Population development and social structure of the population of Prague in the context of European cities

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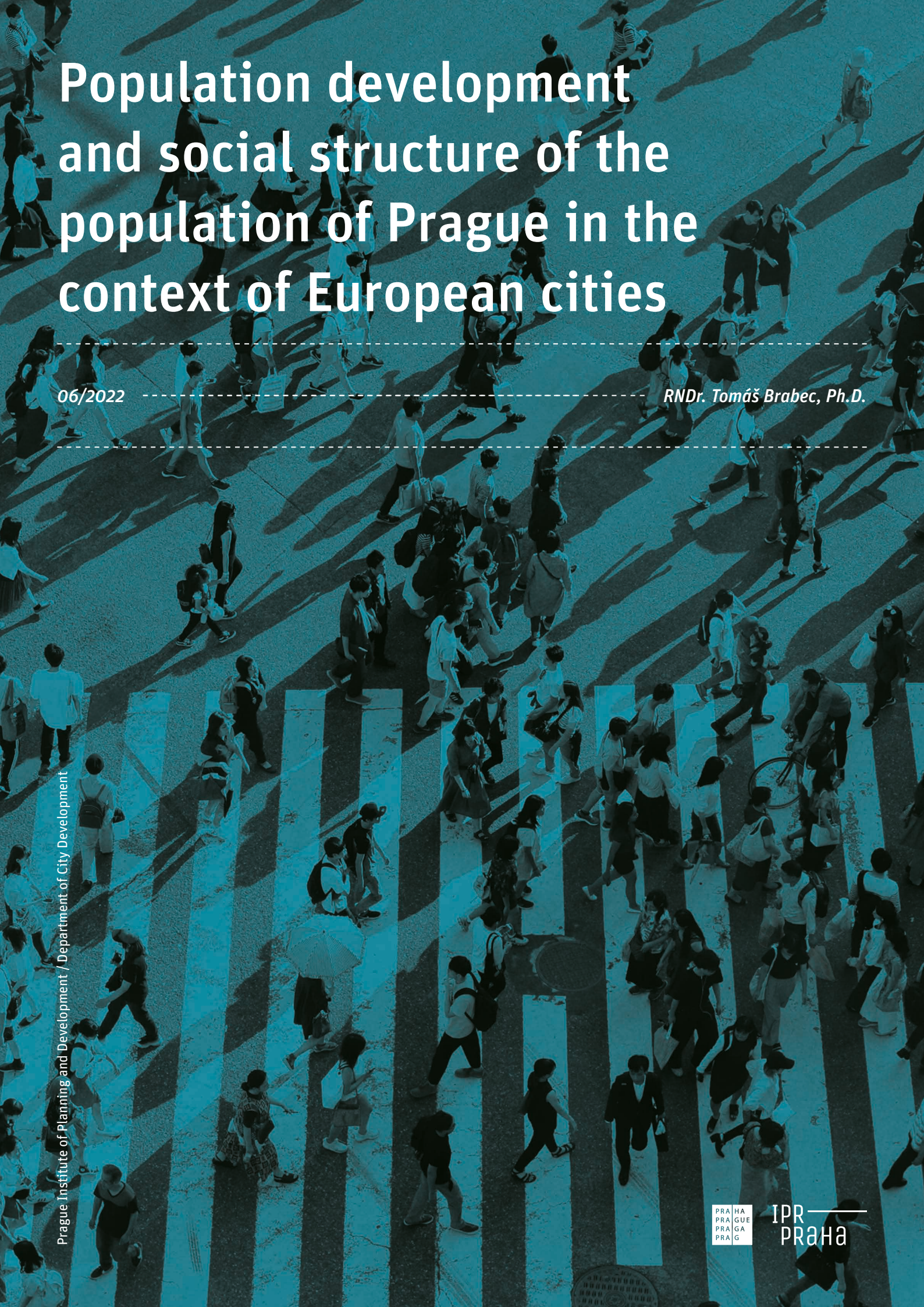

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EXECUTIVE SUMMARY

European cities go through phases of dynamic population growth, alternating with population decline or stagnation, followed again by growth. Today, the populations of most European cities are increasing, but the growth rate is lower than in the classical (industrial) urbanization period. Yet in some cities, such as Munich and Vienna, population growth is actually higher today. However, the populations of many European cities are also stagnating or declining.

The main determinant of population development in European cities since 1990 has been the ability to create new well-paid jobs and quality urban environments that attract new residents, both from within the country but especially from abroad. Therefore, population growth is mainly seen in affluent cities in Northern and Western Europe, followed by cities in Southern Europe (mainly Spain) with a favorable climate and low cost of living. On the other hand, populations are declining in cities in south-eastern Europe and the Baltic states, where there is marked emigration to richer European countries and a relatively lower birth rate.

The population of Prague has been growing for a long time, but our capital city also went through a phase of population decline in the 1990s. Prague's population development is strongly influenced by economic development and the creation of new job opportunities. The most dynamic population growth in Prague was between 2003 and 2009 and 2014 and 2019, i.e. during periods of strong economic growth. However, housing construction and changes in reproductive behavior also have impacts. In the context of European cities, Prague's population growth has been above average in recent years. It is one of the most dynamic of all former Eastern Bloc cities, and higher than many Western European cities. It is, however, lower than in the global cities of Paris and London or other wealthier cities such as Zurich, Munich and Stockholm.

The dynamics of population growth interact with the social structure of urban populations. Growing cities generally have a lower average population age, a higher proportion of foreigners and people with higher education, and a lower proportion of unemployed people.

In Prague, as in most European cities, there is demographic ageing, primarily caused by improving mortality rates. However, thanks to the immigration of young people, the ageing dynamic in Prague and other cities with growing populations is slower than for the country as a whole. Overall, Prague has an average age composition in the context of European cities. Prague has a younger population than, for example, German cities, but older than Paris, Vienna and Bratislava.

Prague's population growth in recent years has mainly been thanks to foreign migration. Without foreign immigration, the total population of the capital would be declining or stagnant. Despite a large increase in recent years, the proportion of foreigners in the total population of Prague is still only slightly above average in the European context. It is still lower than in Western European capitals such as Zurich, Vienna, Munich and London, where the proportion of foreigners is up to twice as high. However, Prague is unequivocally the most attractive city for foreign immigrants compared to other metropolises and smaller cities in the former Eastern Bloc.

In Prague, as in most European cities, the number of people with higher education is increasing, income is increasing, and the average household size is decreasing. In terms of socio-economic structure, Prague is an average city in the European context. The only exception is the very low proportion of unemployed people.

1. INTRODUCTION

Today's cities face many challenges to which they must respond. One of the key challenges is population growth, which results in increasing demands on transport and public infrastructure and worsening housing affordability. Urban population growth is often presented (especially in the media) as a given over the long term, and something we must necessarily continue to take it into account. There is much less talk about the fact that population growth is not continuous, and cities go through periods of stagnation and decline. There is also not much talk about the changing social structure of the population, i.e. who is the driving force behind the population growth of today's cities.

This analysis focuses on the population development and social structure of Prague in the context of other European cities. In assessing the population development of cities, we are dependent on the quality of the statistical data available. Moreover, international comparisons are problematic due to differing definitions of city boundaries and changes in them over time, and different dates for available data (e.g. as censuses are conducted in different years). When monitoring long-term population development in cities, we will primarily rely on the rich Urban Audit database from Eurostat, which contains selected information for more than 1 000 European cities. Some parts of this study have already been published and build on previous work [Brabec, 2015; 2019a; 2019b; Brabec & Němec 2016; IPR Praha, 2020b].[1] However, previous studies lacked comparisons of Prague with other European cities.[2]

The study is divided into five main chapters. In the first, apart from the general introduction, we also address the methodology, meaning primarily the data sources and the problem of defining the city boundaries. It is also important for such assessment to briefly describe the conceptual background and the broader context of urban transformation, and the factors that influence their current structures. We focus on the reasons and stages of urban population development and on the current (post-industrial) processes that strongly influence the shape of today's cities.

The next chapter focuses on an assessment of the long-term population development of Prague in the context of selected European cities, with greater focus on the development over the last 30 years. There is always a more detailed assessment for Prague as a whole first, followed by other European cities. We use official statistical data from the Czech Statistical Office (CZSO) and Eurostat. Since a comparison of population development in cities is problematic due to differing administrative boundaries, we also focus on an assessment of the development for functional urban regions, i.e. for the city including its wider (connected) surroundings.

The third chapter focuses on an assessment of the social structure of the population, once again for Prague as a whole and then for other

1 —— This is continuous work by the IPR, where it is necessary to maintain a long-term overview of the demographic development of Prague. The database of demographic data is continuously updated at the Portal of Planning Analytical Materials of the City of Prague (ÚAP) in the Catalogue of Indicators and Metrics application (https://uap.iprpraha.cz/#/katalog-indikatoru-a-metrik/m.0300.01.001) with comments in the book 300 (https://uap.iprpraha.cz/#/texty/315718/315843).

2 —— TThere is a partial comparison between the population of Prague and those of other cities in the ÚAP in the book 050 Metropolis and Region [IPR Praha, 2020a]. In this book, available at the ÚAP Portal (https://uap.iprpraha.cz/#/texty/313337/313338), there are also comparisons between Prague and other selected cities addressing other thematic areas such as economic development and tourism. There is also a comparison between Prague and some other European cities in terms of quality of life and population satisfaction in the study Satisfaction and Quality of Life of Prague Residents: Population Survey Results [Brabec et al., 2021].

selected European cities. The Urban Audit dataset contains a large amount of information on age composition, number of foreigners, and various socio-economic indicators (e.g. unemployment rate, income, household size). Unfortunately, such data are not available for every year, so we use average values for 2009 to 2018 for the assessment.

Chapter four examines the relationship and associations between population trends and social structure for the variables of interest for all European cities with available datasets. Quantitative statistical methods are also used for the assessment. The last chapter summarises the main conclusions of the study.

The study was carried out at a time that was not very simple and stable for assessing population development and social structure. The first version of the study was completed at a time when a state of emergency was declared in the Czech Republic due to the risks presented by COVID-19. This was an unprecedented situation, the long-term consequences of which are still difficult to estimate, as the global pandemic had not ended by the first quarter of 2022. The study was updated during the war in nearby Ukraine, the primary consequence of which is the influx of large numbers of war refugees into the Czech Republic. Most European countries also conducted censuses in 2020 or 2021. Censuses usually correct and adjust population records, which can result in significant changes in the total population (usually a decrease in the total population, even though positive migration and natural increases are recorded in the period). This results in poorer comparability across years (→ chap. 1.2). It is also for such reasons that we perform the assessment as averages over longer periods of time. We also expect to update the study again in the future, at a time when it will be clear how the above uncertainties have manifested themselves.

TECHNICAL TERMS

the second demographic transition
changes in demographic behavior that began in the 1960s in Western European countries and which had significant consequences for population development and the social structure of the population (in particular, a significant decline in fertility rates and an increase in the average age of mothers)

Gini coefficient
an income inequality indicator that captures the situation between perfect income equality (a coefficient value of 0) and perfect income inequality (a coefficient value of 1)

gentrification
the process of the gradual physical regeneration of relatively neglected inner city locations, leading to social renewal, where a location of relatively lower social status becomes a place where high-income residents live

crude rate (birth/death/migration balance)
the number of a given demographic event in a calendar year (number of births, deaths, immigrants or emigrants) per 1 000 inhabitants in that year (as of 1 July)

economic burden index
reflects the proportion of older and younger age groups per 100 working-age residents; in the case of this study, how many residents aged 65 and over and 19 and under per 100 residents aged 20 to 64

age index
expresses the proportion of residents from older age groups per 100 children; in the case of this study, how many residents aged 65 and over per 100 children aged under 15

infant mortality
number of deaths of children under one year of age per 1 000 live births in a given calendar year

migration balance
the difference between the number of immigrants and emigrants in a given calendar year

life expectancy
the model age to which a newly born person should live, given the mortality rates over the period of interest

natural increase
a statistic indicating the difference between the number of live births and the number of deaths in a given area during a given period

Spearman's rank correlation coefficient
a measure of the non-linear correlation (statistical relationship) between two data sets, taking values between -1 and 1, where the distance from 0 in absolute value indicates the strength of the correlation and the sign indicates the direction of the correlation

suburbanization
a process whereby the hinterland of a city (both population and commercial) grows faster than the city itself, with the main source of growth generally being the shift of population and commercial activity from the city to the hinterland

total fertility rate
a demographic indicator expressing the hypothetical average number of children per woman aged 15 to 49, assuming that fertility rates are maintained throughout the woman's reproductive life

ABBREVIATIONS USED

CZSO	Czech Statistical Office
EU	European Union
EU-SILC	European Union – Statistics on Income and Living Conditions
FUR	functional urban region
IPR	Prague Institute of Planning and Development
n	number of cities surveyed
GDR	German Democratic Republic
CPHF	Census of Population, Houses and Flats
ÚAP	Planning Analytical Materials of the City of Prague

HOW TO READ THIS DOCUMENT

Population development and social structure of the population of Prague in the context of European cities contains a text section and graphical image appendices. The text part contains three main chapters and 15 sub-chapters (including a sub-chapter describing important connections).

Technical terminology and abbreviations

At the beginning of the document in section 1. Introduction contains definitions of **technical terms** and a list of **abbreviations used**.

In the text, the first occurrences of the terms are indicated graphically: technical term.

Image attachments

The document contains visual annexes, mainly graphs but also map diagrams and tables. The image attachments have titles, author, year of creation, and the source data and their dating or source. In selected charts, interesting or significant information may be marked with a different color.

The image appendices are numbered within the relevant unit in the text. The annexes are listed in Chapter 7. Theannexes and their numbering correspond to their position in the document sequence.

In the book, references are marked graphically: (→ Fig. 2.3.1) (→ Annex P.01).

Expert resources

The APA citation system is used for cited and referenced expert sources such as books, studies, expert articles, datasets and strategic documents.

Within the text section, referenced materials are indicated in parentheses: [Brabec, 2019a; Sýkora, 2000]. A list of all referenced material in the document is provided at the end of the document in Chapter 6. Indexes and lists under Cited Sources.

Related text section

Chapters and sub-chapters within the document may be related and complementary. The reference to a part of the text (sub-chapter) within the document is indicated by the relevant number: (→ Chap. 1.2).

1.1 Methodology and data sources

The paper is based on two primary data sources. The first is official data from the Czech Statistical Office (CZSO) published on the website www.czso.cz, and the second is Eurostat's rich Urban Audit database(ec.europa.eu/eurostat/web/cities/data/database). Additionally and only in Chap. 2.2 information on the long-term population is taken from the individual national statistical offices, or (in exceptional cases) we use the Internet-based Wikipedia encyclopedia. While we use data from the CZSO in the assessment of Prague (→ Chap. 2.1, 2.2, 2.3, 3.1, 3.3, 3.5), as well as the Urban Audit database for assessing population development and social structure in European cities and functional urban regions (→ Chap. 2.1, 2.4, 2.5, 3.2, 3.5, 3.6). Thus, even in the chapter devoted to the comparison between Prague and other European cities, we use the population of Prague as reported by Eurostat for the sake of comparability of methodology.[3]

The population of Prague is based on two data sources from the CZSO. These are the results of all censuses and the results of the current population registers. The Census of Population, Houses and Dwellings (CPHF) is carried out once every 10 years, and the results from the current records (balances) are published annually (or quarterly). The population figures from the balances are based on the permanent resident population of the given area (the baseline is given by the CPHF result), to which the numbers of births and immigrants are added each year, and conversely the numbers of deaths and emigrations are subtracted. The balances therefore refer to permanent residents. The CPHFs in 2011 and 2021 also collected the number of usual residents, i.e. those who actually live in a given place even if they do not have permanent residence there. The population figures for Prague in the CPHF and the balances are therefore slightly different.

The CZSO population register has its shortcomings and methodological changes are being made. In particular, the records do not capture people without permanent residence in Prague. Of course, illegally staying foreigners are also not counted (the exact number of these cannot be ascertained). The population is always corrected using census results, showing that the average records are not entirely accurate. Of course, various changes in the definition of resident, meaning which people are included in the official population of the Czech Republic, also have an impact. There was, for example, a change in 2001, since when foreigners with long-term visas (over 90 days) and long-term residence permits are also counted in the population statistics. This methodological change has led to a strengthening of the importance of foreign migrants in the total population. However, the official data recorded by the CZSO are still the most credible and reliable of all estimates.

3 ——— The Urban Audit database gives the populations of the cities in question as of 1 January of the given year. However, the population of Prague is as of 31 December of the given year. It is not clear whether this is an error on Eurostat's part or whether it is deliberate.

The CZSO data also provide information on the social structure of Prague's population. The age composition is monitored across the board and is based on population balances. The numbers of foreigners in the Czech Republic are recorded and provided by the Directorate of the Foreigners' Police Service of the Ministry of the Interior of the Czech Republic, which passes the data on to the CZSO, which publishes them and includes them in the population register (balance). Socio-economic characteristics such as household income and educational composition are based on the **Living Conditions (EU-SILC)** and Labor Force Surveys, which are also guaranteed and published by the CZSO.

In assessing the population development and social structure of European cities since 1990, Eurostat, specifically the Urban Audit database, is a cohesive source. This database also defines the hinterlands for a number of European cities. We can therefore compare the population development of entire functional urban regions (FURs). Population counts for more than 1 000 European cities are available here. Unfortunately, they are not available for all years. Some cities even have only one or two data points for the whole monitored period. In total, we are able to assess development for 226 cities, including most of the major and important cities. There is a problem, however, in the changes in the demarcation of the administrative boundaries of cities, resulting in population jumps in short periods of time (this applies mainly to French and Dutch cities).

The availability of good quality data is generally problematic when analysing social structure. The Urban Audit dataset contains a wealth of information on age composition, numbers of foreigners, and a variety of socio-economic indicators. However, the frequent unavailability of data is a problem. We have no information at all for about 10% of cities. Data availability depends on the given variable, and we will work with those where the dataset is most complete. The completeness of data for a given year is even worse. We are practically unable to analyse developments since 1990. Availability is not ideal even in recent years, as for many cities the most up-to-date information is from national censuses that took place around 2011. Many other cities only have data for recent years. We therefore base our analysis on the average value over the last 10 years, respectively between 2009 and 2018.

In this study, we work with simple demographic analysis tools such as crude measures or indices (e.g., the economic burden index). The correlation analysis method was used to find correlations between population development and social structure, specifically Spearman's rank correlation coefficient (→ Chap. 4.1).

DEFINITION OF 'CITY'

Delineating city boundaries is one of the long-standing tasks of regionalization, mainly carried out by social geographers [Hampl, Gardavský, & Kühnl, 1987; Ouředníček, 2014], although it is a crucial interdisciplinary topic [IPR Prague, 2020a], and the answer is not simple and unambiguous. **It is a generally well-known fact that the administrative boundaries of a city are insufficient in this case and the functional (organic) delineation of the city is much broader.** People living in the administratively defined hinterland of a city, i.e. beyond its borders, often commute to the city for work or services and can therefore be considered de facto residents of the city.[4]

The administrative boundaries of the cities themselves are also differently defined. **Some cities are very narrowly defined in relation to their functional hinterland** (e.g. Paris, Stockholm, Athens), while **some are more broadly defined** (e.g. Prague). This is, of course, a **problem for international comparisons**, as data for individual cities are available mainly according to their administrative boundaries.

It would therefore be better to conduct analyses for entire urban agglomerations or entire functional urban regions (FURs). The problem is the temporal and spatial inconsistency of the FUR definition. Eurostat's Urban Audit publication uses a uniform methodology of definition, where the FUR is composed of the city itself and the hinterland, which includes municipalities close to the city from which more than 15% of the employed commute to the core (city) of the FUR for work. The advantage of this publication is the possibility to compare different cities. The unavailability of data is a problem, and is of course even worse here than for individual cities. The uniform methodology does not take into account local specificities (e.g. the Prague Metropolitan Area is generally more narrowly defined than in the Eurostat definition).

1.2 Background

For a good analysis it is necessary to understand the broader context and theoretical background. For the purposes of this study, however, this analysis is described as briefly as possible and those interested in the broader context can be referred to the large number of high-quality studies on which this study is also based [Knox, 2009; Mulíček, 2008; Musil, 2002; Ouředníček, 2000; Sýkora, 1993; Sýkora & Sýkorová 2007].

4 —— More information and an overview of the definition of the wider Prague region is available at the ÚAP Portal in book 050 Metropolis and Region https://uap.iprpraha.cz/#/texty/313337/313426.

CITY DEVELOPMENT FACTORS

The population development in a territorial unit is always influenced by the birth rate, death rate and migration balance (the difference between the number of immigrants and emigrants). **Urban population development is generally influenced by migration rather than natural increase**, while natural increase is influenced mainly by fertility levels but also by age structure. The migration balance is influenced by three interrelated factors. **The first and key one is economic development**. When the economy grows, new jobs are created and average earnings rise. **The creation of new jobs creates pressure to increase the number of workers, i.e. through new immigrants**.

The second factor is **new residential construction**. As the economy grows, pressure for new residential construction is created, both by population growth and by the fact that an affluent society is more inclined to buy property, either for their own higher-quality housing or as an investment. Ideally, therefore, in times of economic growth there should be an increase in new residential construction and population growth, and in times of economic recession there should be a decrease in new construction and population stagnation, more moderate growth or decline. This proposition does not of course apply absolutely. Residential construction is influenced by many other factors, such as the public construction policy and the capabilities of developers (there are mainly legislative barriers, but also factors such as the unavailability of labor and building materials). As the construction of apartments takes several years, residential construction cannot easily respond to market demands.

The third is subjective factors, as people look for places with a pleasant and quality environment. **People want to live primarily in cities with good quality and available public and transport infrastructure, low crime rates, and good leisure opportunities**. These subjective factors are harder to measure than economic factors, and not easily compared over time, so they tend to play a more minor role in theoretical approaches to urban development.

