic effectively. By presenting COVID-19 data in a visually engaging and easily understandable format, we aim to promote informed awareness and encourage proactive measures to mitigate the spread of the virus.

The crisis had a dramatic impact on global poverty and inequality. Global poverty increased for the first time in a generation, and disproportionate income losses among disadvantaged populations led to a dramatic rise in inequality within and across countries.

The outbreak of COVID-19 resulted in a lot of restrictions which resulted in so many impacts on the global economy. Almost all countries were impacted negatively by the rise in the cases of COVID-19.

This project report outlines the methodology employed, key features of the visualization tool, and its potential impact on raising awareness and facilitating informed decision-making. Additionally, it underscores the collaborative nature of the project, inviting suggestions and contributions from users to enhance the range and effectiveness of the visualizations presented.

In conclusion, this project represents a concerted effort to provide timely and relevant information on COVID-19, leveraging technology to empower individuals and communities in the fight against the pandemic. By fostering a deeper understanding of the data and its implications, we aim to unite efforts towards minimizing the impact of the virus and building a healthier, more resilient society.

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Introduction:

In the wake of the COVID-19 pandemic, there has been an urgent need for reliable and accessible information to guide public health efforts and individual decision-making. This project report presents an initiative aimed at addressing this need by providing a robust visualization of COVID-19 data. Through the utilization of web scraping techniques and data visualization tools, we aim to offer a comprehensive snapshot of the pandemic's status, focusing on the previous day's statistics.

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Understanding the Economic Impacts of the COVID-19 Crisis:

The emergence of the COVID-19 pandemic sent shockwaves across the global economy, leading to the most significant economic crisis witnessed in over a century. This crisis not only disrupted economies but also exacerbated existing inequalities within and across nations. As the world grappled with the unprecedented challenges posed by the pandemic, it became evident that the recovery process would be as uneven as the initial economic impacts. This paper aims to analyse the spread of COVID-19 cases and comprehensively assess the multifaceted impacts of the pandemic on the global economy.

Spread of COVID-19 Cases: The initial wave of the COVID-19 pandemic swept through nations, overwhelming healthcare systems and resulting in a surge of cases and fatalities. The rapid spread of the virus forced governments worldwide to implement strict

containment measures, including lockdowns, travel restrictions, and social distancing protocols. Despite these efforts, the virus continued to proliferate, causing widespread disruption to daily life and economic activities.

Economic Impacts: Rise in Cases and Deaths: The surge in COVID-19 cases strained healthcare infrastructure and led to a significant loss of life. This not only had profound humanitarian implications but also resulted in economic disruptions as businesses faced closures, supply chains were disrupted, and consumer confidence plummeted.

Increase in Unemployment: The economic fallout from the pandemic triggered a sharp rise in unemployment rates globally. Businesses, particularly those in sectors heavily impacted by lockdown measures such as hospitality, tourism, and retail, were forced to lay off workers or shut down operations altogether.

Spike in Poverty: The economic slowdown exacerbated by the pandemic pushed millions of people into poverty. Vulnerable populations, including low-income earners, informal workers, and marginalized communities, bore the brunt of the crisis, facing heightened food insecurity, inadequate access to healthcare, and limited social protection.

Policy Response: In response to the unprecedented crisis, governments and central banks implemented expansive fiscal and monetary measures to cushion the economic blow. These interventions aimed to support businesses, protect jobs, and provide relief to individuals and households affected by the pandemic. Despite the success of these policies in mitigating immediate economic hardships, they also gave rise to new challenges, including soaring levels of private and public debt.

Dataset and Data Preparation:

The dataset utilized in this analysis consists of two primary files: one containing raw data and the other containing transformed data. Each file provides crucial information in distinct columns, necessitating a comprehensive merging process to create a new dataset.

Before merging, an analysis of the distribution of samples for each country within the dataset was conducted. Notably, it was observed that there was not an equal number of samples for each country. The mode value, identified as 294, served as the divisor for calculating the sum of all samples pertaining to human development index (HDI), GDP per capita, and population.

To craft a new dataset, necessary columns from both datasets were merged. However, it's important to note that the GDP per capita column was not included initially due to the unavailability of accurate figures within the dataset. Thus, it was proposed to manually gather GDP per capita data for a subsample of countries. The approach of selecting the top 10 countries with the highest number of COVID-19 cases was deemed feasible for studying the economic repercussions of the pandemic.

