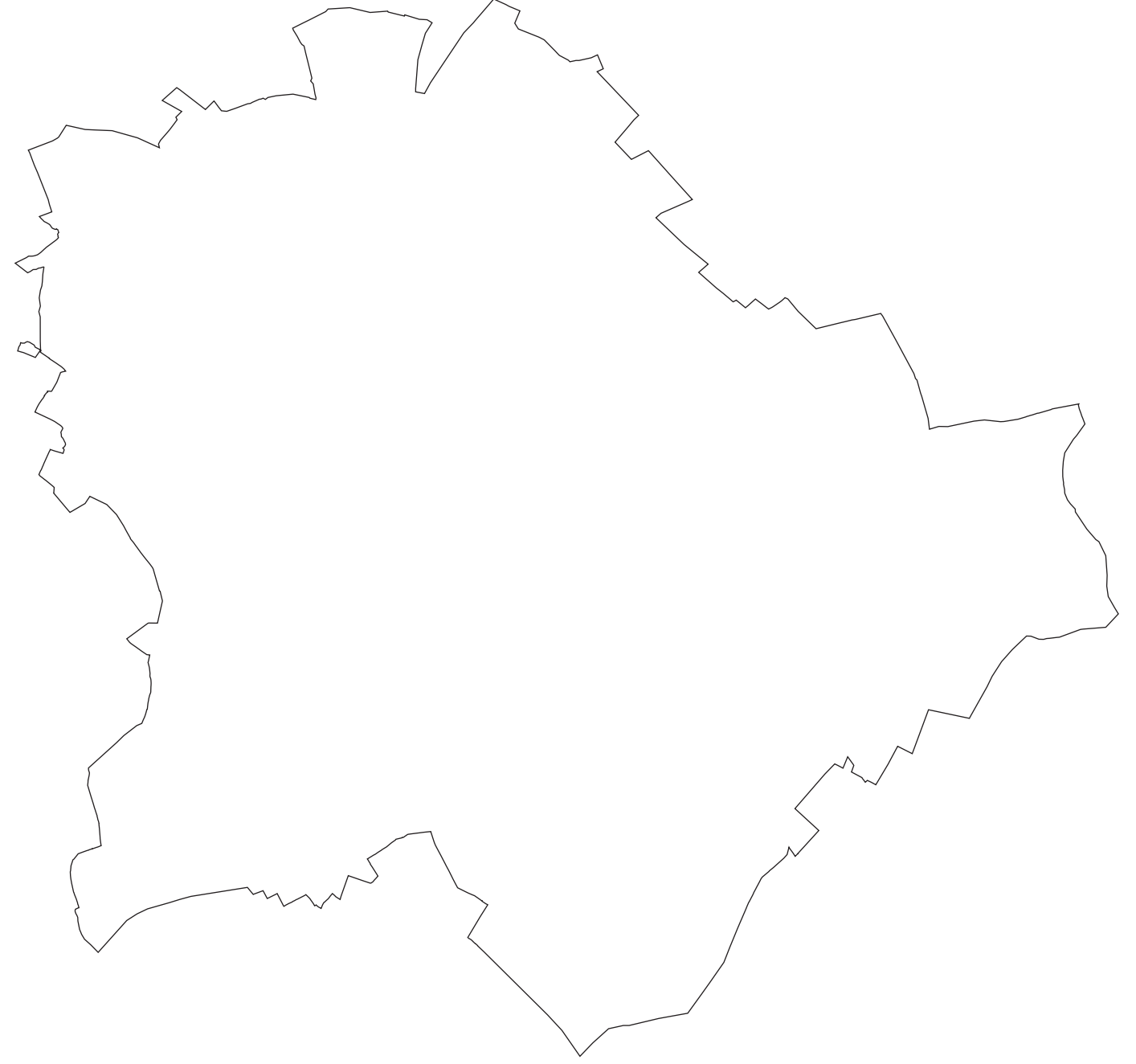




TransHerit - Vienna & Budapest

Data Analysis

Vienna



Content

Page 3

Introduction

Pages 4-13

Methodology

Pages 4-5

Levels of data analysis

Pages 6-11

Quarter level analysis

Pages 12-13

Delineation of historic quarters

Page 14

Chapter 1

Page 14-21

City level analysis

Page 22

Chapter 2

Pages 22-39

District level analysis

Pages 40-41

Selection of case study districts

Pages 42-53

Analysis of case study districts

Page 54

Chapter 3

Pages 54-77

Quarter level analysis

Pages 78-87

Analysis of case study quarters

Page 88

Chapter 4

Pages 82-113

Quarter level analysis of historic quarters

Pages 114-117

Quarter level analysis of Airbnb data of historic quarters

Pages 118-121

Analysis of historic quarters

Pages 122-131

Local Moran analysis

Pages 132-133

Bibliography

Introduction to the research project

TransHerit. Towards a new heritage regime?
Financialisation of the historic housing stock (Gründerzeit) in Vienna and Budapest.

Project supported by the Austrian Science Fund
Grant P37101
DOI Grant-DOI 10.55776/P37102

Over the last decades, urban heritage has been significantly invested into by both public authorities and private actors, both national and international. These investments concern new projects, the preservation of defined urban perimeters (e.g. Unesco) or single objects (e.g. buildings) as well as the renovation of housing units. The rise of new actors, such as real-estate funds and real-estate service companies, whose activities lead to financialisation, has been accompanied by the internationalisation of markets and the homogenisation of properties turned into comparable, standardised commodities, especially in the housing sector. In Vienna and Budapest, this phenomenon can be observed around Gründerzeit housing estates that have been experiencing strong pressure from private developers leading to increasing rents as well as the transformation, destruction, commodification, and social transformation of neighbourhoods. The term “Gründerzeit housing stock” (GHS) refers to objects dating from the industrialisation period within in the Austro-Hungarian Empire, starting in 1840 and ending in 1918. These architecturally noteworthy buildings are particularly predominant in Vienna and Budapest and represent part of their urban identity. Linked to the question of heritage, the emergence and acceleration of the financialization of housing raise new questions in terms of object selection, demolition, preservation, and practices. Housing financialization expressed through actors’ practices, the setup of financial models, housing regulation, as well as architectural and urban planning elements contribute to establishing a specific relation to the preservation (or not) of housing. This research project aims at identifying how financialization and housing regulations act on the tangible and intangible dimensions of the preservation of the Gründerzeit housing stock and its social dimension by looking at two cities, Budapest and Vienna. These cities display a similar GHS and both experience strong housing market pressure, but they follow different urban development trajectories. The hypothesis is that different socio-economic transformations within the two cities lead to different implications for the social dimensions that constitute heritage, challenging social inclusion and cohesion. The project answers the question of how housing transformation informs practices and processes that shape human experiences and representation globally as well as locally. As such, it draws on urban geography, planning, heritage studies, and communication studies, using a transnational comparative place-studies and mixed-method approach including intensive expert interviews, quantitative analysis, media analysis, non-intrusive observation and spatial analysis, as well as collaborative research. This document stems out of the in-depth data analysis that has been conducted in order to get a better understanding of the socio-economic and real estate dynmics dynamics in the two cities and in what we have identified as the historic city. This analysis has been useful in understanding the socio-conomic context and trajectories of our two cities and identify areas where what we have coined as „marginal“ heritage is being located. It also serves as to identify the challenges and issues that this marginal heritage may face.

The project is led by **Sandra Guinand**, urban geographer and planner, based at the Institute for Urban and Regional Research (ISR), Austrian Academy of Sciences (ÖAW) and supported by an interdisciplinary team:

Viktória Éva Lélek, architect, doctoral candidate; **Dávid Sümeghy**, political geographer; **Robert Musil**, economic geographer; ISR/ÖAW; **Matias Kuhs**, volunteer, student in economics; ISR/ÖAW;

Maren Beaufort, **Josef Seetahler** and **Konrad Bleyer-Simon**, comparative media and communication studies; CMC/ÖAW;

Hanna Szemző, sociologist, Metropolitan Research Institute, Budapest; **Florian Brand**, architect, HuB Architekten, Vienna.



TransHerit Website

<https://www.oeaw.ac.at/projects/transherit/home>

Budapest



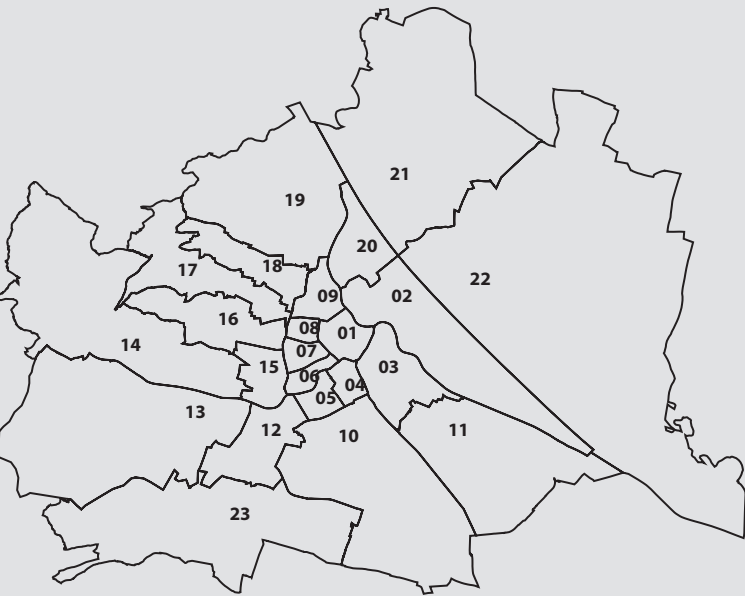
Vienna



1. City level

Main resources of statistics are:
Statistics Austria
City of Vienna

Additional resources are named in footnotes



2. District level

Methodology: levels of data analysis

1. We start the analysis of Vienna at the city level, including socio-economic data, household data and dwelling data. At this level, we used the available data of 1971, 1981, 1991, 2001, 2011 and 2022.

2. The analysis at the district level is conducted for socio-economic, household and dwelling data. At this level, we used the available data of 1971, 1981, 1991, 2001, 2011 and 2022. The analysis shows detailed maps of the statistics. At the end of the section, we provide a detailed description of the case study districts and of the selection process.

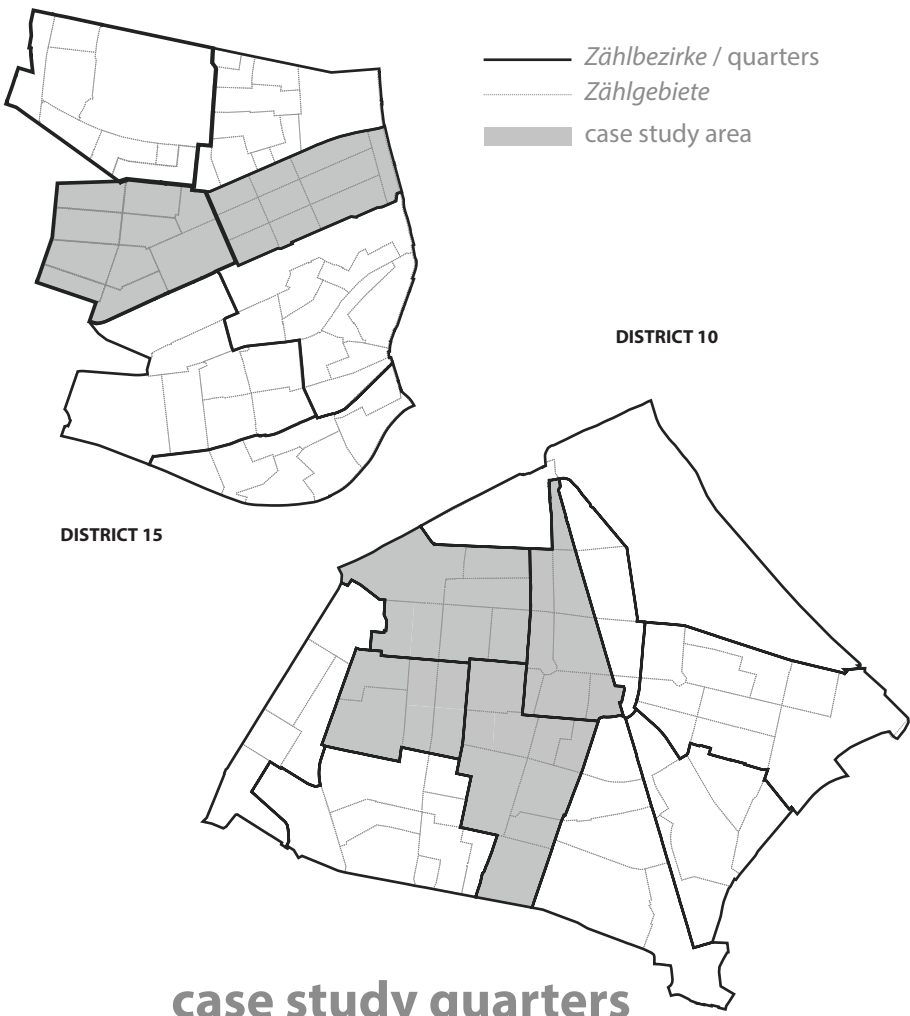
3. The third analysis is conducted at the quarter level, for which we refer to the *Zählbezirke* unit of Vienna. Although a smaller unit of *Zählgebiete* is available, it was only used for precise and special cases. Indeed, the *Zählbezirke* unit of Vienna is can be compared with the quarter unit of Budapest and was therefore used. At this level, we used the available data of 2011 and 2021. The analysis shows detailed maps of the statistics, with more detailed information on dwellings. At the end of the section, we provide a detailed description of the case study quarters and of the selection process.

4. The fourth analysis is conducted at the level of the historic quarters of Vienna. Case study areas are defined within the historical quarters.



3. Quarter level

case study districts



case study quarters



4. Historic quarters

case study districts



case study areas



4. Historic quarters

Methodology: levels of data analysis

1. We start the analysis of Budapest at the city level, including socio-economic, household and dwelling data. At this level, we used the available data of 1970, 1980, 1990, 2001, 2011 and 2022.

2. The analysis at district level is conducted for socio-economic data, household data and dwelling data. At this level, we used the available data of 1970, 1980, 1990, 2001, 2011 and 2022. The analysis shows detailed maps of the statistics. At the end of this section, we provide a detailed description of the case study districts and on the selection process.

3. The third analysis is conducted at the quarter level, for which we refer to the *Városrészek* unit of Budapest. Furthermore, as the 7th (and 6th) district(s) are considered one quarter, we sometimes used unofficial delimitations of main roads. At quarter level, we used the available data of 2011 and 2021. The analysis shows detailed maps of the statistics, with more detailed information on dwellings. At the end of the section, we provide a detailed description of the case study quarters and on the selection process.

4. The fourth analysis is conducted at the level of the historic quarters of Budapest. Case study areas are defined within the historical quarters.



3. Quarter level

Budapest



1. City level

Main resources of statistics are:
Központi Statisztikai Hivatal KSH / HCSO
Hungaricana

Additional resources are named in footnotes



2. District level



3. Quarter level

DATA https://www.data.gv.at/katalog/de/dataset/stadt-wien_vieregisterzhlung2011
wienerszhbezirke4#additional-info

Methodology: quarter-level data of Vienna

Source of data:

The Federal Statistical Office Austria provides the statistical registers with anonymized individual data from the 2011 REGISTER COUNT for the respective federal state. The transfer of the respective federal state data is provided as a service by the federal government within the framework of the agreement pursuant to Art. 15a B-VG. The characteristics, their classifications, and their definitions are based on the UNECE recommendations for population and housing censuses, the CES recommendations. The data set originates from Statistics Austria and was processed by MA23, the municipal department responsible for statistics. „The register-based census is a complete survey of the entire Austrian population (census) and its characteristics, as well as of businesses, workplaces, buildings, and dwellings. The characteristics of the statistics are not collected from the individuals themselves via questionnaires, but are taken exclusively from administrative registers.“ The 2011 register census refers to the reference date of October 31, 2011. The 2021 register census refers to the reference date of October 31, 2021.

Remark:

The delimitation of census units did not change during the period of analysis.

Methodology: combining Budapest quarter-level data

Source of data:

Census data 2011, 2022:
KSH Központi Statisztikai Hivatal - HCSO Hungarian Central Statistics Office - data inquiry on quarter level

Delimitation and names of quarters in the city council decree¹:
„Budapest Főváros Önkormányzata Közgyűlésének 94/2012. (XII. 27.) önkormányzati rendelete a közterület- és városrésznevek megállapításáról, azok jelöléséről, valamint a házszám-megállapítás szabályairól“

Vector data of Budapest quarters²:
Bátorfy Attila 2023. „Kerületek és városrészek“ In Bátorfy Attila: Budapest Open Data Atlasza.

Vector data of Budapest districts³:
OpenStreetMap, accessed 01.08.2024.

General problems with the census data:

The table below illustrates how many rows contain relevant data in each data table per categories of population, households and dwellings in the census of 2011 and 2022.

In the population tables, additional data rows with the heading *„Városrésze nem beazonosítható“* are included, which are identified at the district level, but not at the quarter one. These rows presumably contain data on homeless persons. In subsequent analyses, these rows have been deleted as it is not clear how the individuals are allocated to quarters within a given district. After the removal of these rows, 205 and 211 rows remain. Meanwhile, the number of quarters in the city council decree of Budapest is 203.

Number of quarters / year / category	2011	2022
Population with quarter identification*	205	211
Households	205	211
Dwellings	205	211

*** There is an additional number of population in the districts without quarter identification, that is considered for the district level analysis, but not considered for the quarter level analysis.**



3. Quarter level

- 1 Budapest Főváros Önkormányzata Közgyűlésének 94/2012. (XII. 27.) önkormányzati rendelete a közterület- és városrésznevek megállapításáról, azok jelöléséről, valamint a házszám-megállapítás szabályairól
online: <https://net.jogtar.hu/>
- 2 Budapest Open Data Atlasza
online: <https://atlo.team/boda/>
- 3 OpenStreetMap
online: <https://www.openstreetmap.org/>
- 4 Budapest Főváros Önkormányzata Közgyűlésének 9/2016. (IV. 13.) önkormányzati rendelete indokolása a közterület- és városrésznevek megállapításáról, azok jelöléséről, valamint a házszám-megállapítás szabályairól szóló 94/2012. (XII. 27.) Főv. Kgy. rendelet módosításáról
online: <https://net.jogtar.hu/>



3. Quarter level

Methodology: combining Budapest quarter-level data

Problems related to the 4. district:

Census 2022 quarters:
1. Dél-Újpest, 2. Újpesti Lakótelep, 3. Újpest
Városközpont, 4. Károlyi Városnegyed, 5. Újpest
Kertváros

Comparing the map provided by the 5. district and the official map of quarters provided by the city (see the map on the right), the above mentioned census 2022 units are located in the same location as the two following census 2011 units:

Census 2011 quarters:
4. Újpest, 5. Istvántelek (and 6. Népsziget)

According to the map, the *Istvántelek* part corresponds to the Eastern part of the census units *Dél-Újpest* and *Újpesti Lakótelep*. However, we cannot extract reliable data on *Istvántelek* from these two census units. As an alternative, *Istvántelek* and *Újpest* quarters are merged, taking the name of *Újpest*. This joint quarter has the same area as the combined *Újpesti Lakótelep*, *Újpest Városközpont*, *Újpest-Kertváros*, *Dél-Újpest*, *Károlyi Városnegyed* census units. In the 2011 census, *Újpest* and *Istvántelek* are separate entities, corresponding to the quarters *Újpest* and *Istvántelek*, set in the city council decree. To make the census years comparable, these two units were merged.

Census 2022 quarters:
6. Megyer Kertváros, 7. Északi Kertváros,
8. Újpest Duna-part

In the census 2022 *Megyer Kertváros* and *Északi Kertváros* are separate entities. The area of these two units corresponds to the area of the census 2011 quarter *Megyer*. So, these two units were combined and the data was merged into *Megyer*.

Census 2011 quarters:
3. Megyer, 4. Újpest

In the case of the 2022 census quarter *Újpest Duna-part*, in the city council decree and census 2011, the corresponding unit is missing. If we look at the 2011 map, the *Újpest Duna-part* goes all the way through the West of the IV. district. However, residential houses can only be found in the Southern part according to the satellite map. The neighbouring quarter of this Southern part is *Újpest* so this area was merged into the previously created large *Újpest* quarter.

Census 2022 quarters:
9. Káposztásmegyeri lakótelep,
10. Székesdűlő and
Megyeri híd

In the census 2022 *Káposztásmegyeri lakótelep* can be compared to the city council decree and census 2011 *Káposztásmegyer*.

Census 2011 quarters:
2. Káposztásmegyer, 1. Székesdűlő

According to the map of the IV. district, *Káposztásmegyeri lakótelep* is part of *Káposztásmegyer*. The remaining part is the *Megyeri híd* area (which in the census 2022 is included together with *Székesdűlő: Székesdűlő and Megyeri híd*). This area is not inhabited and hosts industrial facilities. Thus, the data for *Káposztásmegyeri lakótelep* can be roughly matched with *Káposztásmegyer*, and can be merged.

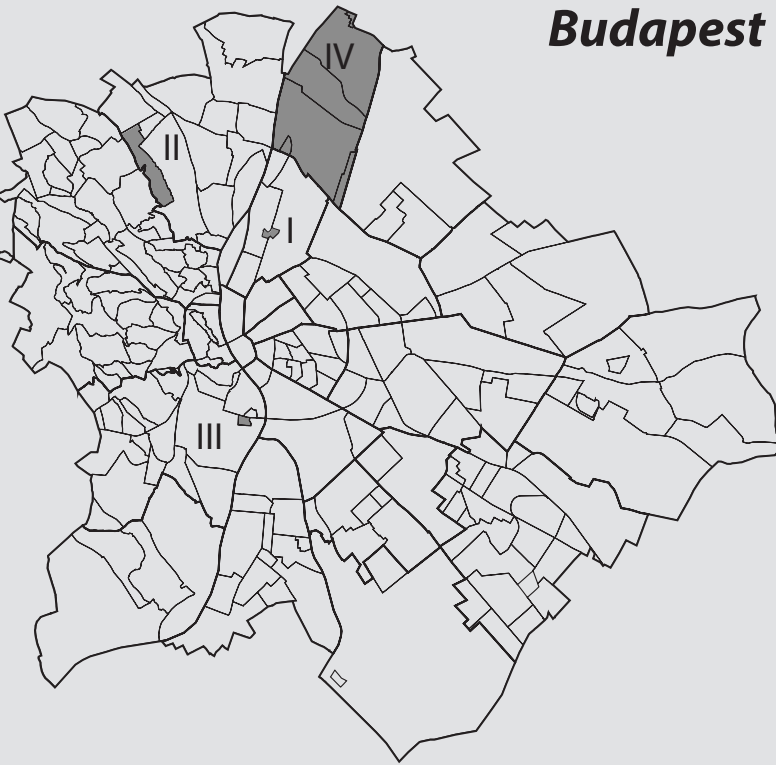
The two quarters that are listed as *Székesdűlő and Megyeri híd* in the census of 2022 were listed in the census 2011 as one quarter, called only as *Székesdűlő*. In fact, the *Megyeri híd* part is in the territory of *Káposztásmegyer* quarter. However, only industrial facilities are located in this area. Thus, the data for *Székesdűlő and Megyeri híd* can be roughly matched with *Székesdűlő*, and can be merged.

The problem of uninhabited, more or less uninhabited:

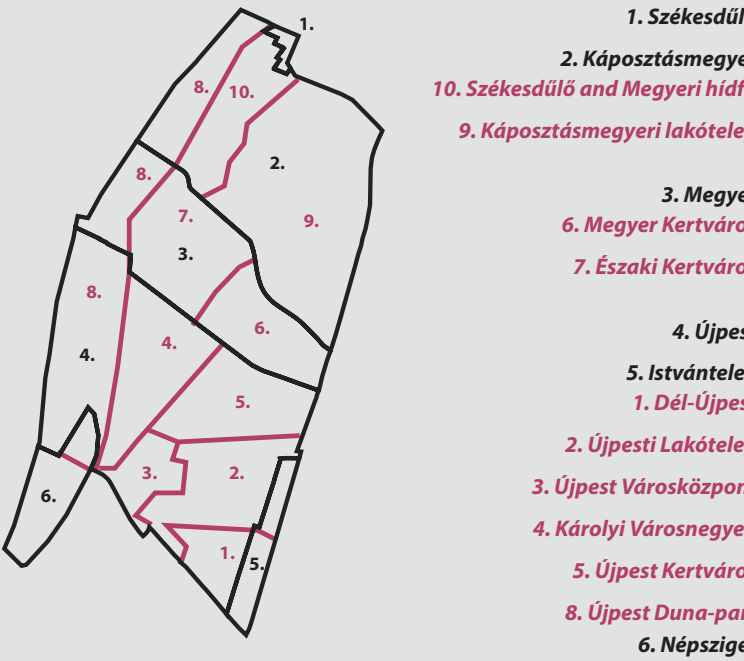
I. According to the city council decree, there is a quarter called *Infopark*, however there is no such area in the censuses. By itself, this quarter only contains office buildings according to the satellite map and Wikipedia⁷. This area was excluded from the analysis.

II. According to the city council decree *Óbudai-sziget*, in the censuses, there is no such name. Based on the satellite map, we could only identify a few residential buildings at most. This area was excluded from the analysis.

III. The *Margit-sziget* quarter listed in the census 2011, is absent from the census in the year 2022. According to a 2014 news report⁸, *Margit-sziget* is uninhabited. This area was excluded from the analysis.



3. Quarter level



5 Budapest Főváros IV. kerület Újpest Önkormányzata Képviselő-testületének 2/2019. (I. 30.) önkormányzati rendelete Budapest Főváros IV. kerület 6. számú, Északi kertváros városrendezési egység Kerületi Építési Szabályzatáról online: <https://net.jogtar.hu/>

6 Map V. Lélek 2024 based on the districts decree 2019 (census 2022) in pink and the capitals decree 2012 (census 2011) in black



3. Quarter level

Methodology: combining Budapest quarter-level data

Quarters crossing district boundaries:

According to the city council decree, there are several quarters that are mentioned under more than one district, with the same territorial delimitation.

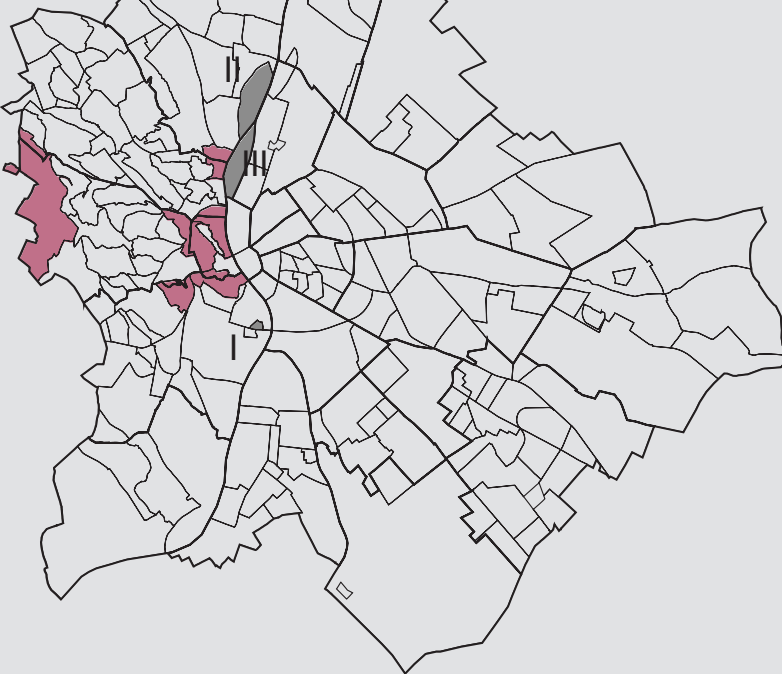
These are the quarters of *Gellérthegy, Sashegy, Víziváros, Krisztinaváros, Budakeszierdő* and *Újlak*.

However, in the case of the census units, they are always shown in two rows, classified under the corresponding districts (e.g. *Víziváros I. district, Víziváros II. district*). Although they form one quarter according to the city council decree, the district boundaries divide them into two entities.

This is problematic because the district administration may adopt different regulations, resulting in different processes taking place in the same quarter. We decided to use two different approaches for the analysis. In one approach, census units were merged in such a way that they correspond to the areas included in the official decree. In the other approach, we split these quarters into two, separated by the district boundary.

To prove that there are no additional quarters, which cross district boundaries, an intersection analysis was carried out. We found some overlaps, but they were due to minor discrepancies between the boundaries of the quarters and the districts (*Kővár, Budafok, Albertfalva, Liptáktelep*).

Furthermore, the Northern part of the quarter *Népsziget* is part of the 5. district, not the 13., as the main part, but this area is not inhabited. (See map 6 on previous page.) Thus, the census data for the *Népsziget* in the 13. district corresponds to the entire *Népsziget* quarter. It was not necessary to split this quarter.



3. Quarter level

7 online:
<https://hu.wikipedia.org/wiki/Infopark>
(accessed 12.02.2025)

8 online:
https://index.hu/belfold/2014/08/11/vegkepp_lakatlanna_valik_a_margitsziget/
(accessed 12.02.2025)

Vienna



4. Historic quarters

Methodology: delineation of the historic city cores of Vienna and Budapest summary

We developed a robust procedure for delineating the historical city core, based on supervised machine learning techniques and quantitative geoinformatics methods. First, we conducted a literature review to explore possible approaches to defining the boundaries of historical city centers. From the small number of potential solutions identified, we selected those that could be implemented using census data. It was essential to choose a delineation method that followed the boundaries of census units, thereby enabling subsequent analysis of the area's socio-economic indicators. In our procedure, we considered six different methods in total and used them to carry out the delineation. For each delineation approach, we examined whether a given census unit was part of the historical city core or not. In the former case, the unit received a value of 1; in the latter, a value of 0. These values were then summed, and if a city unit was included in five or six of the delineation approaches, it was classified as part of the historical city core. As the importance of city-specific knowledge in final evaluations is really important (Beconyte et al., 2023), we also empirically validated the final outcome.

One of the delineation approaches followed the method developed by Soares and colleagues (2022). First, census tracts were filtered by the proportion of older dwellings. Unlike the original study that relied on an absolute building count, this research applied city-specific thresholds (25% for Budapest, 40% for Vienna), based on the share of dwellings built before 1919. This ensured comparability despite differences in tract size and data availability. Next, contiguous urban fabric areas (CUFAs) were delineated for different accumulated construction periods (e.g., pre-1919, pre-1945, pre-1960). These CUFAs revealed how city cores expanded over time. To evaluate density, building footprints for each CUFA were estimated by combining census dwelling data with footprint measurements. Several indices were calculated, and, based on them a density threshold is set. Some areas (parks, cemeteries, railways, water bodies, sport centres) were excluded from tract area to avoid underestimating density. Census tracts above the density threshold were marked as consolidated. The overlap between "old" tracts (Step 1) and "dense" tracts (Step 2) defines the historic city core. The largest contiguous block of these areas was taken as the central historic zone. Finally, detached tracts that meet both criteria but laid slightly outside the contiguous core were added if they fall within 500 meters of the main core. This accounts for areas historically connected but later separated by urban transformation.

The remaining five methods were all types of regionalization procedures. The core idea behind regionalization procedures was to divide a study area into smaller spatial units that are distinct from one another with respect to variables relevant to the analysis, while ensuring internal similarity and homogeneity among units grouped into the same cluster. The resulting analytical regions were therefore directly linked to the phenomenon under investigation (Duque et al., 2007). Regionalization algorithms could impose either soft/implicit spatial constraints (e.g., ClustGeo methods) or hard/explicit constraints. Under hard constraints, all units within the same cluster must be geographically contiguous, whereas under soft constraints, spatially non-contiguous "islands" may emerge. From the regionalization procedures, we requested two clusters: one correspondong the historical core and another representing the non-historical area. Three variables were included in the algorithm: the percentage of dwellings built before 1919, the ratio between total building footprint area and the area of the census unit, and population density. As in most regionalization studies, the spatial contiguity matrix was defined using first-order queen contiguity. In the case of regionalisation procedures, it is not possible to determine a single best method, that fits all (Duque et al., 2007). To test the regionalisation methods and select the most appropriate approach, we used unsupervised evaluation metrics: the Sum of Squared Errors and the Caliński-Harabasz Index (Caliński & Harabasz, 1974). Where applicable, we ran each regionalisation method with various parameter settings and selected the best-performing configuration for evaluation. For example, in the case of REDCAP, all four full-order constraint parameters were tested, and the best-performing one was used to represent the "method family" of REDCAP. Here is the description of the five selected algorithms:

ClustGeo: ClustGeo is a hierarchical clustering algorithm developed by Chavent et al. (2018). It is based on two distance matrices: one reflecting attribute dissimilarity, and the other capturing spatial or geographical dissimilarity. These two matrices are combined into a mixed distance matrix, where a mixing parameter controls the relative influence of each component. Hierarchical clustering is then performed on the resulting composite matrix.

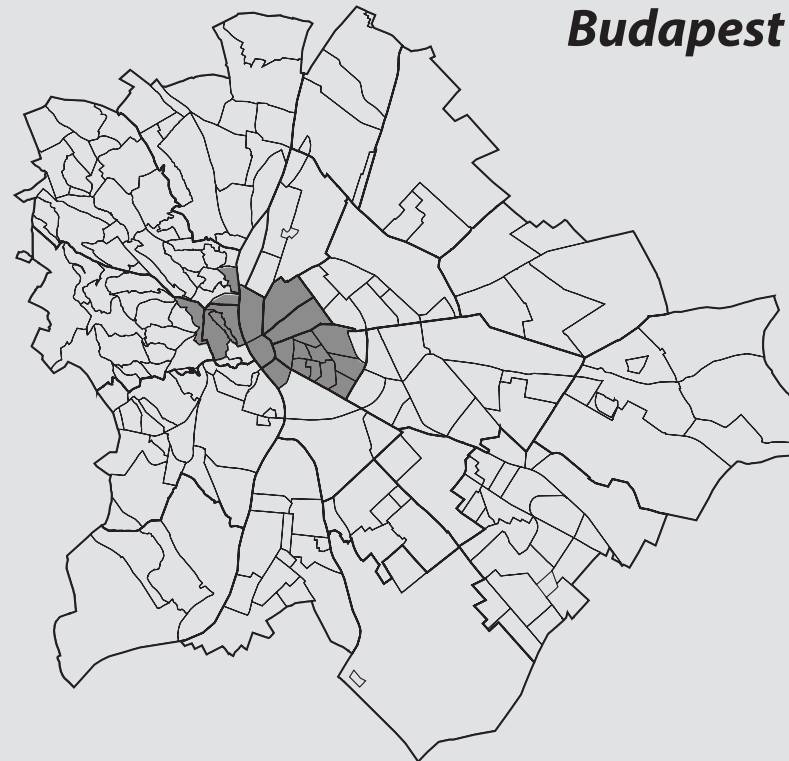
SKATER: The Spatial 'K'luster Analysis by Tree Edge Removal (SKATER) algorithm, proposed by Assunção et al. (2006), is a graph partitioning technique that constructs subgraphs by progressively removing edges. The method is based on a Minimum Spanning Tree (MST), which connects all spatial units without forming cycles, while minimizing the total sum of edge weights compared to all other possible spanning trees.

REDCAP: Regionalisation with Dynamically Constrained Agglomerative Clustering and Partitioning (REDCAP) is an agglomerative hierarchical clustering algorithm that, like SKATER, is based on graph partitioning principles. However, REDCAP addresses a key limitation of the SKATER algorithm by continuously updating the contiguity matrix throughout the clustering process. The method offers six different variants, based on two types of spatial constraints: first-order constraints (using a predefined spatial contiguity matrix) and full-order constraints (which consider all existing edges between regions when calculating linkage). For both constraint types, three linkage criteria are available: single, average, and complete. In addition, the rgeoda (Li & Anselin, 2021) package also supports Ward linkage for REDCAP.

AZP: The Automatic Zoning Procedure (AZP), developed by Openshaw (1977), begins with an initial feasible solution and attempts to iteratively improve it by adding a neighboring spatial unit to one of the initial clusters, followed by evaluating the objective function. A known weakness of the AZP algorithm is its tendency to become trapped in local optima (Sammons, 1978). One modification, AZP with Simulated Annealing (AZP-SA), allows for non-improving moves during the iteration process (Openshaw & Rao, 1995), with the number of such moves controlled by a cooling rate. Another variation, AZP-Tabu, also facilitates escape from local optima by permitting non-improving steps, but prohibits reverse moves to avoid cycling. A further refinement, the ARISeL algorithm (Duque & Church, 2004), modifies AZP-Tabu by considering multiple alternative initial feasible solutions, ultimately running the AZP-Tabu procedure only on the best candidate.

Max-p-regions: This regionalisation method does not rely on a predefined number of clusters; instead, it treats the number of clusters as endogenous. Rather than specifying a fixed cluster count, it requires each resulting cluster to meet a threshold related to a specific variable (Wei et al., 2021). The method consists of three main phases: region growth, enclave assignment, and local search. For the threshold area we specified at least 25% of the total dwellings. The algorithm output contained three clusters, so we merged two of them together.

Budapest

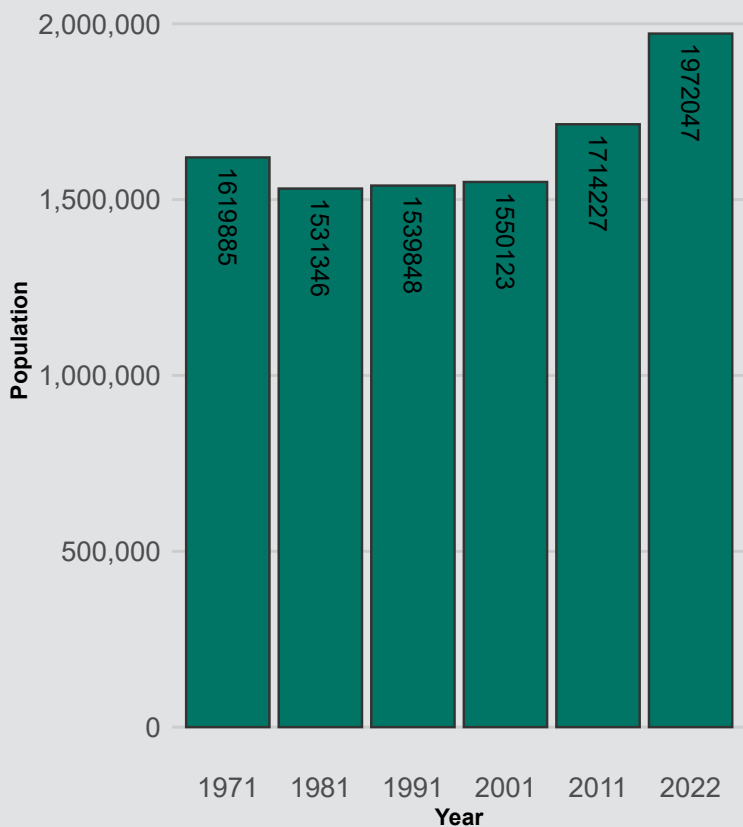


4. Historic quarters

Vienna



1. City level

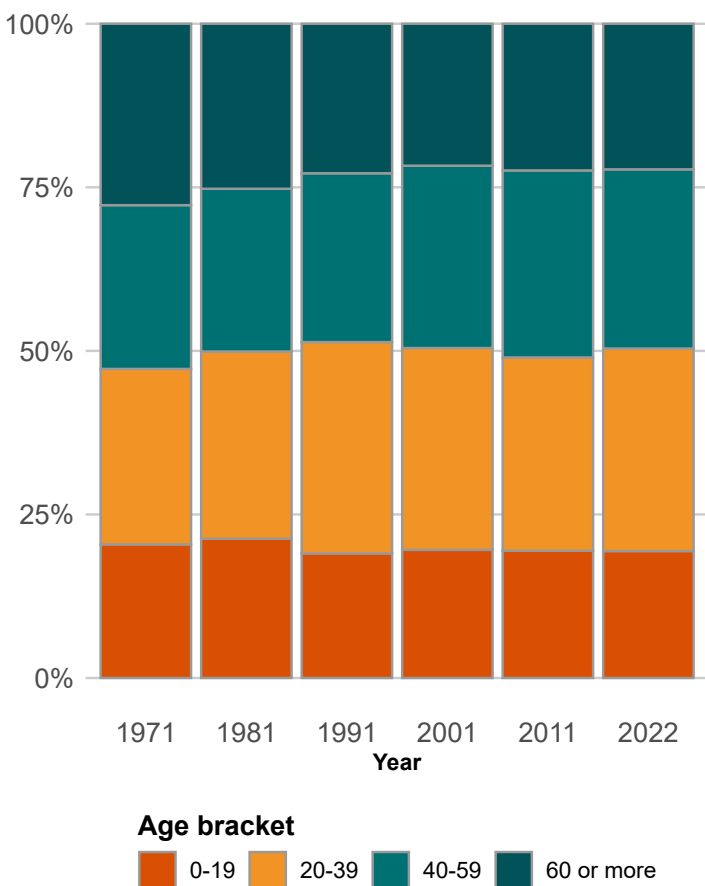


Data source: Statistik Austria

1 2025 Statistics Austria
<https://www.wien.gv.at/statistik/aktuell/>

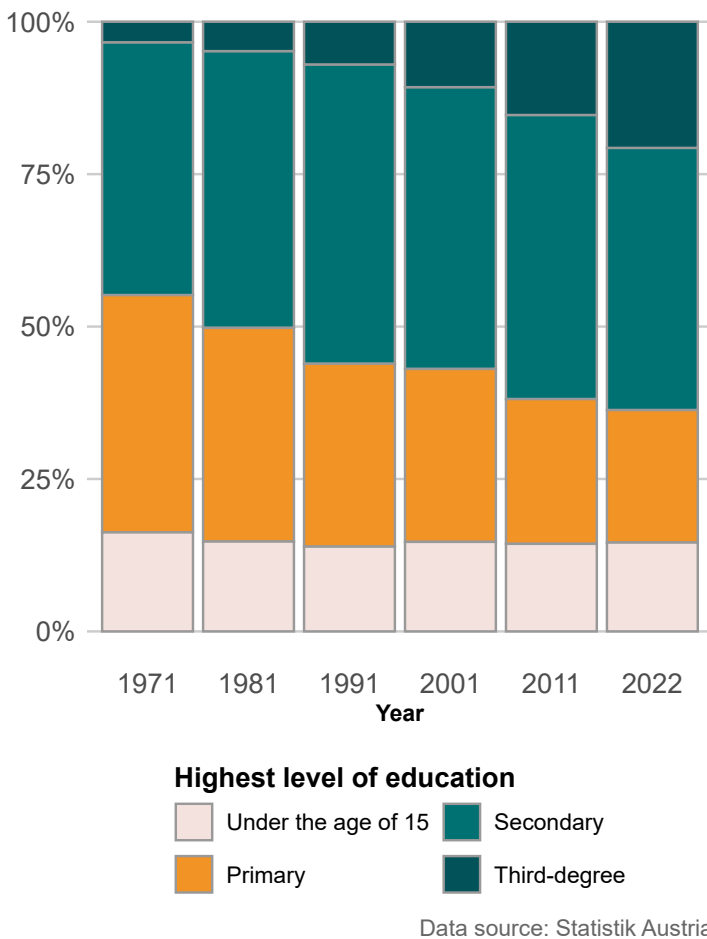
Socio-economic structure at the city level

The city of Vienna is located in the Eastern part of Austria, close to the Hungarian (approx. 60km) and Slovakian (approx. 40km) borders. It extends over approximately 415 km² and comprises 23 districts. The Donaustadt district is the largest, covering about 102 km² or roughly one-quarter of the city's area, while the first district (Innere Stadt - city centre) spans just over 2.88 km². On the 1st of January 2025, the population numbered 2,028,289, which represened an increase of 1.1 % compared to the previous year and of 12.8 % for the past ten years. That same year, 36.4 % of the residents held foreign citizenship, a rise of 1.0 % from the previous year and 10.8 % since 2015. In 2024, Vienna held a positive natural variation with 19,070 live births and 16,917 deaths. In 2024, Vienna recorded 18,864,964 tourist overnight stays - an increase of 9.3 % compared to the previous year. In the academic year 2023/2024, the number of students (including multiple enrolments at various higher education institutions) amounted to 197,209.¹ Considering the highest level of education at the city level, the percentage of people, who finished their third degree education has been growing significantly between 1971 and 2022 increasing from 4% to 20%. As there have been no significant changes in the age groups, woman of 65 years and above have been shrinking from 25% in 1981 to 20% in 2022, while the woman between 15-64 years have been growing from 62% to 67% during the same period.



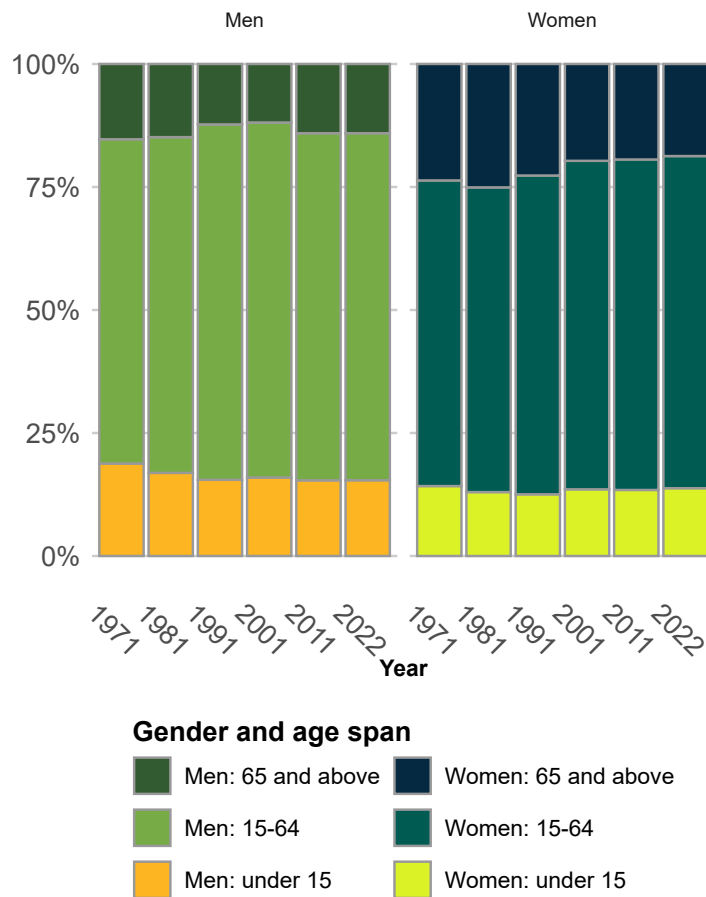
Data source: Statistik Austria

Vienna



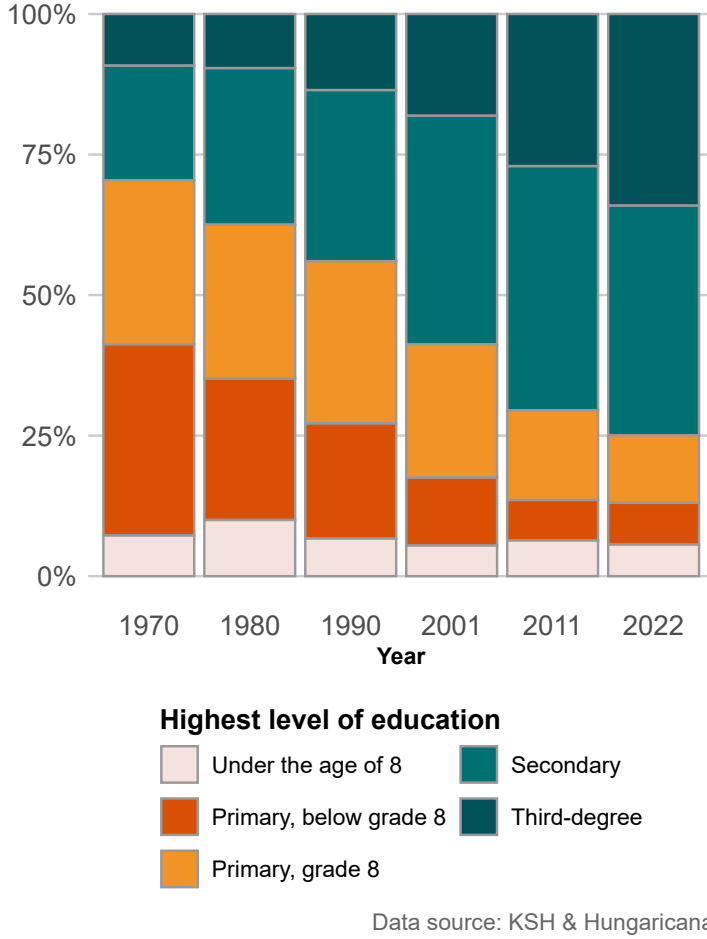
Data source: Statistik Austria

Vienna



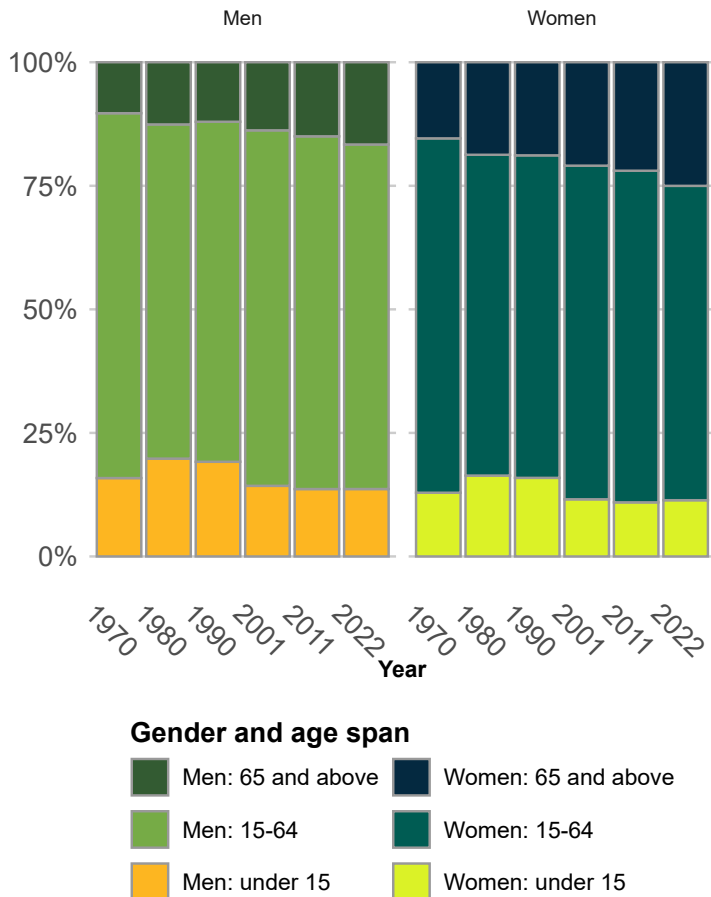
Data source: Statistik Austria

Budapest



Data source: KSH & Hungaricana

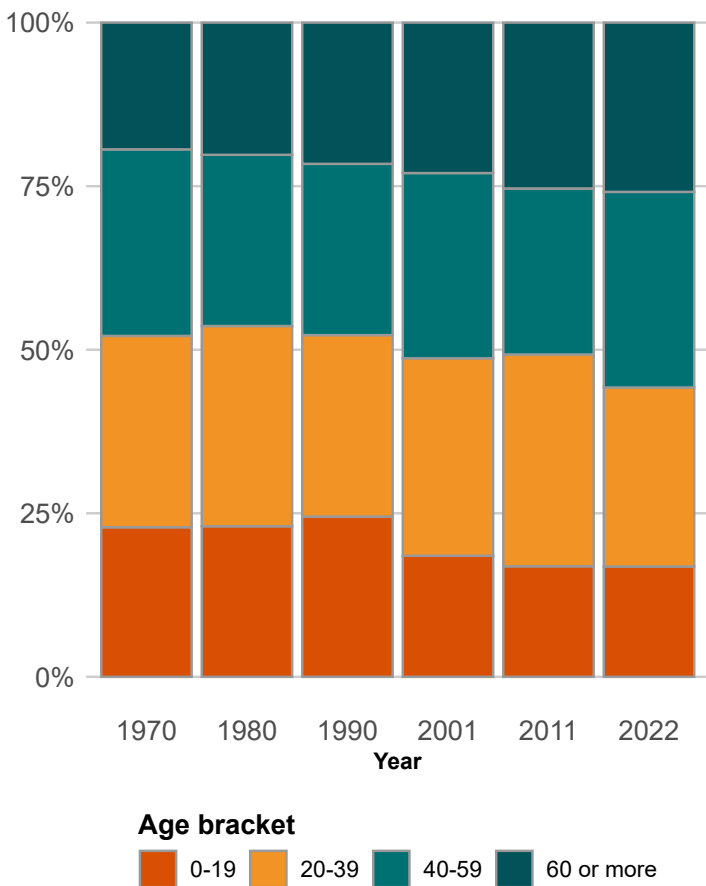
Budapest



Data source: KSH & Hungaricana

Socio-economic structure at the city level

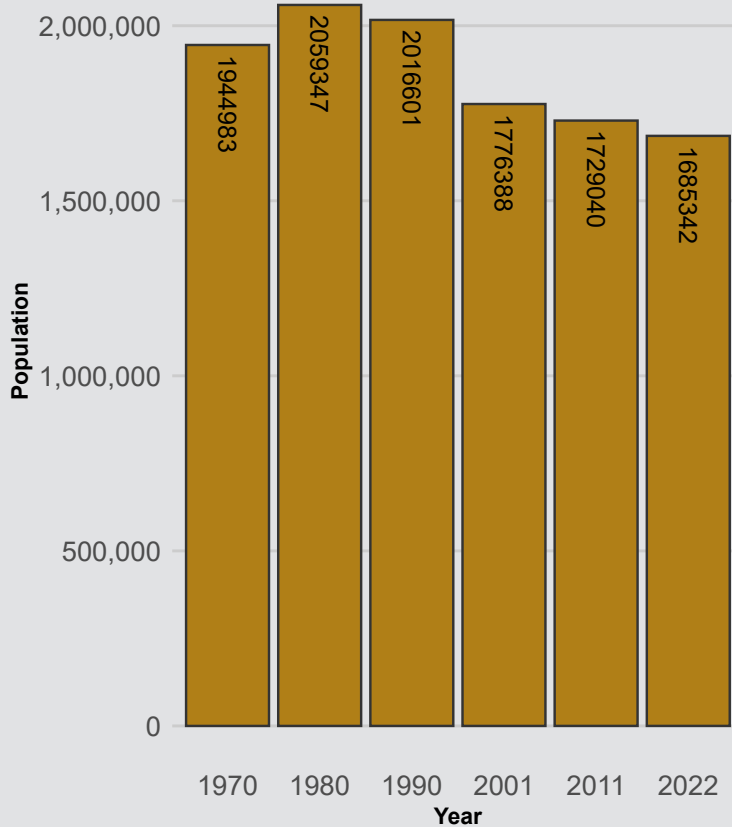
The city of Budapest is located in central Hungary, on the banks of the River Danube. The city had a total area of 525,96 km² and population of 1.686.222 individuals in 2024. Whereas in the 1980s, the population reached 2 million, after the fall of the Iron Curtain, in 1989 the population started to shrink. After the accession to the European Union in 2004 the population has been partially sinking and growing until 2019 when it started to sink again after the COVID pandemic in 2020. In 2025, the population of Budapest has been shrinking to 1,685,209, whereas the agglomeration (county, region of Pest) has been growing to 1,336,134 resulting in a total 3,021,343 for the lage region of central Hungary¹. In 2024, Budapest recorded approximately 14.7 million tourist overnight stays, a 24 % increase from the previous year; 87 % of these stays were by foreign visitors². For the academic year 2023/2024, Budapest hosted over 35 higher education institutions, including major universities such as Eötvös Loránd University (with about 26,006 students), Budapest University of Technology and Economics (21,171 students), and Corvinus University (14,522 students). The number of inhabitants with third degree education has been growing from 10% to 30% between 1970 and 2022. The number of inhabitants over 60 years has been growing fom 20% to 26%, especially women aged of 65 years and above have been growing from 16% to 25%.



Budapest



1. City level



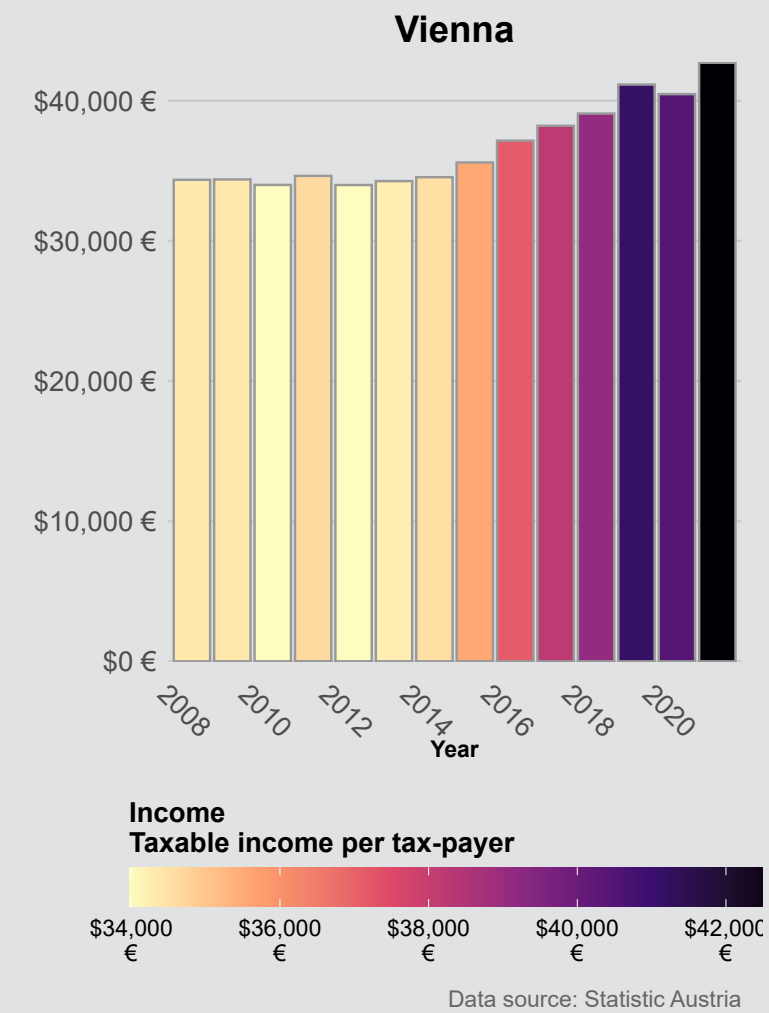
Data source: KSH & Hungaricana

1 https://www.ksh.hu/stadat_files/nep/en/nep0035.html
2 <https://www.budapestinfo.hu/en/2024-budapest-visitor-statistics-and-overview>

Vienna



1. City level



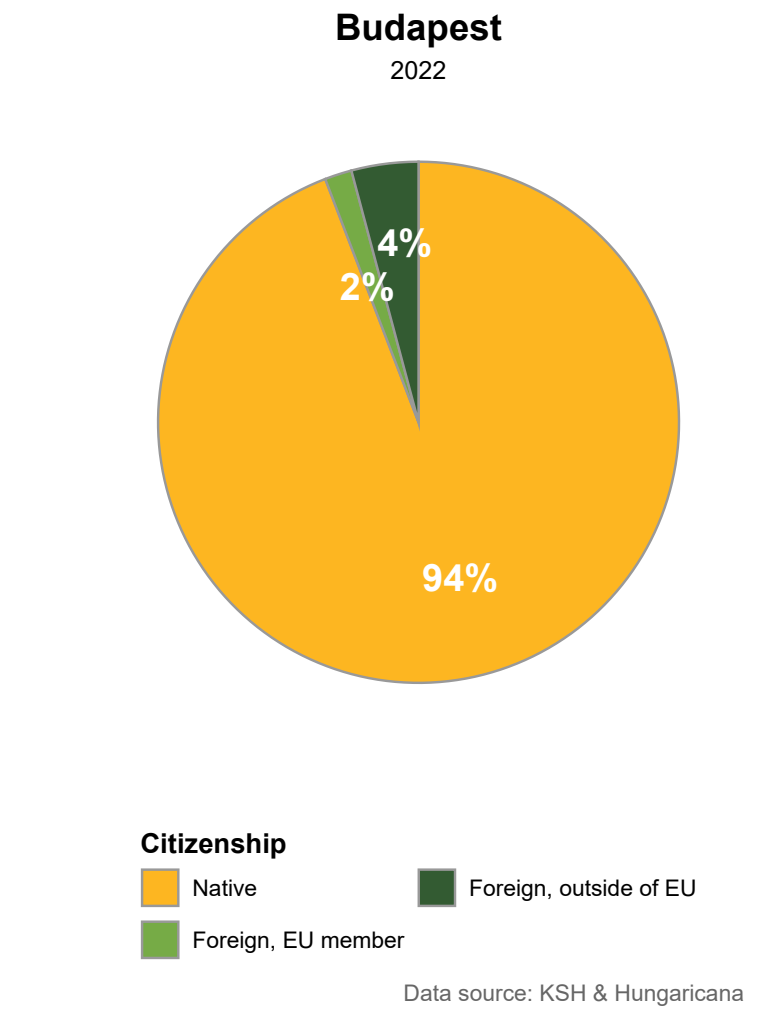
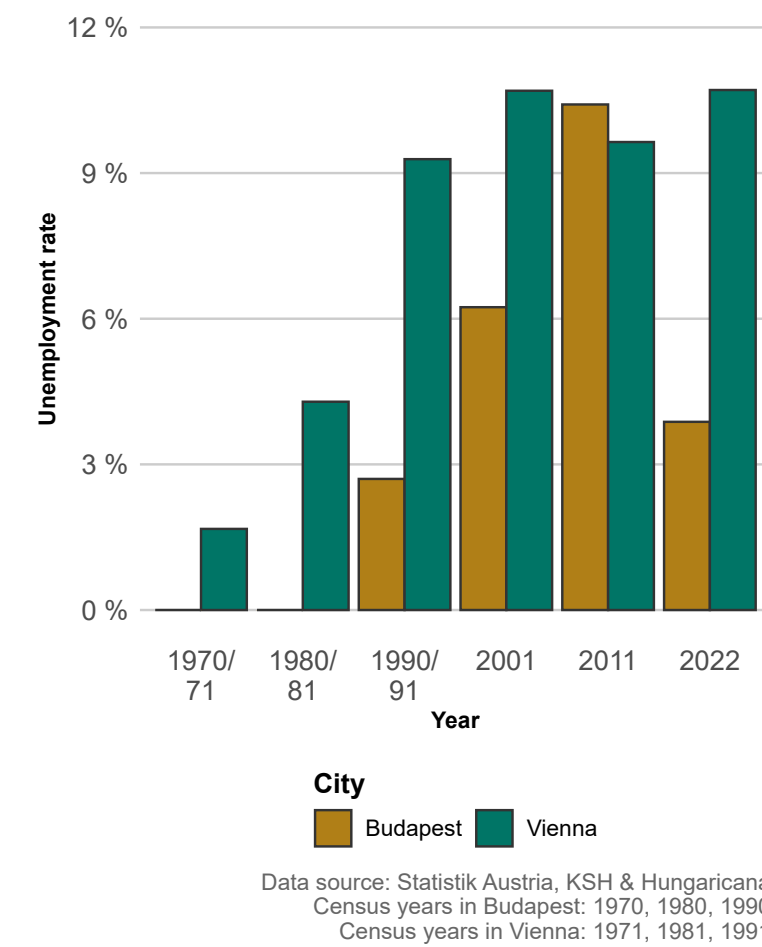
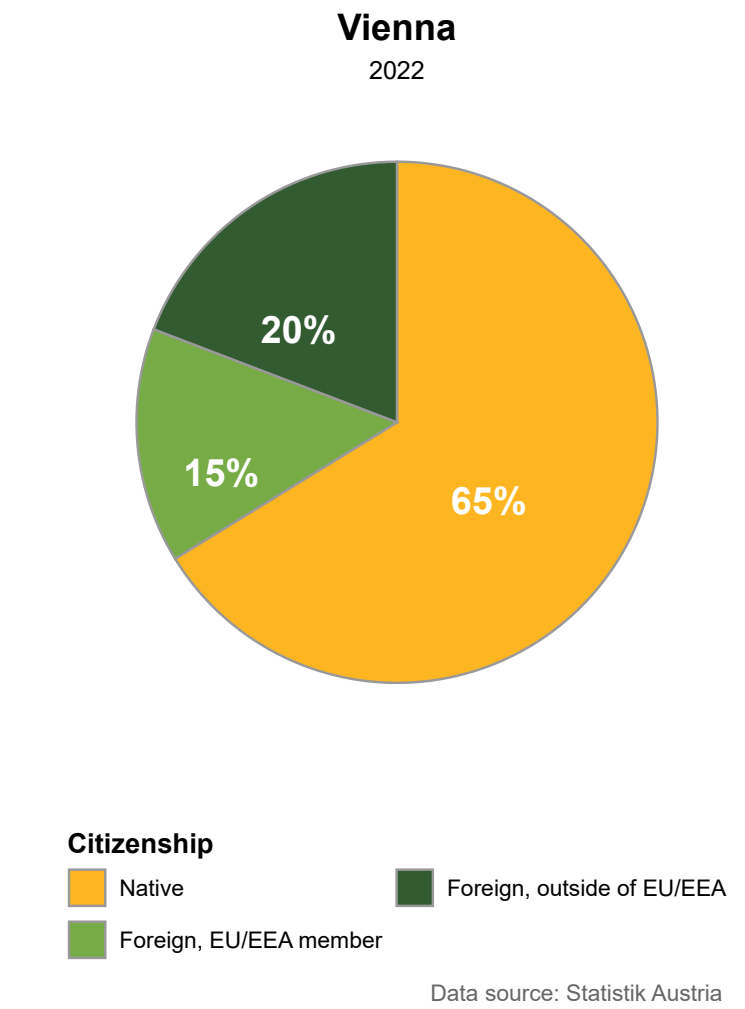
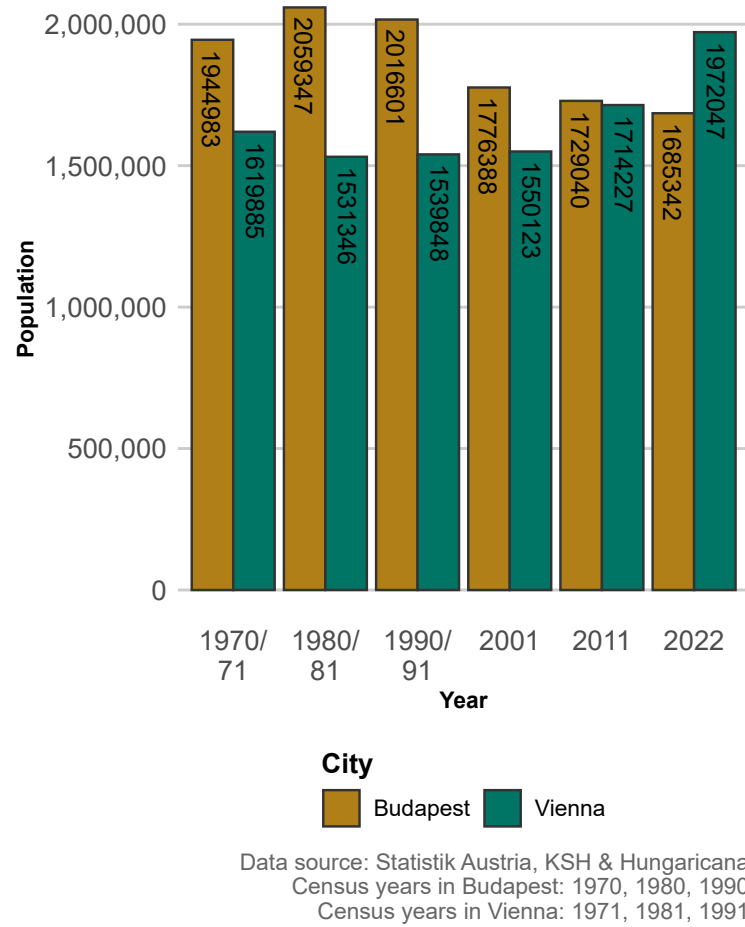
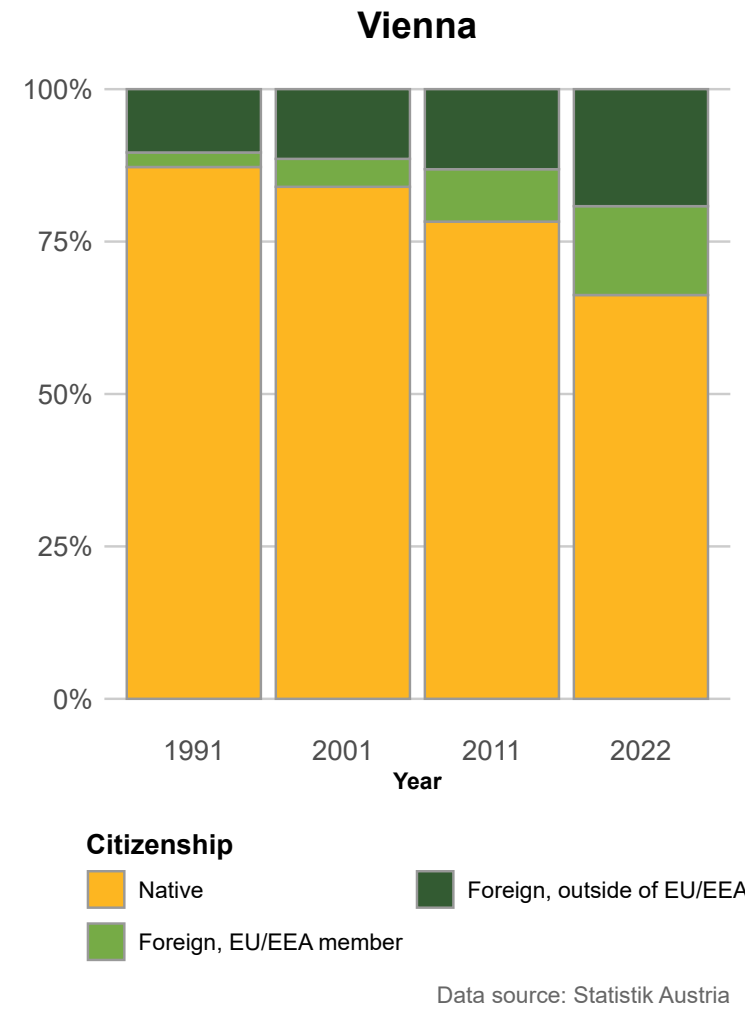
² <https://www.statistik.at/fileadmin/pages/214/CPI.pdf>

Socio-economic structure at the city level

The average taxable income per tax payer in Vienna has been growing between 2008 (around 35,000€) and 2021 (42,000€) yearly, which means a 120% growth, without considering the inflation. Between 2008 and 2020 Austria experienced relatively low and stable inflation, averaging around 1–2 % per year, with a moderate peak in 2011 (3.3 %) and a trough in the mid-2010s (below 1 % in 2015) before returning to a roughly 1–2 % range².

In Vienna, the number of inhabitants with non Austrian citizenship has been growing between 1991 and 2022. The percentage of inhabitants with a citizenship outside of the European Union grew from 10% in 1991 to 20% in 2022, while the percentage of inhabitants with EU-citizenship has been growing from 3% in 1991 to 15% in 2022.

The unemployment rate in Vienna has been growing, reaching more than 10% in 2022.

