INNOVATION

Phase 2

Covid vaccines analysis

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DEVELOPMENT

Scientists have developed various COVID-19 vaccines using different technologies, such as mRNA, viral vector, and protein subunit vaccines. Ongoing research aims to improve vaccine efficacy and address new variants.

Research is ongoing to determine the need for and timing of booster shots to maintain vaccine efficacy over time.

BOOSTER SHOT

Constant monitoring of new variants helps adapt vaccines and treatments as needed.

VARIANT SURVILLANCE

COVID EFFECTIVENESS

Ongoing analysis assesses the effectiveness of vaccines in real-world scenarios, including their ability to prevent infection, transmission, and severe disease..

- **Provide timely data to evaluate effectiveness of new vaccine recommendations**
- **Include populations at high risk for severe COVID-19, including persons with immunocompromising conditions, older adults, and residents of long-term care facilities.**
- **Generate high quality and scientifically sound vaccine effectiveness evaluations to inform national policy decisions.**

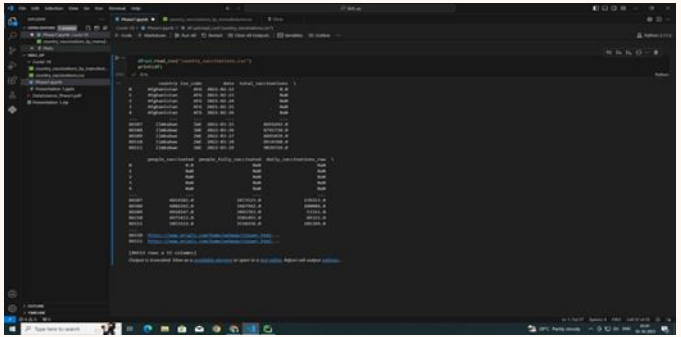
DISTRIBUTION

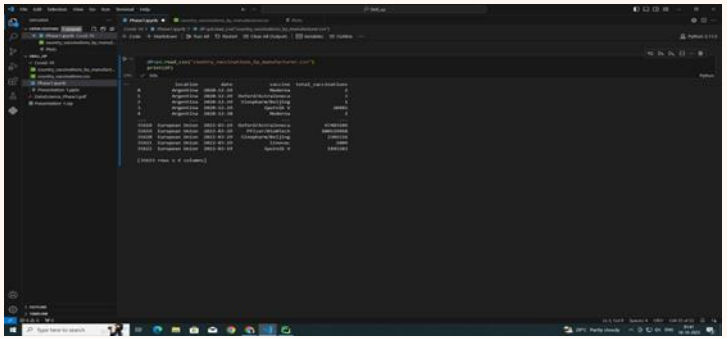
1. Innovations in logistics and distribution ensure vaccines reach populations worldwide efficiently.
2. We operate one of the most sophisticated supply chain systems in the industry, with over 35 Pfizer-owned sites and over 300 suppliers globally, which provides capacity and redundancy as needed
3. Our manufacturing and supply chain professionals have been working non-stop to ensure that the global supply of Pfizer medicines continue to be available to patients
4. We have implemented an unprecedented and comprehensive preparedness plan to control our site operations and will continue to provide timely updates if there is any new information to be shared.
5. Over a year into the biggest vaccination campaign in history, more than 12.7 billion doses have been administered across 184 countries, according to data collected by Bloomberg. The latest rate was roughly 7.07 million doses a day.

Content for Phase 2: Data Source: Consider exploring advanced machine learning techniques like clustering or time series forecasting to uncover hidden patterns in vaccine distribution and adverse effects data.