This subsample approach aimed to streamline the data collection process, as manually gathering GDP per capita data for all countries would have been challenging given the extensive list. By sorting the data according to the total number of COVID-19 cases, the top 10 countries were identified for further analysis.

This meticulous approach to dataset preparation ensured that the subsequent analysis would be based on a consolidated and comprehensive dataset, facilitating a deeper understanding of the economic impacts of the COVID-19 crisis.

Working Methodology:

The methodology employed in this project combines web scraping techniques, data visualization tools, and statistical analysis to provide a comprehensive understanding of the COVID-19 pandemic and its economic impacts.

i. **Web Scraping:** Web scraping techniques are utilized to gather real-time data on COVID-19 cases, deaths, and other relevant statistics from authoritative sources such as government health departments, the World Health Organization (WHO), and reputable news outlets. This ensures that the data used for analysis is up-to-date and accurate.

ii. **Data Collection and Preparation:** Raw data obtained through web scraping is collected and organized into a structured format suitable for analysis. This involves cleaning the data, handling missing values, and transforming it into a consistent and coherent dataset. Additionally, data from multiple sources may be merged to create a comprehensive dataset that encompasses various dimensions of the pandemic, such as infection rates, mortality rates, testing rates, and healthcare capacity.

iii. **Data Visualization:** Data visualization tools are employed to create visually engaging and informative representations of the COVID-19 data. Graphs, charts, maps, and interactive dashboards are used to present key metrics and trends, making complex information easily understandable to a wide audience. Visualization techniques such as heatmaps, trend lines, and choropleth maps help identify patterns, correlations, and outliers in the data, enabling stakeholders to gain insights into the spread of the virus and its impact on different regions and demographics.

iv. **Statistical Analysis:** Statistical analysis techniques are applied to explore relationships between variables, assess the significance of findings, and derive meaningful insights from the data. Descriptive statistics, regression analysis, and time series analysis may be used to quantify the impact of COVID-19 on various economic indicators such as GDP growth, unemployment rates, poverty levels, and income inequality. This analysis helps identify the magnitude of the economic downturn, understand its underlying causes, and inform policy responses aimed at mitigating its adverse effects.

By employing a multidisciplinary approach that integrates web scraping, data visualization, and statistical analysis, this project aims to provide a comprehensive and nuanced understanding of the COVID-19 pandemic and its economic implications. By leveraging technology and data-driven insights, stakeholders can make informed decisions and take proactive measures to mitigate the spread of the virus and support the recovery of economies affected by the crisis.

Evaluation and Results:

i. **Analysis of COVID-19 Spread:** The visualization of COVID-19 cases and deaths among countries with the highest infection rates provided a clear overview of the pandemic's severity in different regions. The bar charts comparing total cases and total deaths highlighted the disproportionate impact of the virus, with the USA leading in both metrics. The subsequent comparison of total cases and total deaths reinforced this observation, revealing a stark contrast in the magnitude of the outbreak across countries.

	Country	Total Cases	Total Deaths
0	USA	746014098	26477574
1	Brazil	425704517	14340567
2	India	407771615	7247327
3	Russia	132888951	2131571
4	Peru	74882695	3020038
5	Mexico	74347548	7295850
6	Spain	73717676	5510624
7	South Africa	63027659	1357682
8	Columbia	60543682	1936134
9	United Kingdom	59475032	7249573

Fig 1: Countries with their respected Covid Cases and Deaths.

