DELIMITATION OF PRAGUE METROPOLITAN AREA AND TYPOLOGY OF MUNICIPALITIES IN CENTRAL BOHEMIAN REGION

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DELIMITATION OF PRAGUE METROPOLITAN AREA

The delimitation of the Prague metropolitan area was a result of the city's application for the EU Integrated Territorial Investment (ITI) regional development instrument.

1 — Many approaches and inspirations

Metropolitan regions, metropolitan areas, functional urban regions and agglomerations are not uniformly defined in almost any country. In the professional sense, they are most often viewed as a statistical concept, defining the built-up areas of large core cities with the location of important economic, administrative and social functions. In the Czech environment, population density and population size were mainly used in settlement statistics (Areas of maximum population, Korčák, 1966). The method was further developed by Martin Hampl, with an emphasis on the economic strength of an area through quantifiable concentrations of jobs and commuting. (Hampl, Gardavský, Kühnl, 1987).

The development of mobile phones in society has made it possible to capture the mobility of people in a more accurate, comprehensive and up-to-date fashion than in previous studies based on population census data. Although the delimitation is based on the traditional concept of metropolitanisation of the Albertov School of Social Geography, different data has forced a redefinition of the approach and used indicators.
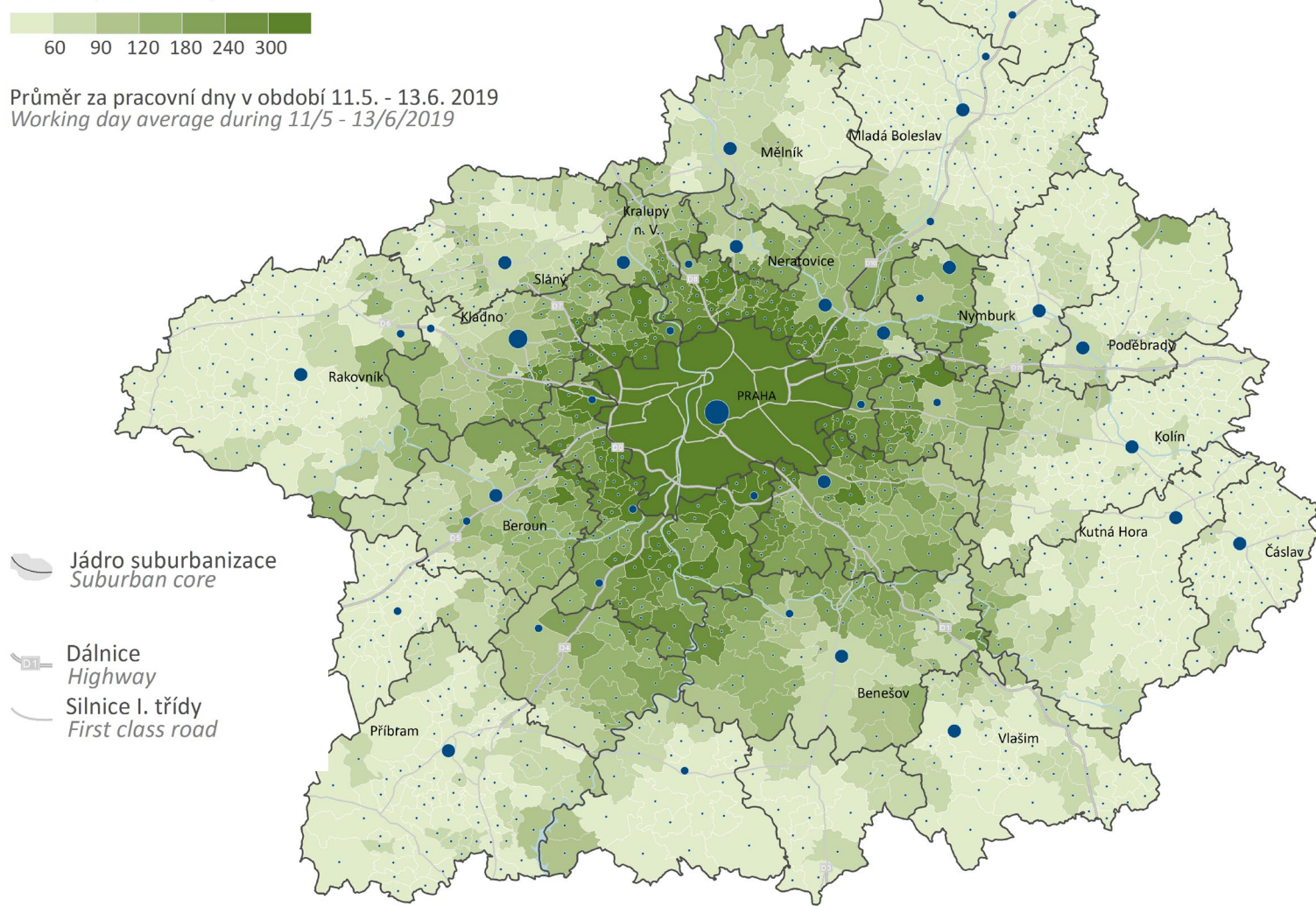
2 — Selection of relevant indicators

