Poland’s approach to conducting General Traffic Census (GTC)
Road network segmentation practices

gov.pl/web/gddkia

25th April 2024

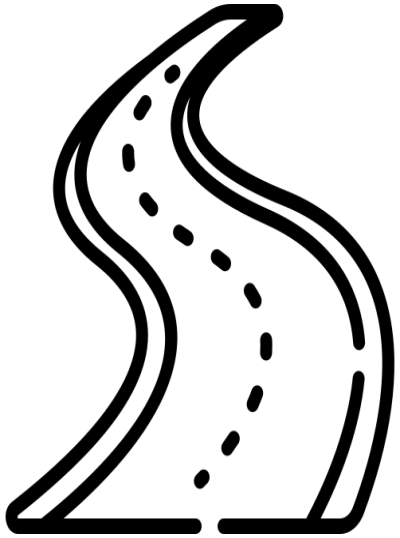
Division of road network in Poland

Road network	Lenght (km)
National roads - motorways - expressways	19 459,6 1802 3067
Voivodship roads	29 597,9
Poviat roads	124 211,5
Municipal roads	254 310,2
Total	**427 578,9**

Date: 31.12.2022

Map layer source: www.geoportal.gov.pl

Sources of traffic data for national roads



General Traffic Census (GTC / GPR)

Automatic Traffic Counting

Other traffic measurements *(short-time & ad-hoc)*

Traffic studies (e.g. surveys, ANPR, Big Data – FCD & Mobile phones)

GTC in Poland

Primary source of traffic data

Conducted **every 5 years**

Covers **national and voivodship road network**

Exemplary applications of GTC data:

- road planning and development
- road and adjacent infrastructure design process
- traffic management
- road maintenance
- environmental and economic analysis
- other needs of public and private entities

GTC in Poland

	National Roads
Lenght of the network	over 18.000 km
Survey technology	100% video recording or automatic counting
Counting sections	approx. 2350
Counting days	9 or 5 or 3
Duration of counting day	24 or 16 hrs
Months	January, March, May, July, August, October
Days of the week	Tuesday, Wednesday, Thursday, Sunday
Vehicle classification scheme	10 categories