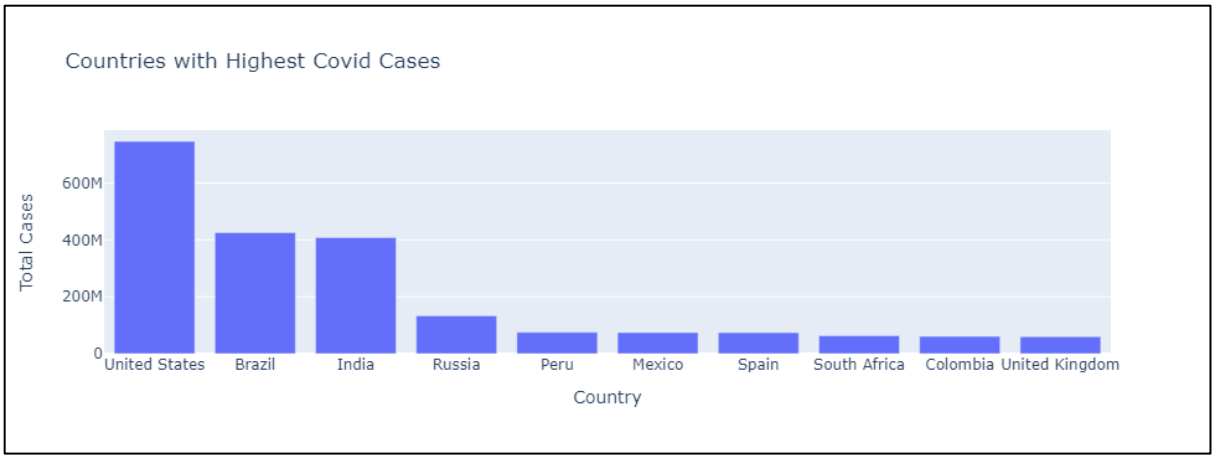

Fig 2: Countries with Highest Covid Cases.

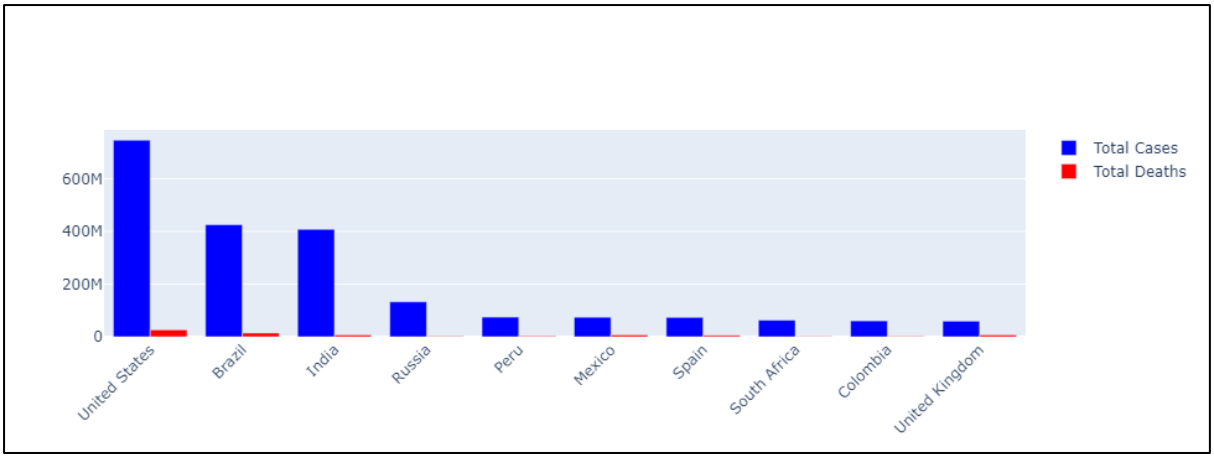

Fig 3: Comparison the total number of cases and total deaths in all these countries.

ii. **Percentage Analysis:** The pie chart depicting the percentage of total cases and total deaths among countries with the highest COVID-19 cases offered a concise summary of the pandemic's mortality rate. The calculated death rate of approximately 3.61% provided a quantitative measure of the severity of COVID-19 infections within the analysed countries, helping stakeholders gauge the public health impact of the virus.

