Welcome to

The Session Will Begin Shortly

START

Spatial Data Analysis and Visualization in R

Session 12: Using Basemaps in tmap

instats

What are basemaps?

- A basemap is a precontructed map that is used in addition to the data-driven map layers.
- The purpose of a basemap is usually to provide geographic context.
- A basemap is drawn at the bottom, so below all other layers
- Use `tm_basemap()` to add a basemap, which is always from first (so bottom layer)

Basemap providers

- Most basemaps are generated from OpenStreetMap data
- Each basemap has different characteristics:
  - → Which OSM elemenets are included?
  - → What colors, line widths, labels, markers etc. are used?
- Preview

Overlay maps

- A precontructed map that only consists of specific vector elements, e.g. lines, markers, labels, with a transparent background is called an *overlay map*.
- See preview (scroll down for overlay maps)
- Use `tm_tiles` to create such maps. (This function should be renamed to `tm_overlay`)

Difference betwee functions `tm_basemap()` and `tm_tiles()`

- A `tm_basemap()` is always drawn as the bottom layer whereas a `tm_tiles()` is drawn in the order it is called.
- In case multiple maps are defined, `tm_basemap()` will make the layers switchable via radio buttons, and a `tm_tiles()` map via check boxes.

Tile server

- Usually, a basemap/overlay map consists of many tiles
- The server on which they are stored is called a tile server
- A URL template example:
  `"http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png"`

Using `tm_basemap()`

- Main arguments:
  - → `server`: either a provider name or a URL template
  - → `zoom`: zoom level (for `"plot"` mode)

Providers

- Run `tmap_providers()` to see the list of providers for the current mode
- Alternatively, use `.tmap_providers$` to see them in the form of a list (handy for IDEs with code completion)

Plot and view mode

- All providers in the **preview** are available in view mode
- Many are also available in plot mode.
- However, for Thunderforest and Stadia maps an API key is required, which is free for personal use

Recap

- Use `tm_basemap()` for basemaps and `tm_tiles()` for overlay maps
- Use `tmap_providers()` to see which are available (mode dependent)
- See the preview

STOP