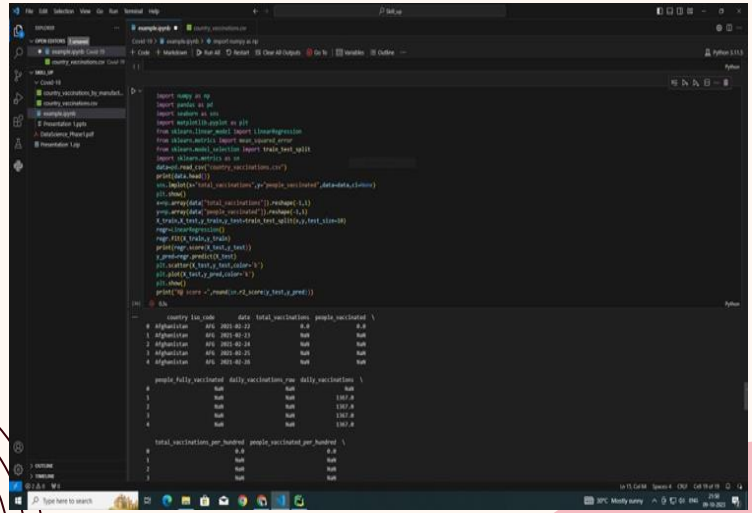
A Good data Source for Covid-19 Vaccine Analysis using machine learning should be Accurate,Complete,Covering the geograohic area of interest,Accessible

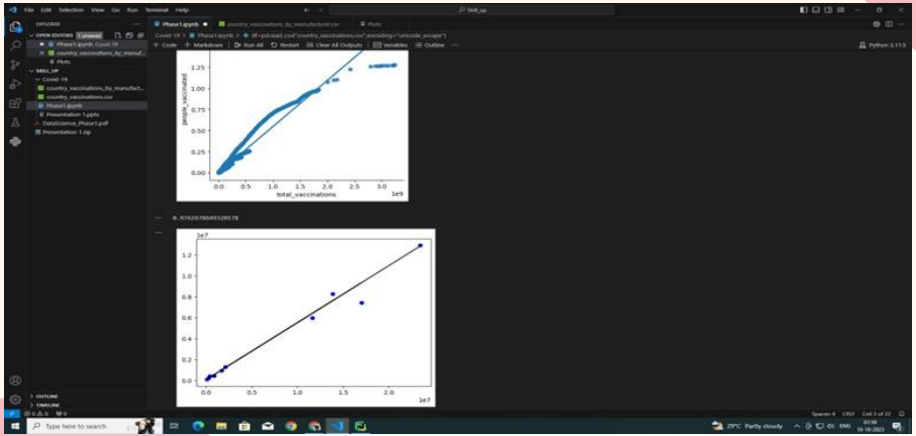
Dataset Link: (https://www.kaggle.com/datasets/gpreda/covid-world-vaccination-progress





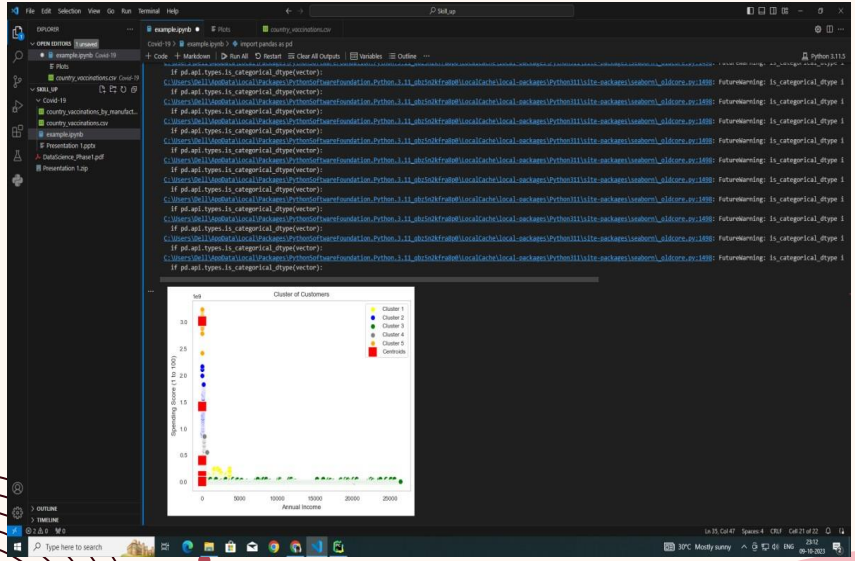
Linear Regression: Linear regression is a fundamental and widely used statistical technique in data analysis. It serves as a valuable tool for understanding and modeling the relationships between variables. Linear regression is a supervised learning algorithm used for predicting a continuous outcome variable (dependent variable) based on one or more predictor variables (independent variables).In conclusion, linear regression is a foundational technique in data analysis that helps model and quantify relationships between variables. It is a valuable tool for understanding trends, making predictions, and informing decision-making in a wide range of fields, from economics to healthcare to marketing.

