civic data lab

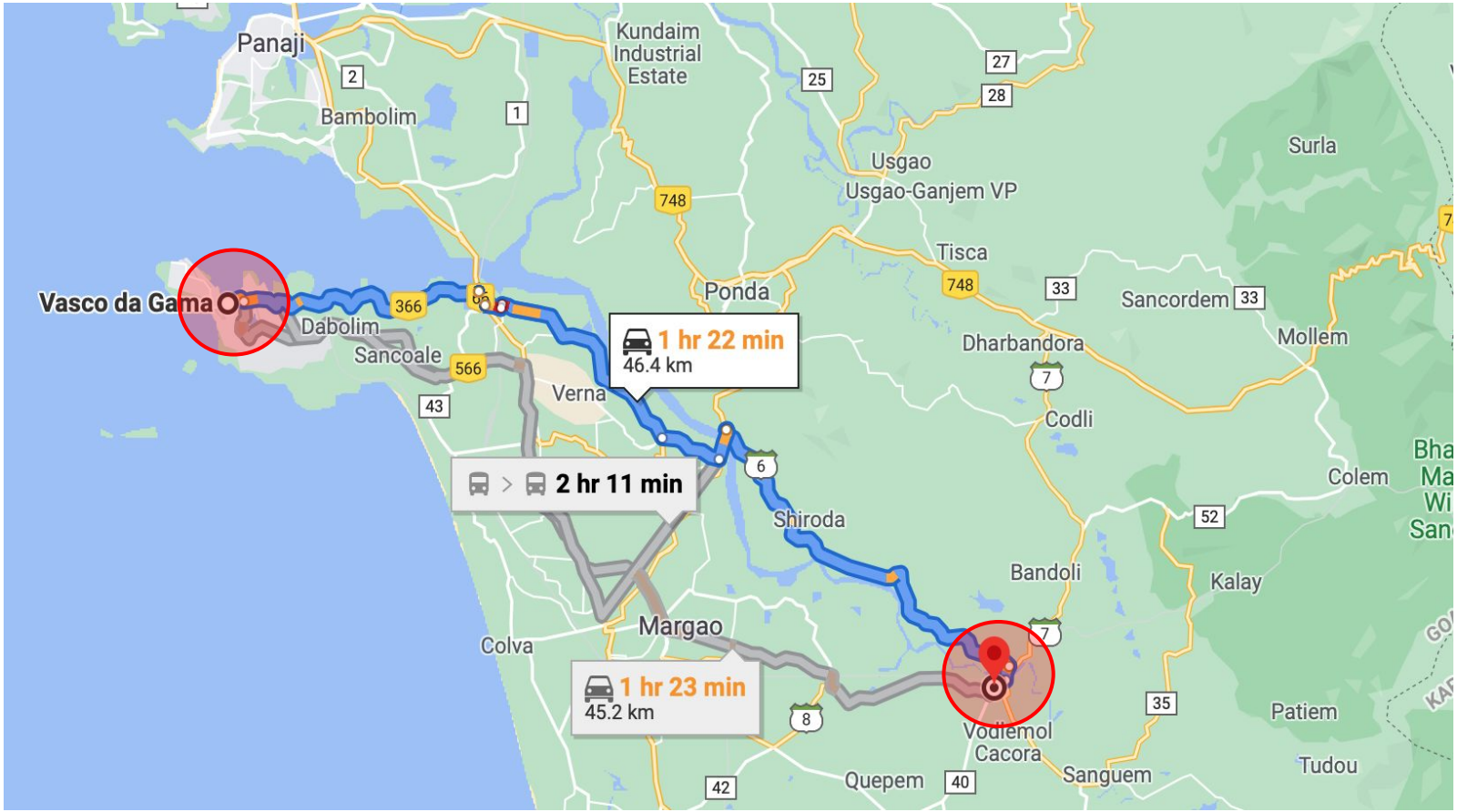
Module 3 - Session 3

GIS in Law & Justice

Working Effectively with Data

CivicDataLab

2021/09/29


Panaji
Kundaim Industrial Estate
Bambolim
Usgao
Usgao-Ganjem VP
Surla
Tisca
Ponda
Vasco da Gama
Dabolim
Sancoale
Sancordem