URBAN DEVELOPMENT STAGES

We can look at the development of cities in two ways. The first is based on the traditional and most widely used concept of social development, which divides development stages according to the proportion of the dominant economic sector into **pre-industrial** (traditional), **industrial** (modern), **and post-industrial** (post-modern) [Hampl, 2005]. In a traditional society, the degree of urbanization was very low, with the vast majority of the population working in agriculture. Cities were not primarily centres of economic power, but of political, spiritual and administrative power. **Population growth in both cities and society as a whole was generally low and affected by external factors** such as wars, famines and epidemics. The transition from traditional to modern (capitalist, industrial) society has affected many aspects of the human population. **Industrial cities, where new jobs were created (mainly in industry, but also in services), are characterised by high population growth** resulting from migration from overcrowded rural areas and partly by higher natural increase. The decline of industry and the increase in service employment have often been accompanied by a decline or stagnation in the urban population. **However, the population development of contemporary cities is different and influenced by the conditions of post-industrial transformation and globalization** (see below). Some cities have still not dealt with the decline in jobs and their population is falling. Most contemporary cities, however, have been growing quite dynamically in recent years.

The second approach focuses on the development of the city within its wider region, and involves alternating between population growth and decline in the core and hinterland.[5] In the first phase (urbanization), the core of the city grows, the hinterland declines relatively, while the region as a whole grows. The second phase (suburbanization) is marked by the decline of the city core but the growth of its hinterland. In the third phase (deurbanization), both the core and the hinterland decline, depopulating the entire urban region. The final fourth phase (reurbanization, often associated with the process of gentrification) is based on revitalising the attractiveness of the urban core and its population growth. This is not, of course, a law written in stone, and all the phases might not proceed continuously according to this static order. This model is often used to explain the gradual development of cities because of its clarity and simplicity.

If we combine both approaches, we can talk about three periods of development of cities and urban regions (→ Fig. 1.2.1), while we will neglect the period before the Industrial Revolution, when the function, importance and size of cities were incommensurate with the present. The first is the period of **classical urbanization, when there is a massive increase in the urban population**, mainly due to people moving to cities from rural areas in search of work. The next development phase of the **industrial and post-industrial city, is marked by population decline and city stagnation**. Mainly thanks to the developing transport infrastructure and the availability of individual car transport, there is a process of suburbanization with more and more people moving from the city core to family houses in the hinterland (respectively the hinterland population is growing faster than that of the city itself).[6] The last period can be called **post-industrial (re)urbanization, during which differentiated urban population growth occurs, influenced by the conditions of post-industrial transformation and globalization**. Cities and their hinterlands that have successfully responded to the current conditions (especially by

5 ——— It is a theory of urban development stages based on research on selected European cities between 1950 and 1970 [van den Berg, et al. 1982; Sýkora & Posová, 2010]

6 ——— However, there is still population growth over the entire urban region (i.e. the cities and the hinterlands), in contrast to a period of deurbanization when people also leave the hinterland and the population of the entire urban region declines.

creating higher-value-added jobs) are growing in population. Their hinterlands are also often growing (continuation of the suburbanization process), as are revitalized neighborhoods in the broader city center (gentrification process). A brief description of the processes of post-industrial transformation is important for understanding the current population development and social structure of European cities.

THE CITY UNDER POST-INDUSTRIAL CONDITIONS

In Western European countries, a gradual social transformation has been taking place since the 1970s,[7] manifesting itself primarily in large cities [Brabec, 2014; Knox, 2009; Musil, 2002; Sýkora, 2000]. For the purpose of this study, it is necessary to mention **5 processes that significantly affect contemporary cities** and society. The first is the process of **globalization**, which affects today's cities mainly through the internationalization of capital and labor. Multinational corporations are emerging, mainly concentrating their headquarters in global cities with the highest global settlement hierarchy levels.[8] There is also a proliferation of sub-branches in cities with lower hierarchy levels. Relatively wealthy executives of multinational corporations then move to such cities. The economic growth of cities creates demand for both skilled and unskilled labor (construction, lower services), and new vacancies often need to be filled by migrants from abroad. The impact of capital internationalization on urban transformation manifests through real estate development, with multinational property developers and global real estate investment playing significant market roles. Investments in real estate are considered very safe and profitable in the long term. Thanks to deregulation and internationalization, the real estate market is becoming global. People from different parts of the world can buy property practically anywhere. Investments are mainly

7 ——— According to many authors, these changes can be compared to the transition from traditional communality to a modern society [Bauman, 2006; Beck, 2004; Giddens, 2003; Keller, 2007]. Traditional insurance mechanisms (especially the welfare state) are ceasing to function, new social, technological and ecological risks have emerged (or have been transformed), politics have changed, traditional family or gender roles have been transformed, and the process of individualization is intensifying, where human behavior is no longer influenced by family, gender or class. The liberation of the individual from traditional social roles. The ambivalence of the individualization process is evident in the fact that it has brought about, on the one hand, lifestyle choice options and, on the other, the individual's greater responsibility for their own behavior and greater isolation.

8 ——— In the global economy, a new hierarchy of global cities is being created, with cities with a high concentration of multinational company headquarters, such as New York, London, Tokyo and Paris, at the top of the hierarchy. Prague is of relatively high importance in the context of Central and Eastern Europe [Knox, 2002].

1.2.1 Illustrative examples of population development in cities, their hinterlands and functional urban regions (FUR)
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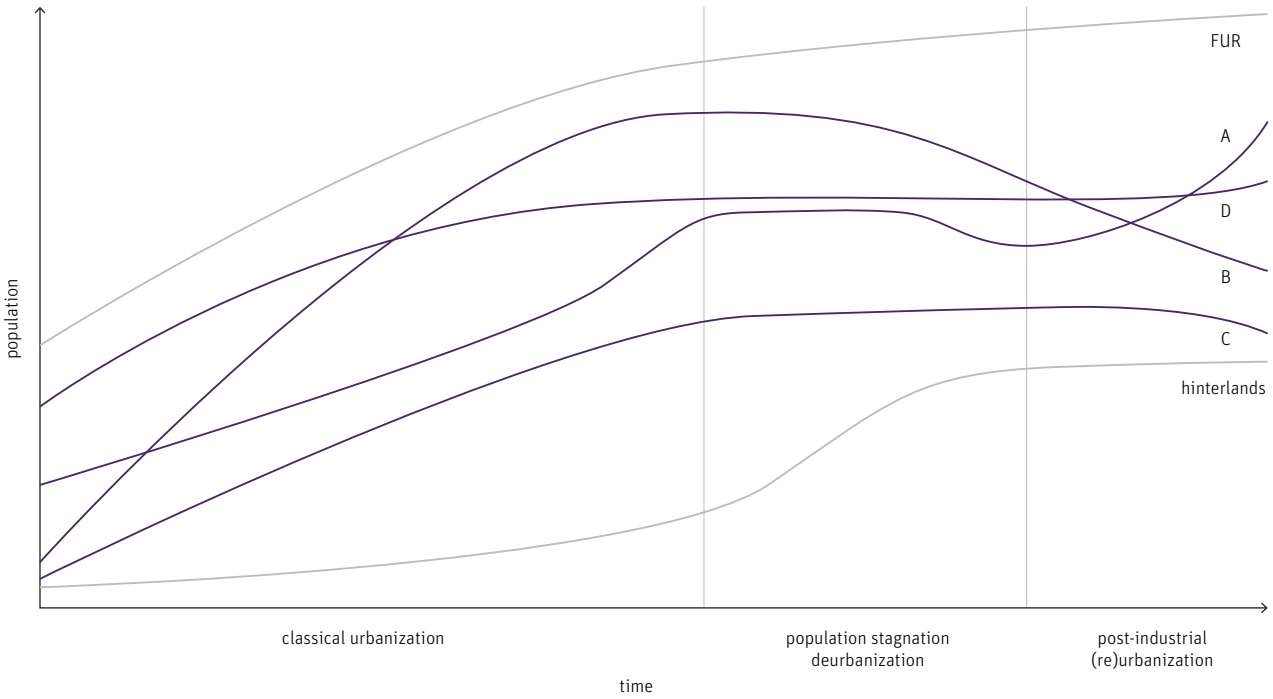


concentrated in attractive locations with realistic expectations of further price growth.

The emergence of globalization has been conditioned by technological development, but also by the **popularity of deregulation policies and neoliberalism**. This is the policy of building a free market with minimal interference by the state (or the public sector in general) in the economy and society, and emphasising the responsibility of the individual. Neoliberal policies promote the privatization of public goods as an effective tool for raising economic and social standards. Instead of building new affordable public housing, the housing policy has promoted the privatization of the housing stock and the emphasis on personal responsibility in acquiring housing.

Another process is **economic restructuring, with more people working in services than in industry**. Factories in cities close and become brownfields. **Instead of industry, large cities have a concentration of businesses specialising in the highest-value-added sectors such as banking, IT, research and innovation**. Affluent cities create demand for new labor, both skilled and less skilled. An affluent society also requires higher and more diversified consumption. Cities are no longer places of production but of consumption. As a result of globalization, industrial production shifts to areas and countries with lower wage levels. Instead of brownfields, large shopping malls are often built, where an overall wealthy society buys products from all over the world.

One consequence of restructuring but also, for example, of the promotion of neoliberal policies (which lead to the slimming down of the welfare state) is an **increase in social inequalities and social polarization**, i.e. increased proportions of rich and poor, and the decline of the middle classes. Today's cities are thus becoming places where, on the one hand, high wealth is concentrated and, on the other, more and more people are at risk of social decline and homelessness.

The last important process to mention is the second demographic transition, which has been taking place in Western Europe since the mid-1960s and is characterised by **many changes in demographic behavior**. The total fertility rate is falling below the simple reproduction level, the average age of the mother at childbirth is rising, the number of live births outside marriage is increasing, less couples are marrying, the proportion of voluntarily childless people is rising, and the use of modern forms of contraception is more and more widespread. Changes are occurring in people's attitudes towards the family, childbearing and lifestyle in general. These changes have been conditioned by structural and technological changes, such as the emergence of modern contraception or the general growth of wealth in society. The authors of the second demographic transition concept [Lesthaeghe, 2010; van de Kaa, 2002] based it on the post-materialism theory by the American political scientist Ronald Inglehart, whose basic thesis is the belief that Western society is gradually shifting from an emphasis on material values (maintaining a stable economic level, social security) to post-material values (quality of life, human freedom, self-fulfilment, the need to care for the environment). People are breaking away from traditional values and norms, and their life paths are becoming individualized. There is a social normalization of childlessness, abortion, divorce, out-of-wedlock conception, and non-heterosexual unions. Many are beginning to view family and parenthood as outdated institutions, preferring work, play or other forms of self-fulfilment.

After the fall of the communist regime, Prague and other cities in Central and Eastern Europe gradually opened up to the world and the **above-mentioned processes of social change began to take place, albeit belatedly, which naturally had an impact on the city's population development and its social and spatial structure** [Ouředníček, 2006; Ouředníček & Temelová, 2012]; Sýkora, 1996, 1999, 2001, 2014]. There are, however, a whole series of specifics, as Prague and other cities in Central and Eastern Europe carry the legacy of more than 40 years of socialist planned economies. We can therefore speak of a **specific post-socialist transformation of the city** [Sýkora & Bouzarovski, 2012]. The transition to a market environment has been accompanied by a variety of state-led institutional changes, such as restitution, privatization, price liberalization, rent deregulation, etc.

CURRENT CONTEXTS AFFECTING TOTAL POPULATION STATISTICS

Population development and social structure in 2022 are influenced by several factors that are **unique and exceptional in the long term, but may significantly affect current population statistics and the overall assessment of current trends**. The first is the COVID-19 disease and the unprecedented measures associated with efforts to prevent its spread. The census, which takes place once every 10 years in the Czech Republic, was carried out from March to May 2021, with the associated corrections and adjustments to the population balance. The last major factor is the war in the geographically and culturally close Ukraine, the immediate consequence of which is an influx of large numbers of asylum seekers into the Czech Republic and Prague.

COVID-19

The immediate demographic consequence of COVID-19 has been an exceptional increase in the number of deaths and a decrease in life expectancy [Hulíková Tesárková & Dzúrová, 2021], which affects the age structure, but also the natural population development. Specifically, in Prague, 12 178 residents died in 2019, compared to 13 621 and 14 460 in 2020 and 2021. Life expectancy fell by 0.21 years for men and 0.19 years for women between 2019 and 2020. This is an exceptional situation, because until then there had been a long-term ongoing increase in life expectancy.

It is still too early to assess the overall impact associated with this disease, as the pandemic is not yet over. The sanitary-epidemiological measures taken to prevent the spread of COVID-19, such as closing schools, banning all services,

closing many stores, and recommending working from home and limiting interpersonal contact as much as possible, have understandably had a negative impact on economic development, with the Czech Republic witnessing an economic downturn in 2020 (a 5.6% drop in GDP). The economic downturn can affect the population development and social structure of contemporary cities, and in large cities such as Prague the long-term impacts can be more pronounced. The attractiveness of cities as places to live in may decline, not least because of the potential growth in teleworking. Only time will tell if the COVID-19 pandemic will have a major impact on the population and social development of contemporary cities or if its impact will be marginal.

Paradoxically, when the state of emergency was declared and entry to the Czech Republic was restricted, the overall statistics in Prague showed an increase in the number of residents and foreigners. The number of foreigners in Prague increased by 8.6% in 2020, the highest year-on-year growth since 2008. The total population in Prague also increased more than forecasted (by 0.8%). **It is not entirely clear whether this was the actual situation or merely a statistical adjustment, with, for example, more foreigners living in Prague but not yet registered for residence registered themselves**.

Censuses in Europe and the Czech Republic 2021

Censuses take place in all European states at regular intervals every 10 years. In many states, including the Czech Republic, the last national census took place in 2021. Population balances are very often adjusted and refined based on such censuses. Although the census took place in 2021, the complete results and data will not be available in the Eurostat database until 2024. In this study, we are therefore mostly forced to work with older data from 2020. The 2021 census results for Prague are already available.

Currently this is only available data on the total number of residents in Prague; the census distinguishes between permanent and occasional residents (i.e. those who do not have a registered permanent residence in a given place but actually live there). Only permanent residents are counted in the population balances, and these are the data we use in this study. As of 31 December 2020, the population of Prague in the balances was 1 335 084, while as of 1 January 2021 it was 1 258 569. This **difference of more than 75 000 inhabitants was due to the correction of the population balances through the 2021 census**.[9] The refinement of the balances is necessary and important, however brings more uncertainty in analysing population development trends (→ Chap. 2.3).

War in Ukraine

When on 24 February 2022, Ukraine was invaded by the Russian Federation, war broke out in Europe, the consequences of which will be very significant for many European states. The primary concern is, of course, the **growth in the number of refugees**, i.e. people involuntarily displaced from places affected by war. The Czech government is granting a temporary protection visa for one year to citizens of Ukraine and their family members arriving because of the armed conflict. Refugees have access to public health insurance, education, and free access to the labor market.

As of 25 April 2022, a total of 305 368 refugees from Ukraine were registered in the Czech Republic [Ministerstvo vnitra České republiky, 2022]. **71 978 of them were registered in Prague** (i.e. approximately 24% of the total). There are almost twice as many women as men overall (24 239 men and 47 733 women). **The proportion of children is also above average**. The proportion of Ukrainian children under three years of age in the total population (4.8%), as is the proportion of children aged six to 14 (20%), are above the national average for Prague of 4.4% and 9.3%. It is very difficult to estimate the total number of refugees from Ukraine in the Czech Republic, as well as the overall consequences, because these will depend on the overall course or outcome of the war. It is expected that the total number of refugees from Ukraine arriving in the Czech Republic could be between 300 000 and 500 000, and the question is how many of them will stay in the Czech Republic in the long term and how many will return when the situation in their home country is safer [PAQ Research, 2022].

9 ——— According to the 2021 census, the number of occasional residents in Prague was 1 301 432.

2. POPULATION DEVELOPMENT

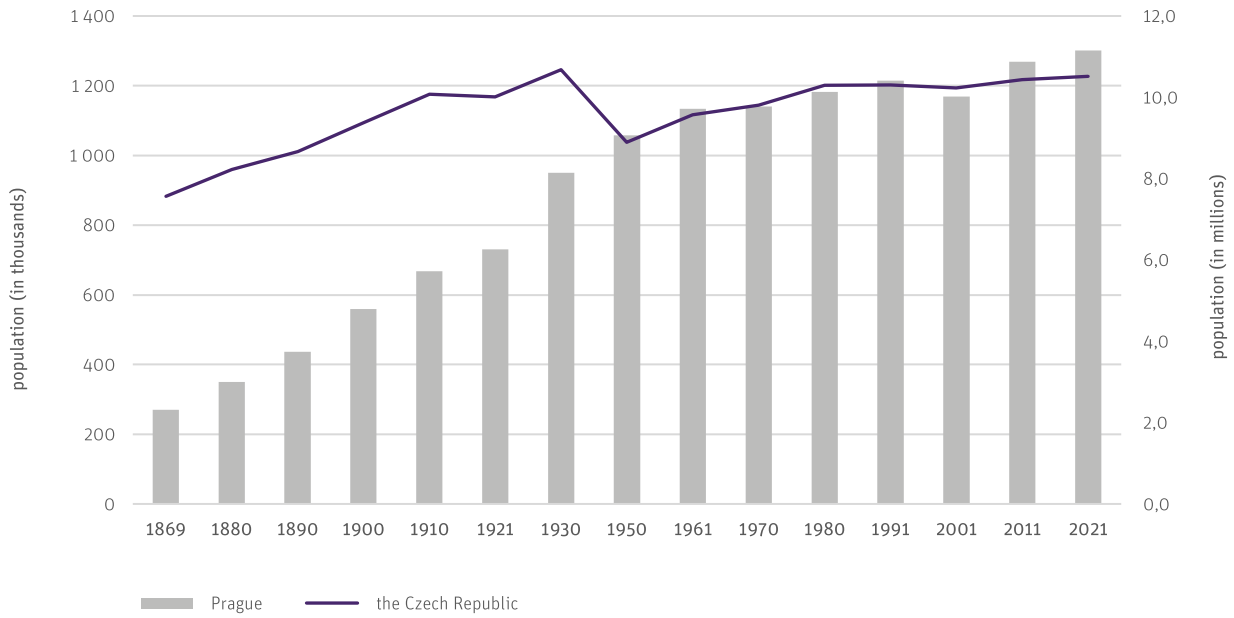
The chapter focuses on an assessment of the long-term population development of Prague in the context of selected European cities, with a greater focus on the development over the last 30 years. The initial detailed assessment is first for Prague as a whole and then for other European cities. We use official statistical data from the Czech Statistical Office (CZSO) and Eurostat, giving us usable data for 226 European cities. Since a comparison of population development among cities is problematic due to differing definitions of administrative boundaries, we also focus on an assessment of the development of functional urban regions, i.e. for cities including their wider (connected) hinterlands.

2.1 Long-term population development in Prague

The settlement of the area of present-day Prague has been documented as early as in prehistoric times, namely in the Stone Age. In this study, we look at population development based on official census data. The first modern census in the territory that is now the Czech Republic was held in 1869. Thanks to the quality of the database, the results of this census are now available for all Czech municipalities (and it is therefore possible to obtain data for the current delineation of cities). **The population of the Czech Republic has grown over the long term since 1869** (→ Fig. 2.1.1). The greatest growth dynamics were evident in the 19th century, when modernization processes took place. There was an improvement in mortality rates (especially a reduction in infant mortality), an increase in the number of live births, and a massive migration of people from the overpopulated countryside to the cities, where new jobs were being created.

The population of Prague was 270 000 in 1869, and had increased to 950 000 by 1930 (an increase of 252%). In the Czech Republic as a whole, the population increased from 8.2 million to 10.6 million between 1869 and 1930 (an increase of 30%). The**growth rate in Prague was therefore much higher than in the rest of the country**. Although this population growth was not the highest of all cities in the Czech Republic, it was above average even compared to regional cities. There were higher growth rates in relatively smaller settlements where there was significant industrial development. For example, the population of Ostrava increased almost sixfold over this period, while the population of Plzeň and Karlovy Vary increased more than fourfold. Of the regional cities, only Ústí nad Labem had a higher increase (of 293%). On the other hand, there were relatively lower growth rates in Brno (171%), Hradec Králové (165%), Olomouc (158%), Liberec (90%), and Jihlava (53%).

2.1.1 Population development in Prague and the Czech Republic
IPR Prague 2022 / CZSO 2022



After the end of World War II, there was a massive displacement of people of German ethnicity, which resulted in the population of the Czech Republic declining by approximately 17% between 1930 and 1950. The Sudetenland was particularly affected by this population decline (e.g. the Sokolov district lost more than half its population). In large cities outside the Sudetenland, there was usually a slight increase or decrease in population (a slight increase in population was also recorded in Brno, where a large percentage of the population was of German ethnicity before the World War II). **In Prague, the population grew by 11.3% between the 1930 and 1950 censuses. The population continued to grow in the following years until 1991, but at a far slower rate**. The population of Prague increased by 14.8% between 1950 and 1991. This was slightly below the average growth for the Czech Republic as a whole, where the population growth was 15.8% in this period.
The population of the Czech Republic as a whole had grown during this period mainly due to natural increase caused by the relatively high total fertility rate. Although the migration balance was also positive in the long term during this period (the only exception was between 1967 and 1970, when more people moved out of the territory of the present-day Czech Republic than moved in). The population of Prague, like that of other cities, is mainly influenced by migration rather than natural increase. **Prague, as the economically dominant centre of the country, has long attracted migrants from all over the country and, in recent years, mainly from abroad.** After 1991, Prague went through a short period of population decline due to a decline in the birth rate and the process of suburbanization, but since 2002 we have witnessed renewed growth (→ Chap. 2.3).

