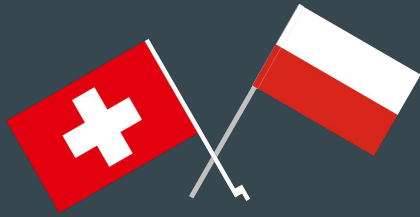


# Python for Geographic Information System

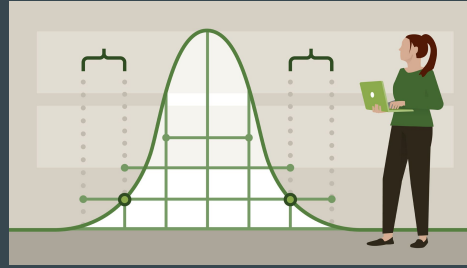
...

Magdalena Surówka  
Zazuko

# About me



Born and raised in Poland  
Living in Switzerland



Hands on experience in geospatial analytics  
Working as Data Scientist  
Studied Econometrics



Focus on Linked Data  
...also Geodata  
Solving graph problems

About you

**Goal**

**Develop geospatial thinking**

# Format

1

Topic overview

2

Live coding

Jupyter notebooks

3

Exercises

Python script  
Your git branch

# Agenda

## Day 1

- Intro
- Shapely
- Geopandas
- Map projections

## Day 2

- Geocoding
- Point in polygon
- Spatial join
- Geometric operations
- Classifiers

## Day 3

- OSM data
- Network analysis
- Visualizations

# Exercises

- 2-3 people groups
- Structure your code:
  - Each exercise as one .py file
  - Make your code modular => use functions
  - **Use type hints**
- Submit solutions to your git branch by the end of the day

