Impact of Covid-19 on Unemployment in India Using Machine Learning

Priya Hari
PG Scholar of Amal Jyothi College of Engineering, Kanjirapally, Kerala.
priyahari@mca.ajce.in

Mr. T J Jobin
Assistant Professor, Amal Jyothi College of Engineering, Kanjirapally, Kerala.
tjjobin@amaljyothi.ac.in

Abstract

This paper attempt to analyse the effect of covid-19 in India on unemployment. Approximately 3.47Cr peoples in India are affected by covid-19. In this circumstance a large number of employees lost their job and not able to apply for the next. We want to analyse that percentage and also the solutions from the Honourable authorities. Estimated how many of them are in labour participation rate of each state in India. Also compare the participation of urban and rural areas on unemployment.

Finding the accurate rate of unemployment from a large survey report is difficult. To overcome this problem, predictive analysis using machine learning is used to get the accurate rate. Data modelling and performance analysis is used for this purpose.

Keywords: Machine Learning, Performance Analysis, Modelling.

I. INTRODUCTION

Machine Learning refers the sector of study that gives computer structures the functionality to analyse without being explicitly programmed.ML is one of the widest technologies that one can could have ever stumble upon. As it's miles obtrusive from the name, it gives the computer that makes it extra just like people. It actively being used in recent times, possible in lots of extra locations than one ought to assume.

Different modules and tools are used for get the accurate rate through graphically. Getting accurate rate is difficult from huge dataset and graphical illustration is more tolerate.

Through data exploration and modelling the unemployment rate of each state can represent graphically. Any viewer can virtually analyse the imbalance of each nation with none proper information. After the predictive analysis this system gives noticeably risk nations underneath unemployment.

a) Requirements

- Jupyter Notebook
- Kaggle/dataset
- Predictive Analysis
- Graph Modelling
- Performance Analysis

II. METHODOLOGY

In this prediction analysis, Jupyter notebook is used as an IDE. It is an open-source platform supporting multiple modules and visualization. This interface helps to represent the data in the dataset with the help of different graph plots. For this purpose, a module called pyplot is used. Can compare the data fields inside the dataset. Some modules used in jupyter are seaborn, plotly, Matplotlib tec.

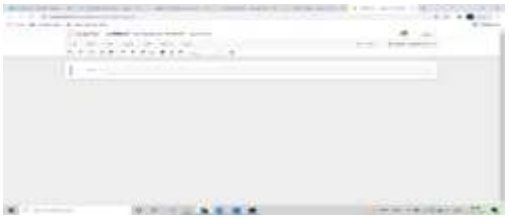

Fig 1. Outline of Jupyter notebook. Have different supporting features:

b) Features

- Check active variables
- API lookups

III. LITRATURE REVIEW

[1]" Unemployment dimensions of COVID-19 and Government response in India –An analytical study". The prevailing article has made a try and

DOI: 10.5281/zenodo.6221238
ISBN: 978-93-5607-317-3 @2022 MCA, Amal Jyothi College of Engineering Kanjirappally, Kottayam

insights the effect of covid-19 on unemployment in India. The have a look at additionally emphasized on policy bundle of the authorities in the direction of the depress brought on due to covid-19.

[2]" An Unemployment Crisis after the Onset of COVID-19". This paper given the implied uncertainty approximately the dimension of destiny labour marketplace situations, it's miles vital to carefully monitor a wide range of indicators to evaluate how the U.S. hard work marketplace is evolving in response to the COVID-19 surprise

.[3]" COVID -19 and the State of India's Labour Market by Radhicka Kapoor". This paper analyses the COVID-19 disaster has accentuated the problem of excessive unemployment and weak combination demand that the Indian financial system was grappling with even earlier than the onset of the pandemic. It has now not most effective ended in massive scale job losses and loss of incomes, however additionally expanded poverty.

IV. DATASET

It is a collection of data used for analysis. Each column of the table represents a field that support the analysis. The dataset must be in .csv format. Otherwise convert it into csv format by click on file, then save as in csv format.

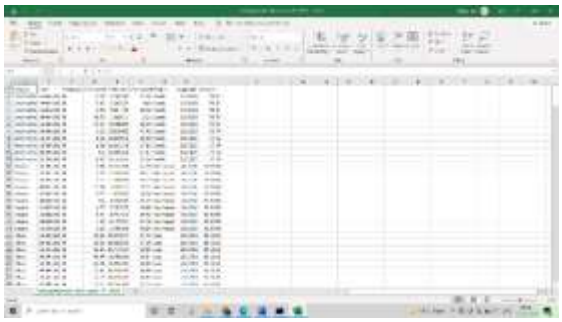

Fig 2. The above synopsis showing the dataset for performance analysis. This dataset is founded from Kaggle.com.

