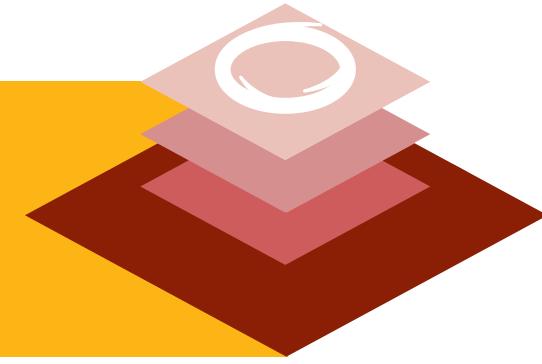


Urban Informatics Lab

Portal

A resource for Indian geospatial data

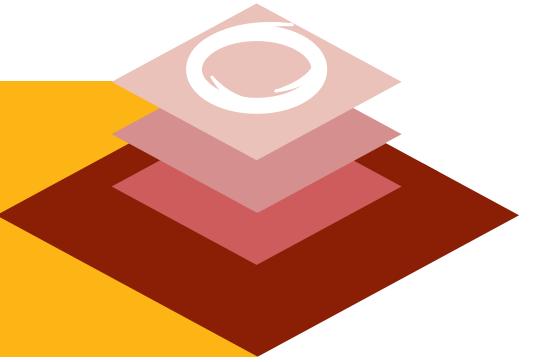
Introduction



- ↔ There is a lack of access to reliable urban metrics for Indian settlements. The data that do exist are often in non-digitized form or are proprietary. Researchers may frequently duplicate others' efforts.

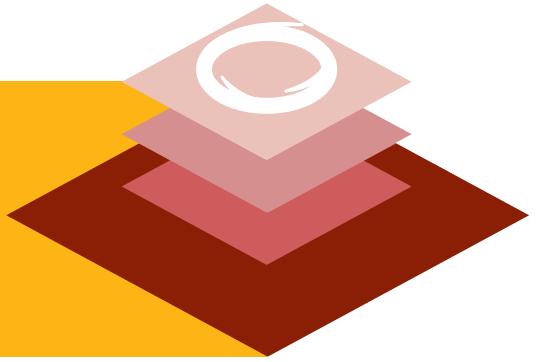
- ↔ This is an issue for both the general public and for researchers because India is a rapidly urbanizing country and at the moment that change is very difficult to measure, visualize, and understand.

IIHS Researcher Interviews



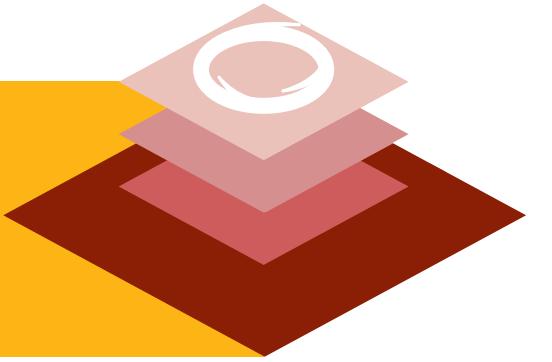
- ◊ Neha Sami - Consultant
PhD, Urban and Regional Planning, University of Michigan
- ◊ Deepak Baindur - Consultant
PhD, Transportation, Technical University of Lisbon
- ◊ Krishna Balakrishnan - External Advisor
PhD Candidate, Env. Planning, UC Berkeley

Researcher Feedback



- ◊ The existing data are very hard to access. Researchers have to digitize paper maps or manually code spreadsheets from reports.
- ◊ The researchers feel like they may be duplicating the efforts of others, even at IIHS, since many people have similar needs.
- ◊ All of the researchers expressed interest in having access to quantitative data at smaller aggregation levels and more clearly defined jurisdictional boundaries.

