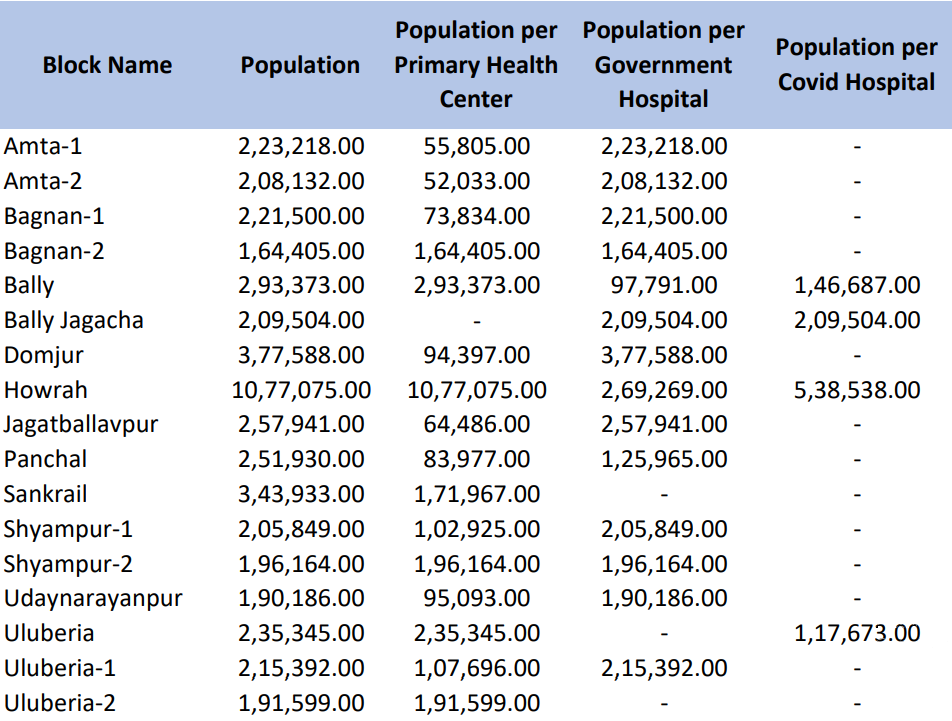
**Team Name**: AAA-IIEST

**Topic:** Health Infrastructure, population map for vaccination

**Methodology**

As the first step to work on a district level study, the shapefile for the district of Howrah was extracted from the ISRO data provided by the organizers. A novel shapefile for the block level boundaries was created. For this step, an official map from the website of Howrah district by the government of West Bengal was georeferenced and digitized. The population data from the Census handbook of West Bengal was fed into the individual polygons of the blocks. The data for the primary health centers (P.H.C.), the covid designated and other government hospitals were noted down from the lists of Health and Family Welfare Department of Government of West Bengal. The individual healthcare facilities were then traced out from the google earth database and fed into separate shapefiles of each facility class. The buffer analysis was started through discussions about suitable and practical coverage expectations after a study of some relevant literature. 3 km of buffer was chosen for the P.H.C.s and 5 km for the hospitals. The buffer generation was then done using the Buffer tool from the Vector Geometry toolbox. Two different buffer shapefiles were generated, one with dissolve result box checked another unchecked. The first one was used for vector analysis of the coverage and the latter for representation. Before the coverage analysis, the buffer files were clipped using the Howrah district polygon to restrict the inclusion of any coverage outside the study area. The different buffer files were then analyzed to find coverage both individually and in unions. The major complexity in this part was to restrict the coverage inside the study area and keep the error of commission in check while analyzing with more than one buffer file at once as the buffers overlap quite often.

**Application**

The application of the maps produced is mainly in the fields of medical administration during the phases of vaccine distribution. The first map shows the block-wise population distribution of the Howrah district with the spatial location of the 3 classes of medical facilities distributed in the district. A Table depicting the population per medical facility is shown :

The second map contains the spatial coverage from the existing covid facilities and the local primary health centers. It also shows the amount of area outside the coverage of the aforementioned medical facilities. The third map can be used as a guide to select some other existing non-COVID government hospitals as a measure to cover the areas previously left uncovered. Though the delegations of primary health centers are done concerning the size of the population they cater to and not the spatial coverage but as the COVID-19 is a heavily transmittable disease, Looking out for the distance that people have to travel to get vaccinated should be a point of concern.