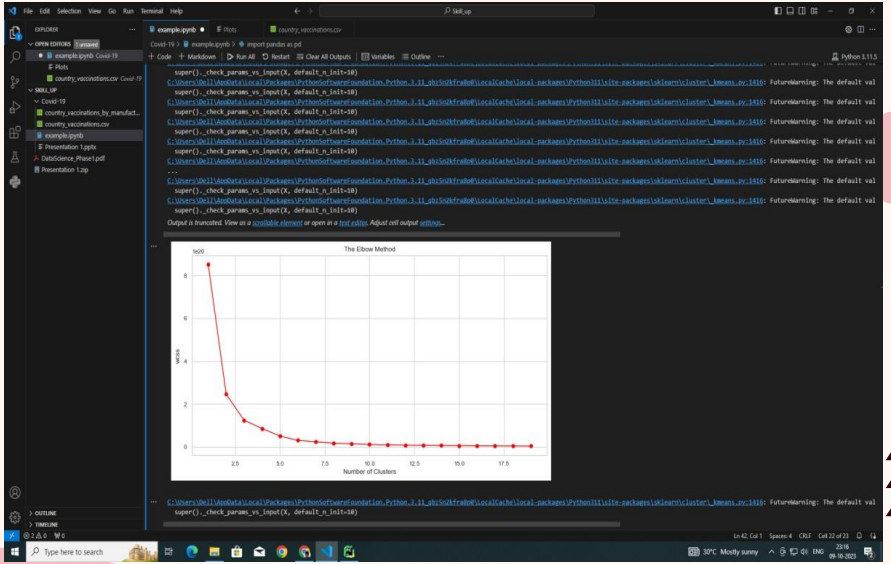




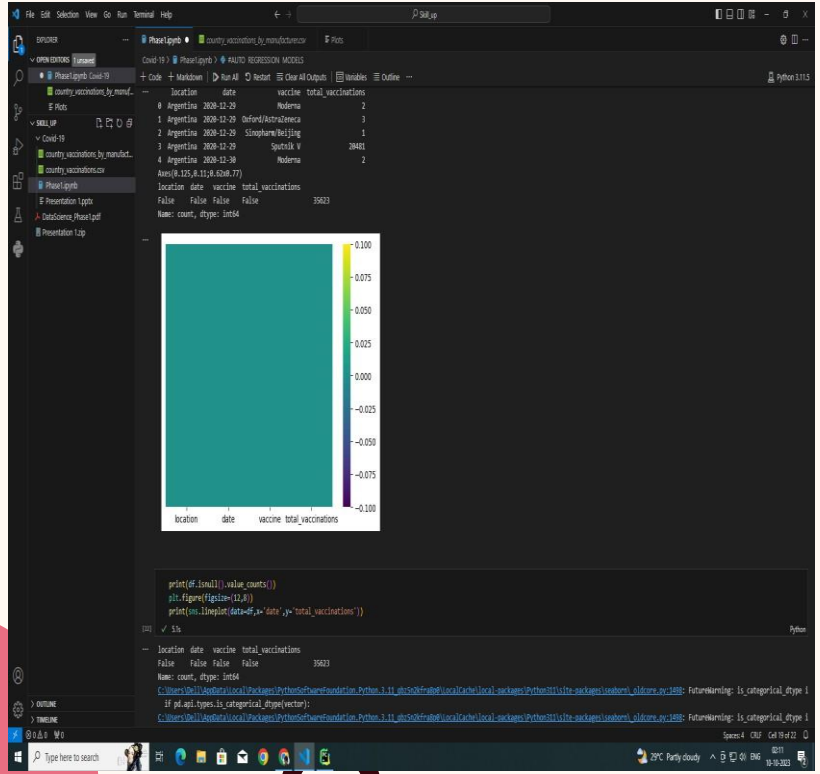
K-means Clustering:

