# Assignment 2: Representing your data

## Objective:

In this assignment, you will work with a geographic dataset of your choice and explore it visually using R, kepler.gl, or another data visualization tool (e.g. https://www.rawgraphs.io/). The goal is to formulate a spatial question, visualize it, and reflect on the four visualization components introduced in the lecture. The Instruction below uses the NO2 (air pollution dataset), you can download it from elearning – session 1 -> data -> DENL17\_uc.csv. The dataset consists of NO2 annual average with predictors such as population density and road density of different road types, the paper related to this dataset is <https://epub.uni-bayreuth.de/id/eprint/7291/>, where you can find explanations to the predictors. I will demonstrate how to accomplish this assignment here for R and kepler.gl.

A grey bug on a dark background

AI-generated content may be incorrect.

Here includes a useful guide for kepler.gl. Read it!

## Instructions:

### 1. Load a Dataset and display it.

Load the data in one of the following tools:  
- R/RStudio:

run the code:

pollution\_data <- read.csv("https://raw.githubusercontent.com/mengluchu/uncertainty/master/data\_vis\_exp/DENL17\_uc.csv")

Please refer to the manual of session 1 and the R script in session 2 (this session).

- kepler.gl (https://kepler.gl/)  
Simply drag the data or load the data and display it.

### 2. Formulate a Question and answer it.

Ask a meaningful spatial question. Examples include:  
- How does the weekday day NO₂ concentration vary spatially based on the ground station measurements.

- How does the weekday day NO₂ concentration differ from the weekday night values?  
- Is there a relationship between population density and NO₂ pollution, how do they vary over space? [Note: You can see the R sample code for this question.]   
   
  
Write your question clearly.

### 3. Adjusting the visualization of the Data

- Use appropriate symbols, colors, or scales to show spatial patterns.  
- Make sure the visual is readable and interpretable.  
  
- R: you can follow the example code and adjust the colors and symbols.   
- In Kepler, see below and adjust the symbols and colors.

A map of europe with many colored spots

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### 4. Describe the 4 Visualization Components

For your map, describe the following:  
1. Visual Cues (e.g., color, size, shape)  
2. Coordinate System (e.g., WGS84, UTM)  
3. Scale (e.g. km, lat/lon degree) – show legend and scale bar.   
4. Context (e.g. caption, title,)

### 5. Sketch Your Idea (Optional)

If you were unable to partly or fully generate your visualization digitally, or if you have great ideas that cannot be expressed using software, create a hand-drawn sketch of your idea. Label the key elements and explain what your map is intended to show.

## Submission

Submit a PDF document by 12.06.2025, Filename format: LastName\_GeoViz25\_Aufgabe2.pdf

containing:  
  
- An exported map, a screenshot, or sketch of your visualization  
- A short paragraph (max 200 words) describing your question and answer.   
- A brief explanation of the 4 components