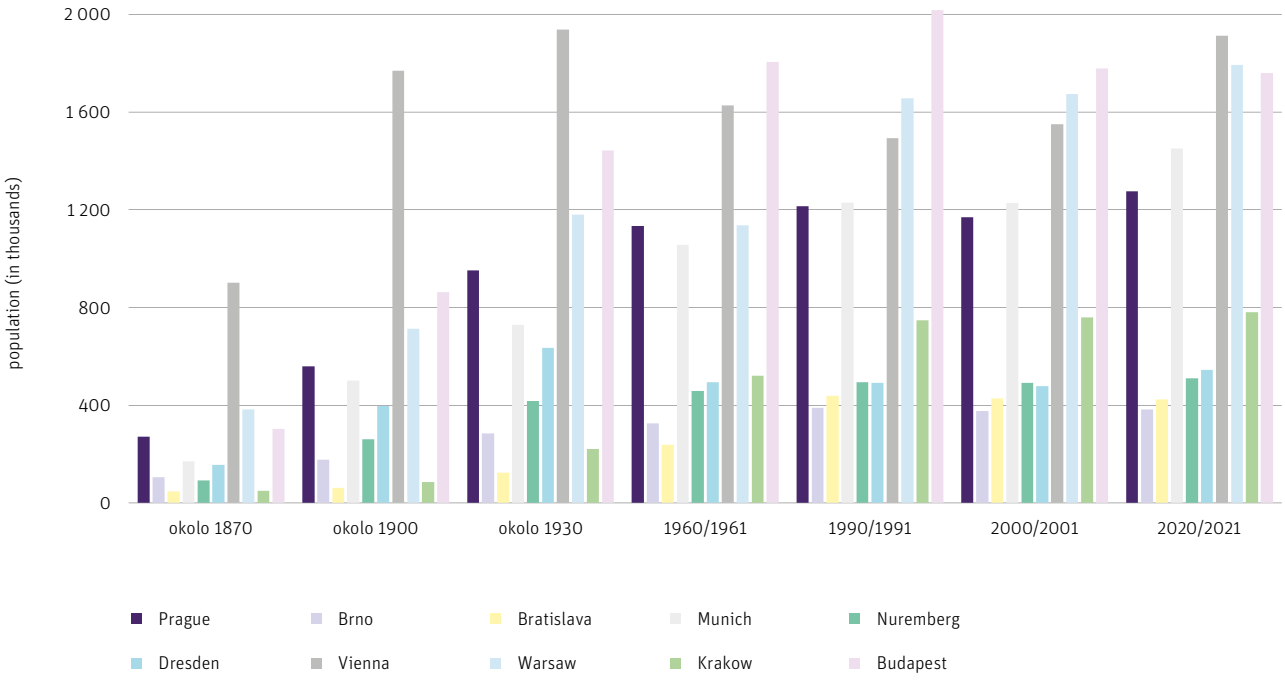
2.2 Long-term population development in European cities

We have examined the long-term population trends in 15 selected European reference cities.[10] These include cities in the Czech Republic, neighbouring states, and larger (global) cities (→ Fig. 2.2.1). The population development in these selected cities corresponds to the scenario described above (→ Chap. 1.2). Most (mainly Western European) **cities went through phases of dynamic population growth during the Industrial Revolution, then a phase of population decline (or stagnation) due to** suburbanization and **deurbanization processes, with subsequent growth again in recent years**.

10 ——— The choice of reference cities was mainly determined by their geographical proximity to Prague, population size and comparability, and similar importance in the settlement structure of the state. A complete overview with reference cities and population development is available in an annex (→Annex P.01).

2.2.1 Population development in selected European cities

IPR Prague 2022 / data: Eurostat, CZSO, Wikipedia, other national or municipal statistical offices 2022



However, individual cities differed in the timing of these phases. It is most illustrative to look at relative and absolute growth over 30-year periods, and we started analysing developments around 1870, when the first modern census was carried out in the territory of today's Czech Republic (1869 to be precise). The relative increase clearly shows that for most cities the **period of highest population growth was in the last 30 years of the 19th century** (→ Fig. 2.2.2). That is, during the period of classical urbanization during the Industrial Revolution. The only exceptions are Berlin, Bratislava and Krakow, where population growth was higher in the first 30 years of the 20th century. For Berlin, this was due to the extension of the city limits in 1920.[11] In the case of Bratislava and Krakow, the reason was the delayed industrialization associated with the creation of new states. At this time, the cities continued to grow dynamically, with population growth quickly compensating for the losses from World War I. Especially in German cities, but also in Vienna, Warsaw, London and Paris, the population decline between 1930 and 1960 reflected the losses in World War II. However, this was more of a one-off decline, and was partly offset by post-war population growth.

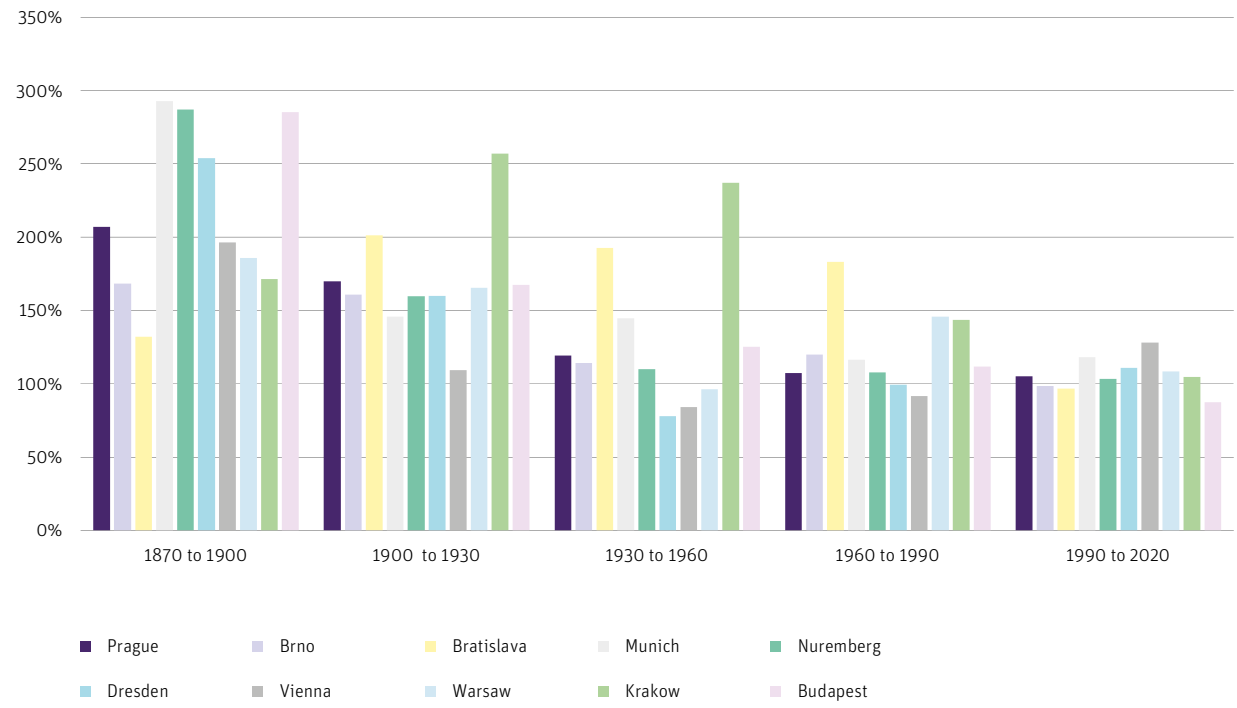
After 1960, Western European cities experienced population decline or stagnation due to the increased availability of cars (suburbanization) and the decline of industry and jobs in the city. **Cities that otherwise showed overall growth during this period also experienced a period of population stagnation**. For example, the population of Munich stagnated or slightly declined throughout the 1970s, 1980s and 1990s. Cities in the then Socialist Bloc were still growing in population at that time. The delayed onset of the processes of post-industrialization and suburbanization that began in these cities after 1990 has contributed to population decline in most of these cities.

The last 30 years have witnessed a resurgence in population growth in the monitored European cities. This is mainly due to the increasing concentration of job opportunities in higher-value-added sectors (e.g. finance, IT, consulting) and related services (stores, hospitality, tourism, etc.). It **is also evident that cities are growing largely thanks to international migration. However, population growth is not happening in all European cities**. Cities in the former Eastern Bloc in particular (e.g. Ostrava in the Czech Republic) are exposed to population decline caused primarily by the emigration of inhabitants to richer cities.

11 ——— Data for Czech cities are based on the Historical Lexicon of Municipalities of the Czech Republic - 1869 to 2011 and preliminary data from the 2021 census by the CZSO, which works with the number of inhabitants in the currently-defined territory. There was therefore no sharp increase in the number of inhabitants in Prague during its expansions in 1922 and 1974.

2.2.2 Relative population changes in the monitored cities in selected periods

IPR Prague 2022 / data: Eurostat, CZSO, Wikipedia, other national or municipal statistical offices



Relative population growth rates are strongly influenced by the baseline, with smaller cities achieving strong relative growth rates even though the overall absolute population growth may not be high. However, a more important reason for tracking absolute growth is comparison over time, as current relative growth rates may seem low relative to past ones but are comparable in absolute terms. For example, the annual growth rates of cities such as Vienna, Munich and Zurich are currently almost the same as in the classical urbanization period. For the other monitored cities, the annual increase is currently lower, but not so low when comparing relative increases.

2.3 Population development in Prague since 1990

The population of Prague grew almost continuously until 1990. The fall of the Communist regime and the subsequent transition to a market economy also had an impact on population development. Overall, the **population development in Prague after 1990 can be divided into five phases** (→ Fig. 2.3.1), while population development is primarily influenced by the economic situation (which affects population migration), housing construction, and changes in reproductive behavior. This division into phases is only assessed up to 2019, as 2020 was extraordinary due to the sanitary-epidemiological measures adopted to combat the spread of COVID-19. These had a significant impact on economic development. The disease itself also markedly increased the number of deaths, a situation unique in the modern history of the country (→ Chap. 1.2).

We can identify a first period of post-revolution population development between 1990 and 1994. During this period, **the population stagnated** (the population increased by 0.2%, while in the Czech Republic as a whole there was a 0.3% decrease). The natural increase in Prague was negative throughout the 1980s and 1990s, yet the population did not decrease thanks to the positive migration balance. At this time, housing construction financed by the public sector and started under the Communist regime, was being completed. These were mainly large housing estates such as Jihozápadní Město and Černý Most. The transformation of the economy from centrally planned to market-based brought a short-term economic downturn, a gradual increase in economic insecurity, and reduced population mobility (people's willingness to move). After 1990, Prague (and subsequently the Czech Republic as a whole) also experienced significant changes in demographic behavior (see the second demographic transition), characterised by a significant decline in the total fertility rate, an increase in the average age of mothers, and a rise in life expectancy.

The next phase took place between 1995 and 2002, and was **marked by a steady decline in population**. Between these years, the population of Prague **decreased by almost 60 000**. (a 4.7% decline, compared to a 1.3% decline in the Czech Republic as a whole). The decline was caused both by natural change and by the displacement of inhabitants from Prague between 1998 and 2001, mainly to family houses in the Central Bohemian Region (the process of suburbanization). After 1993, there was a further significant decline in the total fertility rate in Prague and the Czech Republic as a whole, culminating in 1999 when the total fertility rate in Prague reached 1.04 children per woman compared to 1.7 in 1991 (the population replacement level is 2.1 children per woman). The decline in the total fertility rate resulted in a significant reduction in the number of births and thus in an overall deepening of the natural decline, which was reduced in turn by increasing life expectancy. The decline in fertility was caused by two factors. After the collapse of the Communist regime, there was a change in value orientation, with some of the population beginning, instead of starting a family at a young age, to prefer studying at university, travelling or other values difficult to reconcile with

2.3.1 Phases of population development in Prague
IPR Prague 2022 / data: CZSO 2020

phase	years	average annual value in Prague:				average annual GDP growth of the Czech Republic	average annual value of total population growth in the Czech Republic
		completed housing units	the total increase in the number of inhab.	migration balance	natural increase		
1.	1990–1994	5 847	-82	3 548	-3 630	-1,9	6 115
2.	1995–2002	2 816	-6 256	-1 509	-4 747	2,3	-11 922
3.	2003–2009	6 149	10 782	10 956	-173	3,3	43 363
4.	2010–2013	4 375	4 324	2 353	1 971	0,5	12 911
5.	2014–2019	5 548	13 513	10 753	2 759	3,1	28 124

childcare (these are so-called post-materialist values such as an emphasis on quality of life and a better natural environment). Furthermore, after the fall of the regime, there was also a rise in economic and social insecurity, manifested, for example, in the emergence of unemployment and housing unavailability.

There was a deep decline in new housing construction in 1995. The state stopped financing the construction of municipal housing. In the spirit of the times, housing came to be seen as a private matter that each person had to provide for themselves. Since 1990, the publicly owned housing stock has been largely privatised, either by returning it to the original owners through restitution or by selling it to existing tenants at well below market prices. The rental housing market had been heavily influenced by regulated rents, which favoured tenants holding certificates for rental apartments. The real estate market itself was also not yet fully functional, as there was little financial capital in Czech society at the time, and there was no functional banking system in the Czech Republic that would provide mortgages in a simple way [Brabec, 2021].

As the internationalization of labor and capital began to take effect, rich foreigners from Western Europe and the USA began to move to Prague. These were mainly managers and employees of major multinational companies, who naturally required a certain standard of housing. At this time, the first development projects for new residential construction started to be built in Prague. These were mainly high-end properties designed primarily for foreign clientèle, very often financed and carried out by a foreign investor or developer. These were mainly the projects Malá Šárka in Nebušice, Trinity Garden in Smíchov, and Vila Bianca in Bubeneč. Other residential developer projects from this era may not have been luxury properties for the rich, but the prices are still very high. These include, for example, the projects Hvězda in Petřiny, and Velká Skála in Troja.

Since 1998, there has been a gradual increase in the number of new housing units completed (but remains significantly lower than in the early 1990s). Developers gradually established themselves in Prague and its hinterland, and began building apartment blocks and family houses for a wider range of inhabitants. Property has also become more affordable thanks to government-backed loans, such as the building savings scheme and mortgages. The economy also gradually grew, as did the purchasing power of the population. This meant an ever-increasing number of people could afford their own housing. Since the most preferred type of housing is a family house with a garden, [Brabec et al., 2021] there has been significant individual and developer construction of family houses, both in the outskirts of Prague and especially in Prague's hinterland. It was precisely the suburbanization process, i.e. the growth of the population of the city hinterland compared to the city itself, that largely caused the relatively significant population decline in Prague between 1998 and 2002.

The next phase of Prague's population development can be dated between 2002 and 2009. **During this period, the population growth was very dynamic**. Between these years, the population **increased by approximately 84 000** (a 7.3% increase, while the increase for the Czech Republic as a whole was 2.8%). This was a time of continuous economic growth (up to 7% GDP growth in some years). There was also a steep increase in the number of completed housing units. The record year in this respect was 2007, when about 9 500 housing units were completed. The improved economic situation and increased housing availability also led to an increase in the number of births. Due to improving mortality rates, people born in weaker demographic years dying off, and the emigration of the elderly from Prague, the number of deaths decreased. Overall, Prague has therefore also been growing through natural change since 2006. However, population growth was primarily due to immigration from abroad. Between 2002 and 2009, the number of foreigners increased by about 80 000 (→ Chap. 3.3). **Without foreigners, the population of Prague would have stagnated because during this period there was still a very strong stream of emigration from Prague to its nearby hinterland**, which natural population growth could not compensate.

The population growth and high immigration of foreigners was primarily due to economic growth and the associated low unemployment and high demand for labor. The global economic crisis hit at the end of 2008, resulting in a fall in GDP and a rise in unemployment. The phase of **population development between 2010 and 2014 was marked by a significant decline in the number of immigrants and a slight increase in the population**. According to official data, the population of Prague decreased by 651 (a 0.05% decrease, with a 0.06% decrease in the Czech Republic as a whole); however, this figure is not very relevant, because the 2011 census resulted in a correction to the population of Prague (→ Chap. 1.2). Nevertheless, it is clear that both migration and natural increases were low at this time compared to the previous phase. The mortgage crisis in the US in 2008 shook the global belief that real estate was the safest investment whose value would never fall. There was therefore a decline in the intensity of housing unit construction after 2010. The slight growth in the population of Prague continued to be due to natural growth and foreign migration.

The last phase of population development can be observed from 2014 or 2015. This phase is characterised by strong economic growth, virtually zero unemployment, and rapid growth in average wages. These factors are contributing to **population growth. The population increased by 65 000 between 2014 and 2019** (a 5.2% increase, while the increase for the Czech Republic as a whole was 1.4%). These are the highest annual increases of all the monitored phases. The main population growth factor is again foreign migration, with the number of foreigners in Prague increasing by approximately 45 000 to almost 210 000 (16% of the total population). At this time, however, it is also noticeable that the migration balance of people with Czech citizenship was reversed, with the number of immigrants beginning to slightly outweigh the number of emigrants. However, this is not a fundamental change in the suburbanization process (although there is an increasing number of immigrants from the immediate Prague area), but rather an increase in the number of immigrants from other regions of the Czech Republic (mainly from Moravia).

The improved economic situation is also leading to an increase in fertility levels and the number of births, and therefore to growth in the natural increase. There is also an increase in the number of completed apartments, but it is evident that new residential construction is not sufficient and demand exceeds supply. This has led, among other things, to very dynamic growth in property prices.

The impact of migration on population development is evident when analysed by gross measures of the individual components (→ Fig. 2.3.2). Here we can also see the influence of the individual censuses (see the marked years), where there was always a decrease in the balance of the permanently registered population, even though both migration and natural increase were positive for the given year.

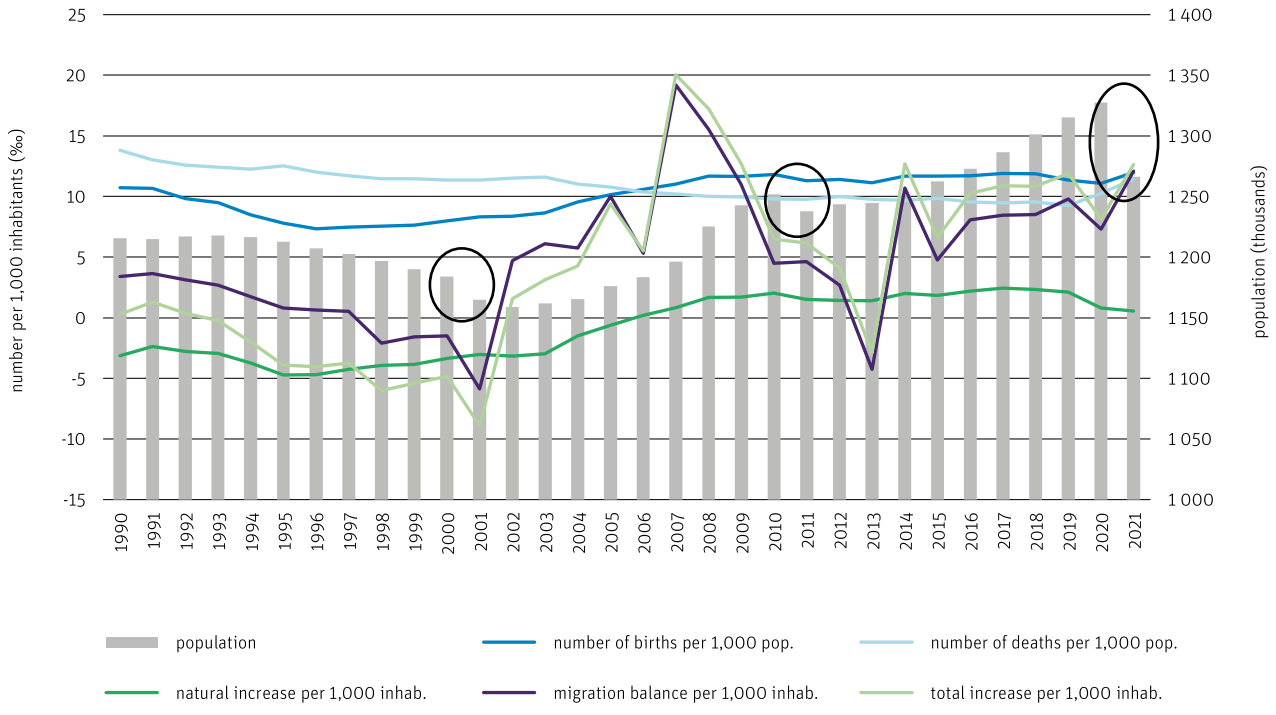
2.4 Population development in European cities since 1990

In analysing the population development in European cities, we rely on the Urban Audit database maintained by Eurostat. Population counts are available for more than 1 000 European cities. Unfortunately, data are not available for all years. Some cities even have only one or two data sets for the whole period under study, i.e. since 1990. In total, we are able to assess development for 226 cities, including most capital cities. There is a problem, however, in the changes in the demarcation of the administrative boundaries of cities, resulting in population jumps in short periods of time (this applies mainly to French and Dutch cities).

In the preceding chapters it has been stated that urban population development goes through a phase of dynamic growth followed by stagnation or decline, which in recent years has been replaced by renewed growth. **Population growth was recorded in most European cities surveyed after 1990**. These are mainly economically successful cities, where there is a high concentration of job opportunities, both in higher-value-added sectors such as finance, IT, and consulting, and related services (stores, hospitality, etc.). It is however evident that cities are growing largely thanks to international migration. **However, population growth is not taking place in all European cities. Cities in the former Eastern Bloc in particular have been subject to long-term population decline, primarily due to emigration to wealthier cities.**

We are seeing a differentiation of European cities according to their ability to attract new residents, whether for economic reasons or people seeking a quality and friendly place to live in (including affordable housing). The cities with the highest relative population growth are mainly in Northern (Malmö,

2.3.2 Development of population and gross measures in Prague
IPR Prague 2022 / CZSO 2022



Stockholm) and Western (Luxembourg, Lugano) Europe and Spain (Palma de Mallorca, Toledo). Those with the highest population decline are mainly cities in the Baltic states (Liepāja, Riga), Southeastern Europe (Vidin), the former East Germany (Frankfurt am Oder, Schwerin) and Portugal (Porto, Lisbon) (→ Fig. 2.4.1). An overview of the cities with the highest and lowest population growth is available in the annexes to the study (→ Annex P.02, Annex P.03).