Mollem
Dharbandora
Verna
Codli
1 hr 22 min
46.4 km
2 hr 11 min
Shiroda
Colem
Bandoli
Kalay
Margao
Colva
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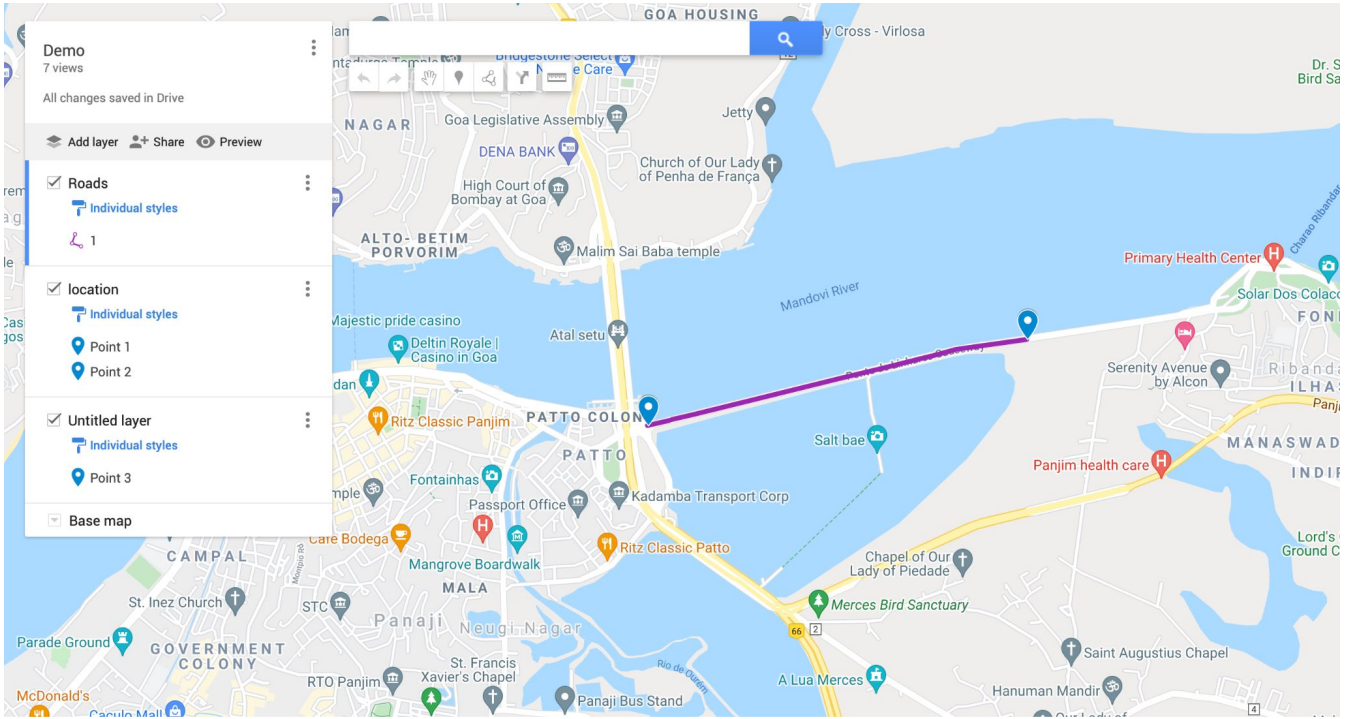
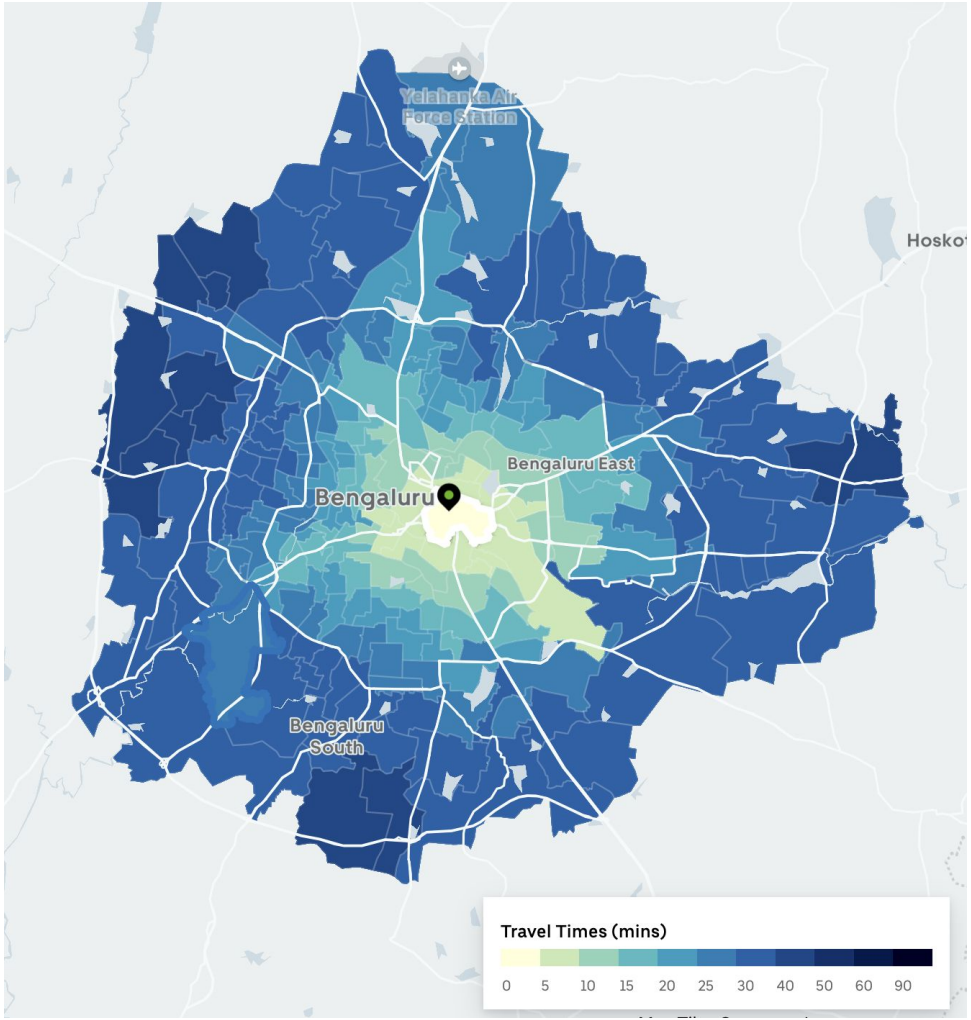
Vodlemol
Cacora
Patiem
Tudou
Quepem
Sanguem