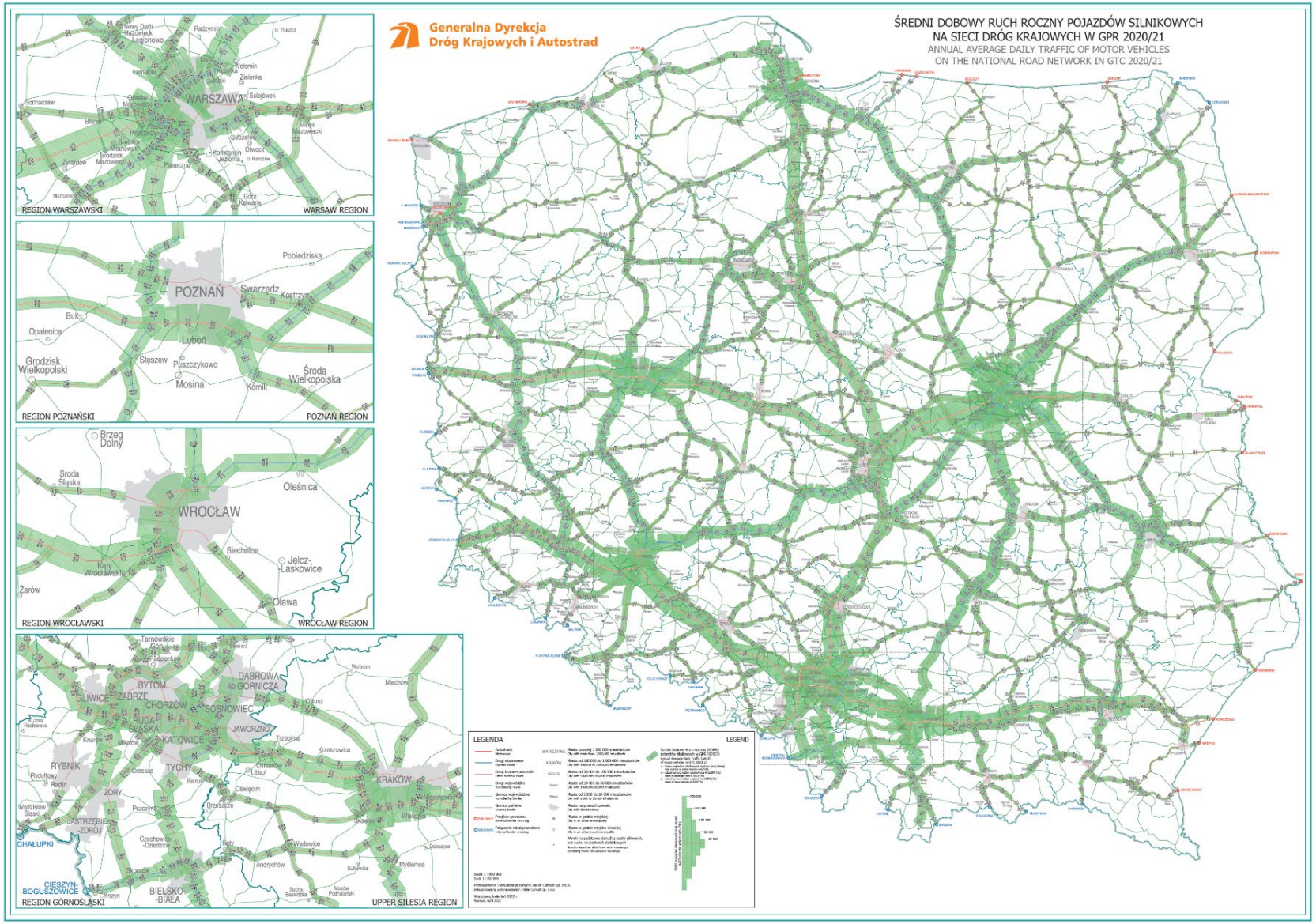
*postponed to October 2020 due to the COVID-19 pandemic and related lockdowns

GTC in Poland

Detailed verification of data obtained from video cameras

- GDPR regulations
- 5 minute recordings and forms
- GDDKiA-owned vehicles on recordings
- Analysis of hourly traffic data on dedicated maps

GTC in Poland



GTC in Poland

- Changes of traffic
- ADT in summer months
- Character of traffic
- Structure of vehicle categories
- Average traffic at day/ night, etc.