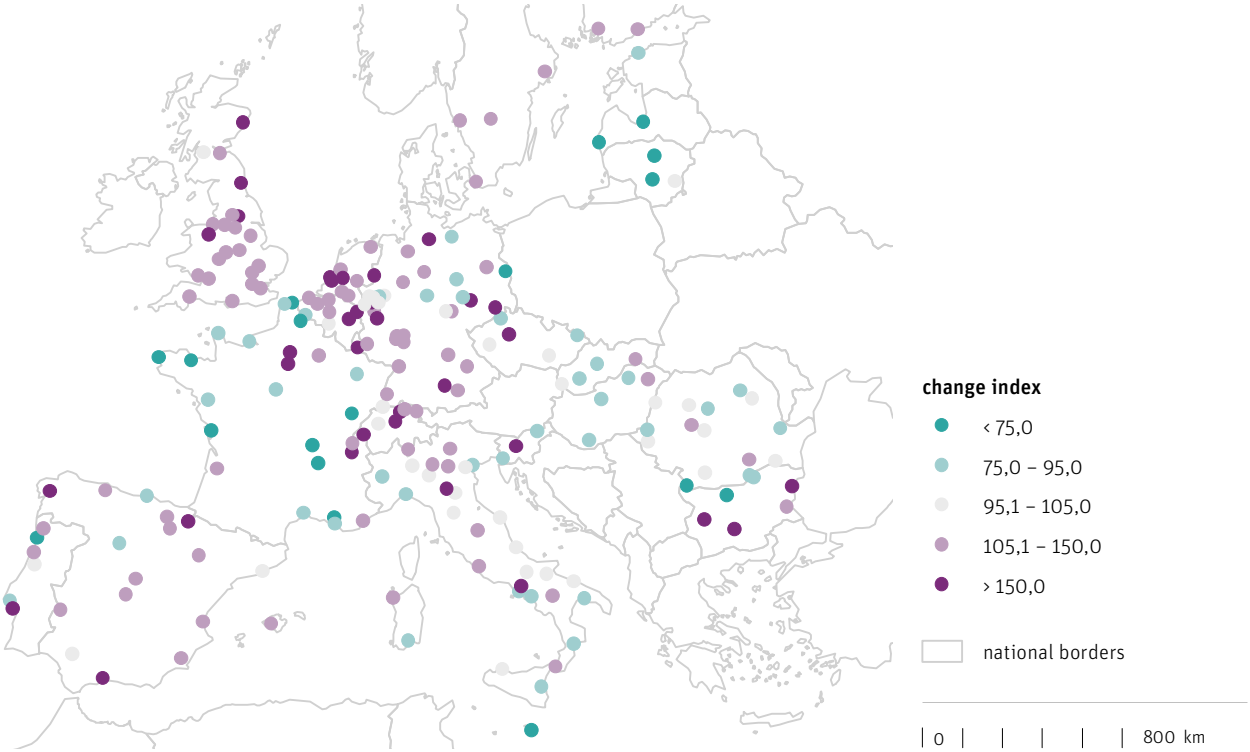
Overall, the development of European cities is marked by population trends that are known at the level of entire countries, with the rich countries of Western Europe growing in population, while most of the poorer countries of the former Eastern Bloc are affected by a depopulation process [Kocourková et al., 2018]. Increasing international migration is the main reason for population growth in many European countries. Although in countries such as Sweden and France, for example, the total fertility rate is relatively higher and the population is also growing through natural change, immigration still plays a major role in overall growth. The directions of migration within Europe are mainly economic, i.e. from poorer countries to richer ones, with growth in countries such as Luxembourg, Ireland, Norway and Switzerland. There is also migration from richer countries to countries with favorable climates and lower costs of living, with countries such as Malta, Cyprus and Spain growing in population. Although most media attention is focused on migration from Middle Eastern countries or Africa, despite the growing number of immigrants, the European Union (EU) Member States are a very significant source of immigration to wealthier areas.

The population development of cities and entire countries is of course related, but not absolutely. On the one hand, there are differences in the development of cities within individual states (e.g. the population growth of Sofia despite the persistent decline of Bulgaria) and, on the other, it is evident that even during a period when most cities decline in population, the states as a whole saw their populations grow (e.g. the population of Paris declined by 33% between 1960 and 1990, while that of France increased by 28% during this period). Urban population development is influenced by several factors. With a certain amount of simplification, we can divide urban population development into five types, respectively one type can be further divided into two sub-types (→ Fig. 2.4.2).

CITIES WITH STEADY AND DYNAMIC POPULATION GROWTH

Cities that show a steady and dynamic population growth are mainly located in the rich countries of Northern Europe with a significant natural increase (→ Fig. 2.4.3), which are also receiving large numbers of immigrants. This is especially the

2.4.1 Population change index between 1990 and 2020 in selected European cities
IPR Prague 2022 / data: Eurostat 2022



case in **Swedish cities, where not only large cities such as Stockholm and Gothenburg, but also smaller cities like Umeå and Jönköping are experiencing high growth rates**. A less dynamic yet steady growth is also evident in **Dutch cities such as Amsterdam and Rotterdam,** and selected cities in France (Montpelier, Nantes). Steady population growth can also be observed in both European megacities, i.e. **London and Paris**, where, in addition to their economic performance, their global prestige also plays a role. Sustained growth, although not very high overall, is taking place in Bulgaria's capital, Sofia, while the rest of the country is experiencing a long-term population decline.

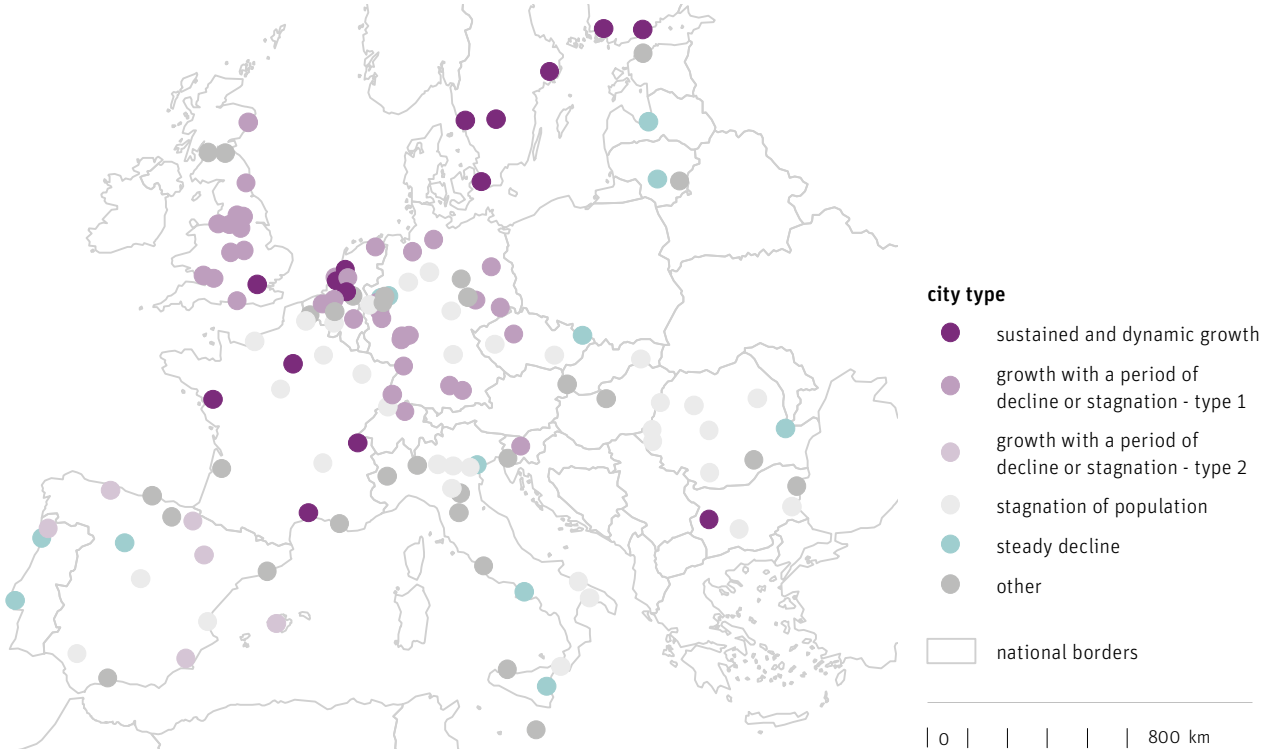
CITIES WITH OVERALL POPULATION GROWTH BUT PERIODS OF DECLINE OR STAGNATION

These are cities that have shown overall population growth since 1990, but also longer periods of population decline or stagnation. We can distinguish two sub-types according to the period of stagnation. In the first case, these are cities that experienced a period of stagnation in the 1990s but are currently growing very dynamically (→ Fig. 2.4.4). A typical representative of this sub-type is **Prague** (→ Chap. 2.3). Somewhat similar development (although e.g. with lower population growth or a more significant decline) can be seen in other former Soviet Bloc capitals such as **Ljubljana in Slovenia, Warsaw in Poland, Bratislava in Slovakia, and Bucharest in Romania**.

Other representatives are mainly **former industrial cities in Western Europe**. The German economy experienced only low economic growth in the 1990s, and population growth in the country as a whole was low at that time. In recent years, on the other hand, the EU's largest country has accelerated its economic dynamics and shows strong demand for labor (thanks to low unemployment). Almost all major German cities, such as **Berlin, Munich, Hamburg, and Cologne** are showing a similar trend. In recent years, large cities in the former German Democratic Republic (GDR) such as Dresden and Leipzig have also been growing in population. Of course, urban revitalization, brownfield redevelopment and the gentrificationprocess also play a role. It is precisely the redevelopment and increased attractiveness of inner city areas that have been key factors in the growth of cities in Great Britain such as **Manchester, Birmingham, and Liverpool**. Similar developments can also be found in cities in **Belgium (Brussels, Ghent, and Antwerp), the Netherlands (Groningen), and Switzerland (Zurich)**.

The second sub-type includes cities that grew consistently in population until the economic crisis in 2008, when growth stopped and the cities stagnated or declined in population.

2.4.2 Typology of selected European cities according to their population growth
IPR Prague 2022 / data: Eurostat 2022



These are primarily relatively smaller cities in **Spain, Portugal, and Cyprus, such as Pamplona, Murcia, Oviedo, Palma de Mallorca, Braga, and Nicosia** (→ Fig. 2.4.5). As is well known, it is the southern EU countries that were most affected by the economic crisis (including the fall in property prices) and have still not managed to return to significant economic growth (unlike, for example, Ireland).

CITIES WITH POPULATION STAGNATION

There are a large number of cities in Europe where the population has not changed significantly since 1990. These are mainly medium-sized cities, although there are also larger cities (e.g. **Madrid, and Barcelona**) from virtually all over Europe (→ Fig. 2.4.6). These cities can be found in **Germany (Nuremberg, Hannover), Spain (Seville, Valencia), Italy (Verona, Brescia), France (Le Havre, Saint-Etienne), Belgium (Charleroi), and Slovakia (Košice)**. In the Czech Republic, such cities include **Brno and Plzeň**. Many such cities are also located in states with significant overall population decline, such as Romania and Bulgaria. This is due to the low level of urbanization in these countries, with large numbers of people moving to the cities from rural areas. The classical urbanization in some of these cities (Bucharest and Sofia are experiencing population growth) contributes to maintaining the total population despite the population decline in the country as a whole caused by emigration to richer countries.

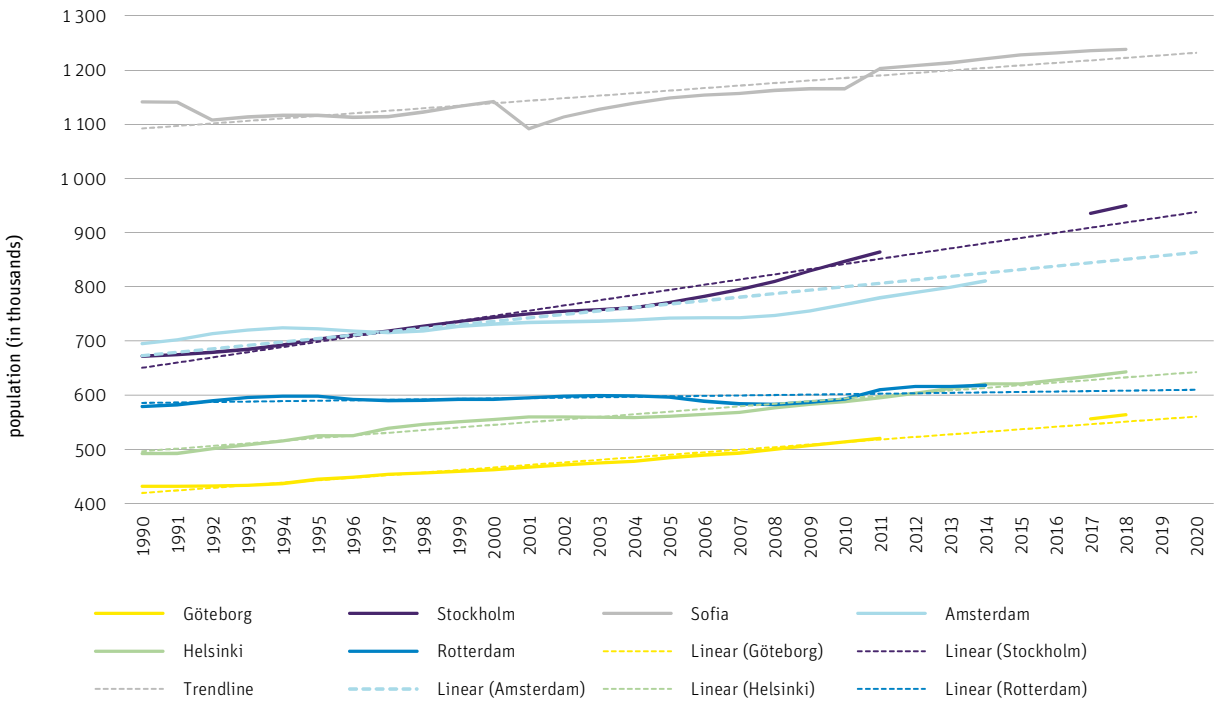
CITIES WITH A PERSISTENT DECLINE IN POPULATION

There are a large number of cities in Europe affected by long-term population decline (→ Fig. 2.4.7). These are cities **in the Baltic States affected by depopulation (Riga, Kaunas, Vilnius)**, and industrial cities not yet able to create new jobs. Such cities can be found in the **German Ruhr (Dortmund, Essen), in Italy (Genoa, Trieste), and in Spain (Valladolid)**. In the Czech Republic, the city of **Ostrava**.

OTHER CITIES

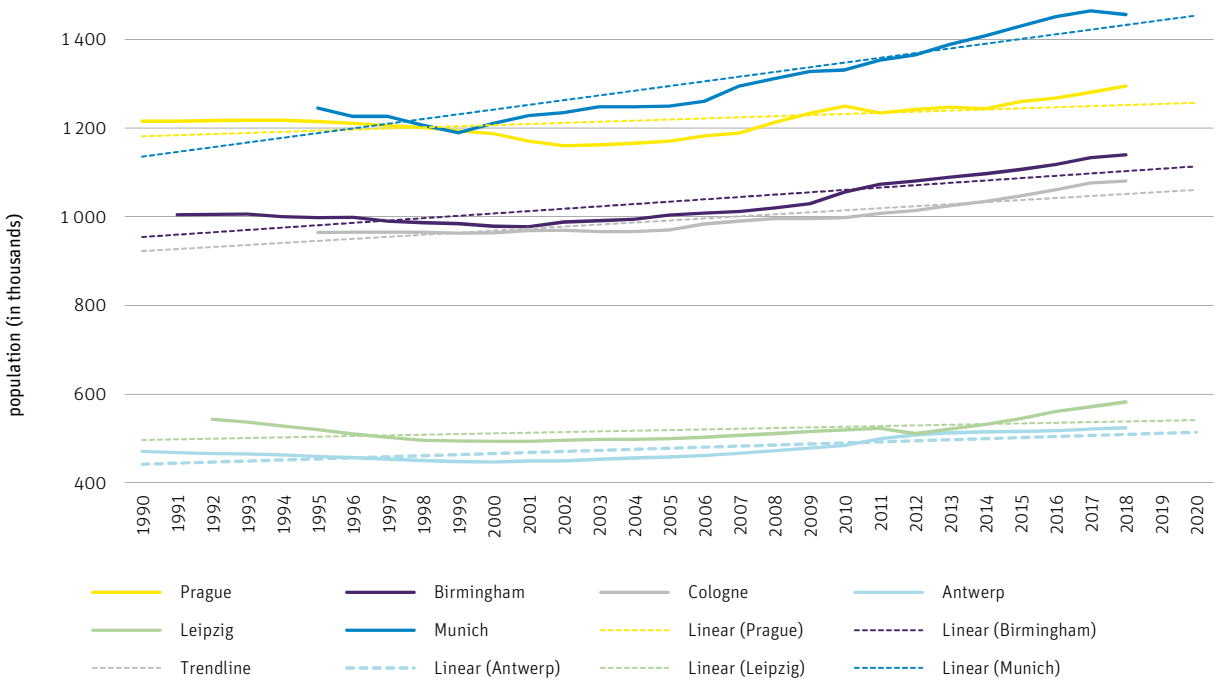
The last type includes cities that have specific population development that cannot be classified under any of the above types. These are mainly cities where there has been a significant decline in population followed by slow or even very dynamic population growth (e.g. **Rome, Glasgow, Varna, Tallinn, and Wuppertal**). Or cities that have experienced multiple phases of population growth and decline over the period under review (e.g. **Milan, Budapest**).

2.4.3 Population development in selected European cities with steady and dynamic population growth (as of 1 January)
IPR Prague 2022 / data: Eurostat 2022



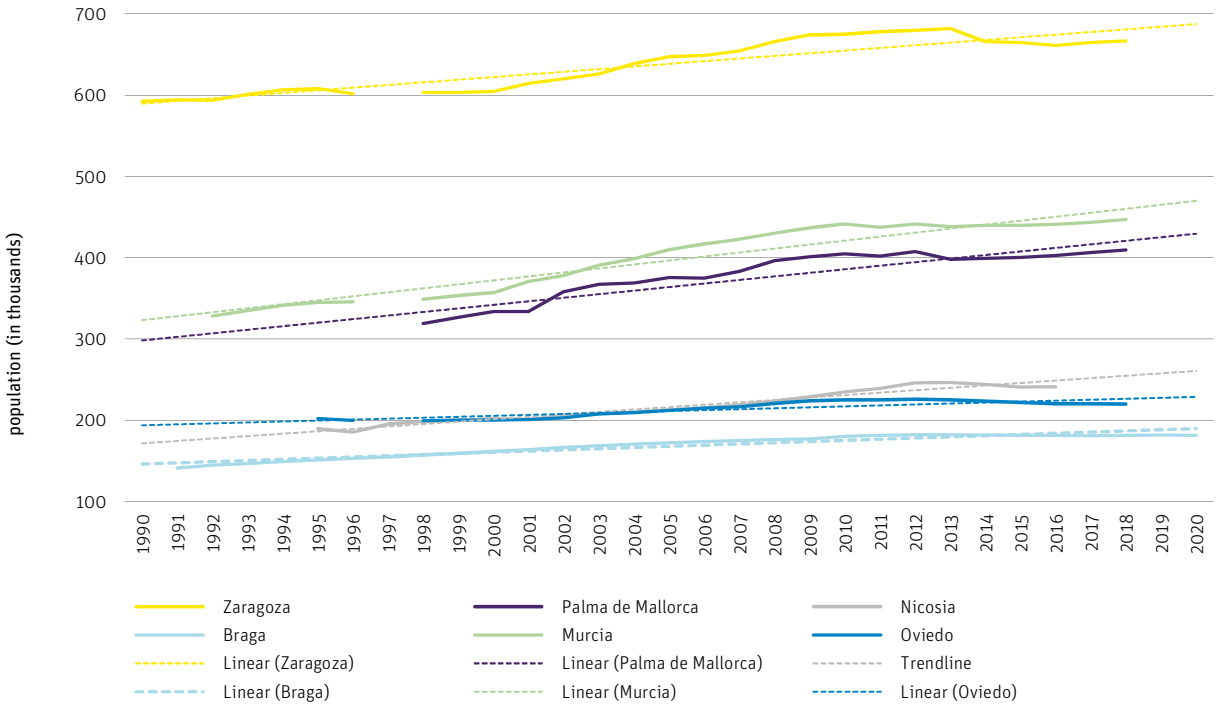
2.4.4 Population development in selected European cities with overall population growth with a period of decline or stagnation in the 1990s (as of 1 January)

IPR Prague 2022 / data: Eurostat 2022



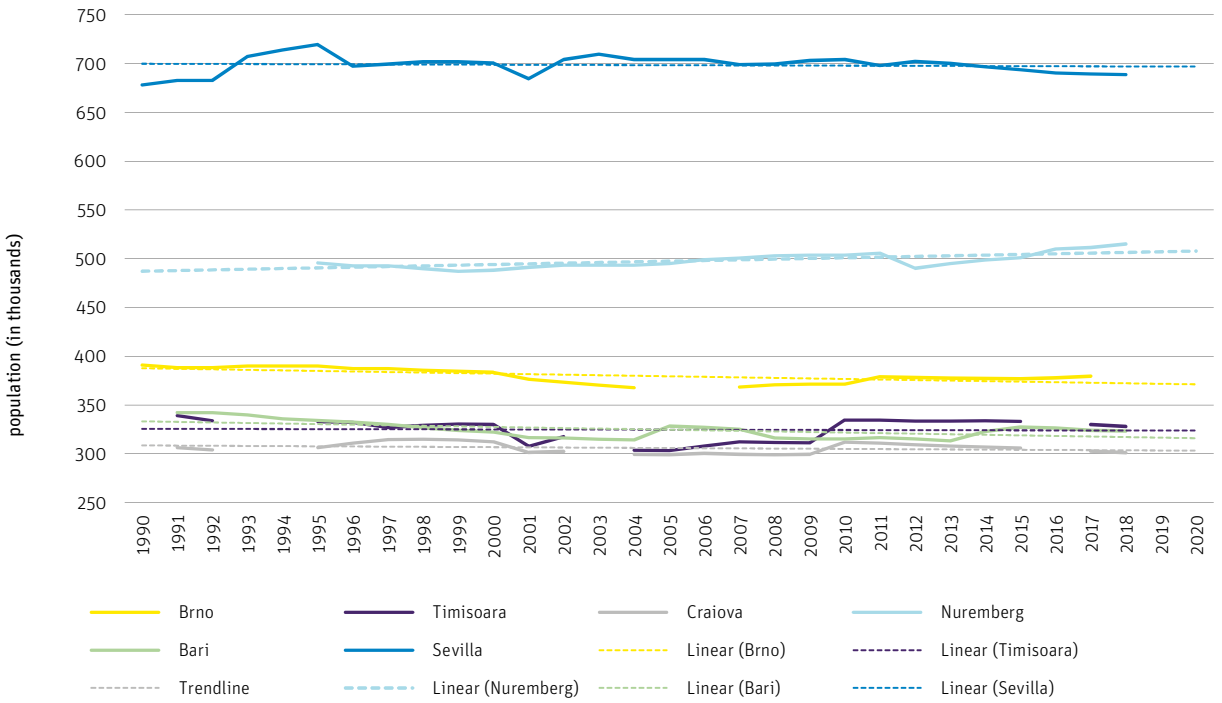
2.4.5 Population development in selected European cities with overall population growth with a period of decline or stagnation in the first decade of the 21st century (as of 1 January)

