06_Contiguity_diagram

March 29, 2020

1 Analysis of similarity of measured data

Computational notebook 06 for **Morphological tessellation as a way of partitioning space: Improving consistency in urban morphology at the plot scale**.

Fleischmann, M., Feliciotti, A., Romice, O. and Porta, S. (2020) *'Morphological tessellation as a way of partitioning space: Improving consistency in urban morphology at the plot scale'*, Computers, Environment and Urban Systems, 80, p. 101441. doi: 10.1016/j.compenvurbsys.2019.101441.

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Date: 29/03/2020

Note: notebook has been cleaned and released retroactively. It is likely that different versions of packages were initially used, but we made sure that the results remained unaltered.

Data

The source of the data used wihtin the research is the Amtliche Vermessung dataset accessible from the Zurich municipal GIS open data portal (https://maps.zh.ch). From it can be extracted the cadastral layer (`Liegenschaften_Liegenschaft_Area`) and the layer of buildings (all features named `Gebäude`). All data are licensed under CC-BY 4.0.

Source data: Vektor-Übersichtsplan des Kantons Zürich, 13.03.2018, Amt für Raumentwicklung Geoinformation / GIS-Produkte, Kanton Zürich, https://opendata.swiss/de/dataset/vektor-ubersichtsplan1

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Data structure:

```
data/
    contiguity_diagram.gpkg - samples to be used in diagram
        blg_s
        tess_s
        blg_c
        tess_c
```

[1]:

```
import geopandas as gpd
import libpysal
from splot.libpysal import plot_spatial_weights
import matplotlib.pyplot as plt
import pandas as pd
```

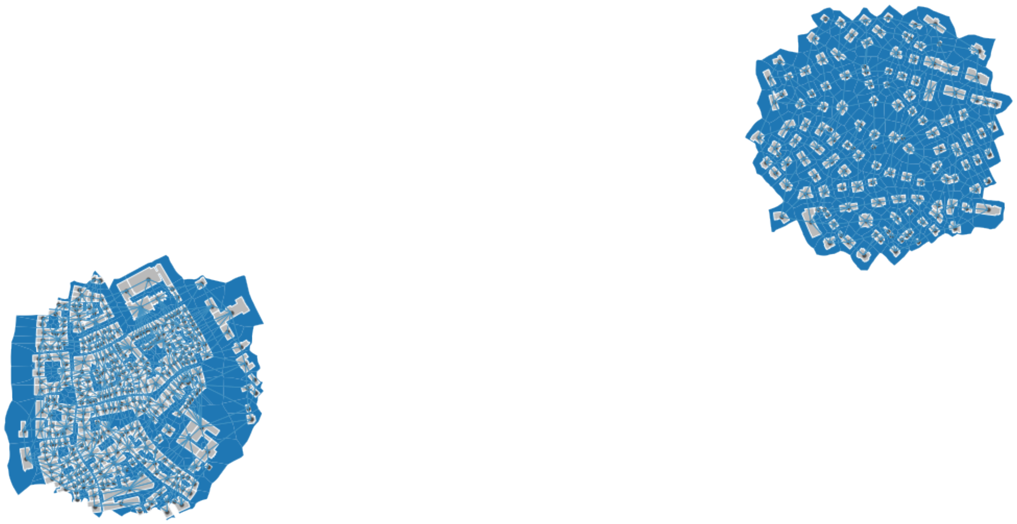
[2]:

```
path = (
    "data/contiguity_diagram.gpkg"
)

blg_s = gpd.read_file(path, layer="blg_s")
tess_s = gpd.read_file(path, layer="tess_s")
blg_c = gpd.read_file(path, layer="blg_c")
tess_c = gpd.read_file(path, layer="tess_c")

blg = pd.concat([blg_s, blg_c])
tess = pd.concat([tess_s, tess_c])


blg = blg.sort_values("uID")
blg.reset_index(inplace=True)
tess = tess.loc[tess["uID"].isin(blg["uID"])]

tess = tess.sort_values("uID")
tess.reset_index(inplace=True)

weights = libpysal.weights.contiguity.Queen.from_dataframe(tess)

f, ax = plt.subplots(figsize=(20, 10))
tess.plot(ax=ax)
plot_spatial_weights(weights, blg, ax=ax)
#plt.savefig(
#    "contiguity_diagram.svg",
#    dpi=300,
#    bbox_inches="tight",
#)
```

```
/Users/martin/anaconda3/envs/ceus/lib/python3.8/site-
packages/libpysal/weights/weights.py:167: UserWarning: The weights matrix is not
fully connected:
 There are 2 disconnected components.
  warnings.warn(message)
```

[2]:

```
(<Figure size 1440x720 with 1 Axes>,
 <matplotlib.axes._subplots.AxesSubplot at 0x129f9c7f0>)
```



[ ]:

```
```