Types of traffic counting sections/ points

A – fully automatic counting

F – semi automatic counting

H – 9-day video counting

G – 5-day video counting

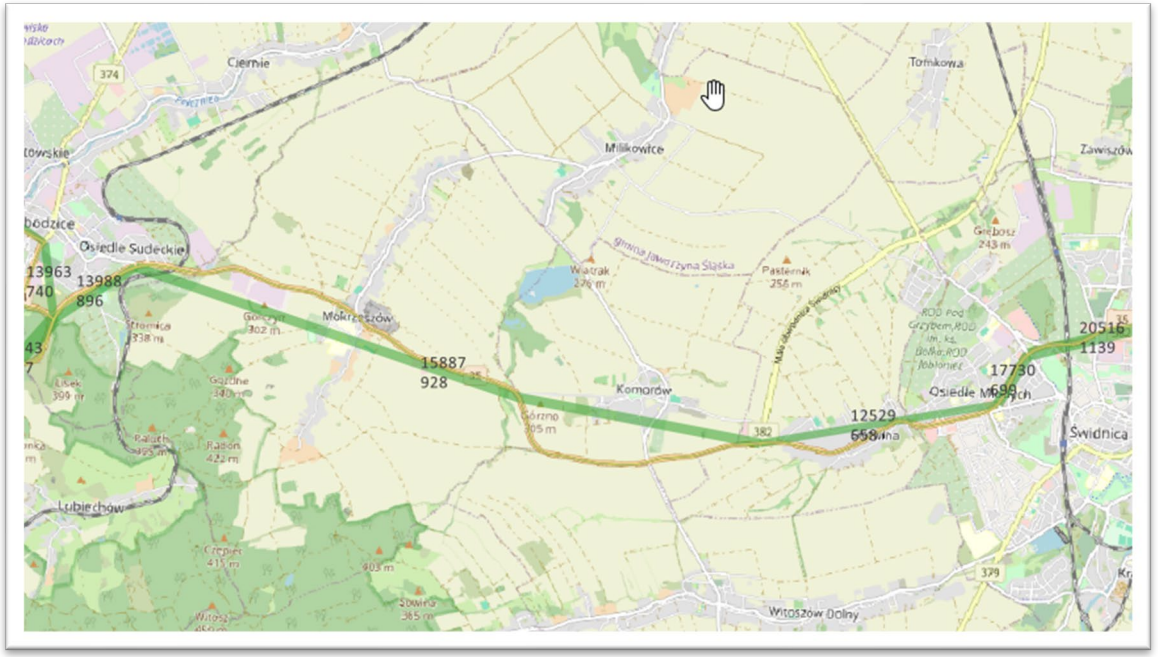
E – 3-day video counting

Road network segmentation practices

Basic criterion is the **uniformity of traffic volume** on a given road section.

It is met, if changes caused by incoming or outcoming traffic (at intersections with other roads) are less than 1000 veh./day

The lenght of counting section **should not exceed 30 km**



Map layer source: Open Street Map

Road network segmentation practices

Situations when it is possible to make changes in the road network division:

- the **construction of new sections** of roads
- **alterations in the routes of existing sections** of national and voivodship roads;
- optimization of the current road network division **to better represent the distribution of road traffic volume**;
- **division of an existing counting section** into multiple parts (e.g. due to a significant increase in traffic volume from a local road or other traffic-generating centre, etc.)
- **merging of counting sections**, especially when there has been no significant change in traffic volume in adjacent sections during the previous GTC.

Road network segmentation practices

Mandatory boundaries of counting sections:

- **intersections with national roads**
- **intersections with voivodship roads**, with AADT volume exceeding 1000 veh/day. Except, in cases where two such intersections are located on a national road within the distance less than 2km (boundary is placed at the intersection with the road with higher traffic volume)
- the **start/end of a given road**
- **borders of country** and **presidential cities**
- intersections with roads under construction

Road network segmentation practices

Exceptions:

- **intersections with other public roads**, that introduce significant traffic volume (above 1000 veh./day)
- **the boundaries of cities** (other than presidential), with a population **exceeding 10.000 inhabitants**; if counting sections are present or planned within these cities (described as „passages/ crossings" through cities)
- **other significant traffic generating or attracting locations** (large logistics centres, touristic or recreational attractions, large industrial plants, investment areas, large shopping centres, utilities)

NOTE: Counting section boundaries are not established at following locations:

- country's territorial/administrative units, including voivodeships, poviats, etc.,
- road cross-section changes from single carriageway to dual carriageway