IPR Prague 2022 / data: Eurostat 2022



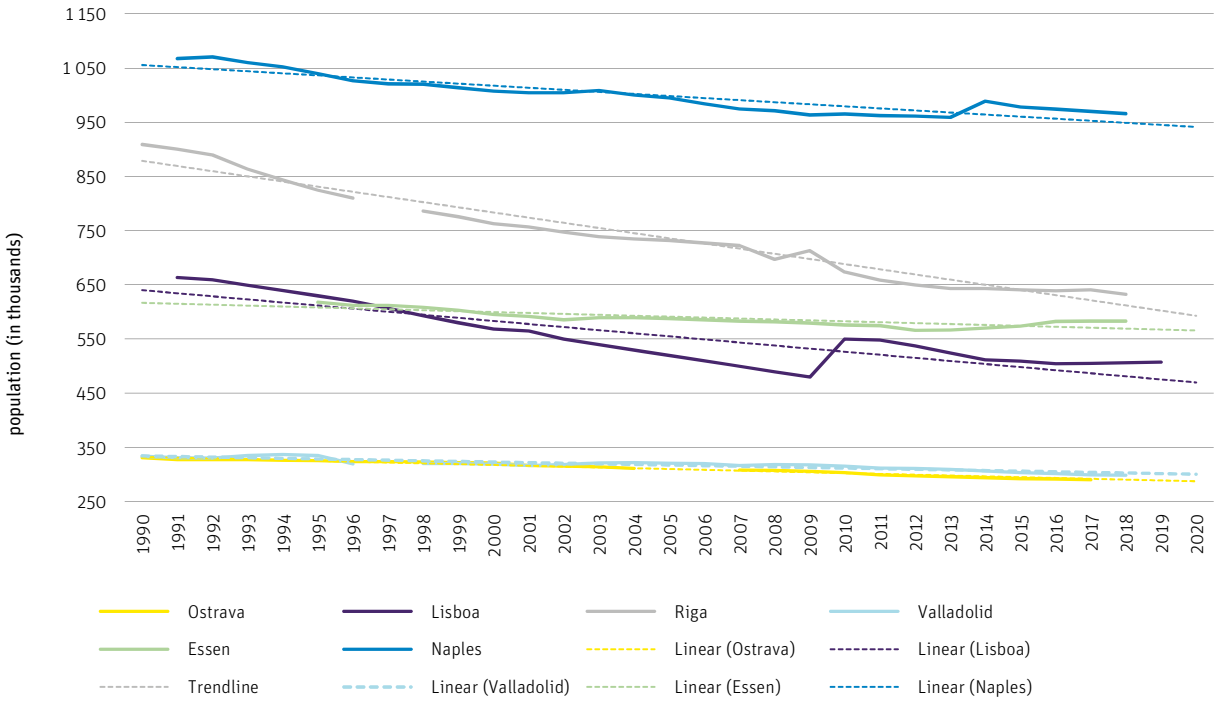
2.4.6 Population development in selected European cities with stagnating population (as of 1 January)

IPR Prague 2022 / data: Eurostat 2022



2.4.7 Population development in selected European cities with a steady decline in population (as of 1 January)

IPR Prague 2022 / data: Eurostat 2022



2.5 Population evolution in European functional urban regions since 1990

Comparing the population development of cities is always problematic because of the different definitions of administrative boundaries, as some cities are very narrowly defined in relation to their functional hinterland (e.g. Paris, Stockholm, Athens). It would therefore be better to conduct analyses for entire urban agglomerations or entire functional urban regions (FURs). However, the temporal and spatial inconsistency of the FUR definition is a problem. Eurostat's Urban Audit publication applies a uniform definition methodology, where the FUR is composed of the city itself and the hinterland, which includes the municipalities close to the city, from which more than 15% of employed people commute to the core of the FUR for work. One advantage of this method is the possibility of comparing different cities. One problem, however, is the unavailability of data, which is of course even worse in this case than for individual cities. The uniform methodology does not take into account local specificities (e.g. the Prague metropolitan area is generally more narrowly defined than under Eurostat) [IPR Praha, 2020a].

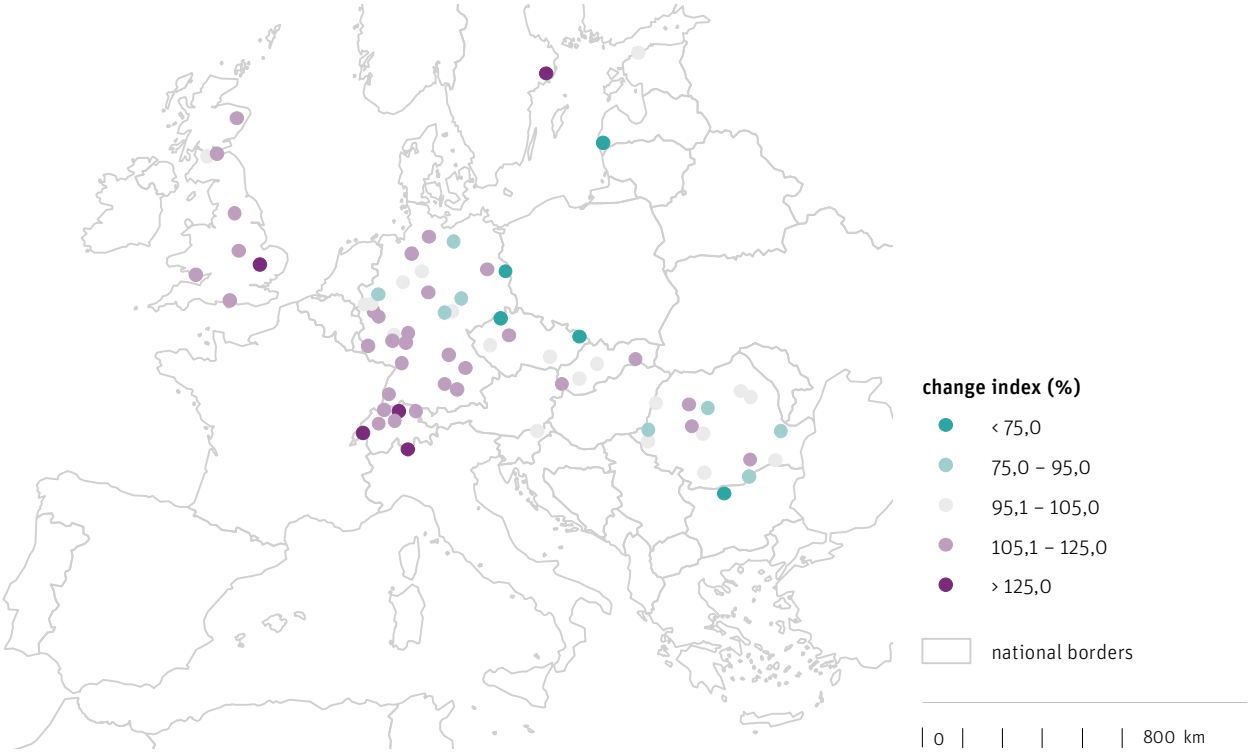
In total, we are able to assess development for 77 FURs, with many major states (Italy, France, Spain) having almost no data for their urban regions. Even from these incomplete data, however, we can **observe basic trends that do not differ significantly from the population development in the cities themselves. Most FURs (55) have seen an increase in population since 1990.** The highest growth dynamics can be seen in the FURs in the rich regions of Northern Europe (Oulu, Stockholm), Switzerland (Geneva, Lugano), and selected regions of Great Britain (Cambridge, Edinburgh) and Germany (Munich, Mainz) (→ Fig. 2.5.1).

Population declines are particularly noticeable in the FURs of peripheral parts of regions affected by depopulation such as the Baltic states (Liepāja, Tartu), Romania (Brăila, Arad), Bulgaria (Pleven), and districts in East Germany (Frankfurt, Halle). Population decline is also occurring in industrial regions affected by job losses. These include the Czech FURs of Ostrava and Ústí nad Labem. There was also population decline in the large industrial Ruhr conurbation in Western Germany.

Due to the process of suburbanization, in most cases there are higher increases in the FURs than in the cities themselves. This is also the case in Prague, where the population increased by 5% between the years under review[12], but there was an 11% increase for the entire Prague FUR. The situation is similar in

12 —— This is the average population on 1 January between 1990 and 1994, and between 2016 and 2020.

2.5.1 Population change index between 1990 and 2020 in selected European functional urban regions
IPR Prague 2022 / data: Eurostat 2022



the cases of Brno, Bratislava, and Munich. However, there may be cases where the city posts higher growth dynamics than the FUR as a whole. These include revitalized post-industrial cities such as Cardiff and Düsseldorf.

3. SOCIAL STRUCTURE

The second part of the study focuses on the social structure of the population of Prague and contemporary European cities. The availability of good quality data is generally problematic when analysing social structure. We are again using official data from the Czech Statistical Office and Eurostat. The Urban Audit dataset contains a wealth of information on age composition, numbers of foreigners, and a variety of socio-economic indicators. There is information for more than 1 000 European cities. These are cities of varying sizes (including municipalities in the hinterland of cities and parts of Greater London). We therefore based our analysis on the average value over the last 10 years, respectively between 2009 and 2018.

3.1 Age structure of the population of Prague

The age composition of the population can be assessed using the numbers and proportions of people in certain age categories - this information is important for planning public amenities, schools, social services and health care.[13] For comparison purposes, the average age of the population or various relative indices, such as the age index (the proportion of the population aged over 65 to the population aged under 15) and the economic burden index (the proportion of the population aged over 65 and under 19 to the population aged between 20 and 64), are more useful. These indices illustrate the rate of demographic ageing and the gross ratio of the economically active population to the inactive population (i.e. the burden of pensions and school infrastructure on the national economy).

The age structure of the population of a settlement unit is influenced by three factors:

1 **the mortality rate** (with increasing life expectancy , demographic ageing logically occurs)
2 **the fertility and birth rates** (higher numbers of births reduce the average age of the population)
3 **population migration** (as people aged between 25 and 35 move most frequently, areas with migration losses generally age demographically and, on the contrary, areas with migration gains show lower ageing dynamics, and possibly a decrease in the average age)

While Western European countries experienced a relatively constant increase in life expectancy after World War II, mortality rates in the then Czechoslovakia improved very little. Between 1955 and 1985, the life expectancy of men in Czechoslovakia increased by only 0.9 years (from 66.6 to 67.5) and that of women by 3.1 years (from 71.6 to 74.7). After 1990, mortality rates in Prague and the Czech Republic as a whole improved. Between 1991 and 2019[14], the increase was much faster and life expectancy increased by 8.1 years for men (from 68.2 to 76.3) and 6.3 years for women (from 75.8 to 82.1). **The increase in life expectancy was mainly due to the availability of modern healthcare (highly effective drugs and modern medical technology), but also due to the healthier lifestyle that began to be promoted after 1989** (e.g. less smoking, a healthier diet, more emphasis on prevention, etc.). After the fall of the Communist regime, there was also a decline in the total fertility rate and a related decline in the number of births between 1993 and 1999. In Prague in the 2nd half of the 20th century, the numbers of emigrants also outnumbered immigrants (→ Chap. 2.3).

As a consequence of the above, we witnessed a relatively dynamic ageing of the population in Prague until 2006, which was manifested by an **increase in the average age, and increases in the numbers and proportions of people in higher age categories** (→ Fig. 3.1.1, 3.1.2) and an **increase in the ageing index** (→ Fig. 3.1.3). On the other hand, the economic burden index has been declining due to the decline in the numbers of children. There has been a stagnation in the average age and a decline in the ageing index since 2007. This is due to an increase in the number of births and migration, with primarily younger people moving to Prague, while on the contrary, in the older age categories (over 50) there are higher numbers of emigrants than immigrants. On the other hand, we are witnessing an increase in the economic burden index caused by growth in the number (and proportion) of people in the lower and higher age categories. The proportion of children under the age of 14 is increasing due to the rising birth rate (2018 saw the highest number of births since 1980). In addition to improving mortality rates, the increase in the proportion of seniors since 2010 is due to demographic trends, with stronger population years (people born after World War II) entering these age categories.

Life expectancy has long been above the national average in Prague. This is due to the availability of quality health care, prompt medical assistance, and healthier lifestyles of the inhabitants. Prague also has a lower total fertility rate. For these reasons, the average age of the population in Prague was higher than in the rest of the Czech Republic in the 1990s. Thanks to **immigration, Prague's population is relatively younger than the national average** (the average age in Prague was 42.0 compared to 42.6 in the Czech Republic in 2020). It is highly likely that the population will continue to age gradually in the future. **Demographic ageing should be less dynamic in Prague, as it should be slowed down by immigration** and expected population growth [Brabec, 2019b].

13 ——— Data on the age composition of Prague's population are updated on the ÚAP Portal in the Catalogue of Indicators and Metrics application (https://uap.iprpraha.cz/#/katalog-indikatoru-a-metrik/m.0300.01.003), and the public amenities assessment in Book 800(https://uap.iprpraha.cz/#/texty/318856/318857).

14 ——— We are not presenting data for 2020 because it was a specific year when life expectancy fell due to an exceptional increase in the number of deaths caused by COVID-19.

3.2 Age structure of the populations of European cities

We assess the age structure of contemporary European cities in terms of the average age of the population, the proportion of the population aged over 75, and the economic burden index. There is strong correlation among these indicators. Due to the incompleteness of the Urban Audit database, we are forced to work with averages for the last 10 years (2009 to 2018)[15], but we also track development since 1990 for selected cities.

When assessing the social structure of European cities, we cannot abstract from the situation at the level of entire countries. The age structure is strongly influenced by the quality of health infrastructure and family policies, which vary from country to country. Individual European countries have also undergone differing demographic development, with some countries experiencing large population losses during World War II, and others - such as today's territory of the Czech Republic - growing in population during that time. However, due to population immigration, cities with growing populations have lower average ages than the national average.

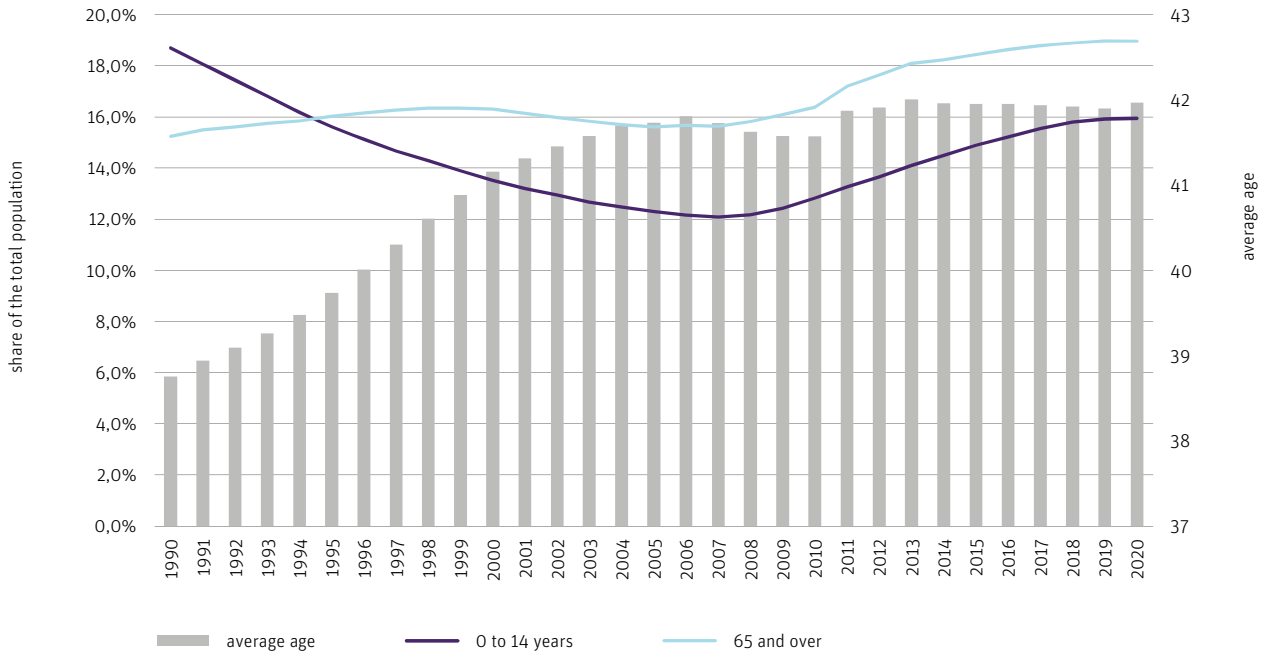
Germany, Italy, Portugal, and Greece have the oldest populations in Europe today. These are countries with relatively higher life expectancy and low total fertility rates. On the other hand, countries such as Ireland, Norway, Sweden, and Great Britain, i.e. countries with positive migrant balances and higher total fertility rates, have younger populations. **The oldest age structures can be found in smaller towns in the former East Germany**, such as Dessau-Roßlau, and Zwikov (→ Fig. 3.2.1). Higher average ages are also found in **Portuguese** (Porto, Lisbon), **Spanish** (León, Salamanca), and **Dutch** (Heerlen) **cities**.[16] The highest proportion of people aged over 75 in the total population is found in **Italian cities**. This is mostly in the region of Liguria (Savona, La Spezia, Genoa), followed by the cities of Trieste, Bologna, and Florence. There is also a high proportion in **coastal cities popular with seniors** (e.g. Fréjus, Oostende, Bayonne). A higher economic burden index can be found mainly in smaller towns in Great Britain (Waveney, Eastbourne), and France (Roanne, Béziers). An overview of the cities with the oldest and youngest age structures is available in the annexes to the study (→ Annex P.04, Annex P.05).

The youngest age structure in Europe is found in cities with growing populations, large universities, and large populations

15 —— In early 2022, there is very limited data availability for 2019 or 2020.

16 —— Higher average ages can also be expected in Italian cities, however data for some of them are missing.

3.1.1 Evolution of the average age and the proportion of people aged zero to 14 and over 65 in the total population in Prague
IPR Prague 2022 / data: Eurostat 2022

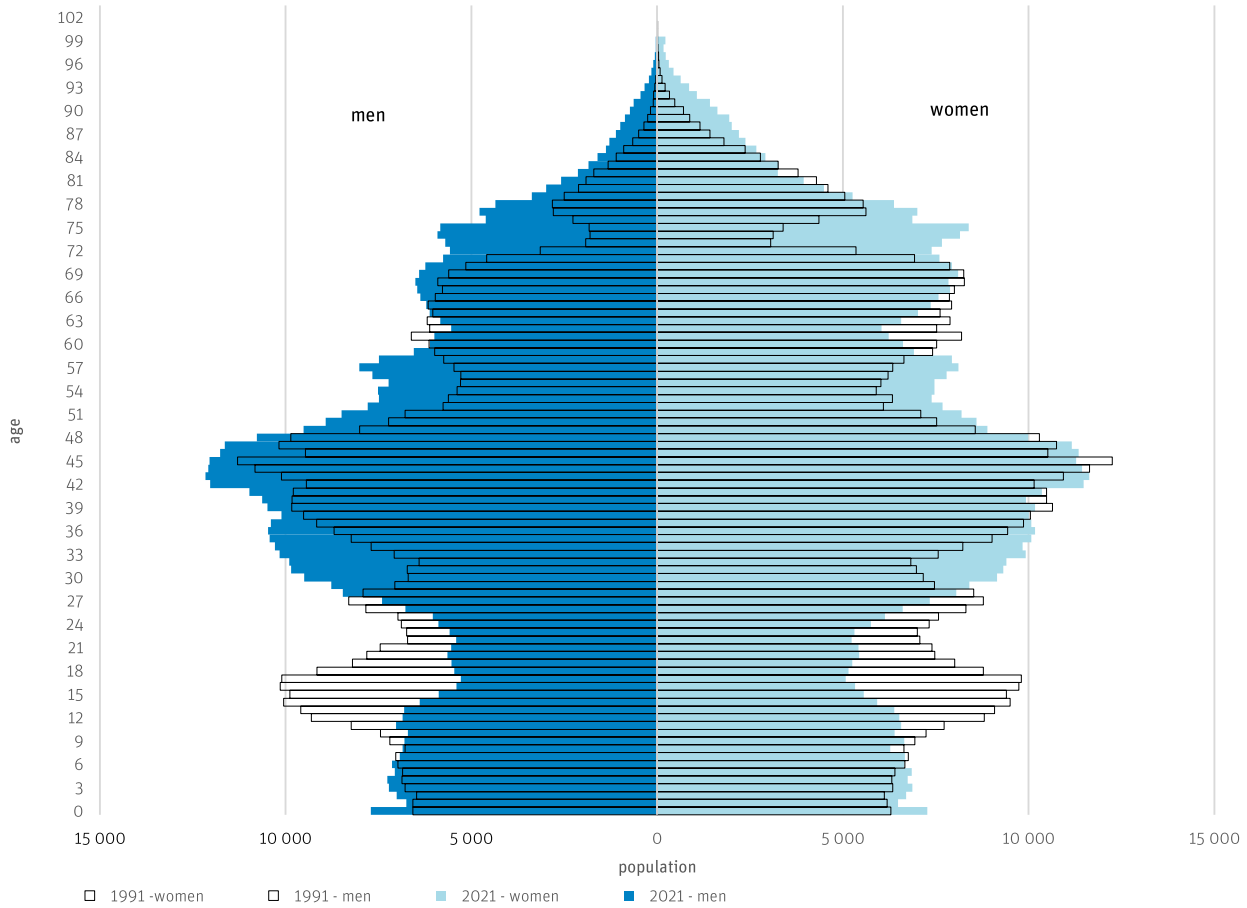


with immigrant roots. These are mainly **British cities such as Oxford, Cambridge and Manchester**. The structure is very young in **London**, especially in the immigrant boroughs of Tower Hamlets, Newham, and Islington. This is also true for selected cities in **France** (Poitiers, Rennes, Montpellier), the **Netherlands** (Groningen, Utrecht), and **Ireland** (Galway, Dublin). A lower proportion is also evident in **cities in South-Eastern Europe** (e.g., Timisoara, Craiova), where life expectancy is lower. Lower fertility rates in these poorer countries are also resulting in lower economic burden indexes.

The age composition of Prague is average in the context of European cities. It has a slightly younger population compared to the reference cities. The average age and proportion of the population aged over 75 in the total population are highest in German cities and Warsaw. By contrast, Vienna, Bratislava, and Paris have relatively younger populations (→ Fig. 3.2.2).