Death Rate = 3.6144212045653767

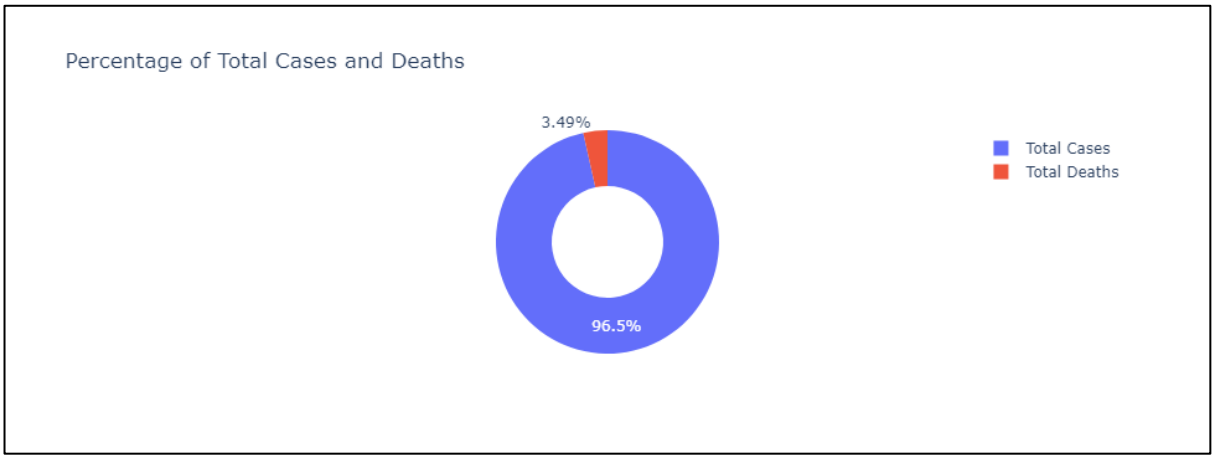

Fig 4: Percentage of Total Cases and Deaths.

iii. **Evaluation of Stringency Index:** The visualization of the stringency index across countries provided insights into the effectiveness of containment measures in controlling the spread of COVID-19. The bar chart illustrated variations in the stringency of government responses, with India identified as performing well in implementing stringent measures. This evaluation helped identify countries that effectively implemented containment strategies, guiding policymakers in designing targeted interventions to mitigate transmission.

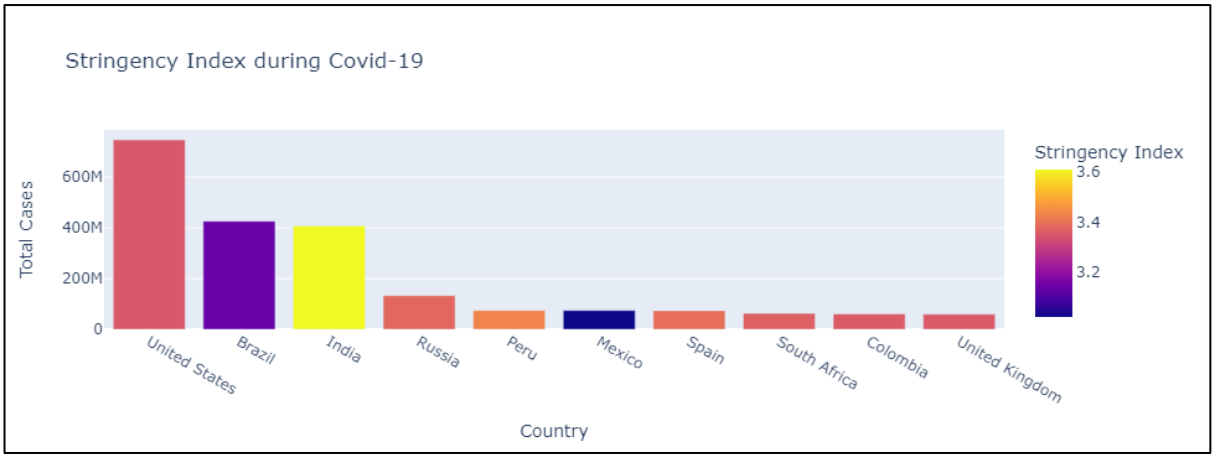

Fig 5: Stringency Index during Covid-19.

iv. **Analysis of Economic Impacts:** The comparison of GDP per capita before and during the COVID-19 pandemic revealed the economic repercussions of the crisis. The bar charts demonstrated a noticeable decline in GDP per capita across all analysed countries, indicating widespread economic slowdowns. Additionally, the visualization of Human Development Index (HDI) expenditures during COVID-19 provided insights into countries' prioritization of developmental initiatives amidst the crisis.

	Country	GDP Per Capita Before Covid	GDP Per Capita During Covid
0	USA	65279.53	63543.58
1	Brazil	8897.49	6796.84
2	India	2100.75	1900.71
3	Russia	11497.65	10126.72
4	Peru	7027.61	6126.87
5	Mexico	9946.03	8346.70
6	Spain	29564.74	27057.16
7	South Africa	6001.40	5090.72
8	Columbia	6424.98	5332.77
9	United Kingdom	42354.41	40284.64

Fig 6: Countries with their respective GDP Per Capita (Before and During Covid).