[Google - MyMaps]



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Uber Movement Data

Choropleth Map

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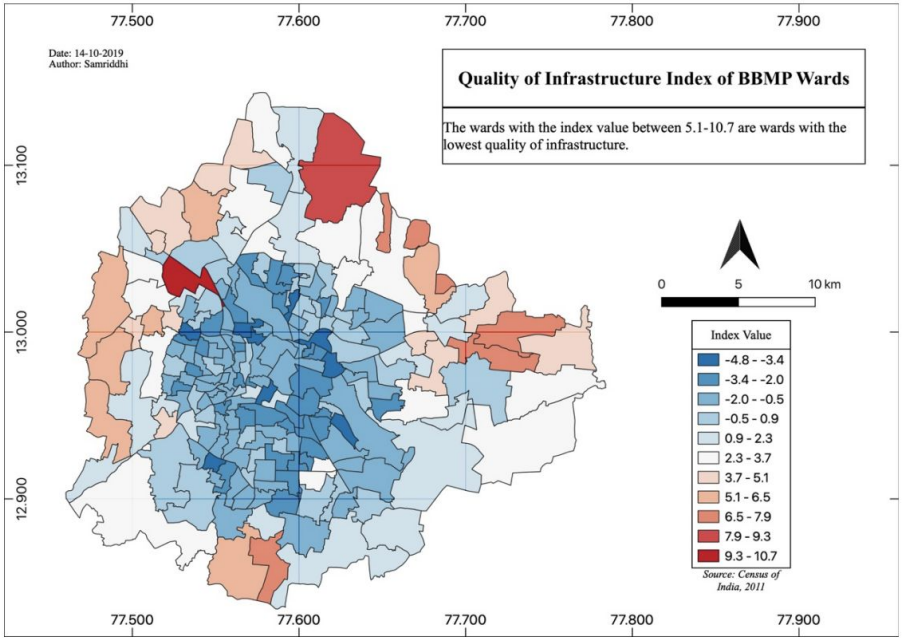