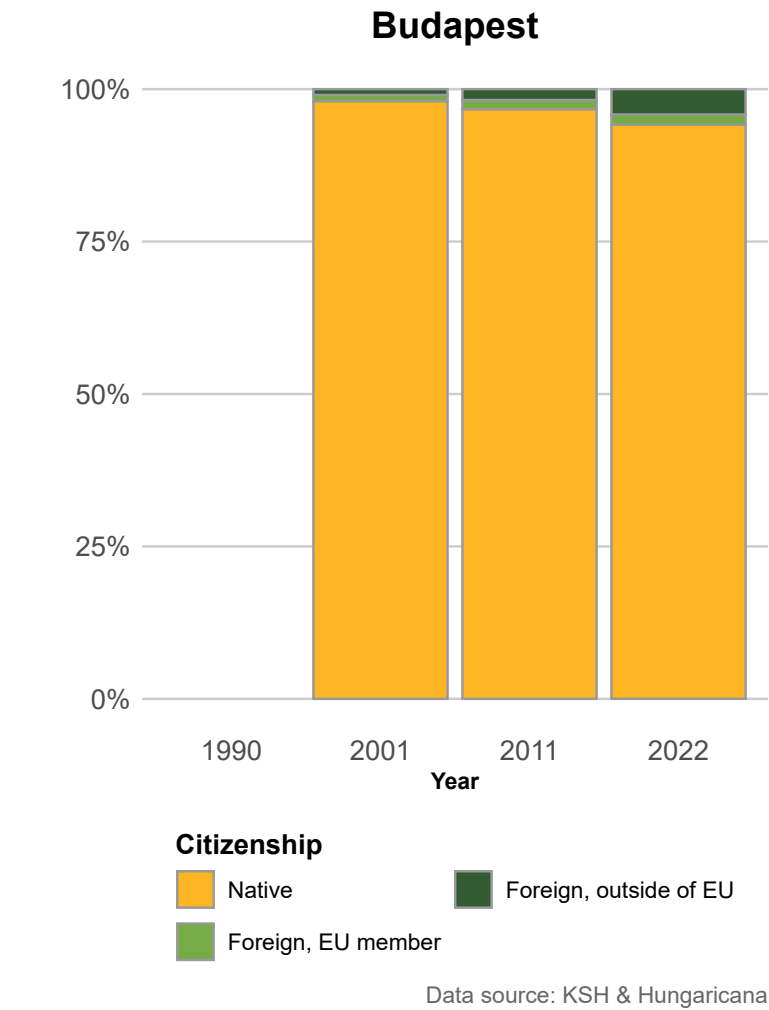


Socio-economic structure at the city level

The average taxable income per tax payer in Budapest, it has been growing between 2012 (2,500,00 HUF) and 2019 (3,500,000 HUF). 3,500,000 HUF was roughly equivalent to 10,700–11,100 EUR in 2019, depending on the exact month and rate. Which means a 140% growth, without considering the inflation. Between 2012 and 2019, Hungary experienced moderate inflation, averaging around 2 % annually, following a peak of 5.7 % in 2012 and a period of near-zero inflation between 2014 and 2016³.

In Budapest, the percentage of the population from EU countries 1% (before the EU accession in 2004). Similarly the population with citizenship outside of the EU has also been around 1%. These percentages have been growing to 4% for outside EU citizenship and 2% for EU citizens in 2022.

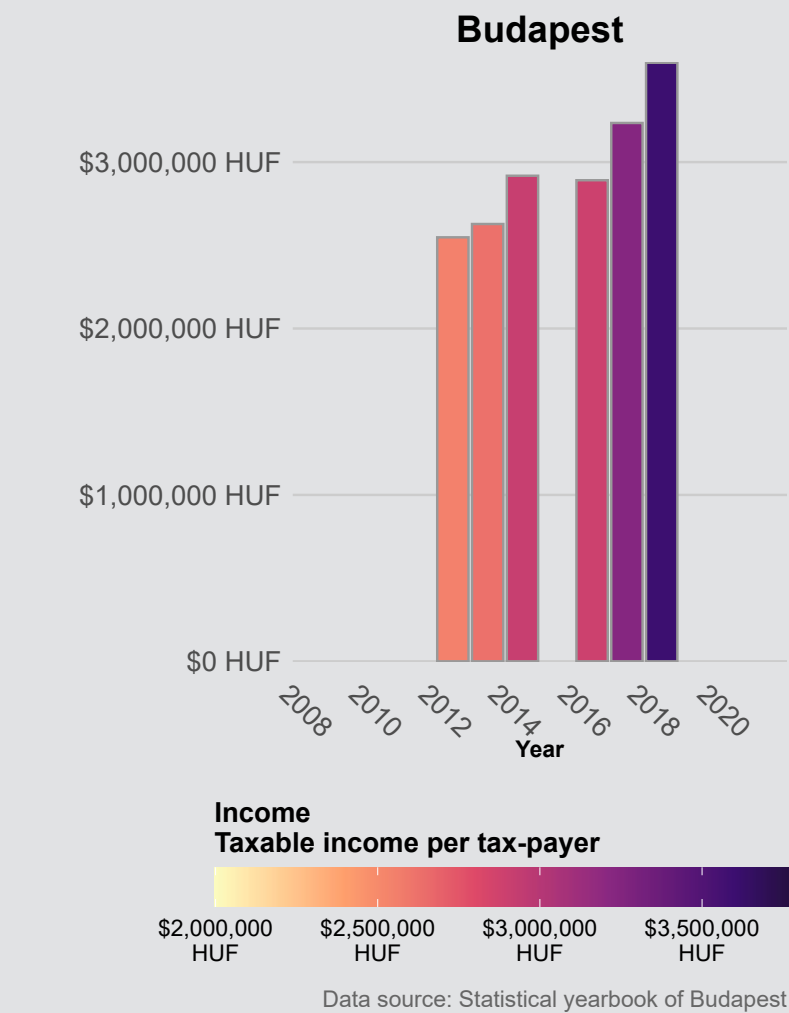
In Budapest, the unemployment rate has been growing until 2011 and has been shrinking significantly since then.



Budapest



1. City level

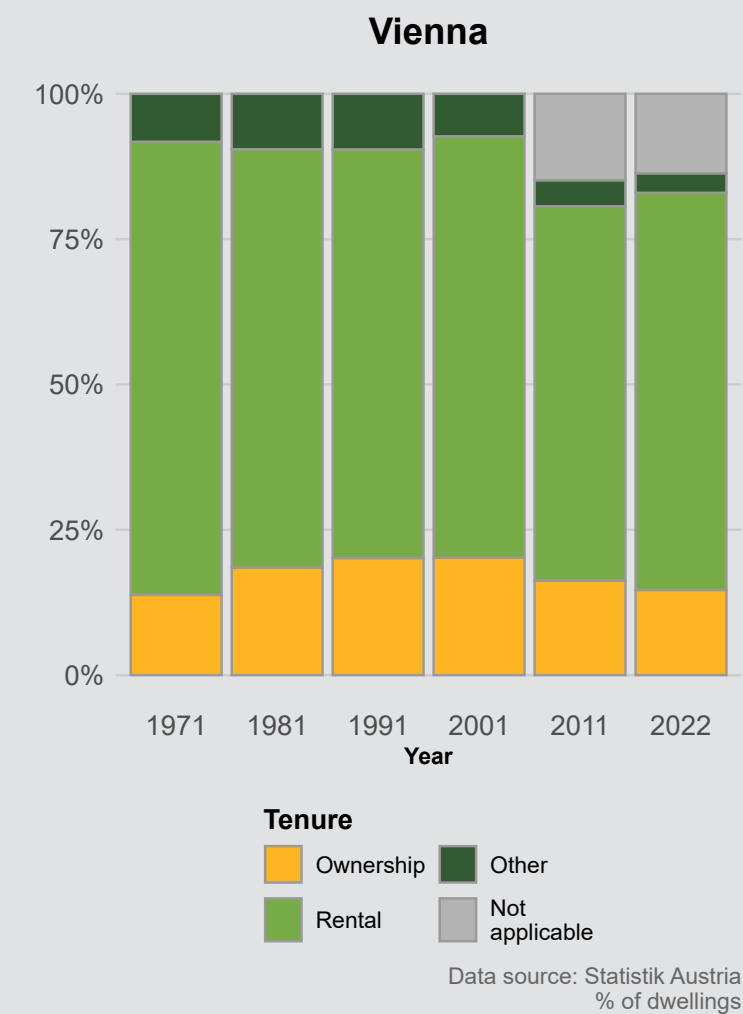


³ <https://www.worlddata.info/europe/hungary/inflation-rates.php>

Vienna



1. City level

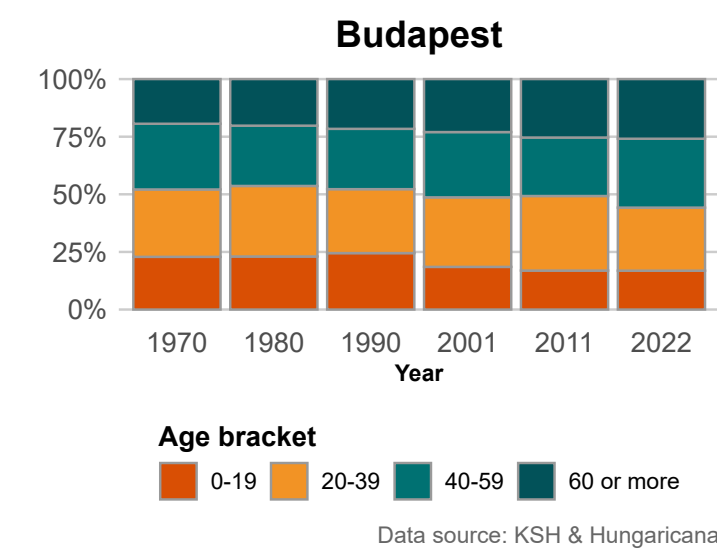
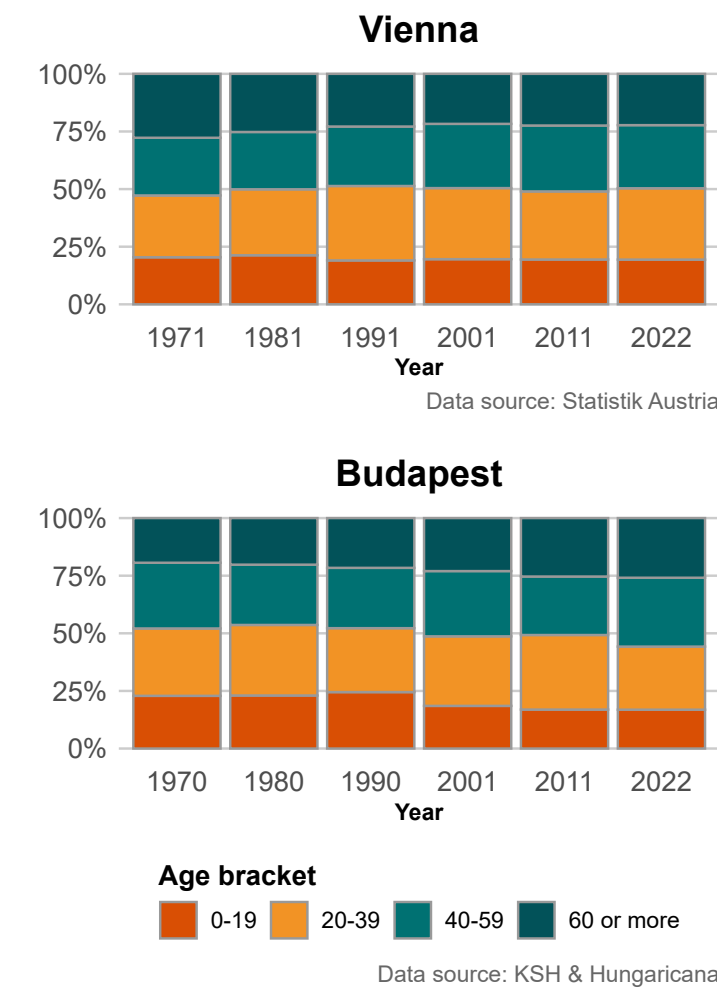
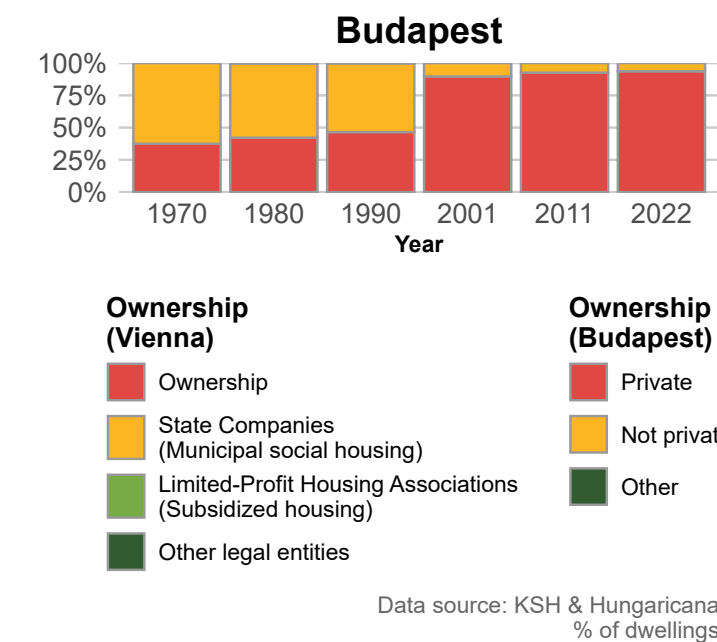
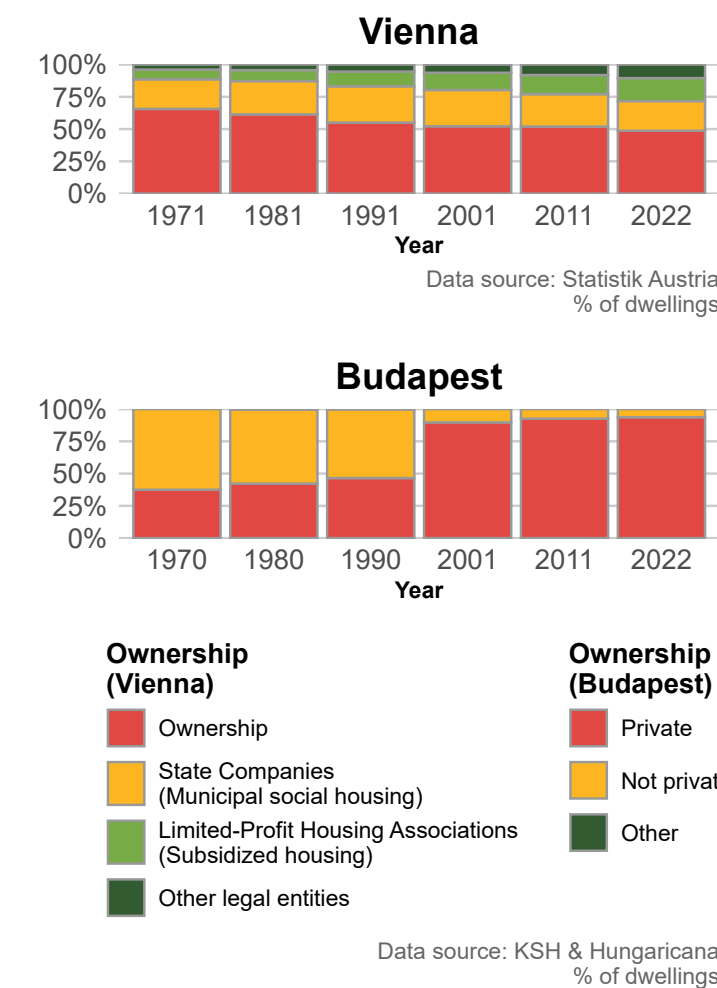
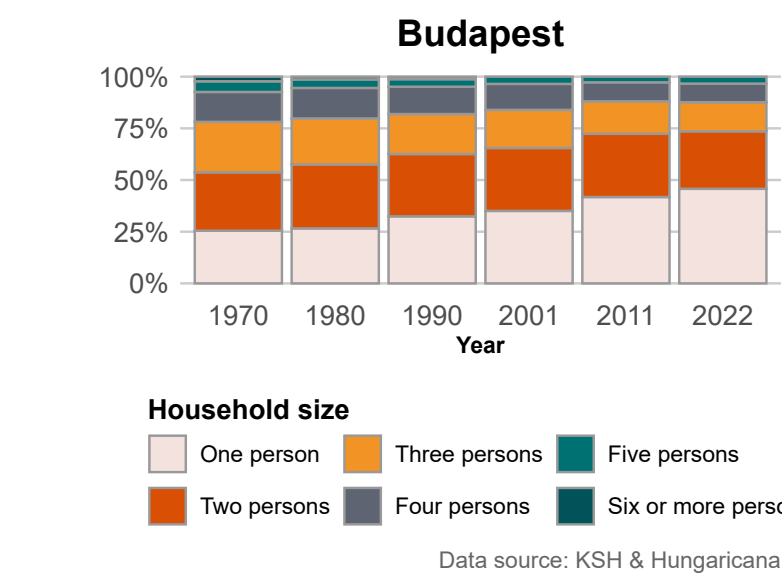
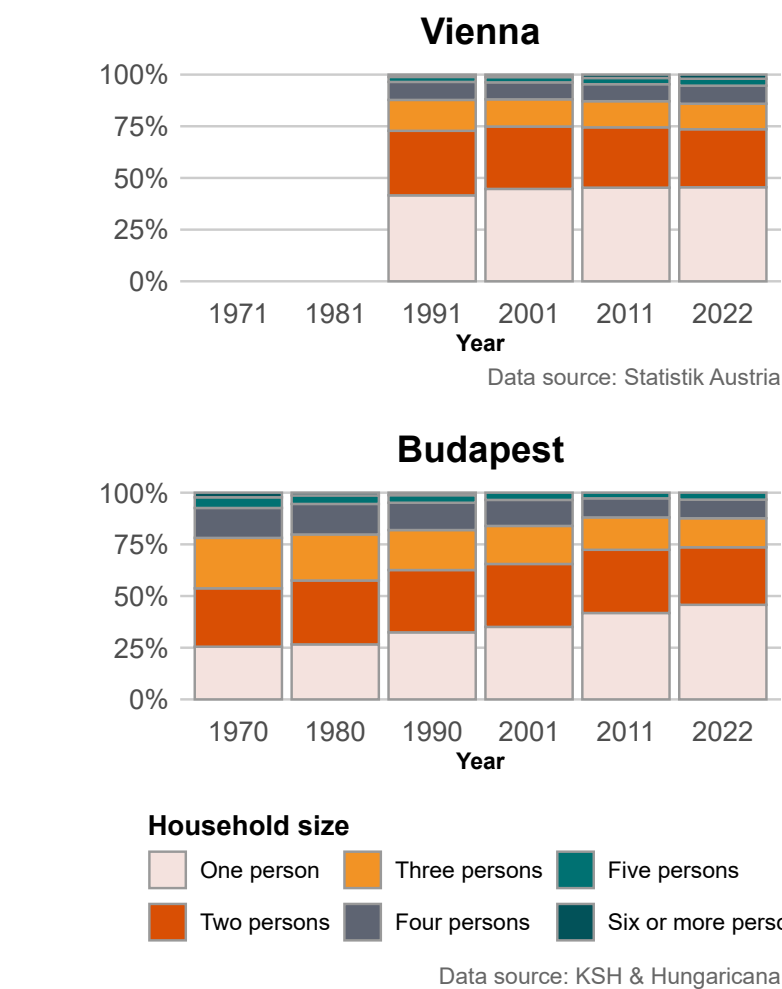
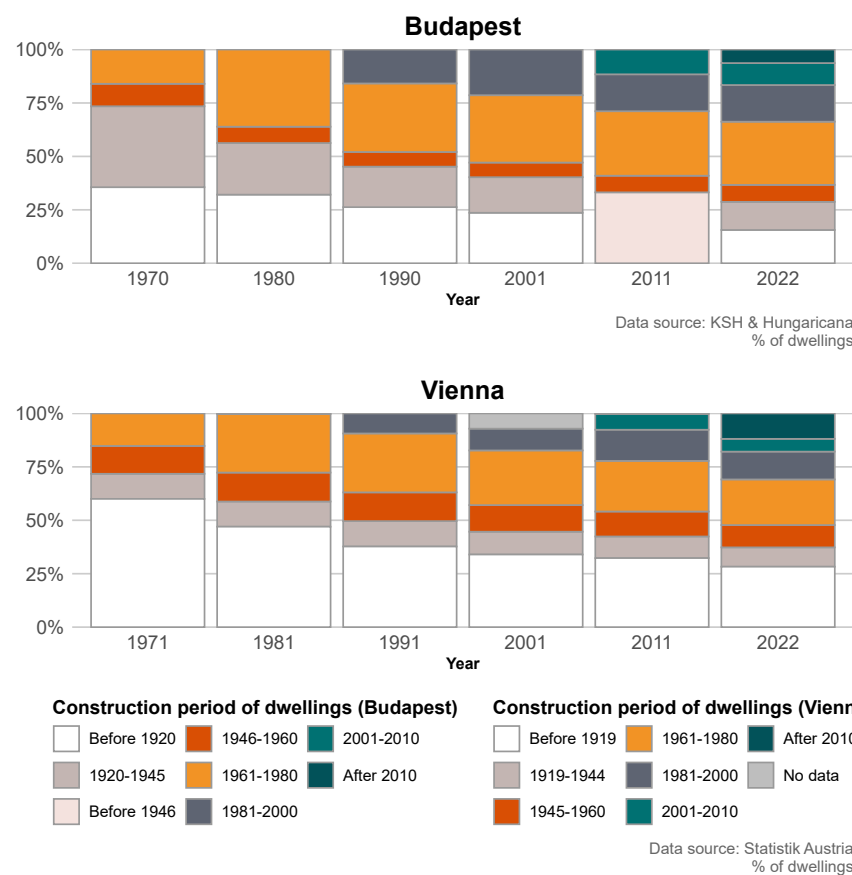
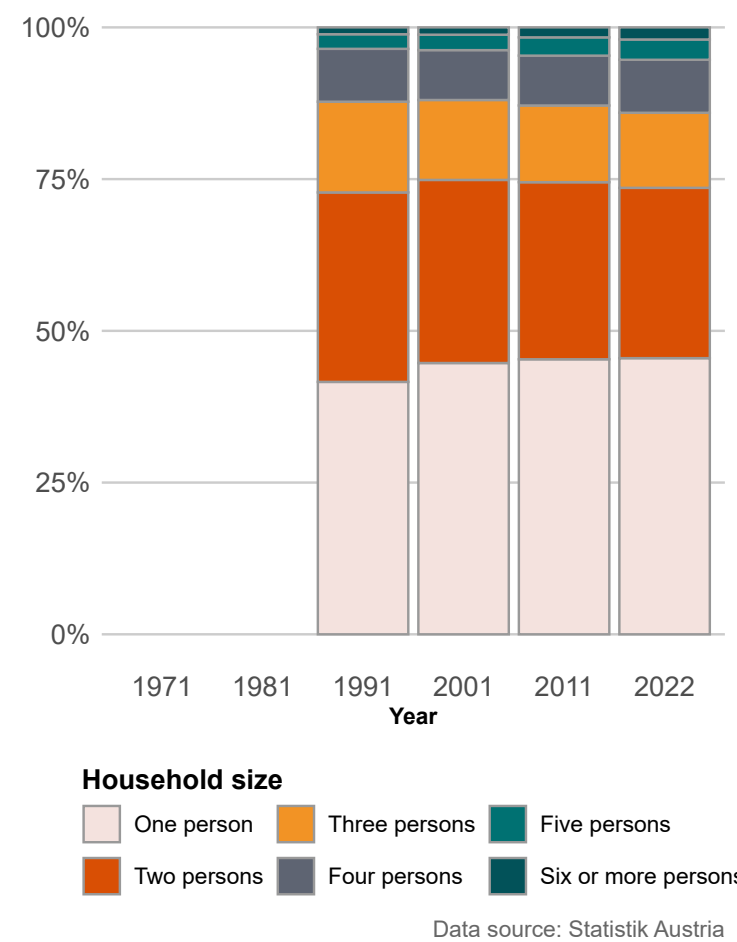


³ <https://www.wienerwohnen.at/wiener-gemeindebau/geschichte.html>

Dwelling & household structure at the city level

One of the dominant construction periods of the building stock is the Gründerzeit (Founder's period) in both Vienna and Budapest. In Vienna, buildings built before 1919 represented more than 50% of the building stock in 1971. This proportion started to shrink below 50% in 1981 to reach approximately 26% in 2022. In Budapest, buildings built before 1919 represented 30% of the building stock in 1970. It then has been reduced to less than 20% in 2022. These shrinking numbers result from new built construction over the years in the two cities as well as demolition. It is important to note that there is a large difference in the number of dwellings in Vienna and Budapest. In the 1970s, Vienna held almost 800,000 dwellings, whereas Budapest counted around 650,000 dwellings. In 2020, the number of dwellings in Vienna reached almost 1,1 million, whereas in Budapest, it was around 950,000.

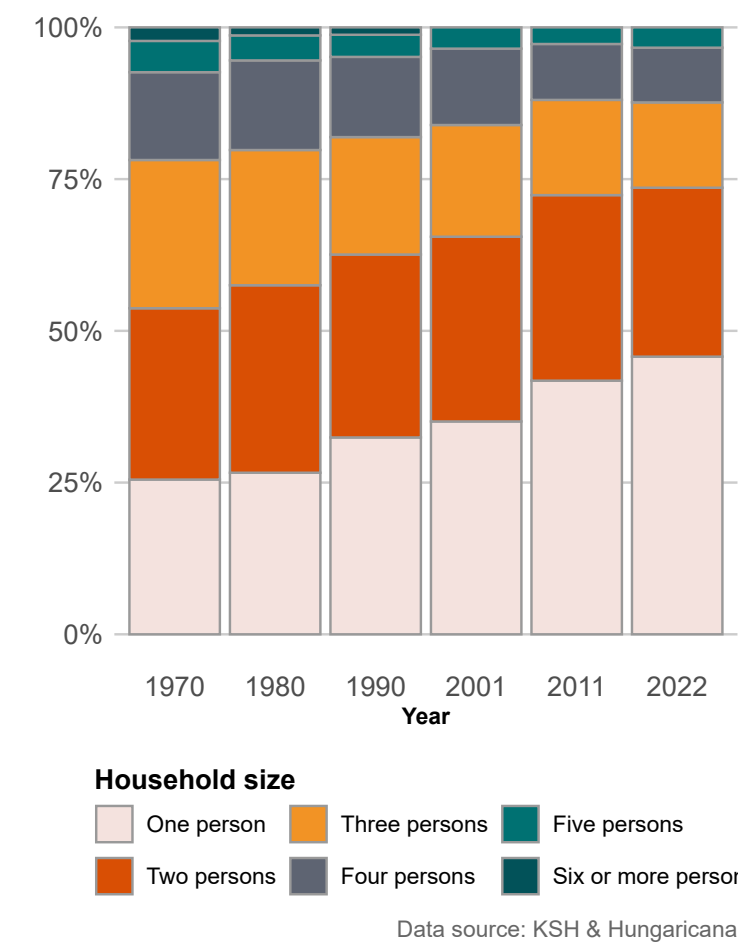
In Vienna, we can differentiate the following types of housing: private ownership with 50% in 2022, social housing of the city of Vienna, around 25% in 2022 and housing built by limited-profit housing associations 17% in 2022. In 2004, the city of Vienna shifted the responsibility of social housing construction to the Limited-Profit Housing Associations, LPHA-s. (Cucca & Friesenecker, 2022) Due to the growing demand, the city started to build social housing again in 2015.³



Dwelling & household structure at the city level

The household structure in Vienna and Budapest in 2022 has been predominantly composed of a single person with 45%. Whereas this percentage has been stagnating in Vienna since the 1990s, it has been growing in Budapest from approximately 25% in 1970, to 30% in 1990, to reach the 45% in 2022.

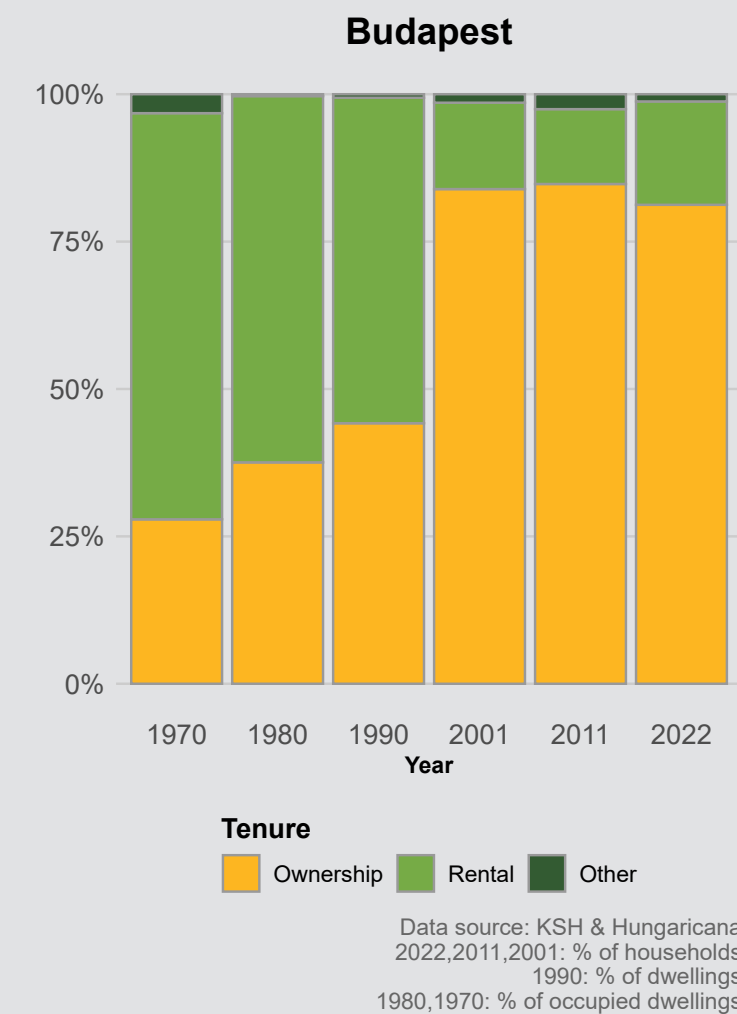
In Vienna, the percentage of rental units has been around 77% in 1971 and 67% in 2022. In Budapest, there has been a significant shift after the regime change in 1989 considering the ownership structure of dwellings. From 66% rental dwellings in 1970 and 53% rental dwellings in 1990, this percentage has been reduced to 14% until 2001. During this period, dwellings have been sold below market price to the tenants living in them. There has been a newly formed two-tier legislation system, where the central municipality and the district's municipality shared responsibilities. The districts gained profit from the privatisation of flats that could be potentially used to finance rehabilitation projects (Kovács, 1992). When it comes to the rehabilitation of existing buildings, Vienna has been considered as a pioneer with the development of the soft urban renewal programme in the 1970s, as a means to reduce substandard dwellings (Kirsch-Soriano da Silva, 2024).



Budapest



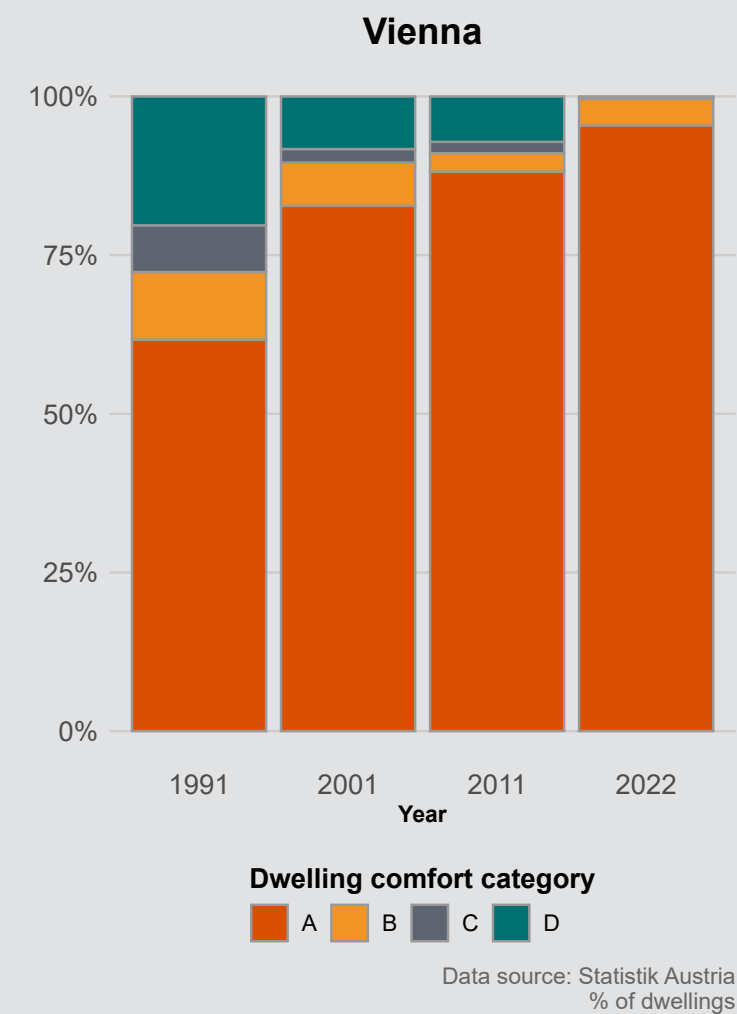
1. City level



Vienna



1. City level



⁴ BGBl. Nr. 520/1981 Bundesgesetz vom 12. November 1981 über das Mietrecht (Mietrechtsgesetz – MRG)

Dwelling structure at the city level

The number of substandard dwellings has been gradually reduced since 1990 with the help of public subsidies provided through the soft urban renewal programme and other rehabilitation initiatives. Back then, 20% of the dwellings were category D, whereas by 2022, this number has been reduced to around 1%. The equipment categories (Ausstattungskategorien) of dwellings according to the Rental Act⁴ of Austria are differentiated as follows (translation, Lélek):

A/ if it is in usable condition its usable floor space is at least 30 m² the flat consists of at least a foyer, one room, a kitchen (kitchenette), a lavatory and a bathing facility (bathroom or bathing alcove) that meets modern standards and has a common heat supply system or a floor heating system or an equivalent stationary heating system and hot water;

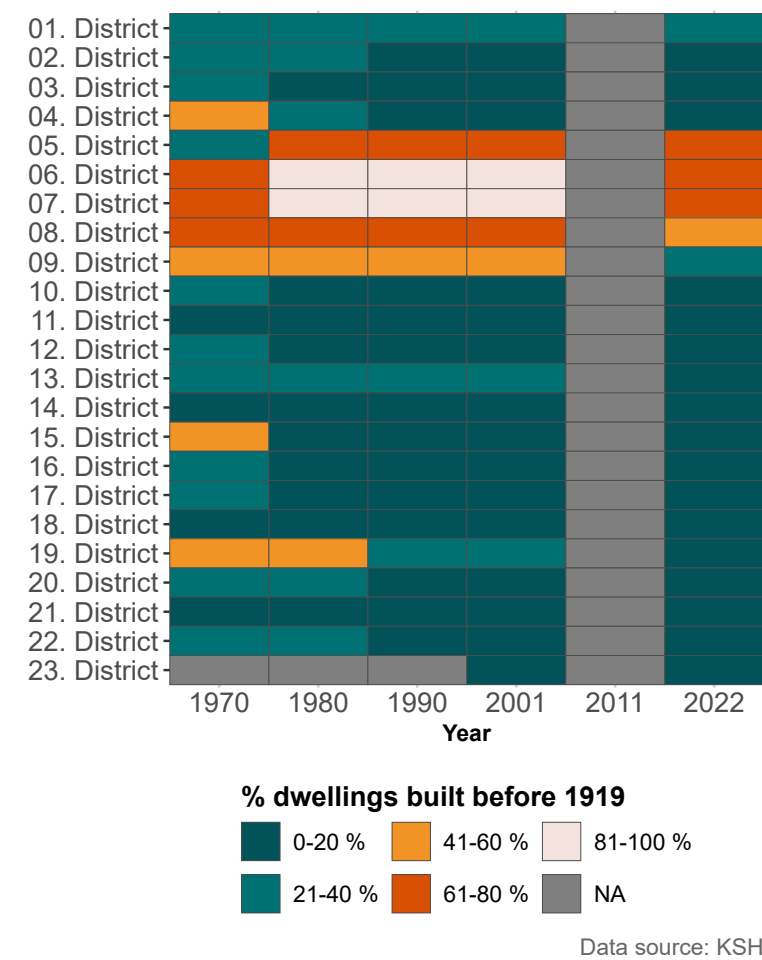
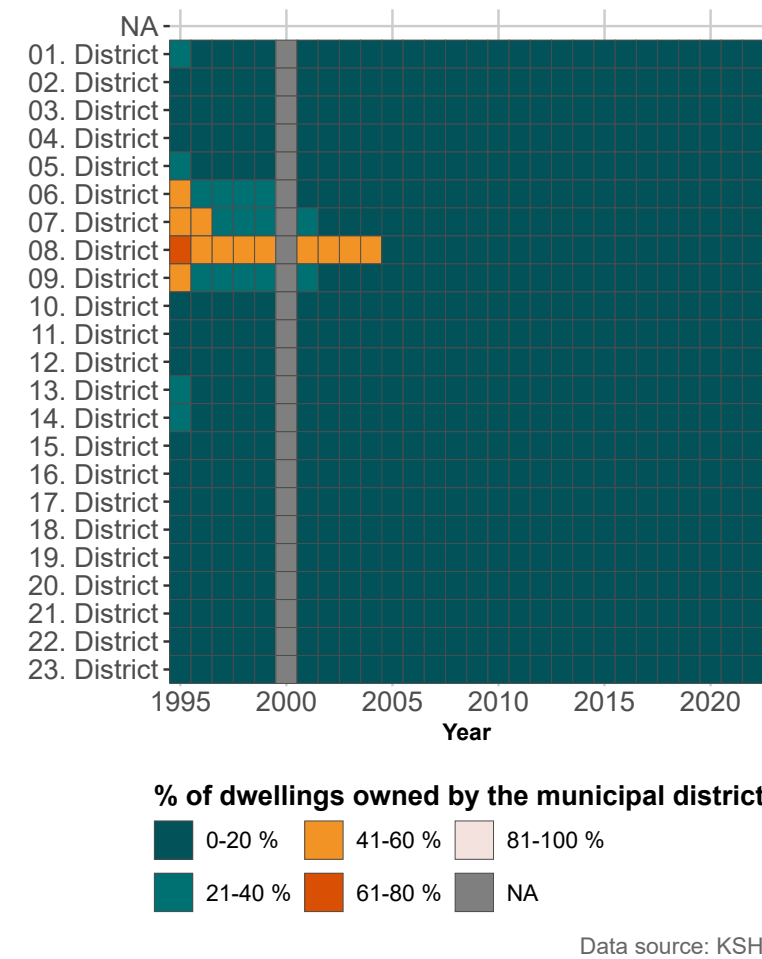
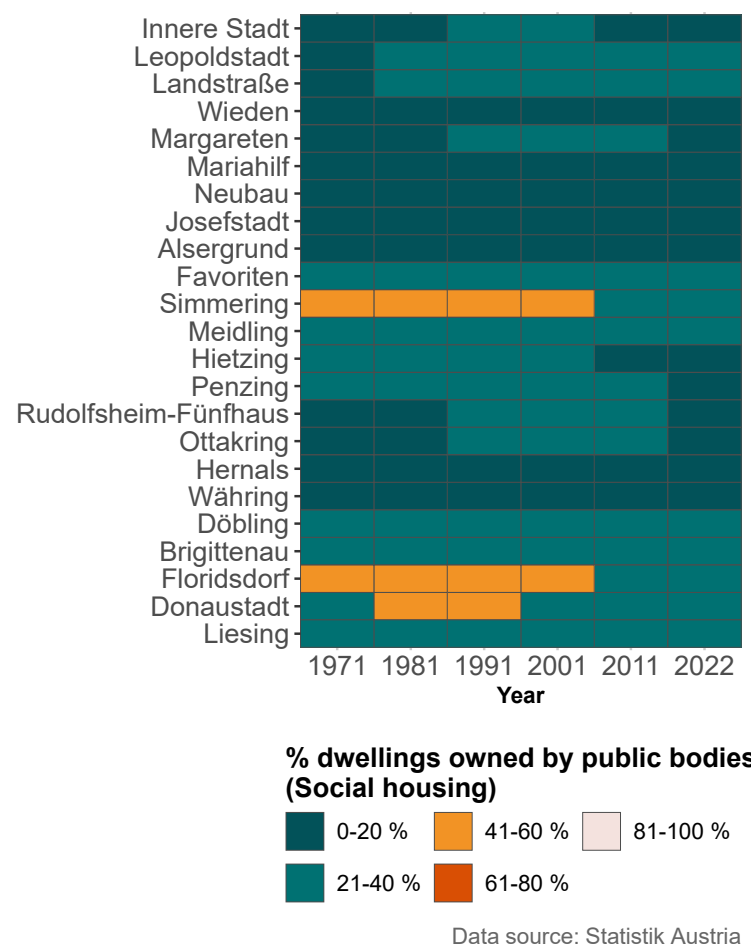
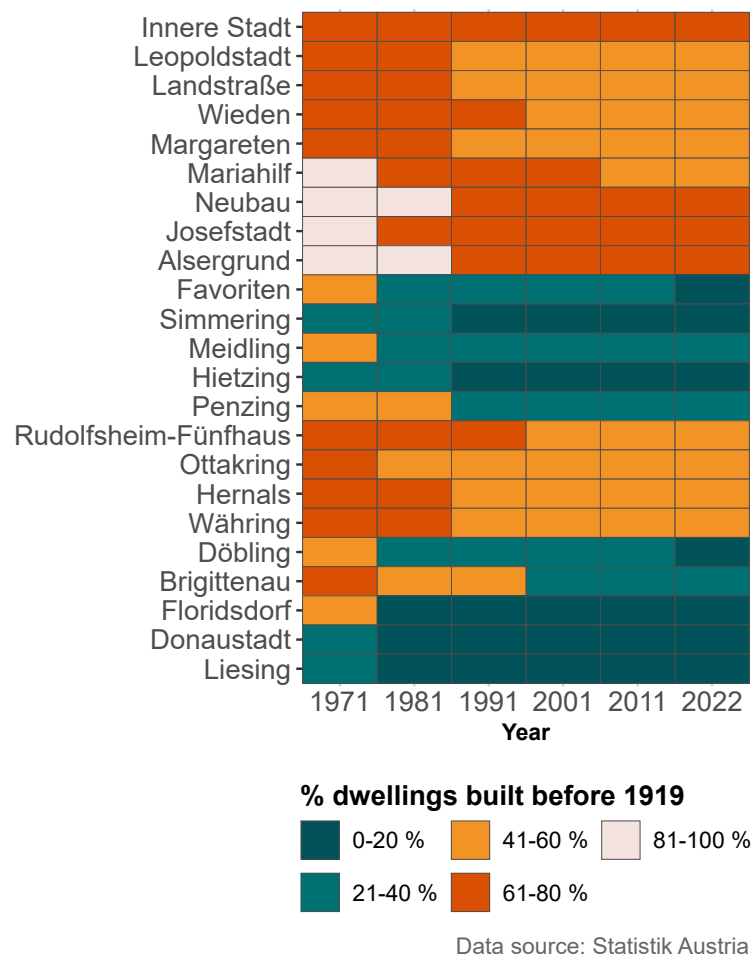
B/ if it is in usable condition and consists of at least a foyer, one room, a kitchen (kitchenette), a lavatory and a bathing facility (bathroom or bathing alcove) that meets modern standards;

C/ if it is in usable condition and has at least one water supply point and a lavatory inside;

D/ if it either has no water point or no lavatory inside or if one of these two amenities is not directly supplied (substandard dwellings).

In the past decades, the number of dwellings built before 1919 has been significantly reduced in the “inner districts”, inside the *Gürtel*. In 1971, the percentage was between 81-100%, whereas in 2022, it reached only 61-80%. During the same period, the number of dwellings built before 1919 and located in the outer districts (outside of the Gürtel) decreased from 61-80% in 1971 to 41-60% in 2022.

The districts with the most municipal housing (social housing) were the 11th district, *Simmering*, the 21. district, *Floridsdorf* and the 22. district, *Donaustadt* for many decades (1971 to 2001). However after 2022, social housing has been more evenly distributed in the “outer districts”.



Dwelling structure at the city level

The percentage of substandard dwellings has also been gradually reduced in Budapest. The reason might be the interventions of the dwellings’ owners after the privatisation in 1990 or municipal renovation programmes in the non-privatised, social housing stock. The comfort categories of dwellings are differentiated by the 1993 Housing Act⁴ as follows (translation, Lélek):

Total comfort: dwelling with at least one living room with a floor area of more than 12 m², a cooking room (if not a separate room, at least +4 m² added to the living room), a bathroom and a toilet, as well as amenities (water and electricity supply and sewage system), hot water supply and central heating system.

Comfort: dwelling with at least one living room with a floor area of more than 12 m², a cooking room (if not a separate room, at least +4 m² added to the living room), a bathroom and a toilet, as well as amenities (water and electricity supply and sewage system), hot water supply and individual heating system. (This has been the highest category in the 1970s and 1980s.)

Semi-comfort: dwelling which does not meet the requirements for comfort dwelling, but which has at least one living room with a floor area of more than 12 m², a cooking room (if not a separate room, at least +4 m² added to the living room), a bathroom or toilet, at least electric and water supply and an individual heating system.

Without comfort: dwelling which does not meet the requirements for semi-comfort dwellings, but which has at least one living room with a floor area of more than 12 m², a cooking room (if not a separate room, at least +4 m² added to the living room), and a toilet outside the dwelling, as well as an individual heating system and the possibility of water supply. (substandard dwelling)

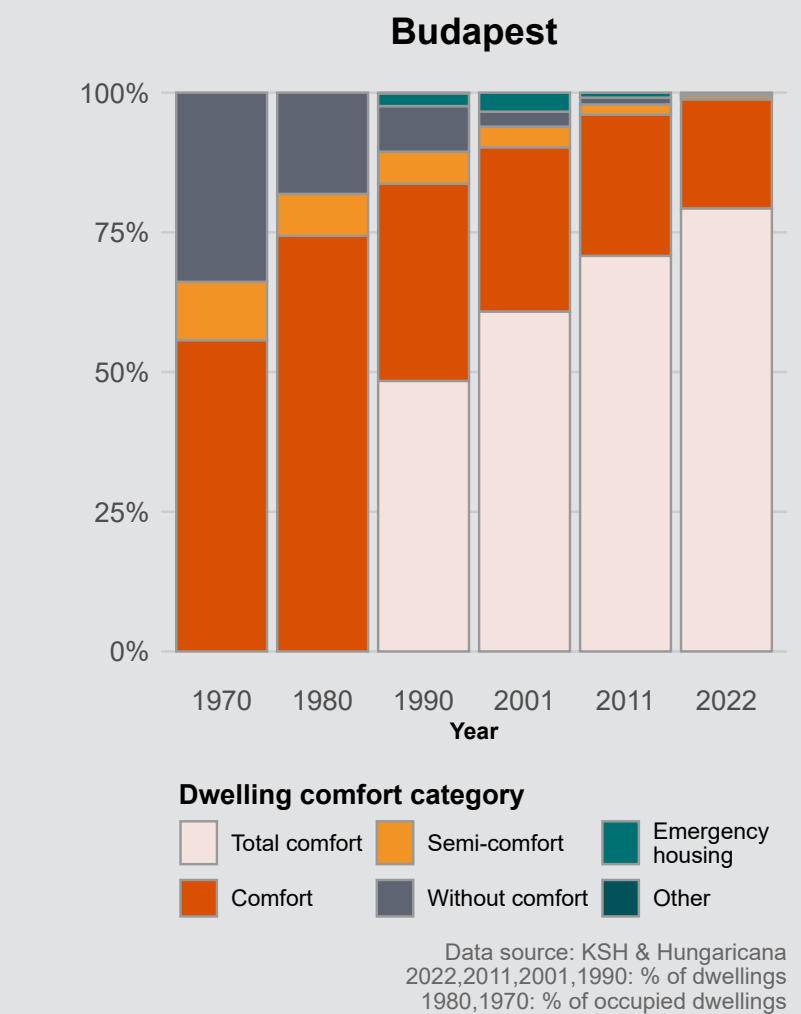
Need or other emergency housing (not a dwelling, as defined by law.)

The percentage of dwellings built before 1919 was the highest in the 5., 6., 7., 8. and 9. districts in the inner city of Pest, with 81-100% until 2001. In 2022, this proportion was reduced to 61-80% and below due to new constructions and demolitions. The percentage of dwellings owned by the municipal districts was the highest with 61-80% in the 8. district of Budapest, *Józsefváros* in 1995 and other districts in the inner city of Pest, such as the 6., *Terézváros*, 7., *Erzsébetváros* and 9. district, *Ferencváros*.

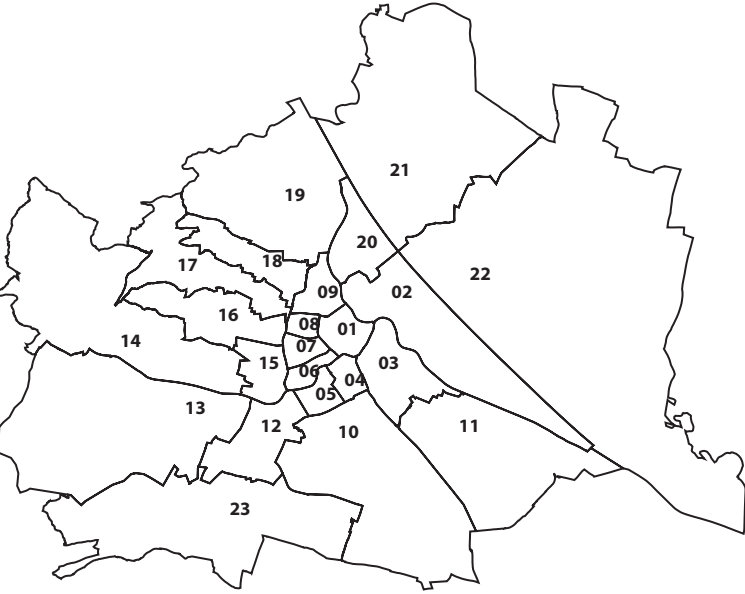
Budapest



1. City level



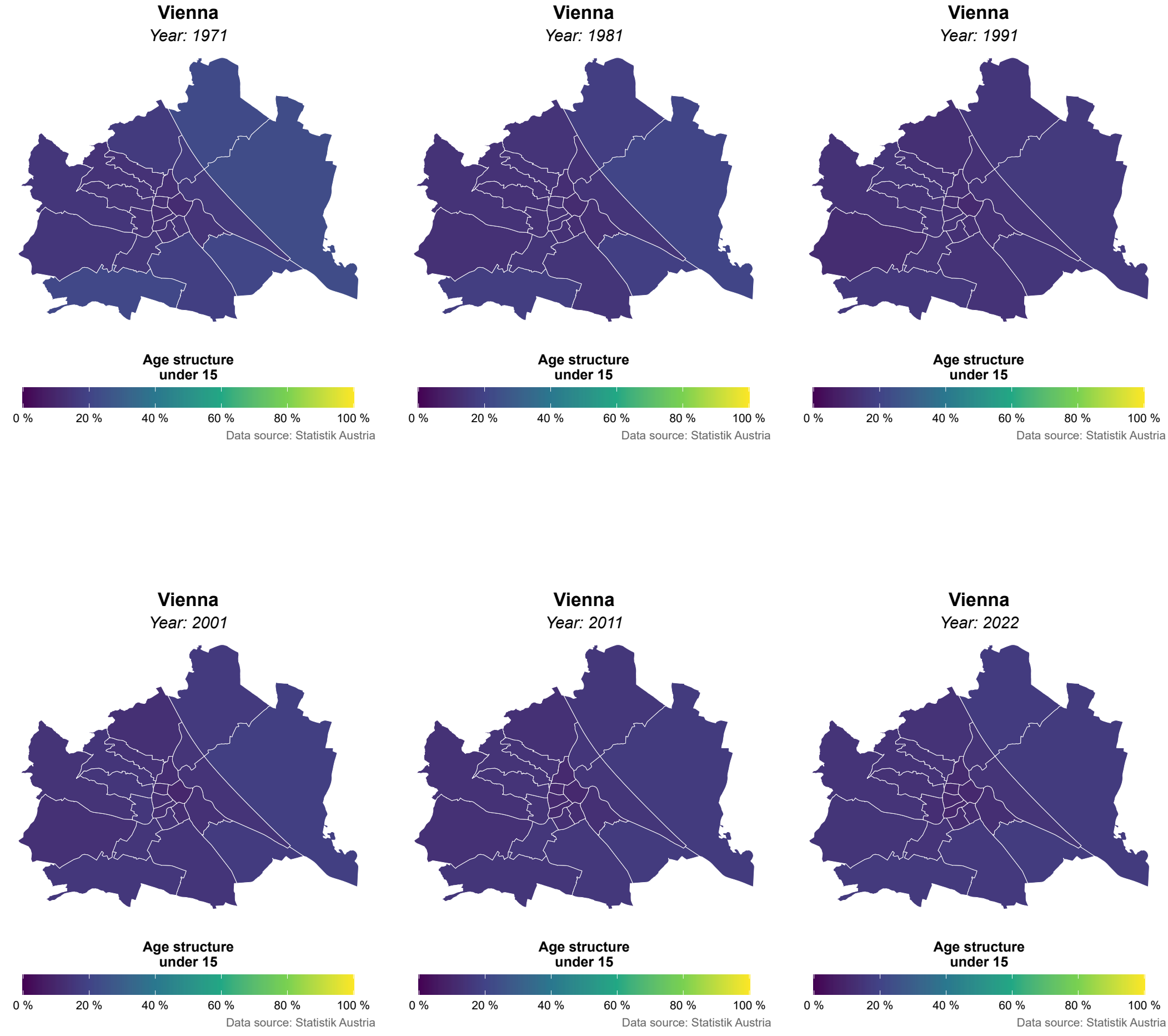
⁴ Housing Act - 1993. évi LXXVIII. törvény - a lakások és helyiségek bérletére, valamint az elidegenítésükre vonatkozó egyes szabályokról



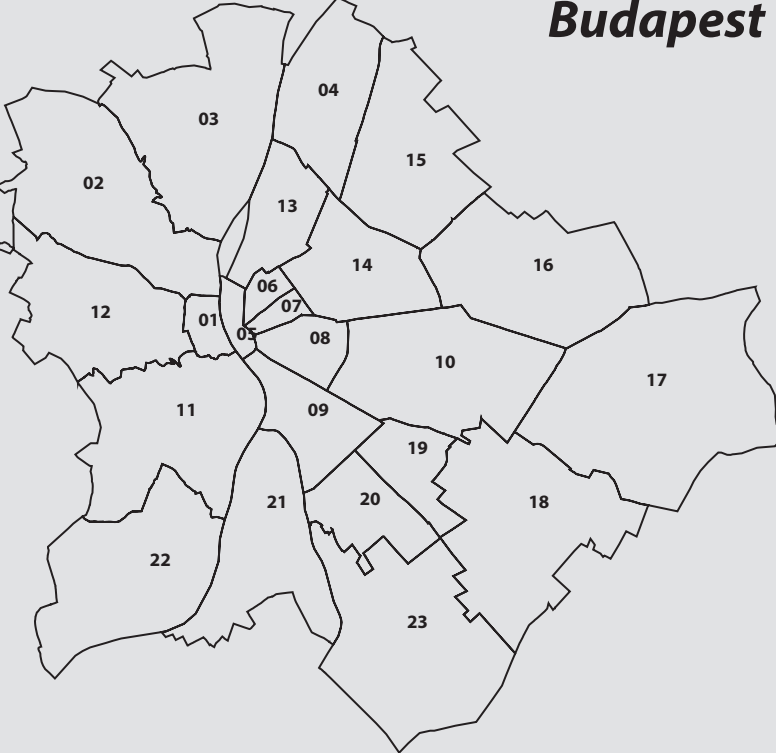
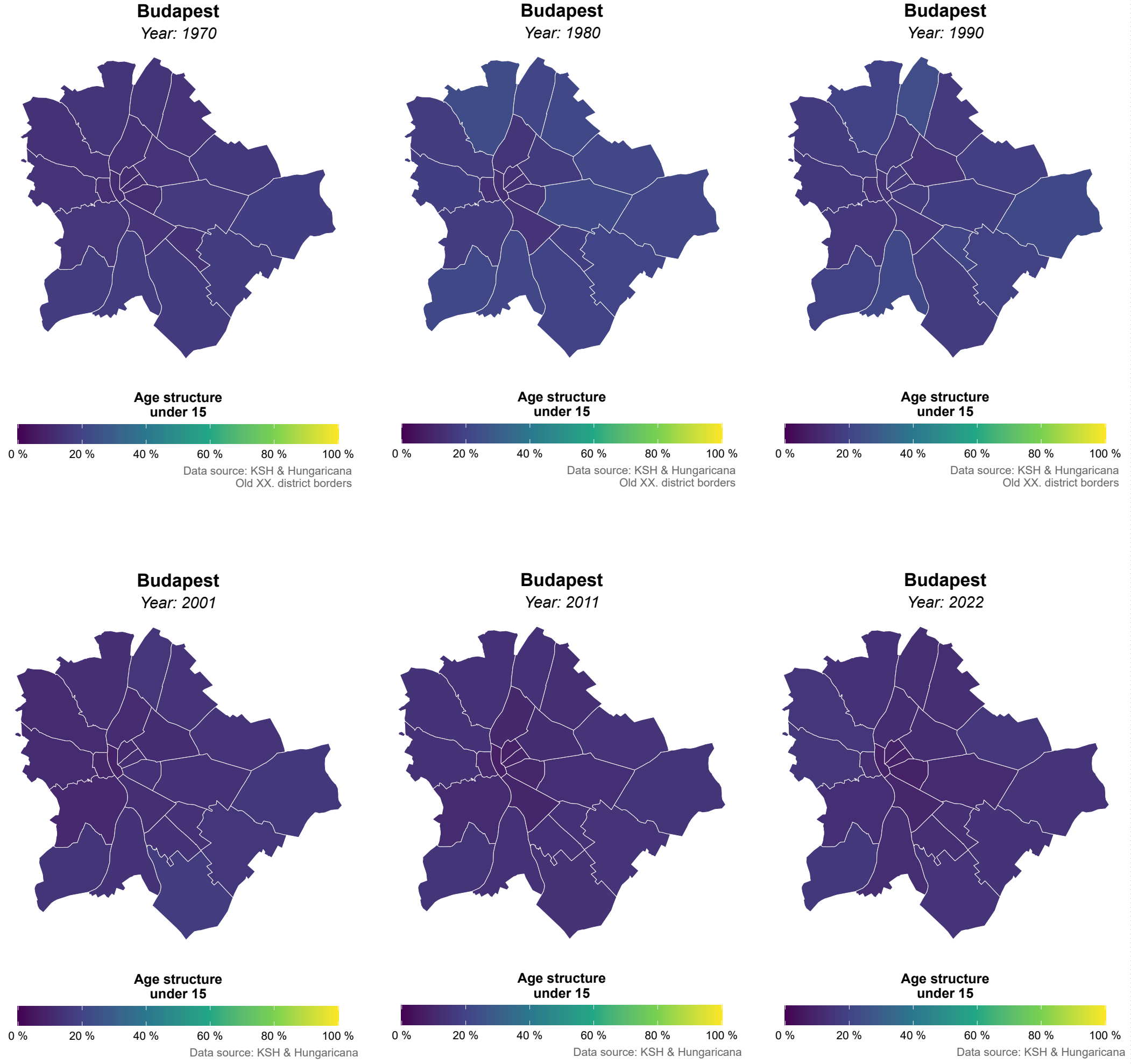
2. District level

Change in percentage of the population under 15 years of age in the districts of Vienna between 1971 and 2022.

Socio-economic structure at the district level



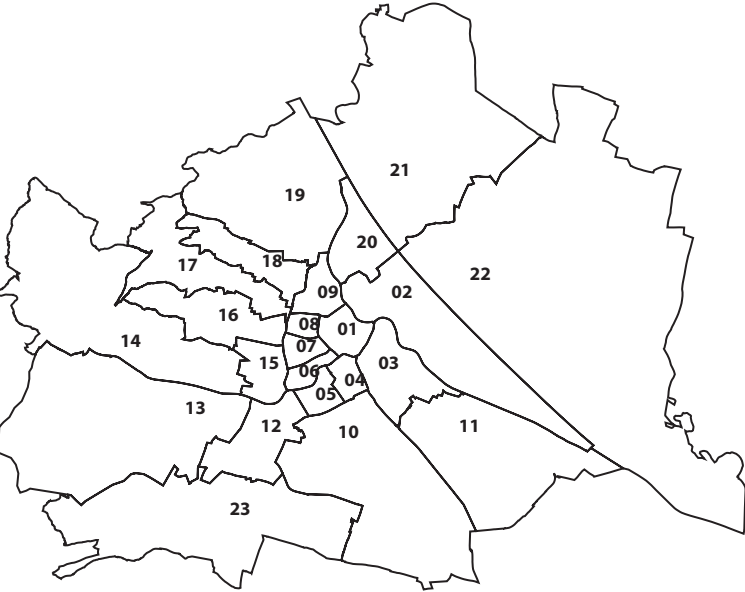
Socio-economic structure at the district level



2. District level

Change in percentage of the population under 15 years of age in the districts of Budapest between 1970 and 2022.

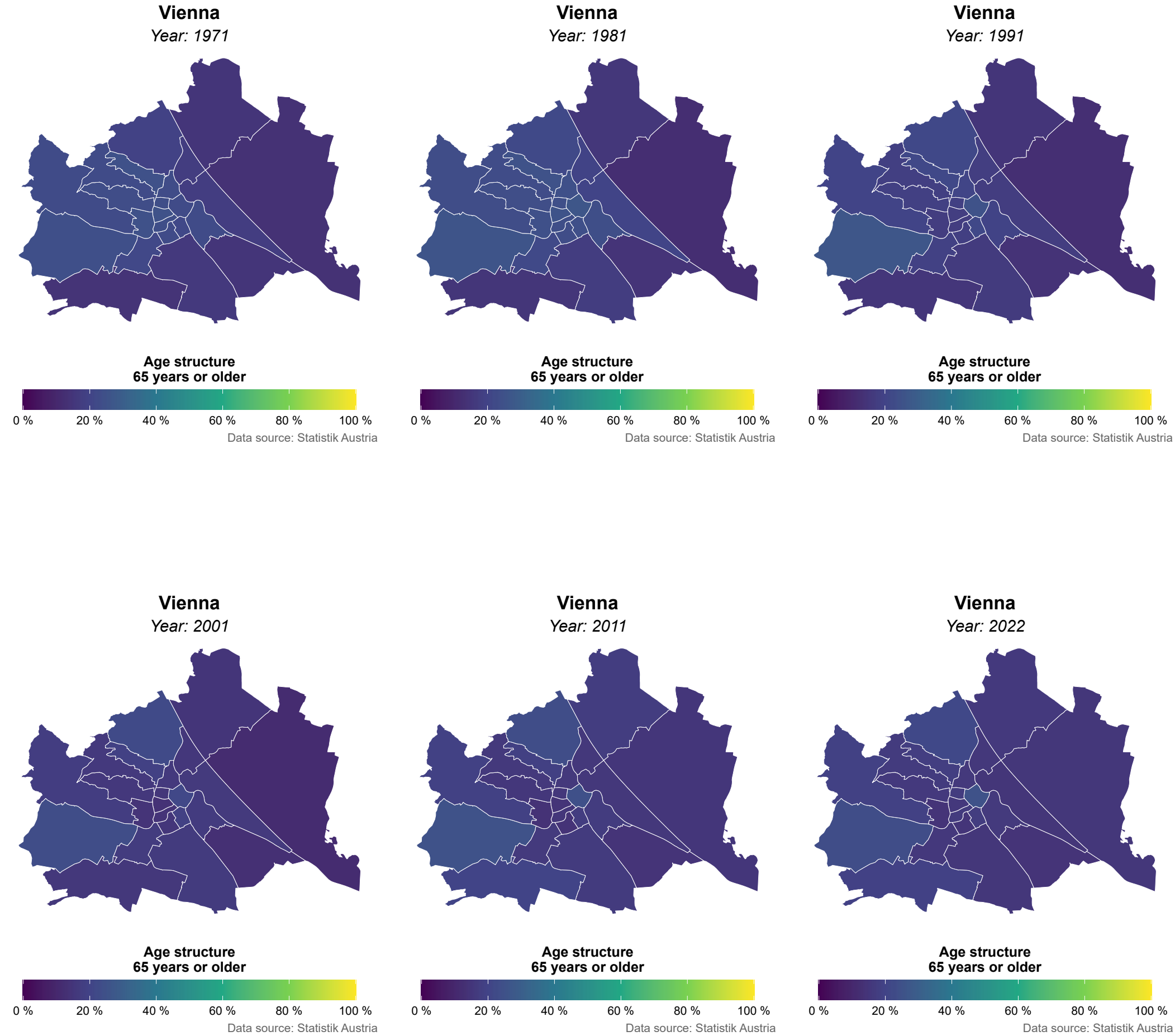
Vienna



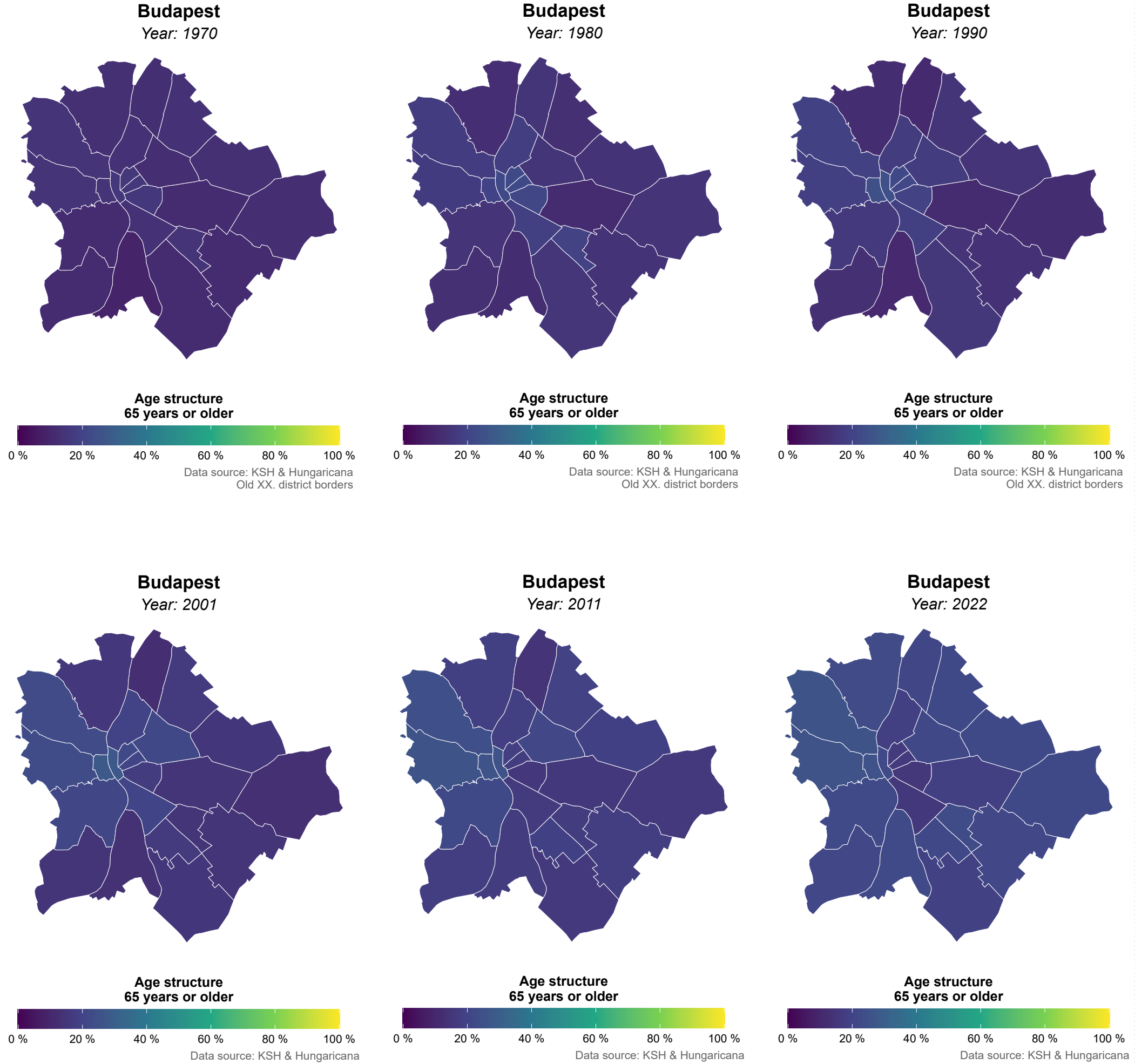
2. District level

Change in percentage of the population with 65 years of age or older in the districts of Vienna between 1971 and 2022.

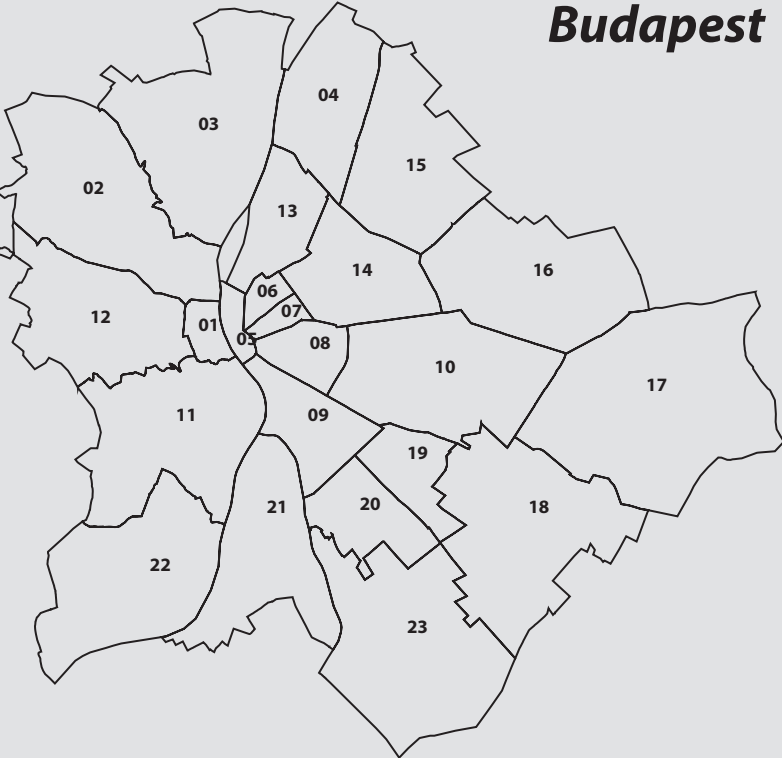
Socio-economic structure at the district level



Socio-economic structure at the district level



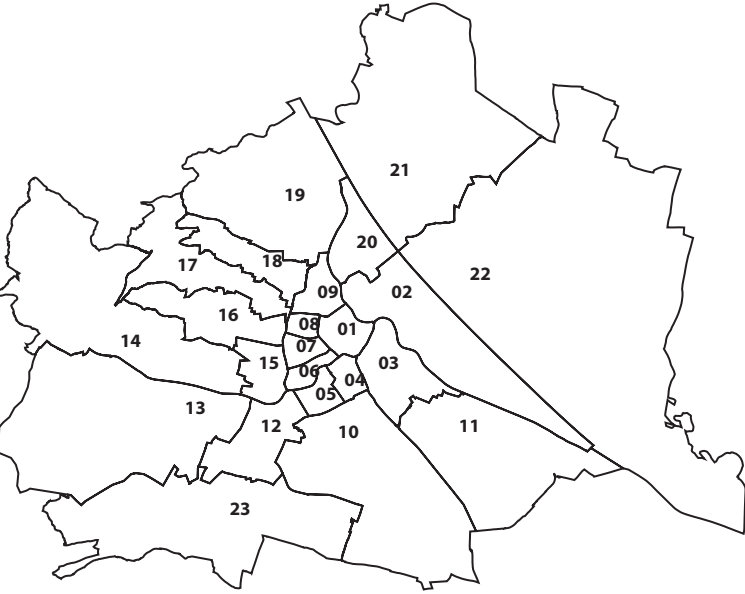
Budapest



2. District level

Change in percentage of the population with 65 years of age or older in the districts of Budapest between 1970 and 2022.

