

Internship at D Lithe

Covid-19 vaccination study in India

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Introduction

India began administration of COVID-19 vaccines on 16 January 2021 (147 days ago). As of 11 June 2021, India has administered 249,600,304 doses overall, including first and second doses of the currently-approved vaccines. Two vaccines received approval for emergency use in India at the onset of the programme; Covishield—a brand of the Oxford–AstraZeneca

vaccine manufactured by the Serum Institute of India, and Covaxin, which was developed by Bharat Biotech. In April 2021, the Indian government approved the Russian Sputnik V vaccine (which is distributed locally by Dr. Reddy's Laboratories) as a third vaccine, which began use in May 2021.

The study of the Vaccination trend in India is facilitated by two notebooks ,one for data collection and the other for visualization. This study also helps in predicting the daily doses on a future date ,which is made possible by a linear regression model.

Data Collection :

The challenge here was to search for data having information about India's vaccination .The required information would be state wise distribution of vaccines , total doses administered ,different vaccine brands and their doses administered .All these information can be used to compare vaccination rate and deduce any pattern from there . Also from the daily doses administered ,we can study the Vaccination trend in India.

URL:India's vaccination details from COWIN's online API -

https://api.cowin.gov.in/api/v1/reports/v2/getPublicReports?state_id=&district_id=

1.In this notebook I have made a request to the above-mentioned API and received and stored the metadata about vaccination into a file .

2. I have also obtained the information from the COWIN Api about the total doses of vaccines delivered over a period of 70 days and saved it for future visualization.

Please visit the notebook for more information.

Data Visualization :

After all the required data has been collected , visualizing them to deduce patterns was the task to be performed.

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1. Vaccination(parital) rate /Immunization rate of men ,women and entire population who have at least taken the first dose of any vaccine are compared.
 2. The vaccination trend of India's vaccination drive is visualized for 70 days .(1st April to 10th June).

Model :

Sklearn's classic linear regression model is used to predict the total number of doses on a future day .The data past 1st April is fed into the model.The model achieves around 97% accuracy on the received data .

Requirements :

1. Numpy and Pandas :Data handling libraries .
2. Matplotlib.pyplot and Seaborn : Data Visualization .
3. Sklearn module for preprocessing and predictions .

Conclusion

1. The rate of vaccination(parital) is slightly lower in females(13.6%) than males(14.5%).
2. India's vaccination trend is showing an upward trend .The trend is definitely increasing , and will keep increasing at a very high rate.
3. According to the trained model India may administer 20crores doses of vaccines during 1week of July which is in phase with Indian government's target for the same .

References:

1. https://en.wikipedia.org/wiki/COVID-19_vaccination_in_India
2. https://api.cowin.gov.in/api/v1/reports/v2/getPublicReports?state_id=&district_id=
3. <https://www.cowin.gov.in/home>