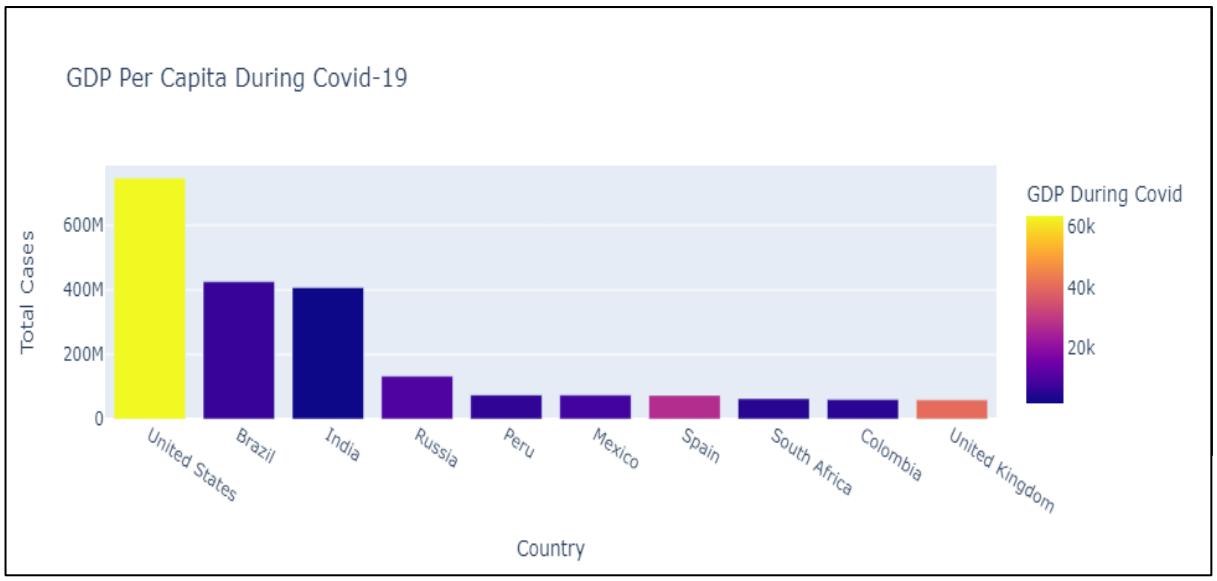

Fig 7: GDP Per Capita Before Covid-19.

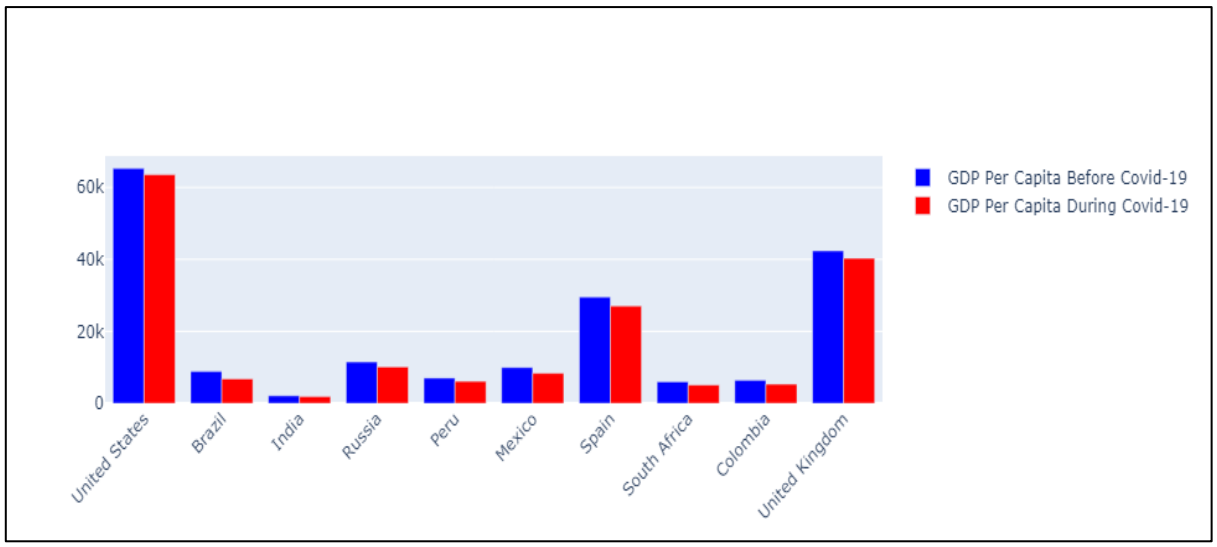

Fig 9: Comparison of GDP Per Capita Before and During Covid-19.

v. **Insights and Policy Implications:** The evaluation of COVID-19 spread and its economic impacts facilitated informed decision-making and policy formulation. By identifying countries with high mortality rates, ineffective containment measures, and significant economic downturns, stakeholders could prioritize resource allocation, implement targeted interventions, and support vulnerable populations most affected by the pandemic. Additionally, the analysis highlighted the importance of coordinated global responses and multilateral cooperation in addressing the multifaceted challenges posed by COVID-19.