Database Technology



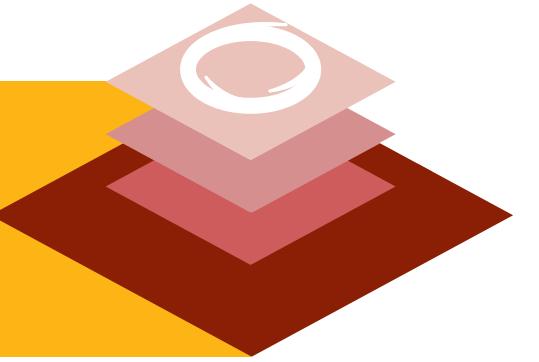
- ↔ CartoDB is the heart of the UIL Portal.

"CartoDB is a cloud based mapping, analysis and visualization engine that lets users build spatial applications for both mobile and the web. CartoDB was launched in April 2012 and version 2.0 rolled out in November 2012.

"The platform is already being used by major news organizations, research institutions, non-profits, and geospatial application developers the world throughout." (www.cartodb.com/media)

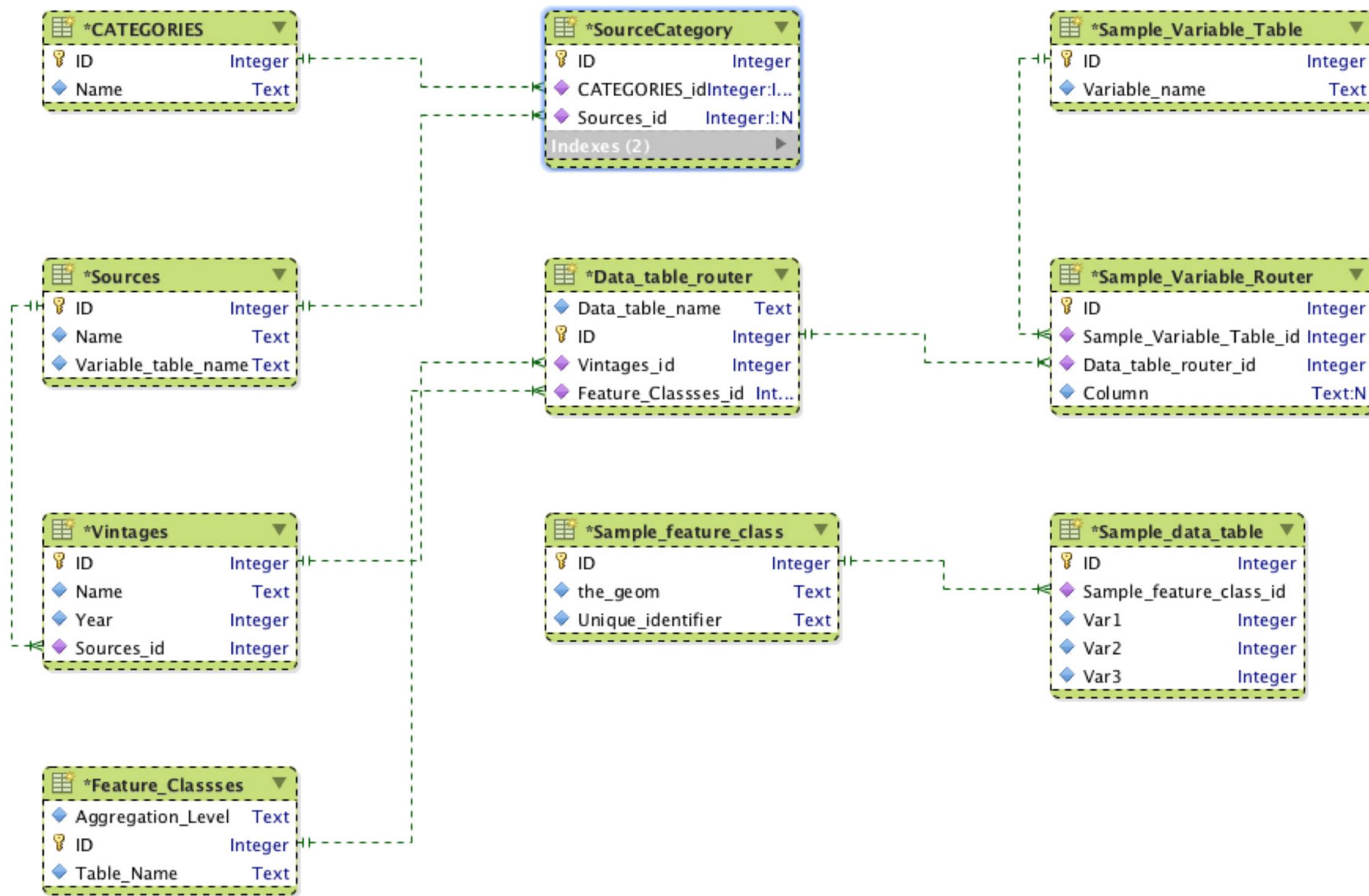
- ↔ Data can be uploaded to and accessed via a local instance of CartoDB (hosted on an IIHS server).

