

2a. Initialize reference data

This notebook:

- Loads the polygon defining the study area and then creates a grid overlay for the study area.
- Loads the reference data.
- Processes the reference data to create the network structure and attributes needed in the analysis.

Sections

- [Load data for study area and create analysis grid](#)
- [Load and preprocess reference data](#)

Load data for study area and create analysis grid

This step:

- Loads settings for the analysis from the configuration file `config.yml`.
- Reads data for the study area.
- Creates a grid overlay of the study area, with grid cell size defined in `config.yml`.

Load data for study area

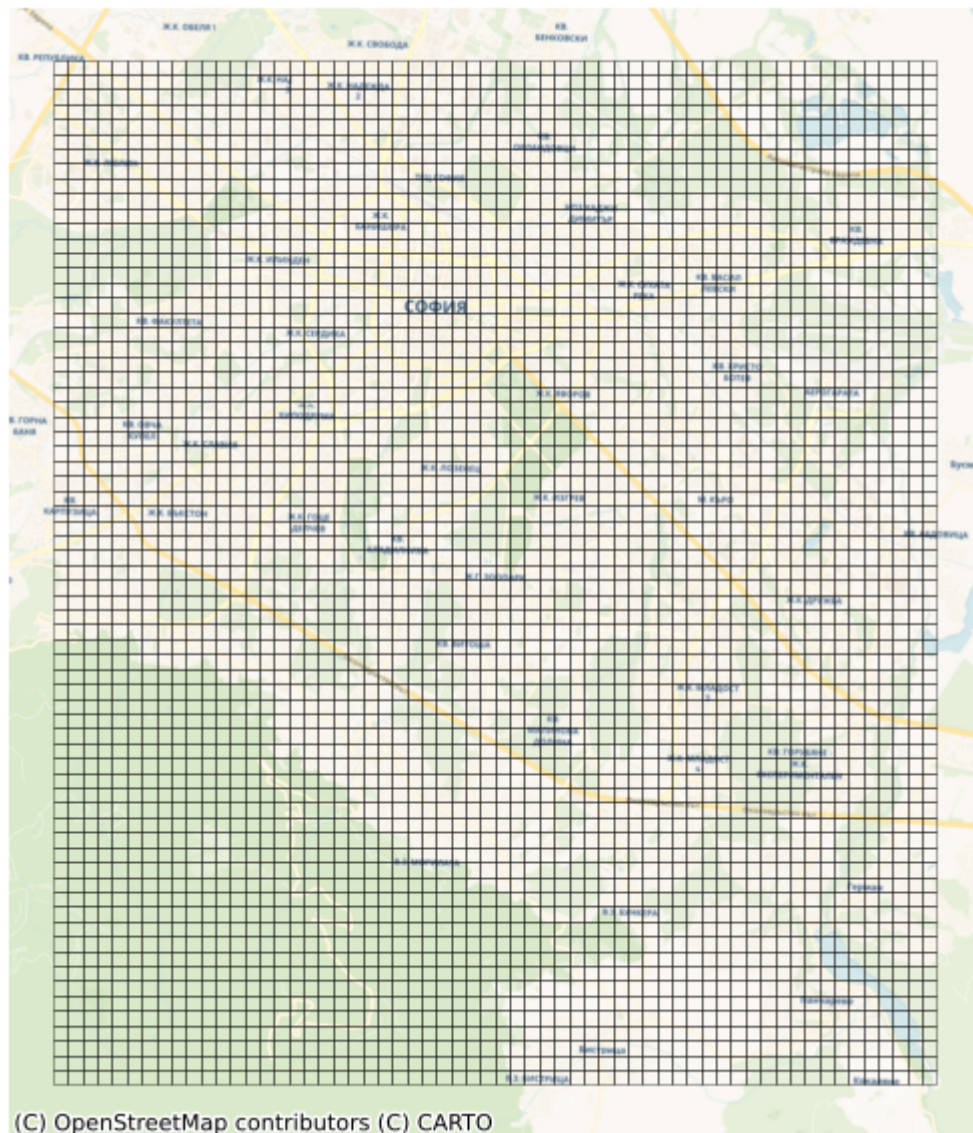
The study area is defined by the user-provided polygon. It will be used for the computation of **global** results, i.e. quality metrics based on all data in the study area.

