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 159.16 km2.
```

Create analysis grid

```
The grid contains 1930 square cells with a side length of 300 m and an area of 0.09 km2.
This grid will be used for local (grid cell level) analysis:
```

Rosario study area (1930 grid cells, side length 300m)

(C) OpenStreetMap contributors (C) CARTO
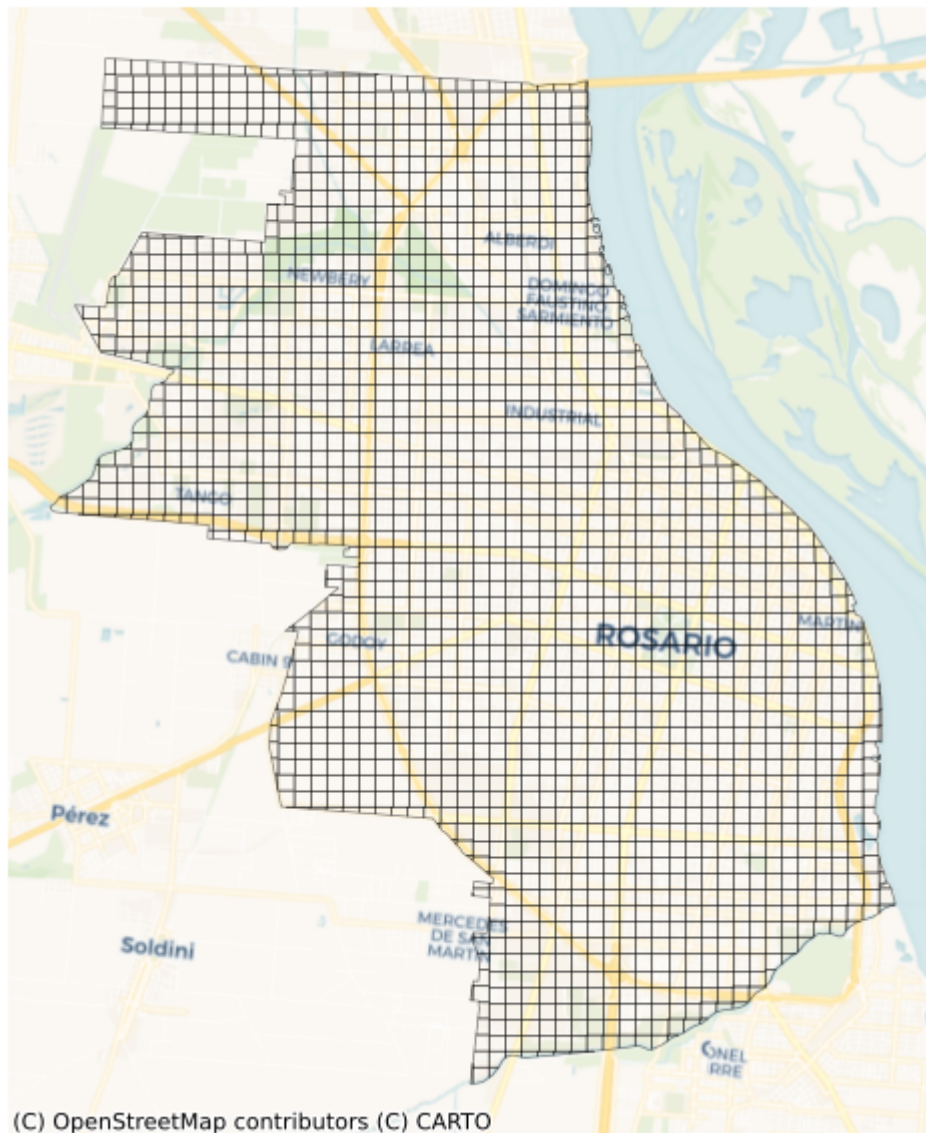
Load and preprocess reference data

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 EMR data covers an area of 96.31 km2.
```

```
Edges where the protection level is 'protected': 672 out of 1214 (55.35%)
Edges where the protection level is 'unprotected': 542 out of 1214 (44.65%)
```
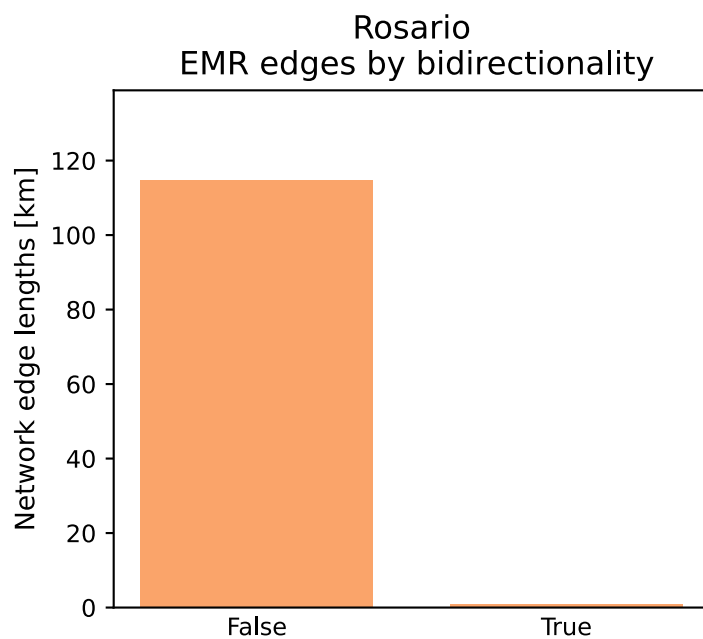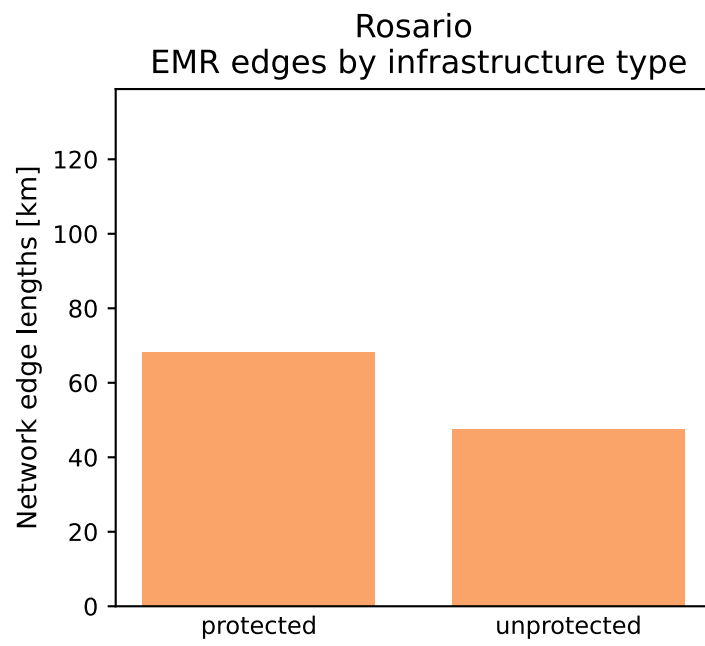
```
Edges where 'bicycle_bidirectional' is False: 1205 out of 1214 (99.26%)
Edges where 'bicycle_bidirectional' is True: 9 out of 1214 (0.74%)
```

```
Using global settings for geometry type.
```

```
The length of the EMR network is 116.71 km.
```

Rosario
EMR edges by infrastructure type

Rosario, EMR network

BIKEDNA