Programming-1 Assignment

Research Question

How has the vaccine prevented the people of Bangladesh from being infected with Covid-19 and how it decreases the number of death and hospitalization?

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Initial step to answer this question I must find out covid related necessary and relevant data sets for Bangladesh. I found all the data sets from https://ourworldindata.org/coronavirus. I downloaded three sets of data.

1. **First Dataset (full_data.csv):** Here information about number of new cases per day and number of deaths per day are available for all countries.

2. **Second Dataset (covid-hospitalizations.csv):** In this dataset information about per day hospital admission and icu occupancy can be found for all countries.

3. **Third Dataset (Bangladesh.csv):** In this dataset, information about number of vaccinations, number of boosters and number of fully vaccinated people can be found.

For my coding I used jupyter notebook. As an initial step I loaded all basics library and then onward I updated this library by adding necessary libraries.

First of all, I loaded all my datasets using pd.read.

In second step, I wrote a small function to clean (for renaming, dropping unnecessary columns, renaming columns, and changing types) my datasets.

In third step, I created two functions to merge my datasets for further use. For merging I use date column as Index.

For forth step, I used linear interpolation to fill NaN data.

In visualization part, I created bokeh plot where I line bar and hover tool to show about data of daily new cases, daily new deaths, daily hospital admission, daily icu occupancy, weekly cases and weekly deaths.

Then I showed couple of groups about vaccination.

Next, I created a pivot df to show average number of daily cases, daily deaths, weekly average of new cases and deaths, average number of hospital admission, icu occupancy, vaccinations.

For further investigation I created two new data frames about percentage and showed percentages of different columns.

Finally, to answer my research question I created four different graphs about covid patient, covid deaths, hospital admission and icu occupancy. From these graphs it can be easily depicted that there are lot of fluctuation which has been declined due to covid vaccination.