Database Technology

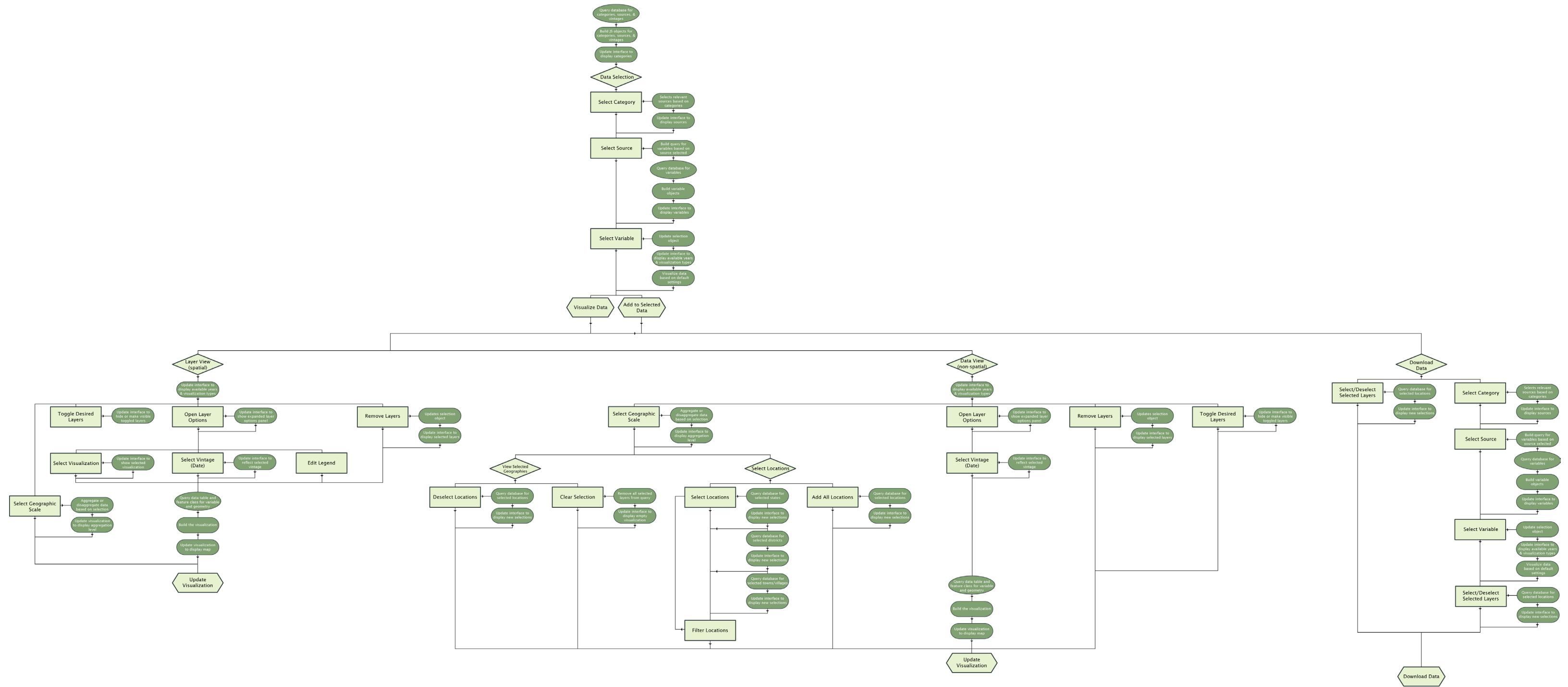


- ↔ CartoDB is powerful but it has some limitations.
- ↔ It is mainly intended for one-off or small dataset visualizations.
- ↔ To our knowledge, this is the first time it has been used for the purpose to which we're adapting it.

