Exercises tmap course day 2

sf: reading

1. Load the **sf** and **tmap** libraries.
2. Read the file `slo_regions.gpkg` with **sf** and assign it to the variable `slo_regions`.
3. What variables are included?
4. What type of spatial geometries are included?
5. What is the CRS (map projection) of `slo_regions`?

sf: processing

6. Read `slo_railroads.gpkg` and assign it to `slo_railroads`.
7. What geometries are included?
8. Create a rail network:
    a. Cast the rail roads to 500 meter wide polygons with `st_buffer`. Check the results with `qtm` in view mode.
    b. Apply `st_union` to make it one single multipolygon. Check the results with `qtm` in view mode.
9. Read `slo_border.gpkg` and assign it to `slo_border`
10. Get the geometric difference between Slovenia (`slo_border`) and the rail network computed above:

    a. Make sure the CRS of both objects are identical. If not, apply `st_transform` to match them.
    b. Use `st_difference` to compute the difference. Check the results with `qtm` in view mode.

visualization of spatial vector data

11. Create a choroploth of the population densities of Slovenian regions.
12. Read `slo_cities.gpkg` and assign it to `slo_cities`.
13. Add a bubble map to the choropleth createa at step 11, with size proportional to the population size.
14. Add a scale bar and map compass.
15. Read `slo_regions_ts.gpkg` and assign it to `slo_regions_ts`. It is the same dataset, but with time series included.
16. Plot the GDP per capita for each year that is included in this data. Use `tm_facets` for that.

cartogram

17. Load `tmap.cartogram`.
18. Create a cartogram of `slo_regions`
19. Create an animated cartogram. Tip: add a `*` prefix to the variable name