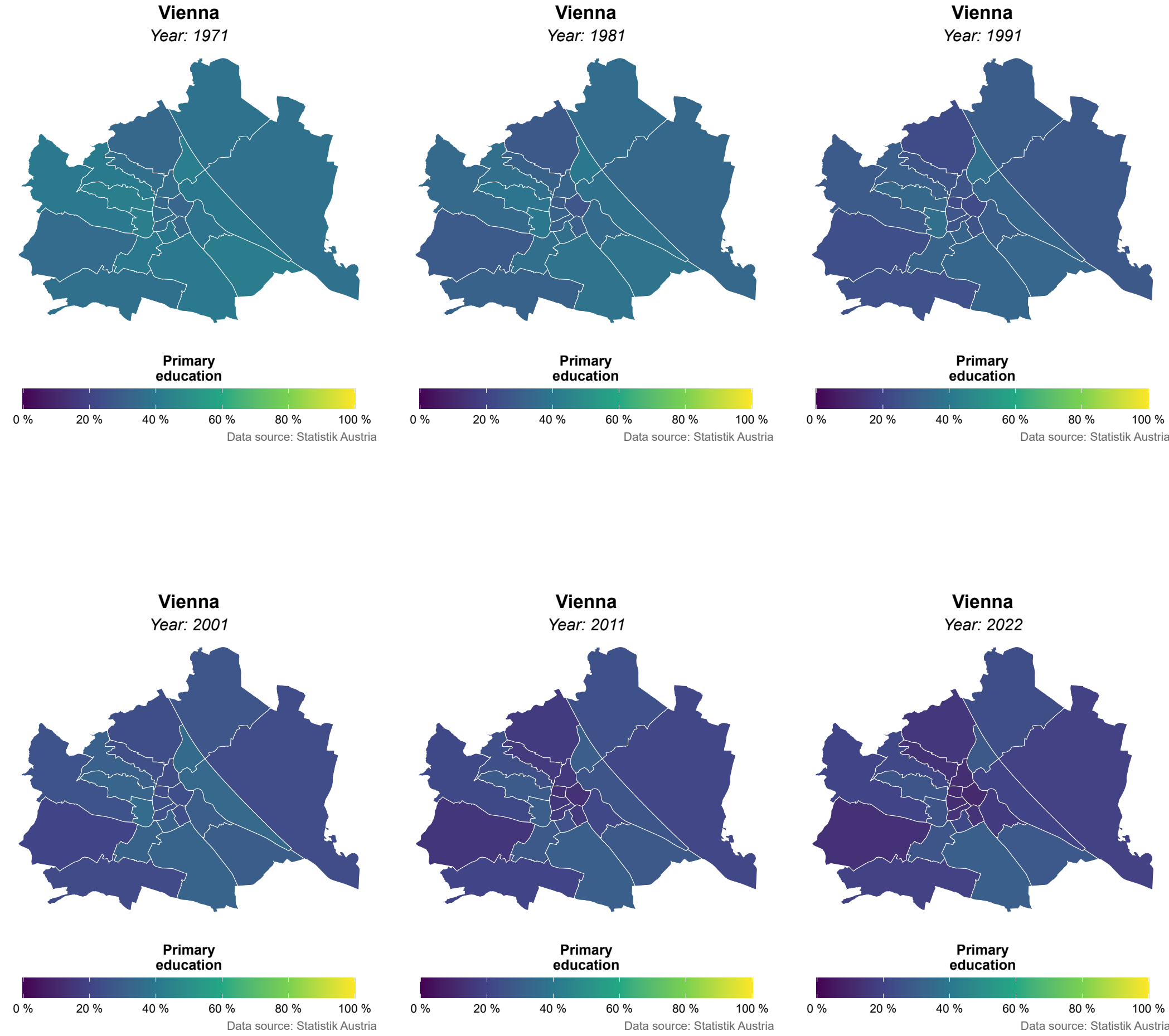
Vienna



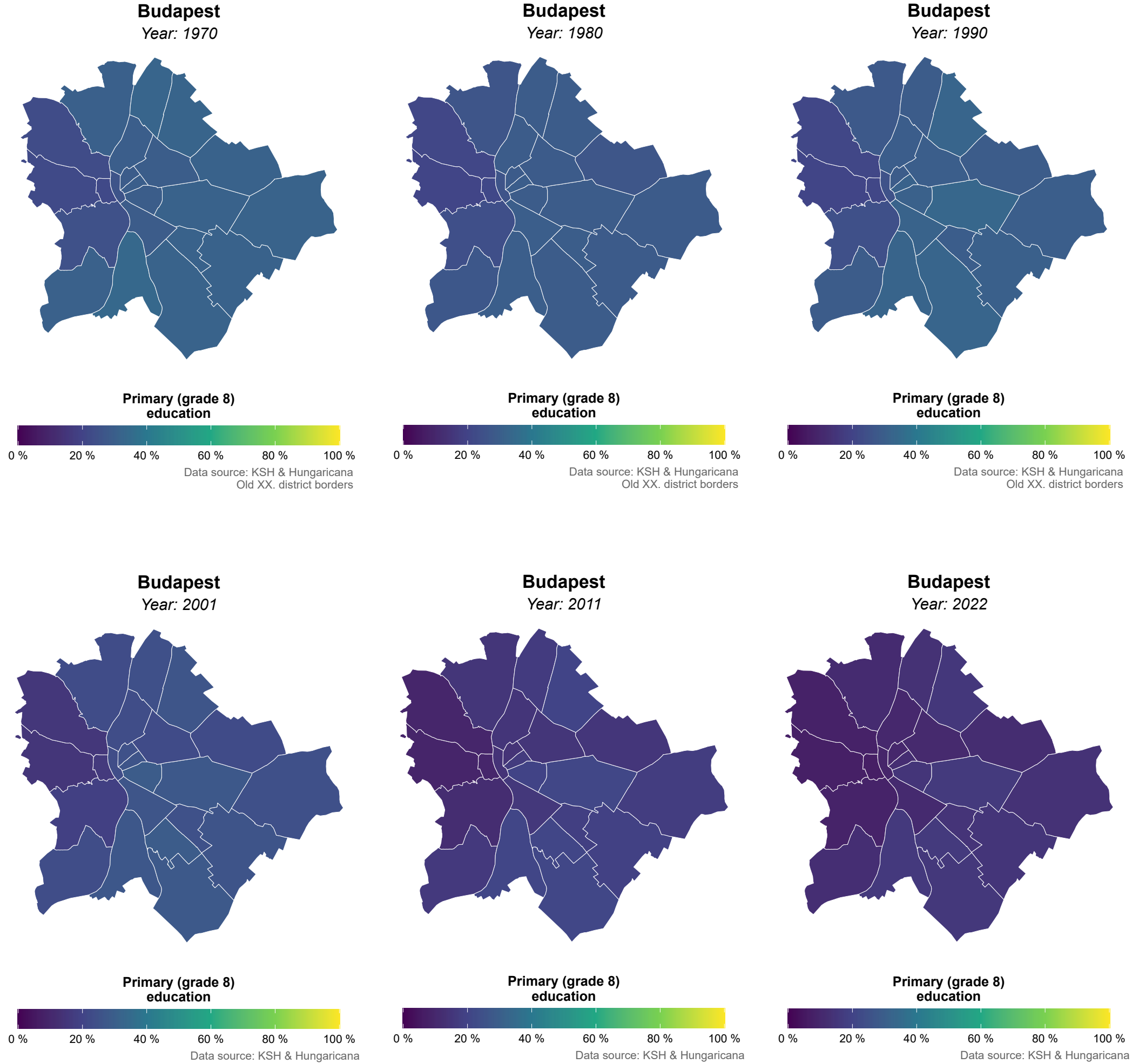
2. District level

Change in percentage of the population with completed primary education in the districts of Vienna between 1971 and 2022.

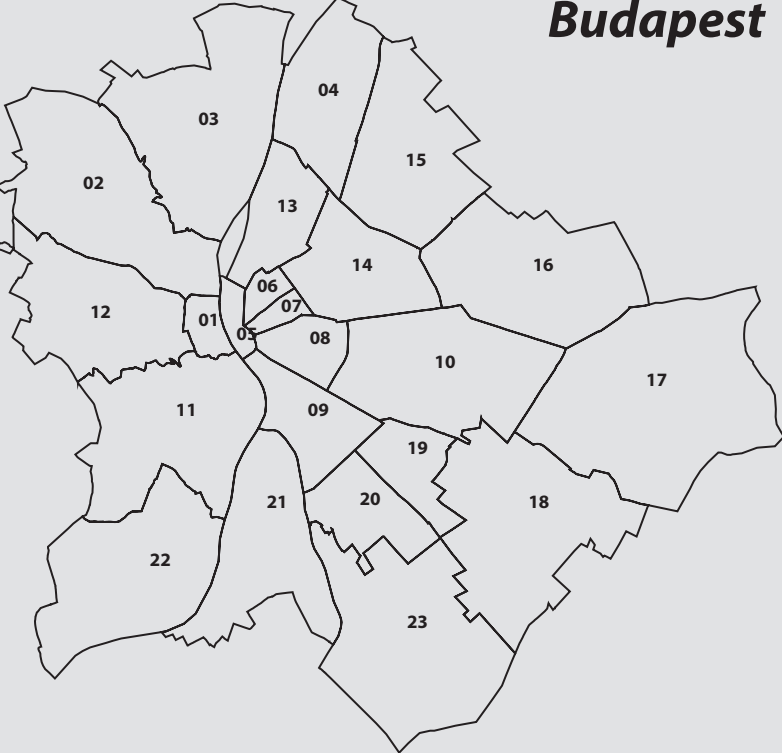
Socio-economic structure at the district level



Socio-economic structure at the district level



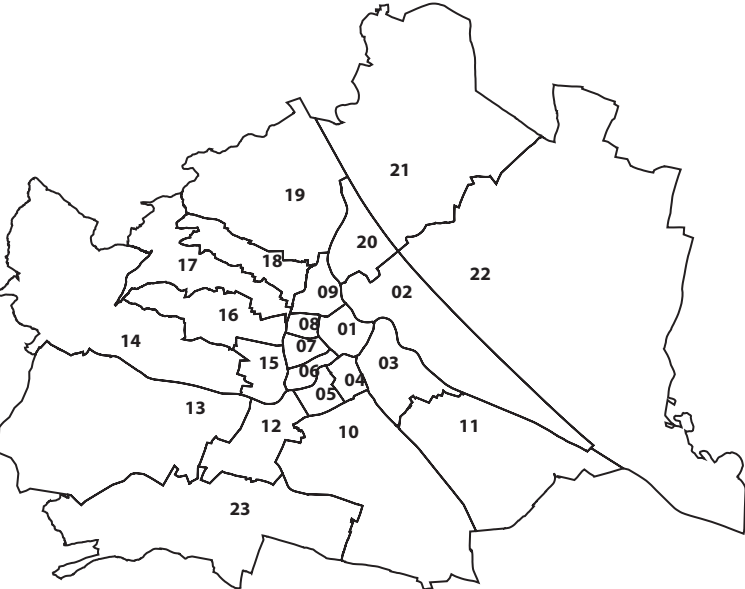
Budapest



2. District level

Change in percentage of the population with completed primary education in the districts of Budapest between 1970 and 2022.

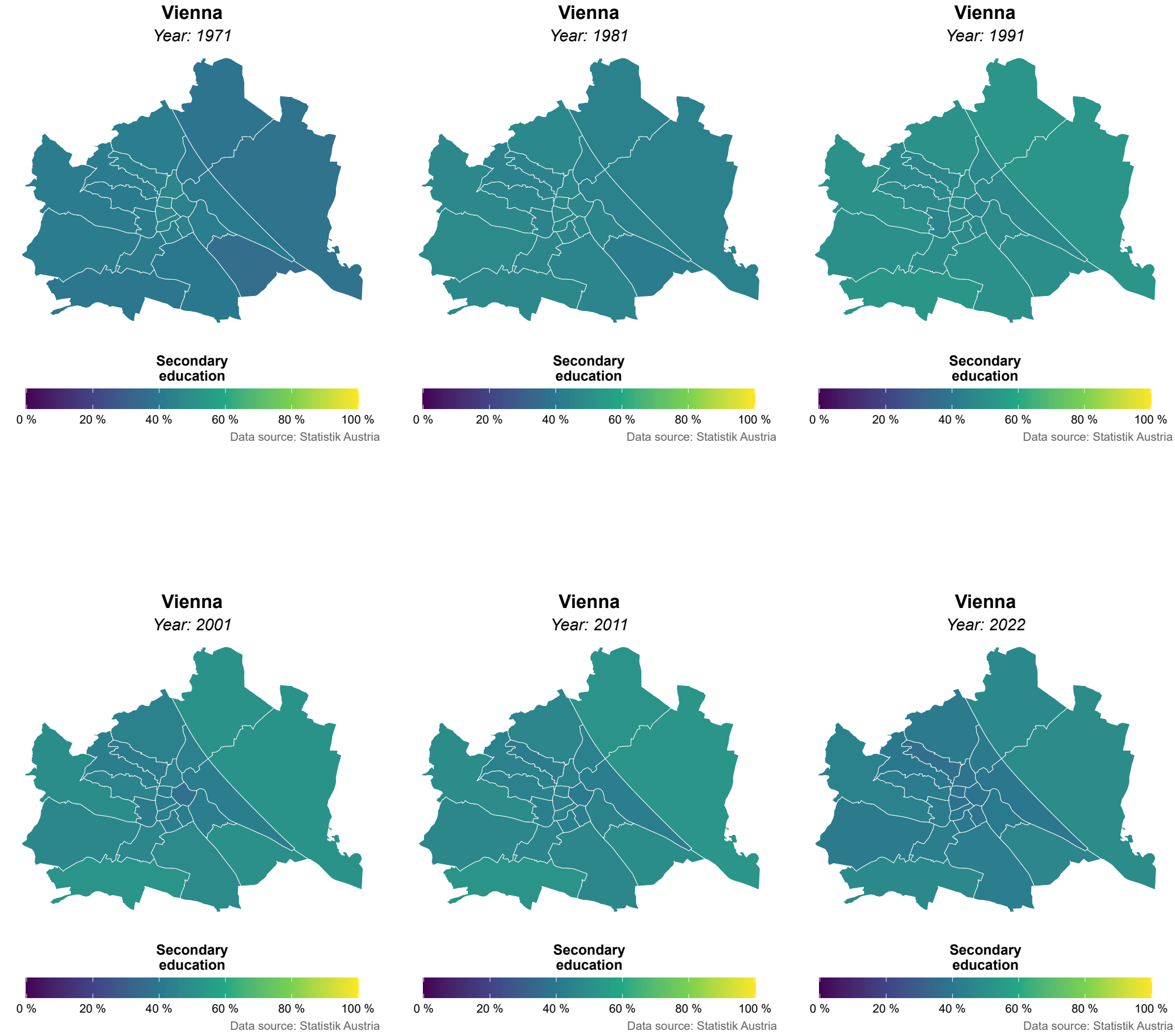
Vienna



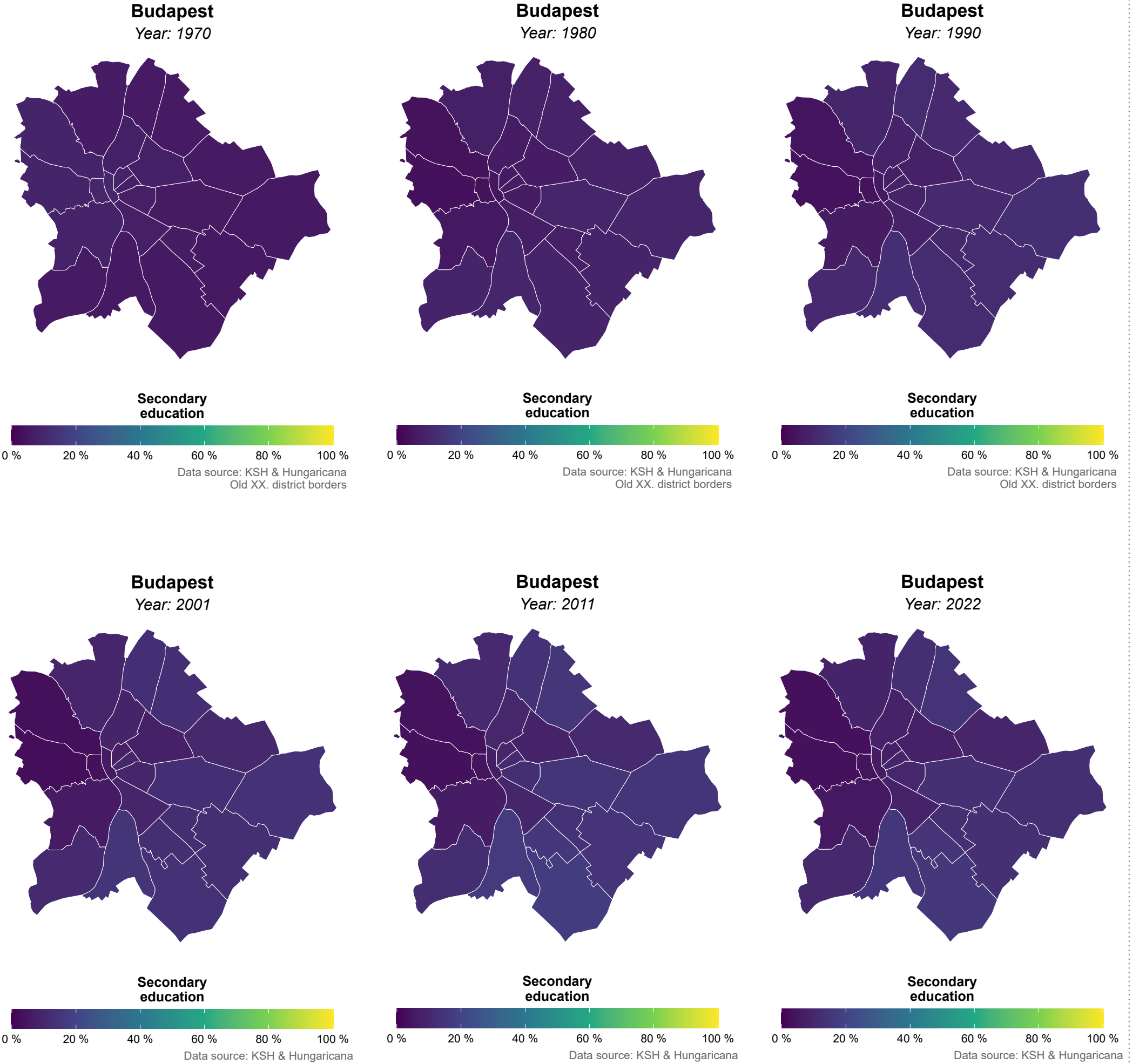
2. District level

Change in percentage of the population with completed secondary education in the districts of Vienna between 1971 and 2022.

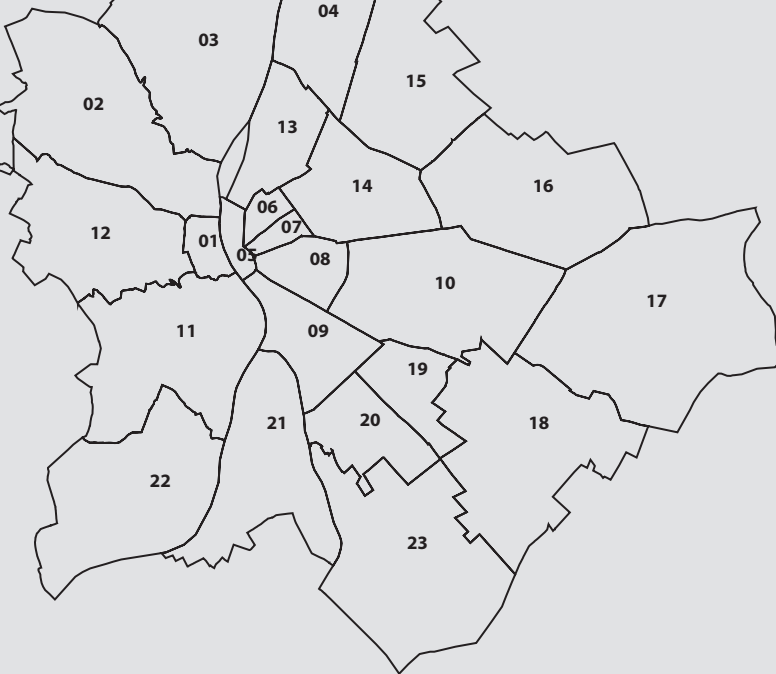
Socio-economic structure at the district level



Socio-economic structure at the district level



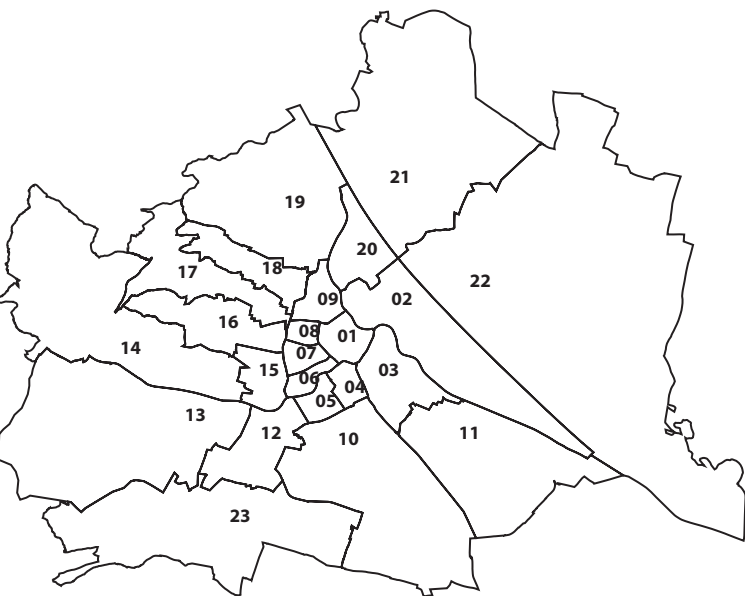
Budapest



2. District level

Change in percentage of the population with completed secondary education in the districts of Budapest between 1970 and 2022.

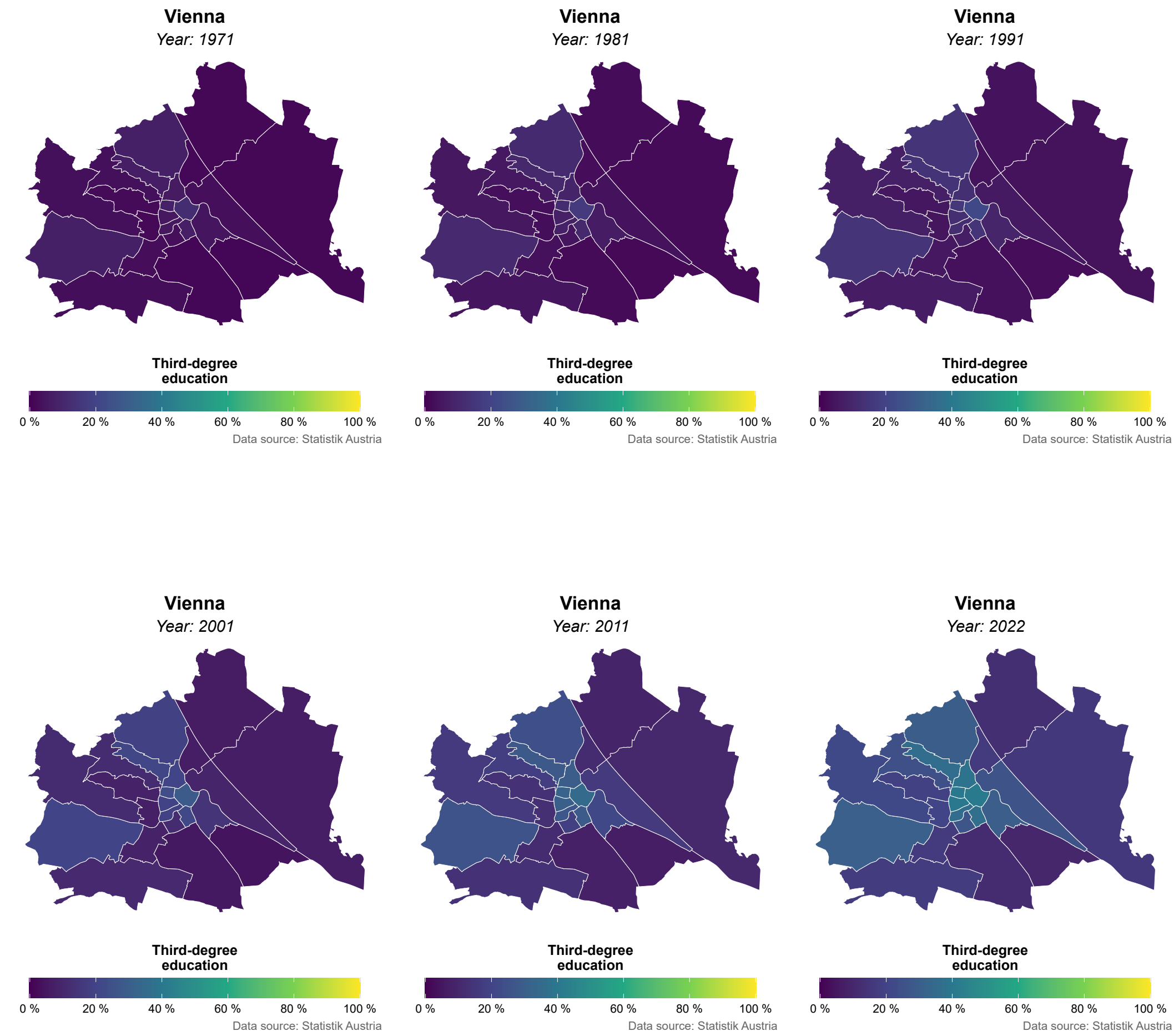
Vienna



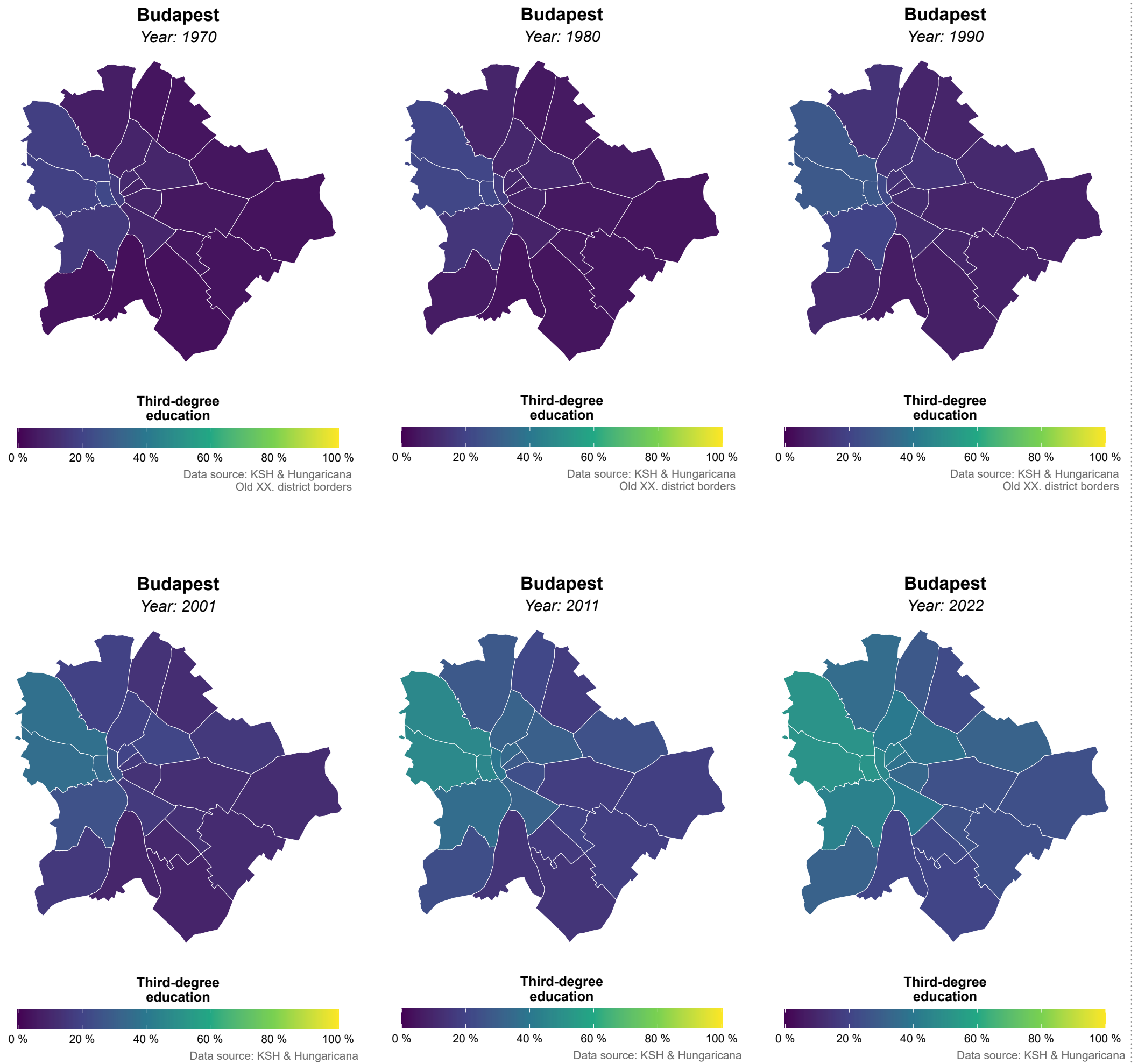
2. District level

Change in percentage of the population with completed third degree education in the districts of Vienna between 1971 and 2022.

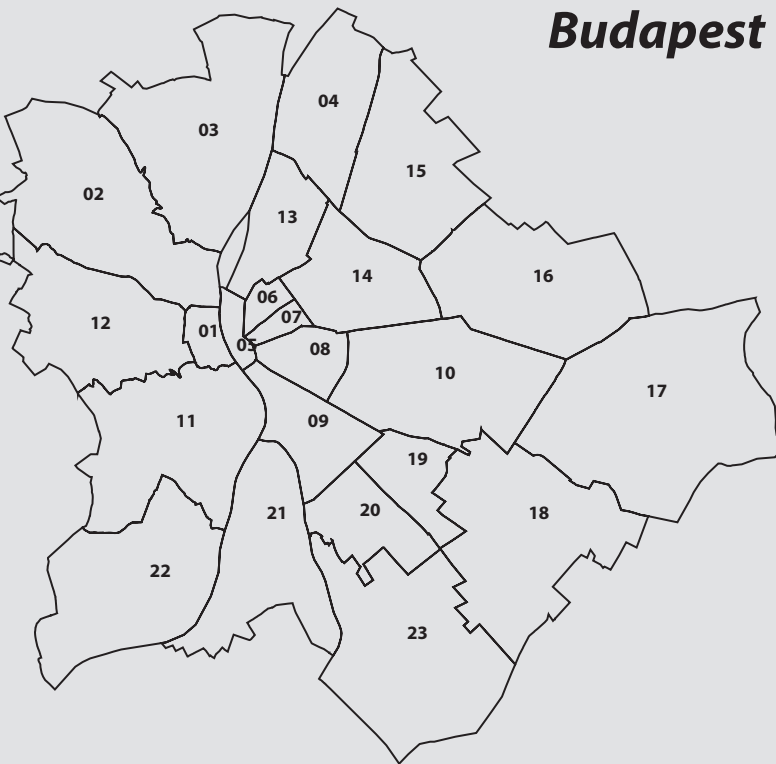
Socio-economic structure at the district level



Socio-economic structure at the district level

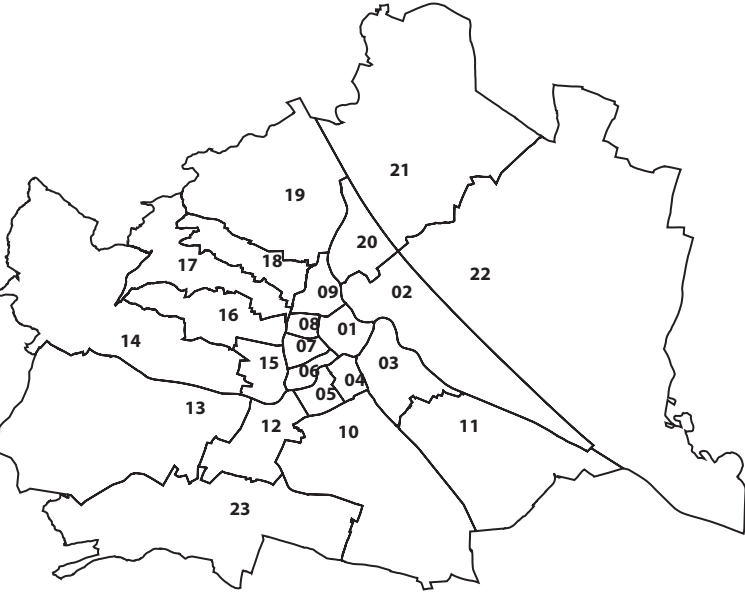


Budapest



2. District level

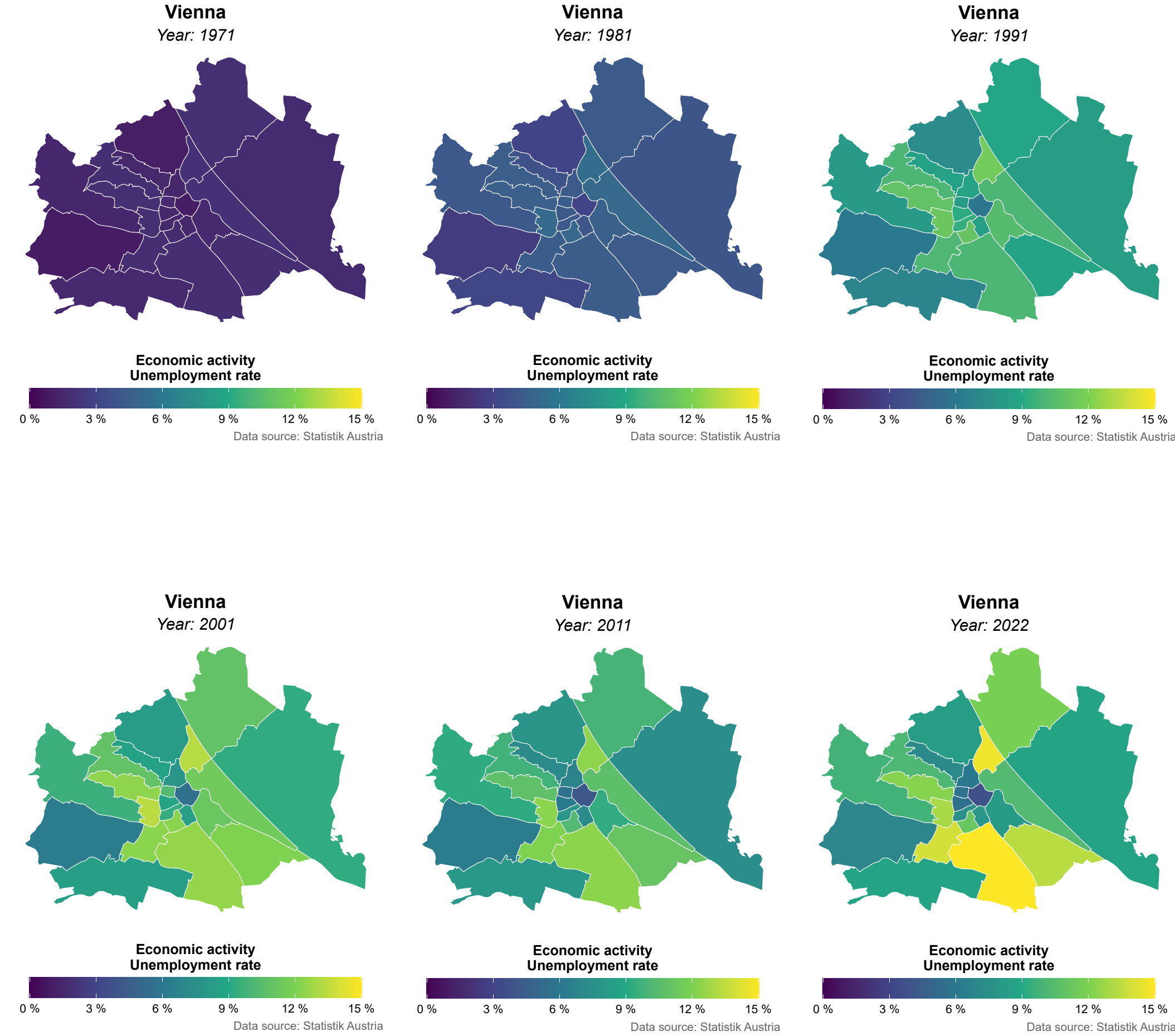
Change in percentage of the population with completed third degree education in the districts of Budapest between 1970 and 2022.



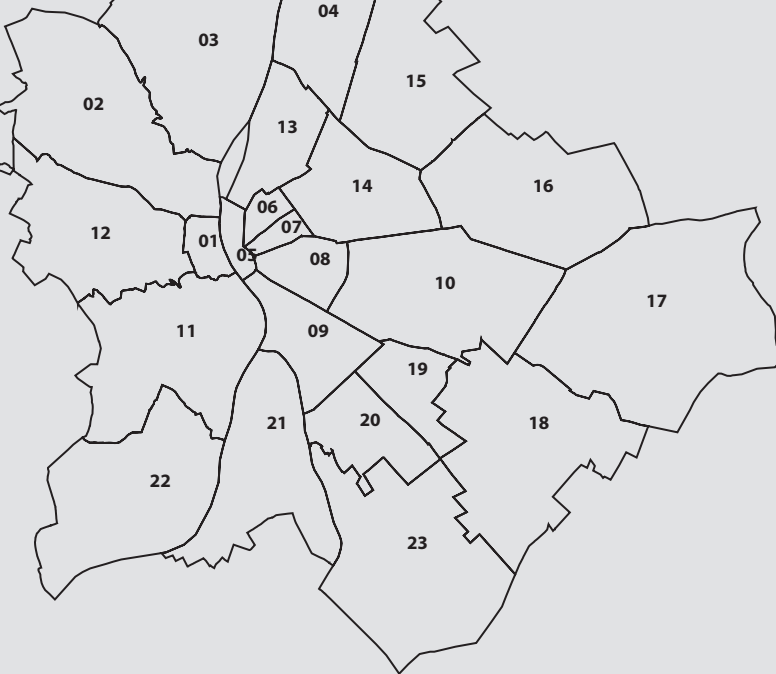
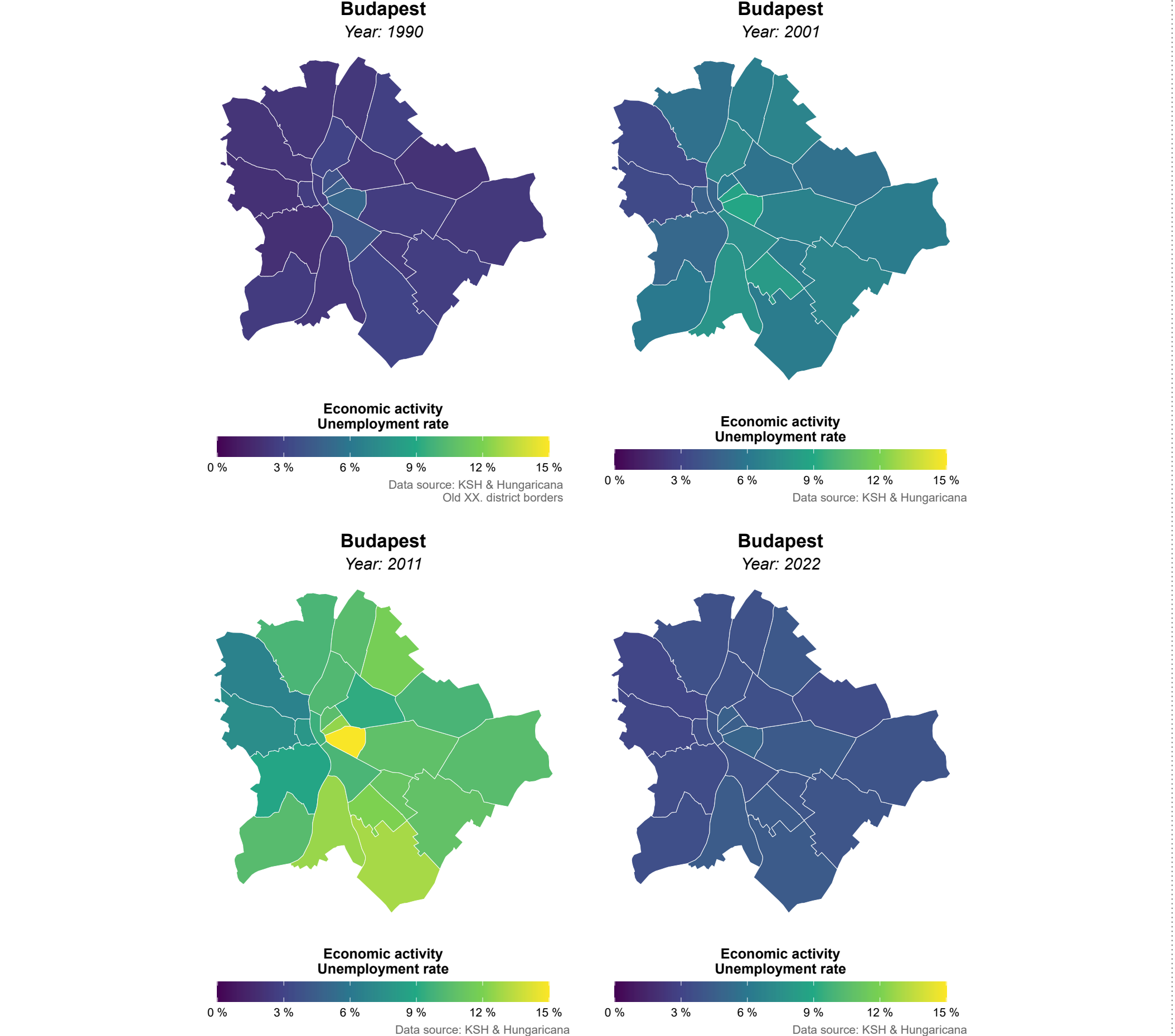
2. District level

Change in percentage of the unemployed population in the districts of Vienna between 1971 and 2022.

Socio-economic structure at the district level



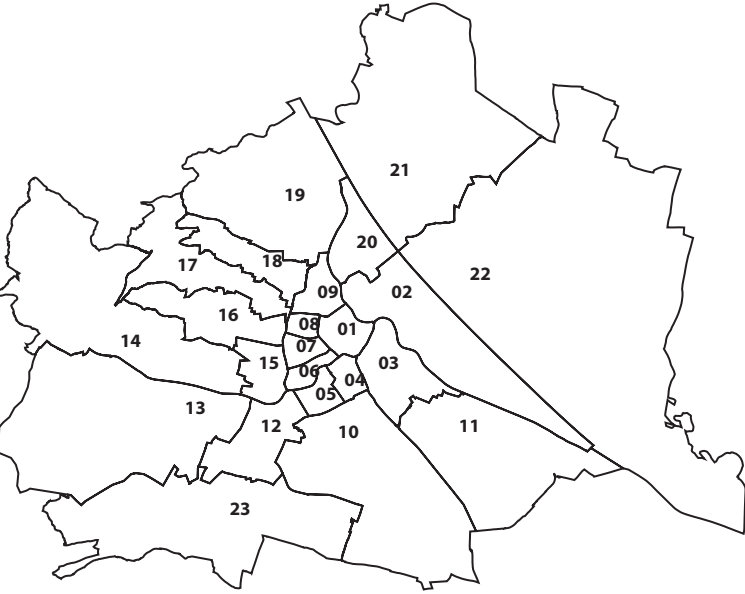
Socio-economic structure at the district level



2. District level

Change in percentage of the unemployed population in the districts of Budapest between 1990 and 2022.

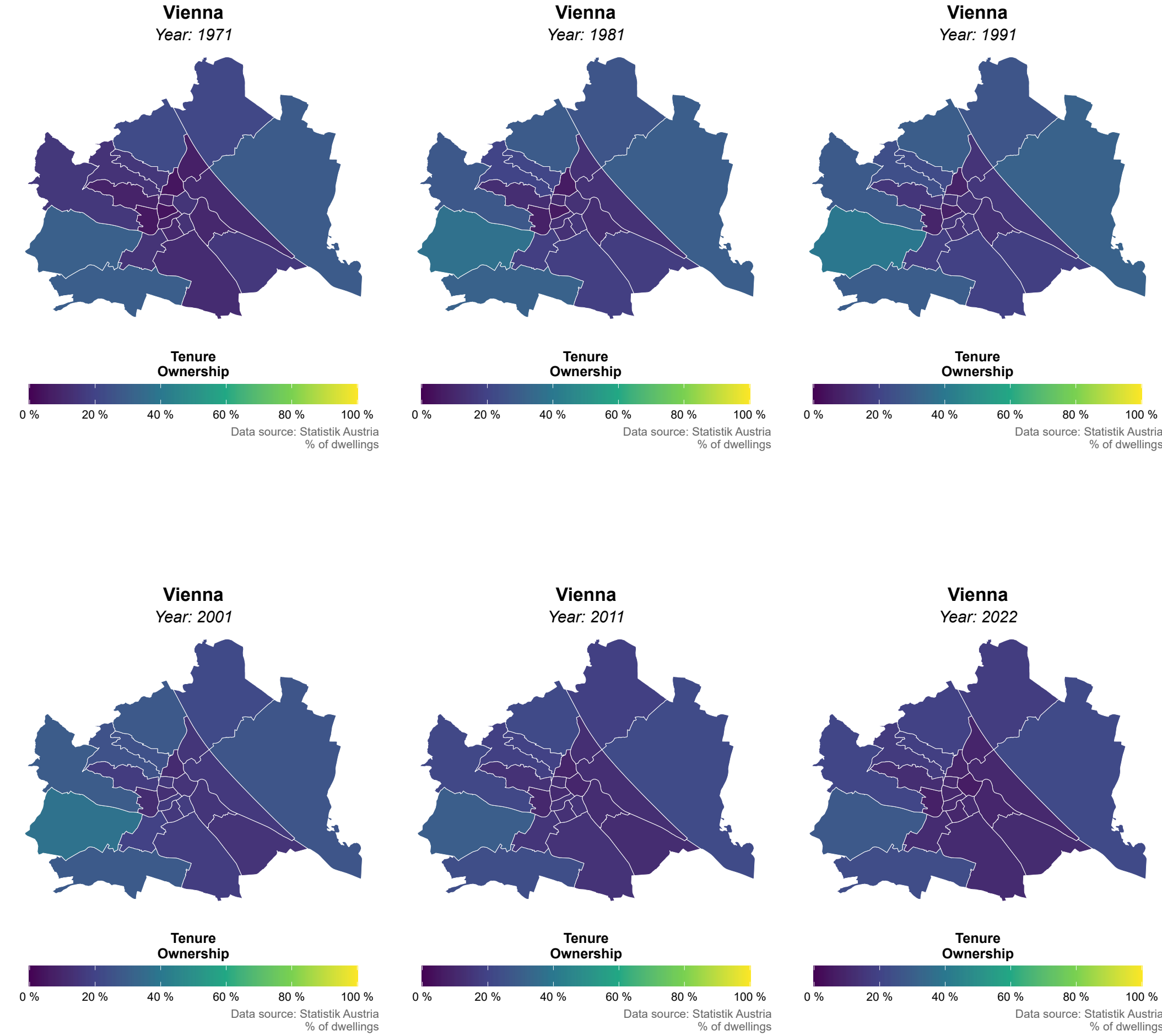
Remark: the methodology of unemployment rate calculation was changed between 2011 and 2022.



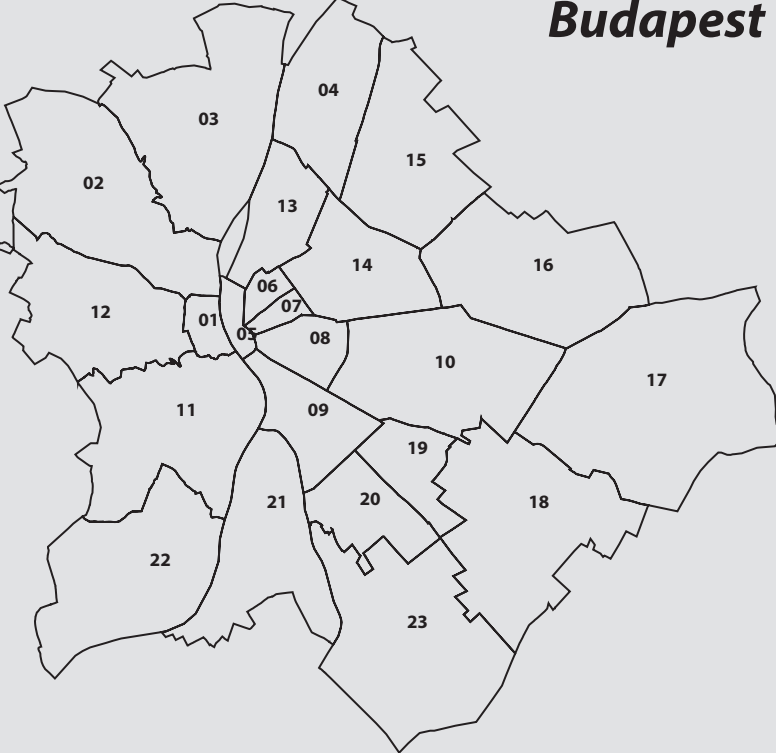
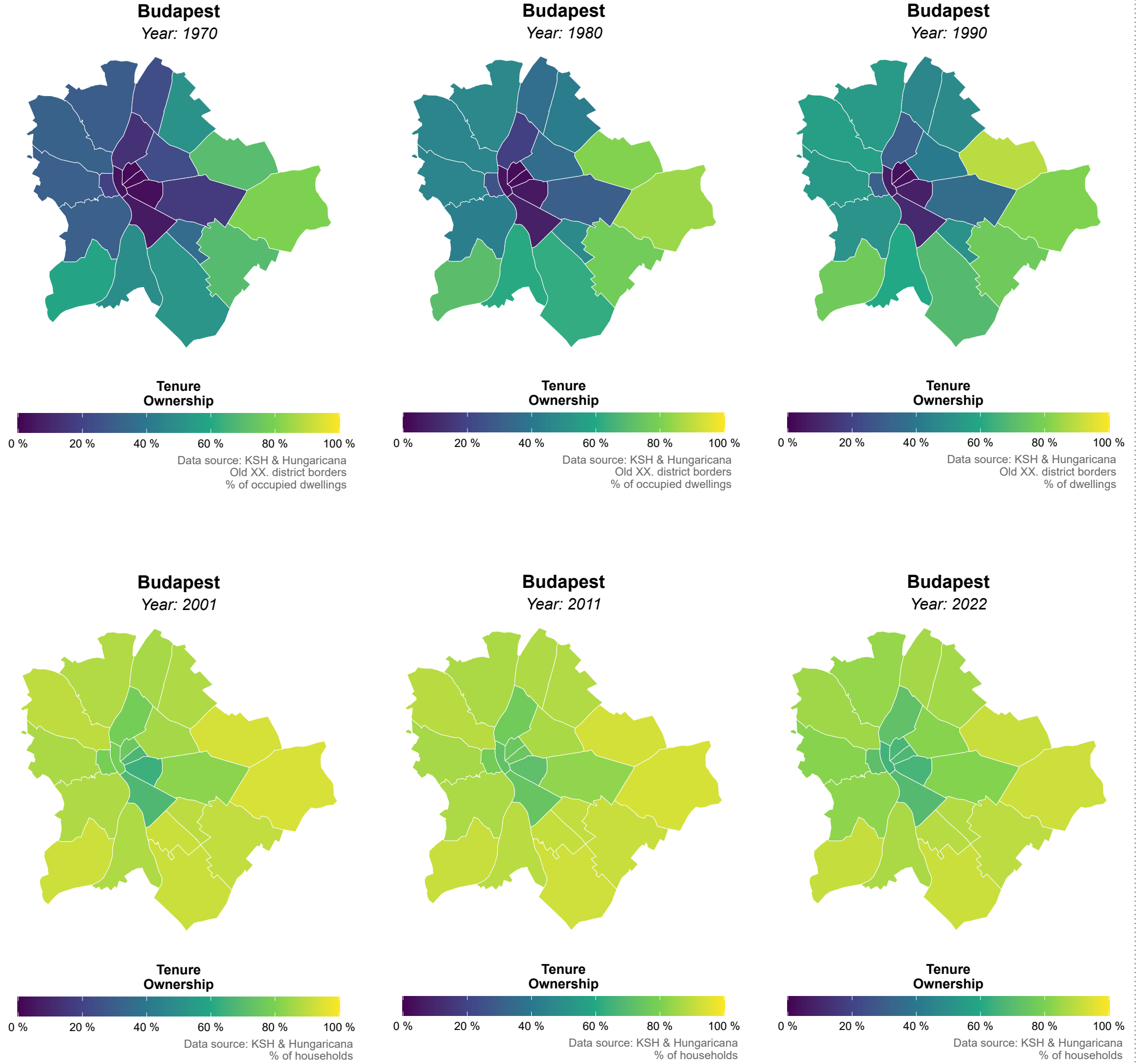
2. District level

Change in percentage of dwellings in private ownership in the districts of Vienna between 1971 and 2022.

Dwelling & household structure at the district level

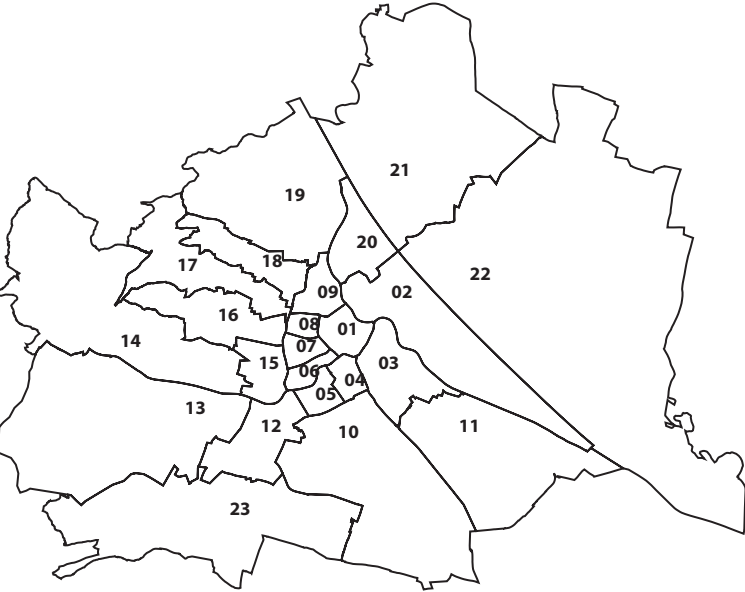


Dwelling & household structure at the district level



2. District level

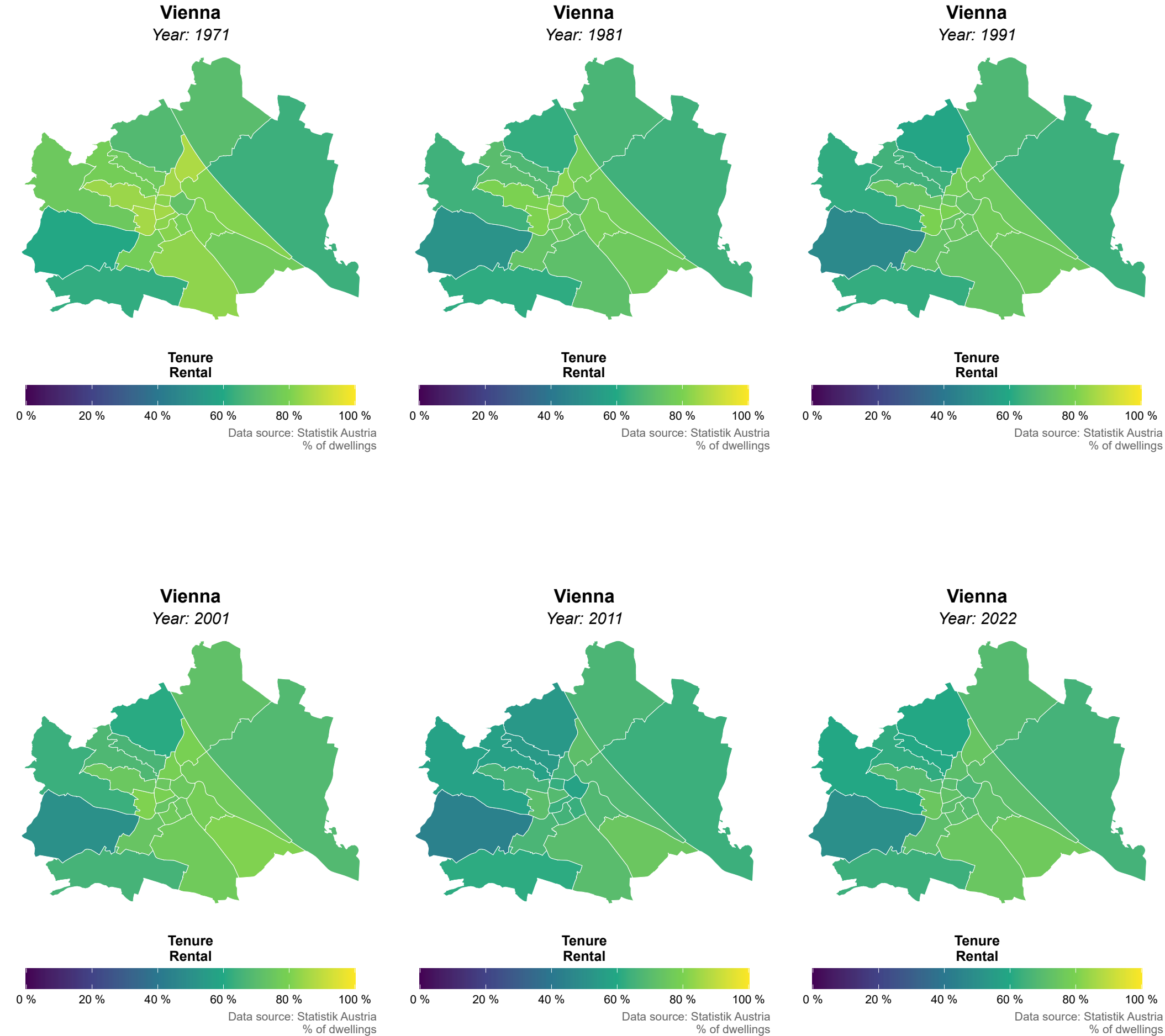
Change in percentage of dwellings in private ownership in the districts of Budapest between 1970 and 2022.



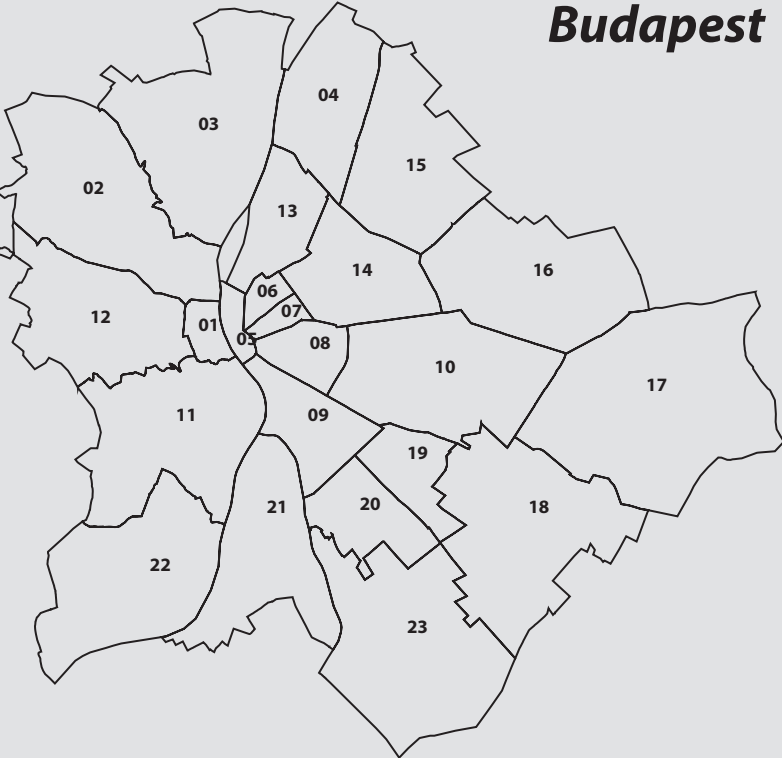
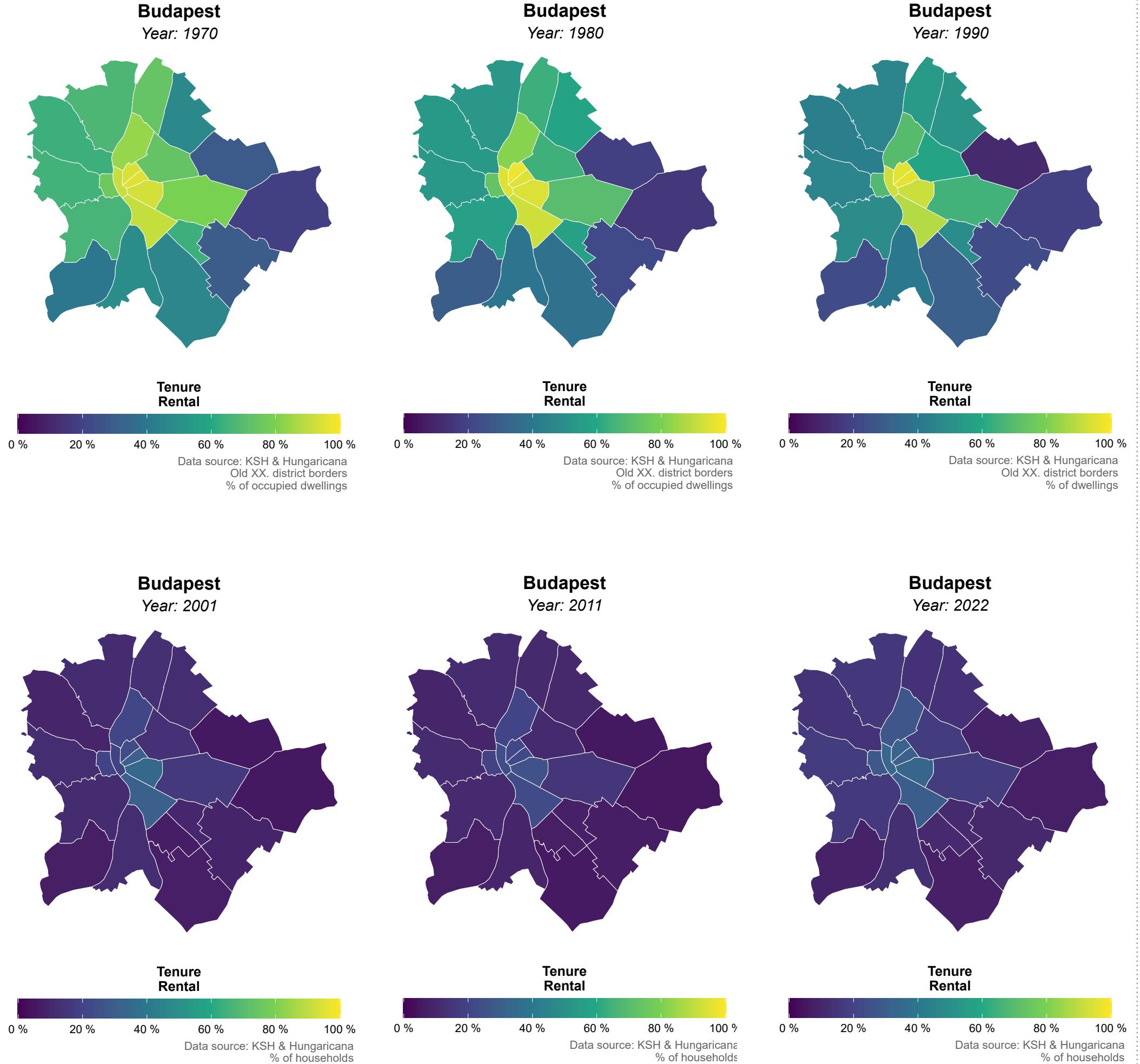
2. District level

Change in percentage of rental dwellings in the districts of Vienna between 1971 and 2022.

Dwelling & household structure at the district level

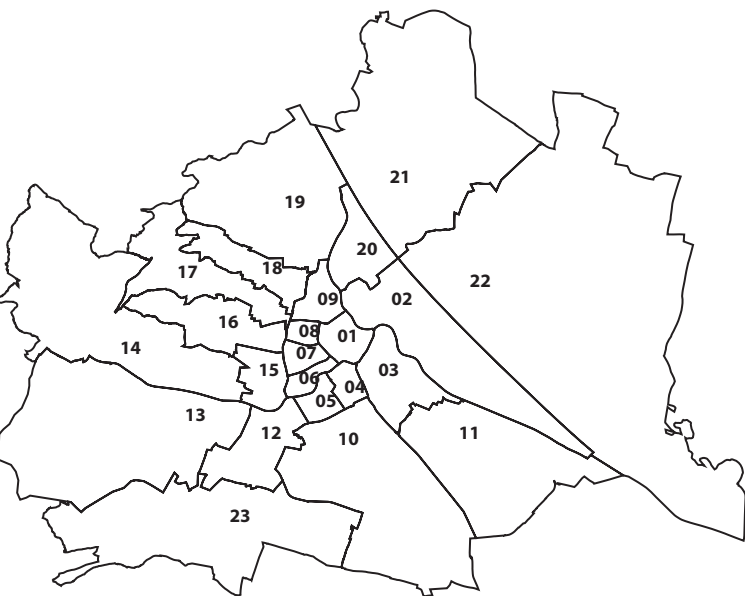


Dwelling & household structure at the district level



2. District level

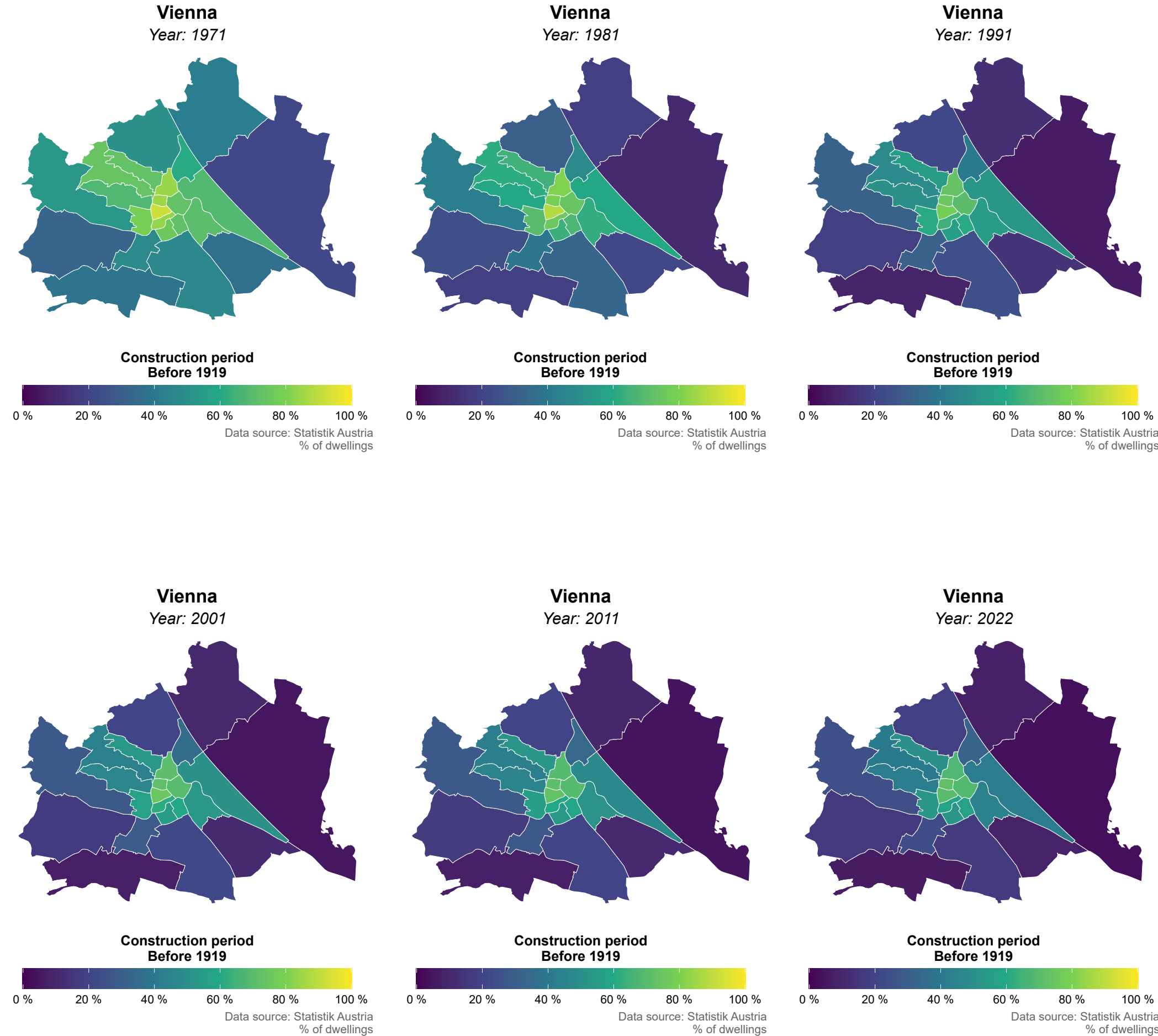
Change in percentage of rental dwellings in the districts of Budapest between 1970 and 2022.