Database Structure



System Structure



Wireframes

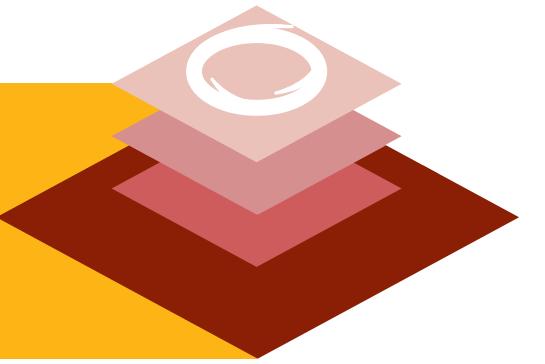


Image 1: Spatial visualisation of data

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HOME BLOG NEWS ABOUT

MAPS CHARTS

TYPE OF VISUAL

STATE v

DISTRICT v

BLOCK v

VILLAGE v

TOWN v

WARD v

FROM v TO v

AVAILABLE ^ DATA v

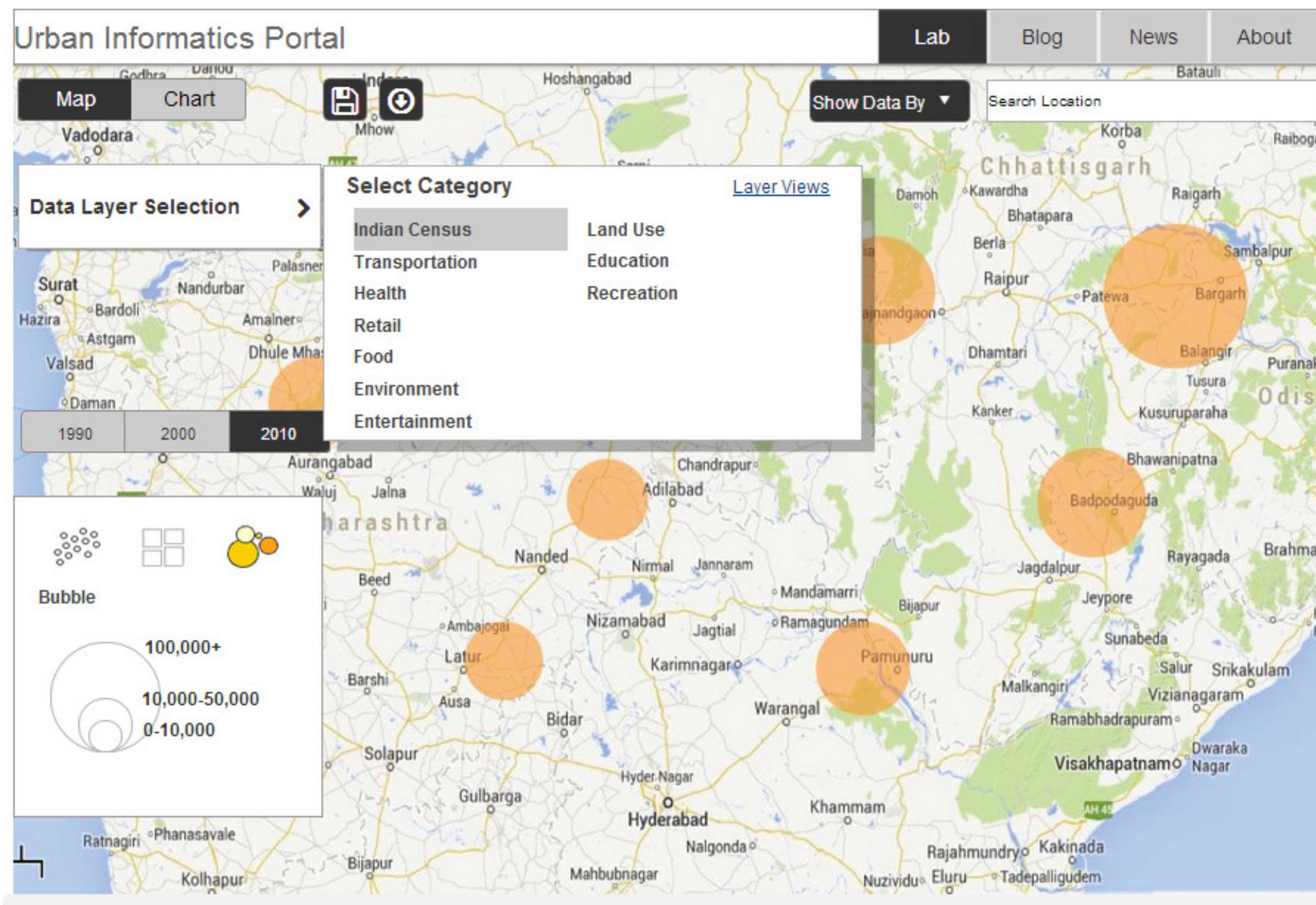
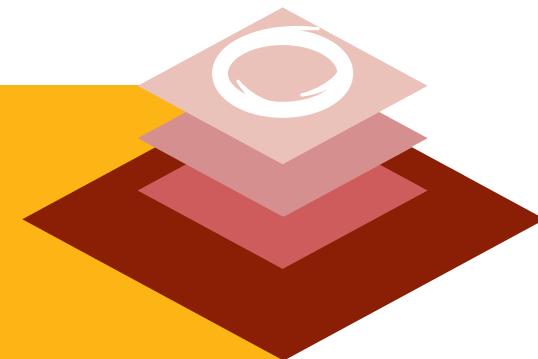
SUBMIT

> TIME →

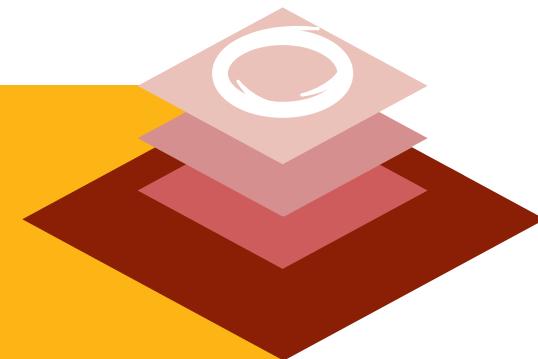
VISUALISATION USING CARTODB

A wireframe diagram of a spatial visualization application. At the top, there's a navigation bar with links for HOME, BLOG, NEWS, and ABOUT. Below that is a secondary navigation bar with MAPS and CHARTS. To the left, there's a sidebar with the text 'TYPE OF VISUAL' followed by five empty square input fields. In the center, the text 'VISUALISATION USING CARTODB' is displayed above a large empty area. To the right, there's a vertical list of administrative units: STATE, DISTRICT, BLOCK, VILLAGE, TOWN, and WARD, each preceded by a 'v'. Below these is a range selector 'FROM v TO v'. At the bottom right is a 'SUBMIT' button. A footer bar at the very bottom contains the text '> TIME →'.