The methodological definition of the regions was based on the approach applied in the 2014–2020 programming period for the Prague metropolitan area (Ouředníček et al. 2014, 2018). The indicators were chosen so as to best cover the short-term (commuting) and long-term (migration) mobility of the population between the metropolis and its hinterland.

The following indicators were used
1. Time spent by villagers in the core
2. Territorial concentration of contacts of secondary nuclei
3. Zones of Suburbanisation (see poster Zones of Suburbanisation)

Average time spent in Prague by inhabitants of Central Bohemia during working day in 2019 (in minutes)

60 90 120 180 240 300

Průměr za pracovní dny v období 11/5 - 13/6. 2019
Working day average during 11/5 – 13/6/2019

Jádro suburbanizace / Suburban core
Dálnice / Highway
Silnice I. třídy / First class road

Time spent in Prague by residents of Central Bohemian municipalities in 2019

The average time spent by the inhabitants of the municipality in the core city shows the mutual complementarity of the residential, working and service functions and the division of labor between the settlements of metropolitan areas. Although we cannot distinguish between different types of daily activities in the available data, the higher time spent in regional centers indicates the internal functional interconnectedness of the metropolitan area. The indicator shows real mobility, including the effects of transport choice, travel, traffic restrictions, traffic congestion, weather or the non-routine activities of people.

Prague, Kladno, and their secondary cores

Ostatní obce / Other towns

Spatial contact concentration (mutual commuting volume per distance)

Working day average during 11/5 - 13/6/2019

Počet obyvatel 2019 (v tisících)
Number of inhabitants 2019 (in thousands)

Obvod obce s rozšířenou působností / Municipalities with extended powers
Obec / Municipalities
Dálnice / Highway
Silnice I. třídy / First class road

Spatil contact concentration in Central Bohemia 2019

The density of spatial contacts (DSC) shows the total two-way daily mobility between municipalities related to their distance. As the time spent indicator shows sufficient ties between municipalities and the core, the DSC was used to define tangential ties within the metropolitan region. Firstly, the secondary cores of Prague and Kladno with a DSC value higher than 50 were defined. Then the strength of the connection of other municipalities to these secondary cores was assessed. The resulting definition therefore takes into account the organic structure of ties in metropolitan areas, which is crucial to complex ITI projects.

3 — Synthesis of relevant indicators

The definition of metropolitan areas and agglomerations was based on the resulting coefficient of the municipality, which included all the methods described above. To be included in the metropolitan area, it was necessary to exceed the value of the coefficient 0.9 and, at the same time, to have a spatial connection to the rest of the metropolitan area. Subsequently, municipalities forming enclaves in the metropolitan area were also included in the metropolitan area.

Quantification of indicators used in the resulting coefficient

Zones of suburbanisation	Time spent
1. zone, core = 1 b.	More than 2 h = 1.5 b.
2. zone = 0.75 b.	1 – 2 h = 0.5 b.
3. zone = 0.5 b.	
4. zone = 0.25 b.	