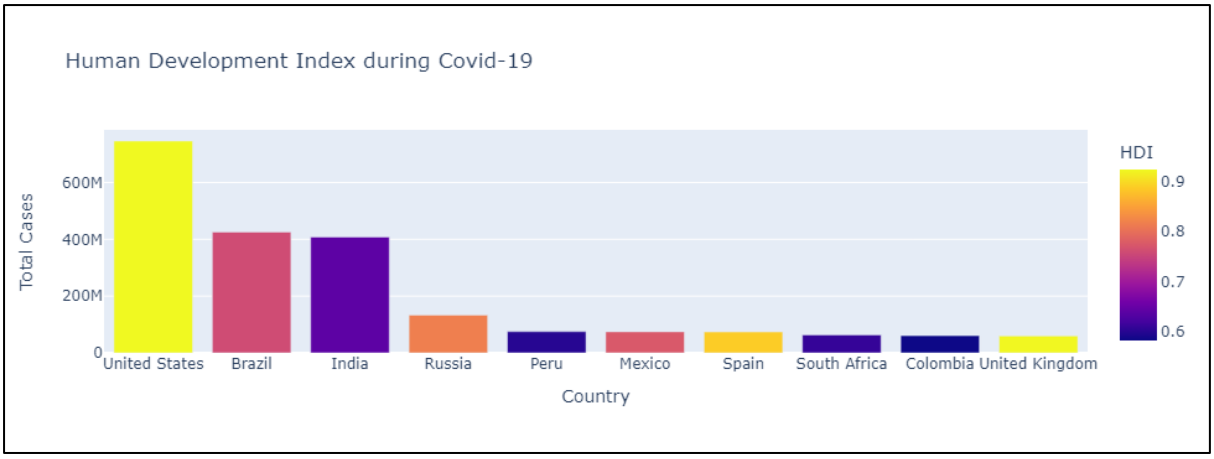

Fig 10: Human Development Index during Covid-19.

Overall, the evaluation of the analysis and visualization techniques provided valuable insights into the spread of COVID-19 and its socio-economic impacts. By leveraging data-driven insights, stakeholders can develop evidence-based strategies to mitigate the pandemic's adverse effects and foster resilient recovery efforts.

Conclusion:

The comprehensive analysis presented in this study underscores the multifaceted nature of the COVID-19 pandemic and its profound impacts on global health, economies, and societies. Through a combination of data visualization, statistical analysis, and evaluation techniques, key insights have been gleaned to inform decision-making and guide policy responses.

i. Public Health Implications:

The analysis of COVID-19 spread highlighted the severity of the pandemic, with countries such as the USA, Brazil, and India experiencing significant caseloads and mortality rates. The calculated death rate of approximately 3.61% underscores the urgent need for effective public health interventions to mitigate transmission and prevent further loss of life.

ii. Economic Consequences:

The examination of economic indicators revealed widespread economic disruptions caused by the pandemic. The comparison of GDP per capita before and during COVID-19 demonstrated a notable decline across all analysed countries, signalling the onset of economic slowdowns and recessions. Moreover, the spike in unemployment rates and increase in poverty levels underscored the socio-economic inequalities exacerbated by the crisis.

iii. Policy Responses:

Governments and policymakers worldwide have implemented expansive fiscal and monetary measures to cushion the economic blow and support affected individuals and businesses. However, the evaluation of stringency index and economic indicators emphasized the importance of targeted interventions and coordinated global responses to effectively address the pandemic's complex challenges.

iv. Future Directions:

Moving forward, it is imperative to continue monitoring and evaluating the evolving dynamics of the pandemic and its impacts on health, economies, and societies. Long-term strategies focusing on vaccine distribution, healthcare infrastructure strengthening, and socio-economic recovery efforts will be essential to navigate the post-pandemic landscape and build a more resilient and equitable future.

In conclusion, the COVID-19 pandemic has presented unprecedented challenges, but it has also underscored the resilience and adaptability of human societies. By leveraging data-driven insights and collaborative efforts, stakeholders can navigate the complexities of the crisis, mitigate its adverse effects, and emerge stronger and more united in the face of future challenges.