# Exercises

```
if not calm:  
    keep_calm()  
else:  
    keep_coding()
```



# Python for GIS examples

## Cardiology

### Horgen

Horgen, gemeente, Ärztin/Arzt,  
Kardiologie

Population: 22869



0-19

20.9%

20-64

58.8%

65-inf

20.3%

### Thalwil

Thalwil, gemeente, Ärztin/Arzt,  
Kardiologie

Population: 18161



0-19

20.8%

20-64

57.9%

65-inf

21.3%

### Zürich

Zürich, gemeente, Ärztin/Arzt,  
Kardiologie

Population: 415774



0-19

18.6%

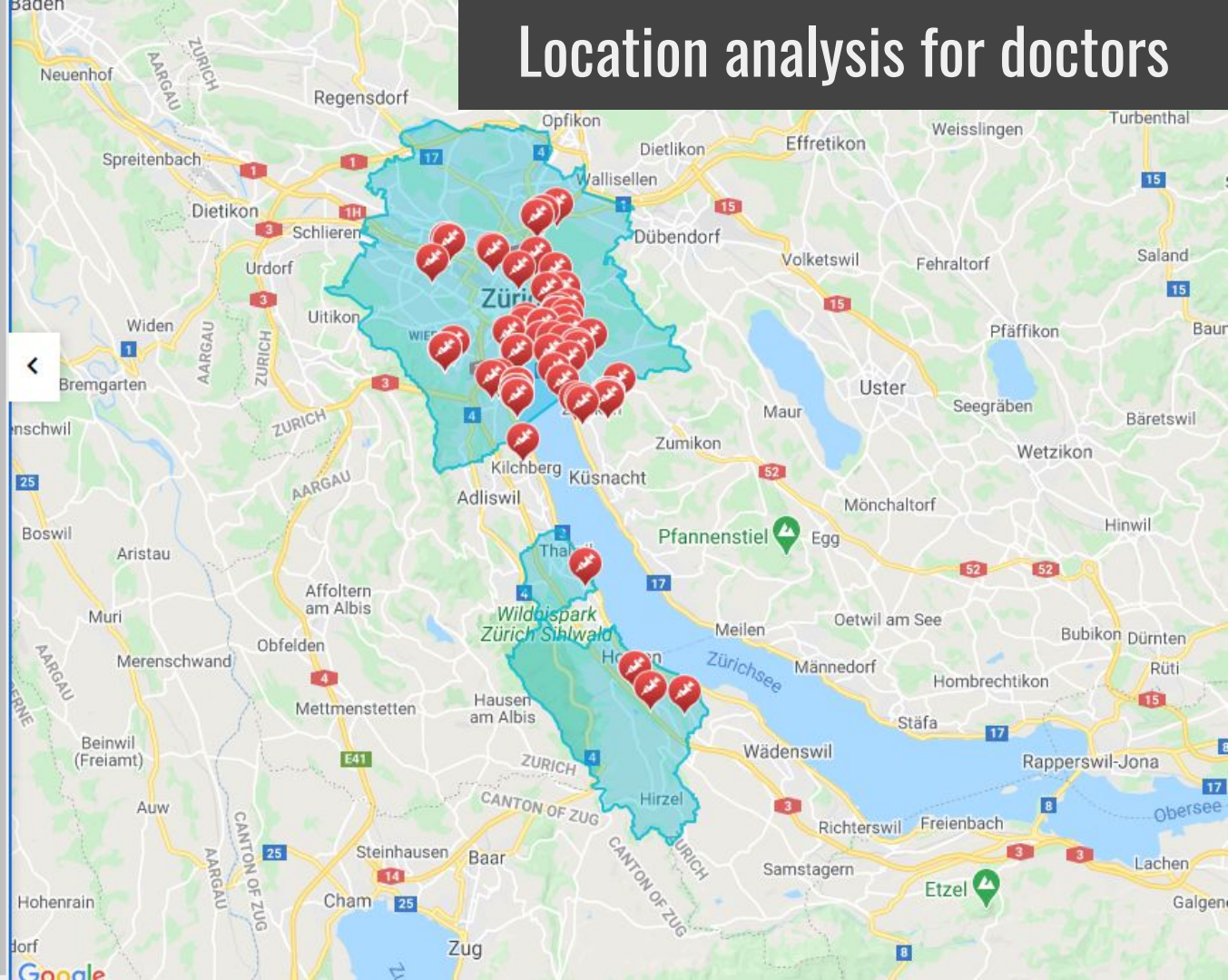
20-64

64.4%

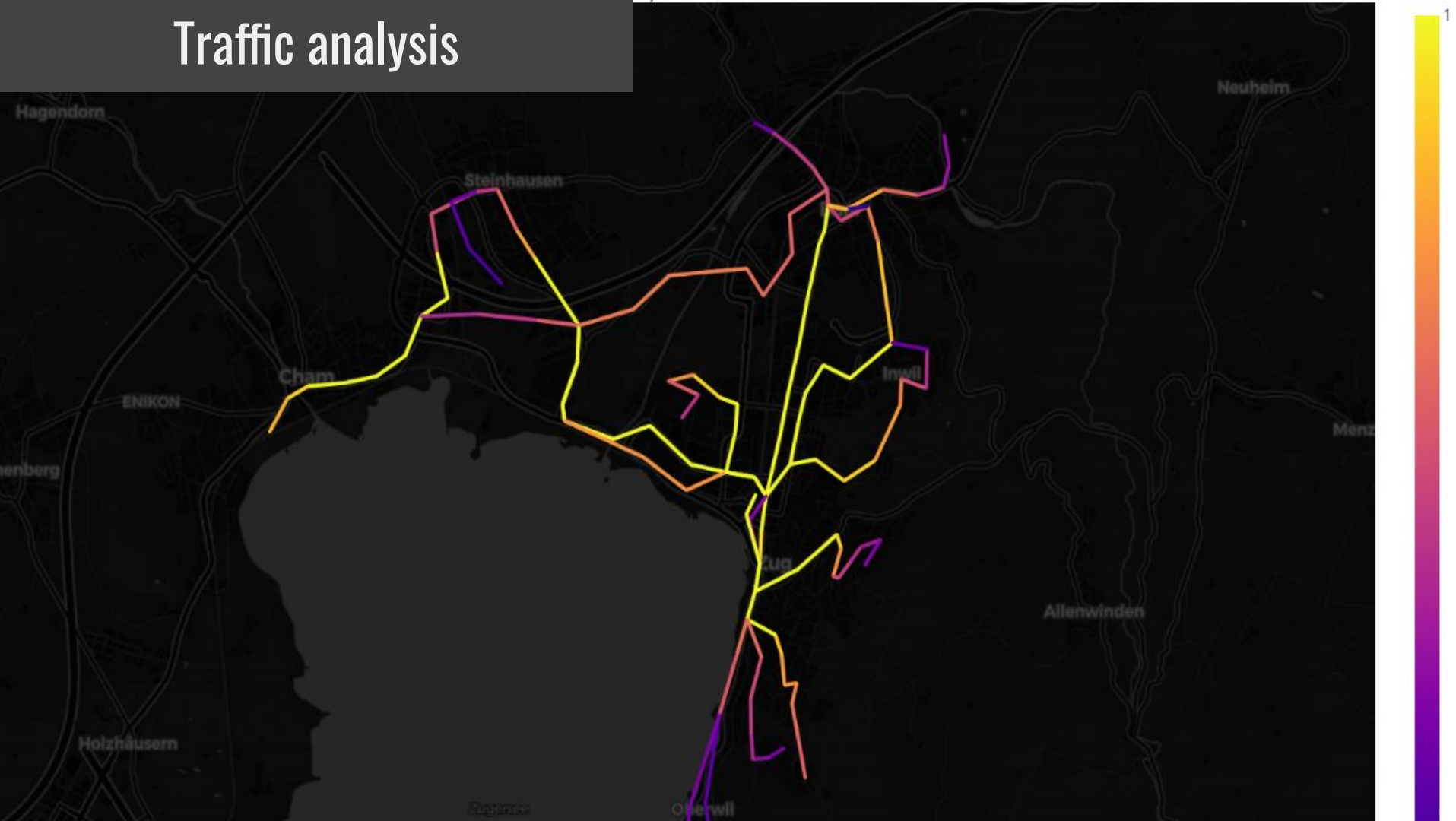
65-inf

17.0%

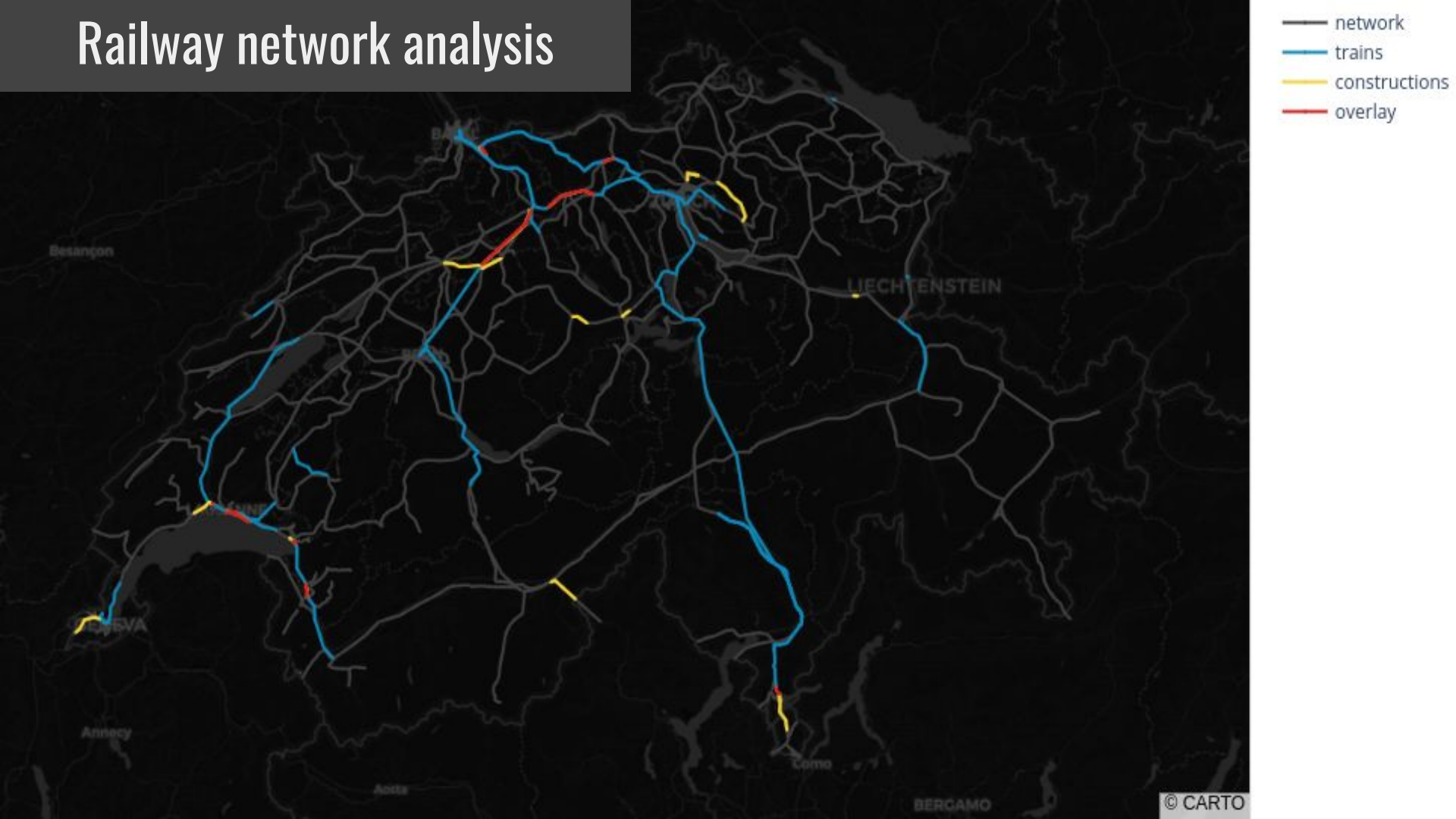
# Location analysis for doctors



# Traffic analysis



# Railway network analysis





Municipality events

**Your projects?**

# Python for GIS tools

GDAL, Geopandas, Shapely, Fiona, Pyproj, Pysal, Geopy, Contextily, GeoViews, Dash, OSMnx, Networkx, Cartopy, Scipy.spatial, Rtree, Rasterio, Rasterstats, RSGISLib, Matplotlib, Bokeh, Plotly, Pandas, Scipy, Basemap, Datashader, Folium, Mapclassify...



# Python for GIS tools

GDAL, **Geopandas**, **Shapely**, Fiona, **Pyproj**, Pysal, Geopy, Contextily, GeoViews, Dash, **OSMnx**, **Networkx**, Cartopy, Scipy.spatial, Rtree, Rasterio, Rasterstats, RSGISLib, **Matplotlib**, **Bokeh**, Plotly, Pandas, Scipy, Basemap, Datashader, Folium, **Mapclassify**...



**Let's get started!**

Questions?

# Thank you!

Contact details:

[magdalena@surowka.ch](mailto:magdalena@surowka.ch)

<https://www.linkedin.com/in/magdalena-surówka-535a21a9/>