The size of the study area is 256.25 km².

Create analysis grid

The grid contains 4140 square cells with a side length of 250 m and an area of 0.06 km². This grid will be used for local (grid cell level) analysis:

Sofia study area (4140 grid cells, side length 250m)



Load and preprocess reference data

This step:

- Creates a network from the reference data.
- Projects it to the chosen CRS.
- Clips the data to the polygon defining the study area.
- Measures the infrastructure length of the edges based on the geometry type and whether they allow for bidirectional travel or not.
- Simplifies the network.
- Creates copies of all edge and node data sets indexed by their intersecting grid cell.

Network data model

In BikeDNA, all input data are converted to a network structure consisting of *nodes* and *edges*. Edges represents the actual infrastructure, such as bike lanes and paths, while nodes represents the start and end points for the edges, as well as all intersections. For further details, read more about the [network data model](#).

► Network simplification

The SofiaPlan data covers an area of 164.30 km².

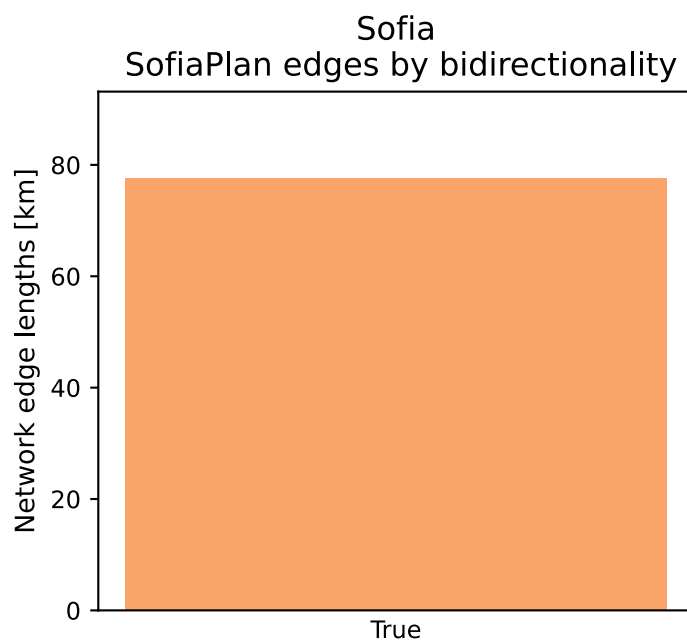
Edges where the protection level is 'protected': 639 out of 911 (70.14%)

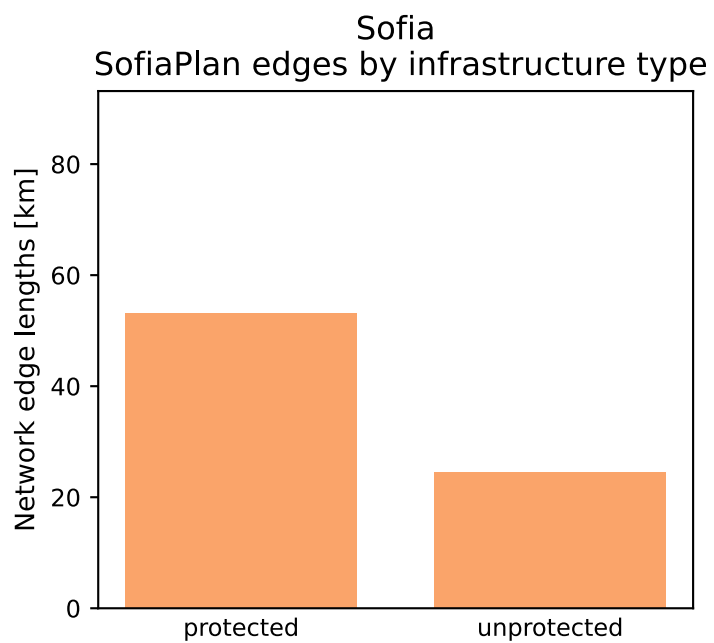
Edges where the protection level is 'unprotected': 272 out of 911 (29.86%)