Road network segmentation practices

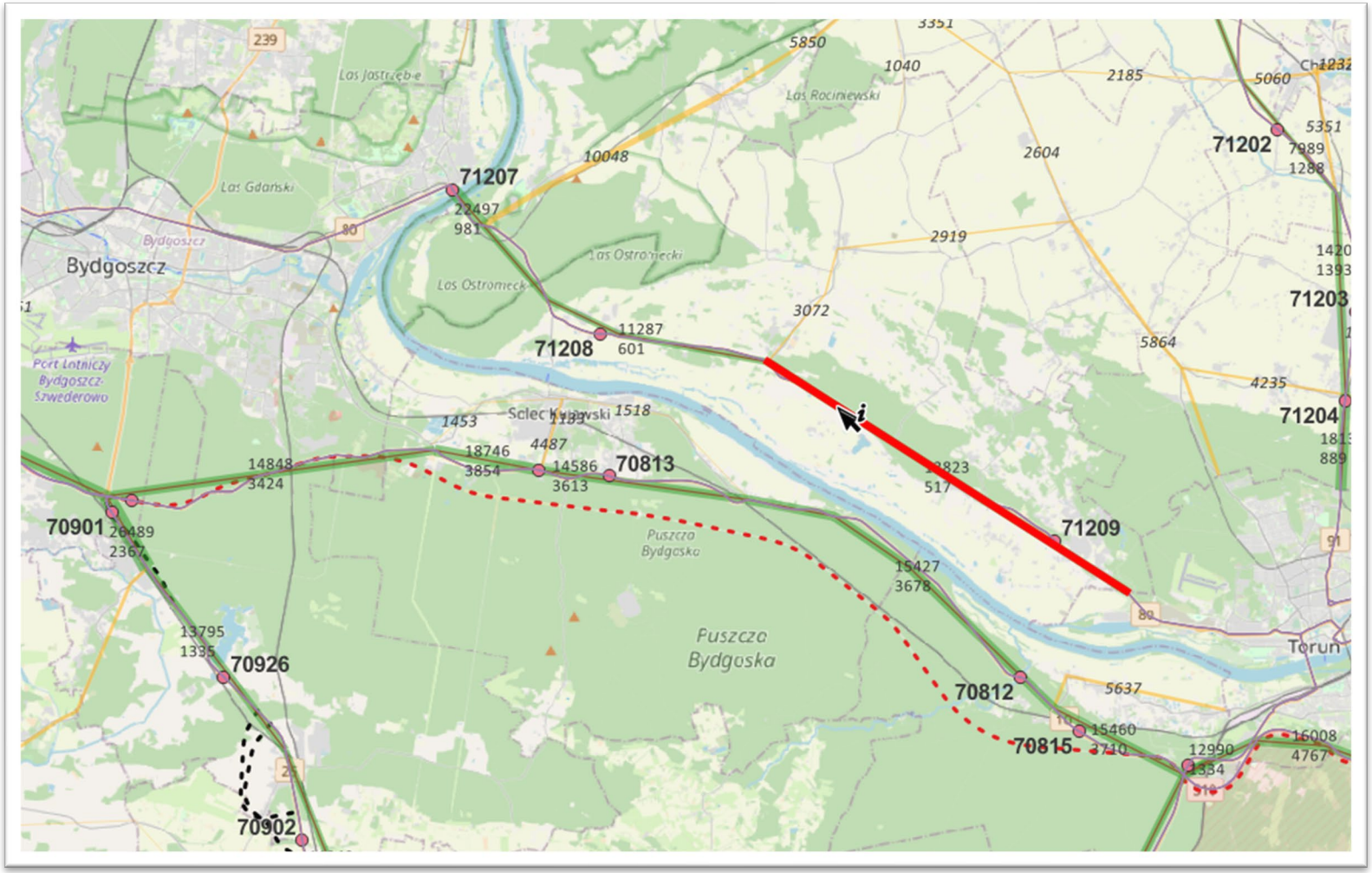
Sections at bypasses or crossing/passages through cities with population over 10.000 inhibitants

- Sections are divided if the estimated difference in AADT volume on them and on an adjacent road section exceeds 1.000 veh./day
- Due to substantial traffic volume fluctuations on short sections between intersections with city streets, counting point is placed at the location with the highest traffic volume
- Number of sections depends on the city size, layout of main roads, etc.