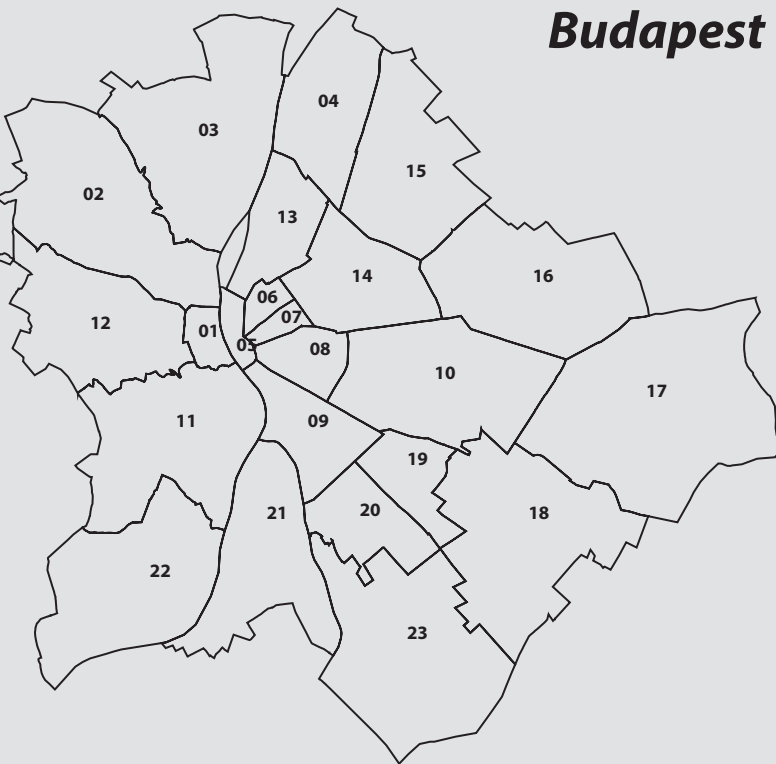
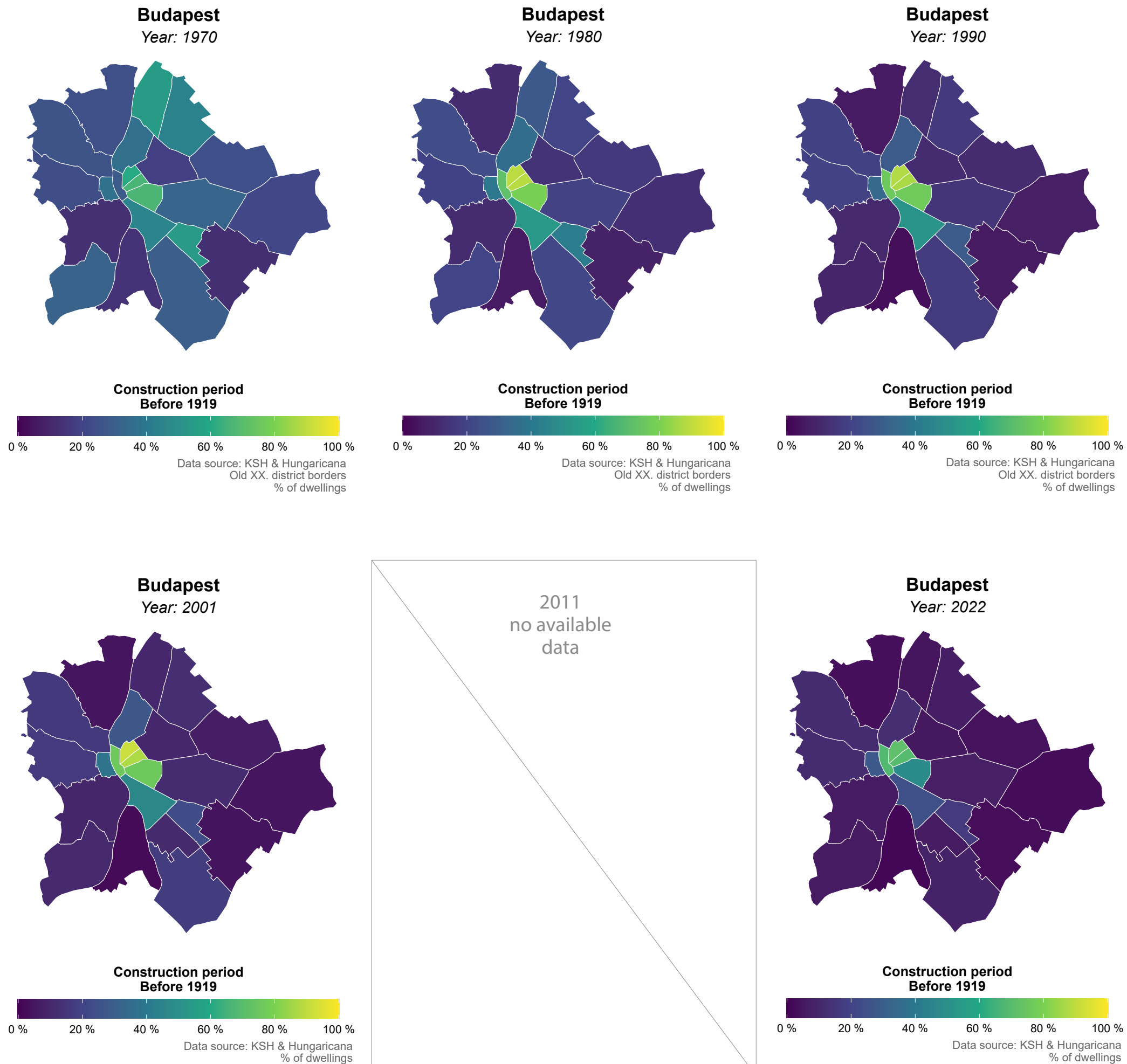
2. District level

Change in percentage of dwellings built before 1919 in the districts of Vienna between 1971 and 2022.

Dwelling & household structure at the district level



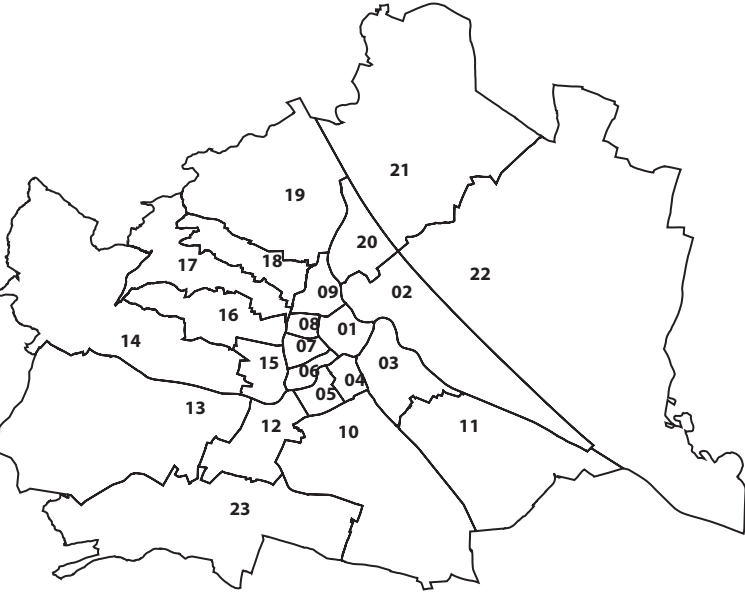
Dwelling & household structure at the district level



2. District level

Change in percentage of dwellings built before 1919 in the districts of Budapest between 1970 and 2022. Data for 2011 is not available.

Vienna



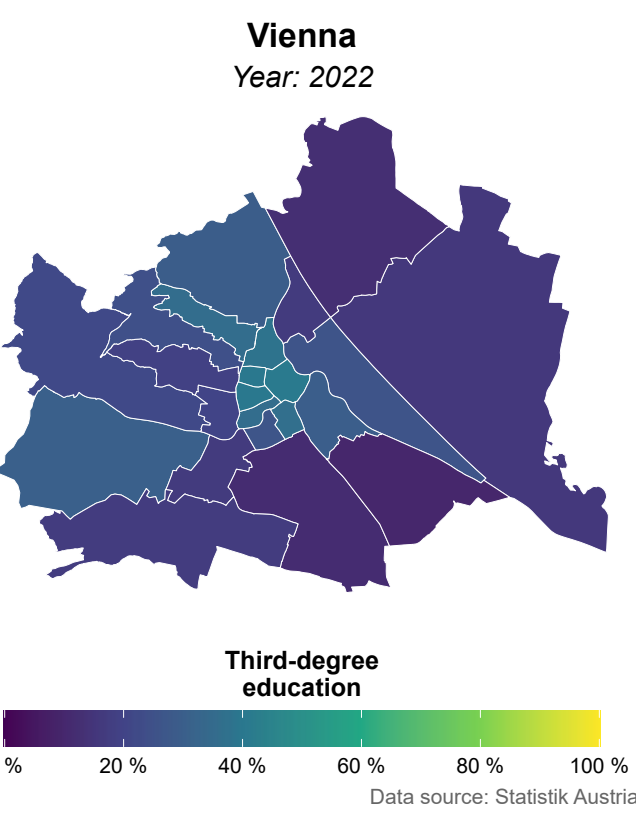
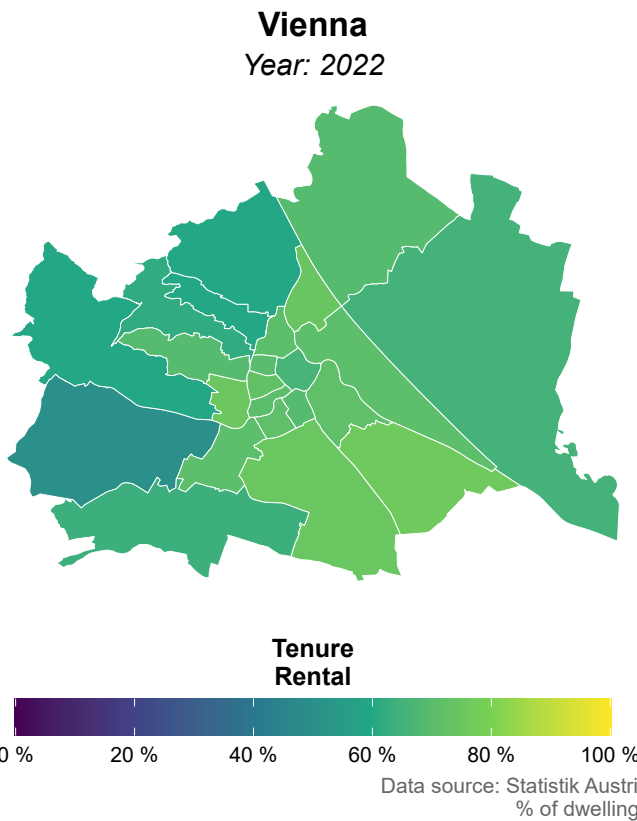
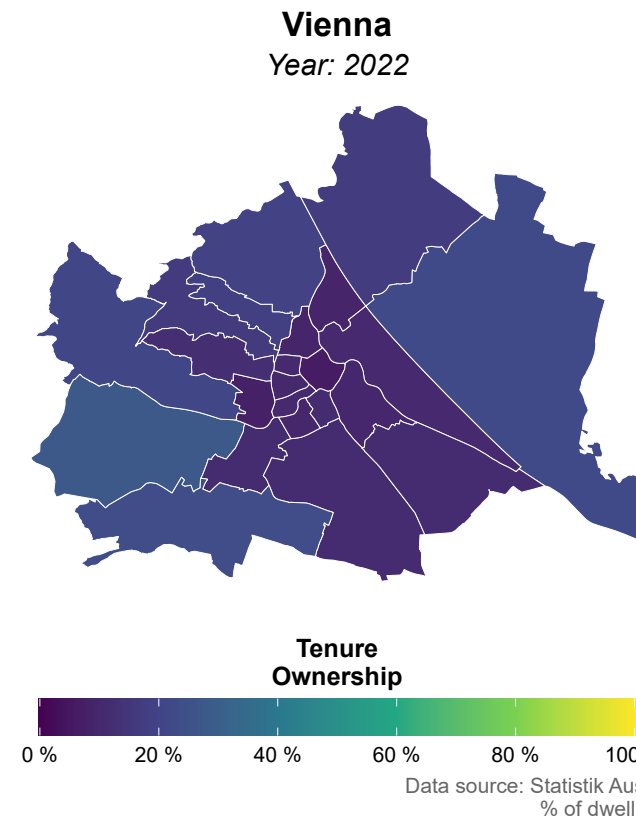
2. District level

Comparison of the case study districts in Vienna with other parts of the city.

Selection of case study districts in Vienna

The “inner districts” and “outer districts” of Vienna are divided by the *Gürtel*, which was the former tax border of the city until its expansion in 1890/92. The formerly bourgeois inner-, and working-class outer districts still show significant differences in the socio-economic structure today (see previous pages for more detailed maps). The unemployment rates are some of the highest in the districts West and South of the *Gürtel*, whereas the population with completed third degree level education is highly represented in the inner districts. Although there is a high percentage of dwellings built before 1919 in districts neighbouring the *Gürtel*, these areas of less prestigious and have less protection measures (outside of UNESCO world heritage sites, large-scale protection zones). In our research projects, we were interested in areas with “marginal” heritage and selected therefore the 15. and 10. districts for further analysis.

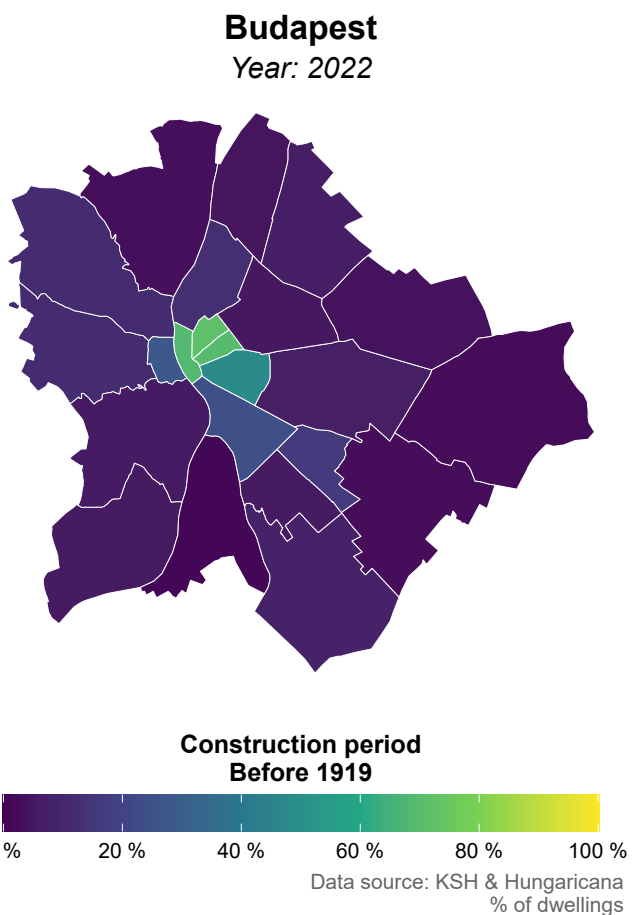
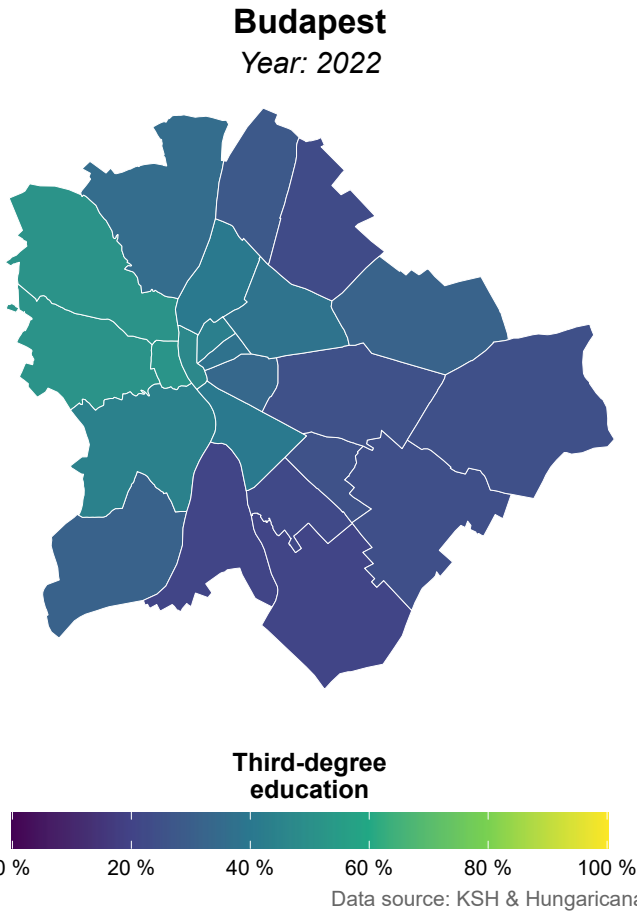
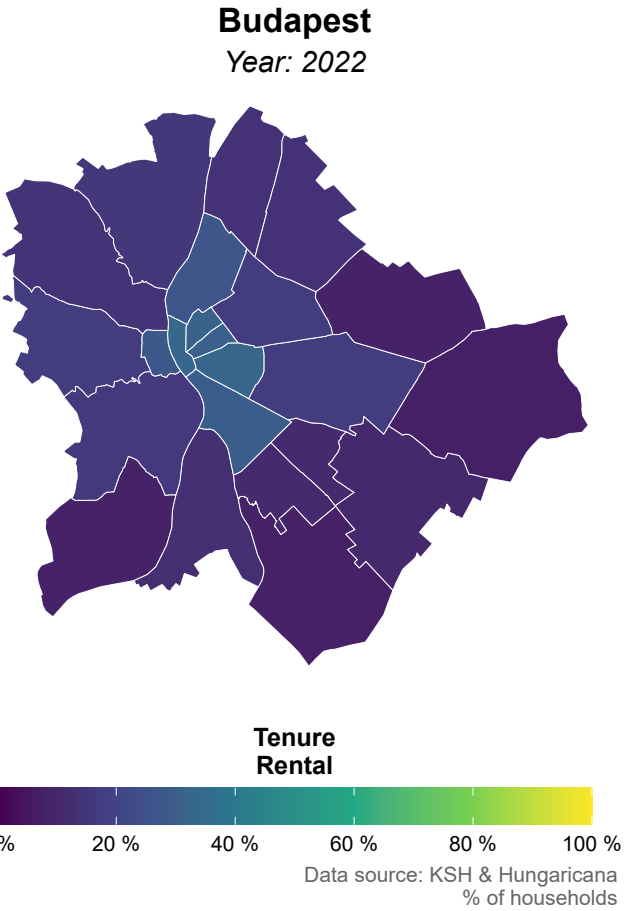
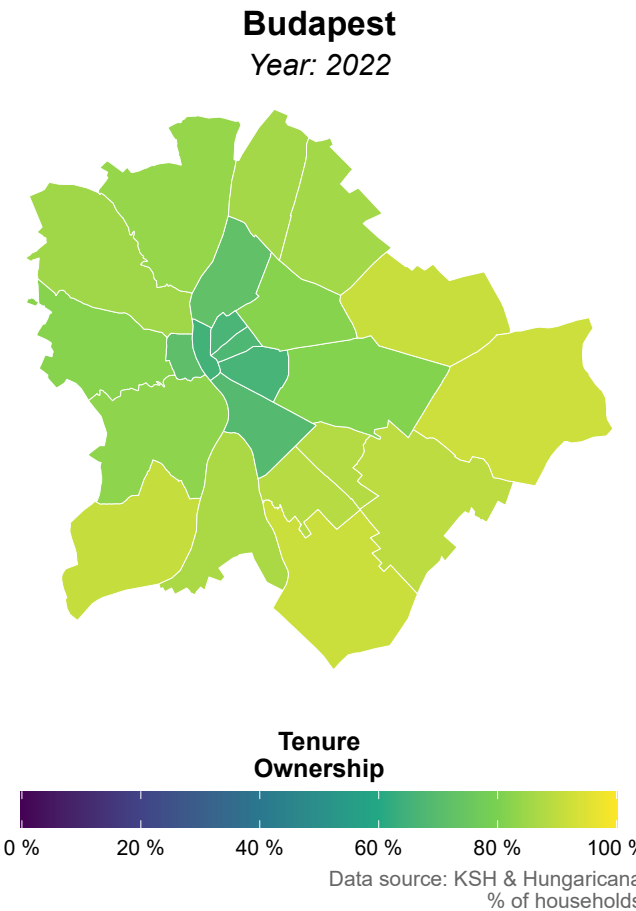
Regarding the dwelling and household structure, Vienna can be characterised as holding a high percentage of rental dwellings, and a low percentage of private ownership (see previous pages for more detailed maps). The housing market consists of multiple segments: private ownership, private rental, controlled private rental, social housing of the city of Vienna and subsidised housing (limited-profit housing associations) (Musil et al., 2021, p. 3).



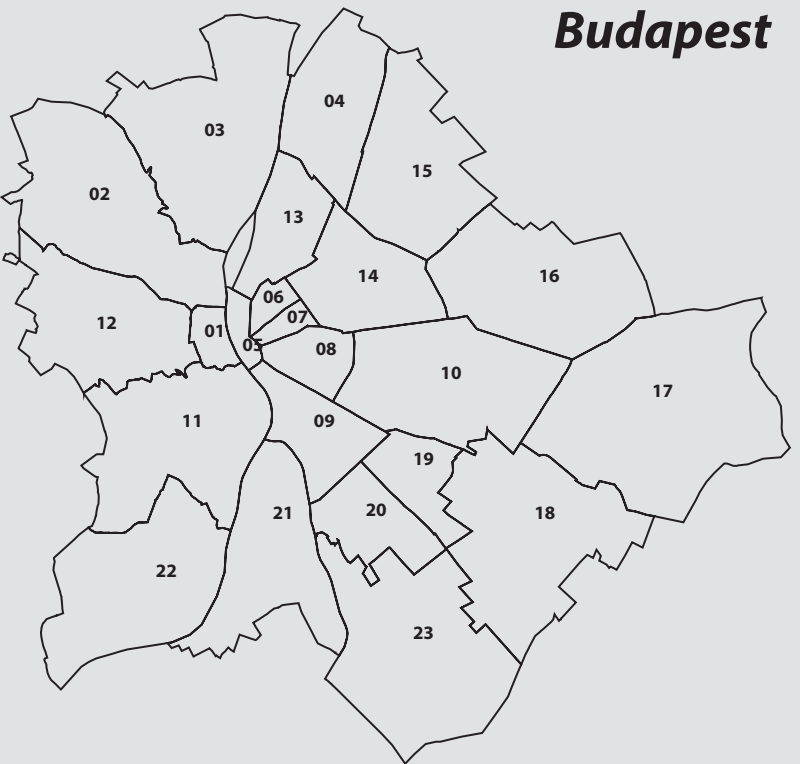
Selection of case study districts in Budapest

Three cities on the two banks of the Danube river, Buda, Óbuda and Pest were unified in 1873. Traditionally, the Buda-side and the inner city of Pest (5. district, inside the first ring) were prestigious areas, which still reflects on the socio-economic data today (see previous pages for more detailed maps). Outside of the second ring, the unemployment rates are some of the highest in the districts of Pest, whereas the population with completed third degree level education is highly represented on the Buda-side. The Buda Castle hill, the inner city of Pest, as well as the neighbouring districts consist of a high percentage of dwellings built before 1919. However, only the first two areas are protected as UNESCO world heritage sites, complemented by an additional zone along the Andrassy Avenue. In this context, our analysis focused on the 7. and 8. districts, considering mainly their parts outside of the second ring.

Regarding the dwelling and household structure (see previous pages for more detailed maps), due to the mass privatisation after the change of regime in 1989, the percentage of ownership is significantly higher than in Vienna. While some inner districts still show a small percentage of rental units, districts that were added to the city area in 1950 are characterised by ownership (single-family homes). Those apartments that were not privatised became municipal social apartments managed by the district municipalities in the two-tier legislative system of Budapest.



Budapest



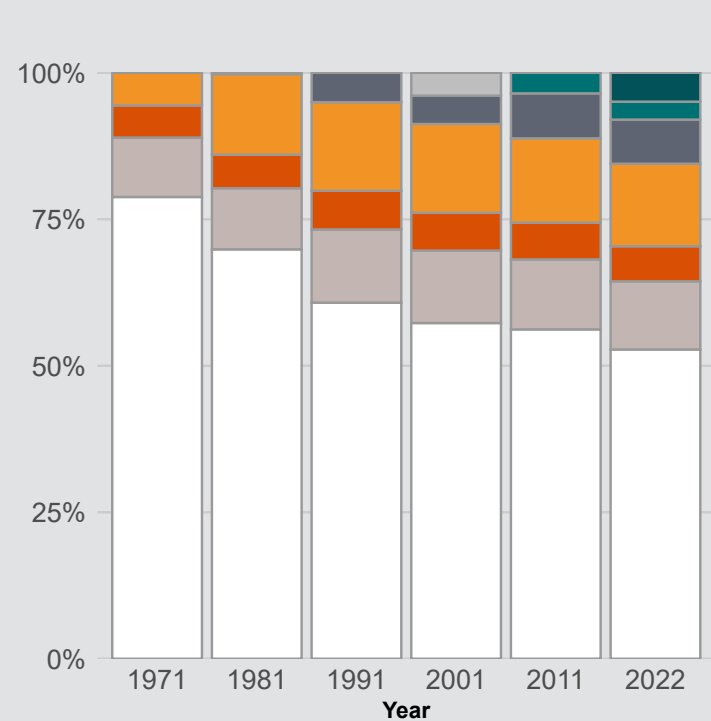
2. District level

Comparison of the case study districts in Budapest to other parts of the city.

Vienna



2. District level



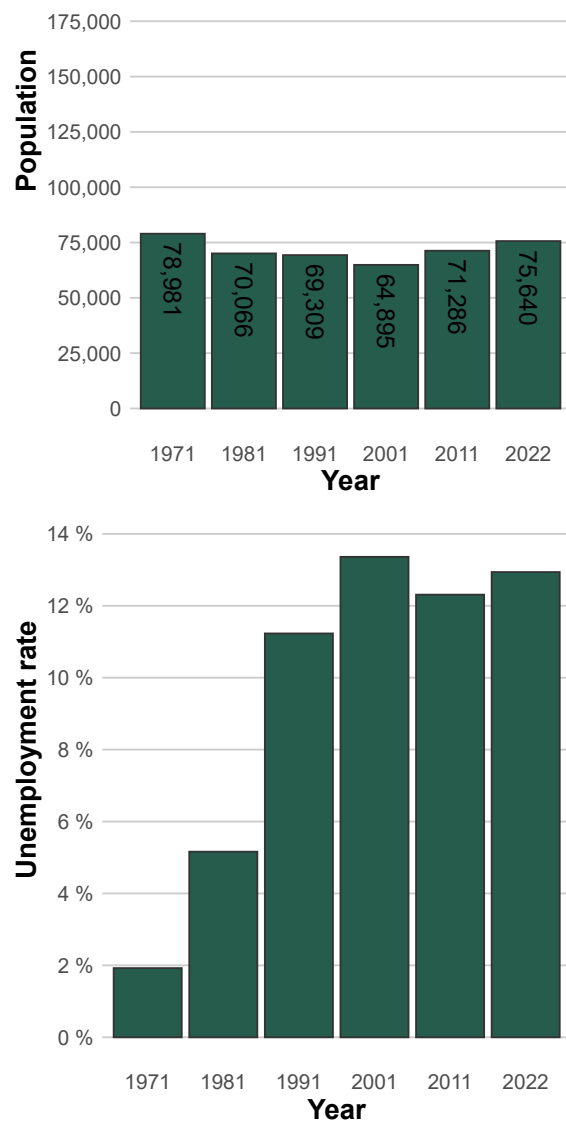
Construction period of dwellings

- Before 1919
- 1919-1944
- 1945-1960
- 1961-1980
- 1981-2000
- 2001-2010
- After 2010
- No data

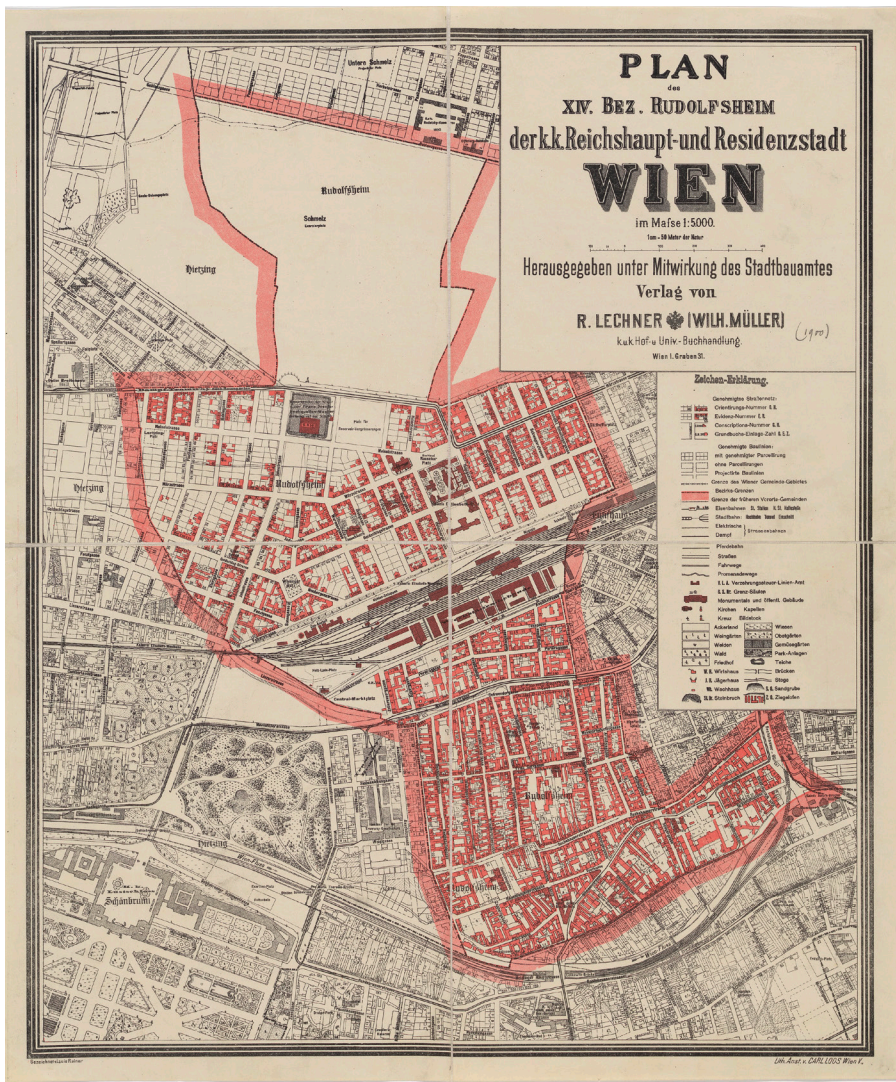
Data source: Statistik Austria
% of dwellings

15. district, Rudolfsheim-Fünfhaus

The 15. district is divided in two parts by the rail tracks of the Western railway station (*Westbahnhof*) that was built in 1859. Whereas the Southern part consists of earlier, more irregular street and block structures, the Northern part shows a regularity that is characteristic of the city planning of the *Gründerzeit*. On the map of 1880, small plots were defined in similar-size blocks for the district's construction. The settlements *Fünfhaus*, *Rudolfsheim* and *Sechshaus*, similarly to many other settlements outside the city border (*Linienwall*), characterized by the *Gürtel*, were added to the city area of Vienna during the second city expansion of 1890. Whereas *Rudolfsheim* and *Sechshaus* were joined in this period, *Fünfhaus*, the Eastern part of the current district area was added later in 1839. As the map of 1901 shows, many of the tenement houses of our case study area North from the railways were built around the turn of the century. It is mainly a residential area with a few parks and green areas. The percentage of dwellings built before 1919 was 52.7% in 2022. The population number in the 15. district in Vienna has been stagnating around 75,000 since 1971. In 2022, the population counted 75,640 inhabitants, from which more than 7% were unemployed during that same year.



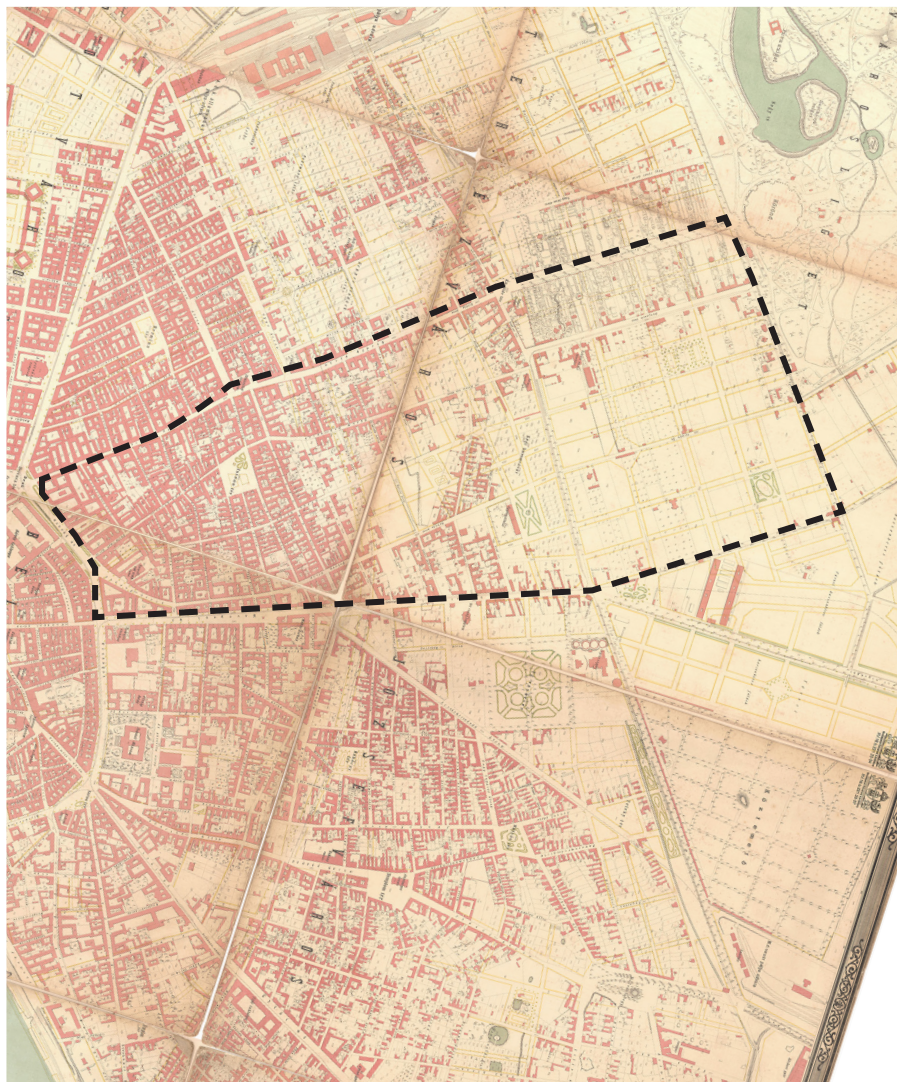
Louis Rainer (Zeichner), Carl Loos (Lithografieanstalt), Stadtbauamt Wien (Herausgeber), Verlag bzw. k. u. k. Universitätsbuchhandlung R. Lechner (Wilh. Müller) (Verlag), „Plan des XIV. Bez. Rudolfsheim der k.k. Reichshaupt- und Residenzstadt Wien“, 1901, Wien Museum Inv.-Nr. 18261, CC0



R. Spies & Co. (Drucker), Josef Habicher (Zeichner), „General-Plan der Gemeinde Rudolfsheim“, um 1880, Wien Museum Inv.-Nr. 19495, CC0



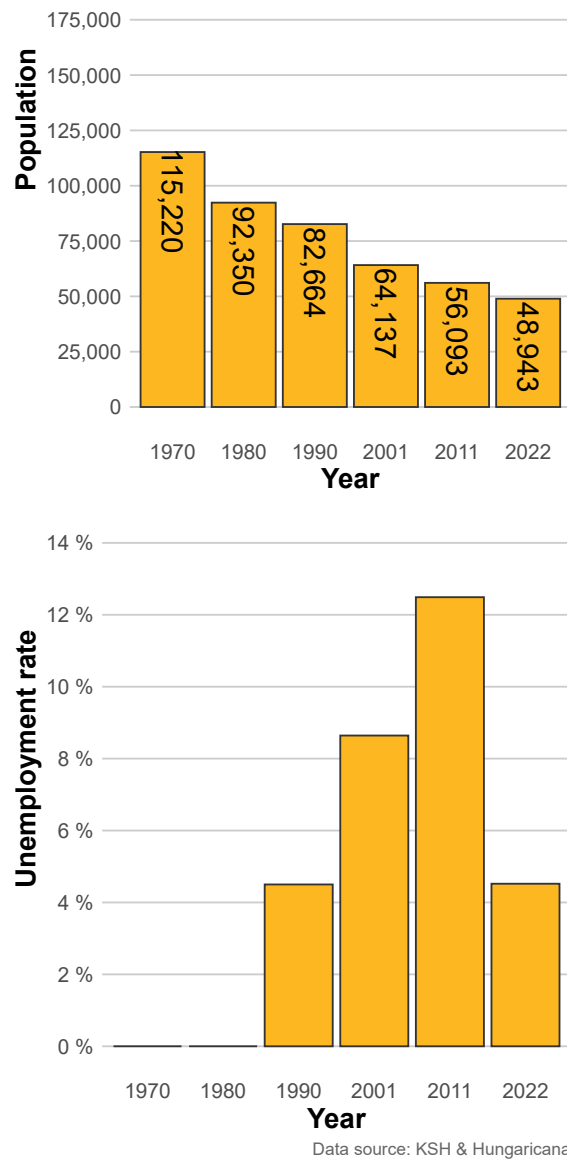
Budapest City Archives HU_BFL_XV_16_d_241_021
Plan of Pest 1850



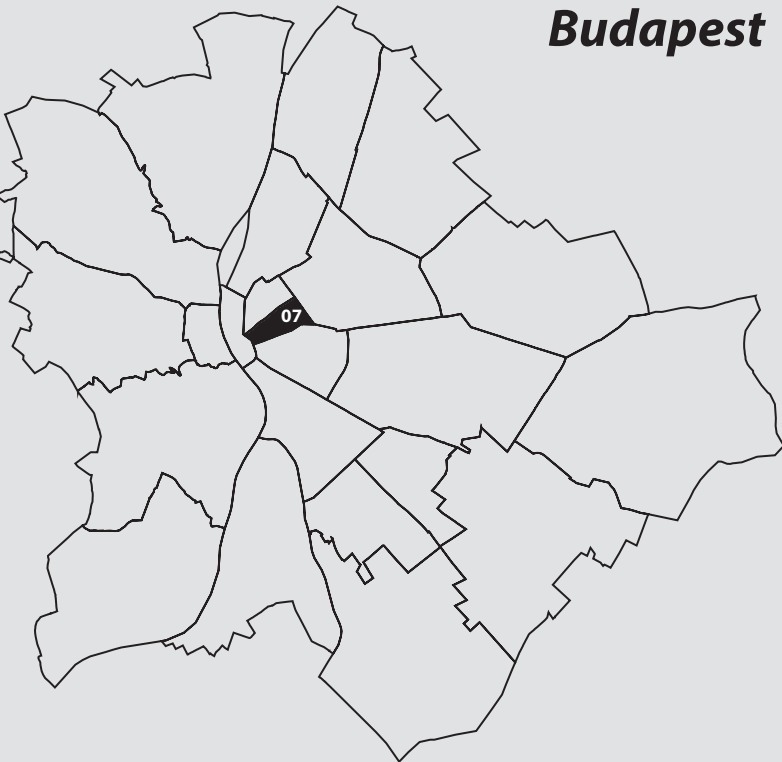
Budapest City Archives HU_BFL_XV_16_b_221_025
Plan of Pest 1872

7. district, Erzsébetváros

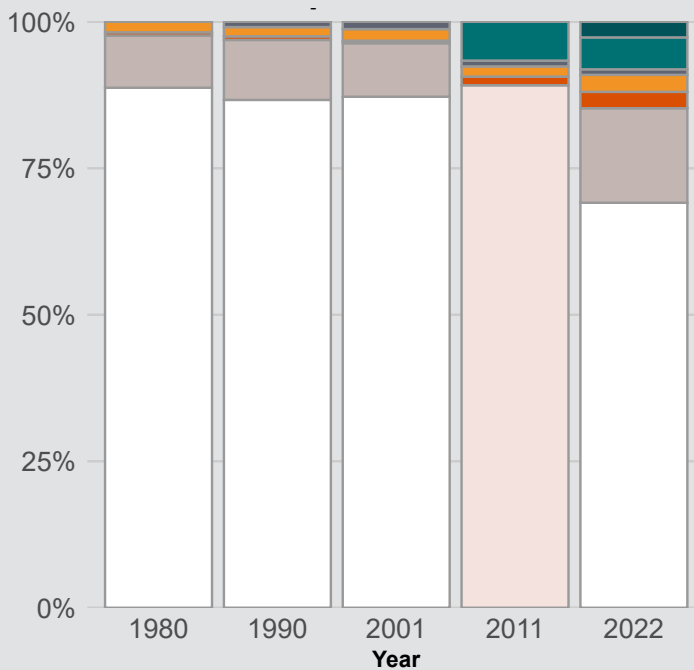
The 7. district, *Erzsébetváros* was created with the division of the former suburb of *Terézváros* at the time of the city unification in 1873. The area North of *Király street* remained *Terézváros*, which is the 6th district today. The 7. district was named in 1881 after the wife of Franz Joseph I., Elisabeth. The map of 1850 shows the city structure before the city unification. The second map of 1872 shows the block structure before the city unification. Whereas the Eastern part of the 7. district is not built yet, we can see the definition of a regular grid street structure, characteristic for the planned urban development during the *Gründerzeit*. The marked area would later become the so-called „Chicago“ with a high-density of *Gründerzeit* tenement housing. The name refers to the rapid and dense construction that was realised in the area. The inner part of *Erzsébetváros* including the synagogue, became the Jewish Ghetto between 1944 and 1945. The percentage of dwellings built before 1919 was 69.1% in 2022 in the 7. district of Budapest. The population number has been gradually sinking since 1970. In 2022, the population counted 48,943 inhabitants, from which around 3% were unemployed during that same year.



Budapest



2. District level



Construction period of dwellings

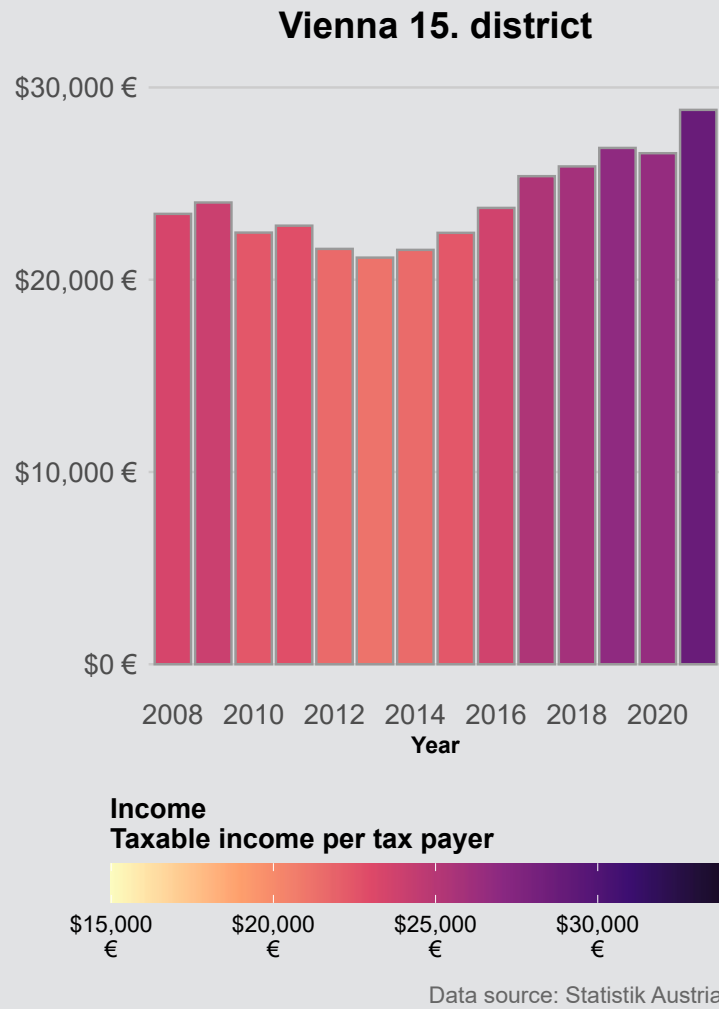
- Before 1920
- 1920-1945
- 1946-1960
- 1961-1980
- 1981-2000
- 2001-2010
- After 2010

Data source: KSH & Hungarianana
% of dwellings

Vienna



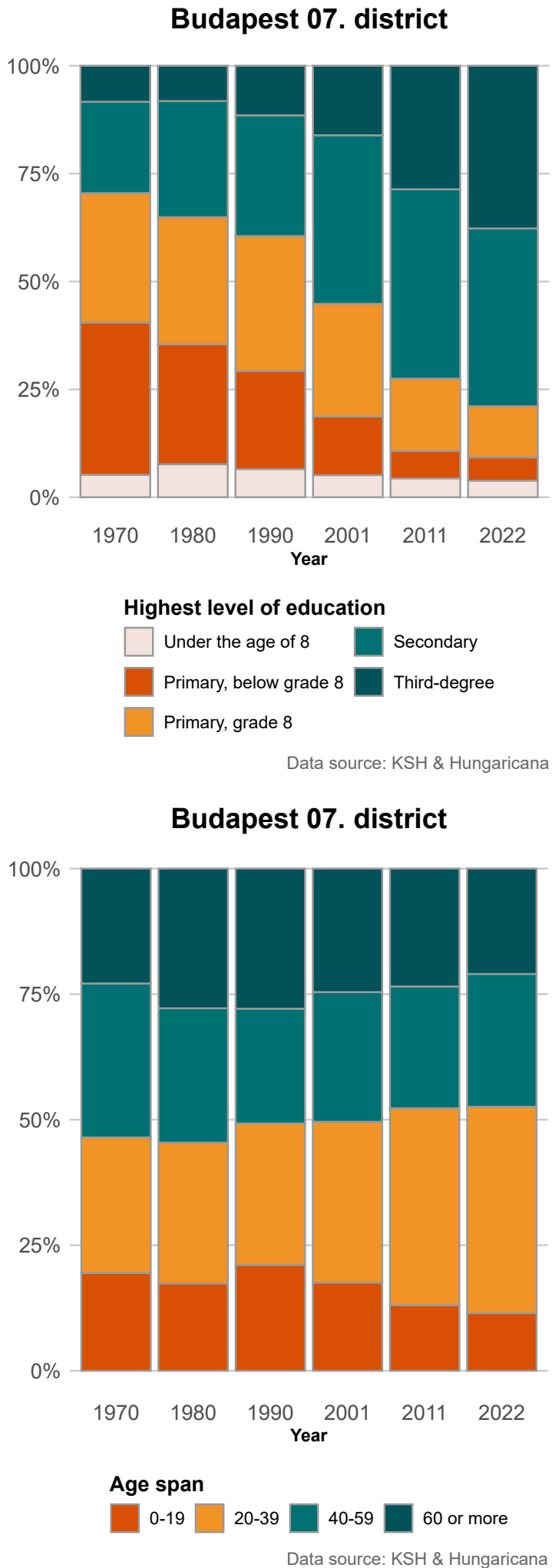
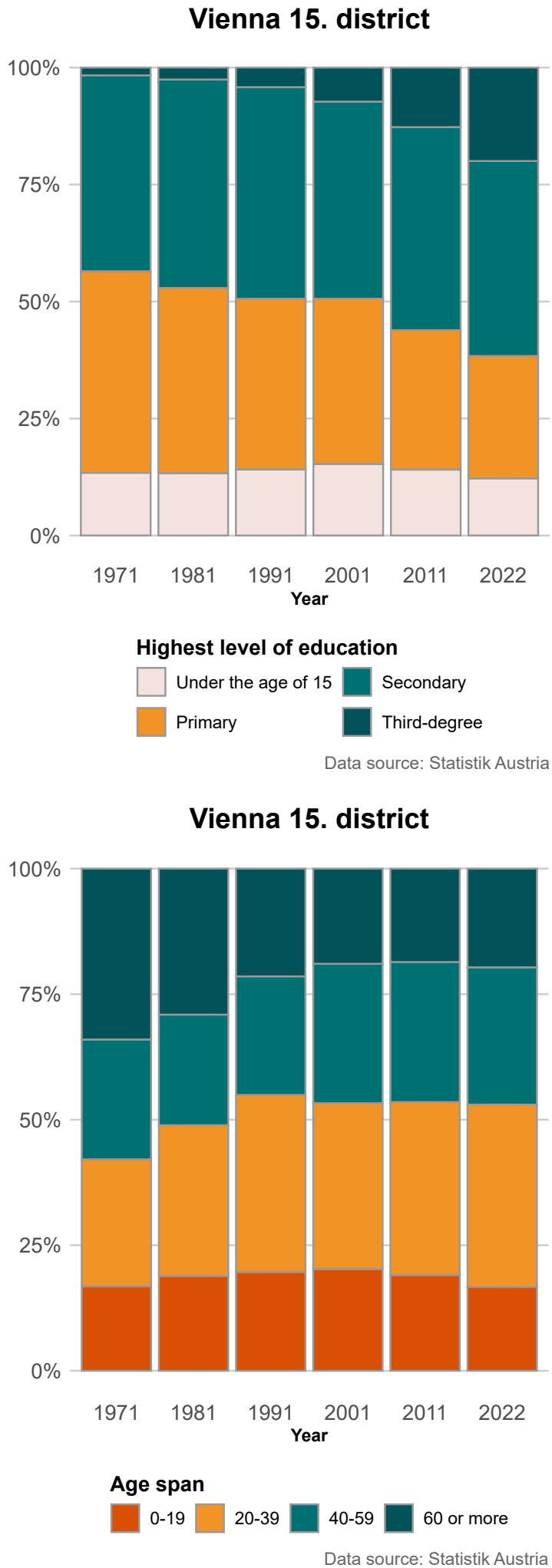
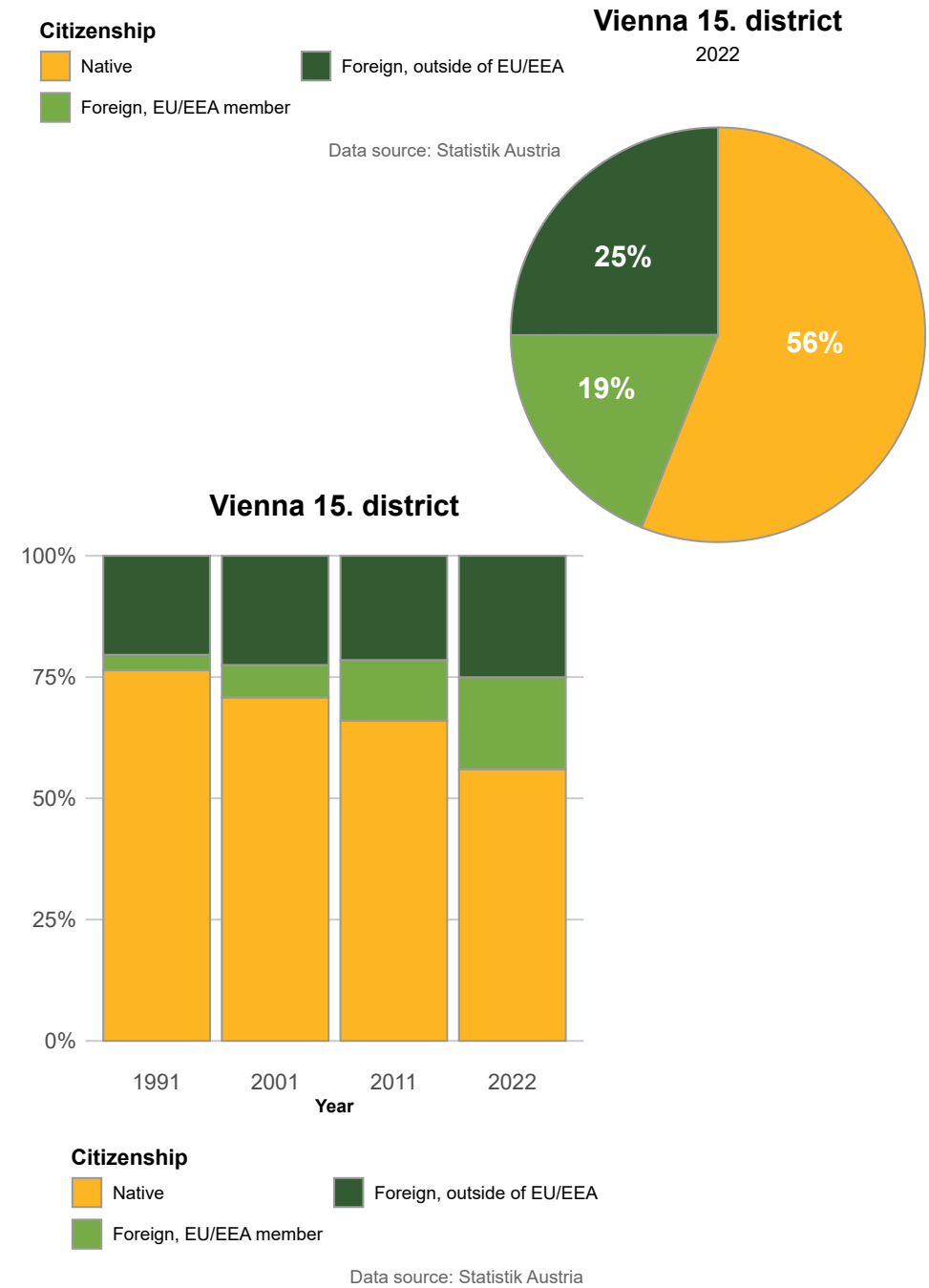
2. District level



15. district, *Rudolfsheim-Fünfhaus*

The taxable income pro tax payer in the 15. district has reached more than 29,000€ in 2020. The percentage of people, who finished third degree education has been growing in the past decades and reached 20% by 2022. At the same time, the number of people in age of 60 years old or older has been decreasing from 35% in 1971 to 20% in 2022. The population became younger and more international. The percentage of people between 20-39 years has grown from 26% in 1971 to 36% in 2022.

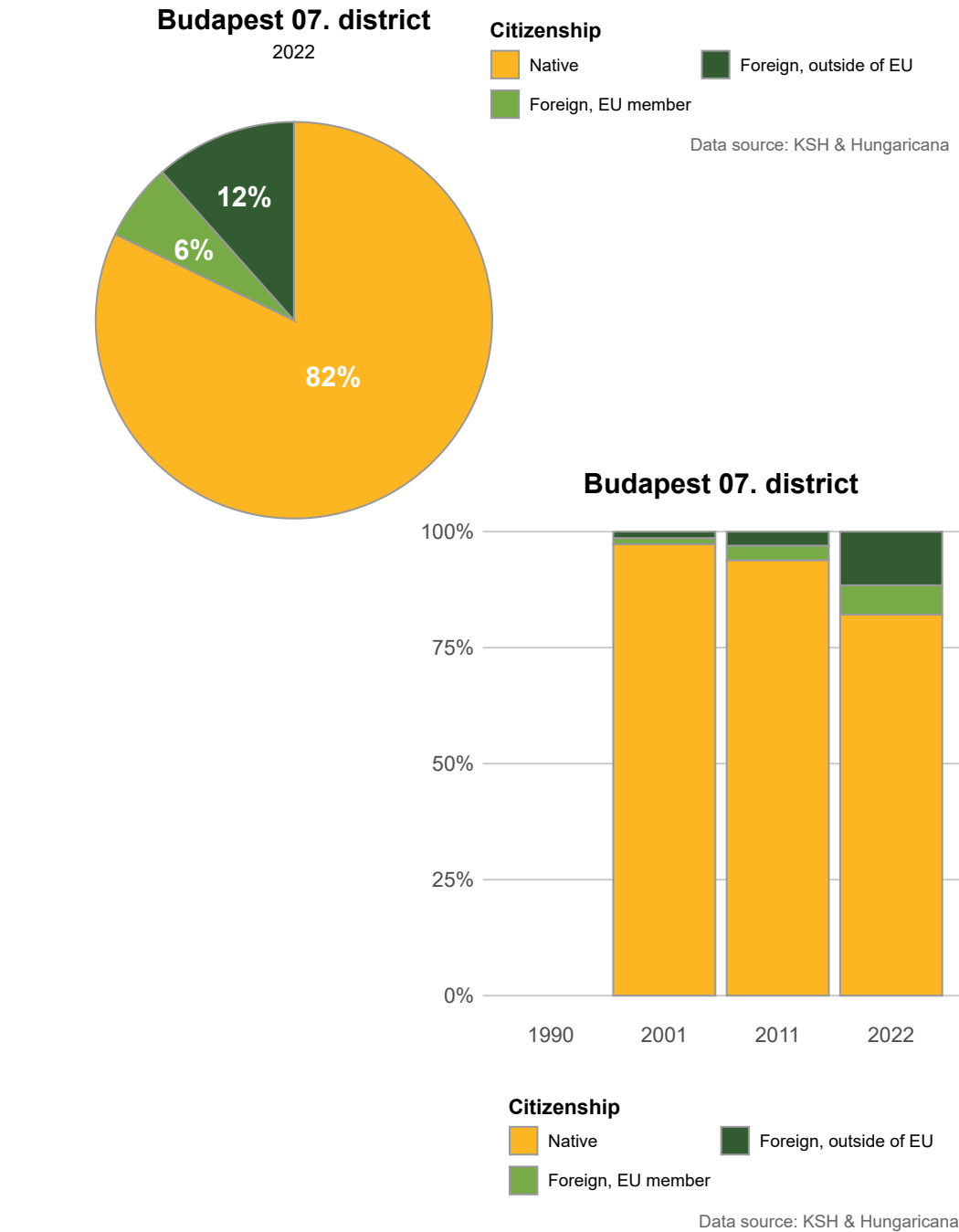
Residents coming from outside of the EU has grown from 19% in 1991 to 25% in 2022. The percentage of the population with a citizenship from the European Union has grown from 4% in 1991 to 19% in 2022.



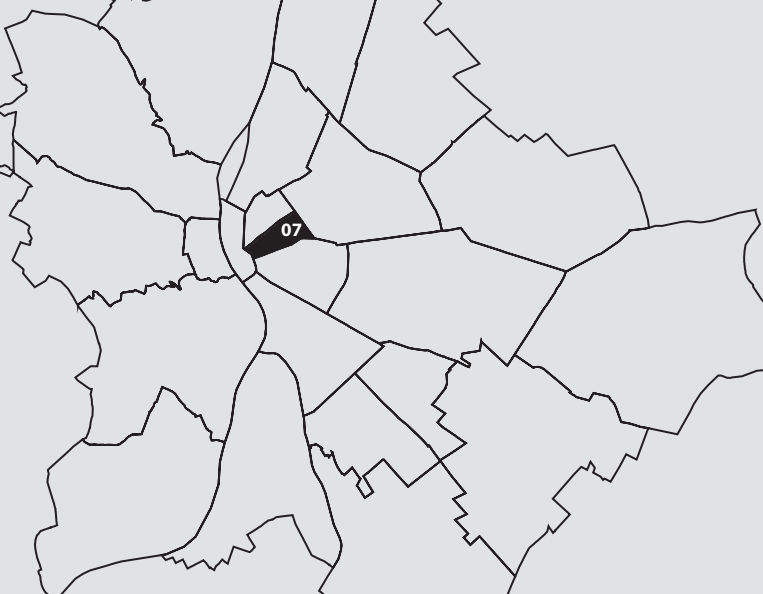
7. district, *Erzsébetváros*

The taxable income pro tax payer in the 7. district has reached more than 3,500,000 HUF in 2019. (3,500,000 HUF was roughly equivalent to 10,700–11,100€ in 2019, depending on the exact month and rate.) The percentage of people, who finished third degree education has been growing in the past decades from 9% in 1970 to 38% in 2022. The percentage of people in the age group between 20-39 years has grown from 27% to 42% in the same period.

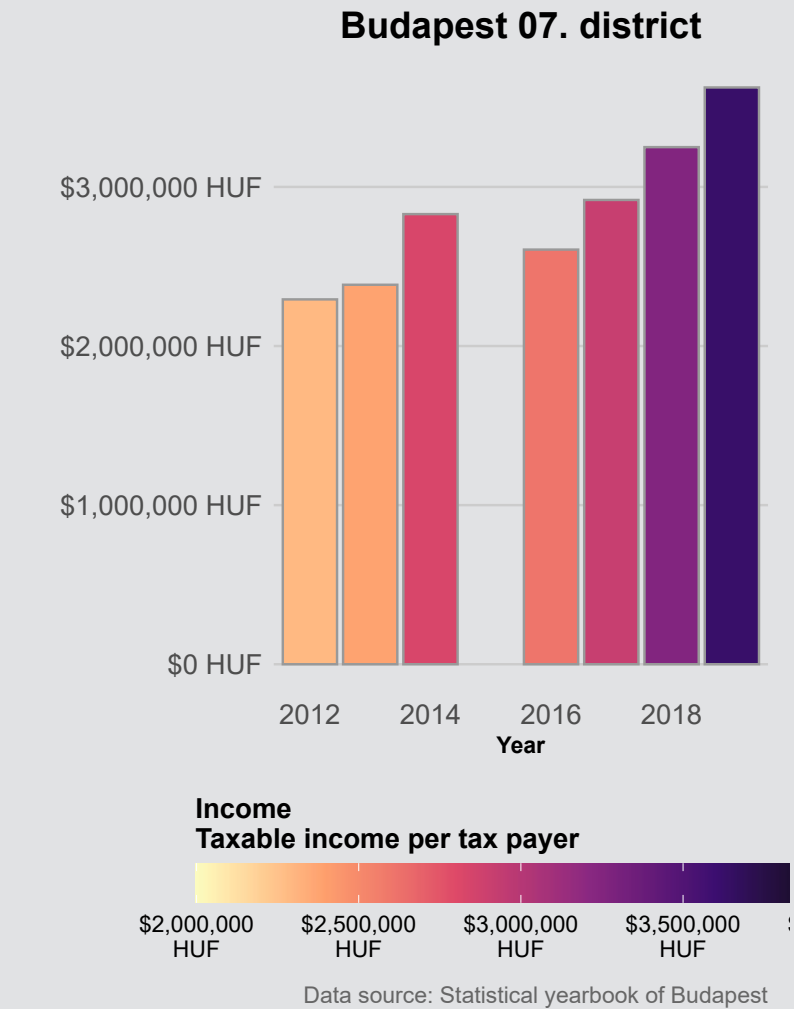
Residents coming from outside of the EU has grown from 1% in 2001 to 12% in 2022. The percentage of the population with a citizenship from the European Union has grown from 1% in 2001 to 6% in 2022.



Budapest



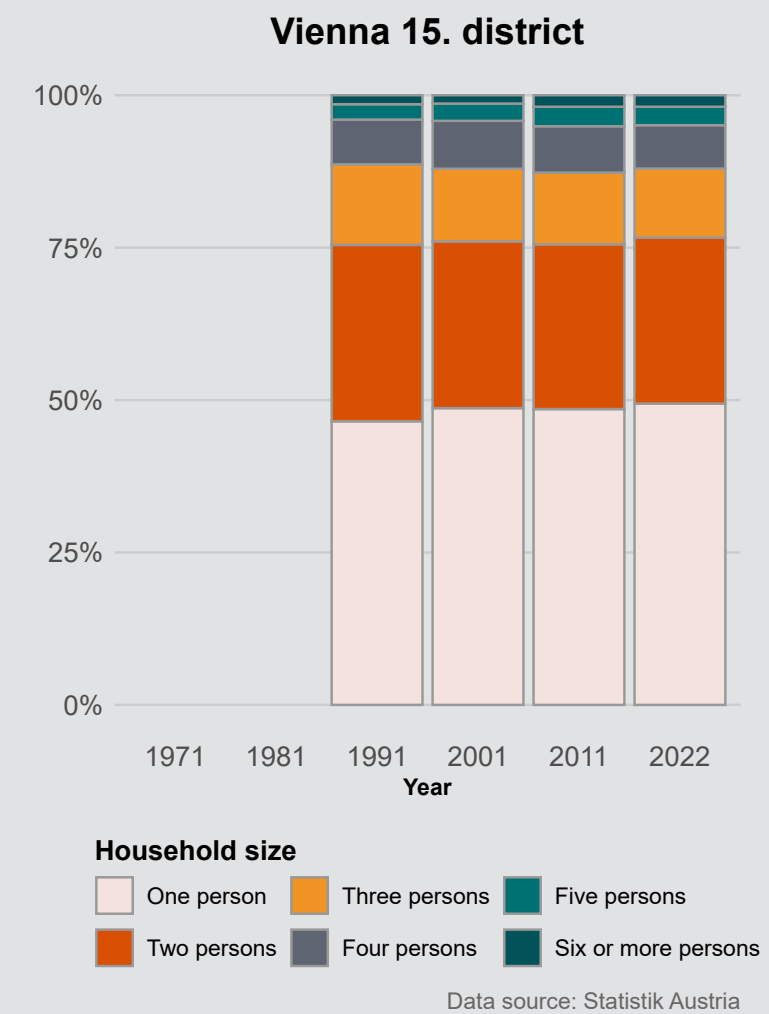
2. District level



Vienna



2. District level

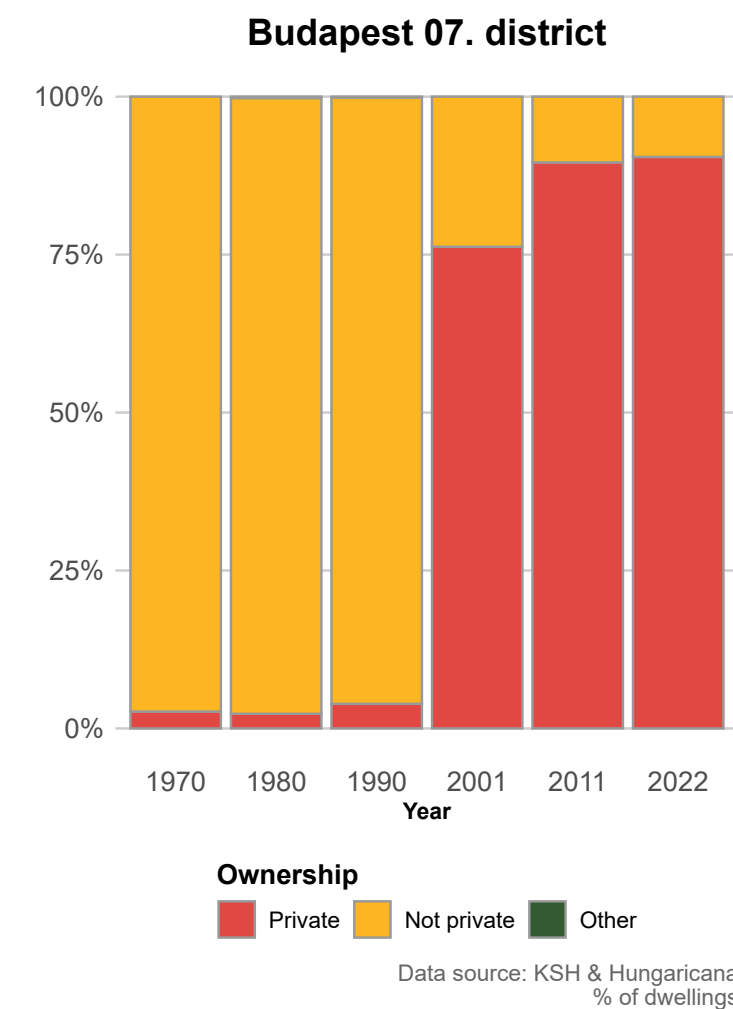
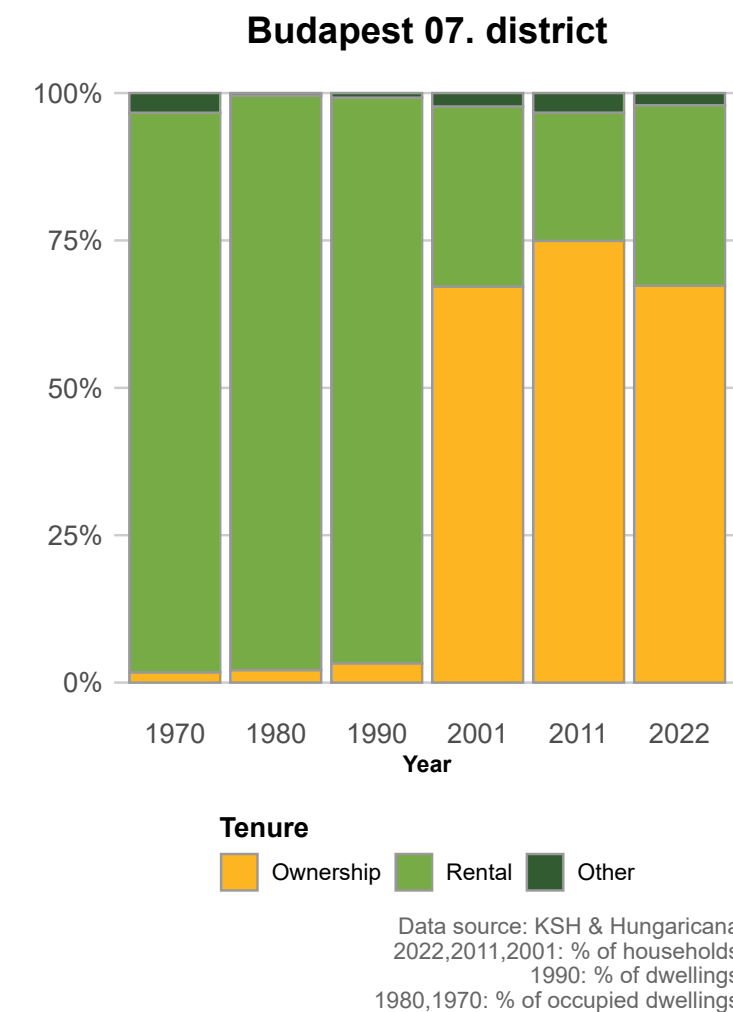
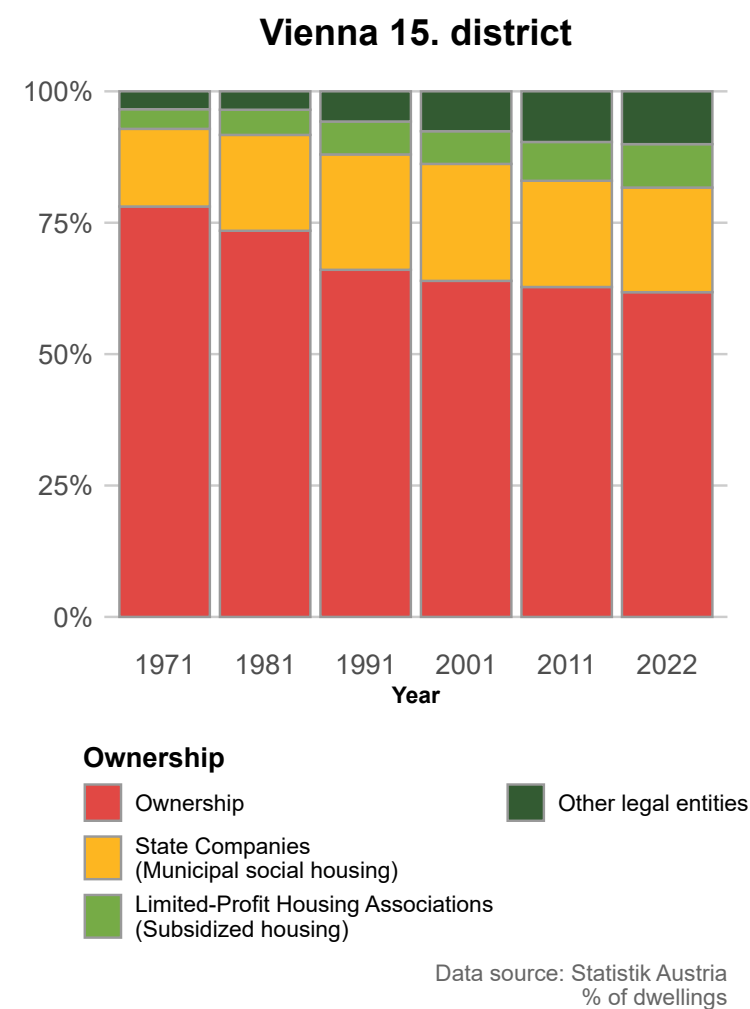
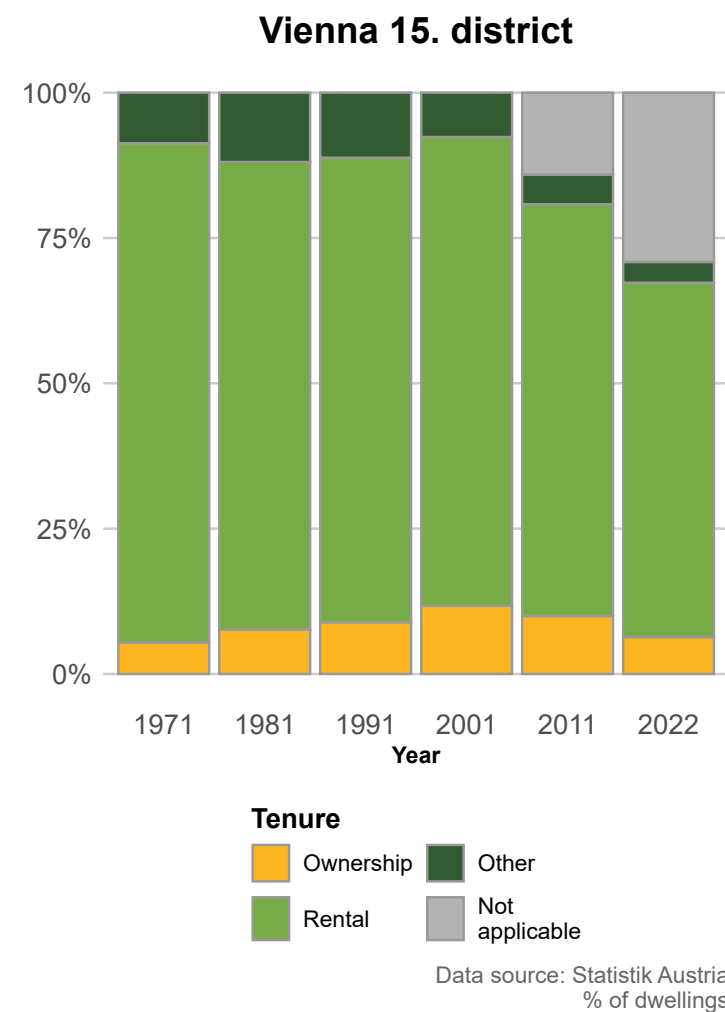
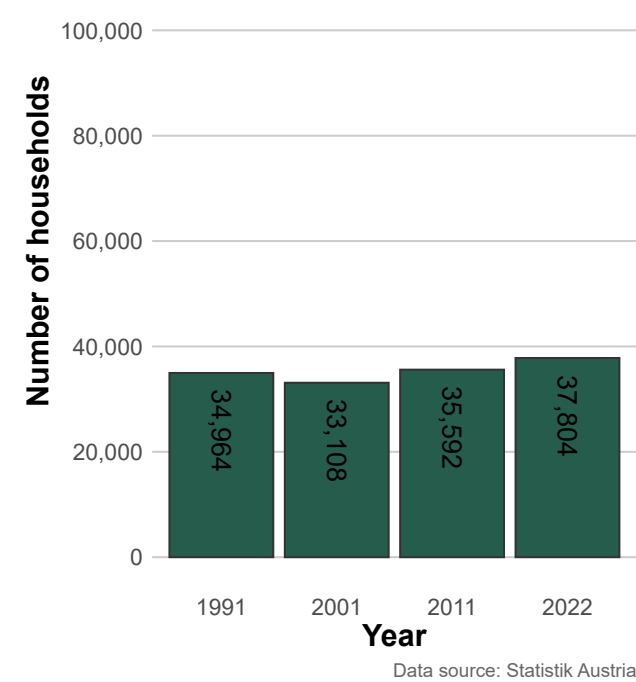
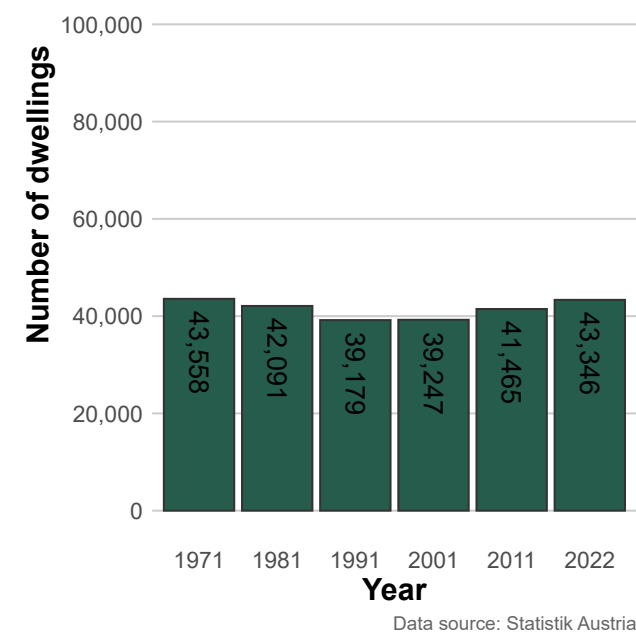


5 <https://insideairbnb.com/vienna/>

15. district, *Rudolfsheim-Fünfhaus*

The total number of households in the 15. district of Vienna has grown since 1991 from 34,964 to 37,804 in 2022. The number of one-person households remained below 50% similarly to the previous decades. The number of dwellings on the other hand, was first reduced between 1971 and 1991 from 43,558 to 39,179 and later increased to 43,346 in 2022. In this area, one can observe some new housing projects, as well as rooftop extensions bringing new apartments to the market.