Edges where 'bicycle_bidirectional' is True: 911 out of 911 (100.0%)

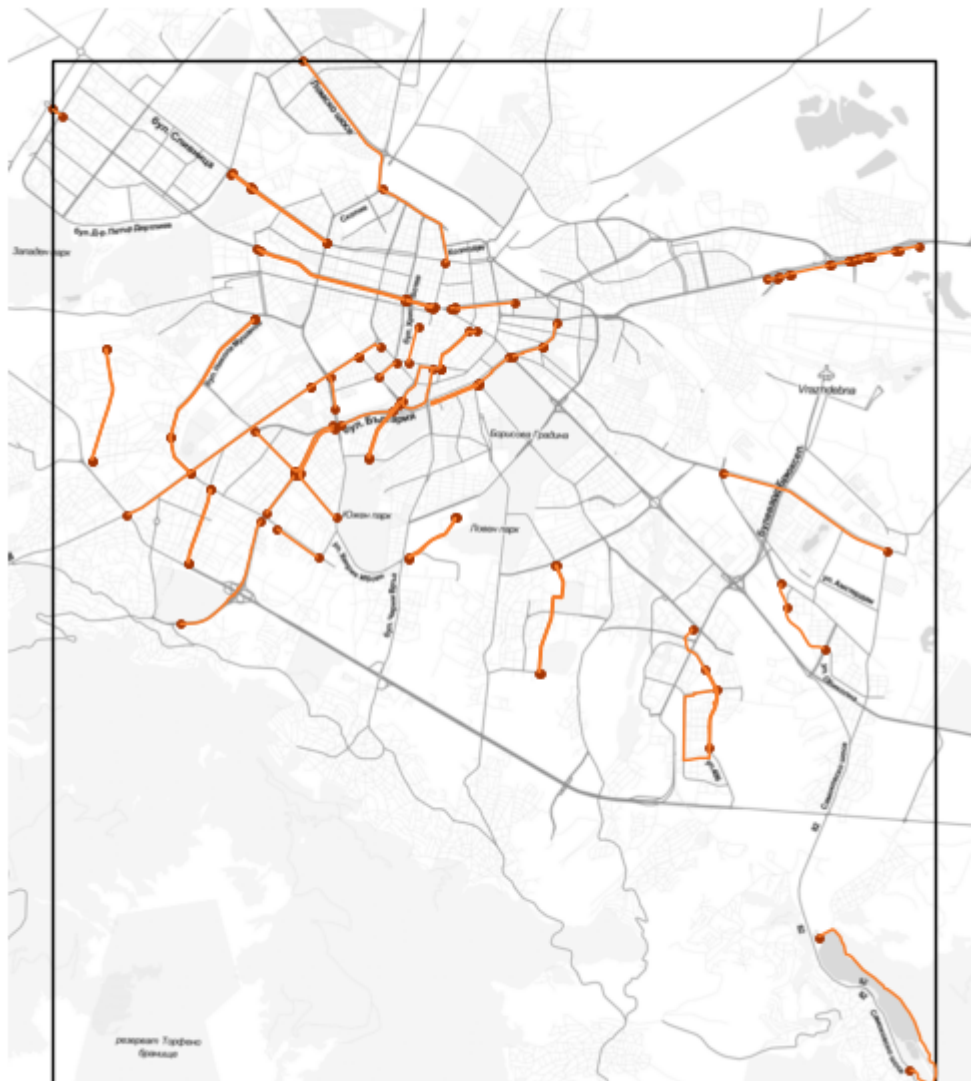
Using global settings for geometry type.

The length of the SofiaPlan network is 155.27 km.





Sofia, SofiaPlan network



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