GIS for Epidemiology

Day 2 of Geospatial Technology for Public Health Policy Workshop *May 27–29, 2024 — GISE Hub, IIT Bombay@Central University Gujarat (CUG), Gandhinagar*

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Welcome

- Welcome to the Day 2 of **Geospatial Technology for Public Health Policy** Workshop!
- The goal for today is to highlight the applications of GIS in Epidemiology while providing the foundational concepts in Spatial Epidemiology.
- The workshop introduces the participants to the field of Spatial Data Science through the statistical programming language R.
- The workshop is intended as an introductory window into the world of spatial data analysis and visualization for public health policy.
- Workshop materials in the github repository GIS4EPI-Workshop

Learning Objectives for Tutorial

At the end of the day, participants will be able to:

- Identify the main features that make Julia an attractive language for Data Science
- Set up a Julia environment to run their data analysis
- Efficiently handle datasets (even across different languages) through Tables.jl and Arrow.jl
- Fit (generalized) linear mixed models with MixedModels.jl
- Communicate across languages (Julia, R, python)

Schedule

Time	Session	Topic
10:00 - 10:50	Session1a	Foundational Concepts in Spatial Epidemiology
		: *Bio-Break* :
11:00 - 11:50	Session 1b	Introduction to Spatial Data Science using R
		Bio-Break
12:00 - 12:50	Session 1c	Investigating an Outbreak: Applications of Spatial Epidemiology
		Lunch
14:00 - 14:50	Session 2a	Spatial Data Visualization: Principles and Best Practices
		Bio-Break
15:00 - 15:50	Session 2b	Case Studies: Spatial Data Analysis and Visualization
		Bio-Break
16:00 - 16:50	Session 2c	Hands-on Exercises
16:50 - 17:00		*Q&A Session*

In preparation for the workshop

Participants are required to follow the next steps before the day of the workshop:

1. Install R
2. Install RStudio.
3. Install packages

- tidyverse: `install.packages('tidyverse')`
- sf: `install.packages('sf')`
- rgeoda: `install.packages('rgeoda')`
- tidyverse: `install.packages('tidyverse')`
- leaflet: `install.packages('leaflet')`
- here: `install.packages('here')`