The percentage of rental units was reduced from 86% in 1971 to 61% in 2022. During the same period, the percentage of municipal social housing and subsidised housing has grown. Therefore, the proportion of free market rentals has been reduced from 77% in 1971 to 61% in 2022. 7% of short term rental listings in Vienna can be found in the 15. district in 2025.⁵

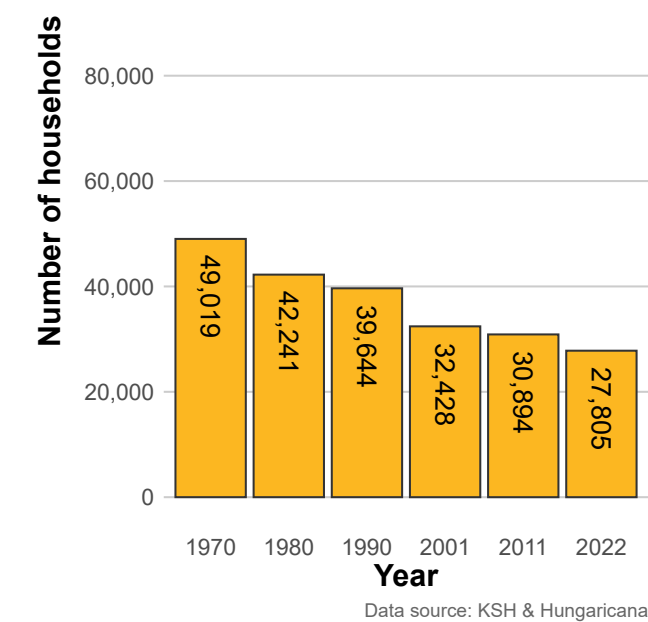
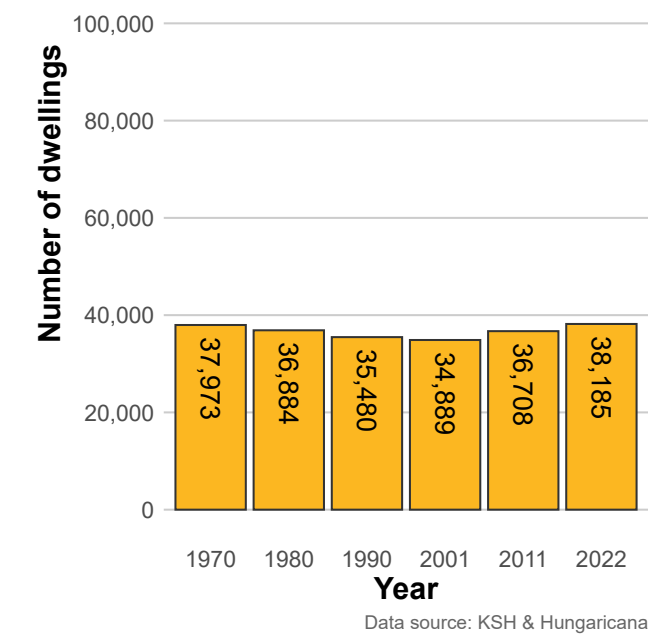


7. district, *Erzsébetváros*

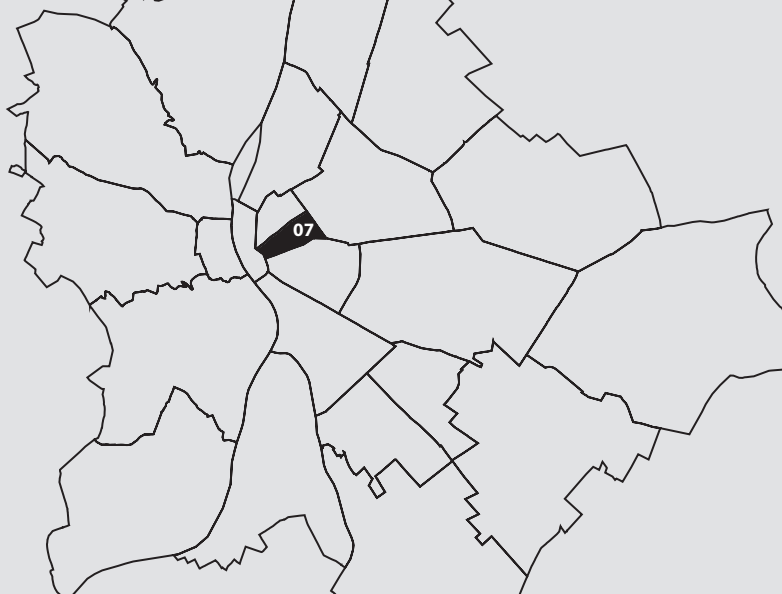
The number of households in the 7. district of Budapest has been reduced significantly since 1970 by more than 50% from 49,019 to 27,805 in 2022. The number of one-person households has grown during the same period to more than 50%.

The number of dwellings in the 7. district has grown from 37,973 in 1970 to 38,185 in 2022. The difference between the significant change in the number of households and the minimal change in the number of dwellings can be explained by the large number of short-term rentals in this district: 28% of short-term rentals can be found in the 7th district in 2025.⁵

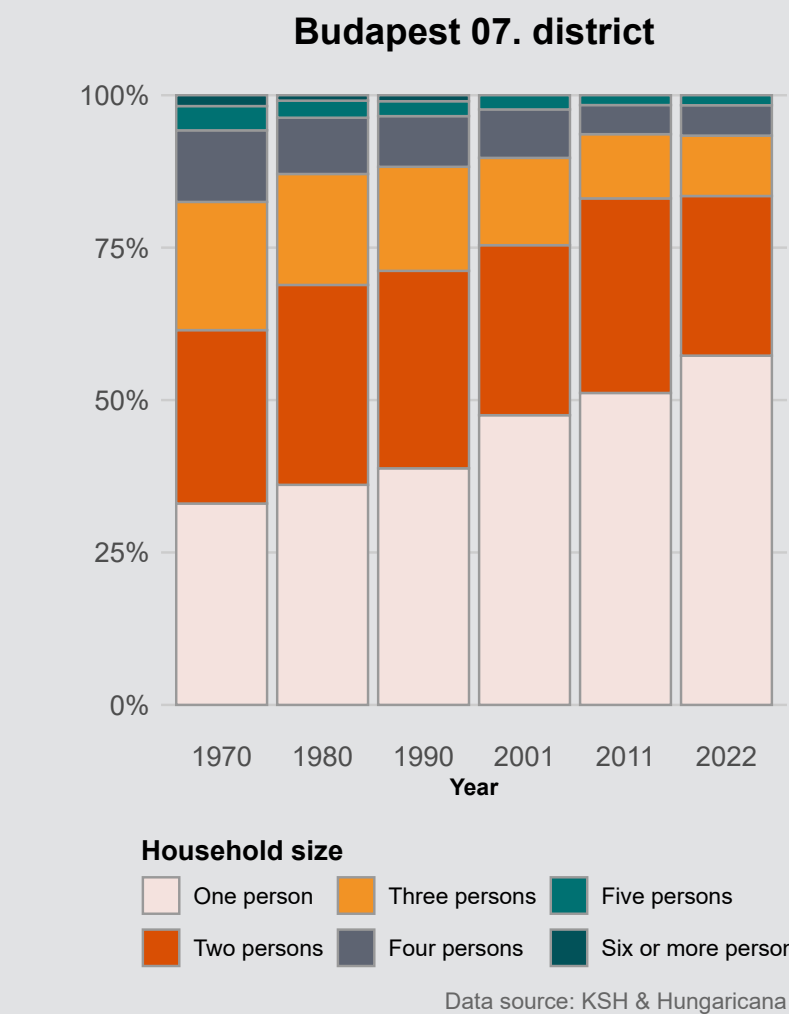
The effect of the privatisation is clearly visible in the shift from rentals to ownership between 1990 and 2001. Whereas in 1970, 94% of occupied dwellings were rental, in 2022 only 30% of the households lived in a rental unit.



Budapest



2. District level

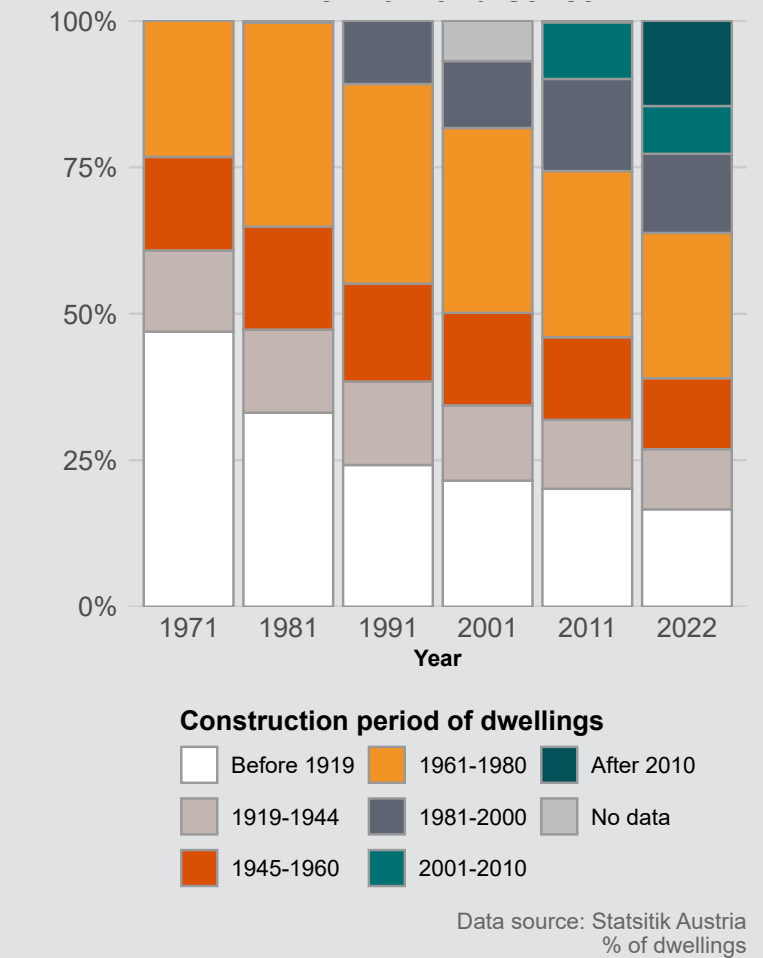


5 <https://insideairbnb.com/budapest/>

Vienna

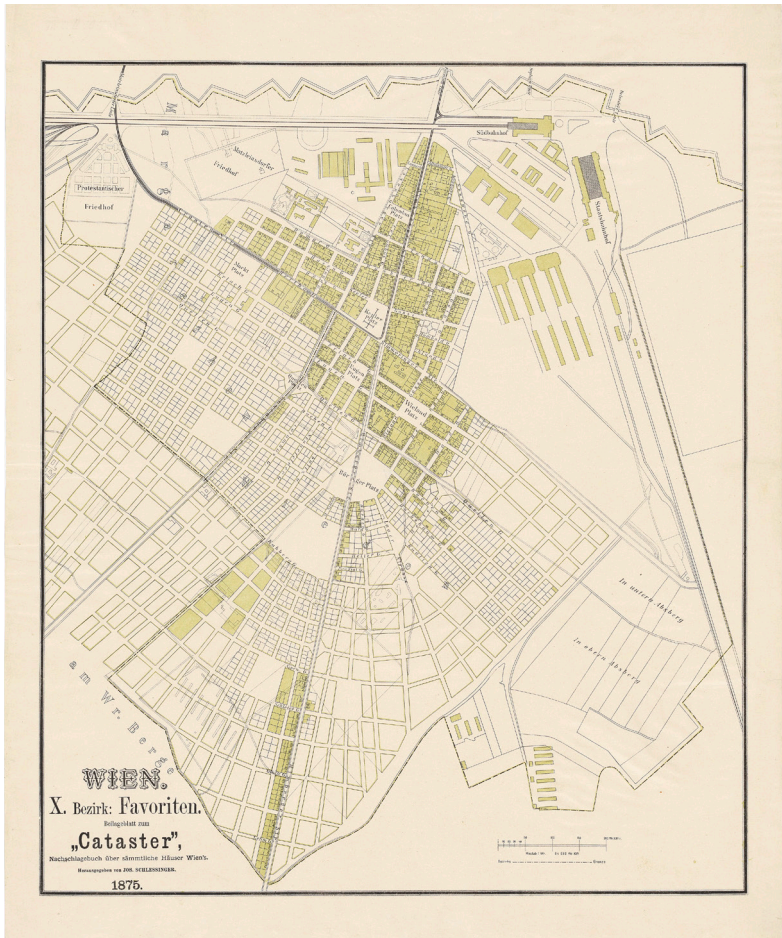
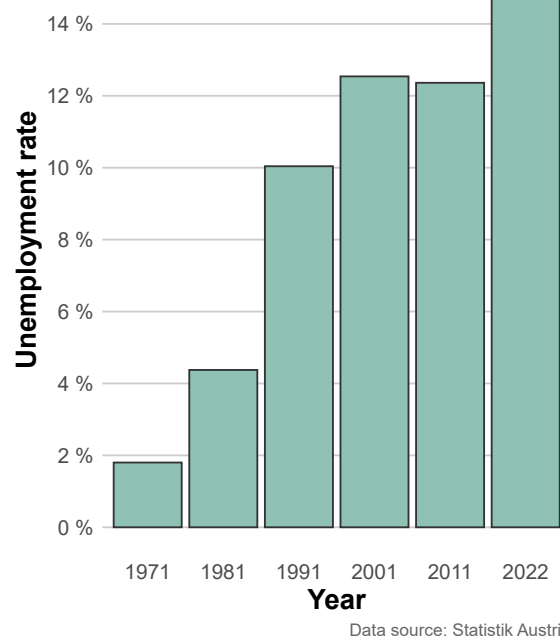
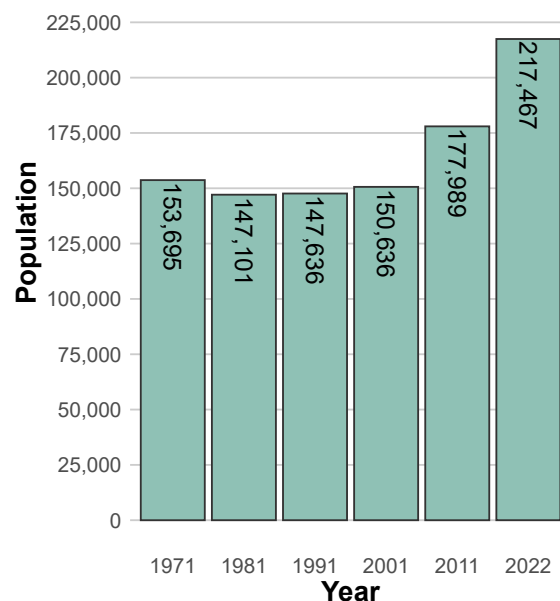


2. District level

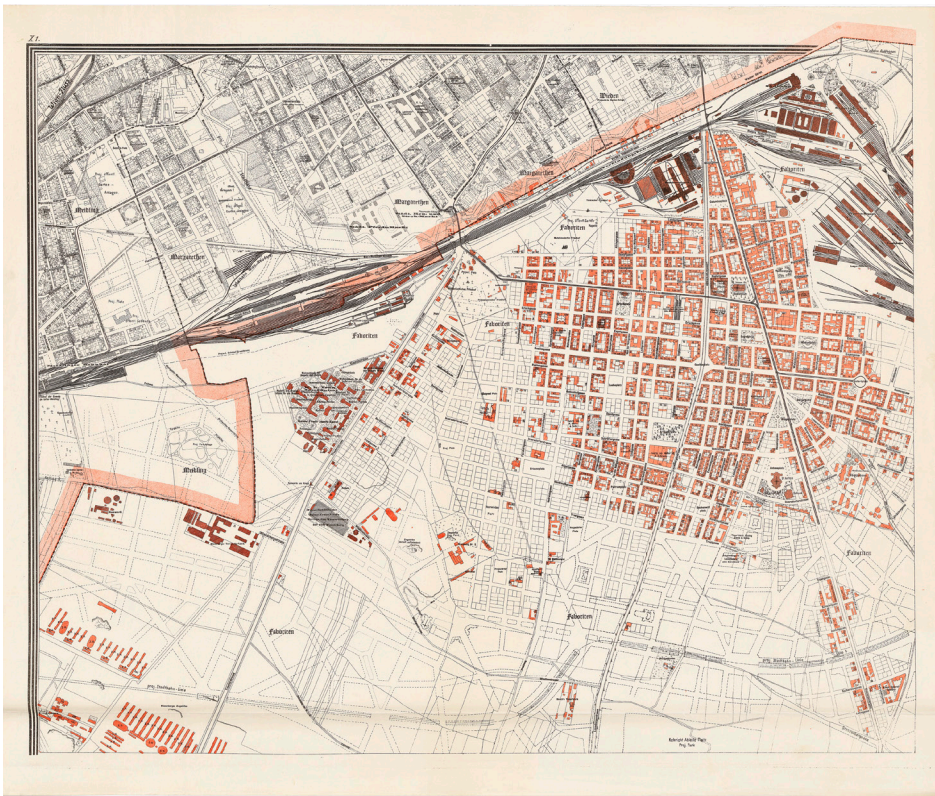


10. district, Favoriten

The inner part of *Favoriten* is typical area of the *Gründerzeit* (1848-1918), which was added to the city area of Vienna during the first and second city expansion of 1850 and 1890. During this period, streets and blocks were defined in a grid structure, with small plots that allow perimeter block construction (*Blockrandbebauung*). The historical cadastral map of 1875 shows the built and non-built areas of the district, where built structures start to spread in the Southern direction from the two railway stations, the Eastern railway station (*Ostbahnhof*) built in 1870, as well as the Southern railway station (*Südbahnhof*) that was built in 1841. Later, on the cadastral map of 1901 a much larger built area is shown including many tenement buildings. The church remains a landmark until today in an area that mainly consists of residential buildings, as well as some green areas, parks and squares, such as the *Reumannplatz*. This square originates back to 1972, located on the triangular connection of two streets, *Laaer-Berg Straße* and *Ettenreichgasse*. The percentage of dwellings built before 1919 was 16.6% in 2022. Historic tenement housing is concentrated in the Northern part of the district.



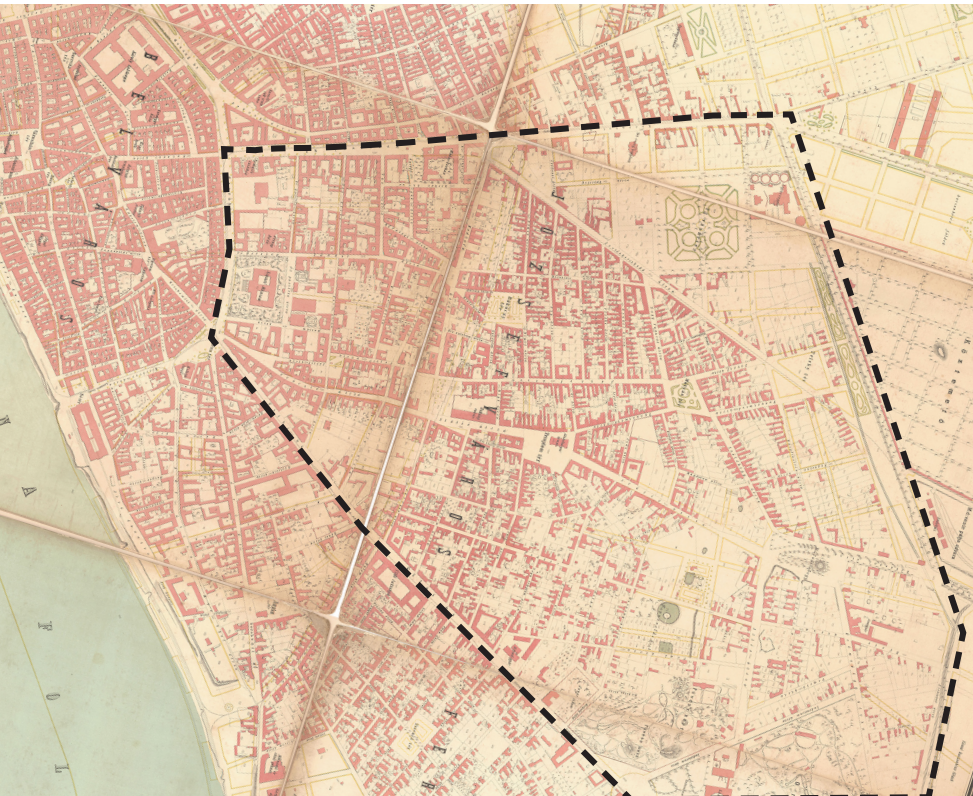
Joseph Schlessinger (Herausgeber), „Wien. X. Bezirk Favoriten. Beilageblatt zum „Cataster“ Nachschlagebuch über sämtliche Häuser Wien's“, 1875, Wien Museum Inv.-Nr. 19486/10, CC0



Louis Rainer (Zeichner), Carl Loos (Lithografieanstalt), Stadtbauamt Wien (Herausgeber), Verlag bzw. k. u. k. Universitätsbuchhandlung R. Lechner (Wilh. Müller) (Verlag), „Plan des X. Bez. Favoriten der k.k. Reichshaupt- und Residenzstadt Wien“ (Plan in 4 Teilen), um 1901, Wien Museum Inv.-Nr. 18906/2



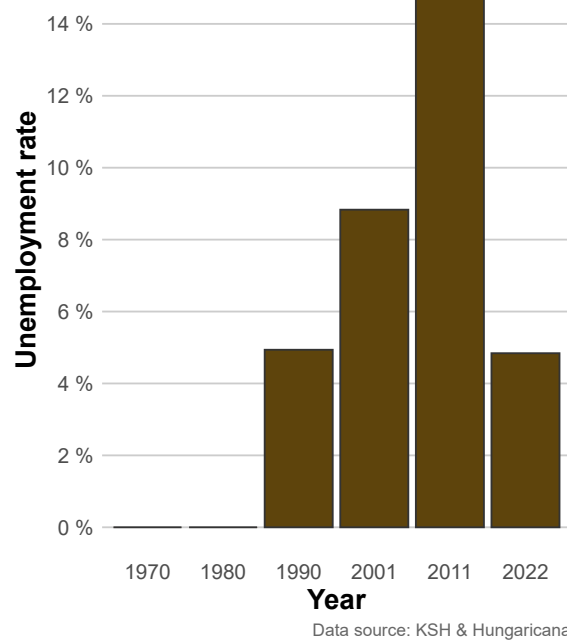
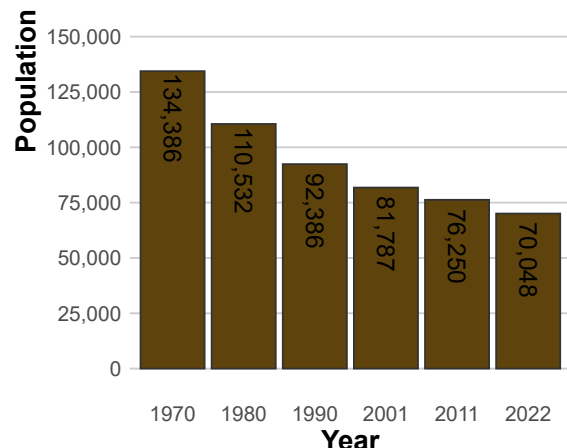
Budapest City Archives HU_BFL_XV_16_d_241_021
Plan of Pest 1850



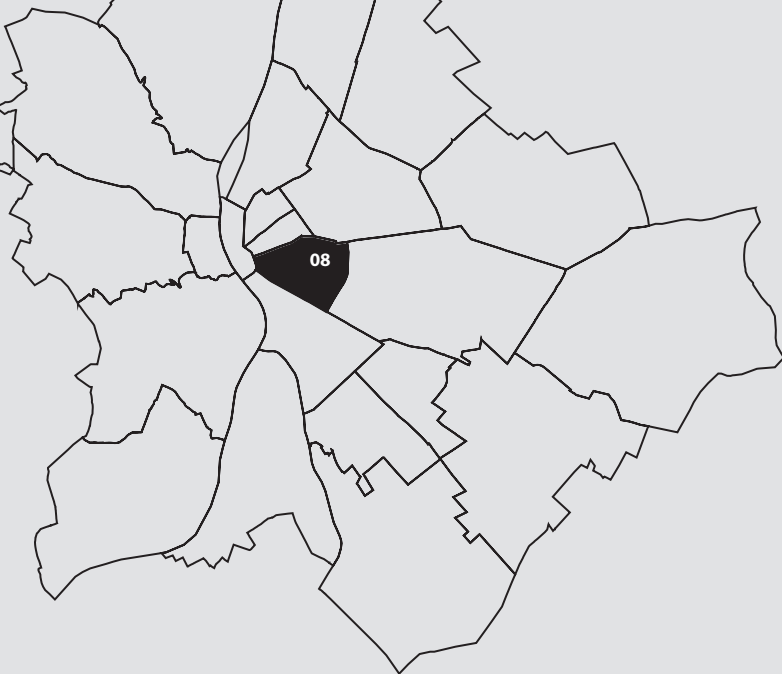
Budapest City Archives HU_BFL_XV_16_b_221_025
Plan of Pest 1872

8. district, Józsefváros

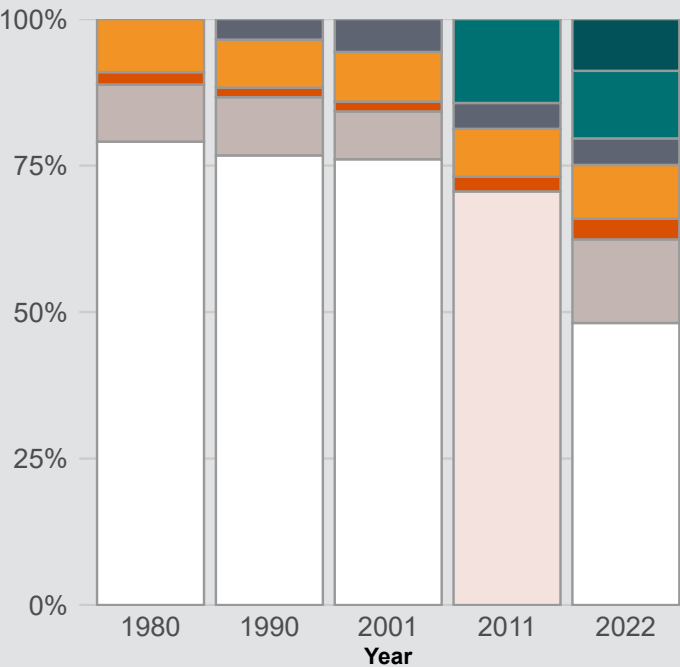
The 8. district of Budapest, *Józsefváros* originally developed in the 18. century first as a suburb, and after 1873 as part of Budapest. It grew rapidly during the 19. century as an industrial and residential area, attracting working-class families. Similarly to the 8. district of Vienna, Josefstadt, it was named after Joseph II, son of Maria Theresia. The district faced considerable challenges during the 20. century, particularly after World War II, when it experienced economic decline and became known for social issues such as poverty and crime. In recent years, Józsefváros has undergone many changes, with efforts by the municipal districts to renovate historic buildings, improve infrastructures, and attract new businesses. When it comes to urban renewal, the Corvin Quarter is an example for large-scale demolition of historical buildings and new construction that went hand-in hand with the relocation of the less favoured groups of the population. This quarter had the highest amount of dwellings built after 2010, in 2022. The Magdolna Quarter had the highest number of dwellings not owned by private individuals in 2022. It was part of an EU funded rehabilitation program led by the 8. district and the company Rév8. The aim of the program was to make small maintenances on as many buildings as possible and to improve their comfort level.



Budapest



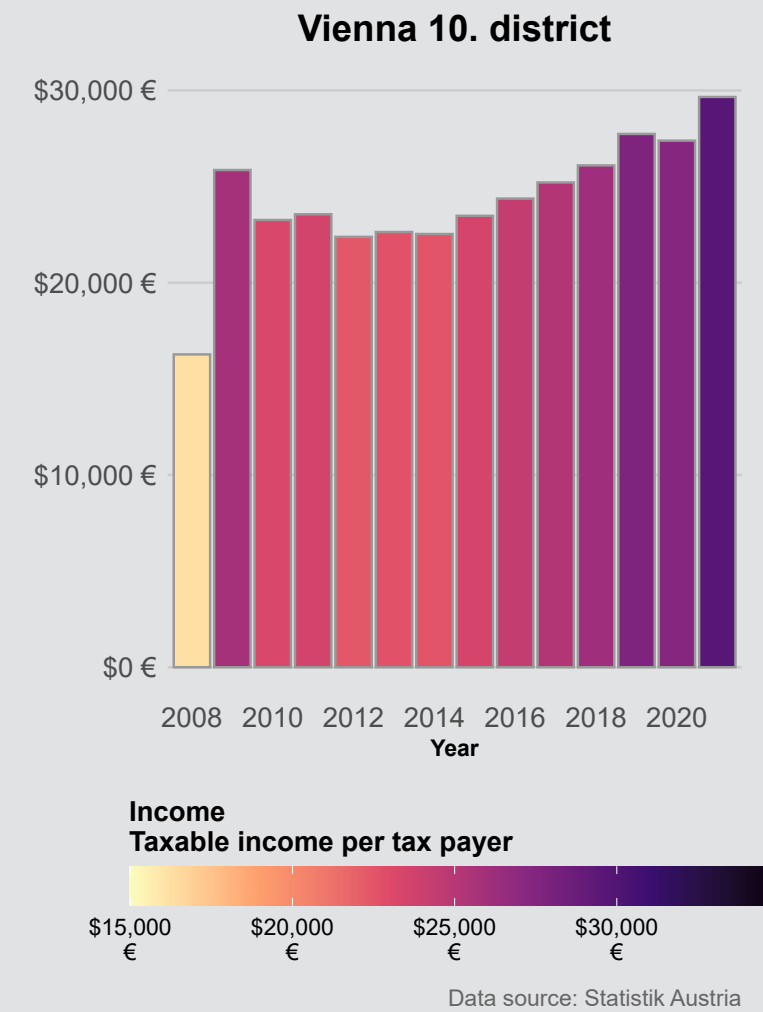
2. District level



Vienna

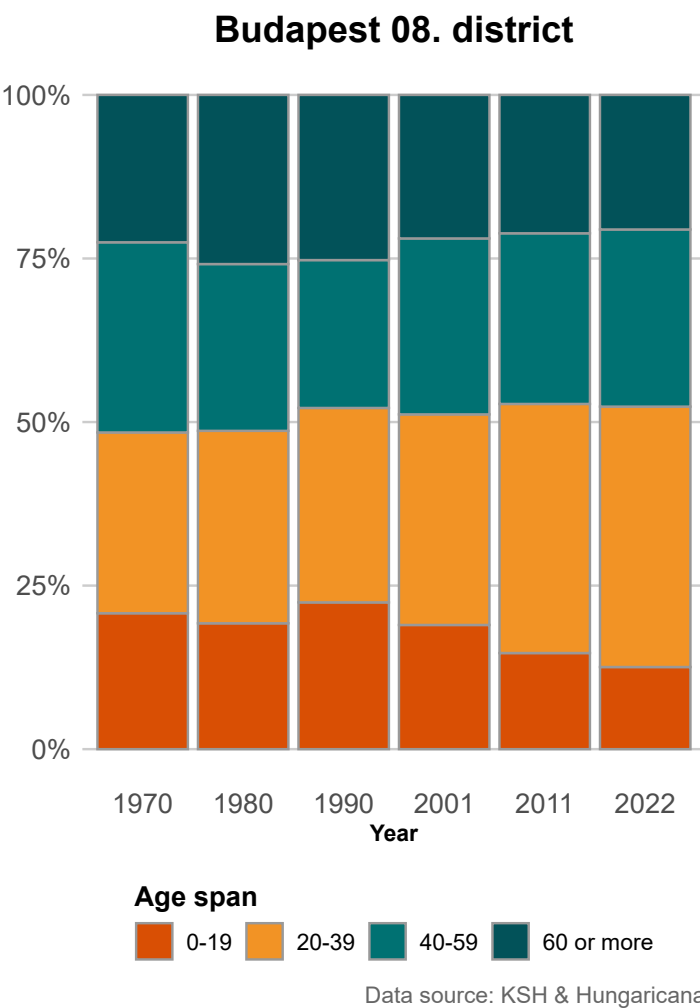
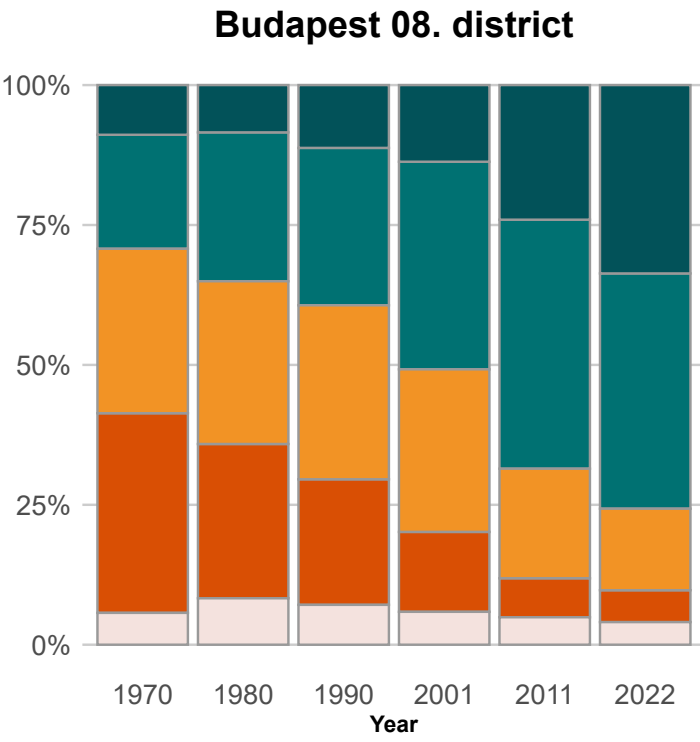
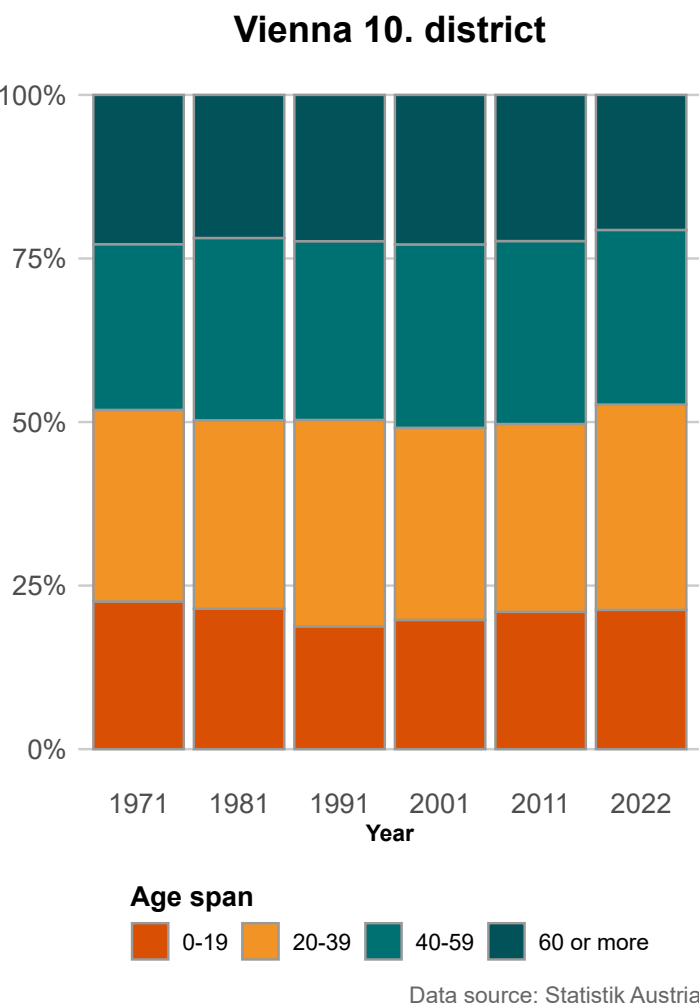
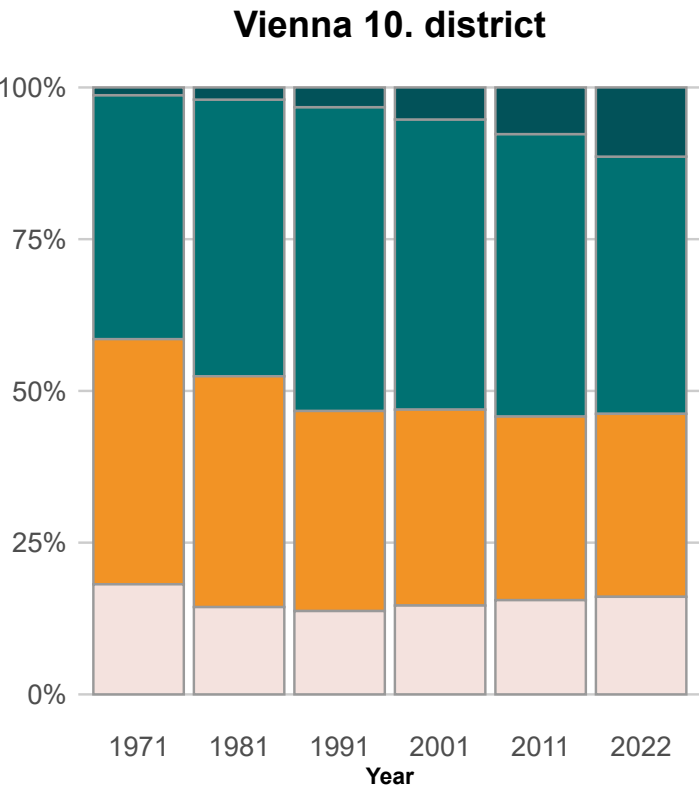
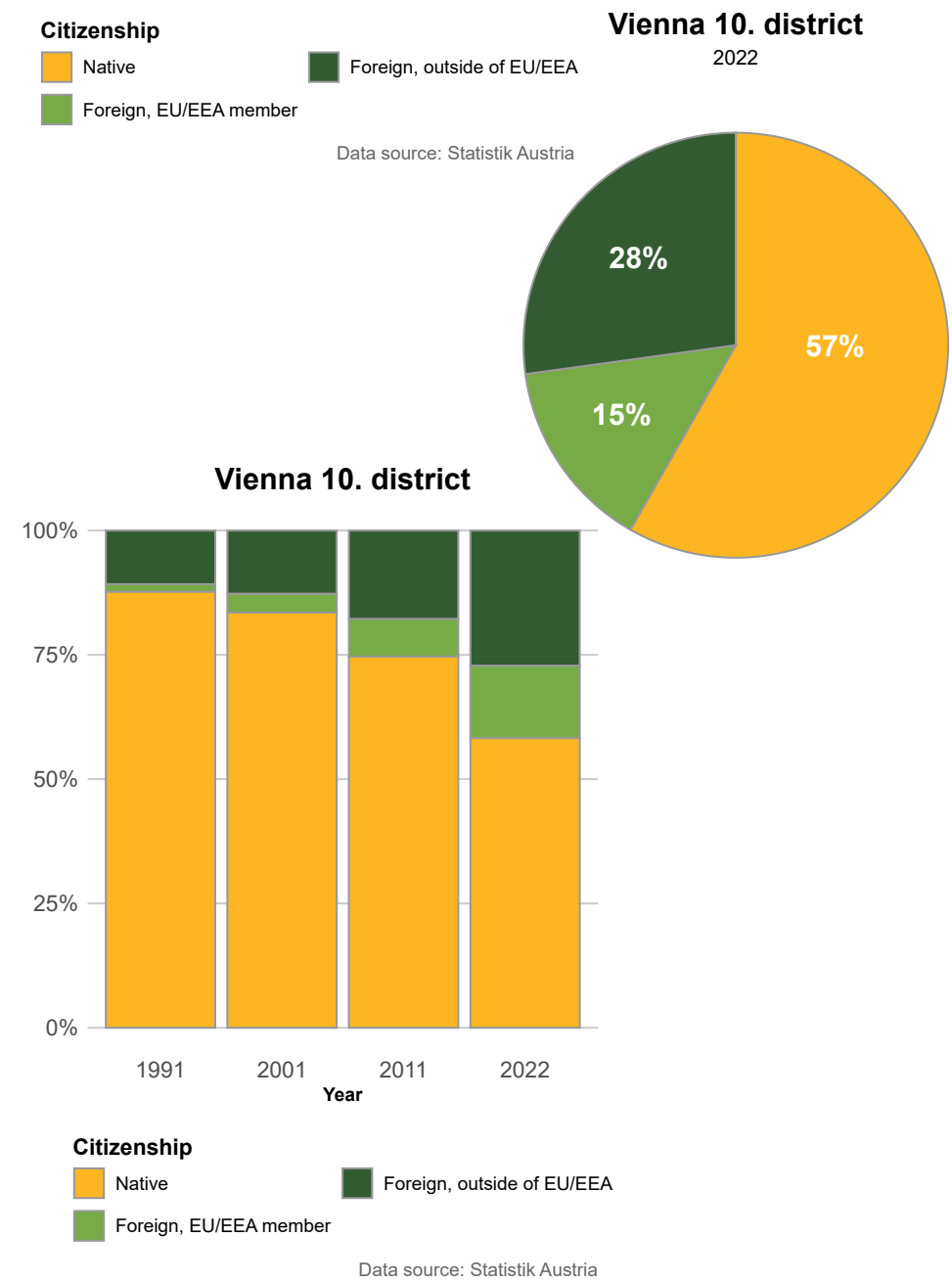


2. District level



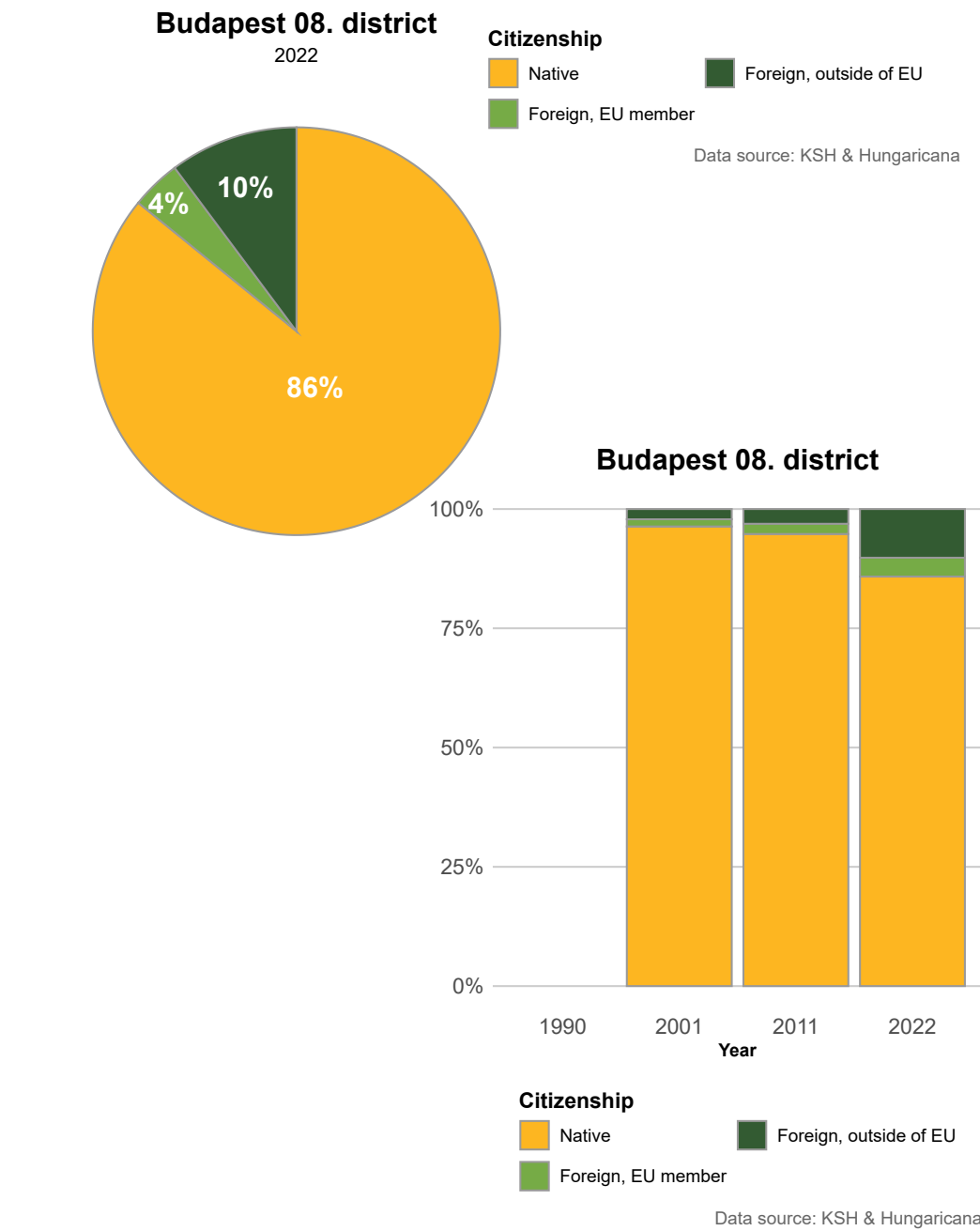
10. district, Favoriten

The number of the population in the 10. district in Vienna has been growing since 1971. Whereas back then 153,695 people lived in the district, the number of the population reached 217,467 in 2022. That same year, almost 8% of the population were unemployed. The taxable income pro tax payer has reached more than 29,000€ in 2020. The percentage of people, who finished third degree level education has been growing in the past decades and reached 12% in 2022. The age groups of the population remained stable during the past decades, with the percentage of people aged 60 or older reaching 20% and people between 20-39 years old reaching 31% in 2022. The foreign population from outside the EU has grown from 12% in 1991 to 28% in 2022. The percentage of the population with a citizenship from the European Union has grown from 2% in 1991 to 15% in 2022.

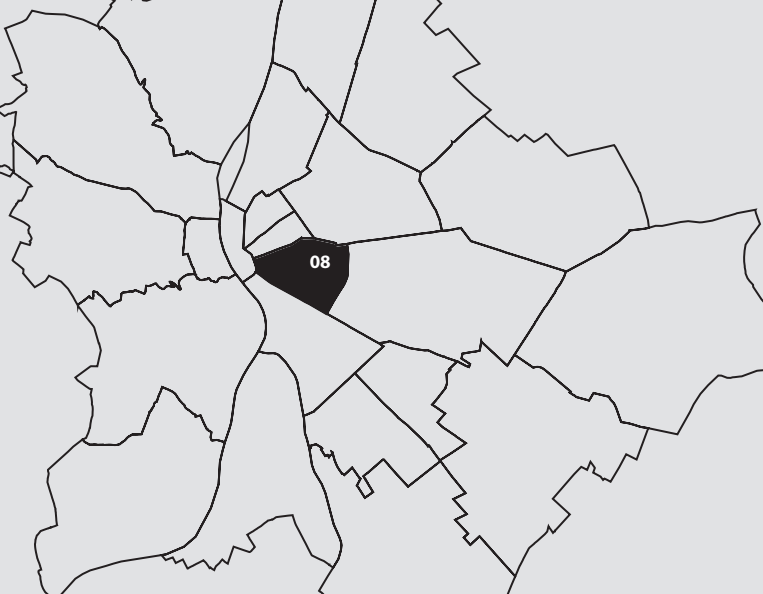


8. district, Józsefváros

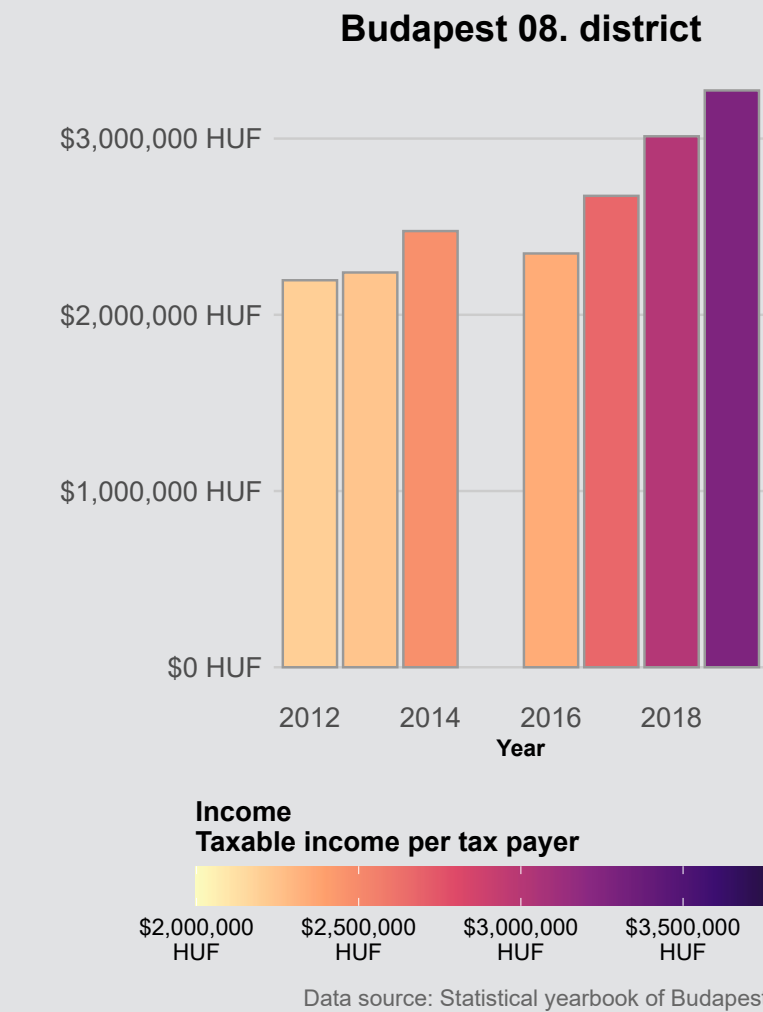
The population's number in the 8. district of Budapest has been shrinking from 134,386 in 1970 to 70,048 in 2022. Around 3% of the population were unemployed that same year. The taxable income pro tax payer has reached more than 3,000,000 HUF in 2019 (3,000,000 HUF was roughly equivalent to 8,950–9,500€ in 2019, depending on the exact month and rate.) The percentage of people, who finished third degree level education has been growing significantly in the district from 9% in 1970 to 34% in 2022. During the same period, the population's percentage between 20-39 years has been growing from 28% to 40%. The non-EU foreign population has grown from 2% in 2001 to 10% in 2022. The percentage of the population with a citizenship from the European Union has grown from 1% in 2001 to 4% in 2022.



Budapest



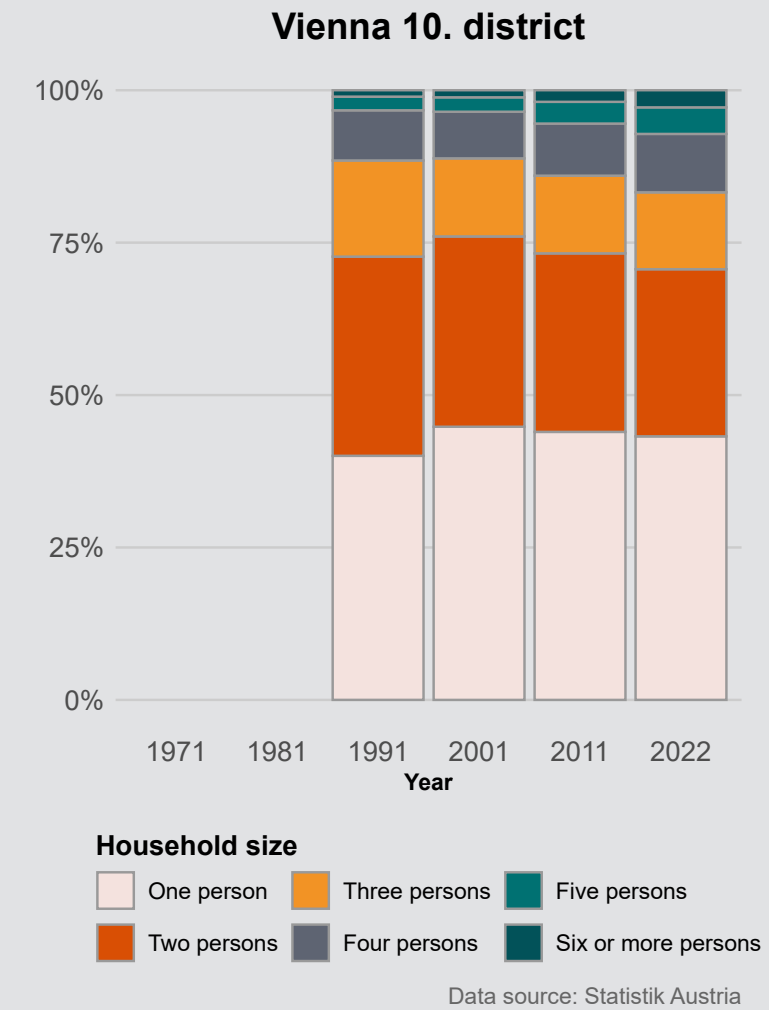
2. District level



Vienna



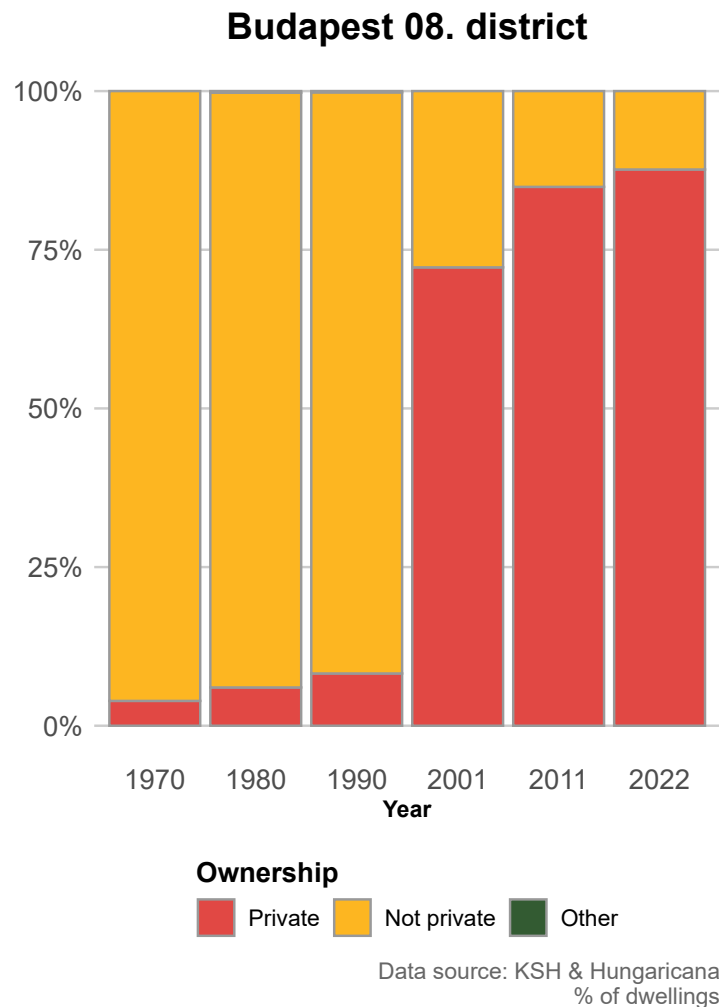
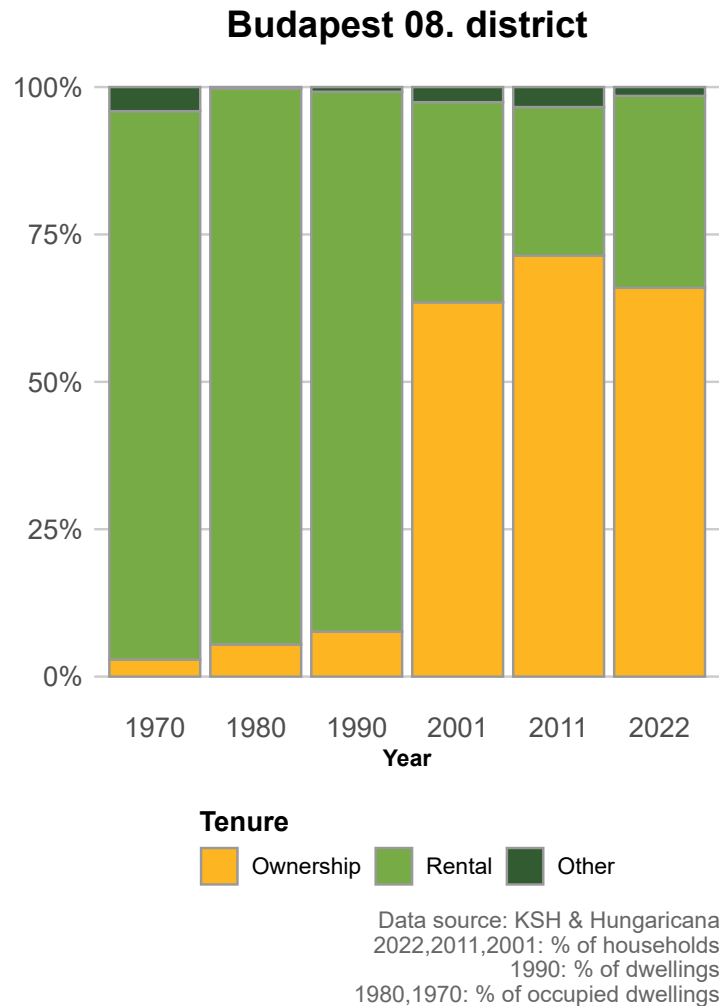
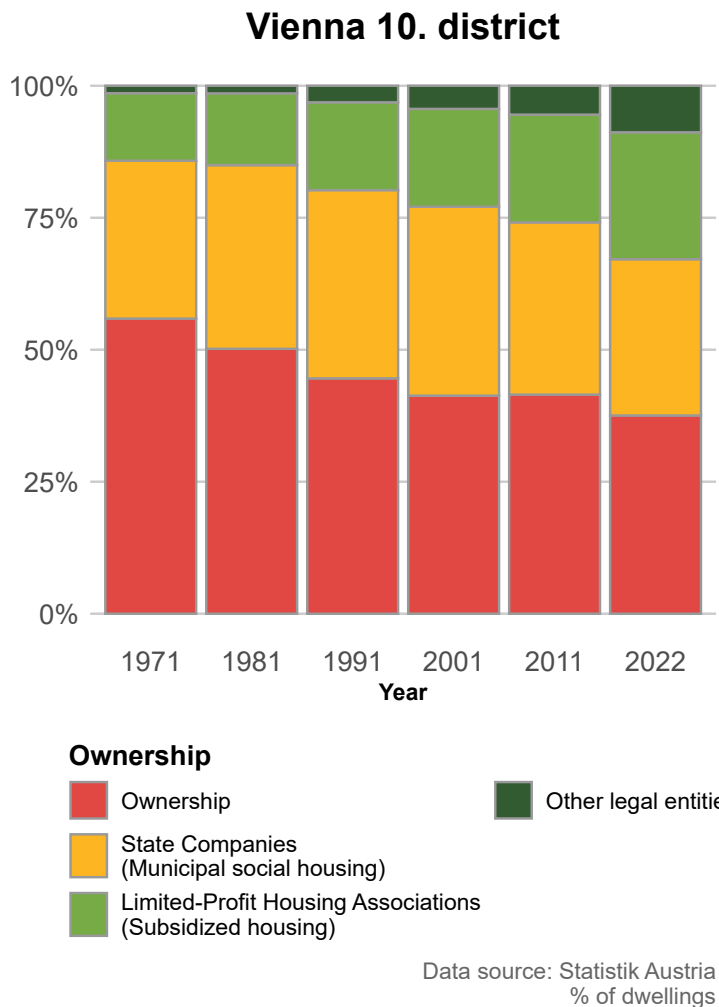
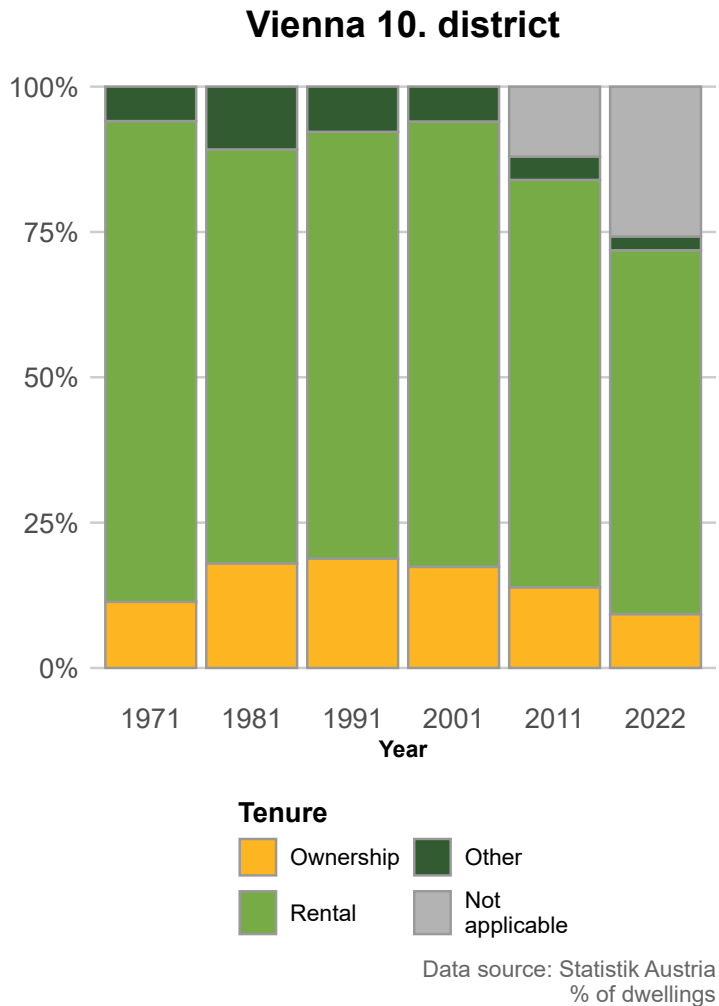
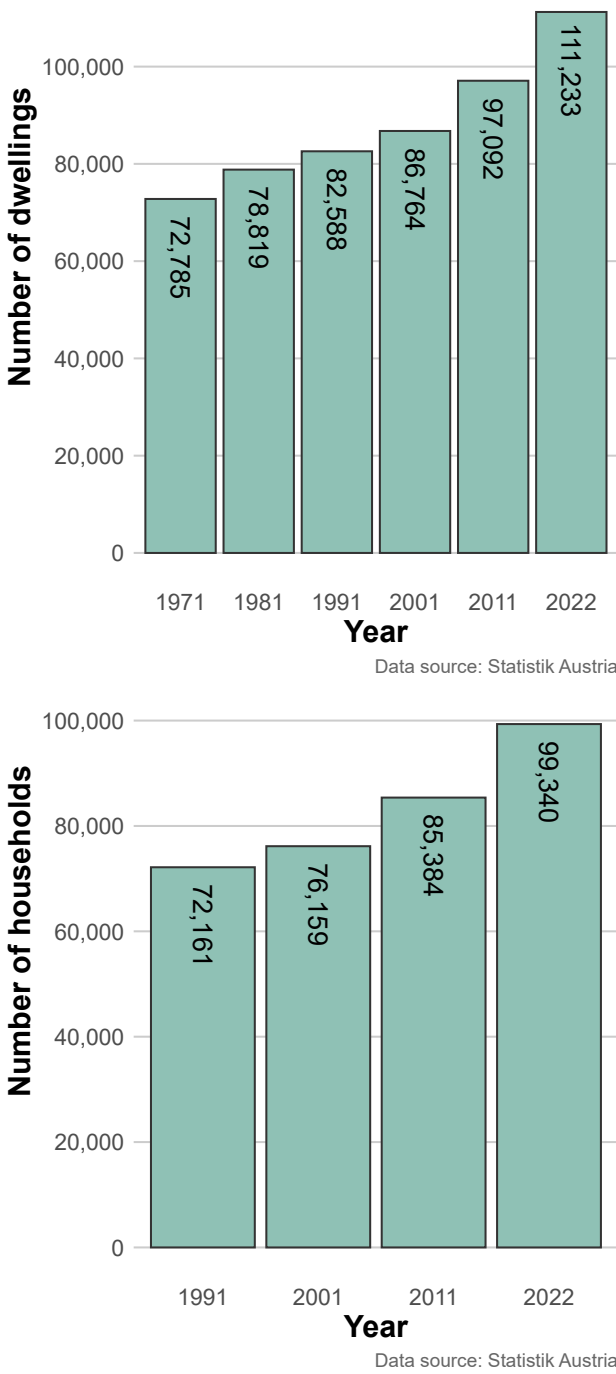
2. District level



6 <https://insideairbnb.com/vienna/>

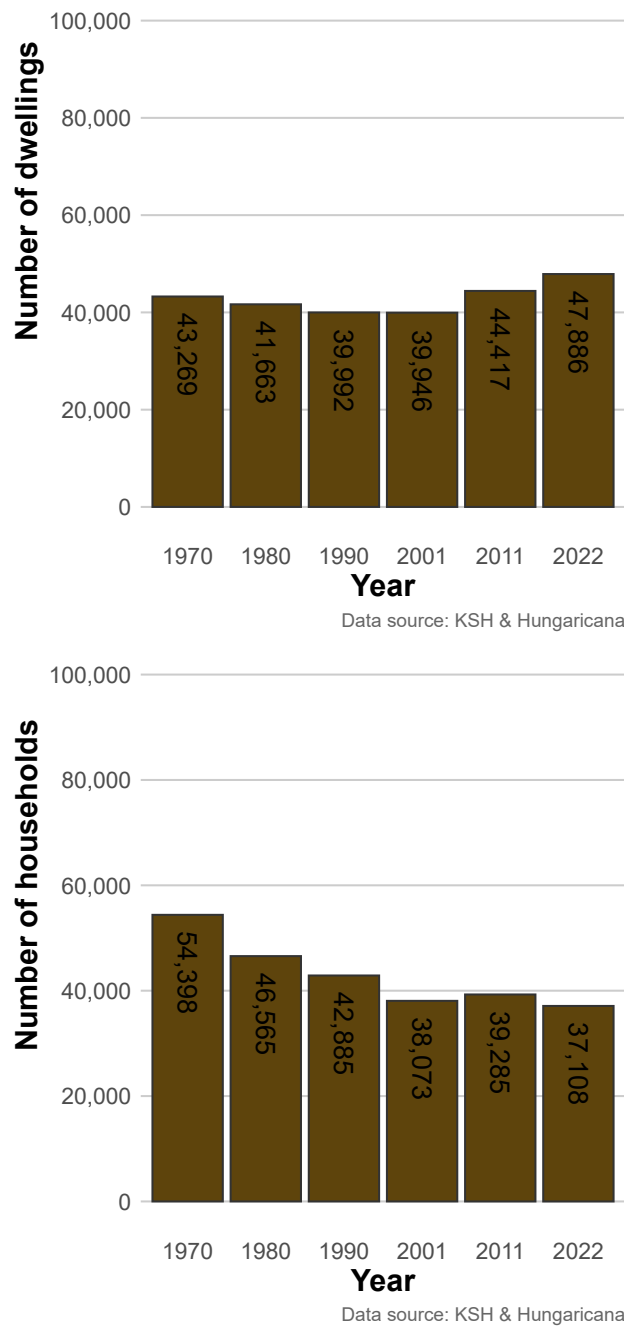
10. district, Favoriten

The total number of households in the 10. district of Vienna has grown since 1991 from 72,161 to 99,340 in 2022. The number of one-person households remained below 50% similarly to the previous decades. The number of dwellings has been constantly increasing in the past decades from 72,785 in 1971 to 111,233 in 2022. In this area, one can observe some new housing projects, as well as rooftop extensions with new dwellings. The percentage of rental units was reduced from 82% in 1971 to 62% in 2022. In the same period, the percentage of social municipal housing and subsidised housing has grown. Therefore, the proportion of privately used dwellings has been reduced from 56% in 1971 to 38% in 2022. 8,8% of short term rental listings in Vienna can be found in the 10. district in 2025.⁶

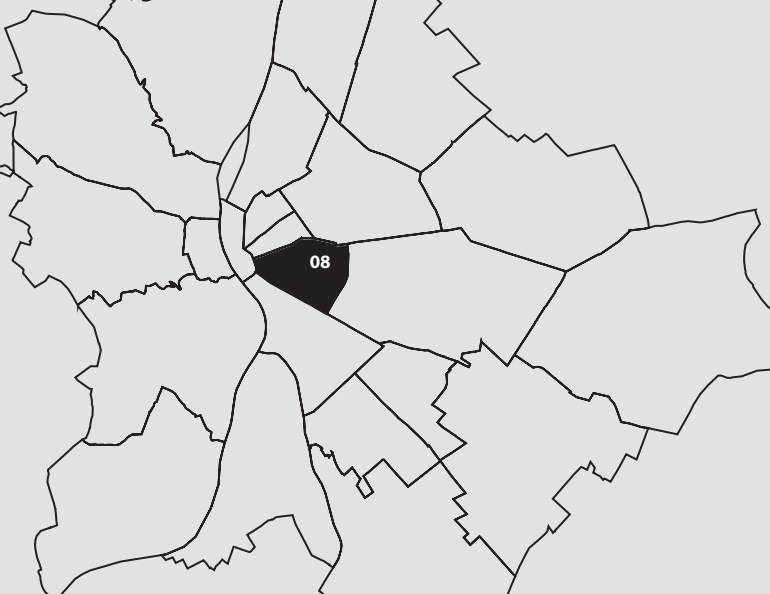


8. district, Józsefváros

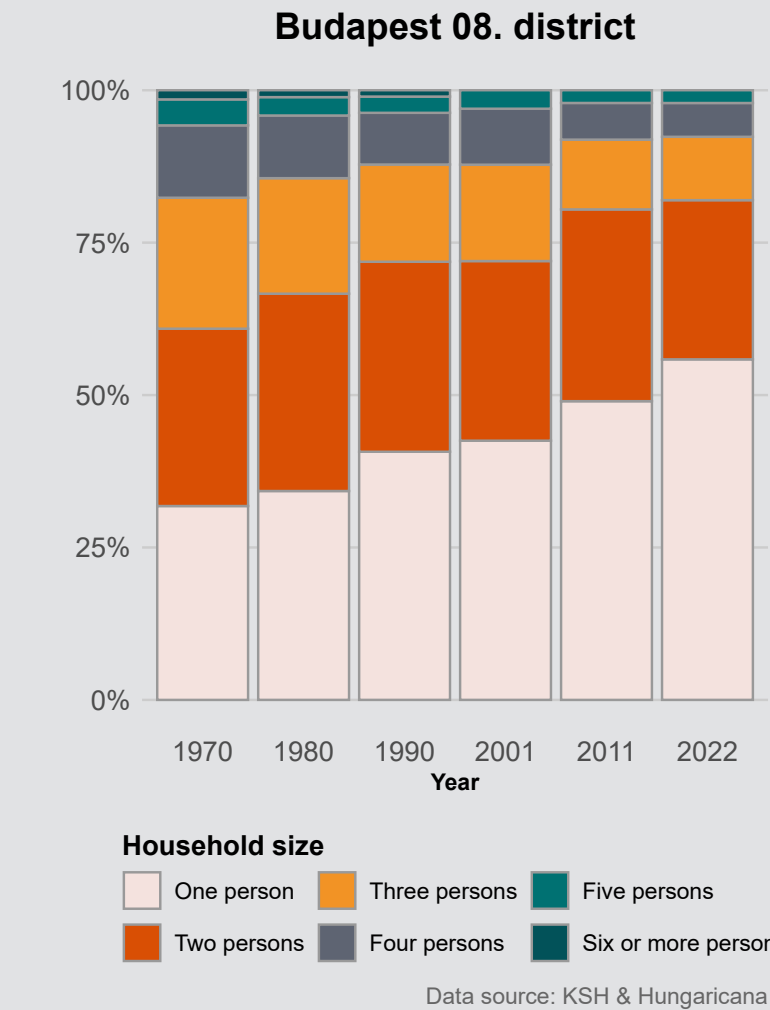
The number of households in the 8. district of Budapest has been reduced significantly since 1970 from 54,398 to 37,108 in 2022. The number of one-person households has grown in the same period to more than 50%. The number of dwellings in the 7. district has grown from 43,269 in 1970 to 47,886 in 2022. The difference between the significant change in the number of households and the minimal change in the number of dwellings can be explained by the large number of short term rentals in this district. For instance, 14,8% of short term rental listings in Budapest could be found in the 7. district in 2025.⁶The effect of the privatisation is clearly visible in the shift from rental dwellings to ownership between 1990 and 2001. Whereas in 1970, 92% of occupied dwellings were rental, in 2022 only 25% of the households lived in a rental unit.