Map layer source: Open Street Map

Road network segmentation practices

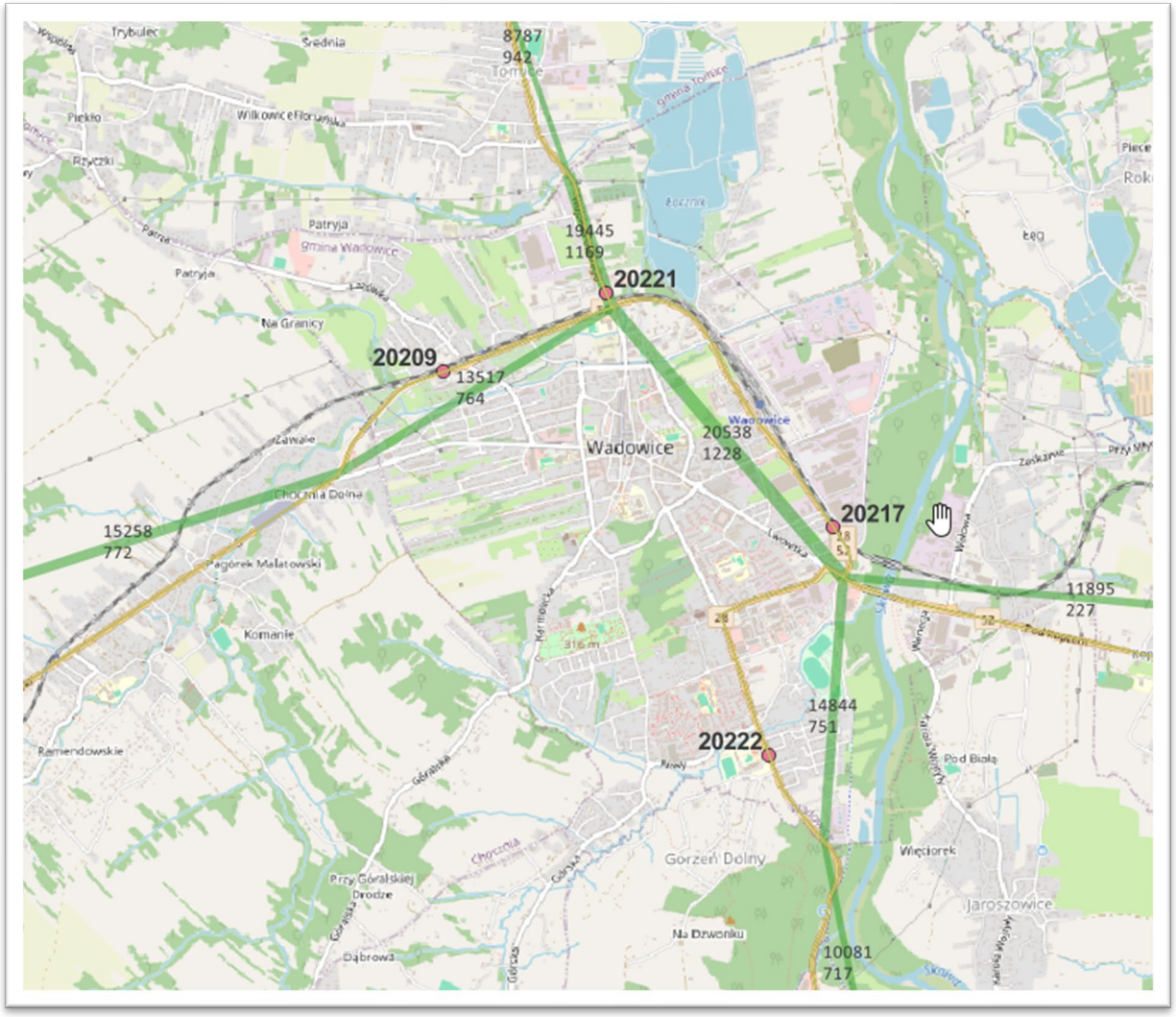
Example: counting sections between two large cities



