**Batch: C3 Roll No.: 16010120193**

**Experiment 06**

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| --- |
| **Title: Working with Geospatial data** |

# Objective:

# *Search/locate and download the geospatial Data (Use same dataset if it contains location information)*

# *To learn how to visualize geospatial data in Tableau*

# *Apply heat map*

# *Try various forms of heat maps*

# *Analyse the visualization and write your interpretation after observation on heat-map*

# Course Outcome:

# CO1: Learn how to locate and download datasets, extract insights from that data and present their findings in a variety of different formats.

# CO3 Apply data visualization best practices

# Books/ Journals/ Websites referred:

Guide to Tableau

Tips for Data Visualisation

Maps for Tableau

# Resources used:

Dataset: <https://www.kaggle.com/sirpunch/indian-census-data-with-geospatial-indexing>

Tableau Documentation

Books

Websites

Educba

# Theory:

# These visualizations focus on the relationship between data and its physical location to create insight. Any positional data works for spatial analysis. What makes geospatial visualizations unique is the scale. A diagram of circuits on a microchip explores position, but it is not geospatial. It does not map to Earth or another planetary body. A map of the stars is also not considered geospatial, but a map of the surface of Mars is. Geo Visualization overlays variables on a map using latitude and longitude to foster insight.

# Definition:

# Geospatial visualizations highlight the physical connection between data points. This makes them susceptible to a few common pitfalls that may introduce error:

# Scaling - Changes in the size of the map can affect how the viewer interprets the data

# Auto-correlation - A view may create an association between data points appearing close on a map, even for unrelated data

# Heat Maps:

# A heat map is data analysis software that uses color the way a bar graph uses height and width: as a data visualization tool.

# If you’re looking at a web page and you want to know which areas get the most attention, a heat map shows you in a visual way that’s easy to assimilate and make decisions from.

# A heat map uses a warm-to-cool color spectrum to show you which parts of a page receive the most attention.

# Following points should be written by students

# Observation after plotting data

# Observation after plotting various forms of heat maps like based on visualization Que

# Interpretation of visualized map

# Note: Detail observation needed along screenshots wherever required

**Dataset:** [Indian Census Data with Geospatial indexing | Kaggle](https://www.kaggle.com/sirpunch/indian-census-data-with-geospatial-indexing)

**Comparative geospatial study between Census data of the year 2001 and 2011**

**Census-2001**

**Plotted Data:**

**Map

Description automatically generated**

**Using Heat maps**

**Map

Description automatically generated**

# \*\*The above Heat Map has used colour to differentiate the variation in population. Colour varies on a band:

# Light Pink for Sparsely Populated Regions

# Dark Green for densely Populated Regions

**Census-2011**

**Plotted Data:**

**Map

Description automatically generated**

# Heat Map:

# Map Description automatically generated

# \*\*The above Heat Map has used colour to differentiate the variation in population. Colour varies on a band:

# Brown for Sparsely Populated Regions

# Dark Blue for densely Populated Regions

# Observation:

# Case 1: Thane Maharashtra

# Year 2001: Population 81,31,849

# Year 2011: Population 1,10,60,148

# Drastic increase in population over 10 years.

# From 2001 diagram 2, Clearly visible as one of the biggest bubbles in India

# From 2011 Diagram 2, It is coloured in dark red to signify how extremely populated this region is.

# Legend Depicting which colour corresponds to which State

# A picture containing table Description automatically generated

# Chloropleth Map for Indian State Population

# Map Description automatically generated

# Conclusion:

# Created a comparative study between population data from 2001 and 2011 of all major districts in India.

# Used Heat Maps to depict sparse and densely populated regions of India.

# Sorted them by color and size to enable efficient visualization

# District taken for case study was Thane and we saw an exponential rise in population in one of the most densely populated districts in India

**Date: 25-11-2021 Signature of faculty in-charge**

# Post Lab Question:

# Explain the Choropleth maps.

# Choropleth maps are thematic maps that use different shading patterns and sequential color schemes for geographical areas, based on the statistical data within them.

# Data is categorized into different classes, with light colors/shades representing lower numbers and darker colors/shades representing higher numbers.

# For example, if you wanted to measure population levels for each state you could assign white to states under 10 million, light blue to states between 10 – 20 million, and dark blue to states over 20 million.

# But keep in mind that for these maps to work properly, measure data with equal intervals

# Map Description automatically generated