COVID-19 VACCINE DATA ANALYSIS PROJECT

ABSTARCT

This project is all about carefully looking at information about Covid-19 vaccines. We're mainly interested in how well the vaccines work, how they are distributed, and if there are any negative effects. The big goal is to find useful insights that can help leaders and health groups make better plans for giving out vaccines. To do this, we go through steps like collecting data, cleaning it up, exploring what it tells us, doing some math to understand it better, and making visuals to explain it clearly. The hope is that by doing this, we can give a good picture of how the vaccines are doing and help in the fight against Covid-19

OBJECTIVES

- The project aims to thoroughly analyze Covid-19 vaccine data with key objectives: evaluating vaccine efficacy, scrutinizing distribution strategies, investigating adverse effects, and providing actionable insights. By achieving these goals, the project seeks to enhance decision-making for policymakers and health organizations, fostering optimized deployment strategies in the ongoing battle against the Covid-19 pandemic.

DATA SOURCE

Data set link:(https://www.kaggle.com/datasets/gpreda/covid-world-vaccination-progress)

	country	iso_code	date	total_vaccin	people_vac	people_fully	daily_vaccin	daily_vaccin	total_vaccin	people_vac	people_fully	daily_vaccin	vaccines	source_nam	source_website
2	Afghanistan	AFG	22-02-2021	0	0				0	0			Johnson&Jo	World Healt	https://covid19.who.int/
3	Afghanistan	AFG	23-02-2021					1367				34	Johnson&Jo	World Healt	https://covid19.who.int/
4	Afghanistan	AFG	24-02-2021					1367				34	Johnson&Jo	World Healt	https://covid19.who.int/
5	Afghanistan	AFG	25-02-2021					1367				34	Johnson&Jo	World Healt	https://covid19.who.int/
6	Afghanistan	AFG	26-02-2021					1367				34	Johnson&Jo	World Healt	https://covid19.who.int/
7	Afghanistan	AFG	27-02-2021					1367				34	Johnson&Jo	World Healt	https://covid19.who.int/
8	Afghanistan	AFG	28-02-2021	8200	8200			1367	0.02	0.02		34	Johnson&Jo	World Healt	https://covid19.who.int/
9	Afghanistan	AFG	01-03-2021					1580				40	Johnson&Jo	World Healt	https://covid19.who.int/
10	Afghanistan	AFG	02-03-2021					1794				45	Johnson&Jo	World Healt	https://covid19.who.int/
11	Afghanistan	AFG	03-03-2021					2008				50	Johnson&Jo	World Healt	https://covid19.who.int/
12	Afghanistan	AFG	04-03-2021					2221				56	Johnson&Jo	World Healt	https://covid19.who.int/
13	Afghanistan	AFG	05-03-2021					2435				61	Johnson&Jo	World Healt	https://covid19.who.int/
14	Afghanistan	AFG	06-03-2021					2649				66	Johnson&Jo	World Healt	https://covid19.who.int/
15	Afghanistan	AFG	07-03-2021					2862				72	Johnson&Jo	World Healt	https://covid19.who.int/
16	Afghanistan	AFG	08-03-2021					2862				72	Johnson&Jo	World Healt	https://covid19.who.int/
17	Afghanistan	AFG	09-03-2021					2862				72	Johnson&Jo	World Healt	https://covid19.who.int/
18	Afghanistan	AFG	10-03-2021					2862				72	Johnson&Jo	World Healt	https://covid19.who.int/
19	Afghanistan	AFG	11-03-2021					2862				72	Johnson&Jo	World Healt	https://covid19.who.int/
20	Afghanistan	AFG	12-03-2021					2862				72	Johnson&Jo	World Healt	https://covid19.who.int/
21	Afghanistan	AFG	13-03-2021					2862				72	Johnson&Jo	World Healt	https://covid19.who.int/
22	Afghanistan	AFG	14-03-2021					2862				72	Johnson&Jo	World Healt	https://covid19.who.int/
23	Afghanistan	AFG	15-03-2021					2862				72	Johnson&Jo	World Healt	https://covid19.who.int/
24	Afghanistan	AFG	16-03-2021	54000	54000			2862	0.14	0.14		72	Johnson&Jo	World Healt	https://covid19.who.int/
25	Afghanistan	AFG	17-03-2021					2882				72	Johnson&Jo	World Healt	https://covid19.who.int/
26	Afghanistan	AFG	18-03-2021					2902				73	Johnson&Jo	World Healt	https://covid19.who.int/
27	Afghanistan	AFG	19-03-2021					2921				73	Johnson&Jo	World Healt	https://covid19.who.int/
28	Afghanistan	AFG	20-03-2021					2941				74	Johnson&Jo	World Healt	https://covid19.who.int/
29	Afghanistan	AFG	21-03-2021					2961				74	Johnson&Jo	World Healt	https://covid19.who.int/
30	Afghanistan	AFG	22-03-2021					2980				75	Johnson&Jo	World Healt	https://covid19.who.int/
31	Afghanistan	AFG	23-03-2021					3000				75	Johnson&Jo	World Healt	https://covid19.who.int/
32	Afghanistan	AFG	24-03-2021					3000				75	Johnson&Jo	World Healt	https://covid19.who.int/
33	Afghanistan	AFG	25-03-2021					3000				75	Johnson&Jo	World Healt	https://covid19.who.int/