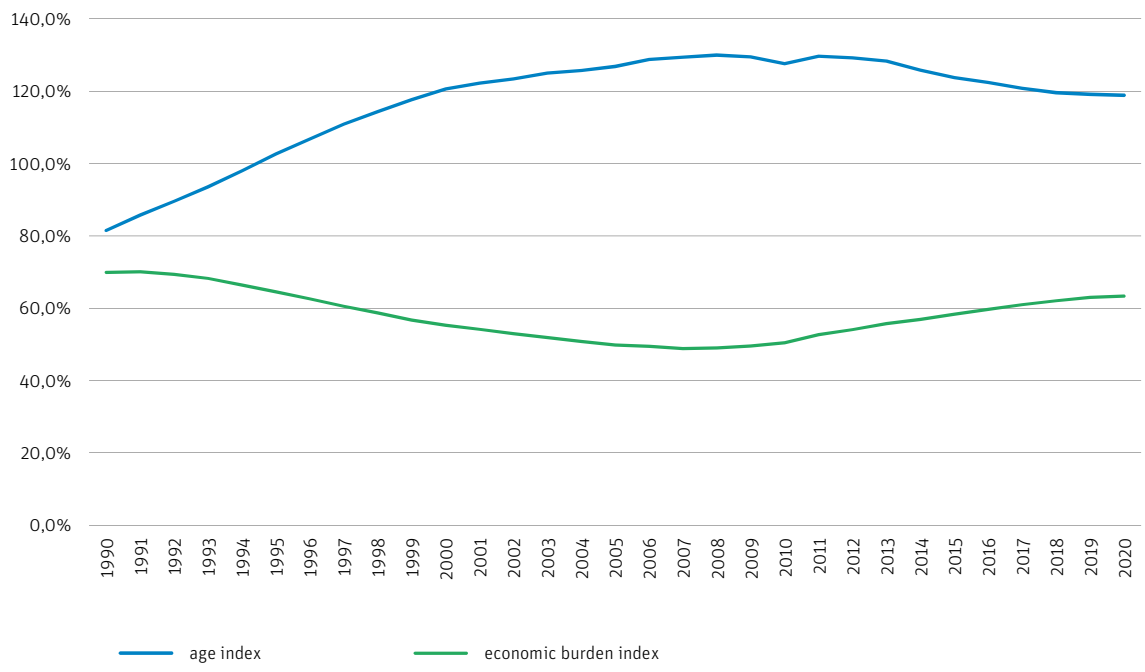
The lack of data means we can only analyse the development of the age structure since 1990 for a limited number of cities (292 cities in total). **The vast majority of the cities surveyed have experienced population ageing, with the ageing dynamic higher for the state as a whole than for the individual cities**. Declines in the proportion of the population aged over 75 can be observed in cities in Northern (Copenhagen) and Western (Paris, Amsterdam) Europe, and Great Britain (Manchester). These are cities undergoing gentrification and generational change. Most European cities are experiencing demographic ageing. The highest dynamics are in cities with declining populations located in states where mortality rates are improving (Bulgaria, Poland, and the former GDR).

3.1.2 Age pyramid of the population of Prague in 1991 and 2021
IPR Prague 2022 / CZSO 2022



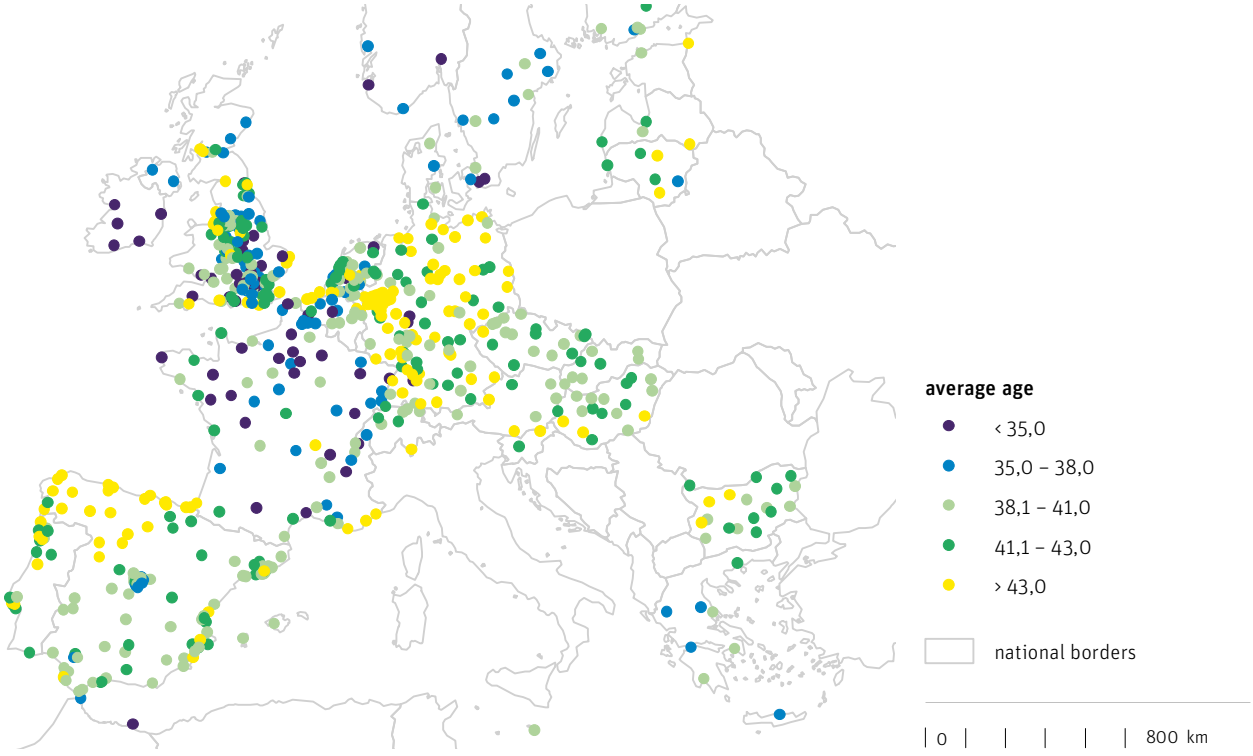
3.1.3 Development of the ageing and economic burden indices in Prague

IPR Prague 2022 / CZSO 2021



3.2.1 Average age in selected European cities (average for 2009 to 2018)

IPR Prague 2022 / Eurostat 2020



3.3 Foreigners in Prague

Prague's population growth in recent years has mainly been due to foreign migration. **Without immigration by foreigners, the total population of the capital would be declining or stagnant**.[17] The number of foreigners in Prague has more than tripled since 2001, and the proportion of people with non-Czech citizenship in the total population was already 17% (228 000) at the end of 2020 (→ Fig. 3.3.1). Foreigners move to Prague primarily for economic reasons, i.e. for work, but also to study and to enjoy the quality urban environment.[18] It is precisely economic growth and demand for labor that have determined the dynamics of the increase in the number of foreigners in Prague in recent years. Already in the 1990s, socially strong foreigners with higher incomes from Western Europe and North America (mostly managers of multinational companies) began to move to Prague, as did socially weaker foreigners (mainly from Ukraine, Slovakia, and Vietnam) to fill lower-paid positions that are not sought after by the majority population [Mejtřík, 2019].

The highest growth in the number of foreigners was between 2004 and 2007 during a significant upturn in the Czech economy associated with growth in construction activity and low unemployment. In 2009, as a result of the economic recession, there was a decline in jobs, which was reflected in a decline in the total number of foreigners living in the Czech Republic, while the number of foreigners in Prague stagnated. With the economic growth that came after 2014, we witnessed another significant increase in the number of foreigners, but there are slight changes in the structure of foreigners by citizenship. **In recent years, there has been a significant increase in the number of foreigners from relatively poorer EU countries with higher unemployment rates** (Romania, Bulgaria, Hungary, but also Greece and Italy), **followed by richer EU countries and North America** (Great Britain, USA, France), and **from countries with high population growth** (India, Turkey, Philippines). Compared to the past, there is no longer any clear increase in foreigners coming from Ukraine (not including the refugee wave in 2022), Vietnam, or Russia.

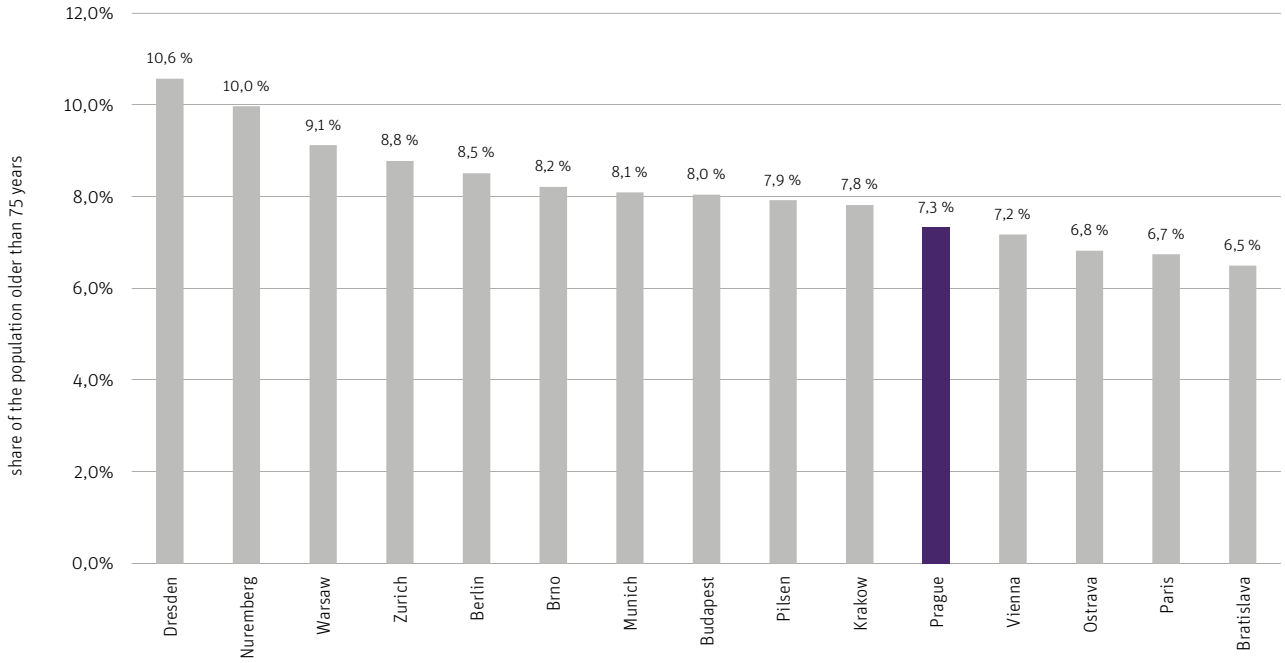
Prague is clearly the most attractive region of the Czech Republic for foreigners due to the number of job opportunities and high quality of life (→ Fig. 3.3.2). **In the long term,**

17 ——— See the ÚAP Portal in the Catalogue of Indicators and Metrics application (https://uap.iprpraha.cz/#/katalog-indikatoru-a-metrik/m.0300.01.018), where you can also find data on the development of the structure of foreigners in Prague.

18 ——— The phenomenon of global real estate investment is also widely associated with foreigners. According to estimates made in the IPR Prague study, between the 2nd half of 2016 and the 1st half of 2018, foreigners acquired on average approximately 10% of all real estate in Prague (Brabec & Němec, 2019)

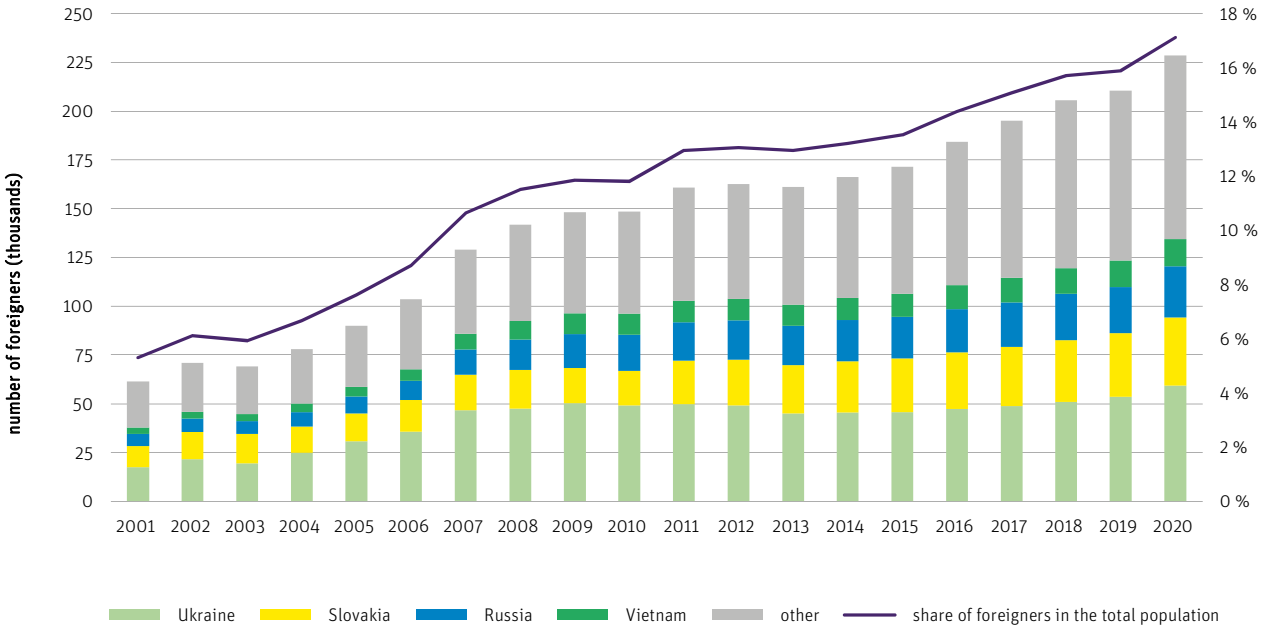
3.2.2 The proportion of the population aged 75+ in the total population in Prague and selected European cities (average for 2009 to 2018)

IPR Prague 2022 / Eurostat 2020



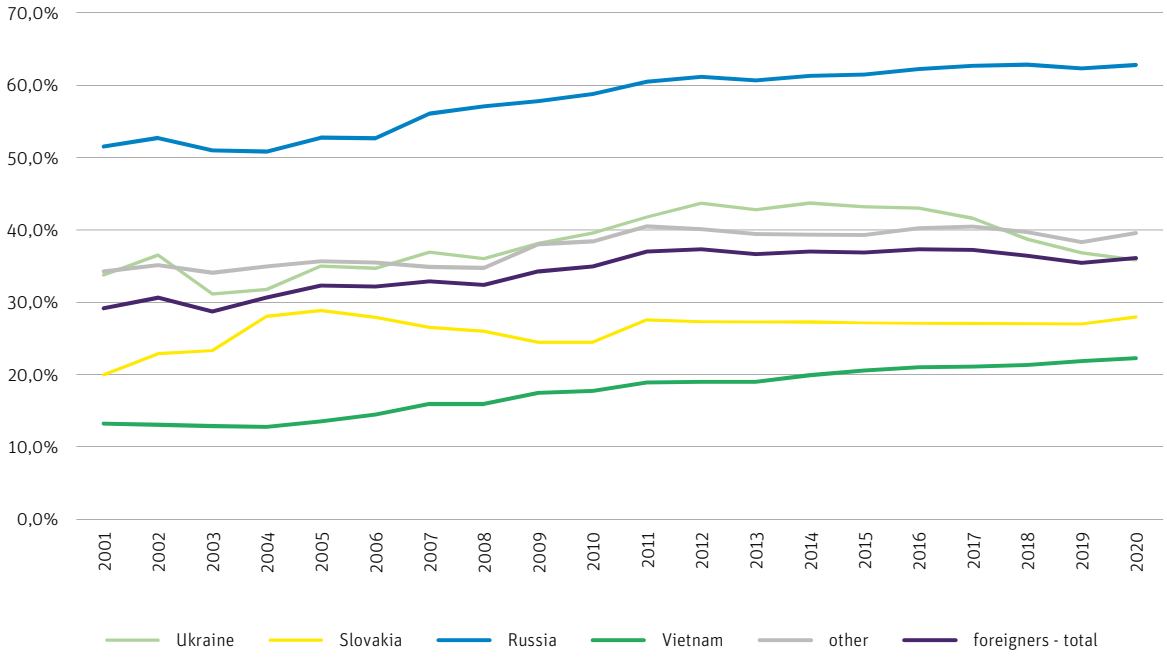
3.3.1 Development of the number and proportion of foreigners by citizenship in the total population of Prague

IPR Prague 2022 / CZSO 2021



3.3.2 Proportion of foreigners living in Prague in the total number of foreigners in the Czech Republic

IPR Prague 2022 / CZSO 2021



approximately 35% to 38% of all registered foreigners in the Czech Republic are concentrated here, with a higher growth rate in Prague than in the rest of the country. There is an above-average concentration of foreigners from Russia, the richer states of Western Europe, and North America. On the contrary, there is a relatively lower concentration of foreigners from Vietnam, Slovakia, and Poland.

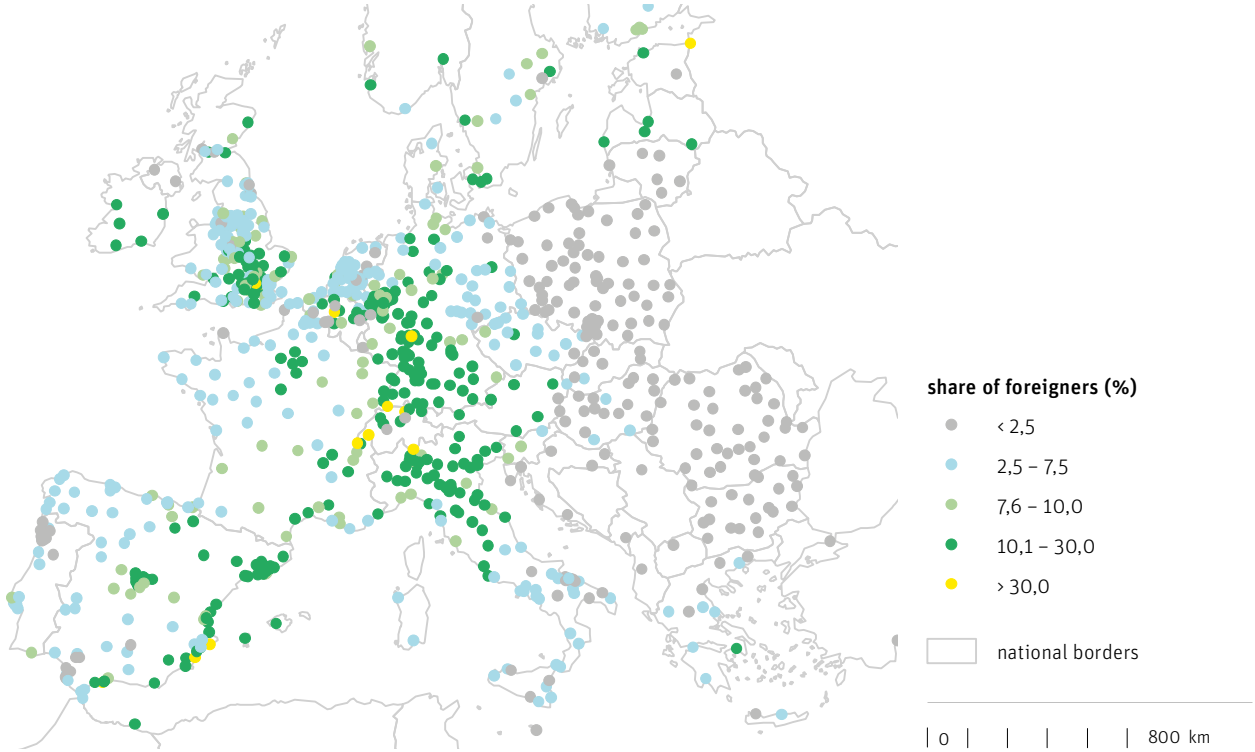
3.4 Foreigners in European cities

The structure of the population by nationality and the growth of the numbers of foreigners in European cities is currently a hot and debated topic. More attention is paid to problems with their integration into the majority society and less to the benefits of foreigners for population and economic growth. **Today's successful post-industrial cities create many jobs that are often filled by immigrants**. These are primarily jobs in economic sectors such as construction, accommodation, and hospitality. That is, jobs that are not sought after by the domestic population and that require greater work flexibility. Industries and businesses are often existentially dependent on the employment of foreigners. However, foreigners also find employment in highly skilled professions, for example as managers of multinational corporations. Today's cities are therefore growing in population largely due to international migration. The growth dynamic for the numbers of foreigners is mainly due to the attractiveness of the city itself. State-level conditions play a rather secondary (though often significant) role, and only for migrants from non-EU countries.

We assess the issue of foreigners in contemporary European cities in terms of the proportion of foreigners in the total population, distinguishing between EU and non-EU foreigners, and the proportion of foreign-born residents (i.e. people who may already be citizens of the given country). There is a strong correlation between these indicators (→ Annex P.08). Due to the incompleteness of the Urban Audit database, we are forced to work with averages for the last 10 years (2009 to 2018). Unfortunately, the unavailability of data means we are unable to analyse the development from 1990.

The largest proportion of foreigners in the total population of any European city is found in the Estonian city of **Narva**, located on the border with Russia, where foreigners actually make up the majority. A higher proportion of foreigners can also be found in other Baltic cities such as **Riga and Tallinn** (→ Fig. 3.4.1). This is due to historical developments, when the Soviet era saw mass migration of the Russian-speaking population, which still lives here today, with a large part of them not having Estonian or Latvian citizenship. **An above-average proportion of foreigners can also be found in the wealthy cities of Western**

3.4.1 Proportion of foreigners in the total population in Prague and selected European cities (average for 2009 to 2018)
IPR Prague 2022 / data: Eurostat 2020



Europe. This is most evident in Switzerland, where more than a third of the population of many cities has foreign citizenship. There is a high concentration of foreigners in the global cities of **Paris** and **London** (both in prestigious neighbourhoods such as Kensington and Chelsea, and in lower-status ones such as Brent and Newham). There is also a high proportion of foreigners in cities where large multinational institutions are based, such as **Geneva** and **Brussels**. There is also a high concentration (mainly of EU foreigners) in the **Spanish coastal cities** (Torrevieja, Fuengirola, and Marbella), which are popular with people from wealthier countries due to their favorable climate and lower cost of living.