Budapest



2. District level



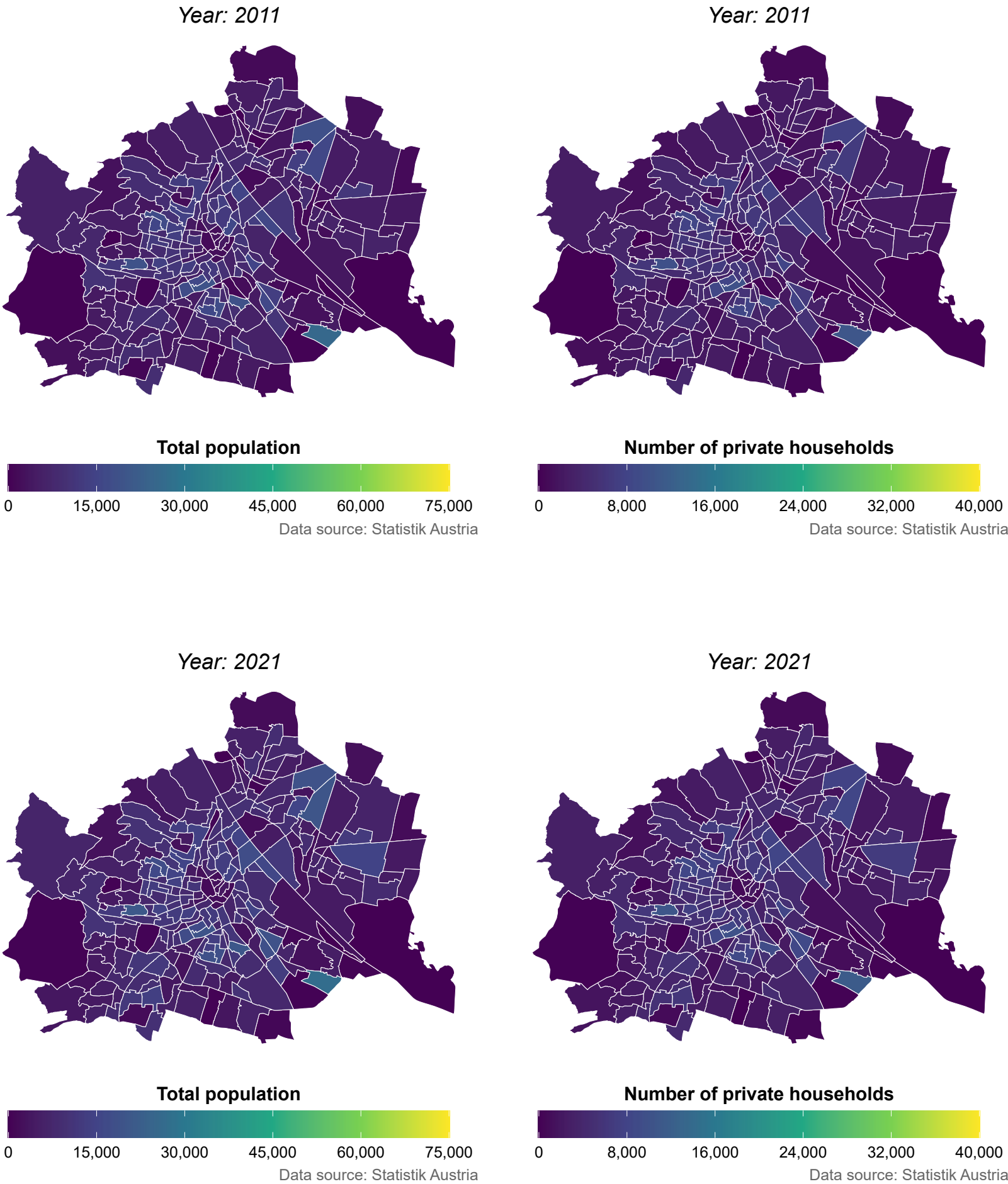
6 <https://insideairbnb.com/budapest/>



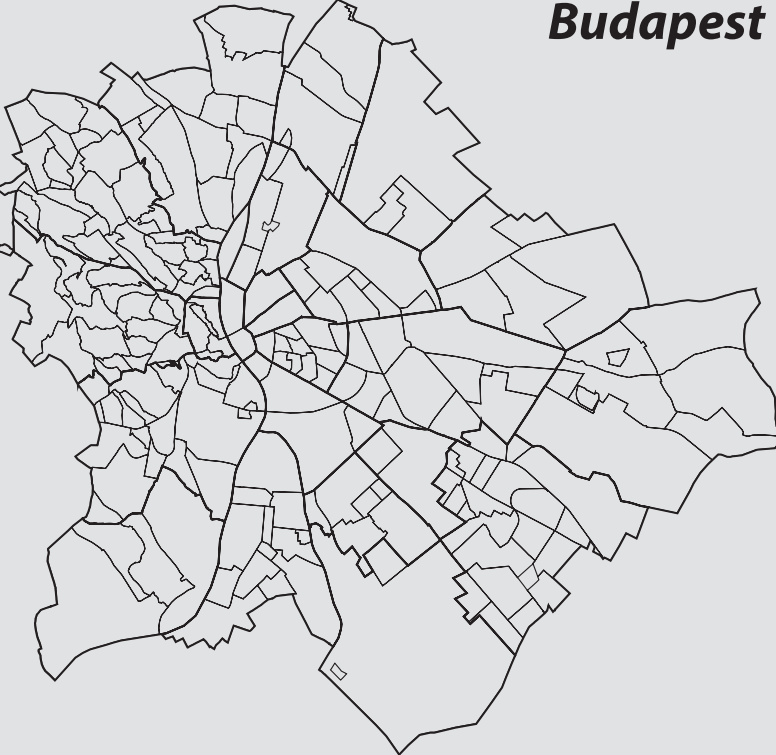
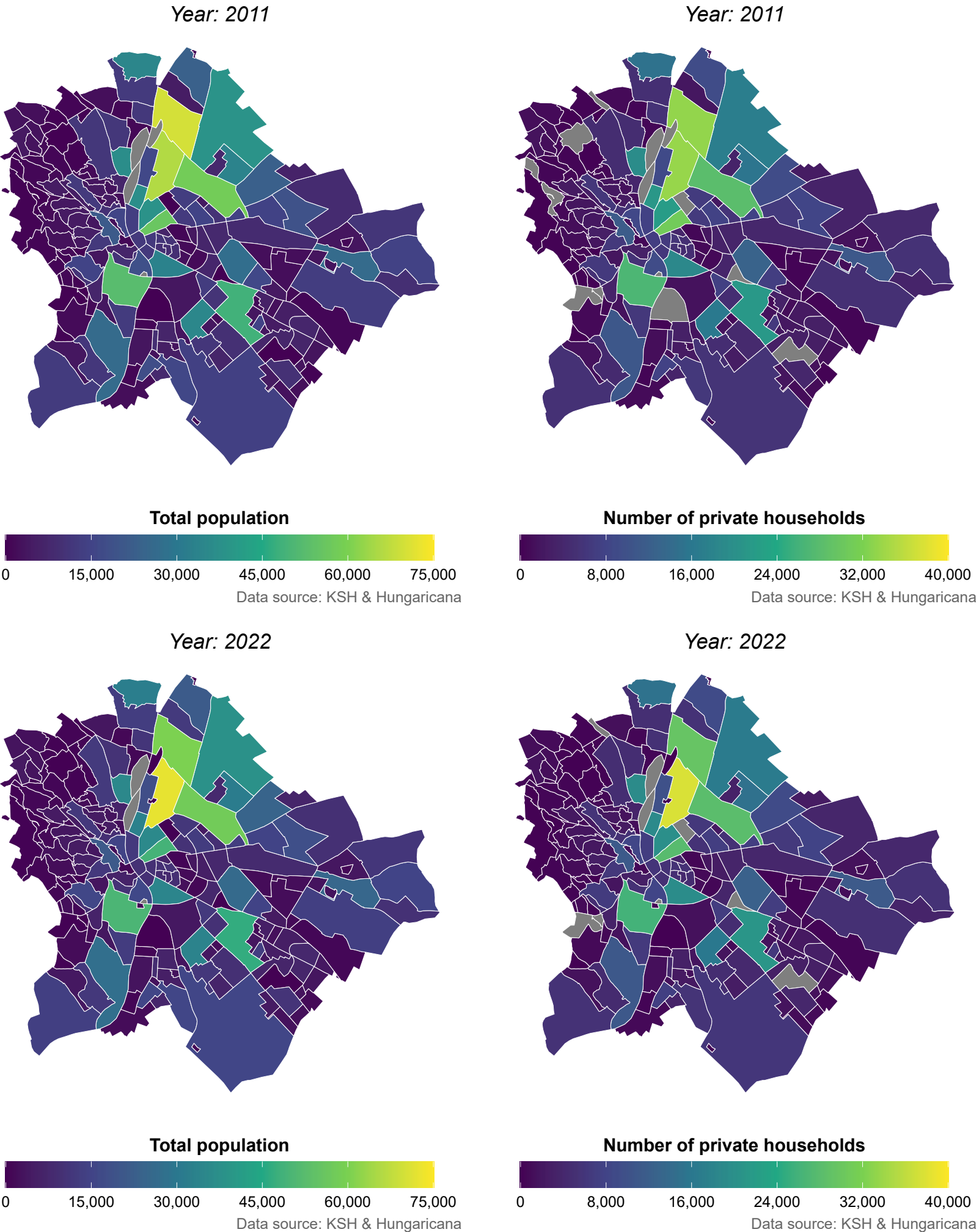
3. Quarter level

Number of population and private households in the quarters of Vienna between 2011 and 2022.

Socio-economic structure at the quarter level



Socio-economic structure at the quarter level



3. Quarter level

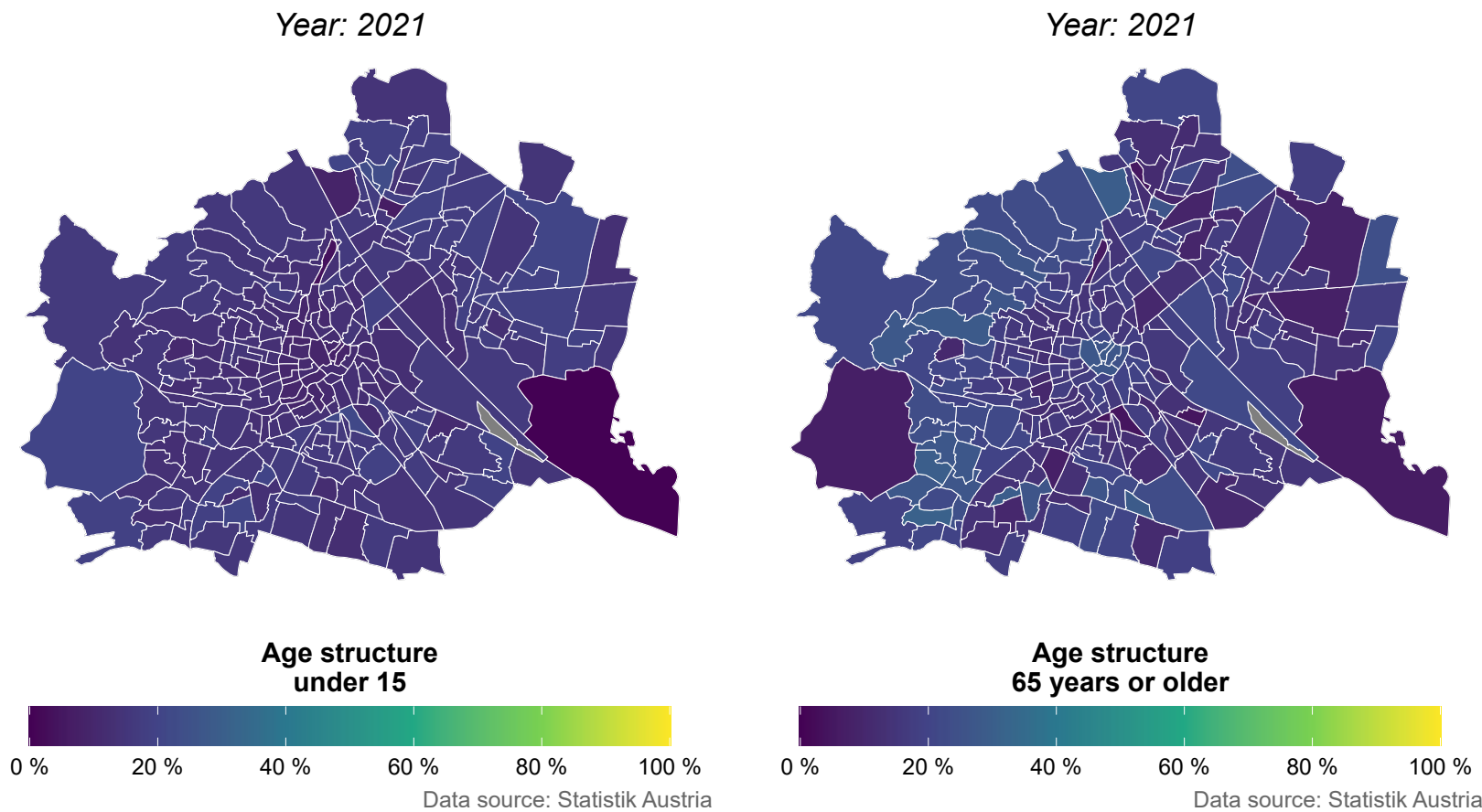
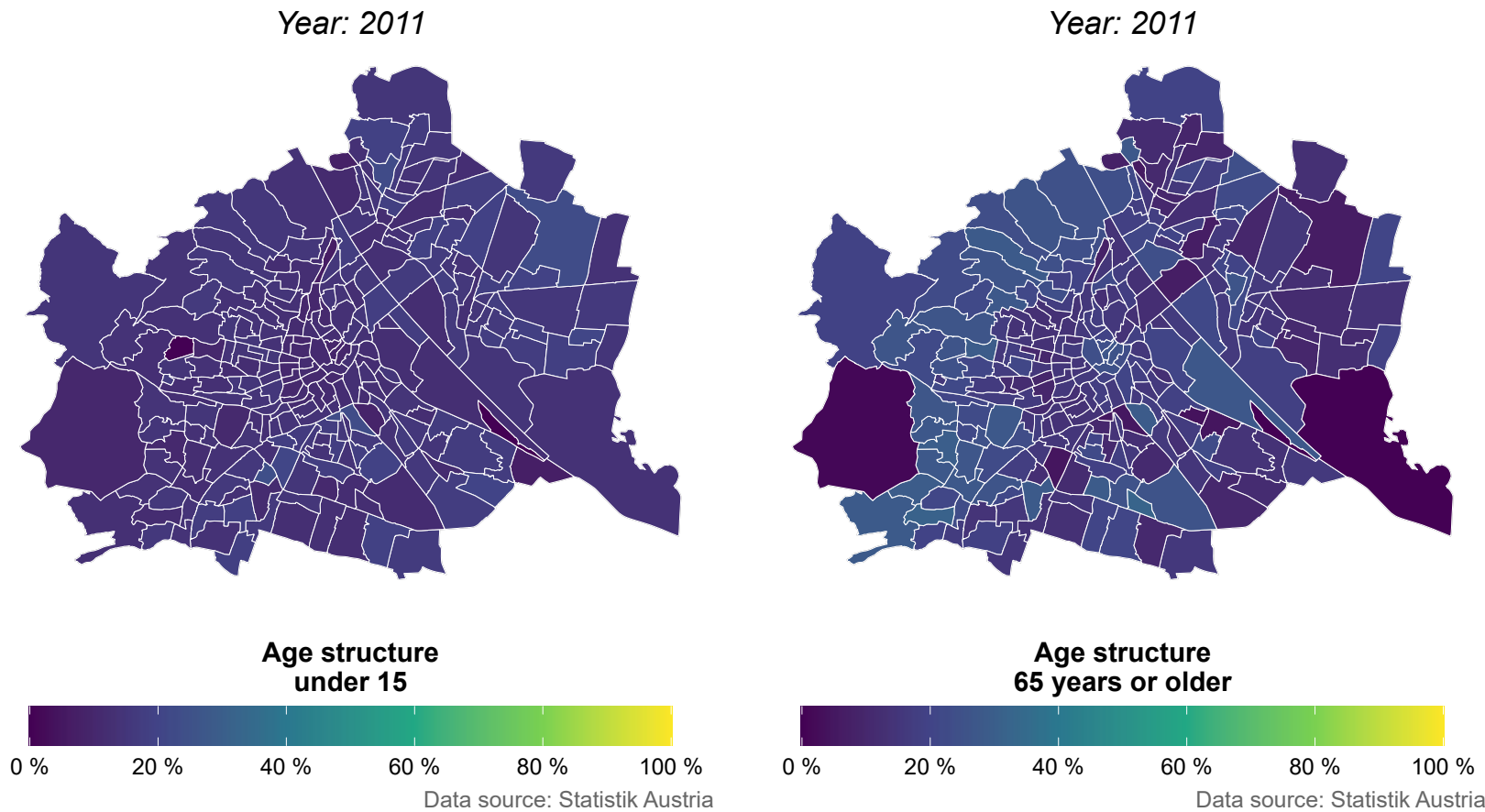
Number of population and private households in the quarters of Budapest between 2011 and 2022.



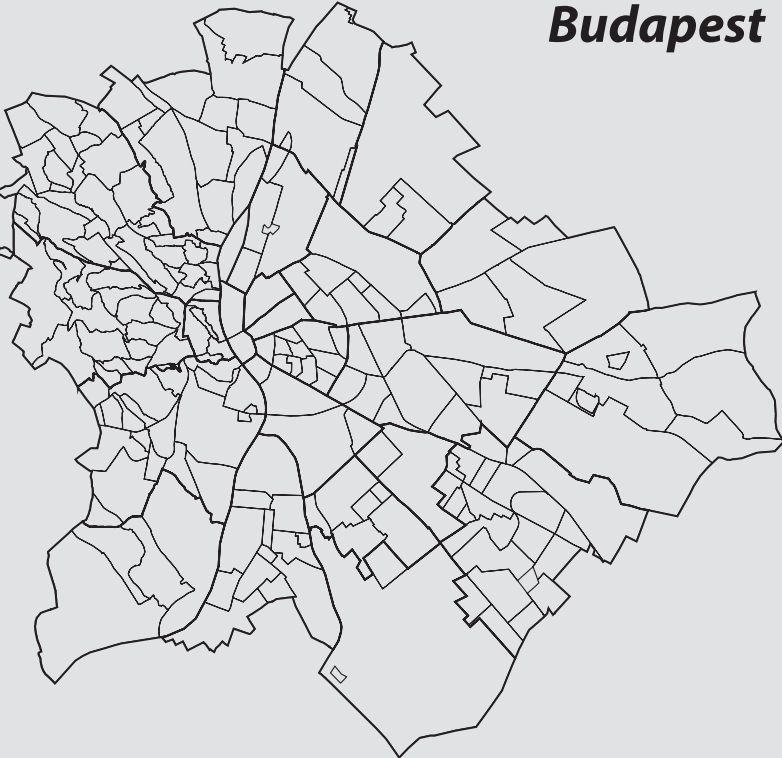
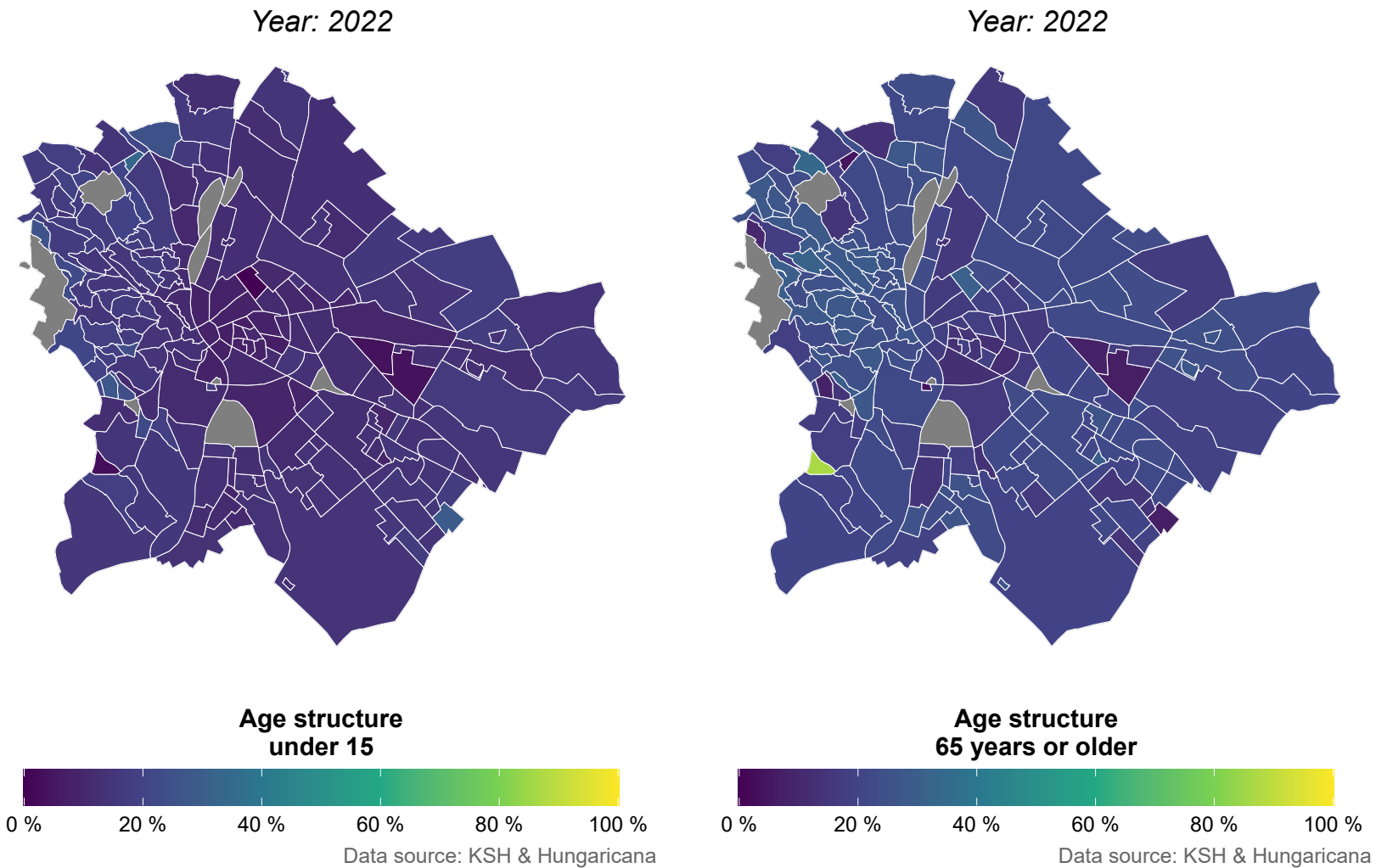
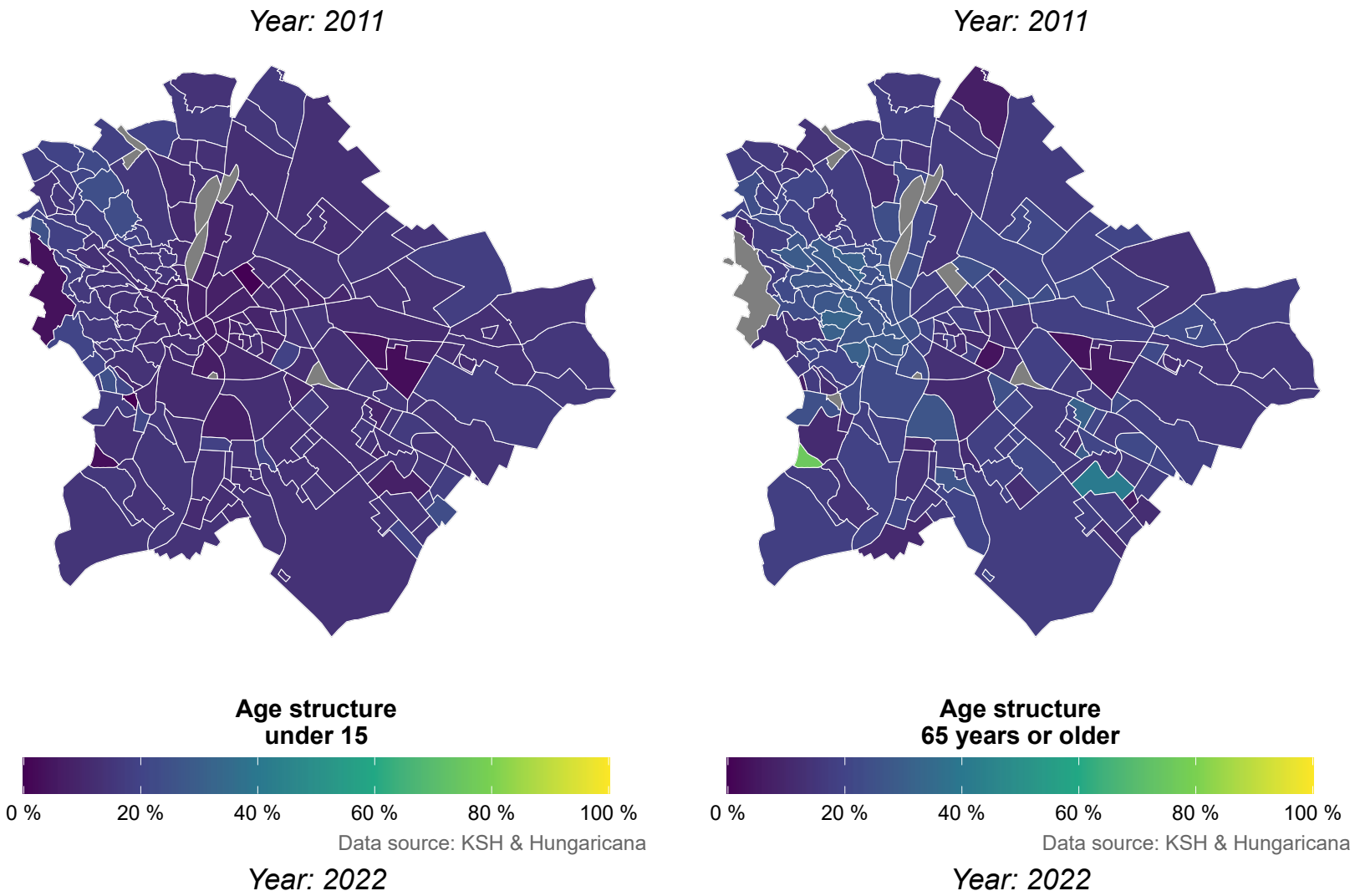
3. Quarter level

Percentage of the population under 15 years and 65 years or older in the quarters of Vienna between 2011 and 2022.

Socio-economic structure at the quarter level



Socio-economic structure at the quarter level



3. Quarter level

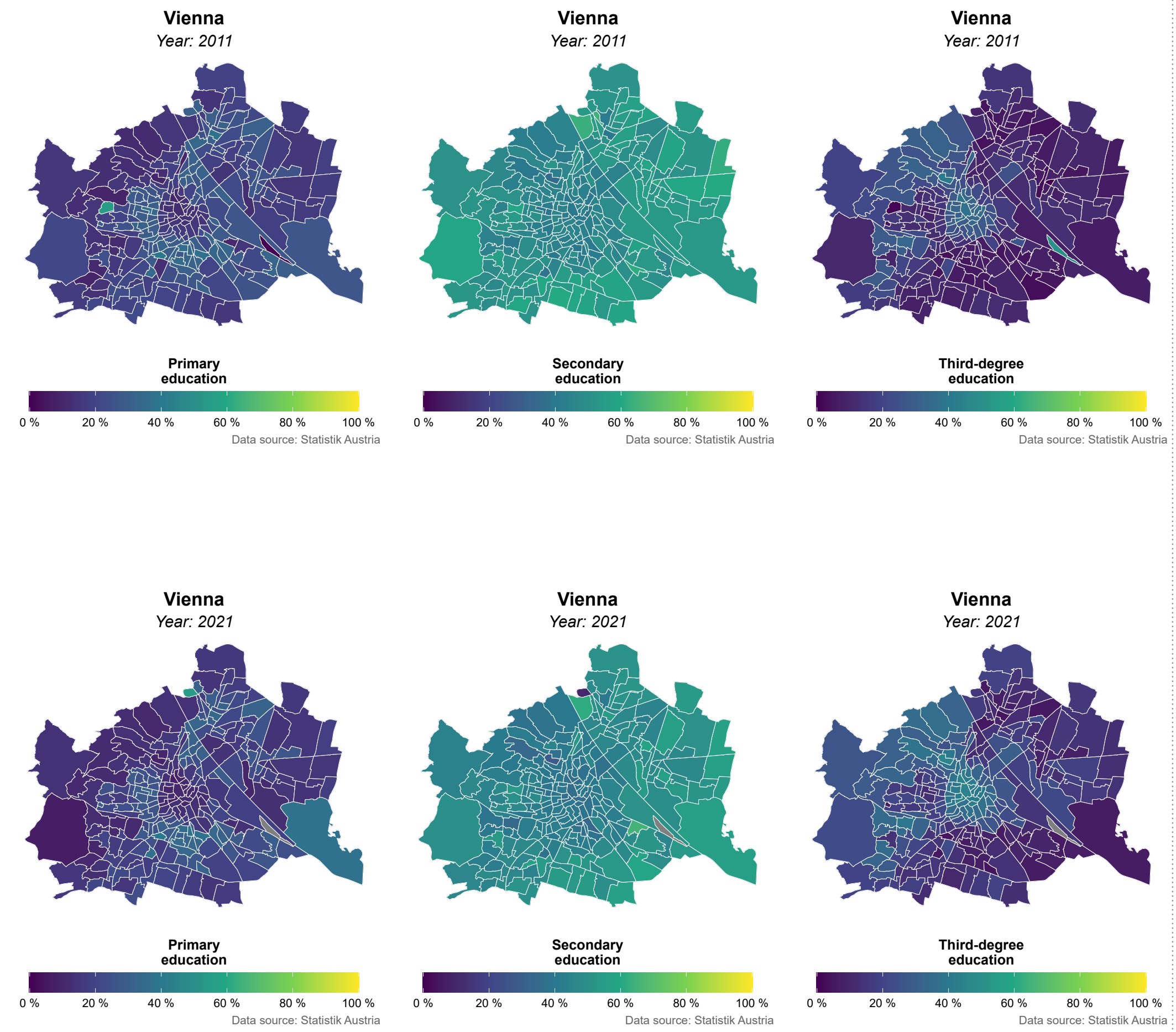
Percentage of the population under 15 years and 65 years or older in the quarters of Budapest between 2011 and 2022.



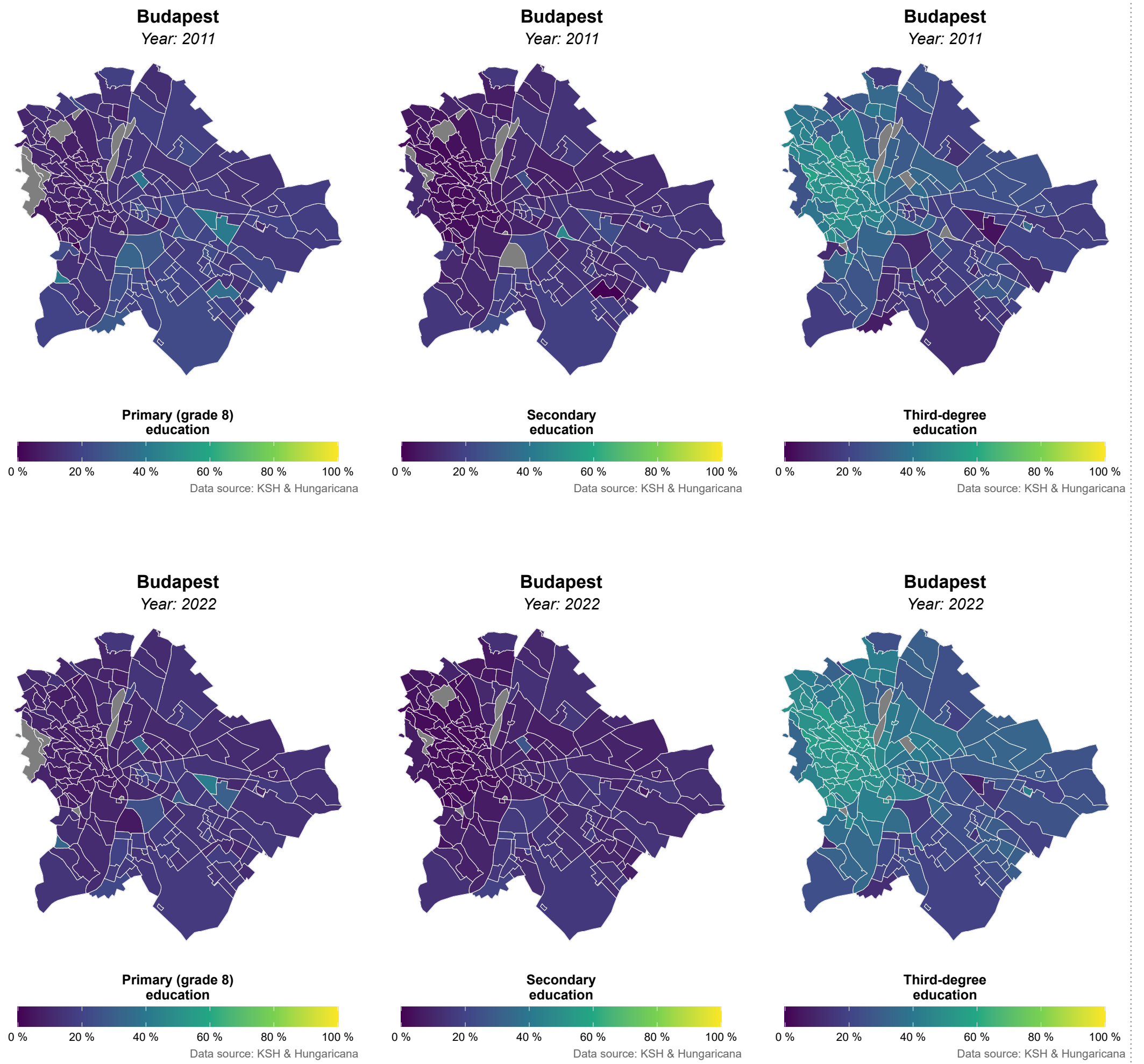
3. Quarter level

Percentage of the population who completed primary, secondary and third-level education in the quarters of Vienna between 2011 and 2022.

Socio-economic structure at the quarter level



Socio-economic structure at the quarter level



3. Quarter level

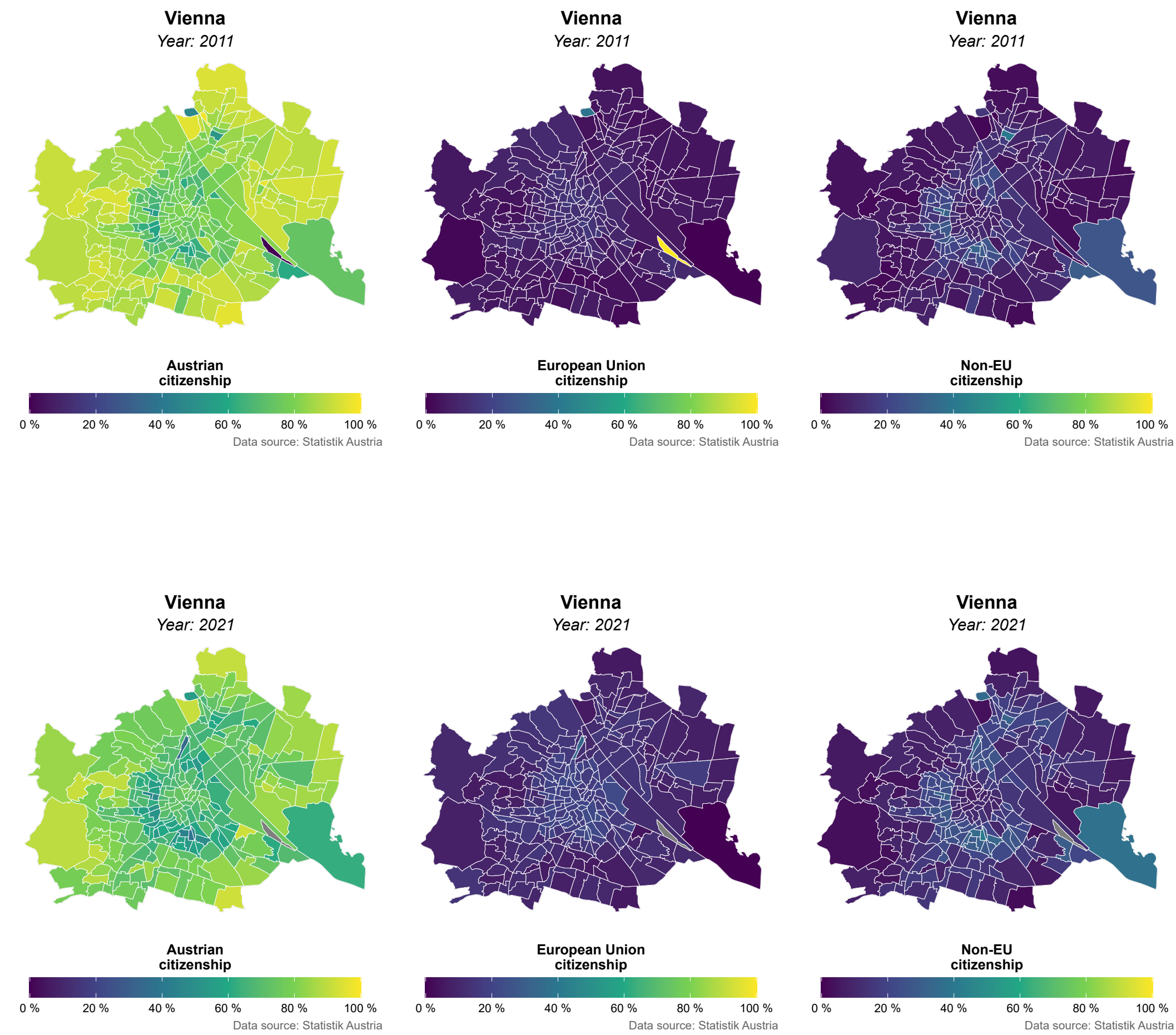
Percentage of the population who compleetd primary, secondary and third-level education in the quarters of Budapest between 2011 and 2022.



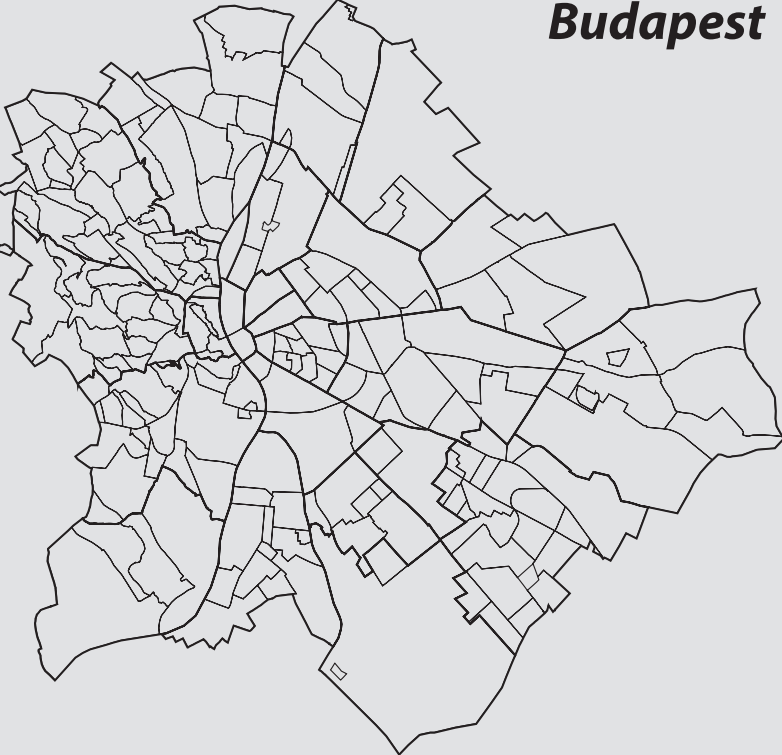
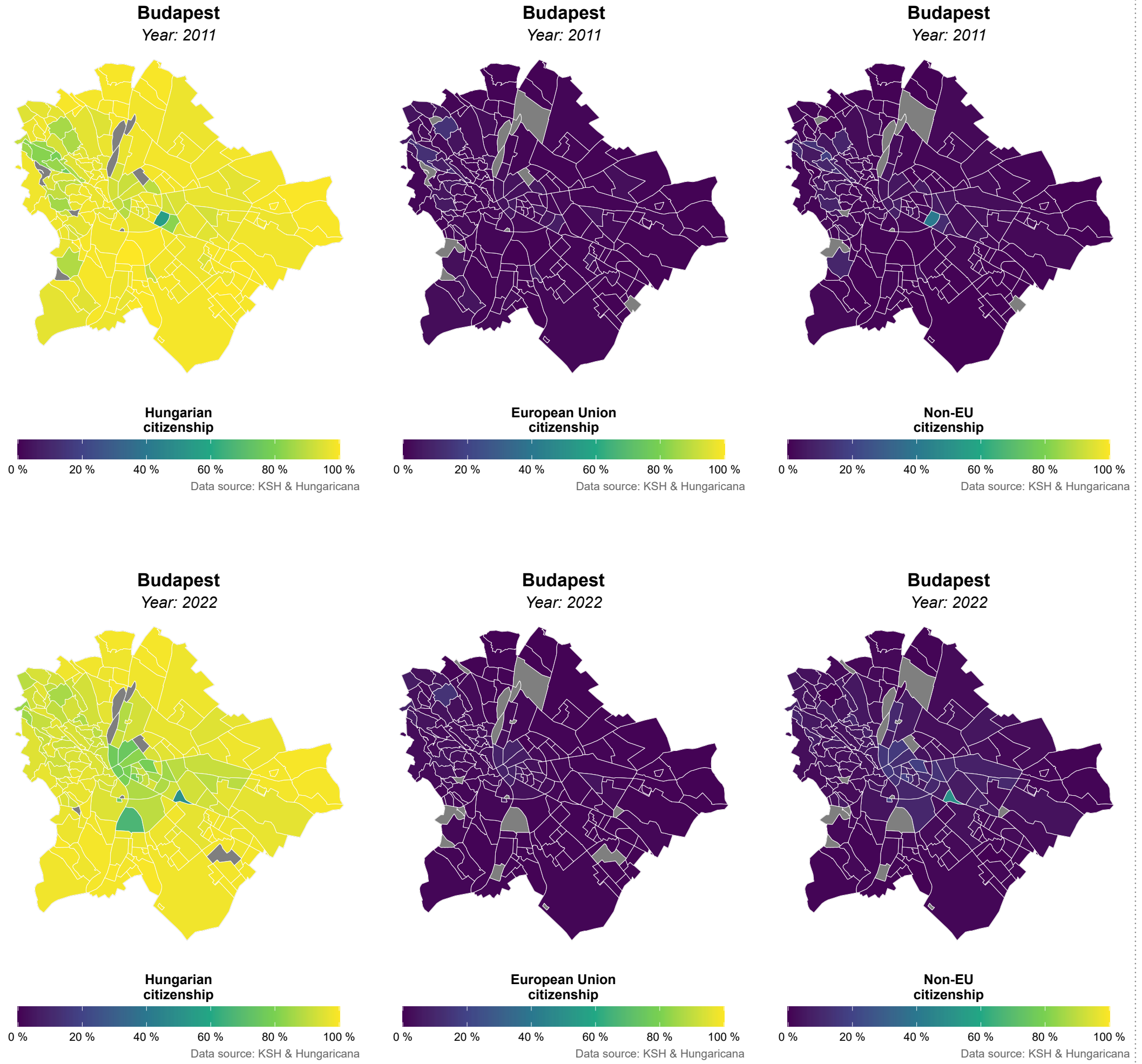
3. Quarter level

Percentage of the population with Austrian, EU and non-EU citizenship in the quarters of Vienna between 2011 and 2022.

Socio-economic structure at the quarter level



Socio-economic structure at the quarter level



3. Quarter level

Percentage of the population with Austrian, EU and non-EU citizenship in the quarters of Budapest between 2011 and 2022.

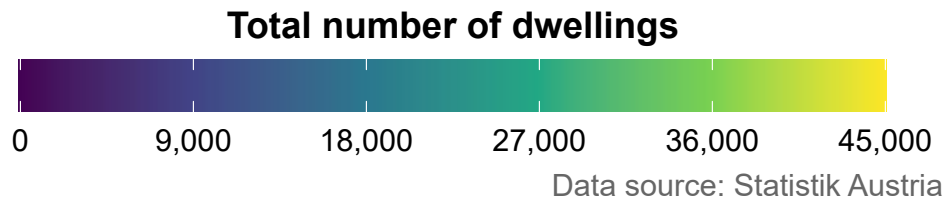
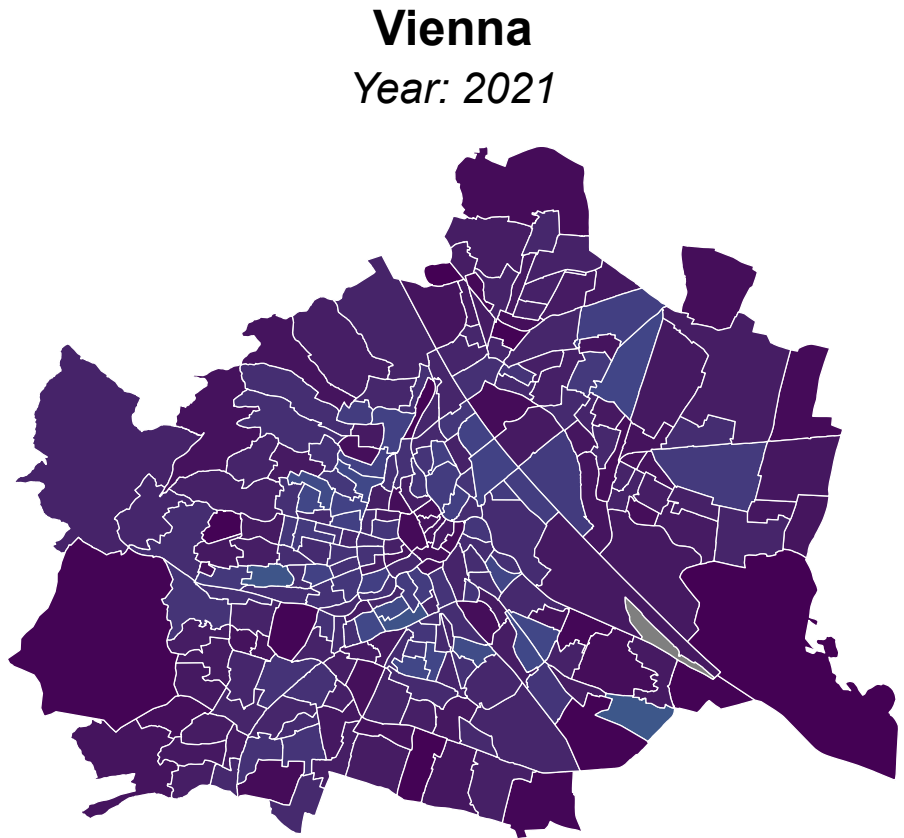
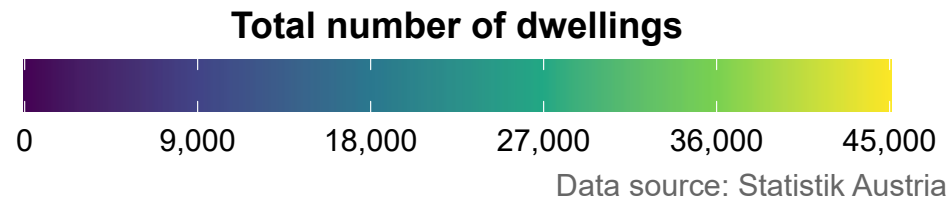
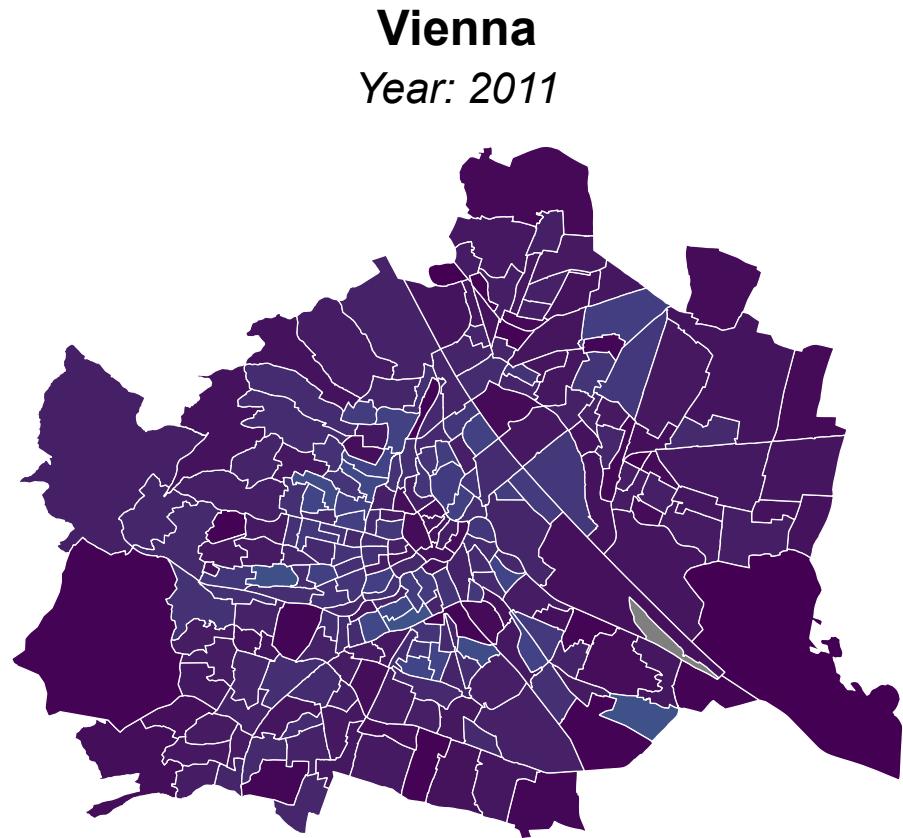
Vienna



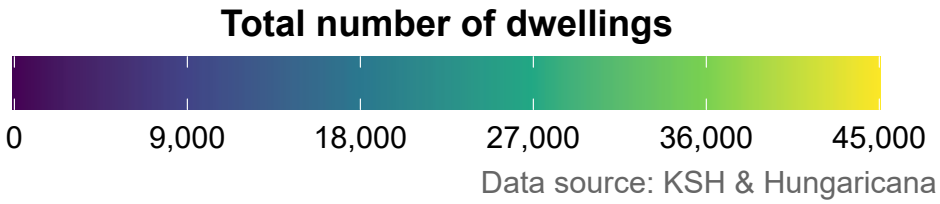
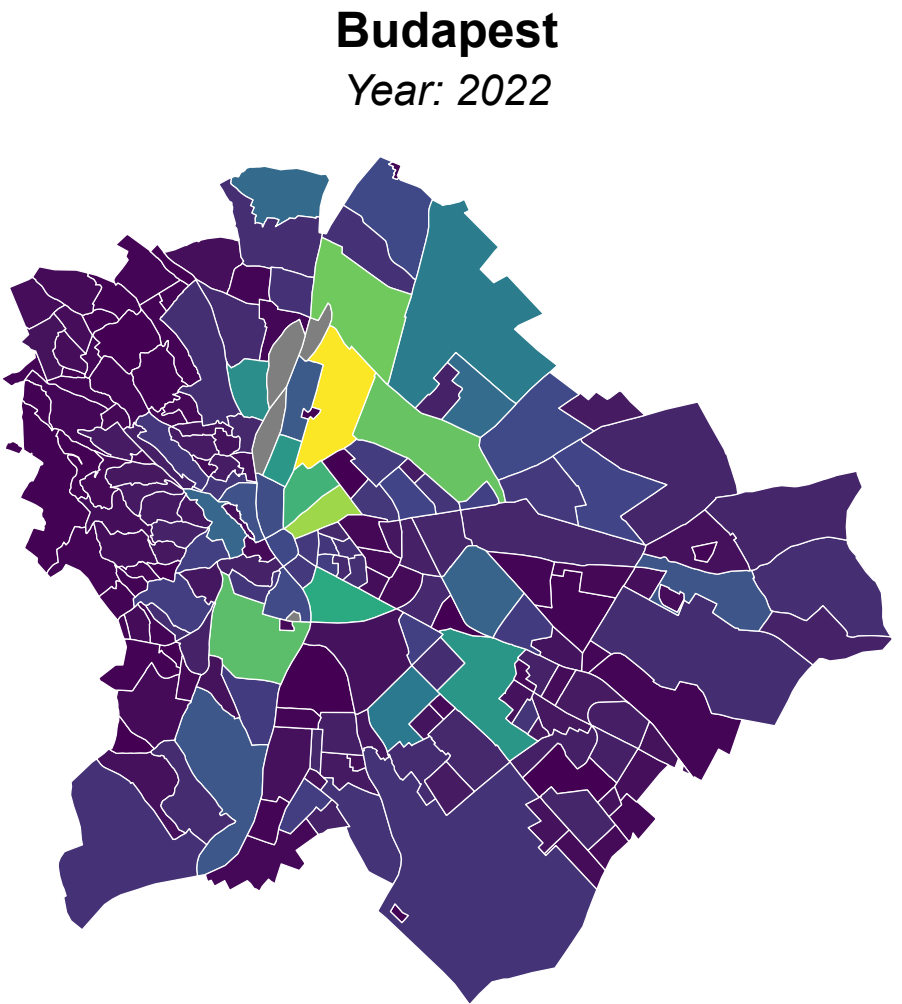
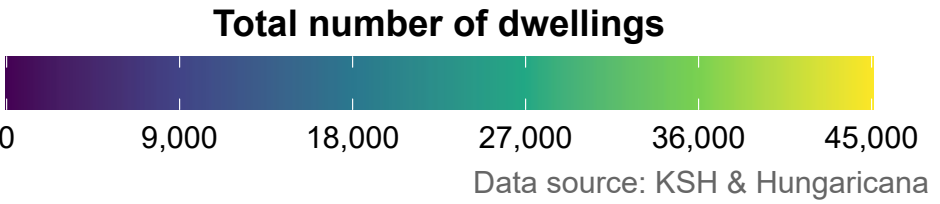
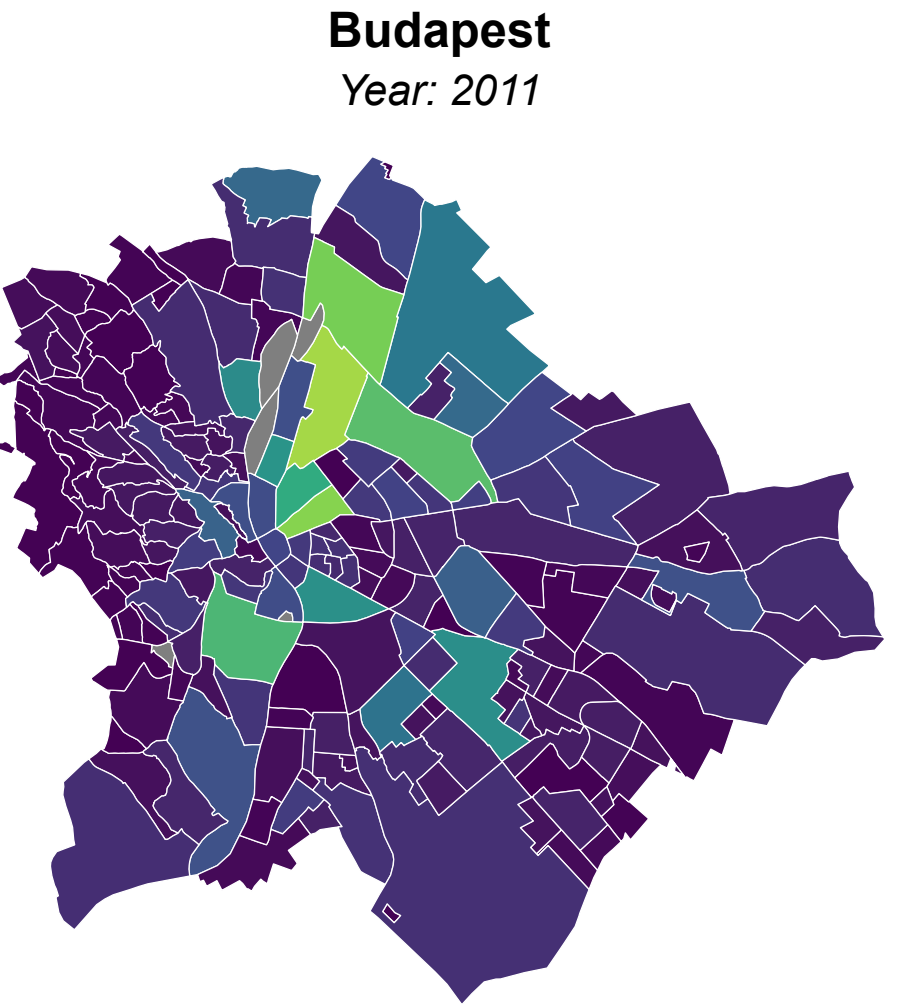
3. Quarter level

Total number of dwellings at the quarters of Vienna between 2011 and 2022.

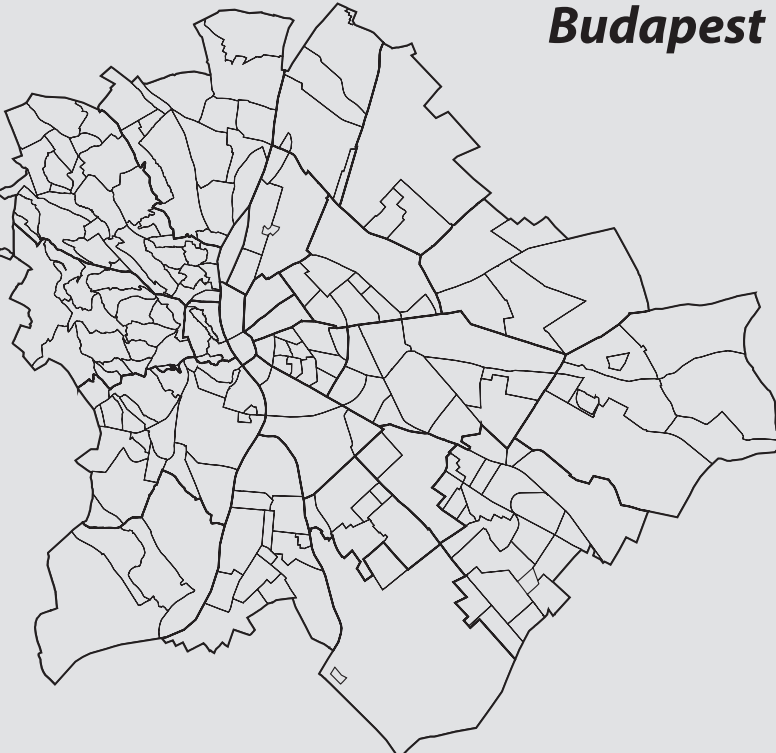
Dwelling structure at the quarter level



Dwelling structure at the quarter level



Budapest



3. Quarter level

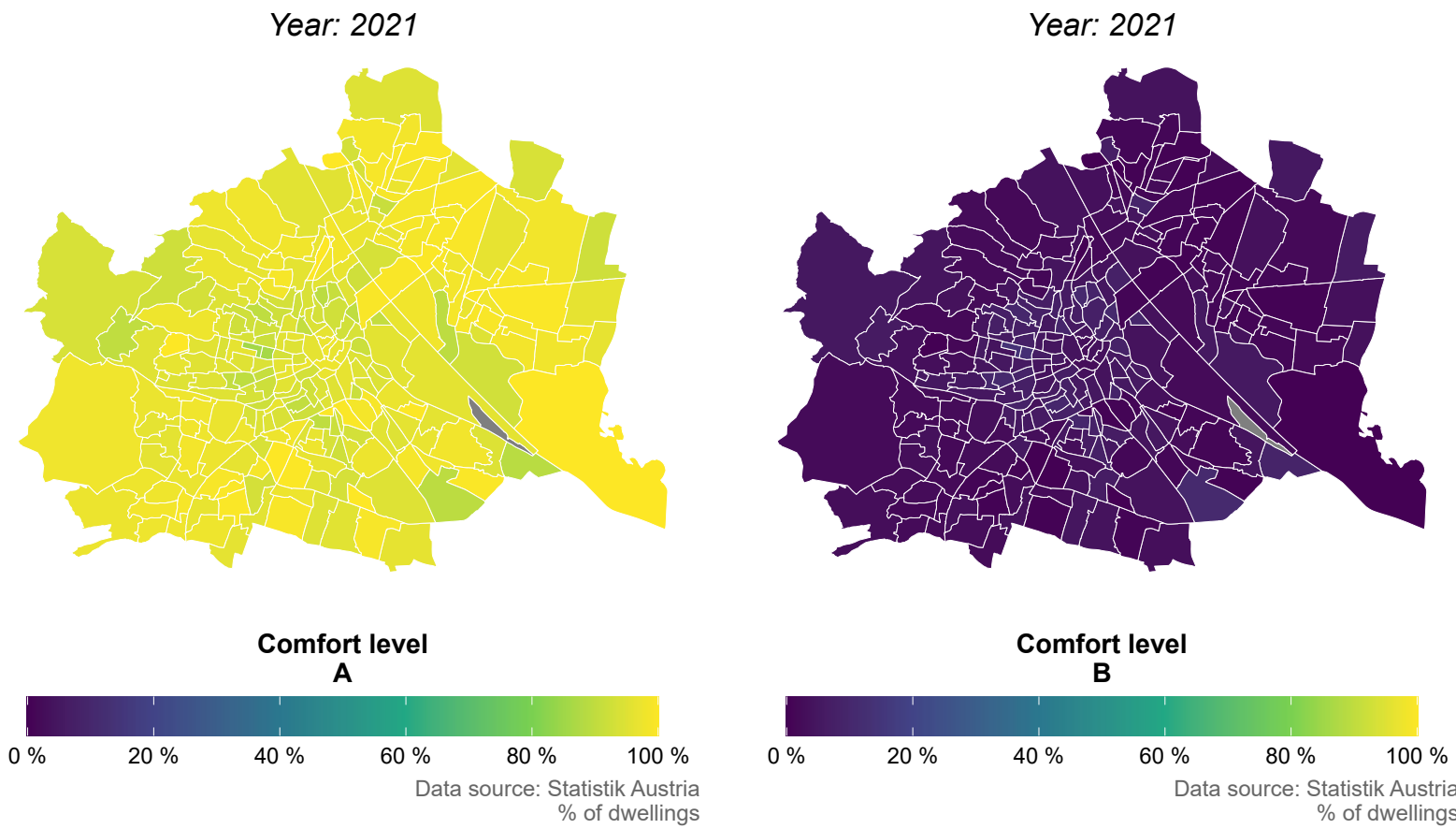
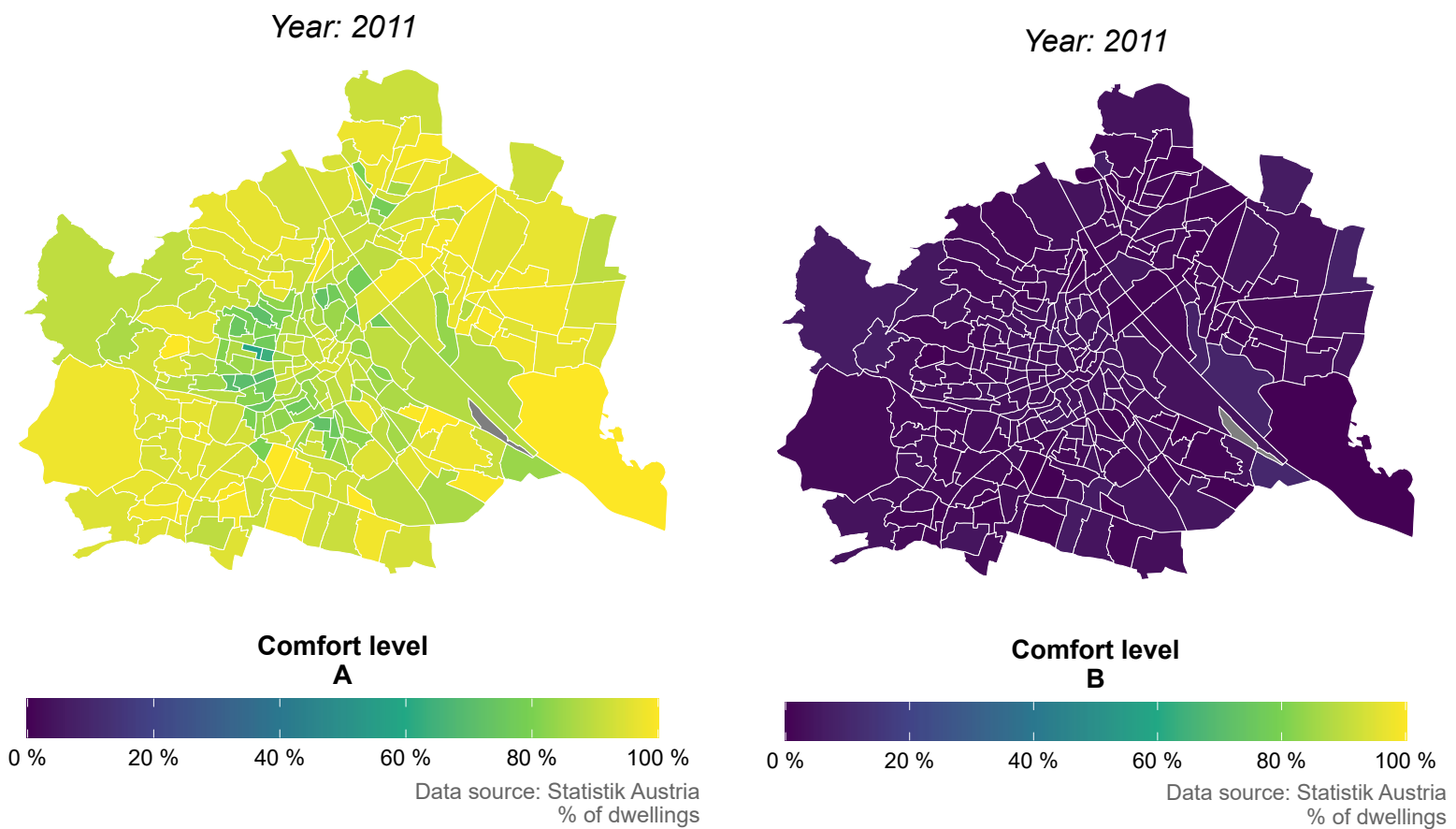
Total number of dwellings at the quarters of Budapest between 2011 and 2022.