DESIGN THINKING AND INNOVATION

- Data Exploration and Understanding
- Data Preprocesing
- Exploratory Data Analysis(EDA)
- Statistical Analysis
- Virtualization
- Insights and Recomme

DATA EXPLORATION AND UNDERSTANDING

- Load the dataset into your preferred data analysis tool, like Python with Pandas or R. Examine the dataset structure and understand the meaning of each coloumn:

- `country`: Name of the country
- `iso_code`: ISO country code
- `date`: Date of the data point
- `total_vaccinations`: Total number of vaccinations administered
- `people_vaccinated`: Number of individuals partially vaccinated
- `people_fully_vaccinated`: Number of individuals fully vaccinated
- `daily_vaccinations_raw`: Daily increase in total vaccinations ü

- `daily_vaccinations`: Daily vaccinations administered
- `total_vaccinations_per_hundred`: Total vaccinations per 100 people
- `people_vaccinated_per_hundred`: Partial vaccinations per 100 people
- `people_fully_vaccinated_per_hundred`: Full vaccinations per 100 people
- `daily_vaccinations_per_million`: Daily vaccinations per million people
- `vaccines`: Types of vaccines used
- `source_name`: Data source name
- `source_website`: Data source

DATA PREPROCESSING

Check for missing values in each column and decide how to handle them (e.g., imputation or removal).

- Handle data types appropriately (e.g., convert the `date` column to datetime).
- Ensure data consistency and correctness, such as checking that percentages are within valid ranges (0-100%)

EXPLORATORY DATA ANALYSIS

- Calculate summary statistics for relevant columns (mean, median, standard deviation, etc.).
- Create various visualizations to explore trends and patterns, such as:
- Time series plots of vaccination progress over time.
- Bar charts to compare vaccination rates among countries.
- Heatmaps to identify correlations between variables.
- Analyze the geographical distribution of vaccination progress using w

STATISTICAL ANALYSIS

- Conduct hypothesis testing to answer specific research questions (e.g., comparing vaccination rates between countries using t-tests).
- Use regression analysis to model the impact of variables (e.g., vaccine type or GDP) on vaccination rates

VISUALIZATION

- Develop informative and visually appealing charts and graphs.
- Consider creating interactive visualizations for online sharing or presentations.
- Ensure that your visualizations are well-labeled and easy to interp

INSIGHTS AND RECOMMENDATION

- Summarize your findings and highlight key insights.
- Provide actionable recommendations based on your analysis.
- For example:
- Suggest strategies to improve vaccine distribution in countries with low vaccination rates.
- Identify factors that correlate with higher vaccination rates.
- Propose further research questions or areas

CONCLUSION

- This detailed plan should help you analyze the COVID-19 vaccine data effectively and derive meaningful insights from it. Remember to adapt your analysis based on specific research questions and objective

THANK YOU