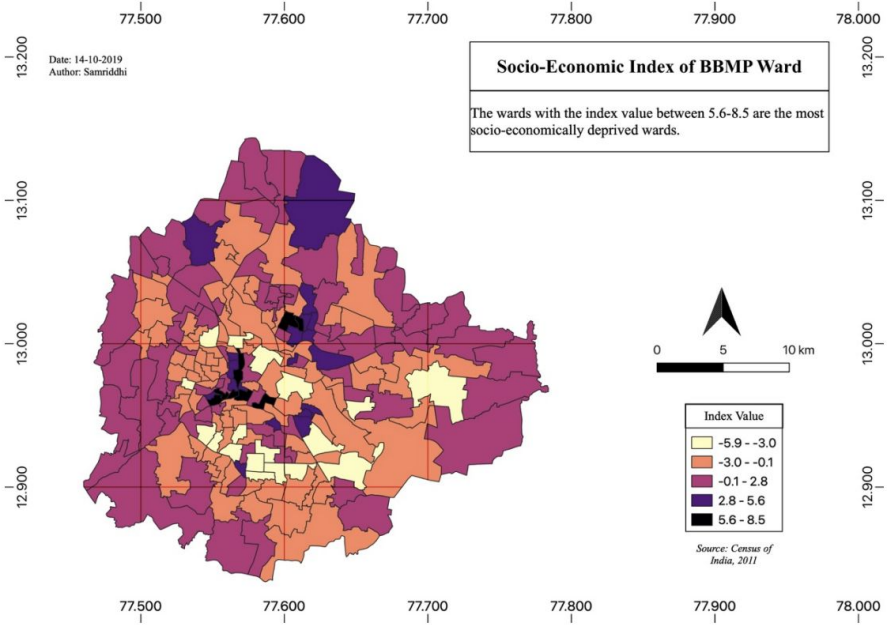

Point

Buffer

Density

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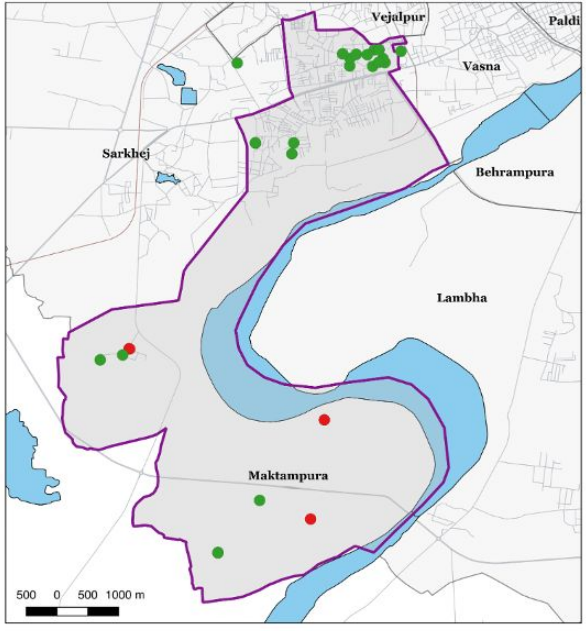
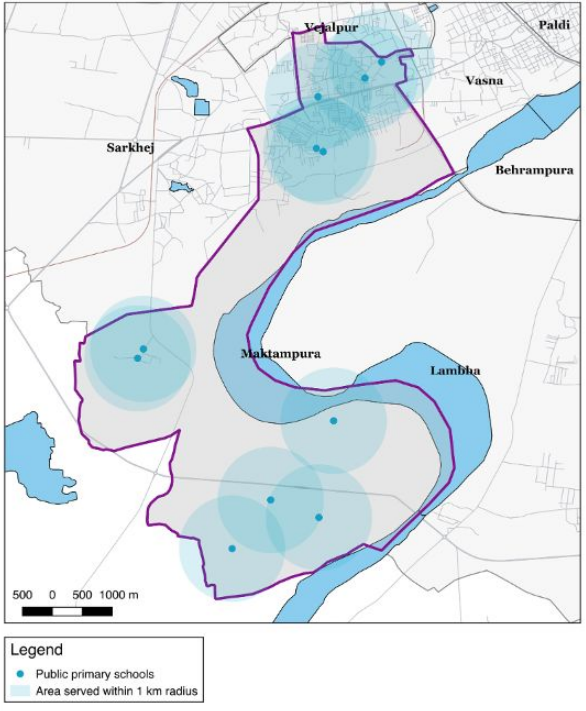
Quality of Anganwadis - Maktampura