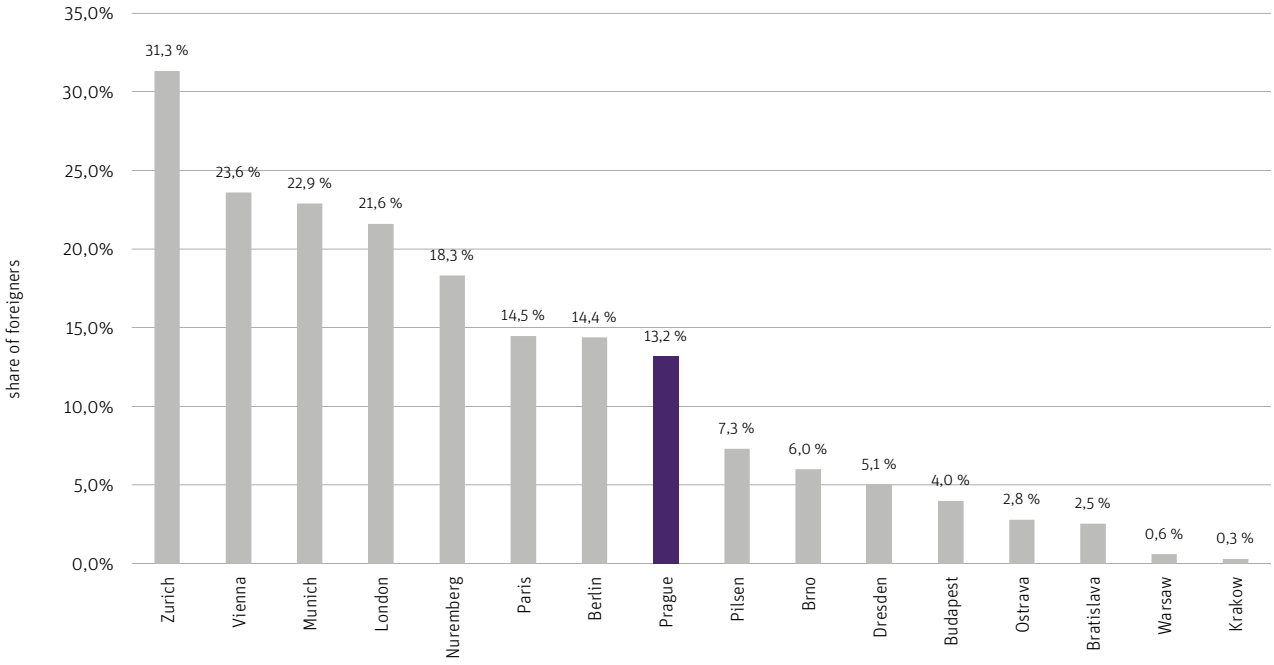
In wealthy and growing cities in Western Europe, the proportion of EU and non-EU foreigners is generally balanced. The database does not contain the structure of foreigners by citizenship, but we can assume that cities generally follow the national situation. This does not change significantly over time and is strongly influenced by the colonial past of the countries in question, their geographical proximity, and other historical developments. French cities have a higher proportion of immigrants from the Maghreb and sub-Saharan Africa, but also from Italy and Portugal. German cities have a higher proportion of foreigners from Turkey, and Poland.

In addition to the proportion of foreign-born people, we can also look at the proportion of people born in a different country than that in which they now live. These are people of foreign origin but who are already citizens of their new state. There is a very strong correlation between these indicators. The biggest differences can be found in Croatian cities (Slavonski Brod), a consequence of the Yugoslav Wars and the associated population displacement. Also cities in Great Britain, the Netherlands, and Sweden. Immigrants tend to stay longer in these countries and acquire citizenship.

Smaller concentrations of foreigners can be found in the cities of Central and South-Eastern Europe. These are mainly smaller towns in Poland, Bulgaria, Romania, Hungary, and Slovakia, meaning countries with relatively low wages and long-term population decline. In cities **affected by depopulation, there are, of course, less job opportunities to attract foreign immigrants**.

In Prague, despite a large increase in recent years, the proportion of foreigners in the total population is still only slightly above average in a Europe-wide comparison (→ Fig. 3.4.2). It is still **lower than in Western European metropolises** such as Zurich, Vienna, Munich, and London, where the proportion of foreigners is up to twice as high. However, Prague is clearly the **most attractive city for foreign**

3.4.2 Proportion of foreigners in the total population in Prague and selected European cities (average for 2009 to 2018)
IPR Prague 2022 / data: Eurostat 2020



immigrants compared to other metropolises and smaller cities in the former Eastern Bloc.

3.5 Socio-economic structure of the population of Prague

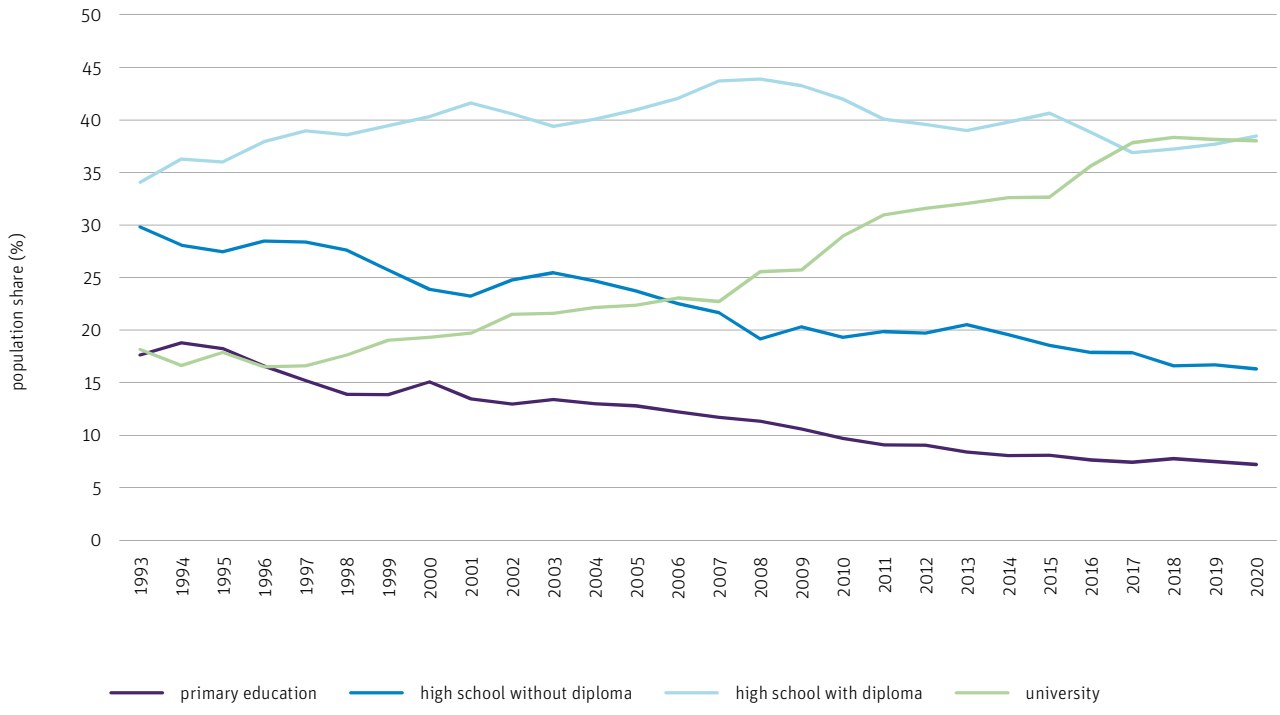
The socio-economic structure of the population and social inequalities are key topics in the study of contemporary post-industrial cities (→ Chap. 1.2). It is evident that successful cities are experiencing an increase in the overall average income of their residents due to the concentration of high-value-added jobs. On the other hand, the number of people who are homeless or at risk of social exclusion is also increasing, partly due to rising property prices and other costs of living.

However, these trends are not easy to track and compare from city to city. The problem is the unavailability of quality data that can be used to assess social inequality. The traditional indicator is the **educational structure of the population, where higher levels of education generally mean better employment and higher income**. Thanks mainly to sample surveys, we can analyse the evolution of average incomes and household sizes. Then the population structure according to the proportion of unemployed people or employment by sector. We can use these indicators to assess the development of the socio-economic structure, but social inequality only to a very limited extent.

In Prague, as in the rest of the Czech Republic, there has been a long-term **increase in the educational level of the population**. While in 1993, the proportion of higher-education graduates in the population aged over 15 was 17%, in 2020 it was already 38% (→ Fig. 3.5.1). On the other hand, there has been a noticeable decrease in the proportion of people with primary or secondary education without passing the secondary school-leaving exams. The proportion of higher-education graduates has long been higher in Prague than in the rest of the Czech Republic (19% in 2020). On the other hand, the growth in the numbers of higher-education students is more dynamic in the Czech Republic as a whole than in the capital.

The higher-education structure of the city's population is reflected in above-average net household incomes, which in Prague have long been well above the Czech average and unequivocally the highest of all regions (→ Fig. 3.5.2). In addition to the education level of the population, higher incomes are also due to the economic performance of the capital, low unemployment, the presence of the headquarters of many domestic and international companies, institutions and authorities, and the attractiveness of the city for tourism, etc. **Average net household incomes have been growing over**

3.5.1 Development of the educational structure in Prague
IPR Prague 2022 / LFSS, CZSO 2021



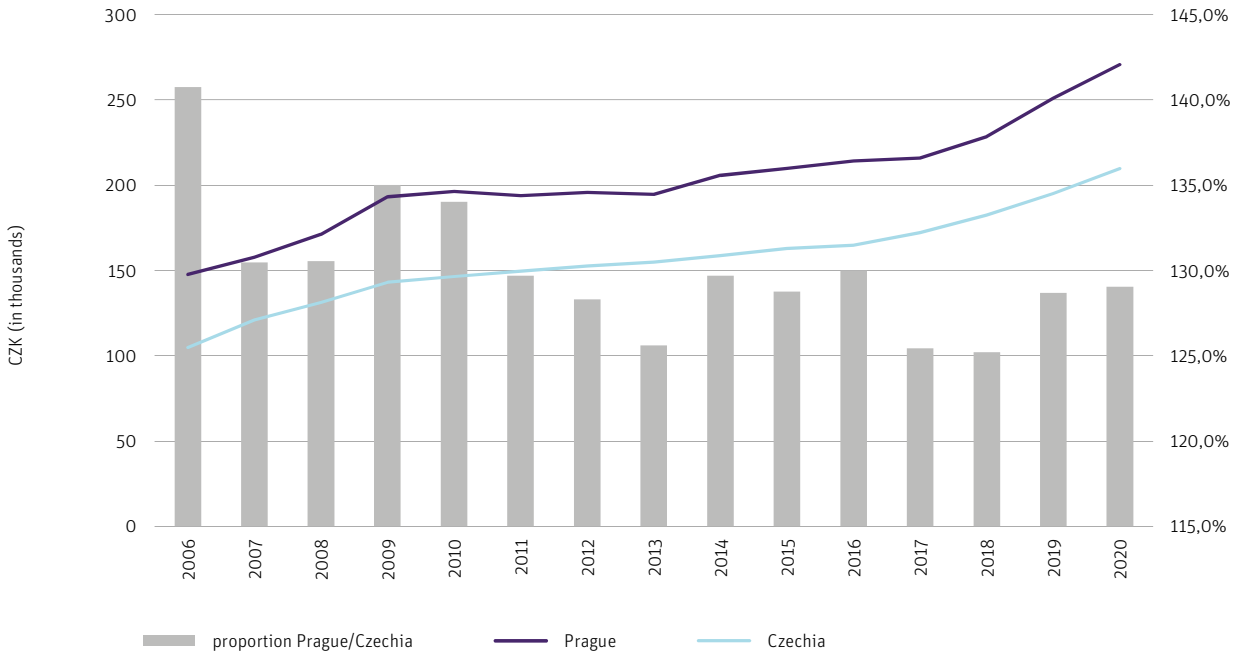
the last ten years both in Prague and in the Czech Republic as a whole, where the growth rate has actually been slightly higher than in the capital. Overall, the dominant position of the capital within the country in terms of average household incomes has been slightly reduced, yet total net incomes in Prague are still approximately 25% to 30% higher than in the rest of the Czech Republic.

Average household net incomes per person (i.e. household member) are differentiated. The highest incomes are achieved by households headed by more educated employees or self-employed people, followed by childless young households or single-person households of people aged under 65. Logically, households with more children and those including retired people have lower incomes per household member. On the other hand, it can be seen that over the last ten years, lower-income households have experienced relatively higher income growth compared to higher-income households. **Thus, the available data do not indicate significant social polarization**, i.e. an increase in social inequalities between rich and poor [Brabec & Němec, 2016].

There has been a long-term decline in the size of households in Prague. While in 2011 the average household in Prague had 2.29 people, in 2021 this figure was already 2.11 [CZSO, 2021]. Overall, therefore, there is a more dynamic increase in households than in population. **The average size of Prague households is consistently the lowest of all regions in the Czech Republic**. The decline in household size is primarily due to growth in the number of single-parent families, and especially growth in the number of single-person households. In 2011, 44% of all households were already single-person households, and approximately 13% of households were single-parent families. The most common type of single-person household is a widowed woman aged over 75, followed by single men aged 25 to 35. In single-parent families, women are most prevalent. The number of single-parent families with dependent children is similar to the number of those without dependent children.

The unemployment rate in Prague has long been lower than in the rest of the country. There is also a higher concentration of workers in higher-value-added services such as finance, information technology, and scientific and technical activities, with significant growth in the number of workers in these sectors since 1990 [Mejtřík, 2019].

3.5.2 Development of average net income per person per year in Prague and the Czech Republic
IPR Prague 2022 / SILC, CZSO 2021



3.6 Socio-economic structure of the population of European cities

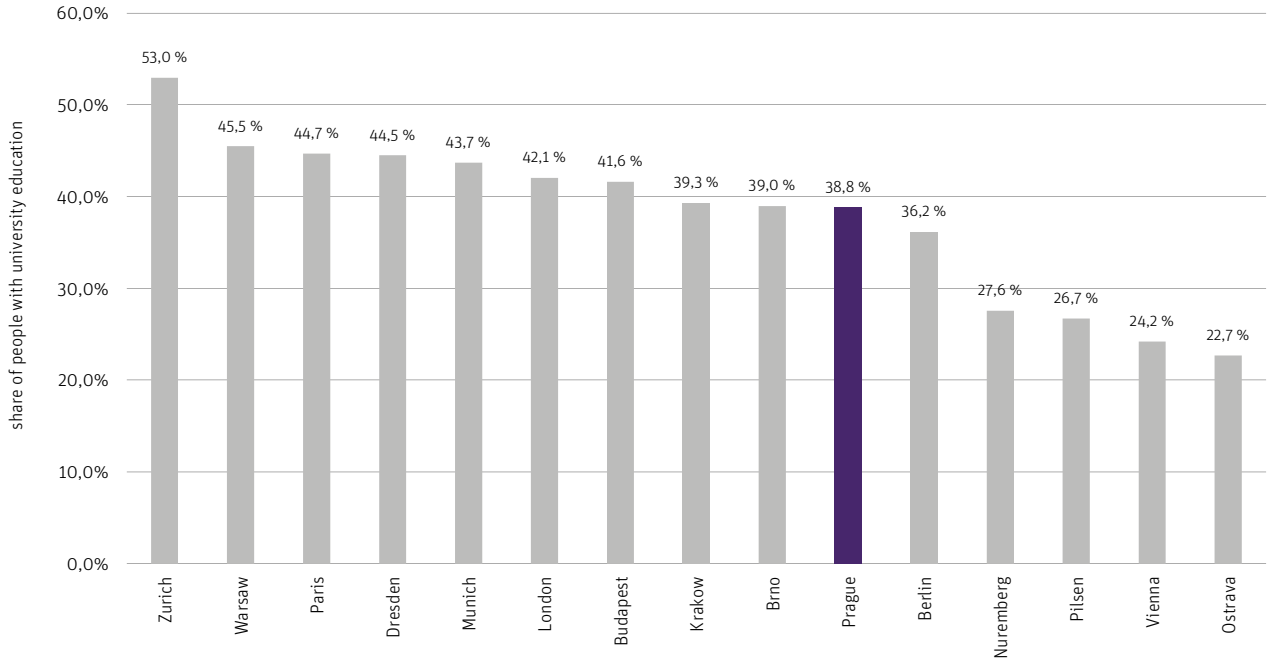
The Urban Audit database contains a large amount of information on social inequalities and living conditions in cities, such as poverty and social exclusion rates and the Gini coefficient. Unfortunately, these data are unusable for our analysis because they are available for very few cities. Thus, we assess cities according to the education structure (i.e. the proportion of higher-education graduates), the unemployment rate, the proportion of people employed in finance and insurance (the sectors with the highest average incomes), average income, and household size. Again, we work with average data for 2009 to 2018. It is therefore a comparative analysis of the socio-economic structure of the population, without focusing on social inequalities in the cities themselves.

Surprisingly, there is not a very strong correlation between these individual indicators. The values are strongly influenced by the state level (including different definitions and changes to them) and especially by the availability of data. Much of the data is still only available from the most recent censuses in European countries, which took place around 2011, and population socio-economic structure values are evolving quite dynamically. For example, the unemployment rate in Prague is listed in the database as 6.8%, while it is currently around 2%.

The highest proportion of people with higher education in Europe is found in cities in Great Britain. **In the university cities of Oxford and Cambridge, more than 75% of the adult population has completed higher education**. Then there are the more affluent parts in the wider areas of major cities such as London and Madrid. High values can also be found in (often university) cities in Northern Europe (Lund, Espoo), the Netherlands (Utrecht), France (Aix-en-Provence), Switzerland (Zurich), Spain (San Sebastian, Santiago de Compostela), but also in the Baltic states (Vilnius, Tallinn). On the other hand, **lower proportions of higher-education students are found in peripheral or structurally handicapped areas of relatively poorer countries such as Portugal** (Paredes, Guimarães), **Poland** (Żory), **Italy** (Prato, Trapani), but also **the Czech Republic** (Karviná, Most). Larger cities in these countries may have a higher proportion of higher-education graduates (e.g. Warsaw), so it is not a rule that richer cities have a higher concentration of higher-education graduates. The proportion is also relatively low in wealthier German cities, and for example in Vienna. **The educational structure of Prague is average in the context of European cities, and rather below average compared to reference cities** (→ Fig. 3.6.1).

The highest proportion of unemployed people has long been clearly in cities in the southern part of Spain, where up to half the economically active population is officially unemployed.

3.6.1 Percentage of people with higher education in Prague and selected European cities (average for 2009 to 2018)
IPR Prague 2022 / data: Eurostat 2020

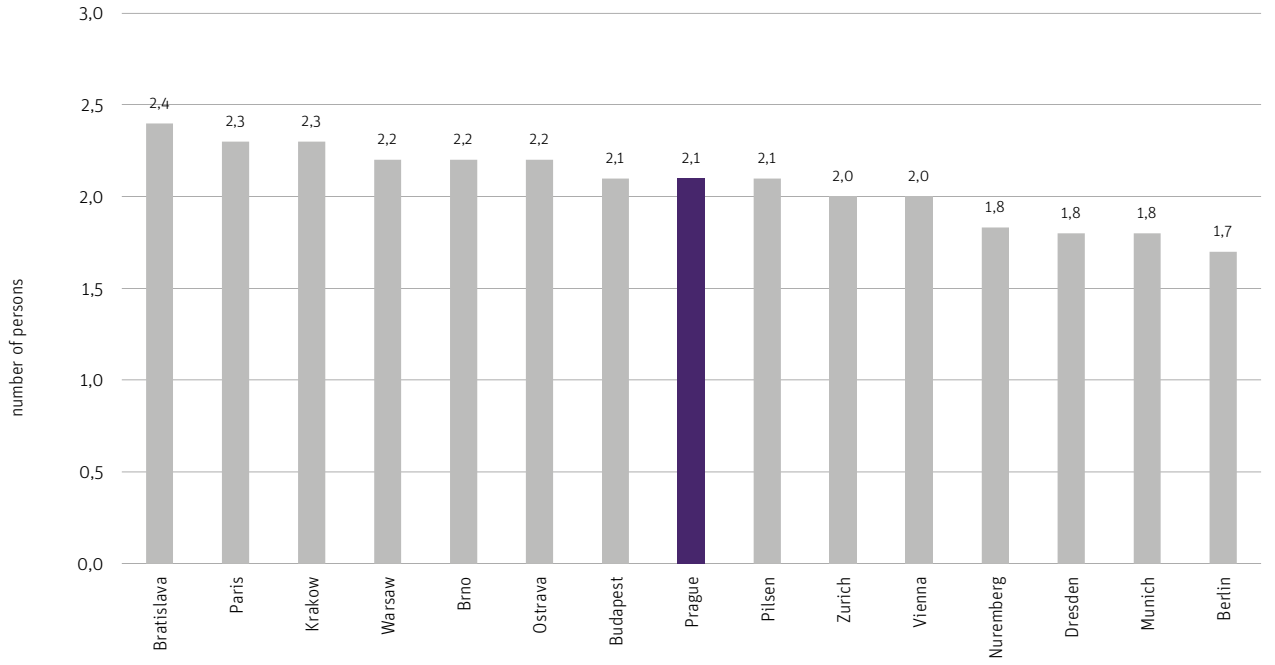


These are followed by cities in southern Italy, including large ones such as Naples and Palermo. Unemployment is also higher in some cities in France (Lens, Perpignan), Belgium (Brussels), Portugal (Porto), and Greece (Thessaloniki). **On the other hand, the lowest proportion of unemployed people can be seen in selected cities in the Czech Republic** (Prague, Plzeň), **Norway** (Stavanger, Bergen), **Hungary** (Sopron), **Germany** (Tübingen, Ingolstadt), and **Great Britain** (Warwick). The proportion of unemployed people is weakly and negatively correlated with the proportion of people employed in finance and insurance. The highest proportion of such employees is in selected London boroughs (City of London, Tower Hamlets), then in cities in northern Italy (Milan, Udine), and Switzerland (Zurich, Lugano), but also in Portugal (Lisbon). On the other hand, lower proportions of employees in finance and insurance can be found in smaller towns in peripheral areas of relatively poorer countries such as Bulgaria (Vraca, Vidin), and Poland (Chełm, Przemyśl).