V. IMPLEMENTATION

First download and install python latest version. Then install jupyter notebook in cmd, inside the C/users/user/appdata/local/program/python/script folder by entering 'pip install notebook' command. Then open it by entering the command 'jupyter notebook' inside the command prompt.

Fig 3. We can saw the files in a tree structure. To create new file, click on 'New' and then 'python 3'.

Fig 4. Then, import numpy module for supporting array implementation, import pandas for data manipulation and analysis, import seaborn for visualization purpose and so on.

Fig 5. Import plotly.io as pio inside the jupyter notebook for supporting statistical, financial scientific 3-dimensional use-cases and import additional modules like calendar and so on.

Fig 6. Then import the dataset by storing its directory in to a sample variable called data. To check the dataset is imported or not, click on shift enter to run the command. Give the command to print its head and tail portions.

DOI: 10.5281/zenodo.6221238
ISBN: 978-93-5607-317-3 @2022 MCA, Amal Jyothi College of Engineering Kanjirappally, Kottayam

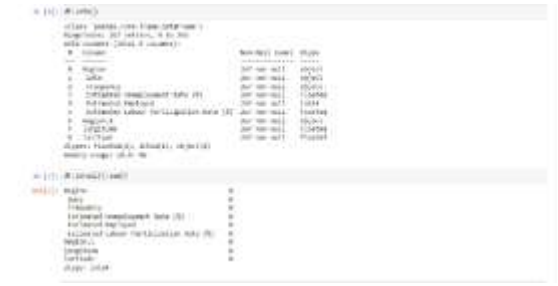

Fig 7. Check out each field in the dataset is not null and the type of data stored in it.

Fig 8. keep each field in the dataset into an array.Then print date, frequency, month_init, month name, region except month by drop it using lambda function and print it.

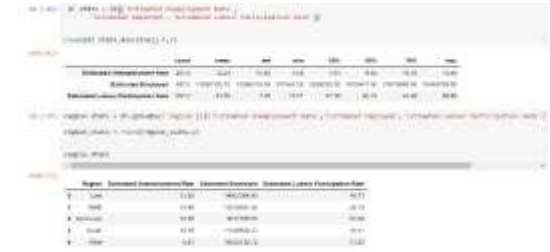

Fig 9. Estimate the Unemployment charge Estimate hired rate and Labour Participation fee.

Fig 10. Print the corresponding data into the form of a heatmap for represent the data uniquely.

Fig 11. Estimate the unemployment rate of each state separately from the estimation before the heatmap. From this bar chart we can easily analyse which state has been affected the unemployment badly and also the less affected state.

Fig 12. Estimate the unemployment rate, anticipated hired and envisioned Labour Participation rate using scatter chart. It helps to make the information greater accurate.

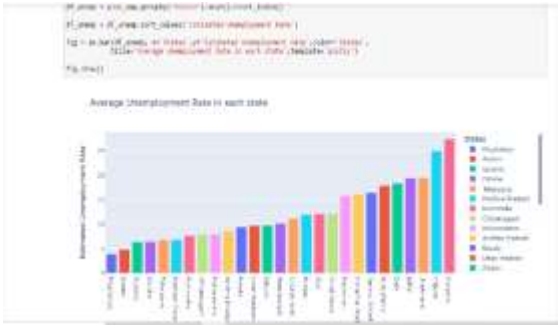

Fig 13. Calculate the average unemployment rate of each state. From the above chart, Meghalaya is the state which have the unemployment less and Haryana have more.

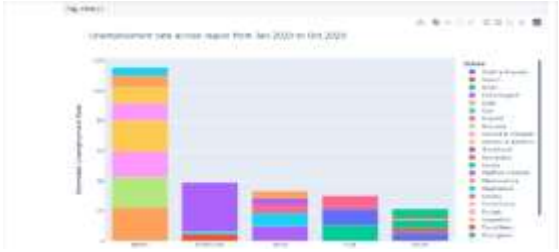

Fig 14. For getting more information, estimate the unemployment rate of each region during Jan.2020 to Oct.2020. From this analysis, north region has the

DOI: 10.5281/zenodo.6221238
ISBN: 978-93-5607-317-3 @2022 MCA, Amal Jyothi College of Engineering Kanjirappally, Kottayam

unemployment in higher rate on the last of October. Compared with the beginning of January the unemployment rate increased at the middle.

Fig 15. To make the above estimation more accurate again calculate it using an audible pie chart which indicate the estimated unemployment rate of each region. From this chart the rate of northern area is higher. Particularly in Haryana. From this, the above estimation was correct.

Fig 16. For more accuracy, estimate the impact of lockdown in each region by adding the latitude and longitude. The higher rate is represented using orange colour and least rated area in blue colour. Without any complex analysis, simply the rate can analyse from this map chart.

