**Working with Spatial Data in R: Sources – Usage – Visualization**

**Aim of the workshop:**

After this workshop you will know how to display spatial data in a map – for example plot unemployment rates for different regions - and what you need for it in your R environment. You will also learn how to convert address data into geographic coordinates and, vice versa, how to convert such coordinates into addresses.

**Prerequisites:**

- basic R knowledge

- a laptop with the following software installed: R, RStudio (recommended) and packages for R:

- ggplot2

- ggrepel

- dplyr

- readxl

- jsonlite

- sf

- maps

- mapdata

- rnaturalearth

- optional: free software QGIS installed ([https://www.qgis.org](https://www.qgis.org/))

More detailed instructions on how to install these packages will be provided before the workshop.

# Preliminary outline of the workshop

1. Hello world: Plotting points on a world map
2. What do I need for plotting geo-data?
   * Sources and file formats for geographic data
3. Plotting your data as a *choropleth map*
   * Combining your data with geographic data to form a *spatial dataset*
   * Making a map with shaded regions depending on a variable (i.e. a choropleth map)
4. Geo-coding and reverse geo-coding via Google Maps API
   * Converting addresses into geo-coordinates and vice versa
5. Fine tuning your plot to make it publication-ready
   * Choosing projections and setting a display window
   * Adjusting the overall appearance of your plot