The highest average net household incomes are found in cities in Switzerland, Luxembourg, the Netherlands, and Northern Europe. Incomes are also high in Spanish cities (highest in the periphery of the Autonomous Community of Madrid), but there is a strong influence from higher household sizes. Lower net incomes are then seen in cities in relatively poorer countries such as Bulgaria (Blagoevgrad), Slovakia (Prešov, Nitra), but also the Czech Republic (e.g. Karviná). However, it should be noted that this indicator has reduced informative power due to poorer data availability.

In contrast, data availability is better for average household sizes. Household size is often cited as one indicator of a city's wealth, with more affluent people being able to afford to live on their own. However, household size is most influenced by age structure, with older people (especially women) more likely to live in single-person households. **The smallest average household sizes can be found primarily in German cities** (Regensburg, Leipzig), and **Groningen in the Netherlands**, with an average of 1.7 people per household. In contrast, the **highest average values** (3.3 people per household) **are in Spanish enclaves in Africa** (Ceuta, Melilla). These are followed by other cities **in Spain** and selected cities in **Poland** (Nowy Sącz), **Portugal** (Ponta Delgada), and **Slovakia** (Prešov, Košice). Larger families can also be found in London boroughs with higher numbers of people with immigrant roots (Newham, Brent). With 2.1 people per household, Prague is a city with lower average household sizes (the average for European cities is 2.3). In Prague, the average household is larger than in German cities or Vienna, but smaller than in Polish cities, Bratislava, and Paris (→ Fig. 3.6.2).

3.6.2 Average household size in Prague and selected European cities (average for 2009 to 2018)
IPR Prague 2022 / data: Eurostat 2020



4. RELATIONSHIP BETWEEN POPULATION DEVELOPMENT AND SOCIAL STRUCTURE

In the previous chapters we discussed population development and social structure in European cities. In the assessment, the association between each of the observed variables was often discussed. It has often been mentioned that population growth is mainly achieved by successful cities with plenty of job opportunities, and that growing cities have higher numbers of foreigners and a younger age structure. In this chapter, we also consider these connections using statistical correlation analyses, and assess the social structure of inhabitants using the typology of cities according to population development.

4.1 STATISTICAL DATA ANALYSIS

The most illustrative assessment of the relationship between variables is generally the use of a correlation coefficient, which assesses the linear relationship between them according to the degree of statistical significance. In this study, we use Spearman's Rank Correlation Coefficient, which is more applicable when the distribution has large outliers, i.e. when the distribution of the observed phenomena has an asymmetric distribution.

In the analysis, we primarily focus on the relationship between population growth, i.e. the index of population change between 1990 and 1994, and between 2016 and 2020, and selected variables monitoring the social structure of the population. Despite data unavailability (and thus their limited informative power), a **statistically significant association can be seen for virtually all monitored variables** (→ Fig. 4.1.1).

The age structure of the population shows a negative correlation. **Cities with growing populations generally have a younger age structure, i.e. they have a lower average age, a lower proportion of seniors**, and a lower economic burden index.. Cities with declining populations have older populations. **The proportion of foreigners in the total population is also positively correlated with population growth**. At the same time, it is interesting that a stronger correlation is evident in the proportion of EU foreigners. There is no correlation between population development and average household size. Otherwise, however, it is evident that population growth is achieved in cities with higher household incomes, a higher proportion of higher-education graduates, a lower number of unemployed people, and a lower proportion of people employed in finance and insurance.

4.1.1 Correlation analysis of the population change index between 1990 and 1994 and 2016 and 2020, and selected indicators of the social structure of the population in selected European cities

IPR Prague 2022 / data: Eurostat 2022

index	value of the Spearman correlation coefficient	significance	n
average age	-0,181*	0,001	197
share of the population older than 75 years	-0,261**	0,000	197
economic burden index	-0,315**	0,000	178
share of the population born abroad	0,299**	0,000	248
share of foreigners	0,279**	0,000	248
share of foreigners from the EU	0,403**	0,000	248
the proportion of unemployed	-0,238**	0,000	233
share of people employed in finance and insurance	0,242**	0,000	218
proportion of university students	0,237**	0,000	224
average household income in EUR	0,376**	0,000	165
average household size	0,071	0,281	231

note:
** proven dependence at 1% confidence level; * proven dependence at 5% confidence level

The mutual relationships between social structure indicators are less clear. There is a weaker but statistically significant correlation between age structure and the proportion of foreigners in the population, with **cities with more foreigners generally having younger populations**. There is no correlation between average age and the proportion of unemployed people or average household income, but there is a statistically significant association between average age and household size and the proportion of higher-education graduates. **Cities with higher concentrations of foreigners generally have lower unemployment rates, higher proportions of higher-education graduates, and higher average household incomes**. The correlations between all the observed variables are available in an annex to the study (→ Annex P.08).

4.2. SOCIAL STRUCTURE OF THE URBAN POPULATION ACCORDING TO POPULATION GROWTH TYPOLOGY

In Chap. 2.3, the typology of European cities according to population growth was discussed. The social structure of the population can be assessed according to the following typology (→ Fig. 4.2.1). **Cities with a steadily growing population generally have a younger age structure**, with the average age in these cities being 3.4 years less than the overall average, and even 7.1 years less than in cities with a steadily declining population. Growing cities also have a lower proportion of residents aged over 75 and relatively lower values of the economic burden index.

The situation is similar for the ethnic (foreign-born) composition of the population, with **growing cities having higher proportions of foreigners in the total population, and especially higher shares of foreign-born people.** The highest proportion of foreigners is in cities that have also gone through a phase of population stagnation, as former industrial cities in Great Britain and Germany are well represented in this type. On the other hand, the proportion of foreigners is lower in cities in South-Eastern Europe (such as Sofia), where, however, there is steady population growth (cities in the classical urbanization phase).

According to socio-economic characteristics, the trends mentioned above are also evident by type. Due to job creation, **the proportion of unemployed people tends to be lower in cities with growing populations, and the proportion of residents employed in finance and insurance, where incomes are generally higher, tends to be higher.** Compared to the average, the proportion of inhabitants who have completed higher education is 10.5% higher in cities with steady population growth. The difference compared to cities that are steadily declining is 12.5%.

4.2.1 Selected population social structure indicators (average for 2009 to 2018) and the population change index in selected European cities according to population development typology between 1991 and 2020

IPR Prague 2022 / data: Eurostat 2020

index	sustained and dynamic growth	growth with a period of decline or stagnation - type 1	growth with a period of decline or stagnation - type 2	stagna-tion	steady decline	other	in total
average age	36,8	37,5	41,1	40,4	43,9	40,5	40,2
proportion of population over 75 (%)	7,4	7,8	8,1	8,6	10,0	8,7	8,1
economic load index (%)	60,3	59,1	59,2	62,5	64,6	60,2	62,3
population share foreign-born (%)	20,6	19,9	14,4	9,1	8,6	10,1	11,3
proportion of foreigners (%)	11,7	13,3	9,9	8,0	7,8	9,5	8,0
proportion of foreigners from the EU (%)	5,3	5,8	3,3	2,7	1,7	2,8	3,3
unemployment rate (%)	11,2	7,6	17,2	14,5	13,2	11,4	11,6
share of people employed in finance and insurance (%)	20,9	22,0	18,4	19,9	21,2	22,2	17,8
proportion of university students (%)	43,5	39,7	39,7	32,4	31,0	37,3	33,0
average household income in EUR	23 675	24 573	28 331	20 083	17 167	22 152	29 705
average household size	2,07	2,08	2,63	2,24	2,18	2,15	2,30
population change index (%)	151,8	142,6	148,3	109,8	84,9	106,2	118,2

5. CONCLUSION

European cities go through phases of dynamic population growth, alternating with population decline or stagnation, followed again by growth. Today, the populations of most European cities are increasing, but the growth rate is lower than in the classical (industrial) urbanization period. The current population growth is even higher in some cities, such as Munich and Vienna. Yet the populations of many European cities are also stagnating or declining.

The main population development determinant for European cities after 1990 is the ability to create new well-paid jobs and quality urban environments that attract new residents, both from within the country but especially from abroad. Population growth is therefore mainly concentrated in the wealthy cities of Northern and Western Europe. Then there are cities in Southern Europe (mainly Spanish) with favorable climates and low cost of living. On the other hand, the population is declining in cities in South-Eastern Europe and the Baltic states, which are experiencing emigration to richer European countries and a relatively lower birth rate.

The population of Prague has been growing for a long time, yet our capital city also went through a phase of population decline in the 1990s. Prague's population development is strongly influenced by economic development and the creation of new job opportunities. The most dynamic population growth in Prague was between 2003 and 2009 and 2014 and 2019, i.e. during a period of strong economic growth. However, housing construction and changes in reproductive behavior also have an impact. In the context of European cities, Prague's population growth has been above average in recent years. It is one of the most dynamic of all the former Eastern Bloc cities, and higher than many Western European cities. However, it has a lower population growth rate than the global cities of Paris and London, and other wealthier cities such as Zurich, Munich and Stockholm.

The dynamics of population growth interact with the social structure of urban populations. Growing cities generally have lower average population ages, higher proportions of foreigners and people with higher education, and lower proportions of unemployed people.

Demographic ageing is occurring in Prague, as in most European cities, and is primarily caused by improving mortality rates. However, immigration by young people means the ageing rate in Prague and other cities with growing populations is lower than the national level. Overall, the population age composition of Prague is average in the context of European cities. Prague has a younger population than e.g. German cities, but older than e.g. Paris, Vienna, and Bratislava.

Prague's population growth has mainly been due to foreign migration in recent years. Without foreign immigration, the total population of the capital would be declining or stagnant. Despite a large increase in recent years, the proportion of foreigners in the total population of Prague is still only slightly above average in a Europe-wide comparison. It is still lower than in Western European metropolises such as Zurich, Vienna, Munich, and London, where the proportion of foreigners is up to twice as large. Prague is clearly the most attractive city for foreign immigrants compared to other metropolises and smaller cities in the former Eastern Bloc.

In Prague, as in most European cities, the number of people with higher education is increasing, as are incomes, while average

household sizes are decreasing. Prague is an average city in the European context in terms of socio-economic structure. The only exception is the very low proportion of unemployed people.

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7. ANNEXES

P.01 Population development in selected European cities between 1870 and 2021

IPR Prague 2022 / data: Eurostat, CZSO, Wikipedia, other national and municipal statistical offices 2022

city	around 1870	around 1900	around 1930	1960/1961	1990/1991	2000/2001	2020/2021
Prague	270 389	559 433	950 465	1 133 056	1 214 174	1 169 106	1 274 562
Brno	104 977	176 645	283 972	324 173	388 296	376 172	382 405
Ostrava	38 598	144 550	219 528	254 297	327 371	316 744	284 982
Pilsen	31 436	91 334	134 288	140 106	173 791	166 118	175 219
Bratislava	46 540	61 500	123 800	238 519	437 146	427 049	422 932
Berlin	969 050	1 888 848	4 242 501	3 274 016	3 433 695	3 388 434	3 520 031
Munich	170 688	499 932	728 900	1 055 457	1 229 026	1 227 958	1 450 381
Nuremberg	91 018	261 081	416 700	458 401	493 692	491 307	509 975
Dresden	156 024	396 146	633 441	493 603	490 571	478 631	543 825
Vienna	900 998	1 769 137	1 935 881	1 627 566	1 492 636	1 550 123	1 911 191
Warsaw	383 000	711 988	1 178 914	1 136 000	1 655 700	1 672 400	1 792 718
Krakow	49 800	85 300	219 300	520 145	746 627	757 942	780 796
Paris	1 825 274	2 714 068	2 891 020	2 790 091	2 152 423	2 125 246	2 182 174
London	3 902 178	6 226 494	8 098 942	7 781 342	6 887 280	7 172 091	9 002 400
Budapest	302 086	861 434	1 442 869	1 804 606	2 016 681	1 777 921	1 759 407
Zurich	50 000	150 301	249 067	437 273	356 352	362 042	396 955

P.02 Population development in the ten cities with the highest population growth among the European cities surveyed, 1990 to 2020

IPR Prague 2022 / data: Eurostat 2022

city	state	average population in years:		development change index
		1990 to 1994	2016 to 2020	
Oulu	Finland	103 592	199 847	192,9%
Luxembourg	Luxembourg	75 800	115 227	152,0%
Malmö	Sweden	235 143	331 064	140,8%
Stockholm	Sweden	680 707	942 690	138,5%
Lugano	Switzerland	46 113	63 583	137,9%
Palma de Mallorca	Spain	296 754	405 513	136,6%
Nikósie (Lefkosia)	Kypr	176 970	241 400	136,4%
Toledo	Spain	61 499	83 735	136,2%
Murcia	Spain	331 201	443 108	133,8%
Umeå	Sweden	93 482	123 986	132,6%

P.03 Population development in the ten cities with the highest population decline among the European cities surveyed, 1990 to 2020

IPR Prague 2022 / data: Eurostat 2022

city	state	average population in years:		development change index
		1990 to 1994	2016 to 2020	
Liepāja	Latvia	109 445	69 885	63,9%
Vidin	Bulgaria	65 461	43 047	65,8%
Kaunas	Lithuania	431 786	294 187	68,1%
Frankfurt (Oder)	Germany	84 937	58 154	68,5%
Panevėžys	Lithuania	128 402	91 732	71,4%
Riga	Latvia	881 308	638 091	72,4%
Porto	Portugal	295 862	214 630	72,5%
Pleven	Bulgaria	132 978	98 820	74,3%
Lisboa	Portugal	652 993	505 443	77,4%
Schwerin	Germany	124 084	96 266	77,6%

P.04 Age structure of the population in the ten cities with the highest average population age among the European cities surveyed (average from 2009 to 2018)

IPR Prague 2022 / data: Eurostat 2020

city	state	average age	share of population over 75 (%)	economy load index (%)
Dessau-Roßlau	Germany	50,2	13,7	73,5
Görlitz	Germany	49,7	13,9	77,0
Zwickau	Germany	49,7	13,1	68,7
Gera	Germany	49,7	13,2	68,3
Fréjus	France	49,6	16,0	97,7
Plauen	Germany	49,5	13,0	71,5
Brandenburg an der Havel	Germany	49,0	12,7	68,1
Oostende	Belgium	49,0	13,9	78,7
Chemnitz	Germany	48,6	12,9	71,2
Porto	Portugal	48,5	12,7	75,2

P.05 Age structure of the population in the ten cities with the lowest average population age among the European cities surveyed (average for 2009 to 2018)

IPR Prague 2022 / data: Eurostat 2020

city	state	average age	share of population over 75 (%)	economy load index (%)
Oxford	Great Britain	29,6	5,5	54,2
Manchester	Great Britain	29,8	4,5	53,8
Nottingham	Great Britain	30,0	5,7	59,2
Tower Hamlets	Great Britain	30,5	2,9	44,1
Poitiers	France	30,6	8,4	63,1
Newham	Great Britain	30,9	3,1	53,4
Galway	Ireland	31,0	3,9	48,0
Groningen	Netherlands	31,0	5,4	44,7
Rennes	France	31,0	7,7	58,1
Cambridge	Great Britain	31,0	6,2	51,8

P.06 Structure of foreigners in the ten cities with the highest proportion of foreigners in the total population among the European cities surveyed (average for 2009 to 2018)

IPR Prague 2022 / data: Eurostat 2020

city	state	proportion of foreigners (%)	proportion of foreigners from the EU (%)	proportion of non-EU foreigners (%)	proportion of foreign-born population (%)
Narva	Estonia	52,9	0,6	52,2	42,9
Geneva	Switzerland	47,2	30,2	17,0	56,5
Torrevieja	Spain	44,7	26,1	18,7	48,5
Lausanne	Switzerland	41,6	26,1	15,5	48,0
Lugano	Switzerland	37,7	28,9	8,9	46,8
Kensington and Chelsea	Great Britain	35,8	19,4	16,4	50,6
Basel	Switzerland	35,4	20,6	14,8	41,2
Brent	Great Britain	34,5	19,1	15,4	54,6
Brussels	Belgium	34,4	21,7	12,8	44,3
Fuengirola	Switzerland	34,1	22,4	11,7	38,4

P.07 Structure of foreigners in the ten cities with the lowest proportion of foreigners in the total population among the European cities surveyed (average for 2009 to 2018)

IPR Prague 2022 / data: Eurostat 2020

city	state	proportion of foreigners (%)	proportion of foreigners from the EU (%)	proportion of non-EU foreigners (%)	proportion of foreign-born population (%)
Žárov (Zory)	Poland	0,0	0,0	0,0	1,2
Bydhošť	Poland	0,1	0,0	0,1	1,7
Bytom	Poland	0,1	0,0	0,1	2,4
Čenstochová	Poland	0,1	0,0	0,1	1,3
Elblag	Poland	0,1	0,0	0,1	3,1
Elk	Poland	0,1	0,0	0,1	2,3
Gliwice	Poland	0,1	0,0	0,1	3,6
Hlohov (Glogów)	Poland	0,1	0,0	0,1	3,2
Grudziadz	Poland	0,1	0,0	0,1	1,2
Chorzów	Poland	0,1	0,0	0,1	0,9

P.08 Correlation analysis (Spearman's Rank Correlation Coefficient) between selected indicators of social structure and population development in selected European cities

IPR Prague 2022 / data: Eurostat 2022

		the proportion of unemployed	share of employees in fin. and insurance	proportion of university students	average household income. in EUR	average household size
share of unemployed	kk	1,000	-,226**	-,194**	-,229**	,374**
	sig.		0,000	0,000	0,000	0,000
	n	896	829	869	505	862
share of employees in finance and insurance	kk	-,226**	1,000	,322**	,362**	-,207**
	sig.	0,000		0,000	0,000	0,000
	n	829	883	870	468	850
proportion of university students	kk	-,194**	,322**	1,000	,362**	-0,061
	sig.	0,000	0,000		0,000	0,071
	n	869	870	939	495	893
average household income. in EUR	kk	-,229**	,362**	,362**	1,000	0,065
	sig.	0,000	0,000	0,000		0,147
	n	505	468	495	505	501
average household size	kk	,374**	-,207**	-0,061	0,065	1,000
	sig.	0,000	0,000	0,071	0,147	
	n	862	850	893	501	915
average age	kk	-0,003	-,081*	-,312**	-0,014	-,250**
	sig.	0,926	0,025	0,000	0,753	0,000
	n	767	759	818	500	811
population share older than 75 years	kk	0,013	0,039	-,074*	-0,039	-,534**
	sig.	0,717	0,284	0,035	0,383	0,000
	n	767	759	818	500	811
economy load index	kk	-,094**	-0,038	-,160**	0,004	-,189**
	sig.	0,009	0,298	0,000	0,926	0,000
	n	767	759	818	500	811
population share born abroad	kk	-,130**	,197**	,341**	,338**	-,159**
	sig.	0,000	0,000	0,000	0,000	0,000
	n	895	882	938	505	915
share of foreigners	kk	-,130**	,420**	,238**	,340**	-,190**
	sig.	0,000	0,000	0,000	0,000	0,000
	n	895	882	938	505	915
share of foreigners from the EU	kk	-,348**	,405**	,295**	,429**	-,173**
	sig.	0,000	0,000	0,000	0,000	0,000
	n	895	882	938	505	915
share of non-EU foreigners	kk	0,014	,410**	,193**	,283**	-,222**
	sig.	0,684	0,000	0,000	0,000	0,000
	n	895	882	938	505	915
population change index between 1990-1994 and 2016-2021	kk	-,238**	,242**	,237**	,376**	0,071
	sig.	0,000	0,000	0,000	0,000	0,281
	n	233	218	224	165	231

average age	population share older than 75 years	economy load index	population share born abroad	share of foreigners	share of foreigners from the EU	share of non-EU foreigners	population change index
-0,003	0,013	-,094**	-,130**	-,130**	-,348**	0,014	-,238**
0,926	0,717	0,009	0,000	0,000	0,000	0,684	0,000
767	767	767	895	895	895	895	233
-,081*	0,039	-0,038	,197**	,420**	,405**	,410**	,242**
0,025	0,284	0,298	0,000	0,000	0,000	0,000	0,000
759	759	759	882	882	882	882	218
-,312**	-,074*	-,160**	,341**	,238**	,295**	,193**	,237**
0,000	0,035	0,000	0,000	0,000	0,000	0,000	0,000
818	818	818	938	938	938	938	224
-0,014	-0,039	0,004	,338**	,340**	,429**	,283**	,376**
0,753	0,383	0,926	0,000	0,000	0,000	0,000	0,000
500	500	500	505	505	505	505	165
-,250**	-,534**	-,189**	-,159**	-,190**	-,173**	-,222**	0,071
0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,281
811	811	811	915	915	915	915	231
1,000	,704**	,281**	-,120**	-,190**	-,188**	-,144**	-,181*
	0,000	0,000	0,000	0,000	0,000	0,000	0,011
840	840	840	840	840	840	840	197
,704**	1,000	,511**	,105**	,081*	0,015	,149**	-,261**
0,000		0,000	0,002	0,020	0,663	0,000	0,000
840	840	840	840	840	840	840	197
,281**	,511**	1,000	0,044	0,027	,075*	0,024	-,315**
0,000	0,000		0,199	0,432	0,029	0,481	0,000
840	840	840	840	840	840	840	197
-,120**	,105**	0,044	1,000	,761**	,729**	,714**	,299**
0,000	0,002	0,199		0,000	0,000	0,000	0,000
840	840	840	1074	1074	1074	1074	248
-,190**	,081*	0,027	,761**	1,000	,898**	,961**	,279**
0,000	0,020	0,432	0,000		0,000	0,000	0,000
840	840	840	1074	1074	1074	1074	248
-,188**	0,015	,075*	,729**	,898**	1,000	,773**	,403**
0,000	0,663	0,029	0,000	0,000		0,000	0,000
840	840	840	1074	1074	1074	1074	248
-,144**	,149**	0,024	,714**	,961**	,773**	1,000	,205**
0,000	0,000	0,481	0,000	0,000	0,000		0,001
840	840	840	1074	1074	1074	1074	248
-,181*	-,261**	-,315**	,299**	,279**	,403**	,205**	1,000
0,011	0,000	0,000	0,000	0,000	0,000	0,001	
197	197	197	248	248	248	248	248

Population development and social structure of the population of Prague
in the context of European cities

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