Fig 17. Estimating the total unemployment rate of each state by calculating the unemployment rate before lockdown and after lockdown.

Fig 18. Then calculate the percentage change in unemployment to reach the initial estimation and sort it.

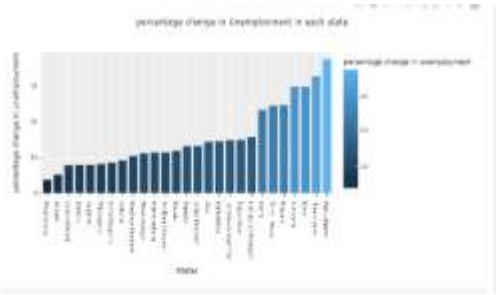

Fig19. Estimate percentage change in unemployment in each state. From current analysis Puducherry has high unemployment rate and Meghalaya has less.

Fig 20. From the above code, most impacted unemployment state and least impacted states are discovered.

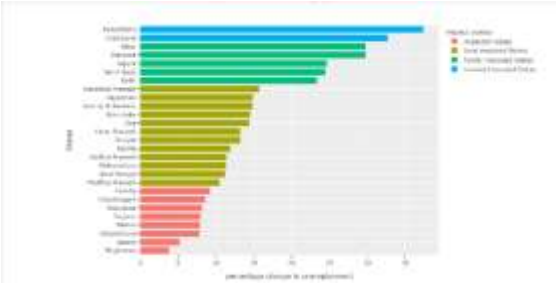

Fig 21. The estimation of unemployment after lockdown is same as the estimation of most impacted states. From the above information, prediction of unemployment after lockdown is more

DOI: 10.5281/zenodo.6221238
ISBN: 978-93-5607-317-3 @2022 MCA, Amal Jyothi College of Engineering Kanjirappally, Kottayam

compared with unemployment before lockdown becomes accurate.

VI. RESULT

From the above predictive analysis unemployment on each state is estimated and visualized using different graphs. Compared with lockdown before and after, unemployment after lockdown is a huge amount and affected mostly in northern regions of India.

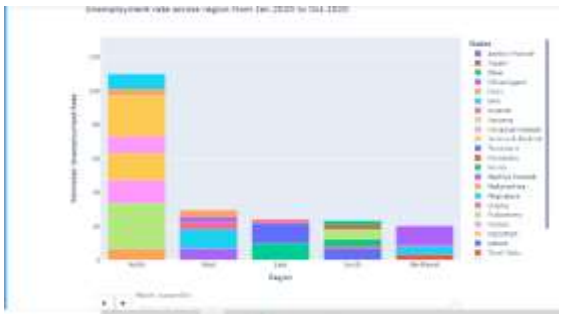

Fig 22. Survey of the result.

From the graph unemployment rate of Puducherry (a city in India) has high level except other southern states. After June onwards again the rate of southern states got higher. All the estimation reached into the identical result, that is the impact of covid-19 in unemployment is large.

VII. CONCLUSION

As the rapid increase of covid-19, about 80% of labours in India lost their job. To overcome this crisis, the authorities need to initiate for further procedures. For that purpose, estimating the employees from each state with a survey is difficult. In such situation this paper helps to solve it by using proper analysis of finding the unemployment rate of each state. Also helps to predict which state needs more attention and awareness.

By using this visualized predictive analysis, anyone without professional knowledge about charts can easily catch the information on it. Through this, unemployment rate after lockdown is high and also changed to moderate level at the end of October. This situation is not overcome and not concluded at this current scenario. It is also persevering with under this covid-19 period.

VIII. REFERENCES

[1] Unemployment dimensions of COVID-19 and Government response in India –An analytical study G L Parvathamma, Bangalore University, India glparvathi@gmail.com

[2]" An Unemployment Crisis after the Onset of COVID-19". Robert G. Valletta- is a senior vice president in the Economic Research Department of the Federal Reserve Bank of San Francisco.

[3]" COVID -19 and the State of India's Labour Market by Radhicka Kapoor" radhicka.kapoor@gmail.com, rkapoor@icrier.res.in

[4] Covid-19: Impact on the Indian Economy S. Mahendra Dev and Rajeswari Sengupta rajeswari@igidr.ac.in

[5] Dias, Monica Robert Joyce, Fabien Postel-Vinay and Xiaowei Xu. 2020. "The challenges for labour market policy during the Covid-19 pandemic" Institute for Fiscal Studies, March 25th 2020.

DOI: 10.5281/zenodo.6221238
ISBN: 978-93-5607-317-3 @2022 MCA, Amal Jyothi College of Engineering Kanjirappally, Kottayam