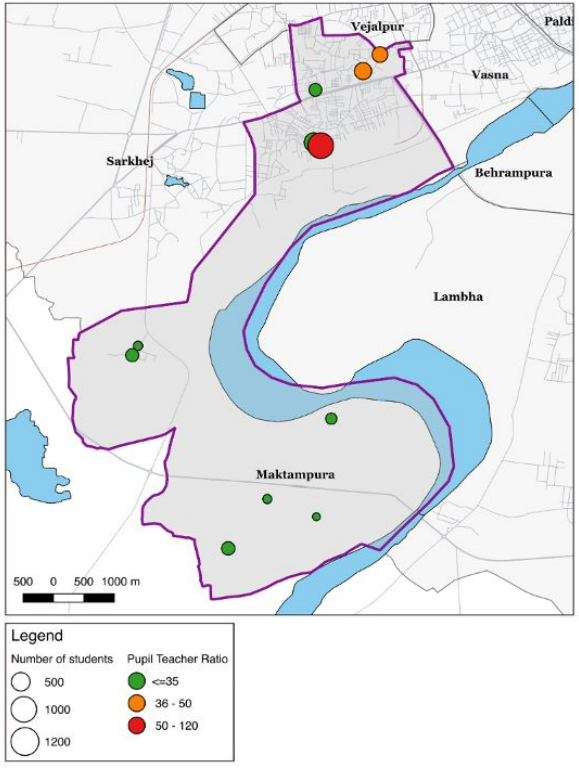


Facilities include water connection, electricity connection and washrooms.

Service area of Public primary schools - Maktampura



Number of students and Pupil Teacher Ratio in Public primary schools - Maktampura