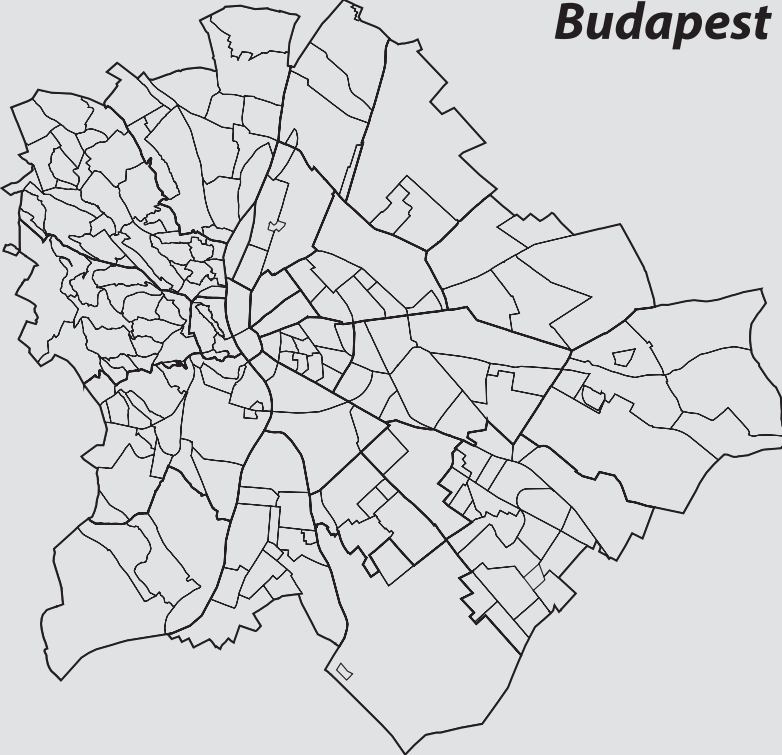
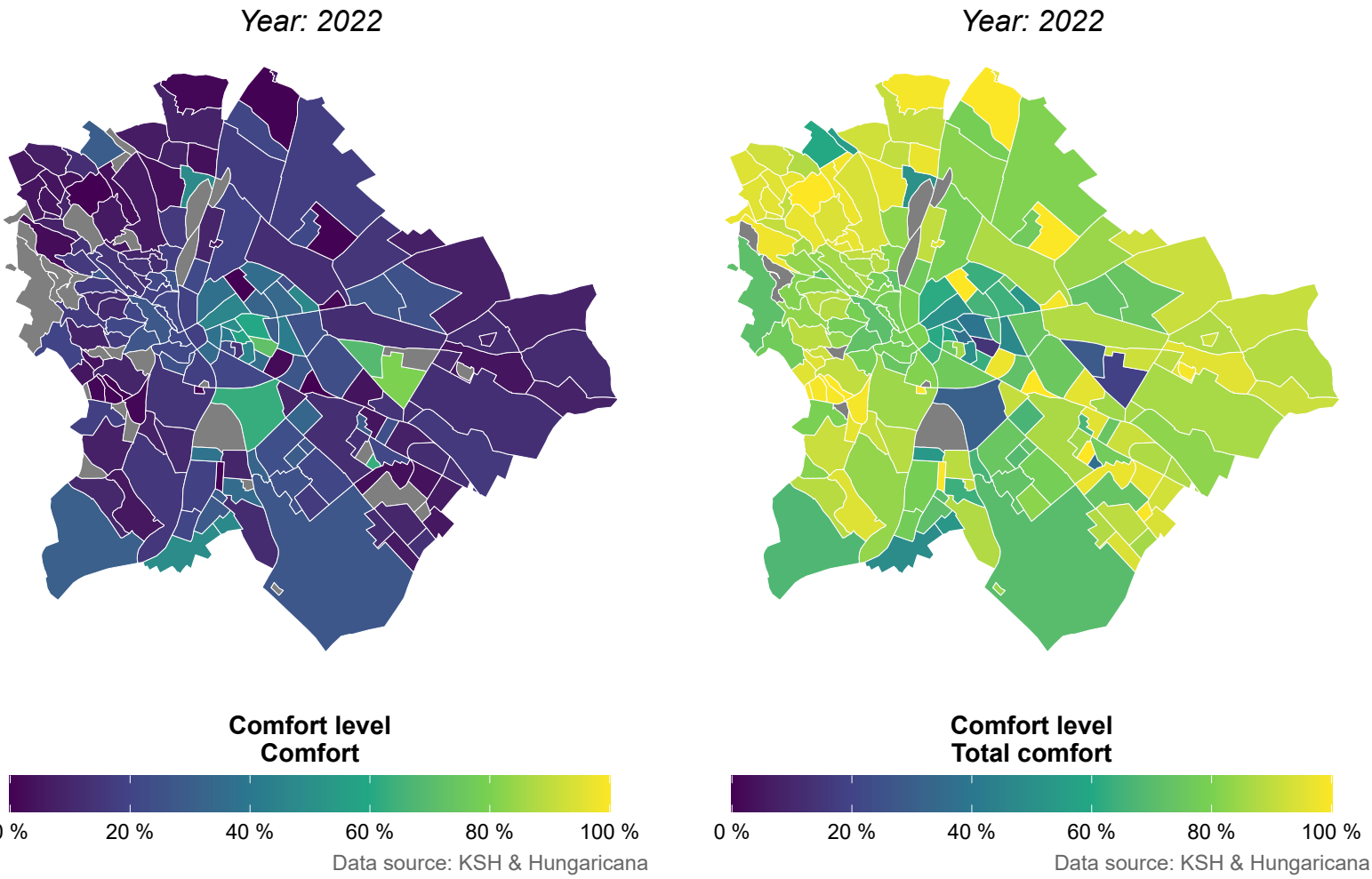
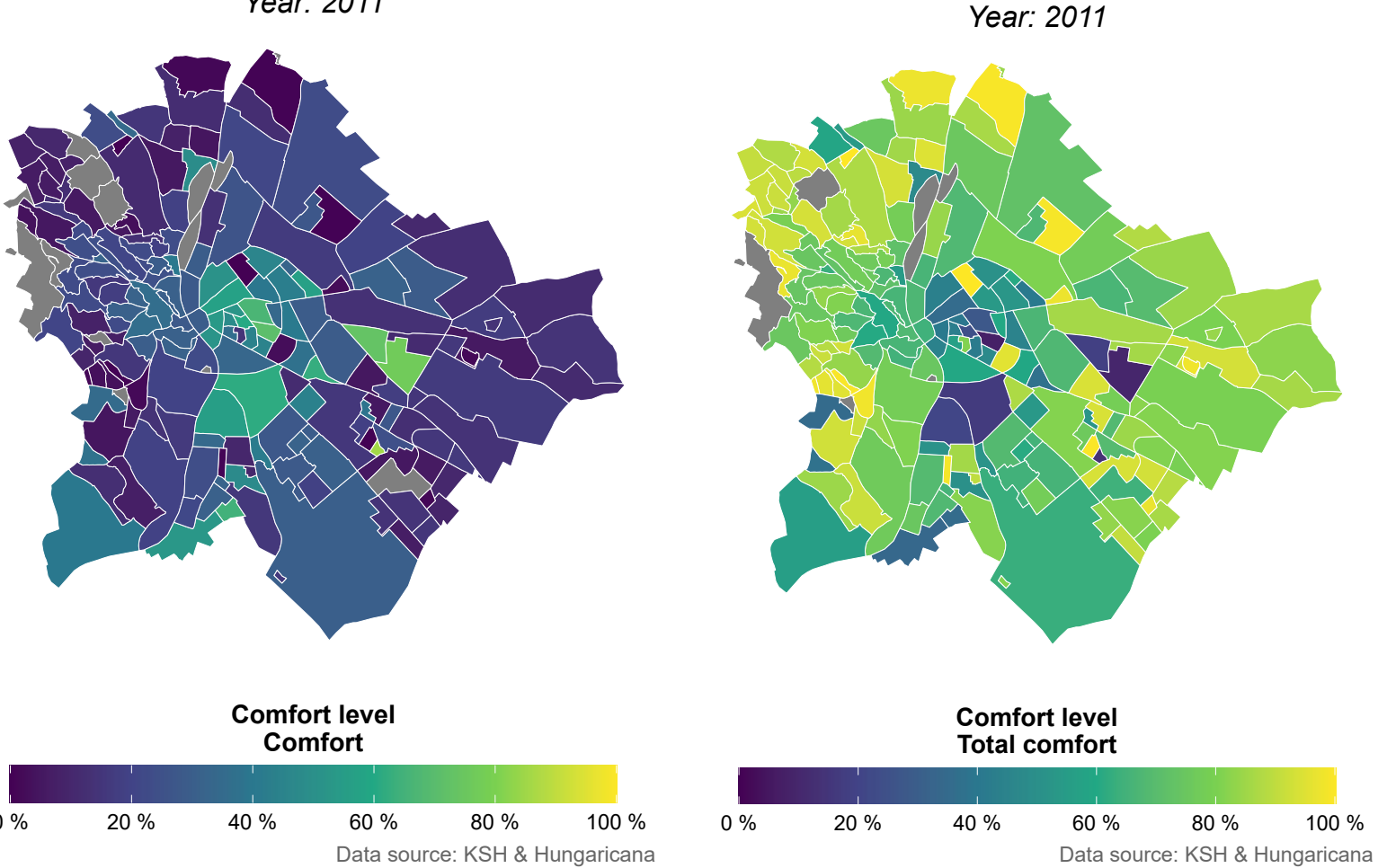
3. Quarter level

Percentage of A and B category dwellings in the quarters of Vienna between 2011 and 2022.

Dwelling comfort at the quarter level



Dwelling comfort at the quarter level



3. Quarter level

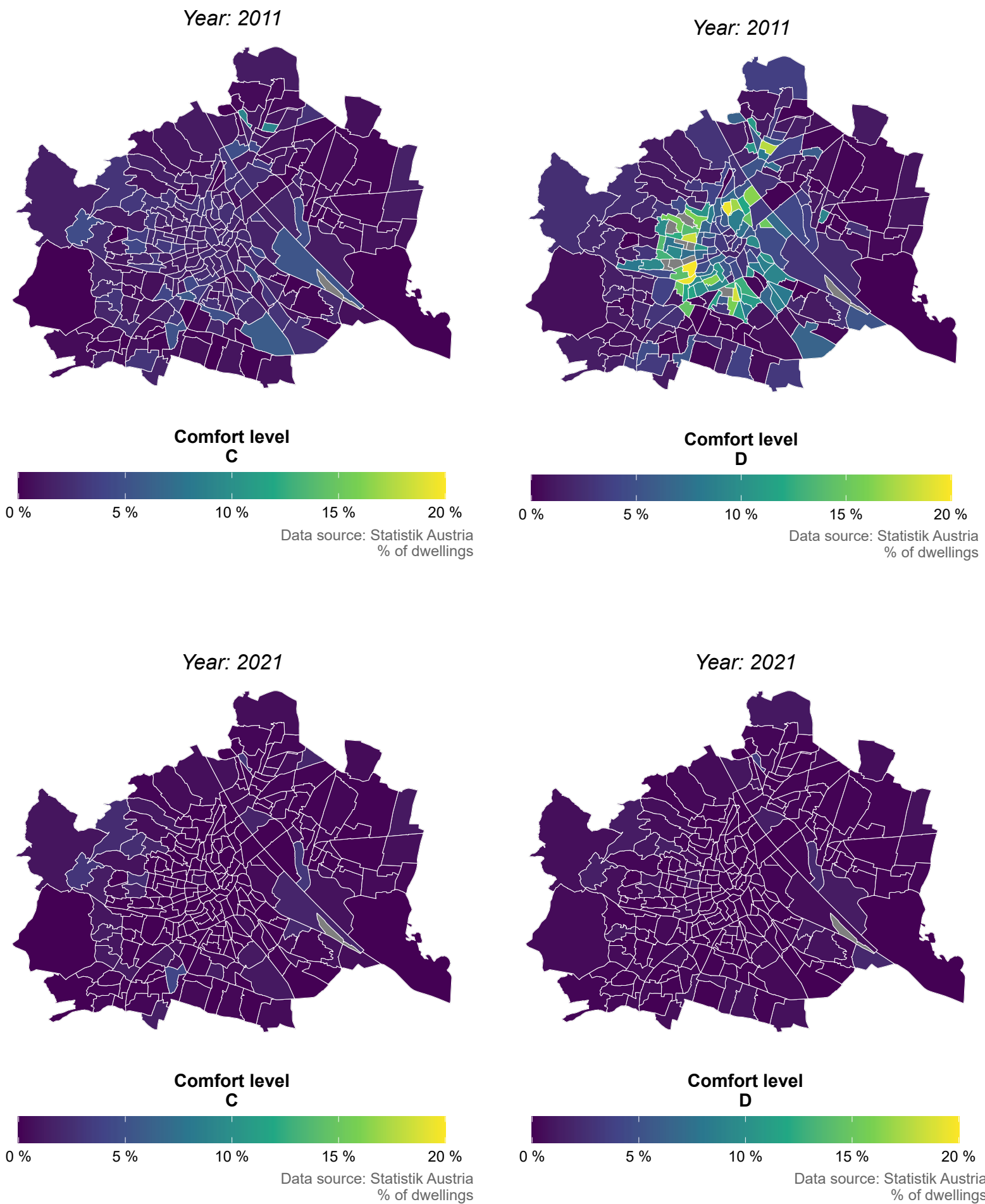
Percentage of dwellings with total comfort and comfort dwellings in the quarters of Budapest between 2011 and 2022.



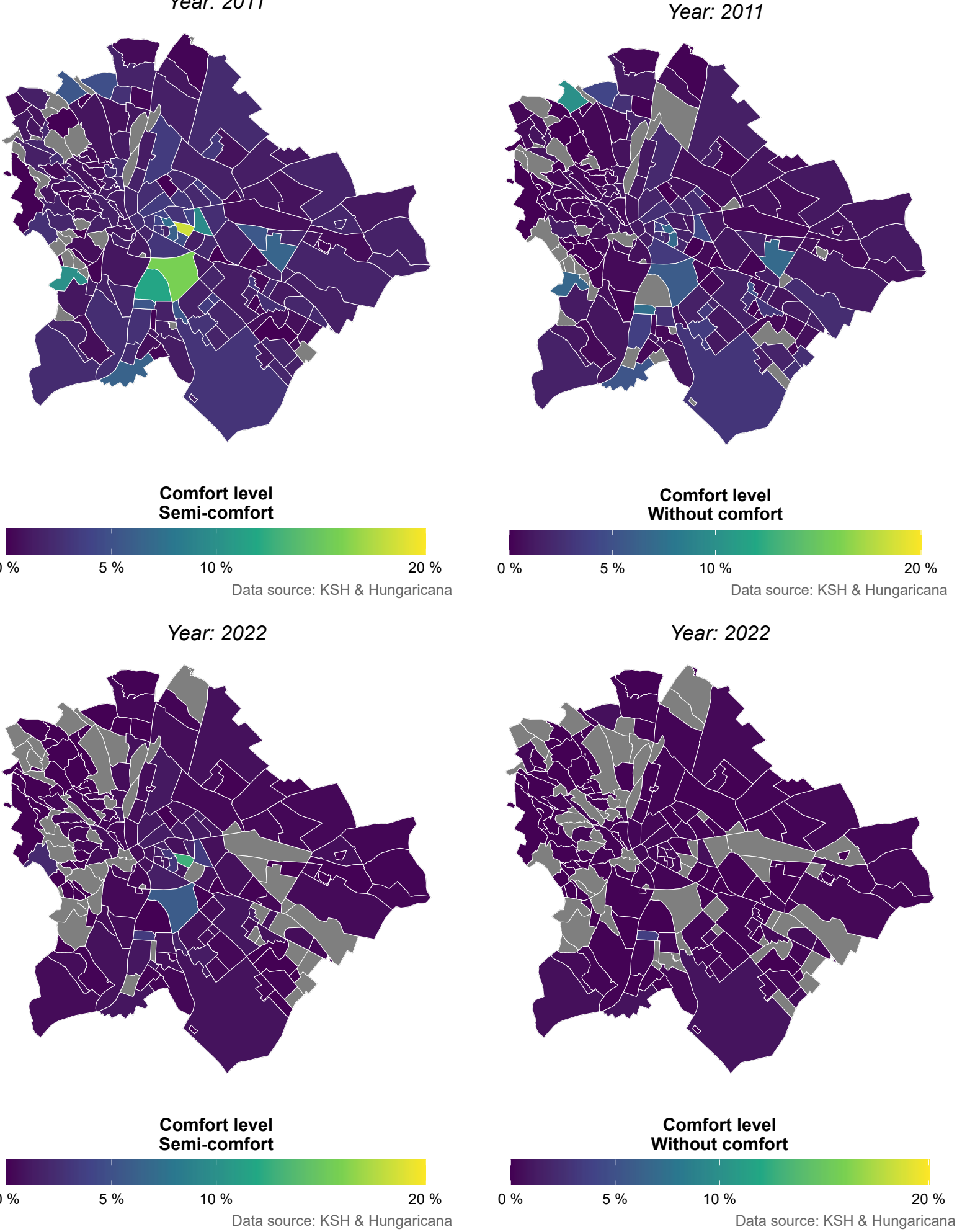
3. Quarter level

Percentage of C and D category dwellings in the quarters of Vienna between 2011 and 2022.

Dwelling comfort at the quarter level



Dwelling comfort at the quarter level



3. Quarter level

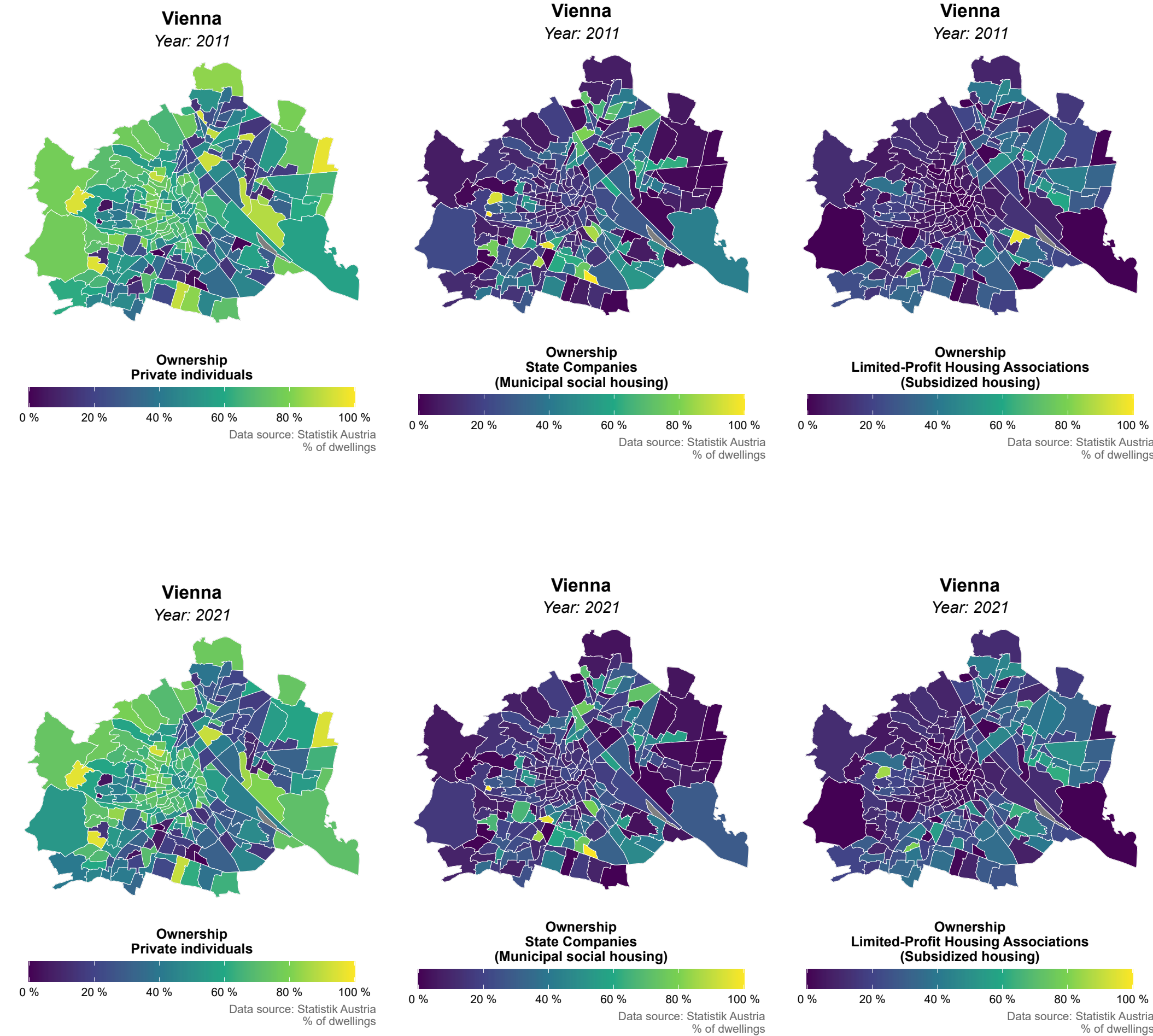
Percentage of dwellings with semi-comfort and without comfort in the quarters of Budapest between 2011 and 2022.



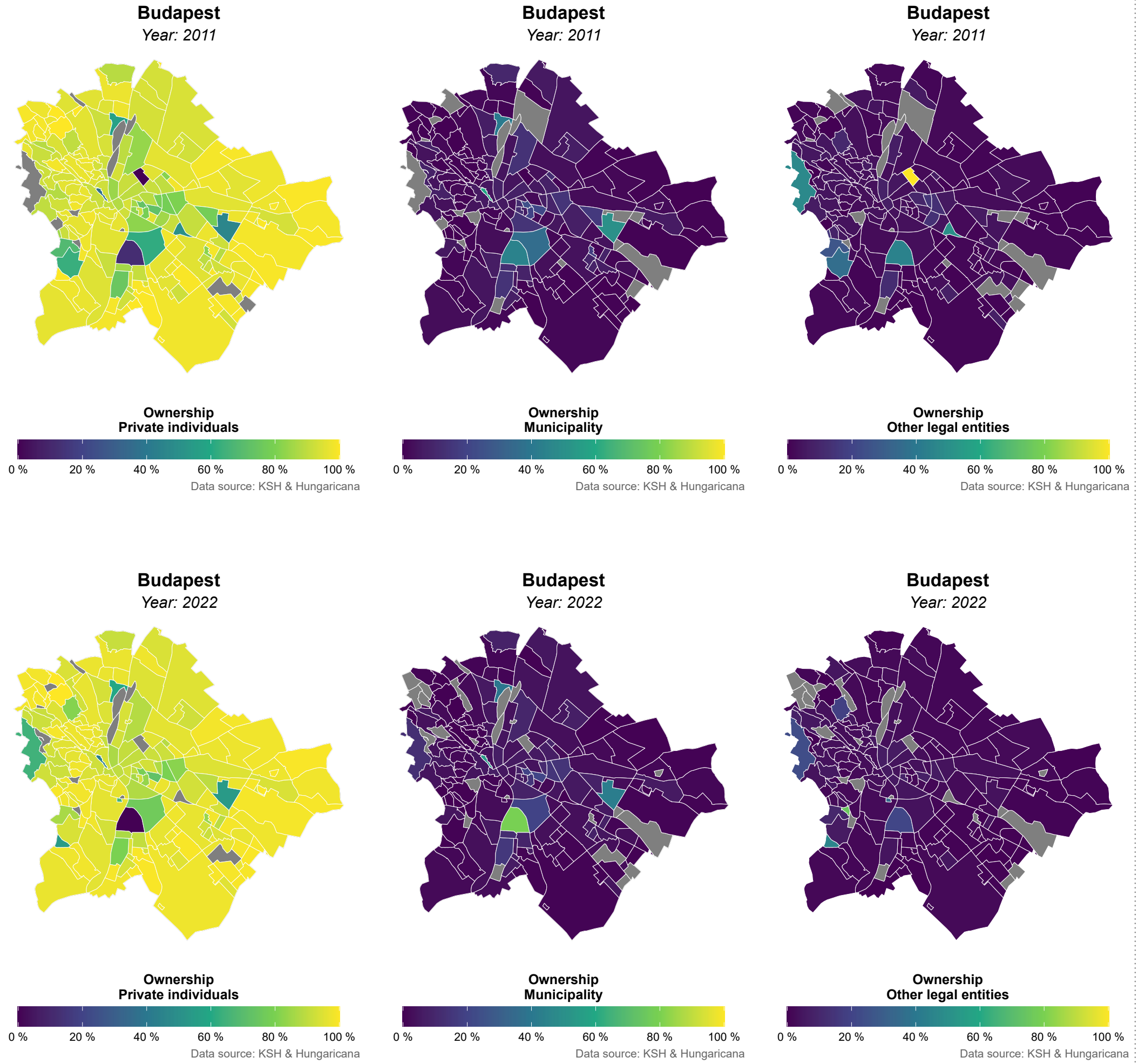
3. Quarter level

Percentage of dwellings owned by private owners, state companies and other legal entities in the quarters of Vienna between 2011 and 2022.

Dwelling structure at the quarter level



Dwelling structure at the quarter level



3. Quarter level

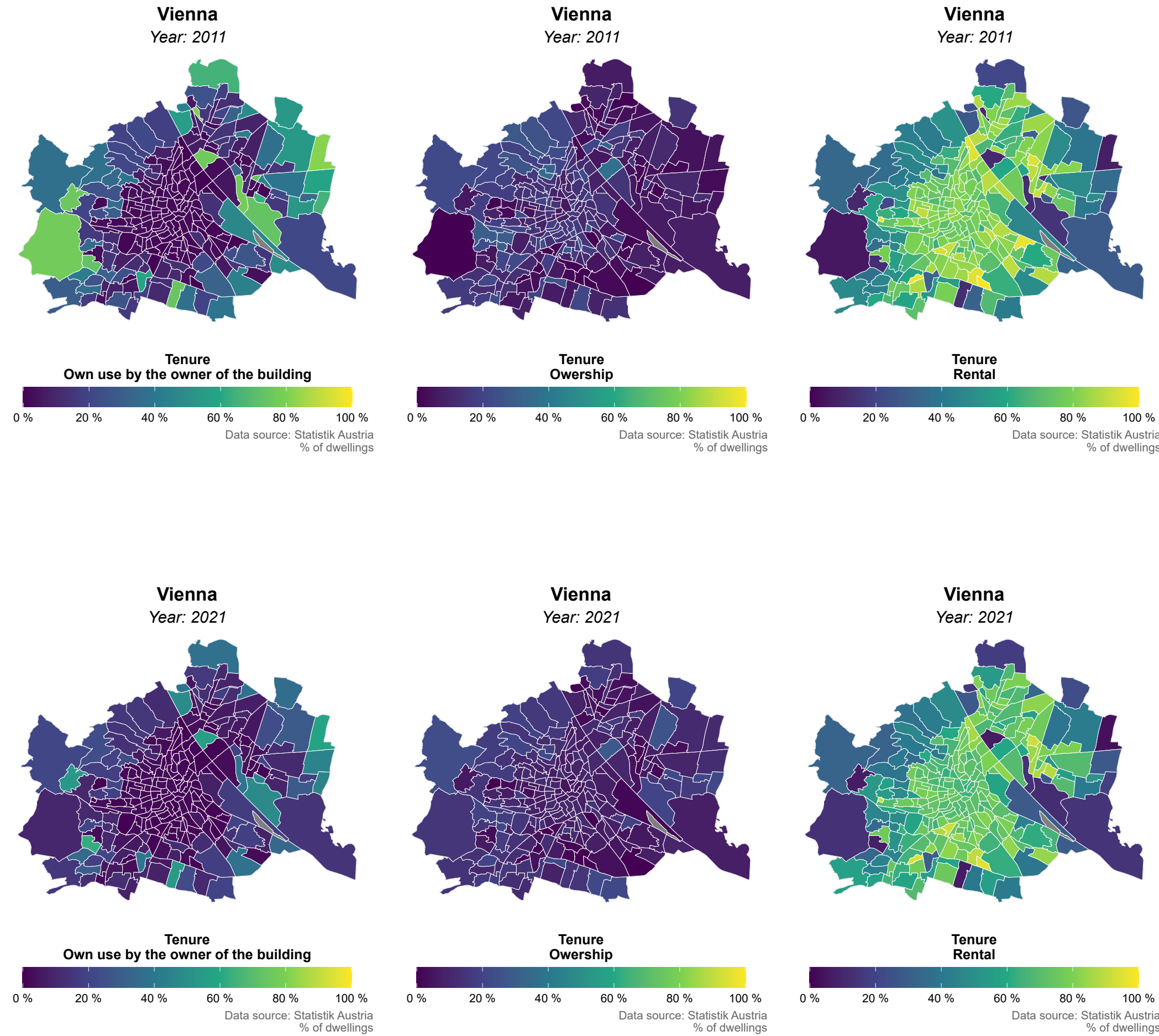
Percentage of dwellings owned by private owners, municipality and other legal entities in the quarters of Budapest between 2011 and 2022.



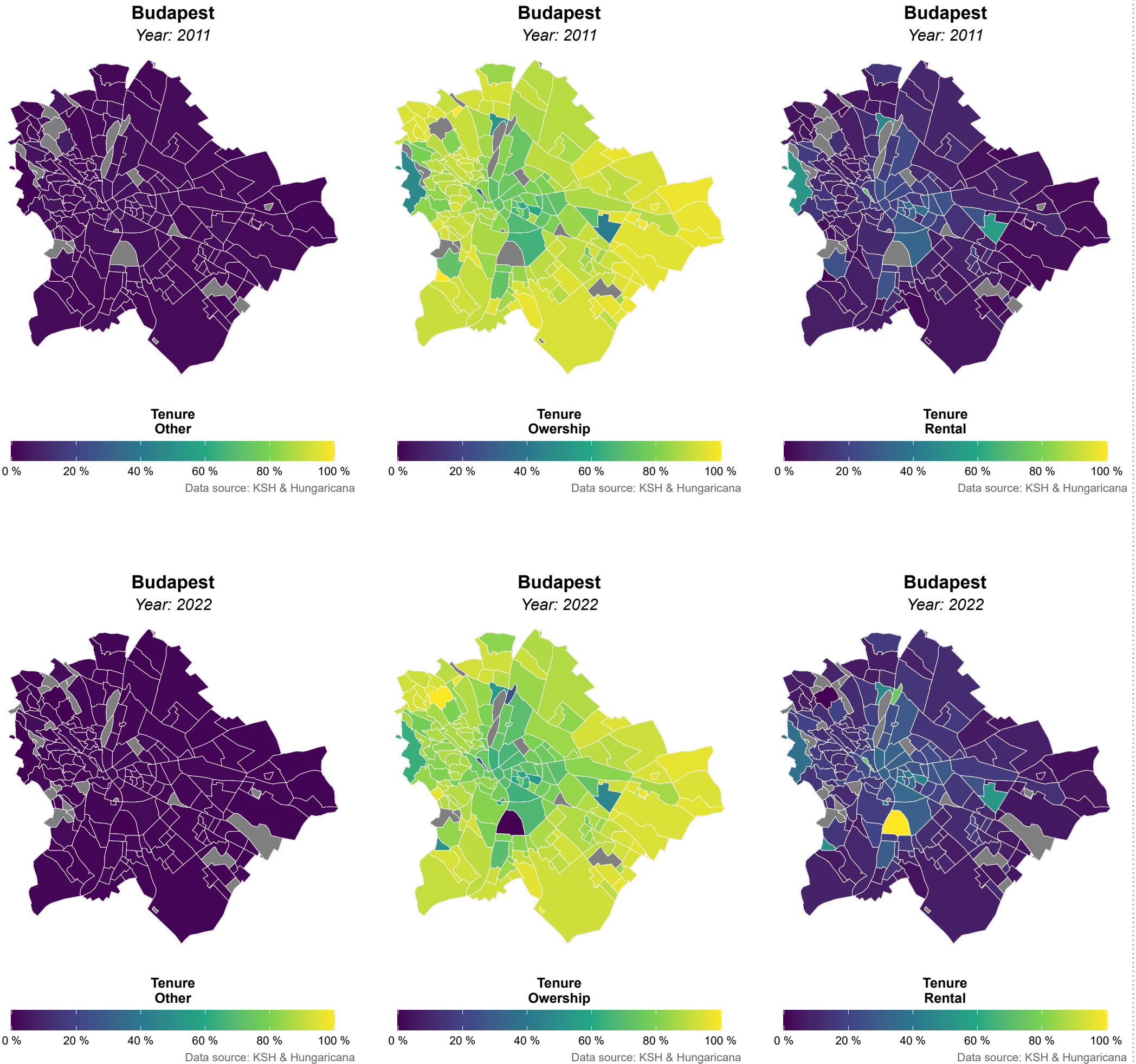
3. Quarter level

Percentage of ownership versus rental dwellings in the quarters of Vienna between 2011 and 2022.

Dwelling structure at the quarter level



Dwelling structure at the quarter level



3. Quarter level

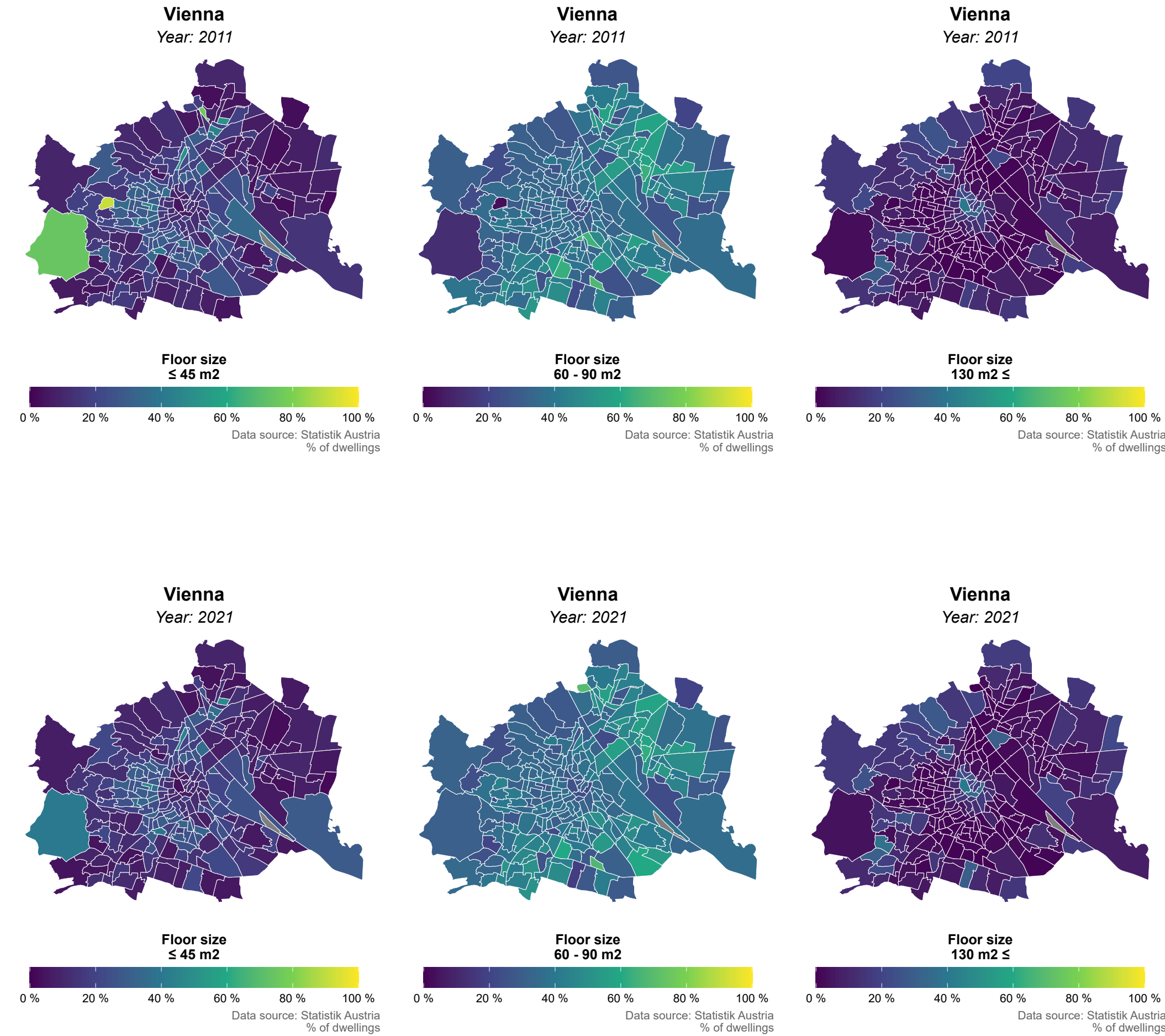
Percentage of ownership versus rental dwellings in the quarters of Budapest between 2011 and 2022.



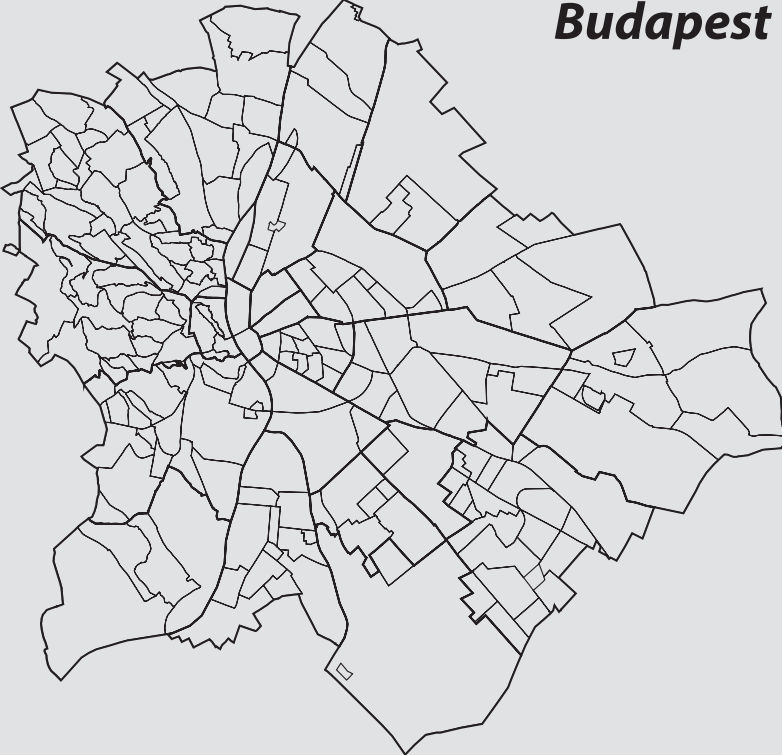
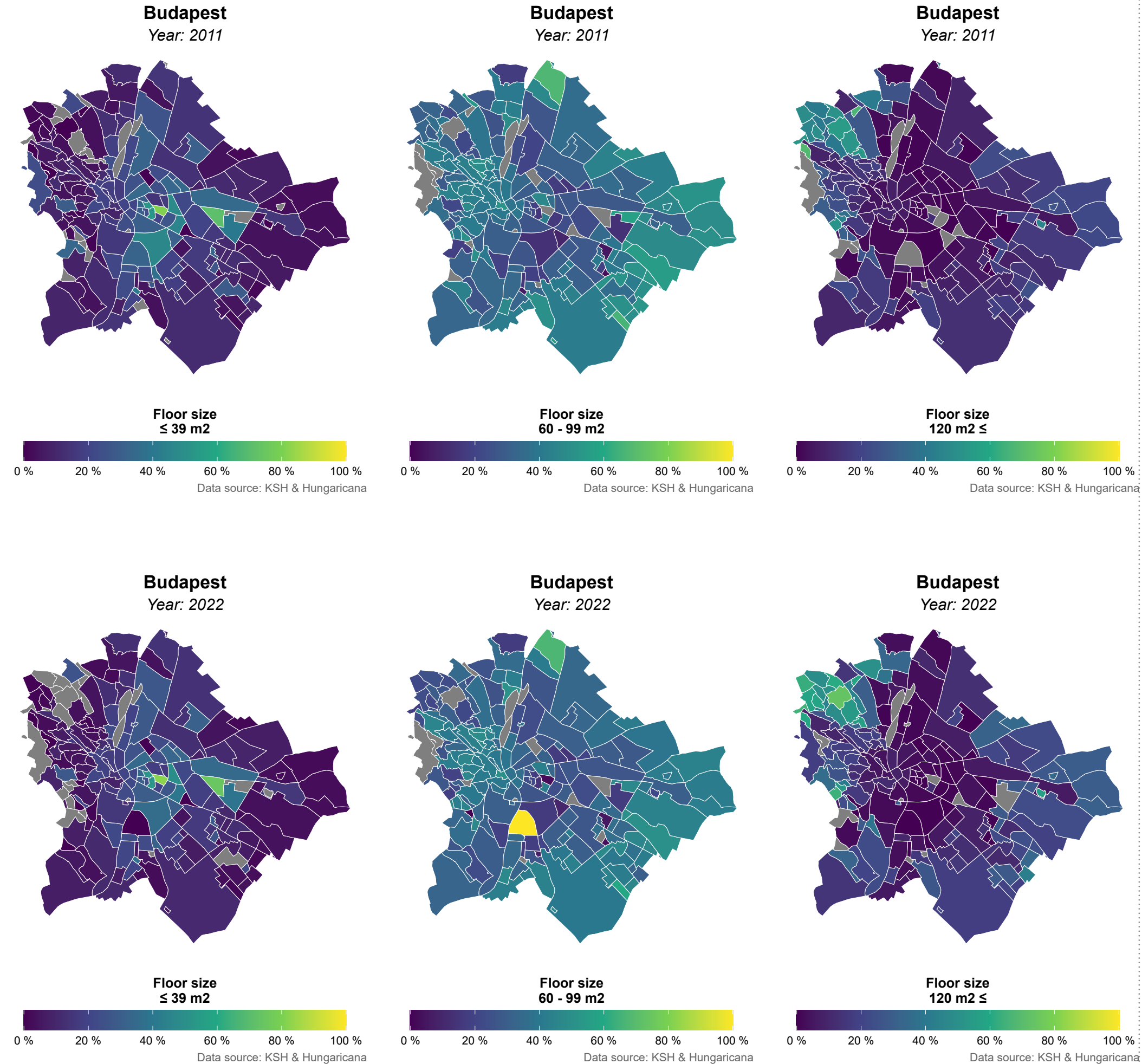
3. Quarter level

Percentage of small-, medium-, and large-size dwellings in the quarters of Vienna between 2011 and 2021.

Dwelling structure at the quarter level



Dwelling structure at the quarter level



3. Quarter level

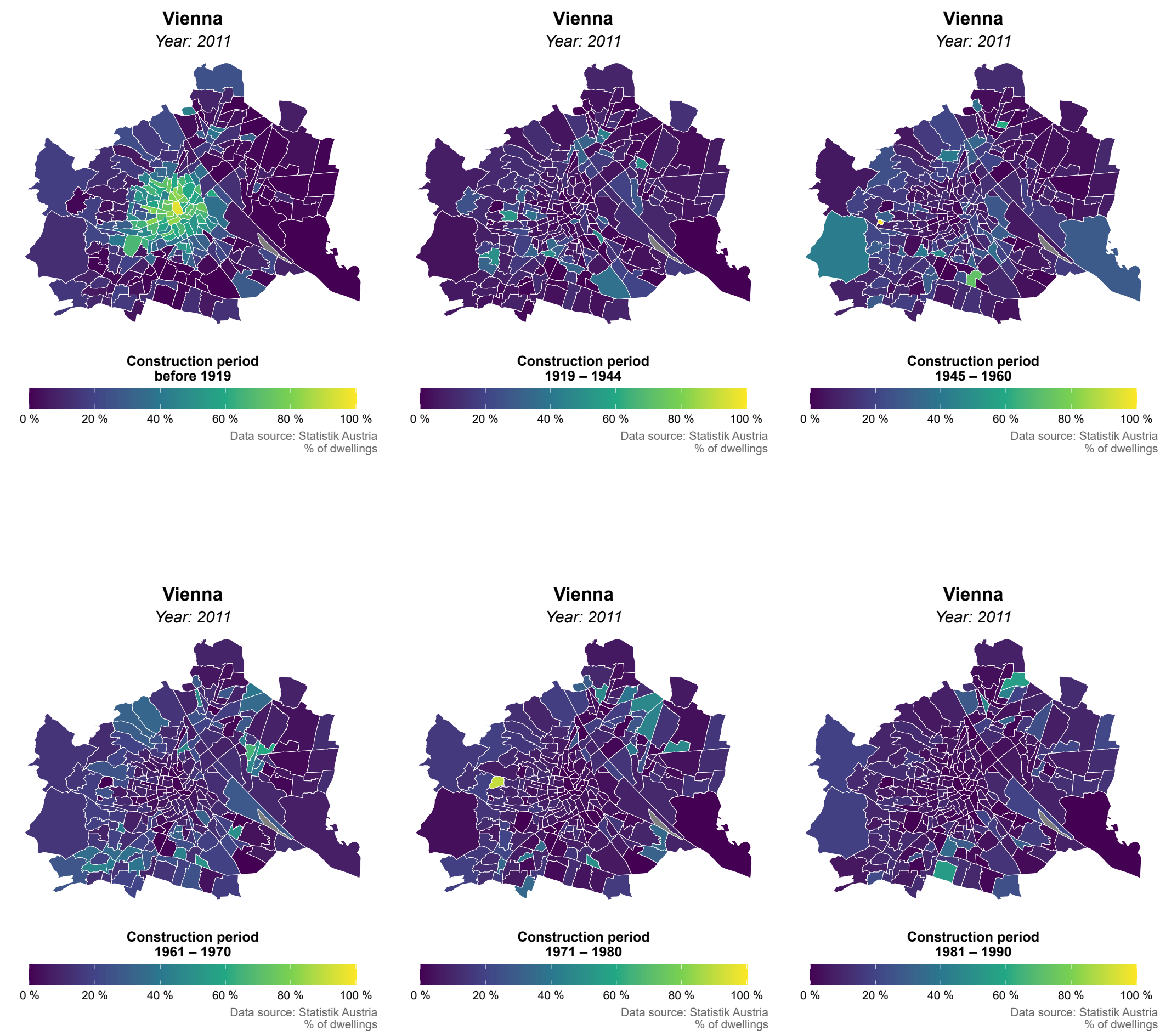
Percentage of small-, medium-, and large-size dwellings in the quarters of Budapest between 2011 and 2022.



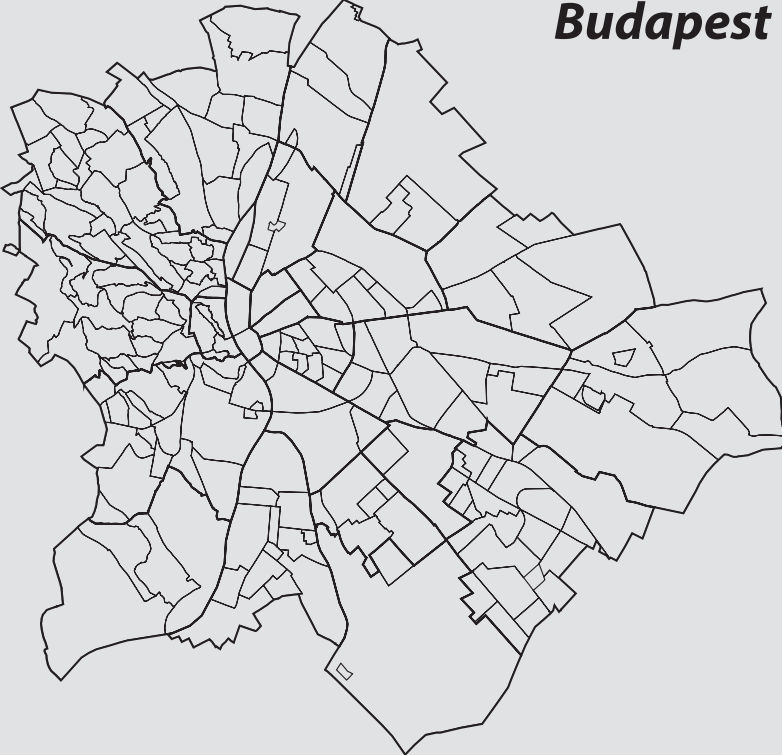
3. Quarter level

Construction periods of dwellings built before 1990 in the quarters of Vienna in 2011.

Dwelling structure at the quarter level



Dwelling structure at the quarter level



3. Quarter level

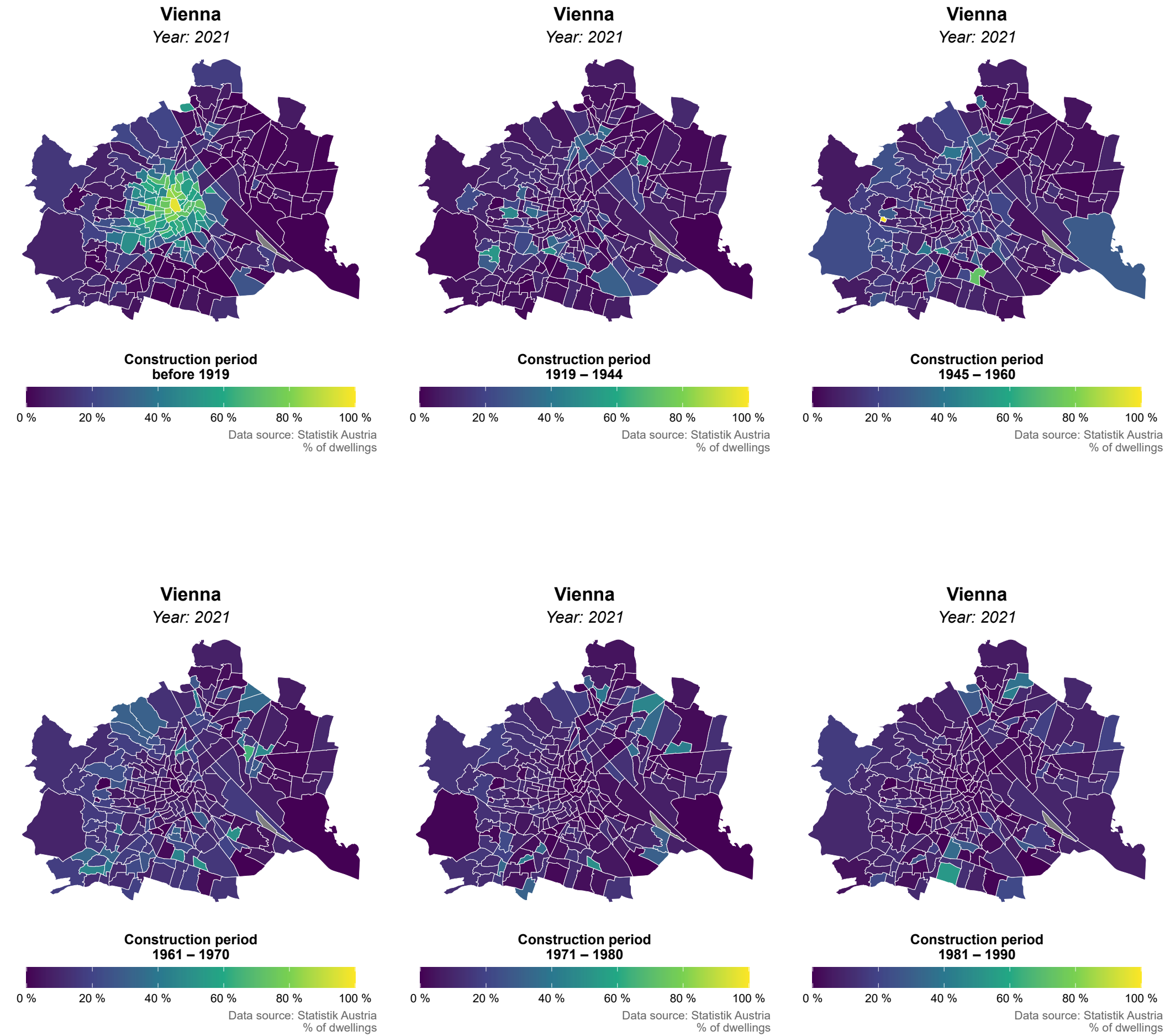
No available data on the construction periods of dwellings built before 1990 in the quarters of Budapest in 2011.



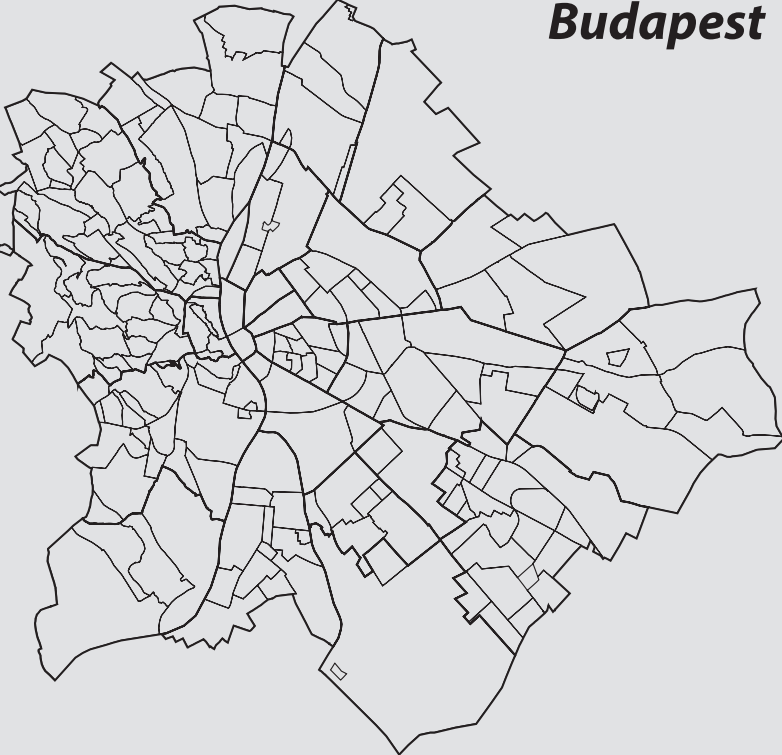
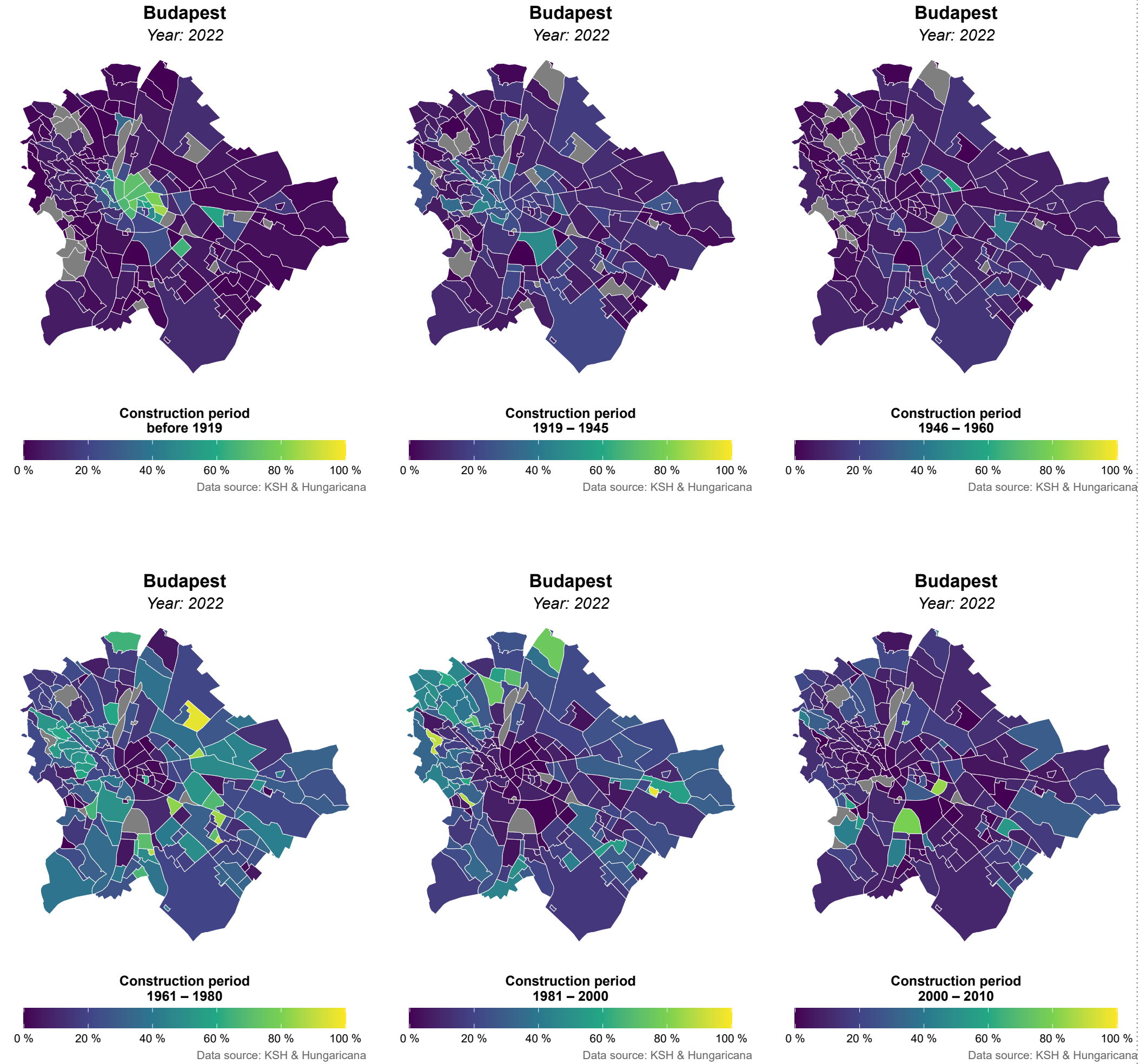
3. Quarter level

Construction period of dwellings built before 1990 in the quarters of Vienna in 2021.

Dwelling structure at the quarter level



Dwelling structure at the quarter level



3. Quarter level

Construction period of dwellings built before 2010 in the quarters of Budapest in 2022.

Vienna



3. Case study quarters

Comparison of the case study quarters in Vienna to other parts of the city.

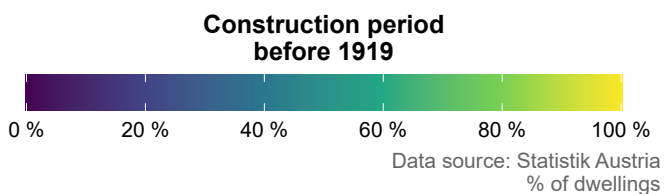
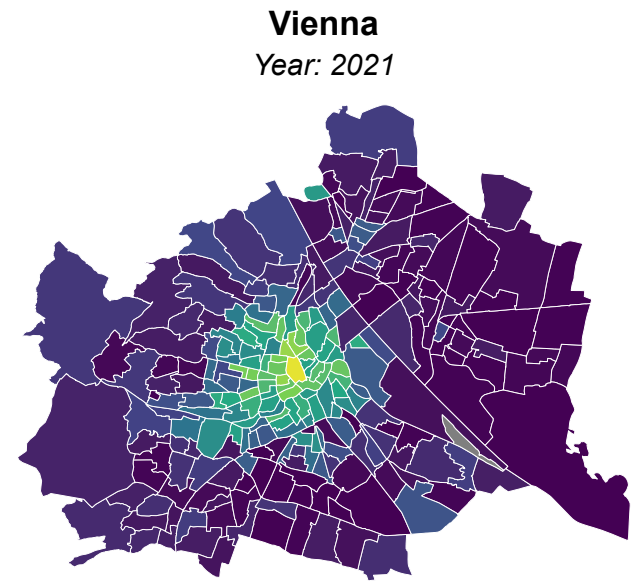
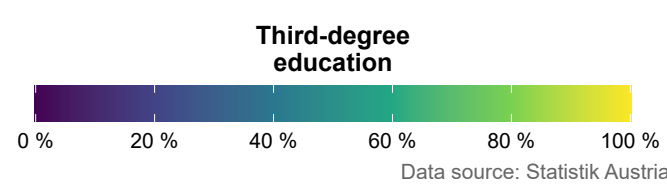
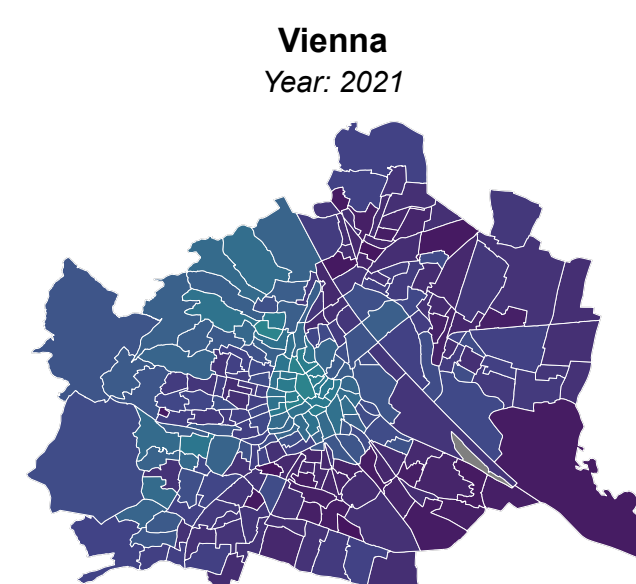
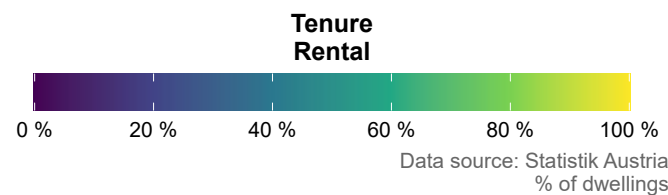
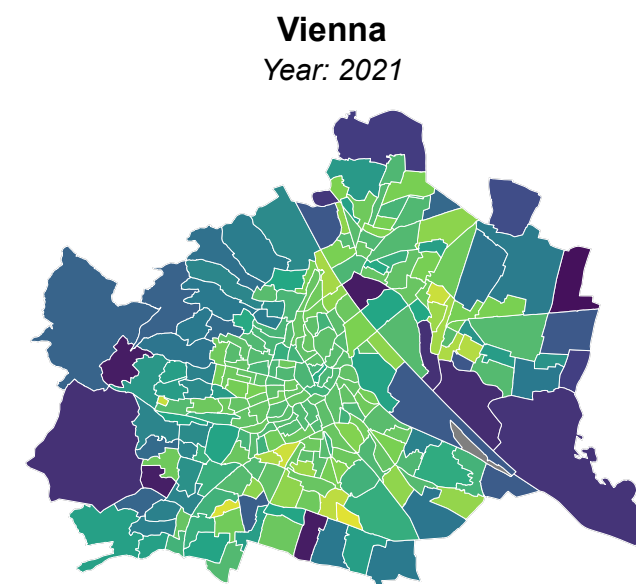
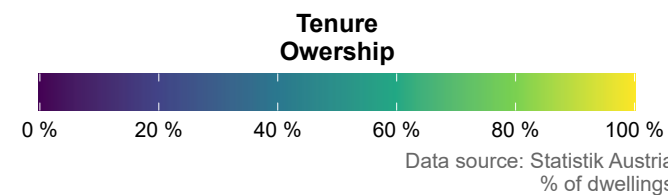
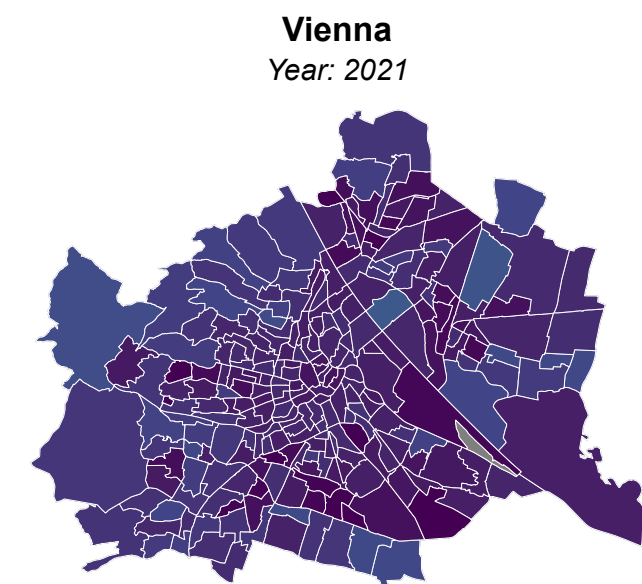
Selection of case study quarters in Vienna

Case study quarters in Vienna were defined in the case study districts, therefore the same selection criteria were applied (outside of the *Gürtel*, large percentage of historic housing, little protection measures). However, at this level, additional parameters were considered. First, case study quarters had to be part of the historic core (see methodology and chapter 4 for details). Second, they had to consist of a large percentage of privately owned rental apartments built before 1919. Third, they had to host a large percentage of low-income and migrant population without third degree education characteristic of working-class areas.

In Vienna, these quarters are the following: 1004 (Quellenplatz), 1005 (Arthaberplatz), 1006 (Erlachplatz), 1007 (Belgradplatz) in the 10. district and 1502 (Reithofferplatz) and, 1506 (Rauscherplatz) in the 15. district.

During our research, we have identified many objects in transformation in these quarters. Some recent examples are the rooftop extensions and conversions from tenement housing to dwelling ownership. Some earlier examples were demolitions and new constructions (Guinand & Lélek, 2025).

To learn more about the socio-economic, dwelling and housing structure of the case study districts of Vienna, see the following pages. To learn more about the socio-economic, dwelling and housing structure of historic quarters of Vienna, see the next chapter.



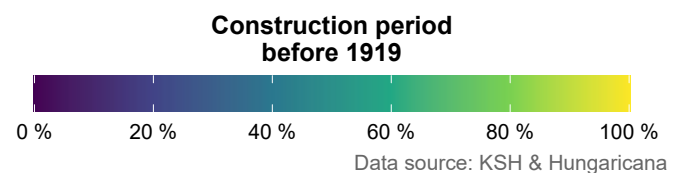
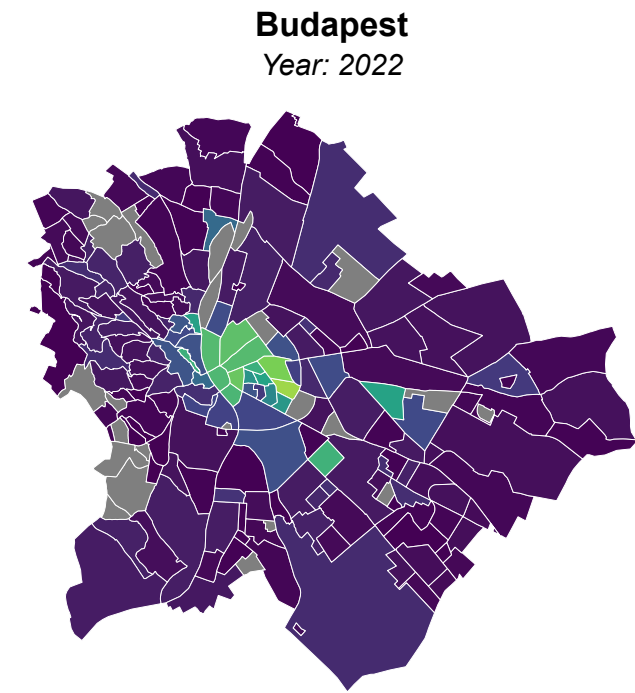
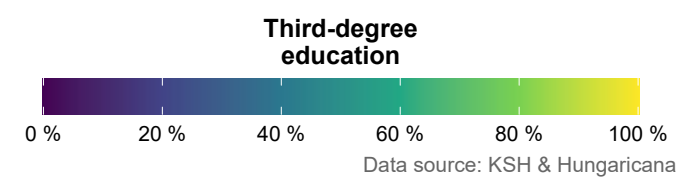
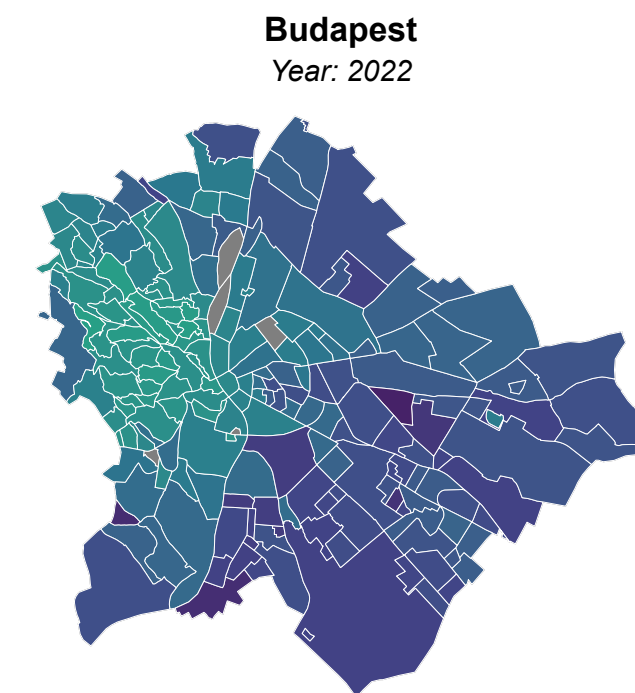
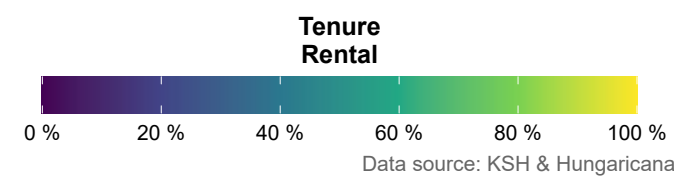
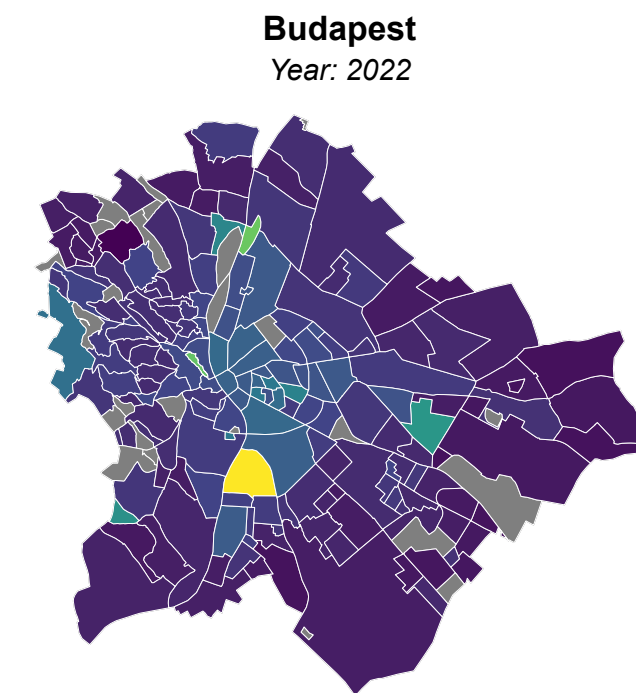
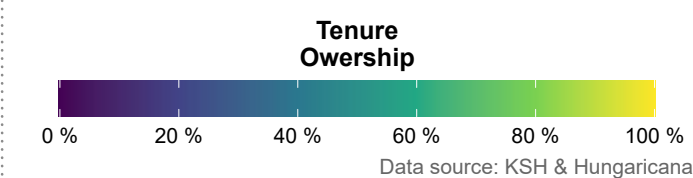
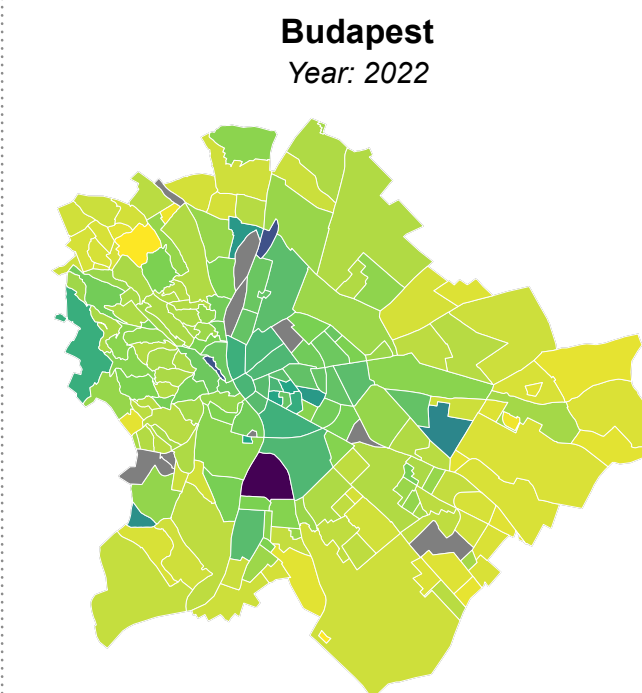
Selection of case study quarters in Budapest

Case study quarters in Budapest were defined in the case study districts, therefore the same selection criteria were applied (outside of the *second ring*, large percentage of historic housing, little protection measures). However, at this level, additional parameters were considered. First, case study quarters had to be part of the historic core (see methodology and chapter 4 for details). Second, they had to consist of a large percentage of privately owned rental apartments built before 1919. Third, they had to host a large percentage of low-income and migrant population without third degree education that is characteristic for working-class areas.

