



COVID'19 Data Analysis Kerala

Kerala

COVID-19 Data Analysis

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The Battle of Survival in the Neighborhood

A Capstone Project on Applied Data Science by IBM Cognitive Class

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Introduction / Business Case

Covid-19 needs no introduction to anyone in the world and will remain a most searched, most thought, most discussed word for next couple of years.

While “the vaccine” seems to be just a step away from reality, we still move around with the survival instincts as our driving force.

The project is focused on Kerala – A state in India which has bagged a lot of attention in world media for its good work on containing the virus to a large extend.

In the month of Jan’2020 we barely had any Covid testing centers and hospitals were less equipped to accommodate Covid patients, with the well thought measures from Indian government, hospitals and medical authorities were able to buy some time to prepare for a unavoidable spike in the Covid cases. In this project we will illustrate the population density, active cases across Kerala and we will throw our focus on the commercial capital of Kerala at the number of currently operational hospitals and active laboratories for Covid tests in the neighborhood.

Target Audience

Anyone living or travelling to Ernakulam is the targeted audience on this project.

The data can also be used to identify the neighborhood with most number of hospitals.

Data

- Data Mining
- Data Cleansing
- Data Analysis
- Data Presentation

Sources (All the data is as of Nov13th 2020):

Population Data - https://en.wikipedia.org/wiki/List_of_districts_of_Kerala

Hospital Data - <https://www.medicineindia.org/hospitals-in-state/kerala>

Covid Cases - <https://dashboard.kerala.gov.in/>

Testing Centers - <https://dhs.kerala.gov.in>

Web scraping done using BeautifulSoup

Location Data – FourSquare & Geocoder

Methodology

- ❖ All relevant python packages and libraries that will be used in this project (Details on [Ipnyb](#)).
- ❖ Bar graph for Active cases description.
- ❖ Geocoder for Latitude and Longitude details for each data set.
- ❖ Folium maps for data visualisation on Hospital & Testing Lab data.

All details/codes are on the shared notebook.

Population Data for Kerala

Good to Know Facts

Kerala is home to 2.76% of India's population, and at 859 persons per km²; its land is three times as densely settled as the rest of India

District	Population
Malappuram	44,94,998.00
Ernakulam	34,27,659.00
Thiruvananthapuram	33,55,148.00
Kozhikode	32,49,761.00
Thrissur	32,43,170.00
Palakkad	29,52,254.00
Kollam	26,59,431.00
Kannur	26,15,266.00
Alappuzha	21,46,033.00
Kottayam	19,83,573.00
Kasaragod	13,90,894.00
Pathanamthitta	11,72,212.00
Idukki	10,93,156.00
Wayanad	8,46,637.00

from 2018 Census

Kerala has the lowest positive **population growth** rate in India, 3.44%; the highest Human Development Index (HDI), 0.784 in 2018 (0.712 in 2015)