Prototypes



Prototypes



Map Chart

Data Layer Selection

Query Data

Download Data

View Data By: Auto Zoom

Hazira Baroda Amalner

Astgam Valsad Dhule Mhasv

Male Literacy Population

Total Worker Population

Total Population

1991 2001 2010

Base Layers

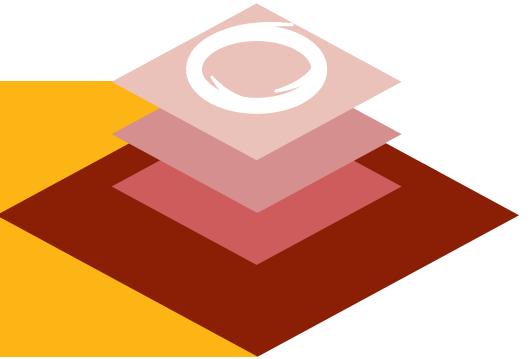
100,000+
10,000-50,000
0-10,000

Data Selection

Category	Source	Variable
Capital Expenditures	Primary Census Abstract	Number of Households
Demographic		Total population
Economic		Total male population
Enterprise		Total female population
Employment		Total 0-6yrs population
Financial		Total male 0-6yrs population
Other		Total female 0-6yrs population
		Total SC Population
		Total male SC population
		Total female SC population
		Total ST population
		Total male ST population

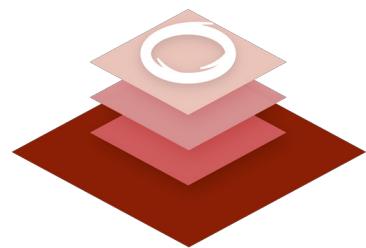
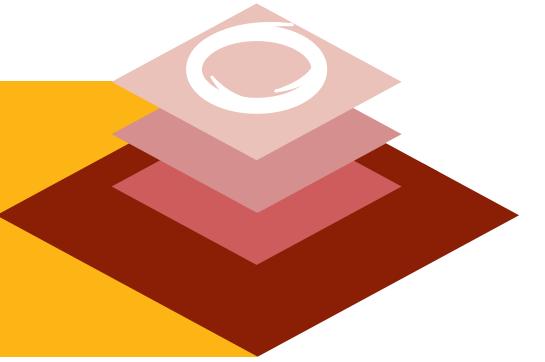
A map showing the distribution of data layers across southern India, with a legend indicating population density ranges (0-10,000, 10,000-50,000, 100,000+) and a timeline from 1991 to 2010.

Cartography & Stylization



- ↔ CartoDB is compatible with Mapbox, an open-source cartography platform. Mapbox is based on Mapnik, an open-source toolkit for mapping apps.
- ↔ The TileMill application uses Mapbox to generate map tiles that can be imported into a CartoDB database.
- ↔ TileMill allows for a high degree of customization using CartoCSS, a map styling language.

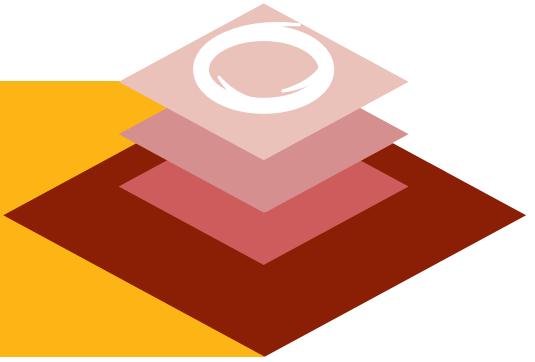
A Demonstration



Urban Informatics Lab

Portal

Future Trajectory



- <> Data download function, allowing users to download visualized data.
- <> Tooltips on cursor hover over layers for easy geography and metric identification.
- <> Raster integration (CartoDB doesn't do well on its own with raster data).
- <> Additional levels of analysis within the Portal itself: raster analysis/calculations, filtering and querying data.
- <> Auto-link baselayer components to OSM/Geofabrik so that the layers automatically update as Geofabrik updates them daily.