Title:
COVID-19 Impact Analysis: A Data-Driven to Understand the Pandemic

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Introduction to Domain:
The project belongs to the healthcare domain and is aimed at addressing health challenges at global level - the COVID-19 worldwide pandemic. It is the conjunction of public health, data science, and economic analysis which evaluates the multiple dimensions of global pandemic social, and health impact.

Goals and Objectives:

Motivation:
The Coronavirus COVID-19 pandemic is among the hardest, most disrupting global incidents of the older history that have affected millions of lives and have massively impacted the economy globally. Clear understanding of dynamics and efficiency of interventions, with an aim of noticing the gap in public health and the function of businesses in all sectors is necessary.

Significance:
The main objective of our project is to meet the problem of gaining the knowledge on these trends by visualizing the spread of virus during pandemic. The purpose of our data visualization is to come up with new scientific confirmed information about the pandemic spread, the various socio-economic amenities and the pressure on the health care systems. This data visualization can lead to the development of a tool for policy makers, healthcare providers, and researchers to try and establish better prevention strategies to tackle any unanticipated future public health crises as well.

Objectives:
- To establish an interactive visual dashboard that shows the course of the COVID-19 rates on time and space through case numbers and testing trends.
- To examine the connection between the spread of COVID-19 and several demographic and economic factors.
- To assess the effect of the non-pharmaceutical interferences on the virus transmission.
- To assess the duration of the impact on health care sector and economy hence, creating a tool that can be used for planning and managing future projects.

Features:
This project will feature:
- Interactive visualization framework, with the D3.js library as a base, that allows users track COVID-19 data on real-time and gives them tools to filter using various parameters.

- Health correlation with resources like Tableau for the part of demographic evaluation and economic impact estimation with Power BI.
- Modules for comparing strategies from various country regions using their efficiency indexes.
- Interface that simplifies the process of Data Exploration and Discovery during the use of Data Sources.

Correlation Heat Map

The heatmap provided visualizes the correlation between different variables, presumably from the merged COVID-19 and agriculture datasets. Here's a summary of what it tells us:
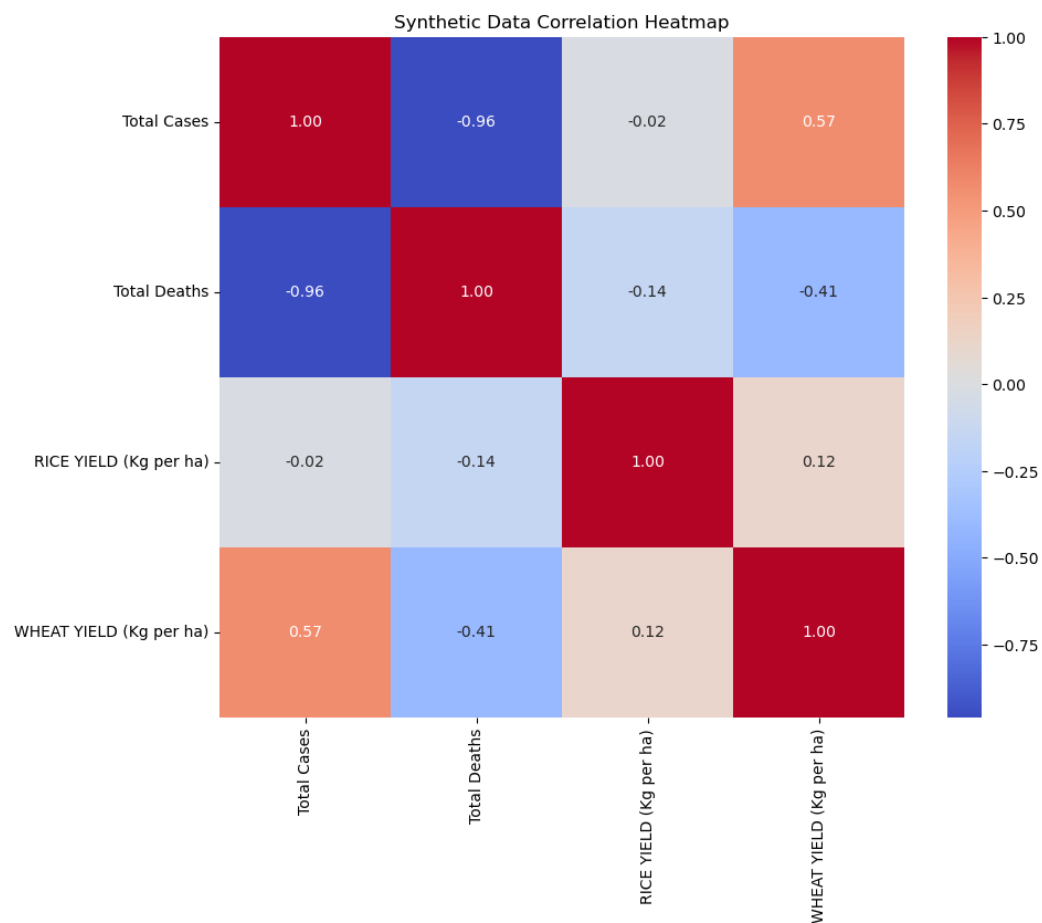

Figure 1: Correlation Heat Map

- **Total Cases and Total Deaths:** There is a very convincing negative linear relationship between the total cases and the total deaths which can be very well explained by the value of − 0.96. This relationship is quite interesting because cases that we normally expect to have more deaths associated with more cases. The minus indicator means that the data, which is likely synthetic, shows the decline in the number of cases when the number of deaths goes up, which can be an error, or it can mean it's synthetic.

- **Total Cases and Agricultural Yields:** The heat-map suggests that there is no significant relation between total number of COVID-19 cases and rice yield (approx. − 0.02) which means that the number of cases doesn't have much influence on the rice yield in the entire data set. However, the presence of a moderate positive correlation among the total number of cases and wheat yield stands at 0.57. The increasing cases of COVID-19 by some extent also sees the growth in yield of wheat that could be the product of many factors such as the change in agricultural techniques or market demands arising by consumers during the time of the pandemic.
- **Total Deaths and Agricultural Yields:** In the last field, there is a weak negative correlation between rice yield and total deaths (~ -0.14) and a moderate negative correlation is available between wheat yield and total deaths (~ -0.41). This might be associated with regions marked by high numbers of deaths as agricultural production in these places may witness a decline possibly due to agricultural farmers shortage or other pandemic-related issues.
- **Agricultural Yields:** There is modest and positive relationship of rice and wheat yields (i.e. about 0.12). This could be unveiling the fact that factors that advance the yield of one can also have a positive effect on the other by a small fraction, this could be due to common farming practices, or they may be brought about by environmental conditions that benefit the two crops.

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