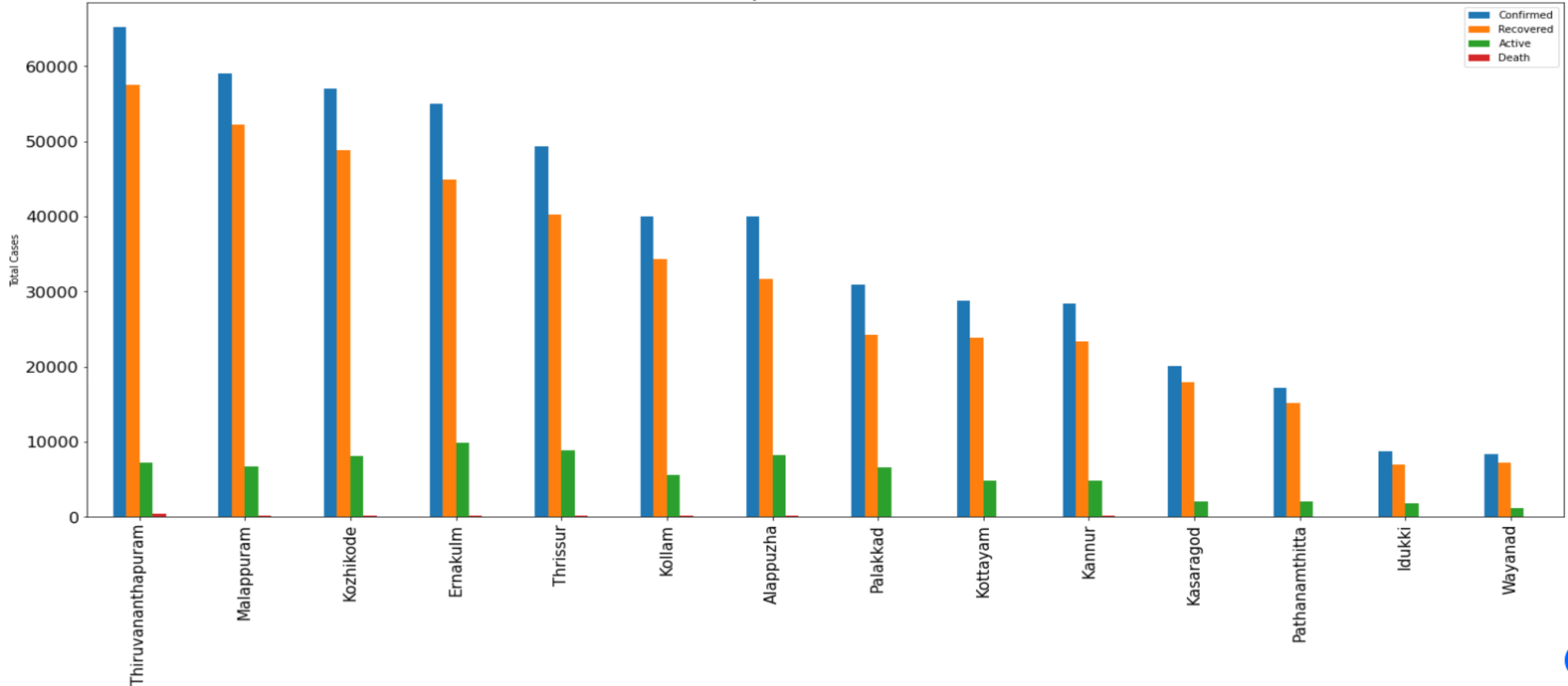
Methods used

- Web scraping
- Data Processing
- Data Cleansing

Data Exploratory Analysis on Confirmed/Active/Recovered/Lost life cases

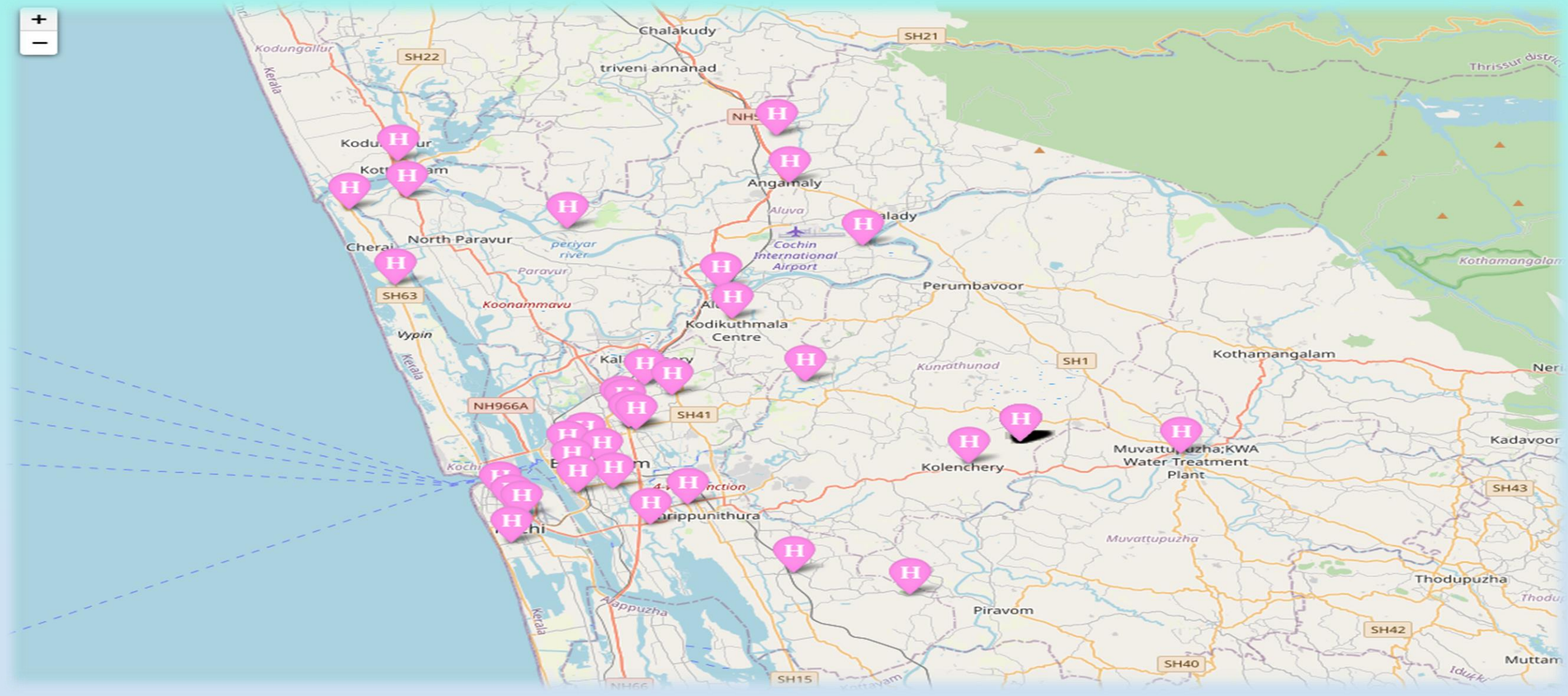
At the UN webinar, the health minister of Kerala received international recognition for her stewardship of the state’s response to the pandemic that has seen Kerala effectively flatten the curve during the first phase of the outbreak. The panel also praised the health infrastructure of the state, with which the government was able to control the situation.