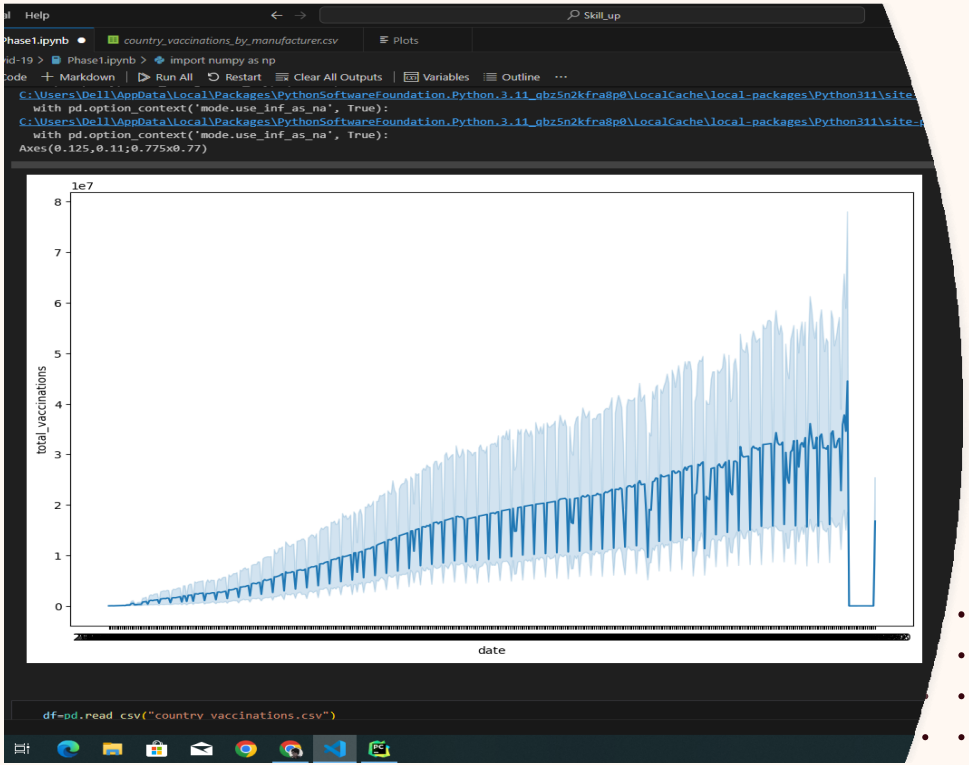
K-Means clustering is a popular unsupervised machine learning technique used for partitioning data into groups or clusters based on similarity. It's a fundamental algorithm in data analysis and has numerous applications in various fields





Time Series Forecasting: Auto Regression Model: Time series forecasting is a statistical technique used to make predictions about future values based on historical data points collected over time. It plays a critical role in various domains, including finance, economics, weather forecasting, and demand planning. AutoRegressive (AR) models, often denoted as AR(p), are a class of time series forecasting models used to predict future values in a time□ordered sequence based on their own past values. These models are part of the Autoregressive Integrated Moving Average (ARIMA) modeling framework. In this part of the image we have simply checked for an prevailing null Values by plotting the heatmap. This particular dataset does'nt have any null values thus an uniform color appears on the output page.





EQUITY

Information on COVID-19 therapeutics under assessment by WHO and current timelines for the development of clinical practice guidelines.The most recent WHO guideline for therapeutics to treat COVID-19 and associated online interactive publication platform. Open-access journal publications for the current therapeutic recommendations.Resources and tools for health care workers to support prescribing and administering therapeutics and monitoring patients. Resources for patients, caregivers and families.

SAFETY

More than 672 million doses of covid-19 vaccine have been given in the united states from December 14,2022, through march 1,2023. to view the current total number of covid 19 vaccines that have been administrated in united state

Covid 19 vaccinines were evaluate in tens of thousand of particiants in client trials . The vaccines met the food and drugs adminsdtration (FDA'S) rigorous scientific standards for safety,effectiveness and manufacturing quality needed to support emergency use of authorization (EUA).