Map layer source: Open Street Map

Road network segmentation practices

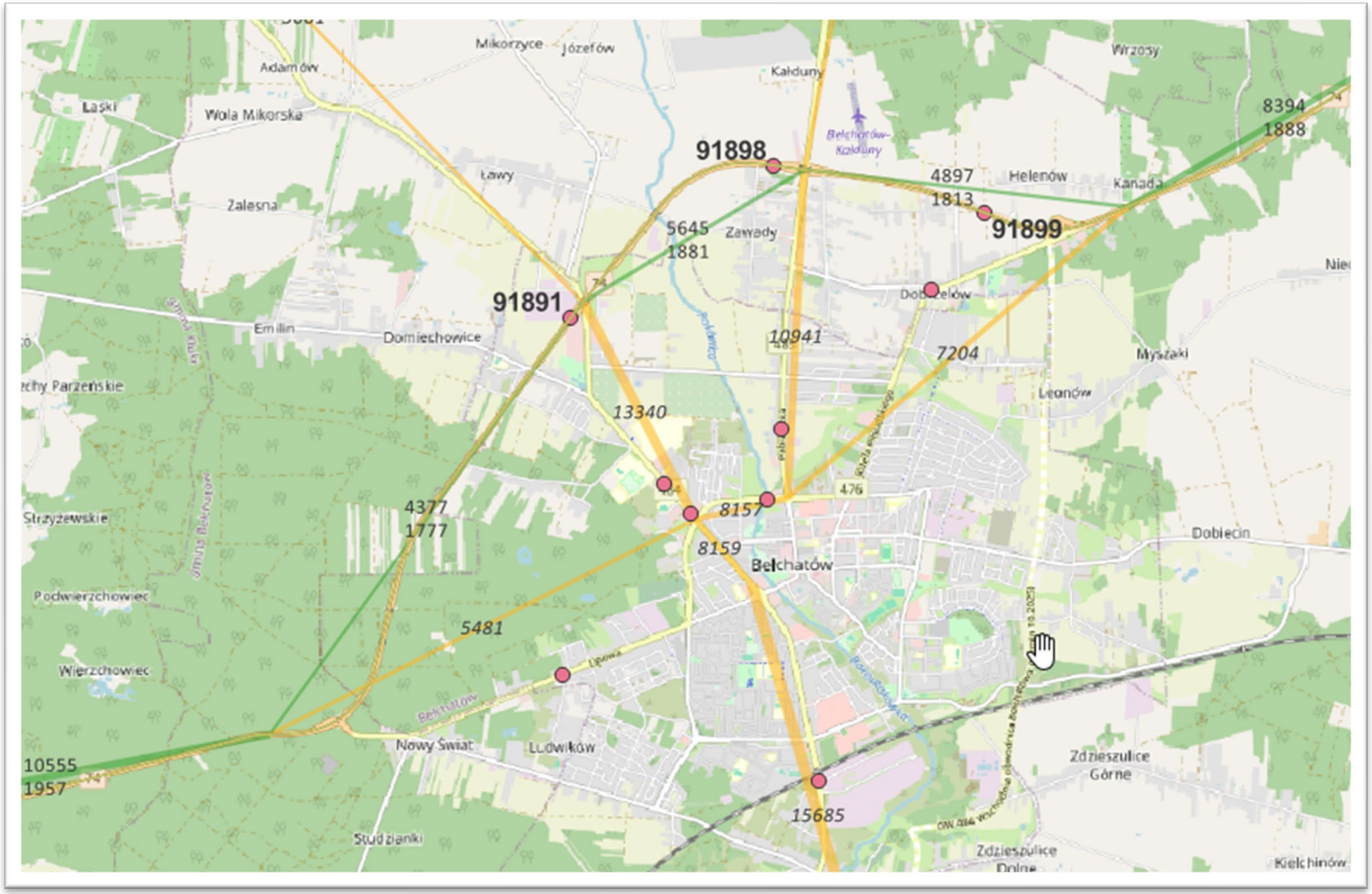
Example: counting sections marked as crossing/ passages through cities



Map layer source: Open Street Map

Road network segmentation practices

Example: counting sections on the bypass road and within the city



Map layer source: Open Street Map

Concluding remarks

- Described methodology is considered **optimal and represents the best compromise** between traffic census costs and the obtained results
- It allows for a **detailed division of the road network** and provides insights on fundamental traffic characteristic for each counting section.
- Collected data allows for the **calculation of detailed characteristics** and statistics **for the entire national road network**
- Provided data **facilitates the monitoring of traffic volume changes over the years** and enhances planning for new road investments, maintenance of existing roads, organization of roadside infrastructure during roadworks, support for private entities (fuel stations, charging points), implementation of safety measures and equipment, and more.

Thank you for your attention.

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