Kerala State Active cases per District as of November 13th 2020



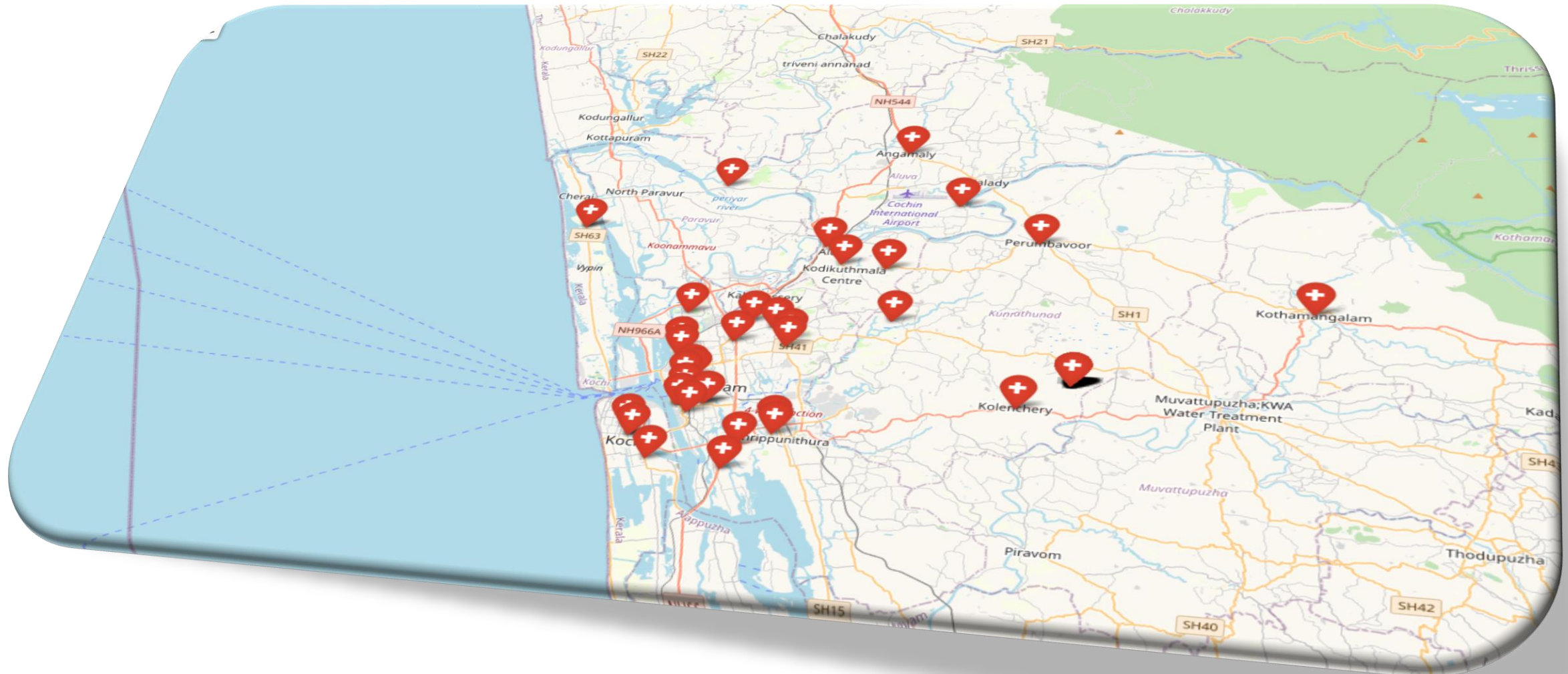
Data Visualization on Hospitals for Commercial Capital of Kerala - Ernakulam