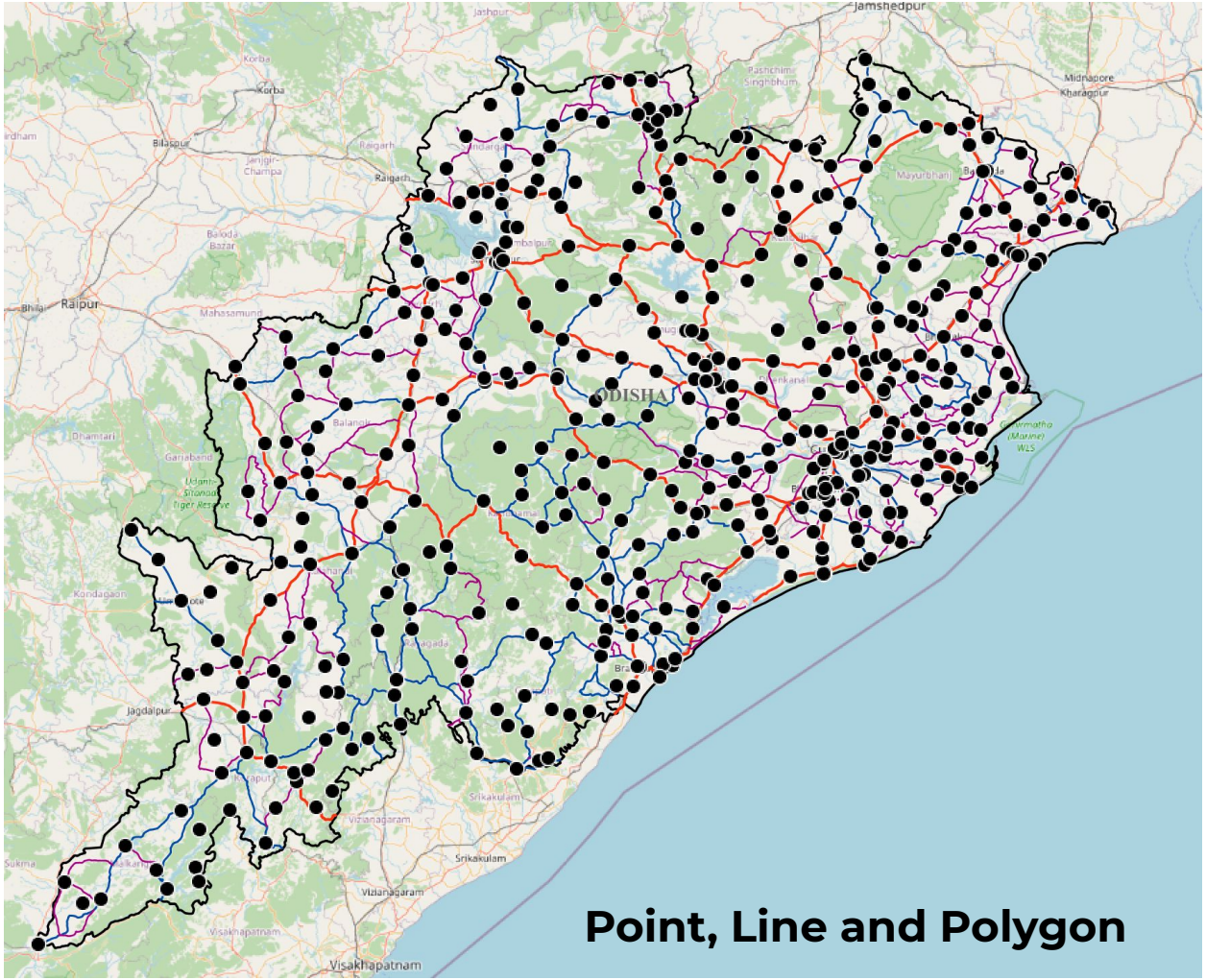
What is GIS?

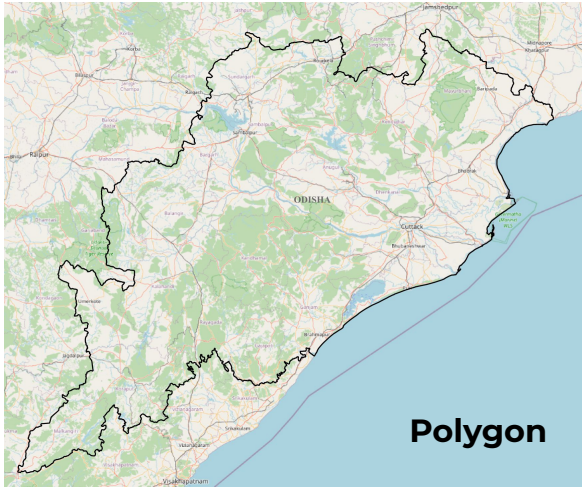
A geographic information system (GIS) is a computer system for capturing, storing, checking, and displaying spatial data.

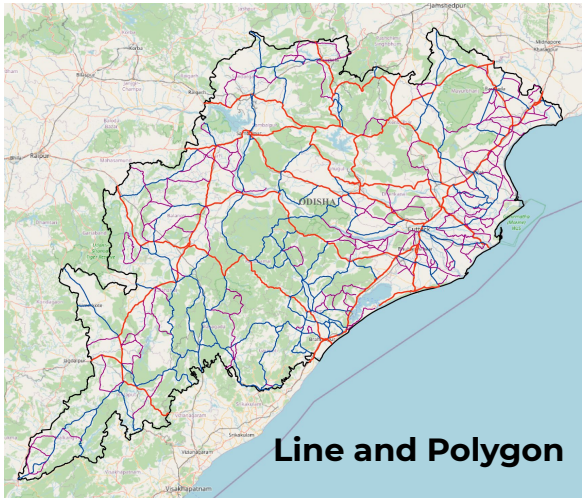
What is Spatial Data?