Density of spatial contacts
Secondary core = 1 b.
Other municipalities = 0-1 b.
(depending on total ties to secondary cores and on secondary core ties to Prague and Kladno)

4 — Final delimitation

Prague metropolitan area 2014 and 2019 comparison

	Prague metropolitan area delimitation	
	2014	2019
Number of municipalities	515	491
Area (km²)	4 983	4 822
Number of inhabitants	1 999 732	2 123 173
Population density (inhab./ km²)	401	440

Prague metropolitan area as defined for the second programming period of the Integrated Territorial Investments 2019

Pražská metropolitní oblast / Prague metropolitan area
2019
2014

Výsledný koeficient / Resulting coefficient
0.1 0.51 0.9 1.5

Počet obyvatel 2019 (v tisících) / Number of inhabitants 2019 (in thousands)

Obvod obce s rozšířenou působností / Municipalities with extended powers
Obec / Municipalities

Metropolitan areas and agglomerations as defined for the second programming period of the Integrated Territorial Investments 2020 in the Czechia

Statutární město / Statutory City
Hranice obce / Municipality border
Hranice ORP / Municipality with extended powers border
Hranice kraje / Region border

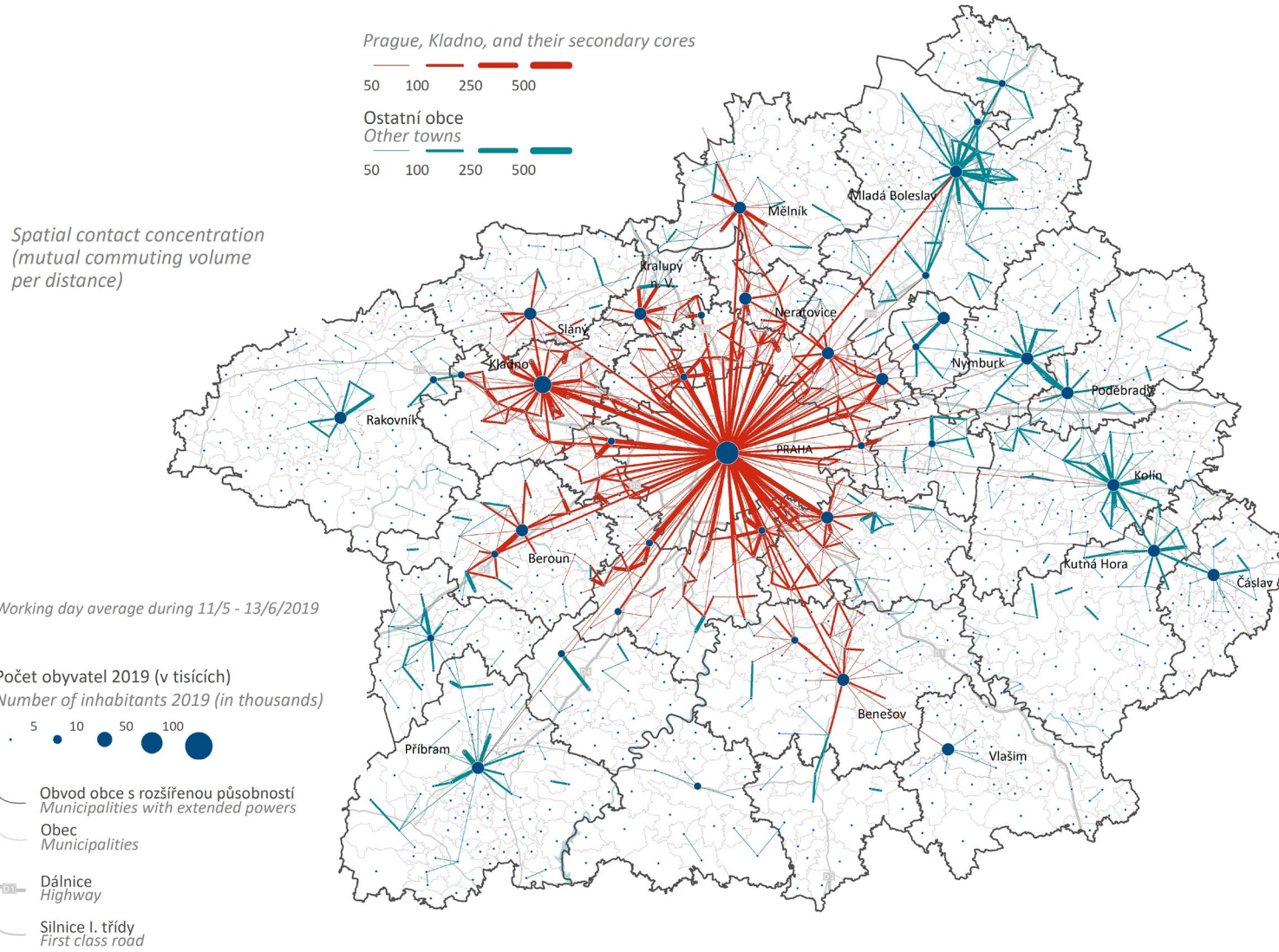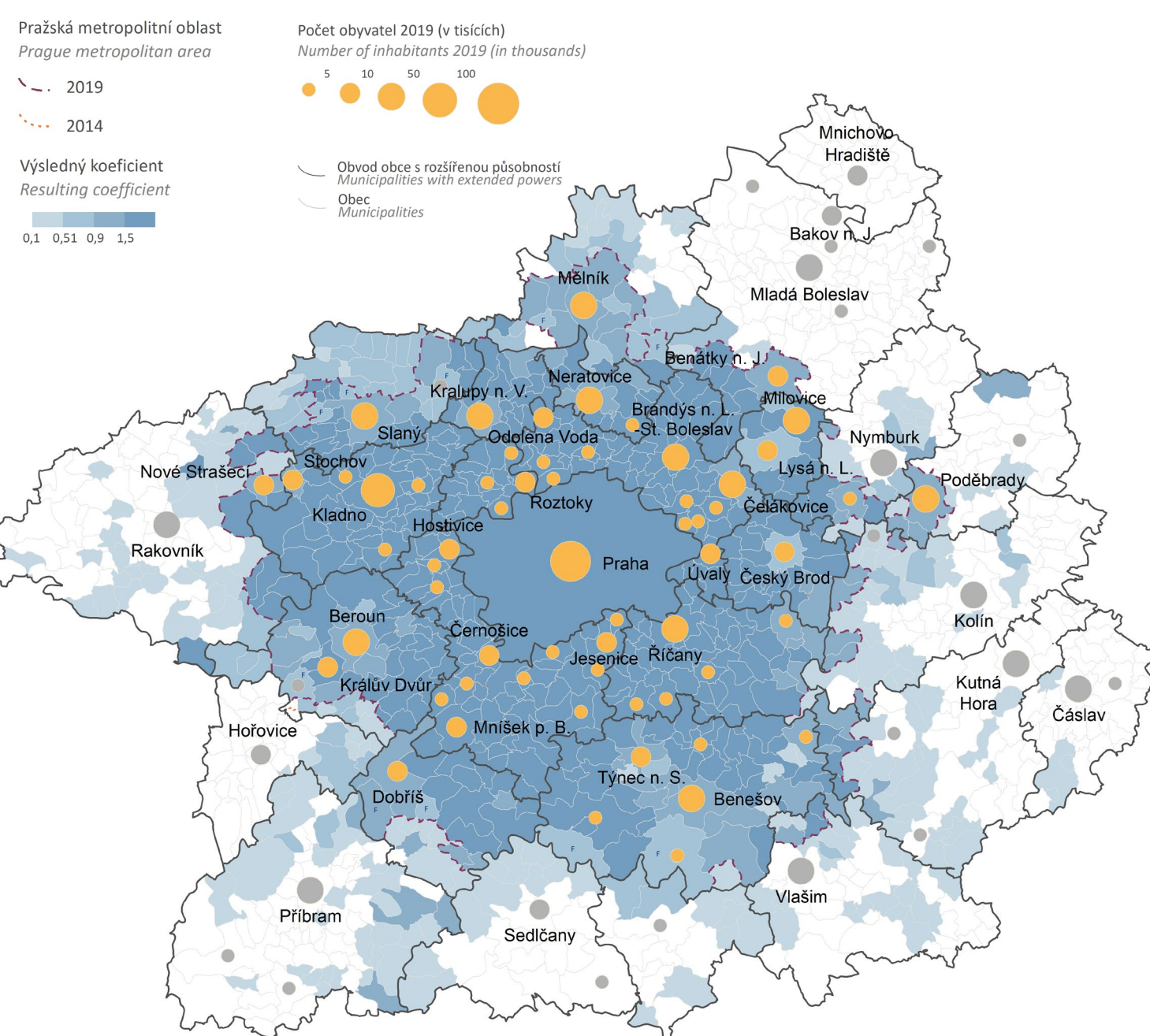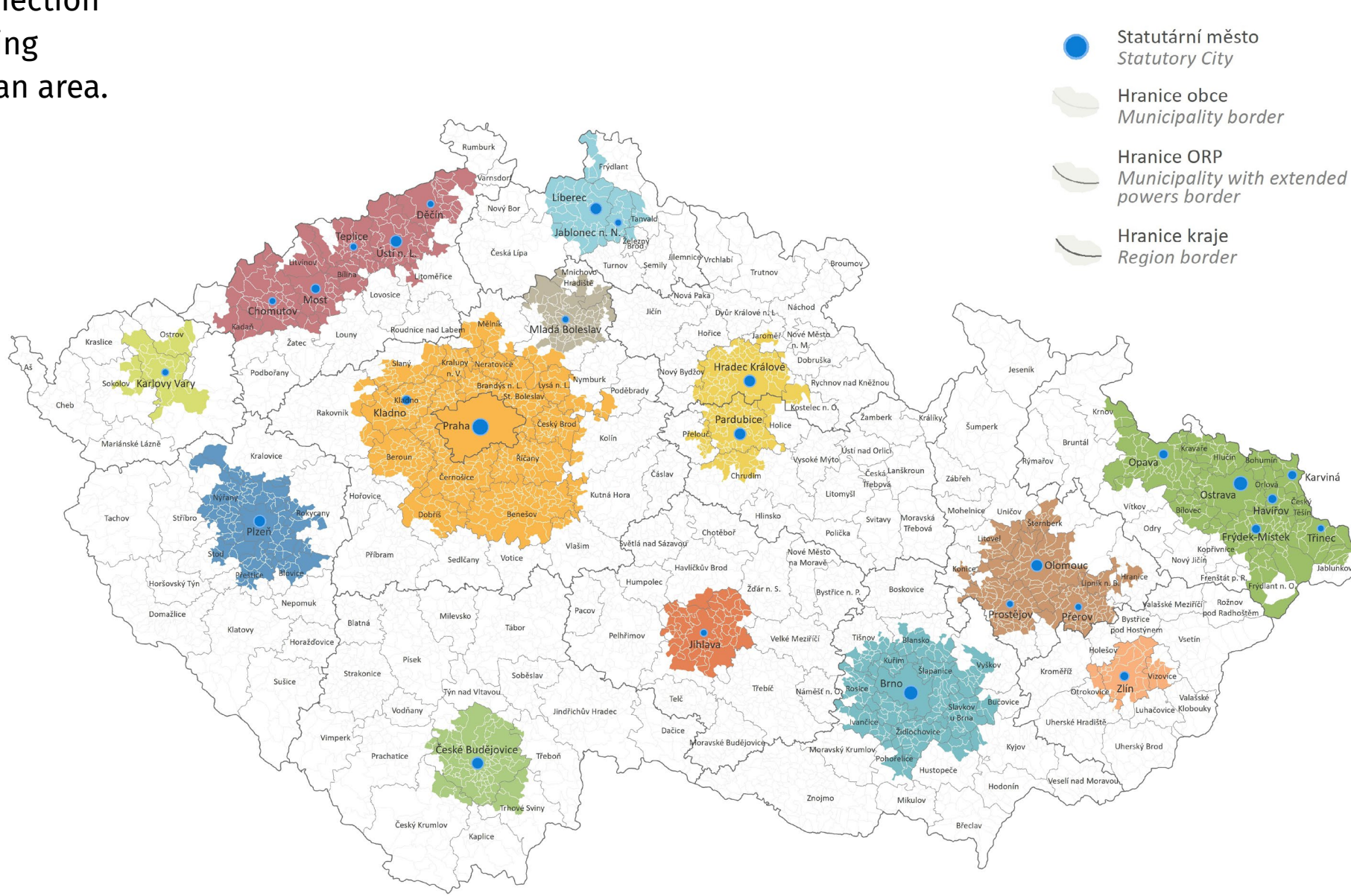## TYPOLOGY OF MUNICIPALITIES IN CENTRAL BOHEMIA REGION