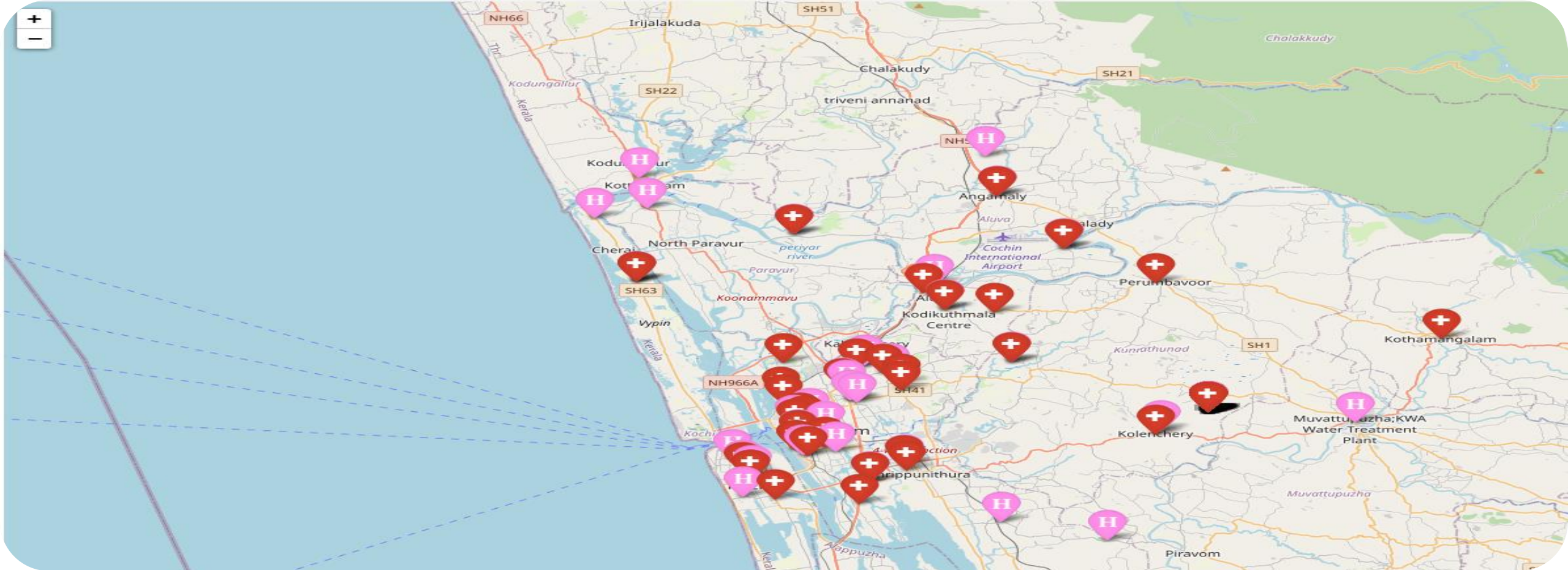
- Below data visualization shows the total number of hospitals in the neighborhood of Ernakulam.
- It shows the easy accessibility of hospitals around the Cochin International Airport.
- We will look at the data set in our results section.



Data Visualization on Covid Testing Centers for Ernakulam

The map of Ernakulam district shows the number of testing labs available.
It shows the close by neighborhood around the National Highways and State Highways.





Data Illustration on combination of the maps.

Methods Used for above slides:

- Folium maps
- Foursquare & Geocoder for Lat & Long

RESULTS



Post analysis findings/results:

- Kerala has overall 5.2L confirmed cases, 70k active, 4.5L recovered & 1.8k deaths.
- Population density – Malappuram has the highest and Wayand has the lowest.
- Ernakulam have total of 57 Hospitals & 69 testing centers.
- Ernakulam have overall – 9.3k Active covid cases.
- Analysis shows the city is well equipped by hospitals to accommodate covid patients.
- The large number of testing centres show the preparedness to do fast and rigorous testing.
- With a current medical infrastructure it is to be assumed that a vaccine distribution for 34.5L population is a seamlessly achievable target within a short span of time.

Conclusion

The project passes through different sections from Data Mining, Data processing, Data Cleansing, Methodology, Data Analysis and clustering.

The neighborhood for Aster Medcity Hospital (the largest in South India) was explored using foursquare.

The results obtained are for illustrative purposes only, this should not be used to make any real life decision as there might be variations on the accuracy of the data though they are sourced from internet web.

The overall Data science journey has been very exciting, it prepares me well to take on major projects and further studies to sharpen the skills required for a Data Scientist.

Finally, we conclude on the medical preparedness and infrastructure availability for Ernakulam which definitely shows the positive side of the tough times the world is going through.

With government measures and preparedness for the anticipated vaccine arrival soon we should be able to get back to the new normal.

The results shown here is targeted for anyone living or traveling to the city to find nearest hospital or a testing laboratory which is a must have for inter-state and international travels.

THE END

Thank you & Stay Safe! 😊