

Dr B.R. Ambedkar University Delhi
School of Liberal Studies

Post-Shodhotsav 2026 Event

Workshop on

“Exploratory Spatial Data Analysis for Social Science Research”

Resource Person: Dr. Sugam Agarwal, School of Liberal Studies, Dr. B.R. Ambedkar University Delhi

Date: 24 September 2026

The Economics Programme of the School of Liberal Studies successfully conducted the workshop, "*Exploratory Spatial Data Analysis for Social Science Research*", as a part of Post-Shodhotsav 2026 Events. The workshop started with a welcome and a brief introduction about the workshop and the resource person by Dr Indervir Singh. The workshop was conducted in two parts. The first part focused on concepts and theory of spatial data analysis, whereas the second part of the workshop included a hands-on practical session using GeoDa software. The details of both parts are as follows.

Part 1: Concepts and Theory Session

The presentation session introduced participants to spatial thinking in social science research and covered the following themes:

- **Module 1: From social questions to spatial thinking:** This module discusses topics: when a social-science question has a spatial dimension; Tobler's First Law of Geography; what we mean by "space" (geographic, network, and social/economic); space as distance, friction, relative position, and a produced reality; and the bridge from spatial economics to ESDA.
- **Module 2: Spatial data, maps, and the idea of "neighbours":** It includes topics: converting an ordinary data table into spatial data by linking it to a district shapefile through a common geographic code; reading and constructing choropleth maps; spatial-weights matrices (W) using contiguity (queen and rook), distance-band, and k-nearest neighbour definitions; the concept of spatial autocorrelation; testing global association through Moran's I with permutation-based inference; and locating local clusters and outliers through LISA maps.

Part 2: Hands-on Practical Sessions (with GeoDa Software)

In the practical sessions, participants worked directly in GeoDa and practised:

- Linking district-level data (Economic Census 2013) to an India district shapefile using a common geographic/census code.
- Creating and interpreting choropleth maps of district-level indicators (e.g., manufacturing and service-sector workers).
- Constructing and comparing spatial-weights matrices (queen/rook contiguity, distance band, and k-nearest neighbours), and justifying the choice of weights.
- Computing Global Moran's I and interpreting permutation-based significance.
- Generating and reading LISA cluster and outlier maps to identify high-high, low-low, and spatial outlier districts.

The sessions were interactive and highly engaging. Participants actively participated in the conceptual discussion and the hands-on exercises in GeoDa. They asked questions about the theoretical and practical aspects of spatial data analysis techniques. The participants found the workshop highly useful, which may help in their research work. The workshop ended with a vote of thanks by Dr Indervir Singh.