Spatial Data are data with coordinates attached to them. Coordinates are unique location address of each point on the earth.

Types of Spatial Data


Point, Line and Polygon


Polygon


Line and Polygon

Advantages & Limitations of GIS

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Advantages

- Allows to work and visualise data from different sources (spatial and non-spatial)
- Allows to visualise how a space appeared in the past
- Available on a near-real time basis

Limitations

- Cost
- Technical Expertise
- Using only geospatial data might not be sufficient

Governing Policies

1. National Map Policy 2005
    a. The Survey of India to be responsible for preparing and publishing maps under the “Open Series Map” category to support development activities. This category includes maps on administrative boundaries, roads, hydrology, vegetation, forests, etc.

2. Draft National Geospatial Policy 2021
    a. No restrictions on collecting, storing and disseminating geospatial data
    b. Encouraging collaborations for collecting, generating and disseminating geospatial data
    c. Focus on geospatial education and skill development
    d. Focus on strengthening geospatial infrastructure

Data Sources

Community Created Maps of India

Community Created Maps of India

Community Created Maps of India sourced from different government websites which are freely available to all the Indians. Here we have digitized them, cleaned them, added appropriate attributes so it can be used by all the researchers, students etc.:

All the boundaries are available in geojson or shapefile (WGS84, EPSG4326) format. The below table gives you the status of the data as we clean and upload. Data is not perfect there as many errors both in data and boundaries. You can contribute by sending the pull requests. Please use the census names when correcting the attributes and geojson for shapes. Refer CONTRIBUTING for ways to contribute.

Data{Meet} This projects run by Data{Meet} community. DataMeet is a community of Data Science and Open Data enthusiasts. Data{Meet} community encompass many people, ideas, projects, solutions, and challenges that using data in India presents. Join the the Google Group to be part of this community. Please refer to individual project webiste for more information on how to download, license etc

