Graded Problemset

Visualization of accident patterns in Kiel

Your role is that of a data scientist working for the municipality of Kiel. The municipality is interested in accident patterns in Kiel, in order to take measures to improve road safety. The municipality has provided you with 3 geo datasets:

- **accidents.geojson**: accidents in Kiel between 2016 and 2022 (source: https://unfallatlas.statistikportal.de/). The meaning of most of the fields will be self explanatory. The field `geometry` contains the coordinates of the accident. The binary fields (e.g. `bike`, `pedestrian`) indicate whether the respective group was involved in the accident.
- **districts.geojson**: name, polygons and some other information about the districts of Kiel. (Source: Open Street Map)
- **roads.geojson**: line representation of road segments in Kiel. Note that a single road (e.g. "Hamburger Chaussee") is often composed of multiple segments, because each crossing defines the starting point of a new road segment. (Source: Open Street Map)

The mayor of Kiel, Ulf Kämpfer, has asked you to identify interesting patterns in the data and to provide a report that visualizes and describes these patterns. Specifically:

- The report should contain a map of Kiel that visualizes the number of accidents per district. Apart from this requirement you are free to set the focus of your analysis.
- Include a maximum of 5 visualizations
- Optimize the visualizations in terms of effectiveness and aesthetic appeal.
- Briefly describe and interpret each visualization.
- Briefly summarize your key findings and if possible derive recommendations for the municipality.

No further requirements are given. There are many, different angles from which you can look at the data, and different ways to visualize one and the same fact. You can use all three datasets, but you do not need to do so. You can put a focus on geographic aspects, but you do not need to do so. You can decide on the contents, the used Python packages, the use of static or interactive visualizations, and other aspects.