The typology of municipalities in the Central Bohemian Region was created for the needs of the Technology Agency of the Czech Republic's project 'Real Populations in Prague and the Central Bohemian Region: Monitoring of Daily Mobility and Population Forecast'. Within the typology, emphasis was placed on simplicity due to further usability and the possibility of a clear comparison in other thematic areas, such as migration, natural change, present population, occurrence of foreigners or age structure. All 1 125 municipalities in the Central Bohemian Region and Prague entered the typology, and each municipality is included in just one of four types.

The basis for the typology is the most important process takingplace in the hinterland of all cities in the Czechia, namely suburbanisation. At the same time, the process of residential suburbanisation significantly interferes with the transformation of the social and physical environment of the Czech countryside. **Suburbs** were identified according to the method of delimiting suburbanisation zones based on the volume tyf housing construction and migration from core cities (Ouředníček, Špačková, Novák 2014). The majority of suburbs (84%) were caused by significant migration of inhabitants from Prague.

The second category of municipalities is also associated with the delimitation of suburbs. These are the **cores of residential suburbanisation**. They are characterised by a population higher than 10 000 and the fact that it is not a suburb of a larger city.

The remaining two types are rural municipalities that are not intensively affected by suburbanisation. Rural municipalities were divided according to their overall population dynamics. Compared to **"rural municipalities with population loss or stagnation"**, **"rural municipalities with population gain"** are characterised by a positive value in the gross rate of total growth higher than 5%. The reason is an effort to set aside municipalities with significant growth but that do not have a strong influence on urban suburbinisation, defining population development suburbs and other rather loss-making peripheries in the well-established division of the Central Bohemian Region.

Basic characteristics of municipality types in the Central Bohemian Region (2020)

Type	Number of municipalities		Area (km²)		Number of population		Population density (inhab./km²)
Suburban cores (municipalities with more than 10 000 inhabitants)	17	1.5%	984.3	8.6%	1 696 996	62.6%	1 724
Suburbs	460	40.2%	4 324.9	37.9%	669 201	24.7%	154.7
Rural municipalities with population gain	358	31.3%	2 646.9	23.2%	151 236	5.6%	57.1
Rural municipalities with population loss or stagnation	310	27.1%	3 468.4	30.4%	191 914	7.1%	55.3
Central Bohemia - total	1 145	100%	11 424.5	100%	2 709 347	100%	237.2

Basic demographic characteristics of municipality types in the Central Bohemian Region (2000–2019)

Type	Net natural increase rate (‰)	Net migration rate (‰)	Net population increase rate (‰)
Suburban cores (municipalities with more than 10 000 inhabitants)	0.46	5.03	5.49
Suburbs	2.40	19.54	21.94
Rural municipalities with population gain	0.00	11.20	11.20
Rural municipalities with population loss or stagnation	-2.59	3.58	0.99
Central Bohemia - total	0.63	8.40	9.02

Suburban cores
Suburbs
Rural municipalities with population gain
Rural municipalities with population loss or stagnation

Municipality with more than 10 000 inhabitants
Municipality border
Highway
First class road