Available Maps

Assembly-constituencies

Assembly Constituencies

Parliamentary-constituencies

Parliamentary constituencies

State Boundaries

States

District Boundaries

Districts

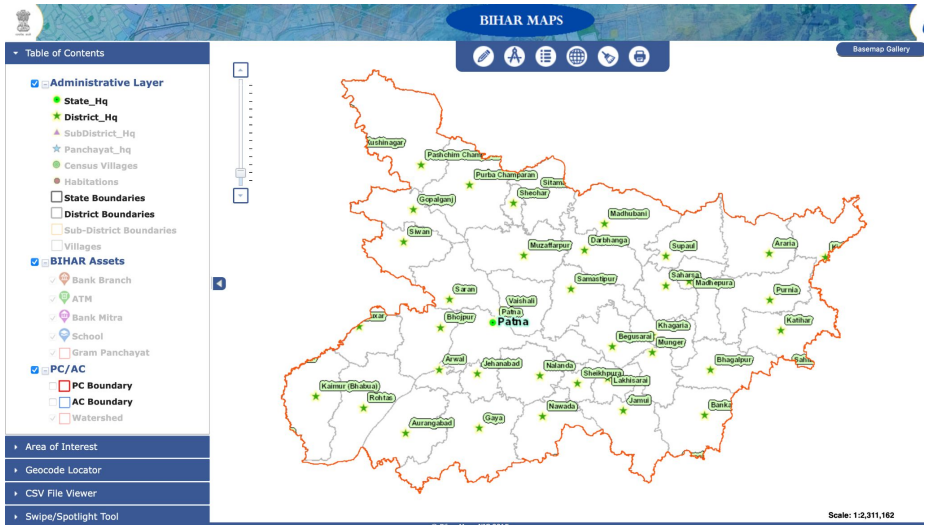
Spatial data of Municipalities

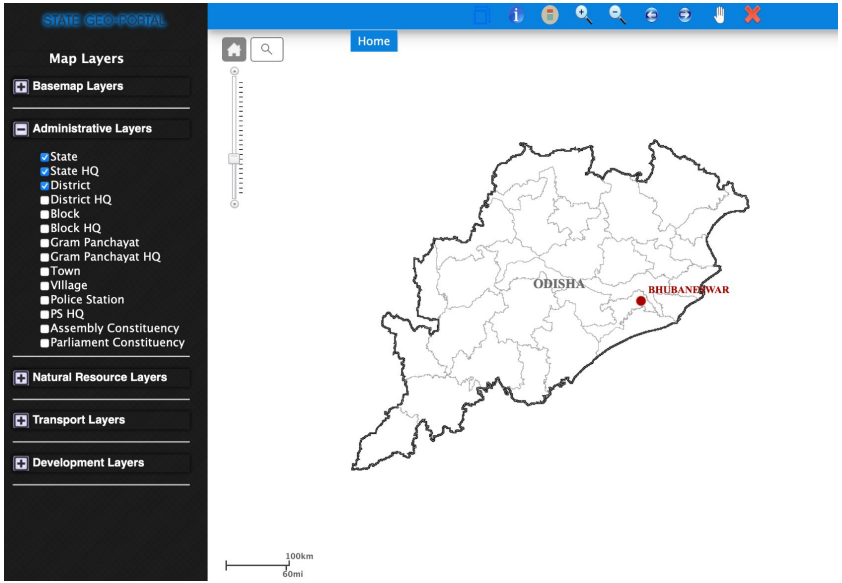
Spatial Data of Municipalities (Maps)

Indian village boundaries

Indian Village Boundaries (Maps)

State Government Geo-portals





Bihar Geo-portal

Odisha Geo-portal

Open Series Map (Survey of India)

Maps & Data

- SOI Brochure
- Open Series Maps (OSM) Index
- Political Map of India
- Physical Map Of India
- Road Map of India
- Railway Map Of India
- India and Adjacent Countries
- World Map

State wise status of availability of Open Series Maps

States/ UT – Region 1	States/ UT – Region 2
Arunachal Pradesh (Download)	Andaman & Nicobar Is (Download)
Assam (Download)	Andhra Pradesh (Download)
Bihar (Download)	Chhattisgarh (Download)
Chandigarh (Download)	Daman (Download)
Haryana (Download)	Diu (Download)
Himachal Pradesh (Download)	Goa (Download)

Challenges

- Lack of awareness about data sources
- Availability of data in appropriate formats
  - Example - Open Map Series, Survey of India
- Inconsistent data availability across regions
- Interoperability of different kinds of datasets along with spatial data
- Skill set

Case Studies

1. The story behind the Nigeria satellite images
2. Burma: Massive Destruction in Rohingya Villages
3. GIS for Racial Equity & Justice
4. Alaska Justice for All Map App
5. GIS Map Locations of JLOS Institutions - Uganda
6. Finding the Best Locations for 10,000 New LPG Centers

Storing Vector Data

Few of the commonly used formats to store vector data are:

- **Shapefiles**

A shapefile is a simple, nontopological format for storing the geometric location and attribute information of geographic features. Geographic features in a shapefile can be represented by points, lines, or polygons (areas). It is the most widely known format for distributing geospatial data. It is a standard first developed by ESRI almost 30 years ago

- **GeoJSON**

GeoJSON is an open standard geospatial data interchange format that represents simple geographic features and their nonspatial attributes. Based on JavaScript Object Notation (JSON), GeoJSON is a format for encoding a variety of geographic data structures.

- **Keyhole Markup Language (KML)**

Keyhole Markup Language (KML) is an XML-based format for storing geographic data and associated content and is an official Open Geospatial Consortium (OGC) standard. KML is a common format for sharing geographic data with non-GIS users as it can be easily delivered on the Internet and viewed in a number of free applications, including Google Earth

Working with Spatial Data

- Calculating Geometric Attributes
- Fixing Invalid Geometry
- Table Joins

Map Making

Step 1: Creating thematic maps using attribute information

Step 2: Map Composition

There are few things to remember about making maps

D O G T A I L S

Date - Orientation - Grid - Scale - Title - Author - Index - Legend - Sources

Resources

1. National Map Policy
2. Draft National Geospatial Policy 2021
3. QGIS Documentation
4. Udemy - Practical QGIS for Spatial Data Analysis Beginner to Expert

Queries and Feedback