**Data Used**

*ISRO Data Used - India\_District\_Boundary provided in link* - [Index of /mapathon/Mapathon2020\_Data/ (fossee.in)](https://static.fossee.in/mapathon/Mapathon2020_Data/) .And other sources used are  <http://censusindia.gov.in>, <http://pmc.gov.in> and <http://data.gov.in> it includes data of 1800+ villages which consist of the population as per gender as well as total population area-wise, Number of the community health centre, Primary health ,allopathic health centre ,Non-Government Medical facilities and Others Along with this detail we also have detail regarding alternative hospital facility, dispensary availability, Family welfare centres with mobile health clinic doctor presence in that region. For every detail, we also have data regarding the nearest available health centre which can help the people to keep track of the data.

**Specific steps in GIS**

* Layer and Text Scaling
* External Layer Addition for Taluka
* Combining Data of Health facilities, population and Coordinates (Multi-polygon)
* Adding desired and Removing undesired Fields
* Multi-layer operation for better map features
* Used Expression and Condition to get the Desired result
* Worked mostly with Vector Layer and Delimiter text, and styling them
* Working with map layout by adjusting scales grid and frame positioning them and adding legends, labels and scale

***Complexities Involved:***

Regarding complexities we faced few complexities which is mostly during the search of data related to the requirement as well as the Pune shapefile and boundary file was not easily available. Even after collecting data and merging all into a single CSV file, it got bit complex during fitting all those data as per their coordinates. For all the members of my team, QGIS is new software and none of us was familiar to mapping environment so to get comfortable with software with short span of time was also a challenge for us all. Even we learned and imposed some advance feature of QGIS like rule-based scaling for visibility of data with reference to scale.

**Potential application of the map**

***Population Distribution Map***

This map is a visual representation of Pune city we have categorised it based on the population density of different regions of Pune. This map has so many potential applications are as follows:-

1. This helps us to understand the demographic distribution of the Pune city
2. Our population density map helps to non-profit, multilateral agencies and government to plan the vaccine distribution campaign.
3. Aid organisations can use this map to respond to natural disaster and plan disaster preparedness projects, mapping which area are most likely to be affected by natural disaster. Population density maps can help to tackle these problems very easily.
4. These maps are also helpful for volunteers who are distributing vaccines or medicine and performing residue sprays for malaria control and any other diseases.
5. This population maps can improve the way health workers reach households with information about forthcoming coming vaccine distribution and procure the right number of vaccines needed in the particular villages or area of the Pune.
6. Public health organisations can use maps to improve the way they can reach ruler populations with health interventions.
7. These maps help researchers assess how climate changes and urbanization impact where people live.
8. These maps give information to our government about which region of Pune needs more health infrastructure and health facilities according to the population density.
9. It also gives information about which region of the Pune city needs more sanitisation and proper instruction and precautions to make sure that the diseases cannot be spread in a more populated region.

***Health Infrastructure Map***

This map gives information about the total number of health infrastructure and facilities available in every region of Pune.

1. Health infrastructure is the foundation of the basic health system. Public health focuses on promoting health and preventing disease and injury at the population level.
2. As we know that federal, State, and local health agencies rely on basic infrastructure to monitor population health and respond to community health needs. Infrastructure is the basis for planning, delivering, and evaluating a wide range of essential public health services and through this map we can get all information about health infrastructure.
3. Infrastructure allows public health professionals to respond to ongoing health problems, such as chronic disease, and prepare for and respond to emergency health threats, such as natural disasters and disease outbreaks. Without a strong public health infrastructure, deadly disease outbreaks can become even deadlier.
4. This map helps to public health agencies assess health facilities status and determine whether they have adequate resources to address health problems.
5. Public health agencies develop health policies and programs that address people health needs according to the health facilities available in particular area.
6. Through the data of health infrastructure and facilities available, our government can use this information for making plan to distribute vaccine.
7. It also gives information about non - availability of health facilities in some regions. So, at the time of pandemic or disaster government can easily set our priority for providing facilities.
8. As we have completed data of health infrastructure, we can easily provide a proper medication of vaccine to everyone just by dividing all this facility available in a proper manner and distribute them in different regions of Pune so that every single person will be immunized.