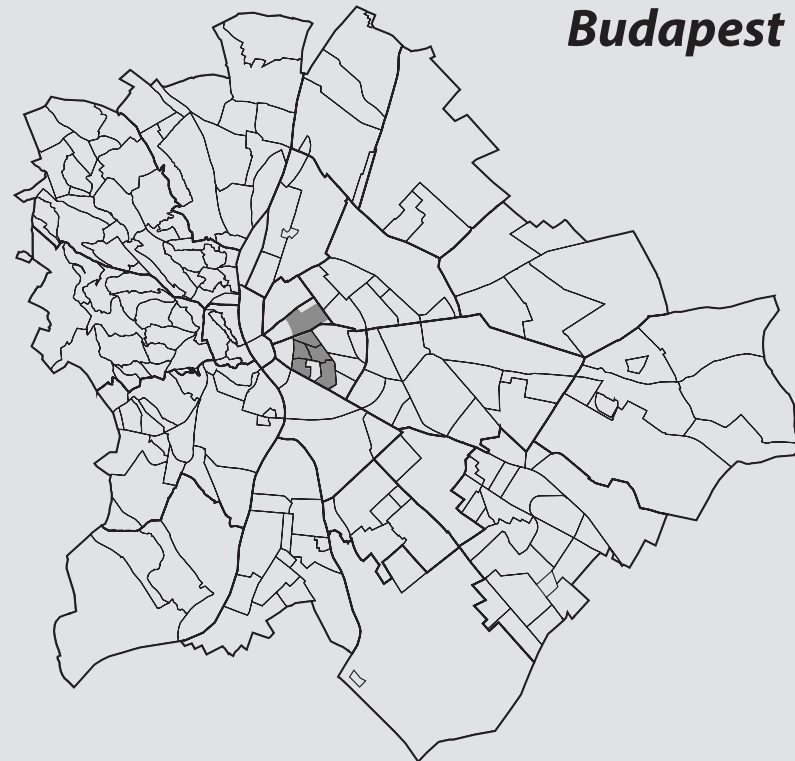
In Budapest, these quarters are the following: *Corvin* quarter, *Csarnok* quarter, *Népszínház* quarter, *Magdolna* quarter, *Orczy* quarter in the 8. district and the *Chicago* and *Middle-Józsefváros* parts of the 7. district (one quarter).

During our research, we have identified many objects in transformation in these quarters. Some recent examples are the refurbishment of municipal housing, as well as demolitions and new constructions. We have found some examples of rooftop extensions, however, not as commonly as in Vienna (Guinand & Lélek, forthcoming).

To learn more about the socio-economic, dwelling and housing structure of the case study districts of Budapest, see the following pages. To learn more about the socio-economic, dwelling and housing structure of historic quarters of Vienna, see the next chapter.



Budapest



3. Case study quarters

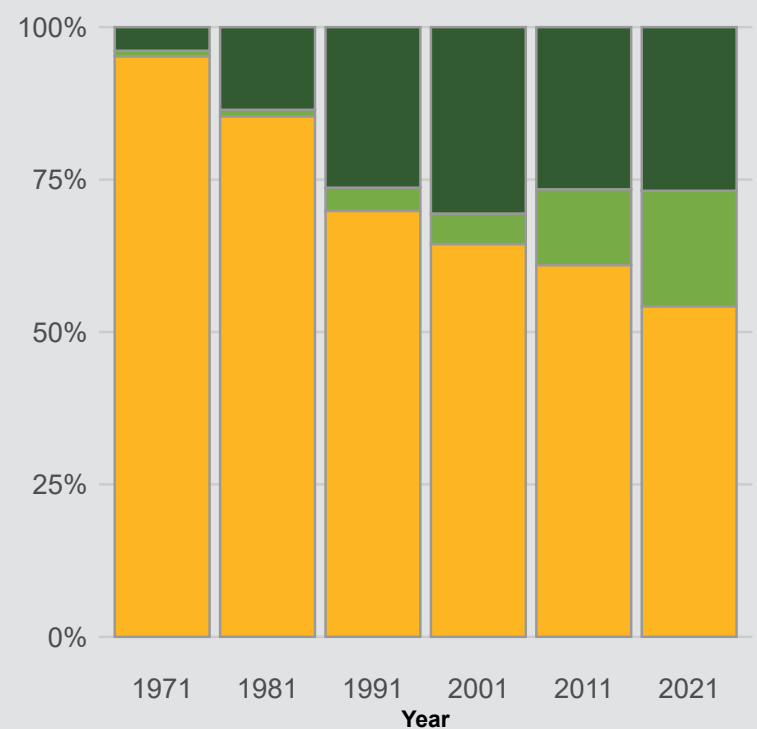
Comparison of the case study quarters in Budapest to other parts of the city.

Vienna



3. Case study quarters

Case study areas: 15. district



Citizenship

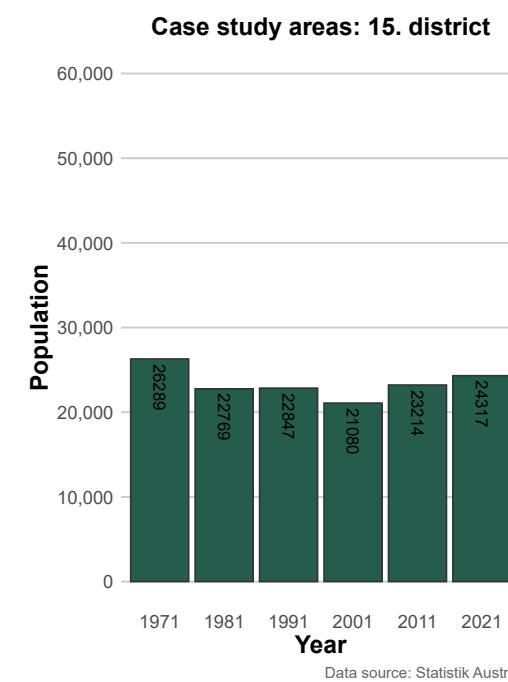
- Native
- Foreign, EU/EEA member
- Foreign, outside of EU/EEA

Data source: Statistik Austria

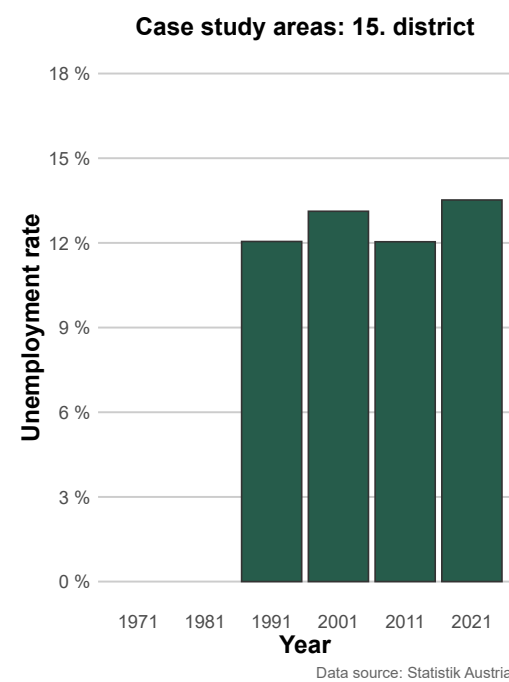
15. district, quarters of *Rudolfsheim-Fünfhaus*

The case study quarters (1502, Reithofferplatz; 1506, Rauscherplatz) of the 15. district are located in the Northern part of the district. The two quarters have a total area of approx. 1km² and total population of 24,317 inhabitants. The unemployment rate of the area has been varying between 12-14% since 1991. This percentage is higher than the Viennese average, however it equals the district's average.

There is a growing number of foreign population, both with EU (around 25% in 2021) and outside EU (around 20% in 2021) citizenship. Furthermore, the number of inhabitants with completed third-degree education has grown from 1% in 1971 to around 20% in 2021. At the same time, the number of inhabitants within the age group of 20-39 has grown from 35% to 38% between 1991 and 2021; and the number of inhabitants within the age group of 40-59 has grown from 21% to 28% within the same period. The reason for these changes might be that more and more young adults and middle-aged academics move to this area due to its affordability.

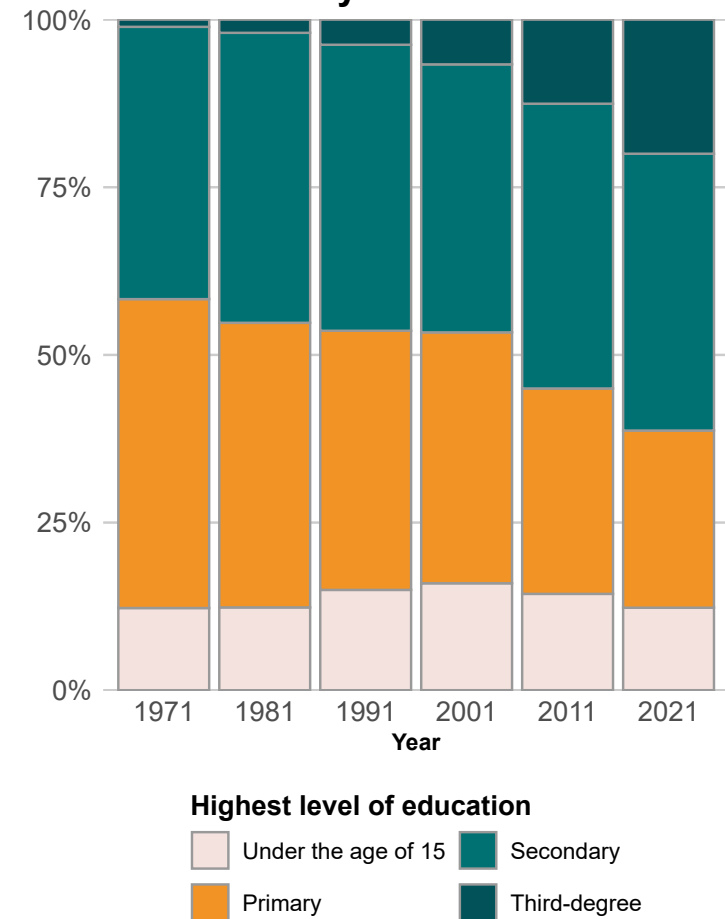


Data source: Statistik Austria



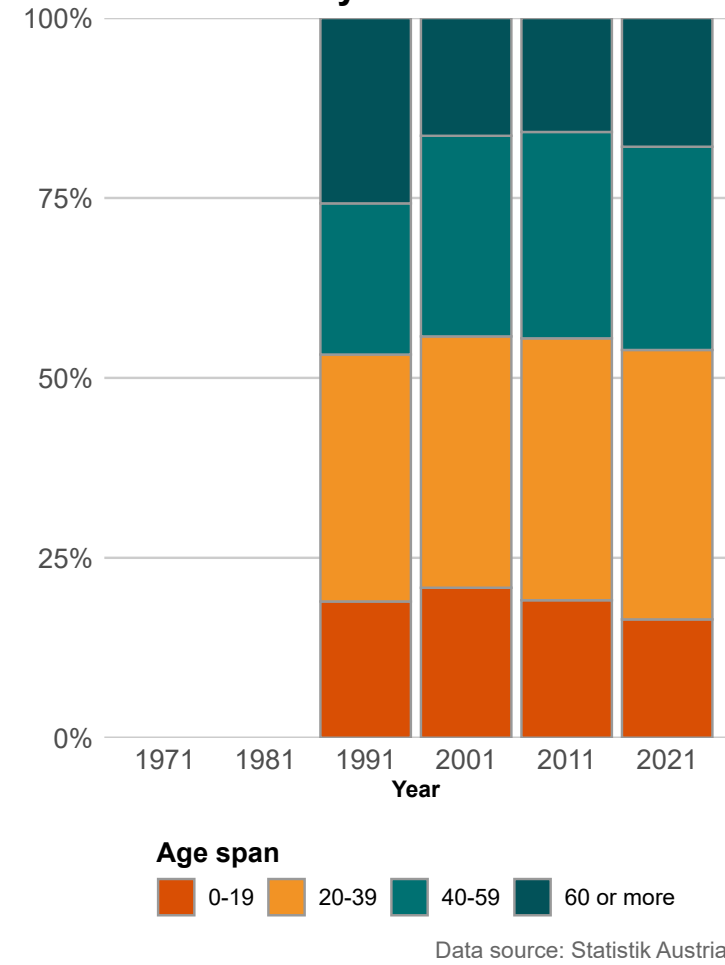
Data source: Statistik Austria

Case study areas: 15. district



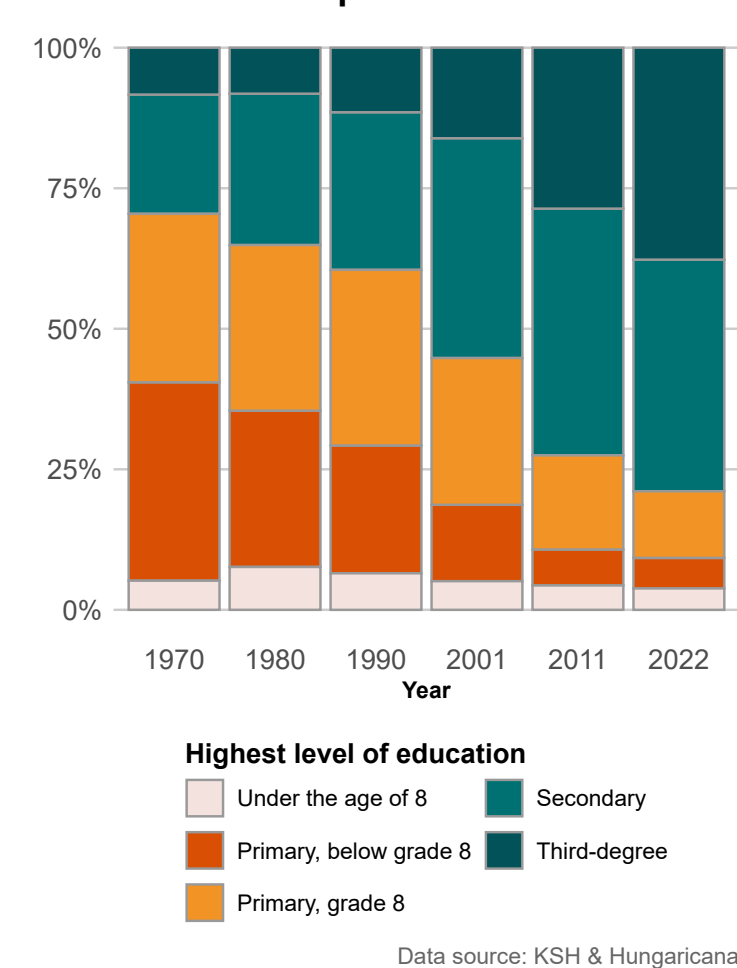
Data source: Statistik Austria

Case study areas: 15. district



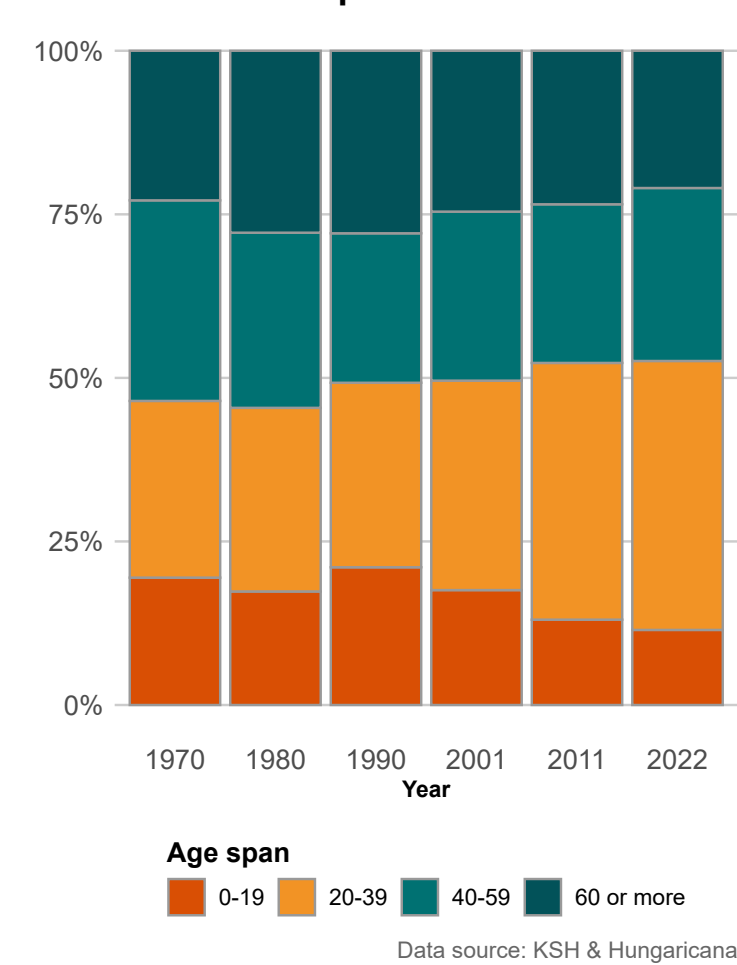
Data source: Statistik Austria

Budapest 07. district



Data source: KSH & Hungaricana

Budapest 07. district

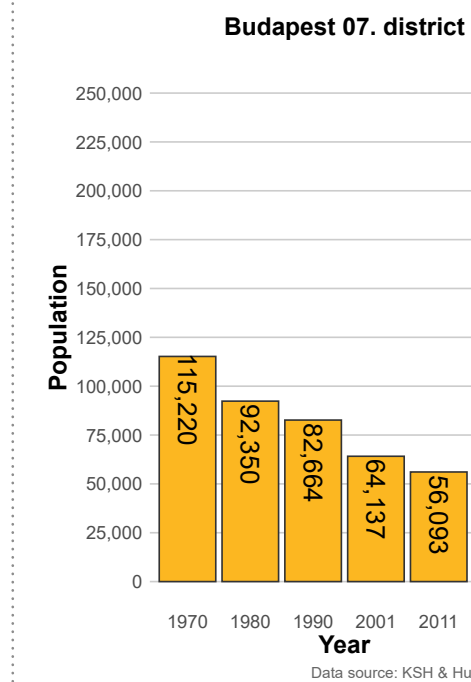


Data source: KSH & Hungaricana

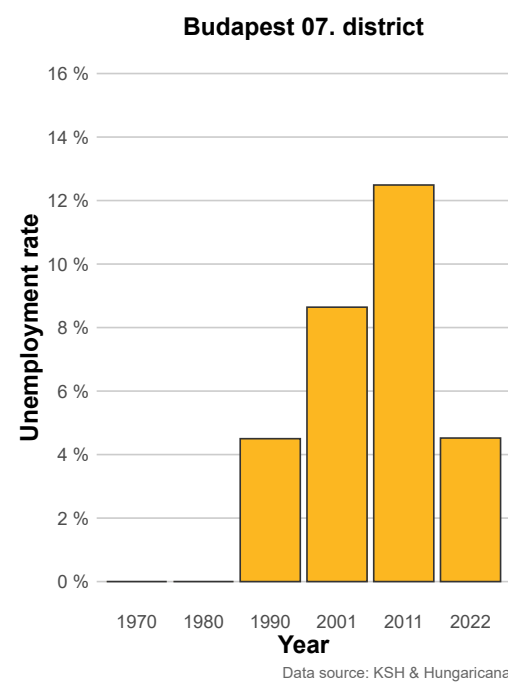
7. district, quarters of *Erzsébetváros*

There are two districts in Budapest, the 6. and the 7. district that are not further divided into quarters. Therefore socio-economic, dwelling and housing statistics are only available on the district's level. (Learn more on the history and data of the 7. district in chapter 2.) While in our project, we focused on the *Chicago* and *Middle-Józsefváros* parts of the 7. district outside the second ring road, the statistics can help us understand the dynamics that influence both the district (2.1km²) and the case study area (1.4km²).

The districts population has been shrinking radically from 115,220 to 48,943. The unemployment rate has been reduced from above 12% to around 4,5% between 2011 and 2022, remaining very similar to the city's average. There is a growing number of foreign population, both with EU (around 5% in 2022) and non-EU (around 15% in 2021) citizenship. 80% of the population had a completed secondary or third-degree education in 2022. The number of people within the age group 20-39 years has grown significantly from around 25% in 1970 to almost 40% in 2022. The growing nighttime economy that characterises the 7. district might lead to the elderly people leaving the area.

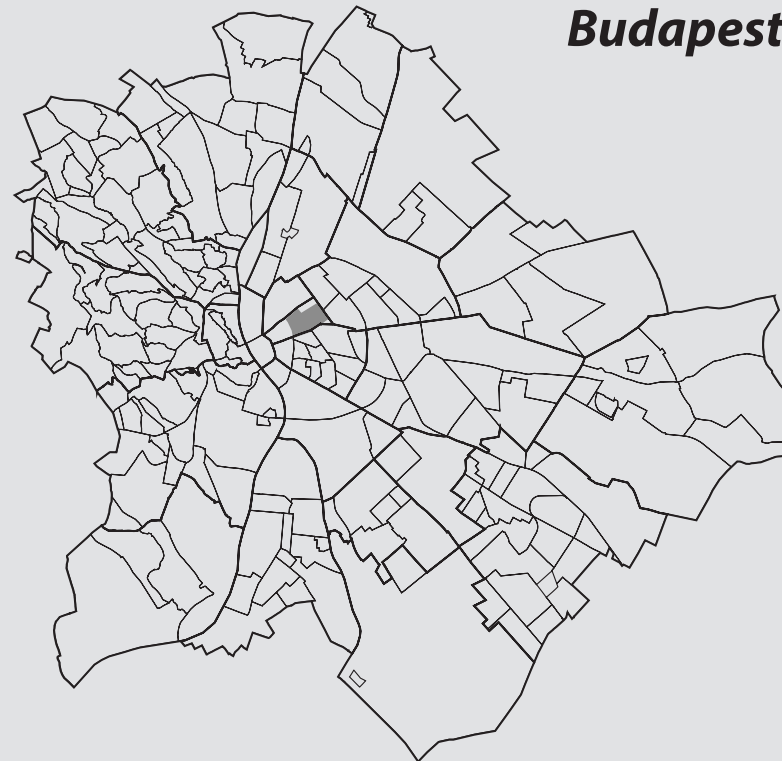


Data source: KSH & Hungaricana



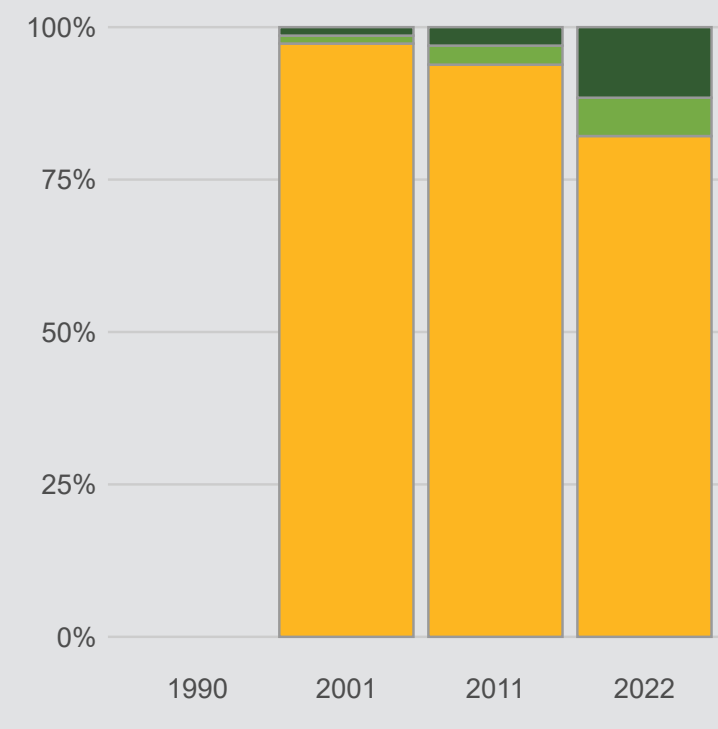
Data source: KSH & Hungaricana

Budapest



3. Case study quarters

Budapest 07. district



Citizenship

- Native
- Foreign, EU member
- Foreign, outside of EU

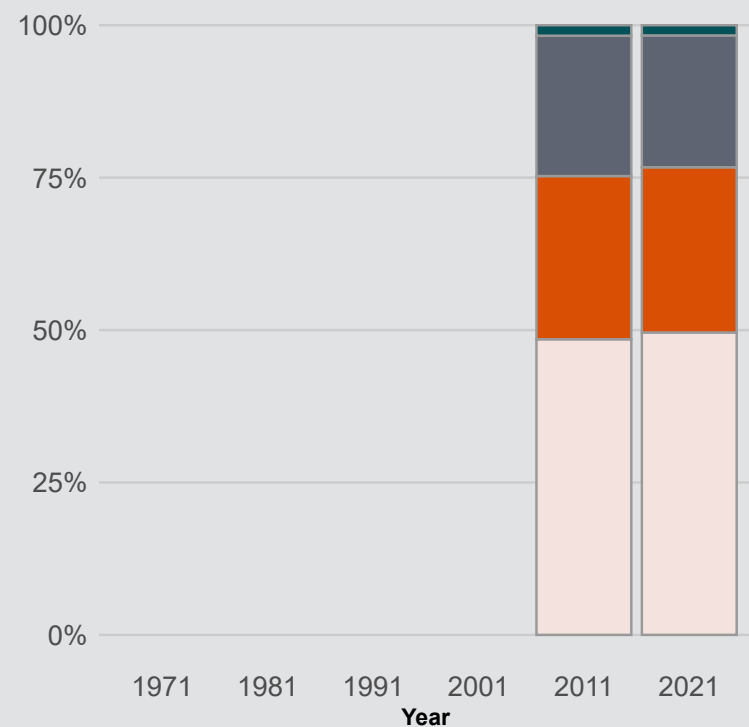
Data source: KSH & Hungaricana

Vienna

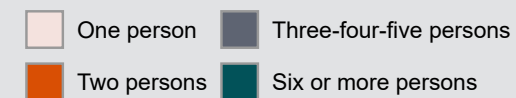


3. Case study quarters

Case study areas: 15. district



Household size



Data source: Statistik Austria

⁷ <https://www.immopreise.at/Wien/Wohnung/Miete>

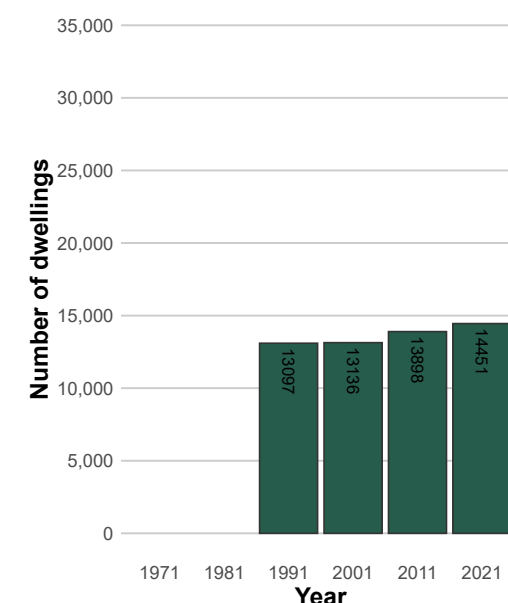
⁸ <https://www.immopreise.at/Wien/Wohnung/Eigentum>

15. district, quarters of *Rudolfsheim-Fünfhaus*

The 15. district offered (fourth quartal, 2025) the lowest average rental price in Vienna⁷ with 18.35€/m² and on the fourth (lowest) place in terms of purchase price in Vienna⁸ with 6,004€/m². The number of dwellings has grown from 13,097 in 1991 to 14,451 in 2021, whereas the number of households has first reduced from 13,926 in 1971 to 10,848 in 2001 and has later grown again to 12,453 in 2021. The number of one person households has been stagnating around 50% in the past two decades. Most of the dwellings are in private ownership (75%) or in the hand of state companies (municipal social housing, around 10%). Around 80% of the dwellings were being rented out in 2021. Therefore the private rental housing segment is predominant in this area.

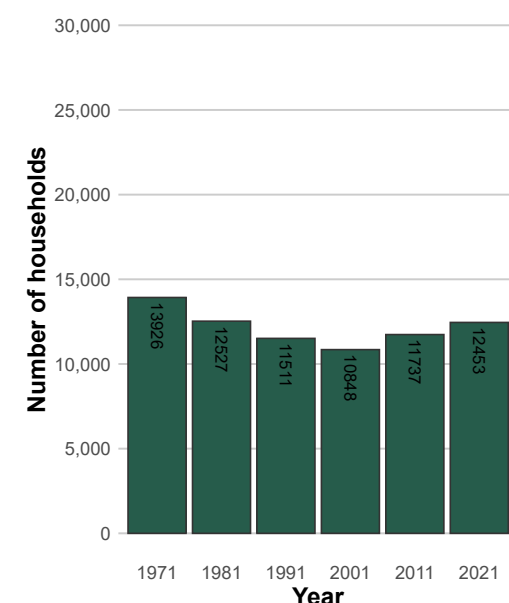
Due to the large percentage of historic housing, this area is affected by national rental regulations (MRG) that define a rent cap for buildings built before 1.1.1945. This often leads to the transformation of rental dwellings into ownership (Guindand et al., 2025)

Case study areas: 15. district



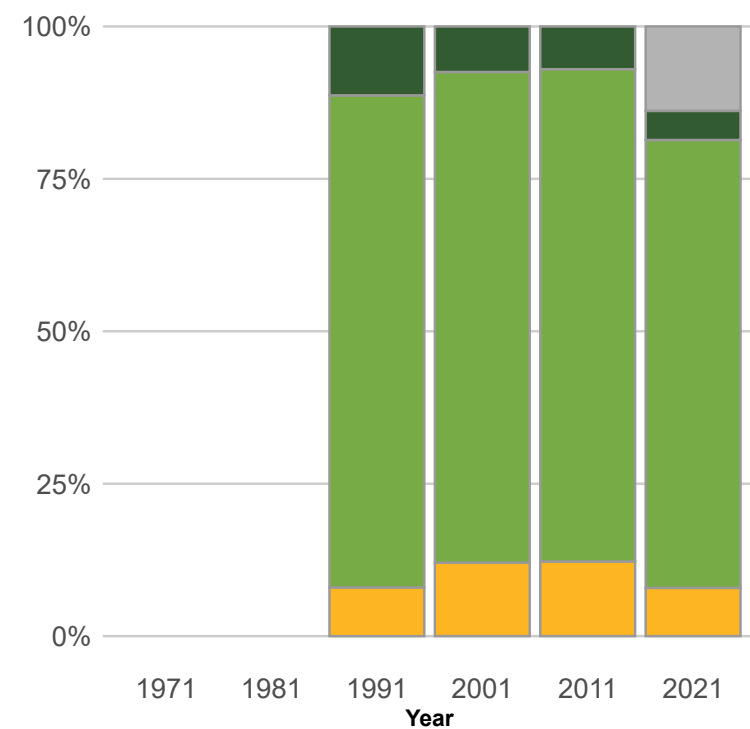
Data source: Statistik Austria

Case study areas: 15. district

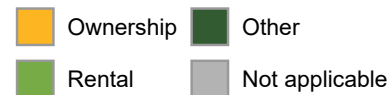


Data source: Statistik Austria

Case study areas: 15. district

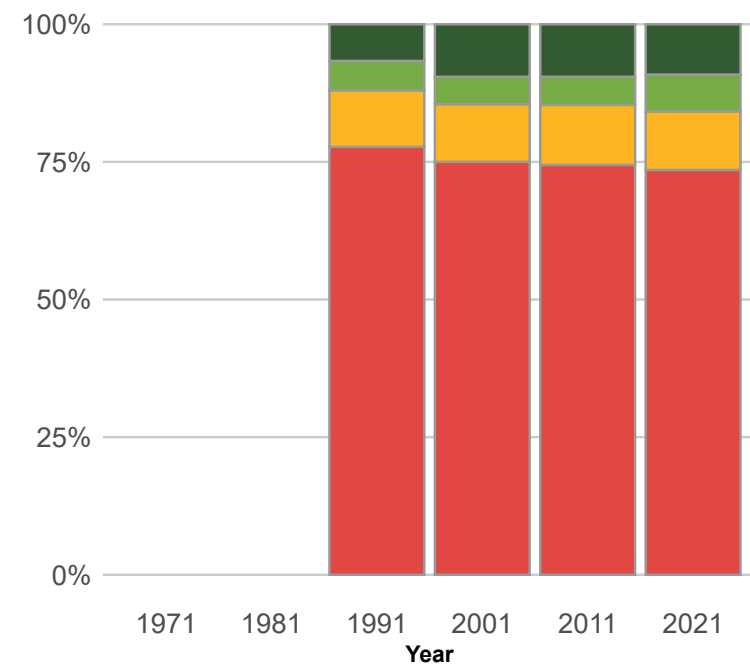


Tenure

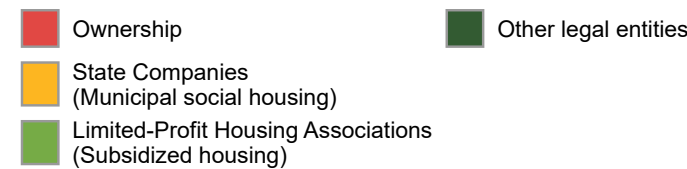


Data source: Statistik Austria

Case study areas: 15. district

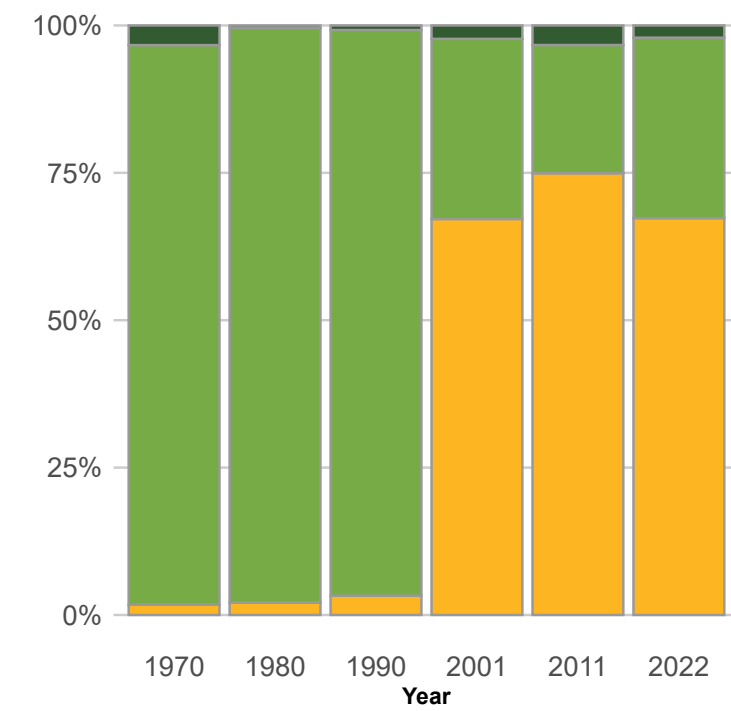


Ownership



Data source: Statistik Austria

Budapest 07. district

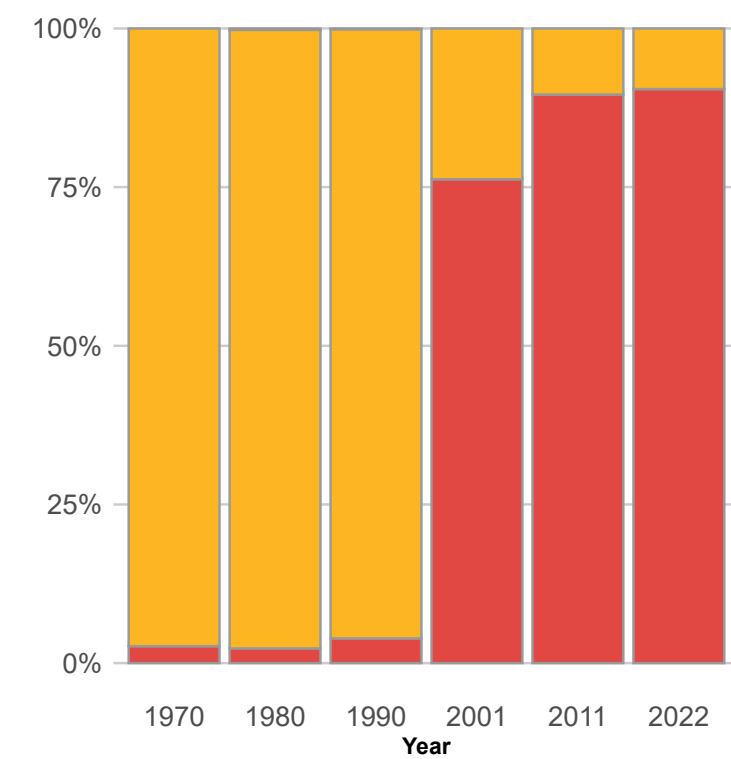


Tenure



Data source: KSH & Hungaricana
2022, 2011, 2001: % of households
1990: % of dwellings
1980, 1970: % of occupied dwellings

Budapest 07. district



Ownership



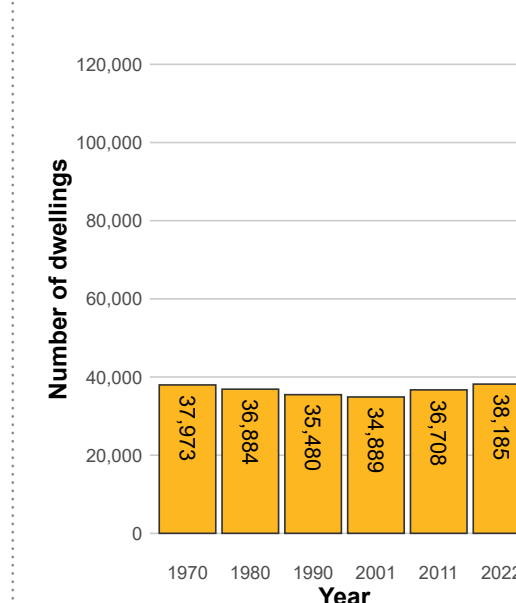
Data source: KSH & Hungaricana
% of dwellings

7. district, quarters of *Erzsébetváros*

The 7. district offered (fourth quartal, 2025) some of the highest average rental prices in Budapest⁷ with 5,561Ft/m². Similarly, the area offers some of the highest average purchase prices in Budapest⁷ with 1,453,753Ft/m². With the rate of approx. 390Ft = 1€, these prices can be converted to 14.24€/m² for rental and 3,723€/m² purchase prices. The number of dwellings in the 7. district has grown from 37,973 in 1970 to 38,185 in 2022. During the same period, the number of households was reduced significantly from 49,019 to 27,805. Simultaneously, the number of one person households has grown from 30% in 1970 to more than 50% in 2022. After the mass privatisation of housing in the 1990s, the number of dwellings in private ownership has grown to 70-75%. In 2022, only 25% were private rental dwellings.

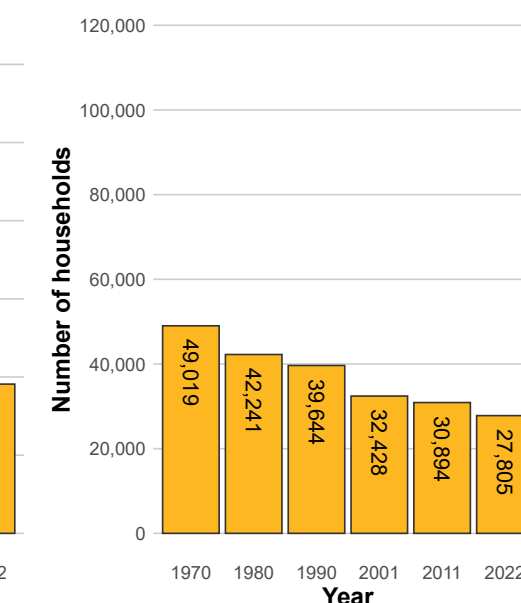
Nighttime economy and the significant number of short-term rentals have an effect on the affordability of housing in the area. In many cases, this leads to population change and gentrification (Olt et al., 2024).

Budapest 07. district



Data source: KSH & Hungaricana

Budapest 07. district



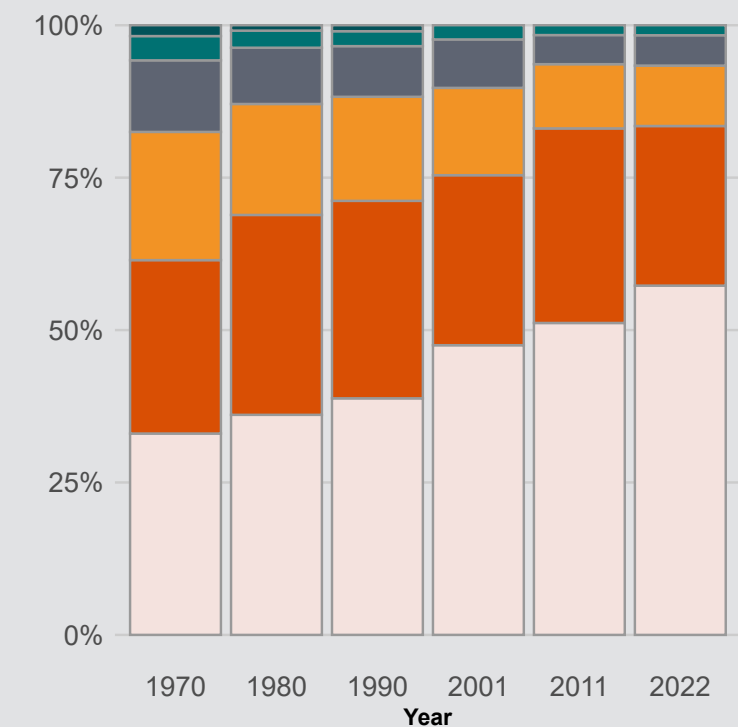
Data source: KSH & Hungaricana

Budapest

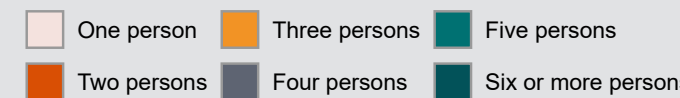


3. Case study quarters

Budapest 07. district



Household size



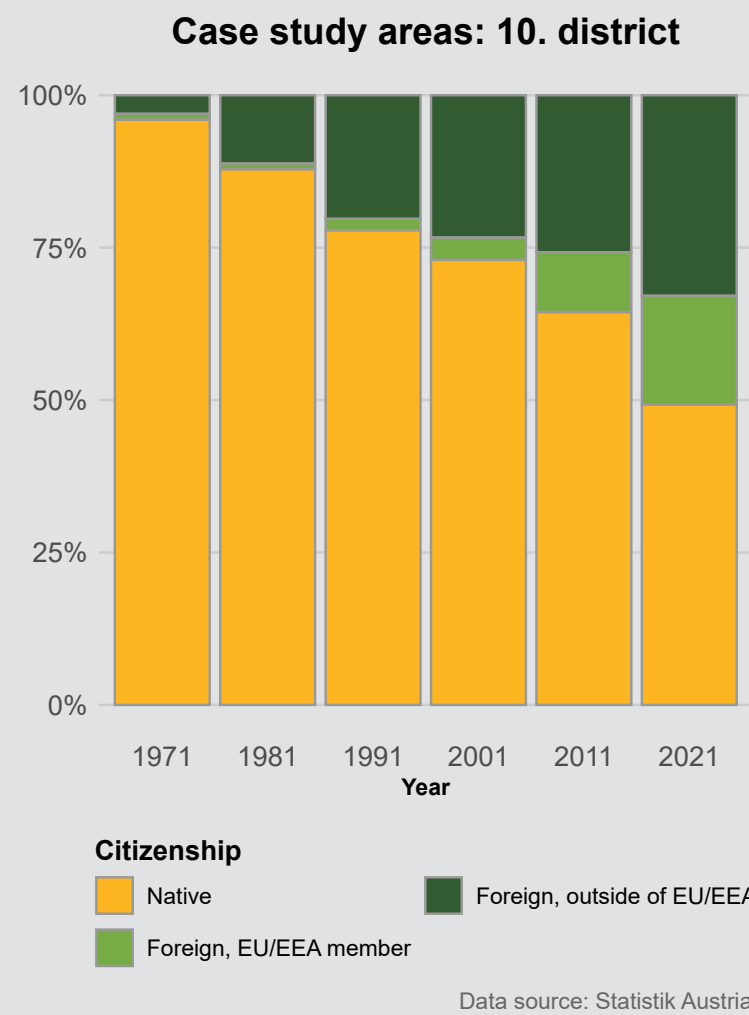
Data source: KSH & Hungaricana

⁷ <https://wwwingatlanet.hu/statisztika/budapest-vii-kerulet>

Vienna



3. Case study quarters



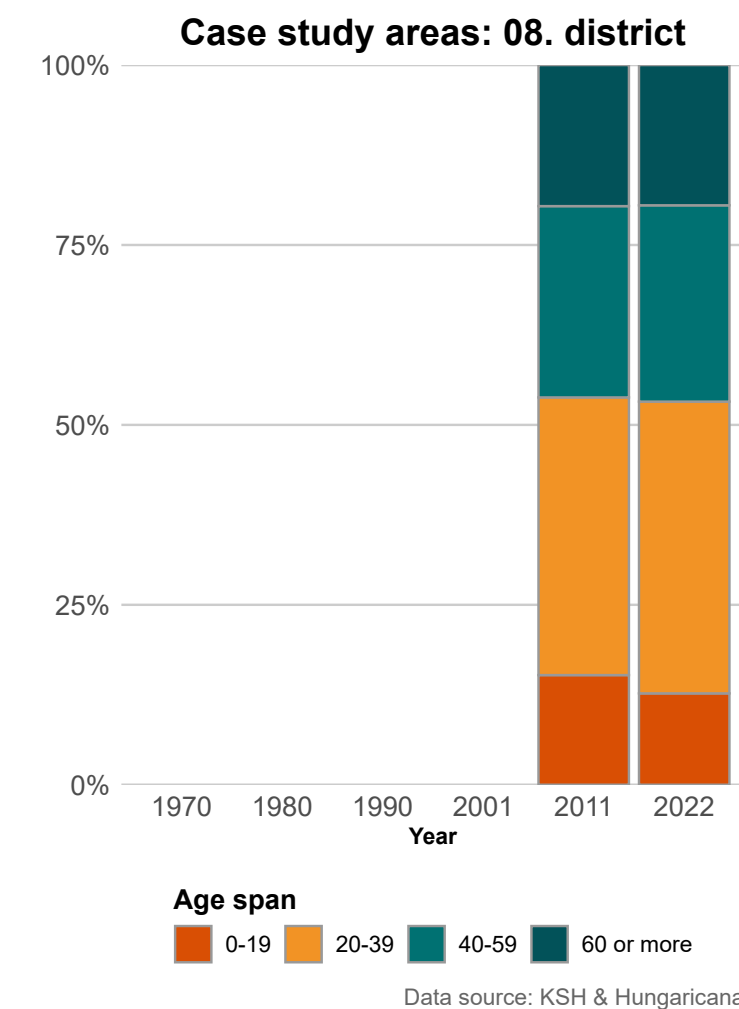
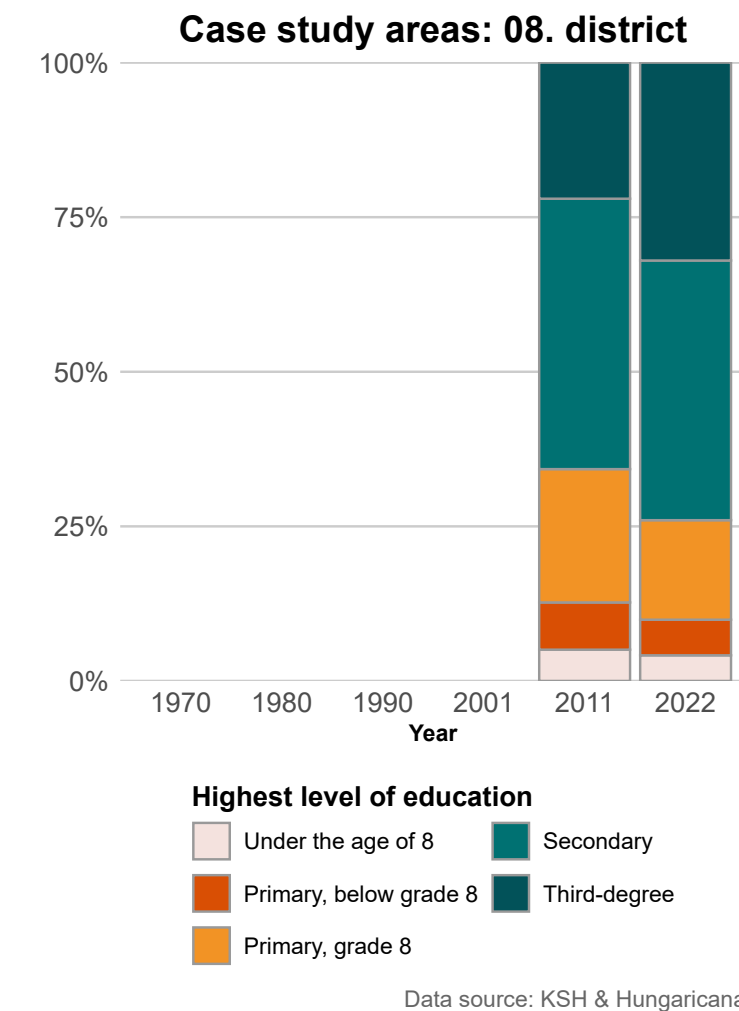
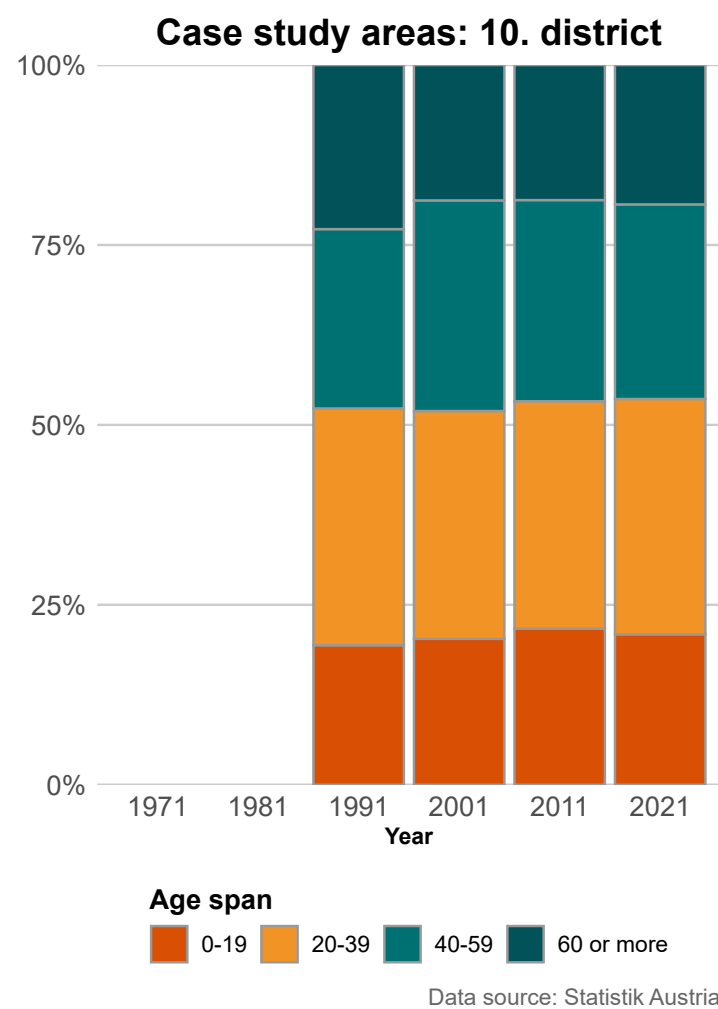
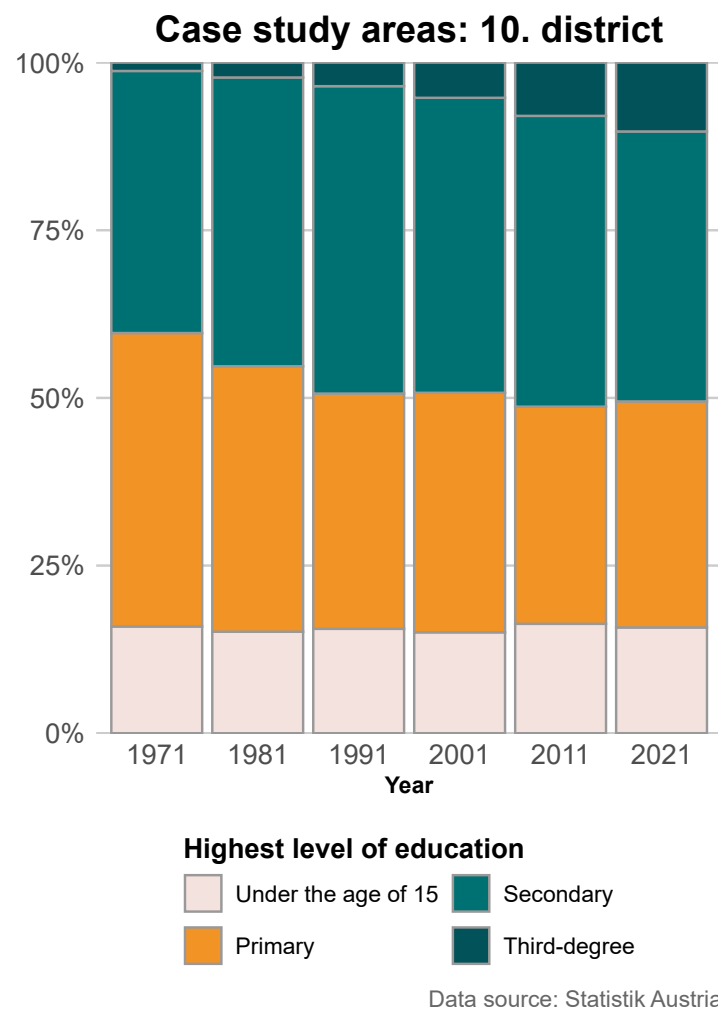
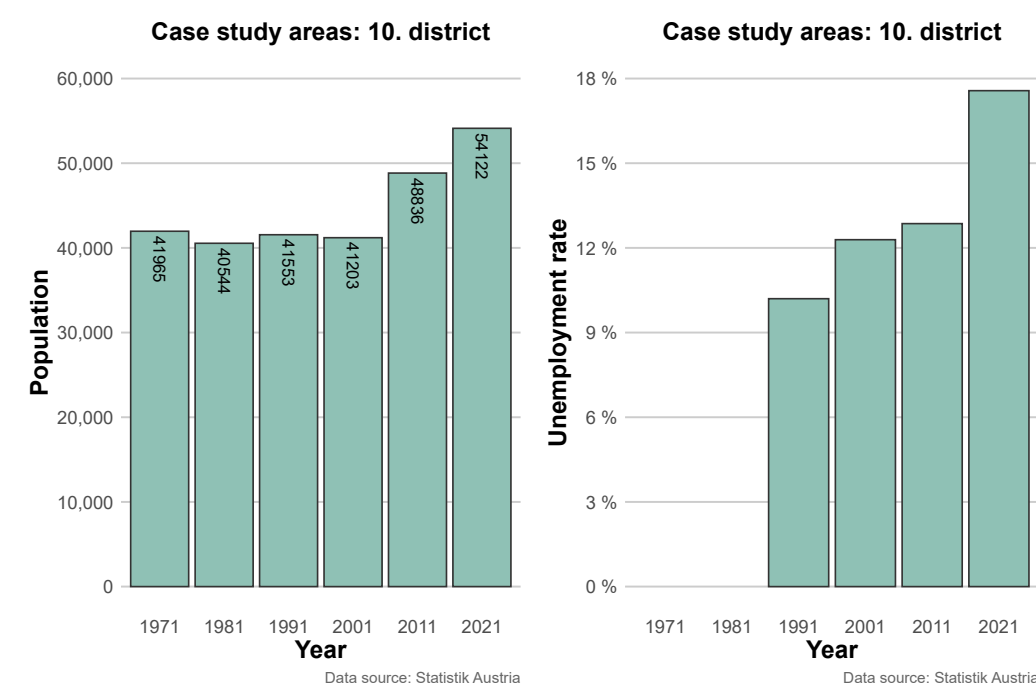
⁹ https://www.integrationsfonds.at/fileadmin/user_upload/OeIF_FB_Migrantische_Oekonomien_WEB_neu.pdf

10. district, quarters of Favoriten

The case study quarters (1004, *Quellenplatz*; 1005, *Arthaberplatz*; 1006, *Erlachplatz*; 1007, *Belgradplatz*) of the 10. district are located in the Northern part of the district. The four quarters have a total area of approx. 1.8km² and a total population of 54,122 inhabitants. The unemployment rate of the area has been growing from 10% in 1991 to almost 18% in 2021. This percentage is significantly higher than the Viennese average (10%) and higher than the district's average (15%).

There is a growing number of foreign population, both with EU (around 10% in 2021) and non-EU (around 30% in 2021) citizenship. Although the number of inhabitants with completed third-degree education has grown, it still remains relatively low, around 10% in 2021. The age groups remained quite similar since 1991, with the threshold 20-39 remaining the largest group with approx. 30%.

While migration from the global South has a long tradition in the history of both the 15. and the 10. district, the 2015 refugee crisis also affected the socio-economic dynamics of the neighbourhoods. The result is a specific migrant economy, cultural diversity with in some cases, integration challenges and marginalisation.⁹

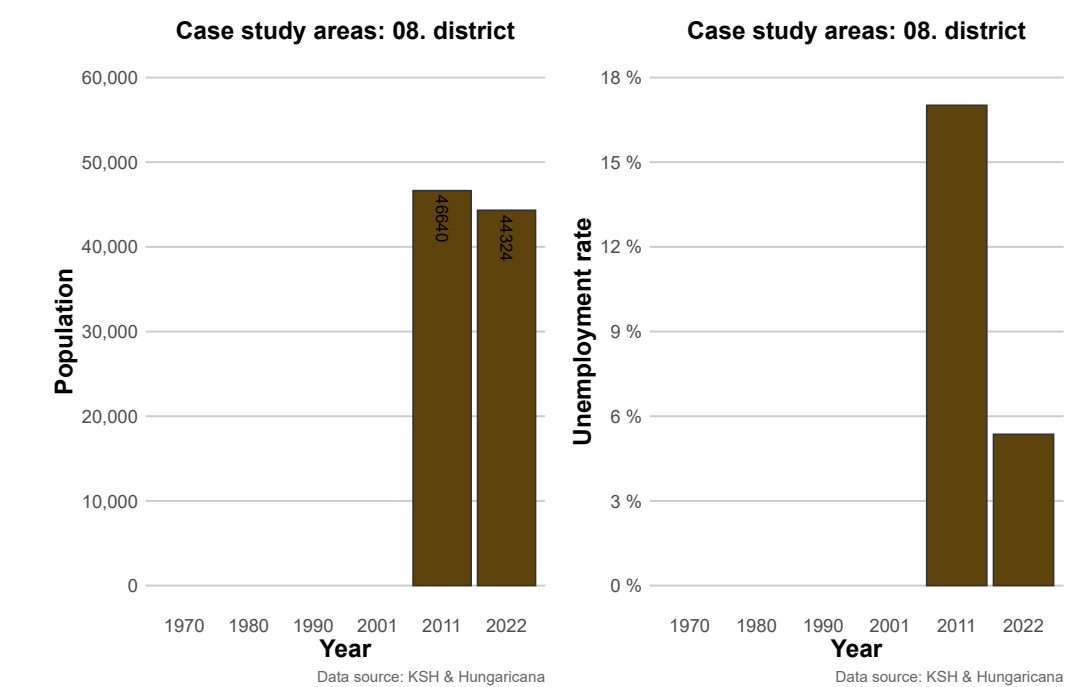


8. district, quarters of Józsefváros

The case study quarters of the 8. district are the *Corvin* quarter, *Csarnok* quarter, *Népszínház* quarter, *Magdolna* quarter, and *Orczy* quarter. The five quarters have a total area of approx. 2.2km² and total population of 44,324 inhabitants. The unemployment rate has been reduced from around 17% to around 5% between 2011 and 2022, remaining a little higher than the city's average.

There is a growing number of foreign population, both with EU (around 10% in 2021) and non-EU (around 3% in 2021) citizenship. Almost 75% of the population had a completed secondary or third-degree education in 2022. The largest percentage of the population belonged to the age group between 20-39 years with approx. 22% in 2022.

It is important to note that there are noticeable differences between the *Palace* quarter, within the *second ring* and the analysed quarters outside of the *second ring*. While the inner part of the district has been affected by gentrification and functional change; the outer part could be characterised, for a long time, by a rather low-income, less educated population and, in some specific areas, with high crime rates. (Alföldi, 2008)

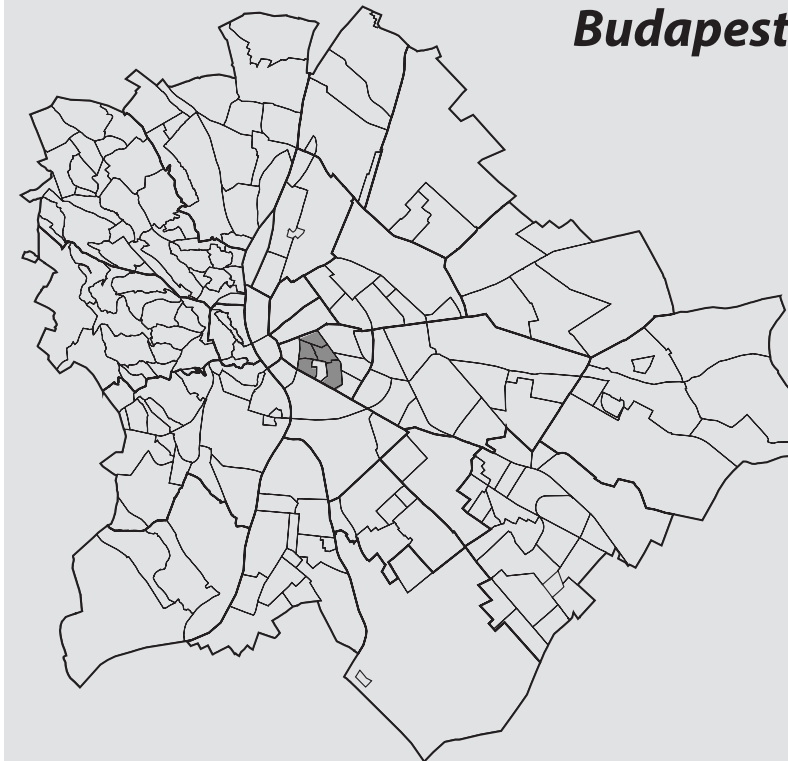


Citizenship

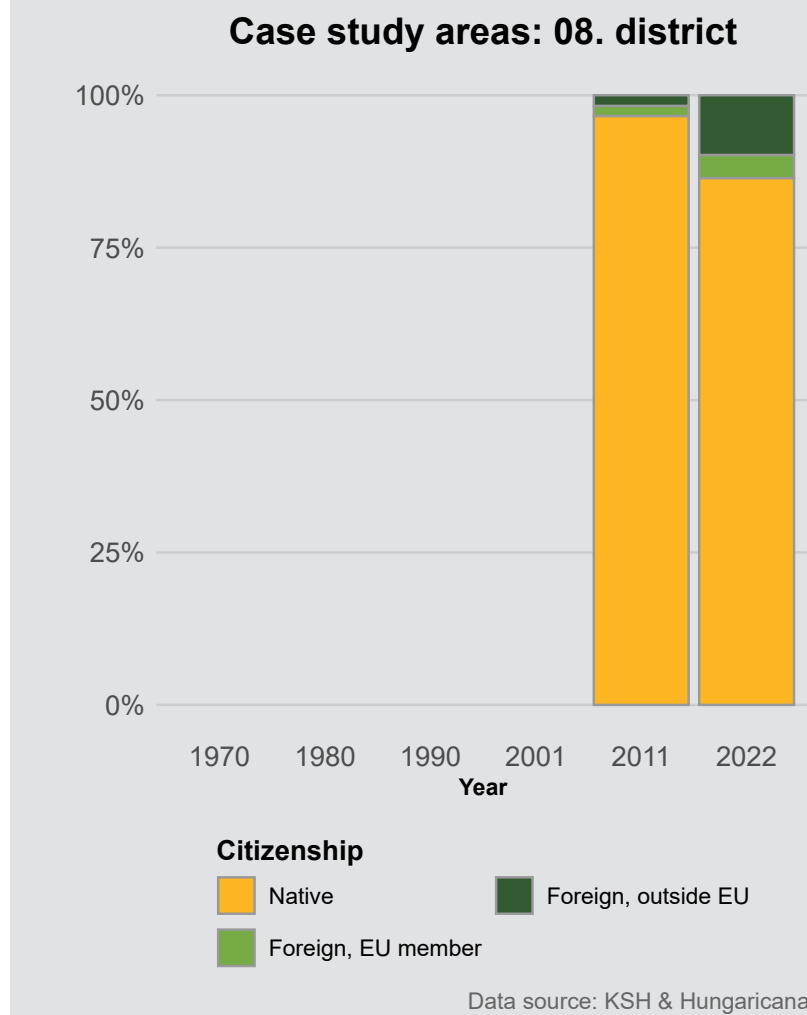
- Native
- Foreign, EU member
- Foreign, outside EU

Data source: KSH & Hungaricana

Budapest



3. Case study quarters

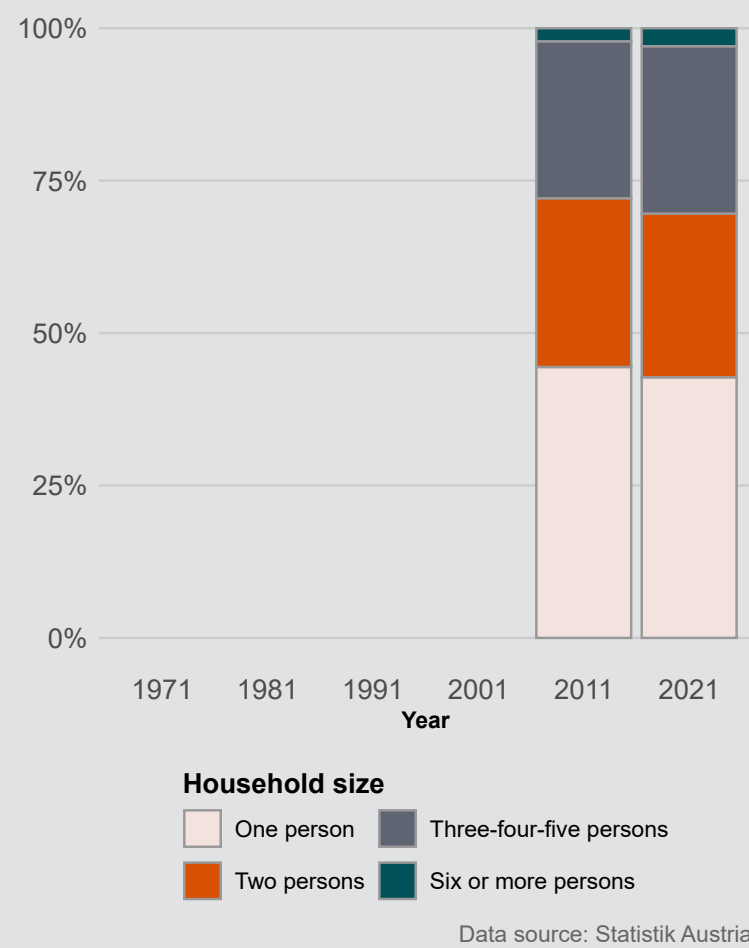


Vienna



3. Case study quarters

Case study areas: 10. district



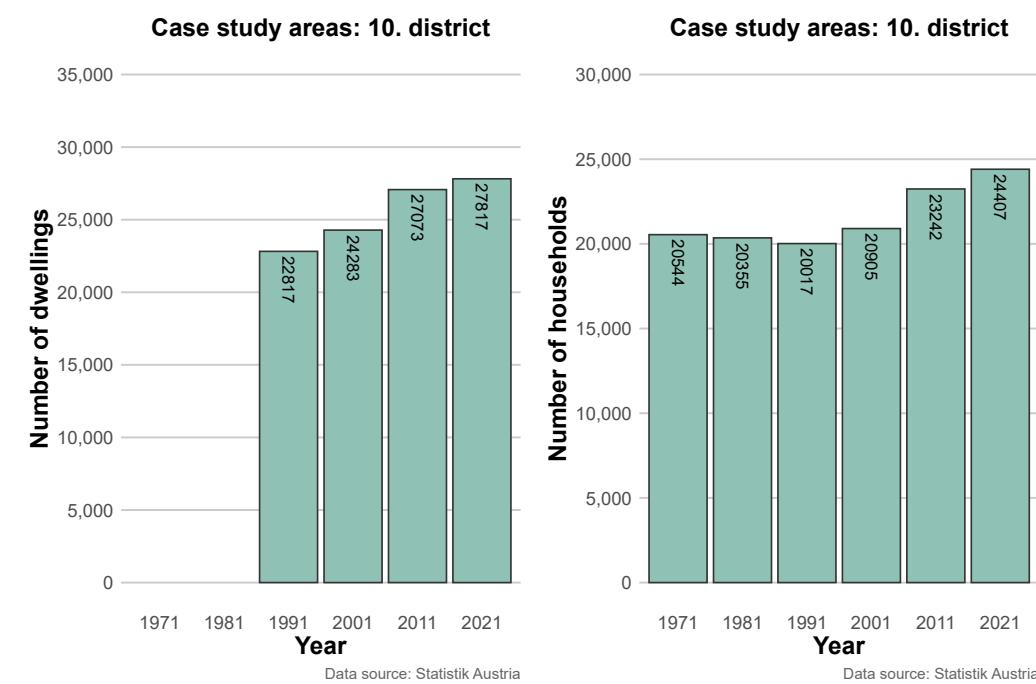
¹⁰ <https://www.immopreise.at/Wien/Wohnung/Eigentum>

¹¹ <https://www.immopreise.at/Wien/Wohnung/Miete>

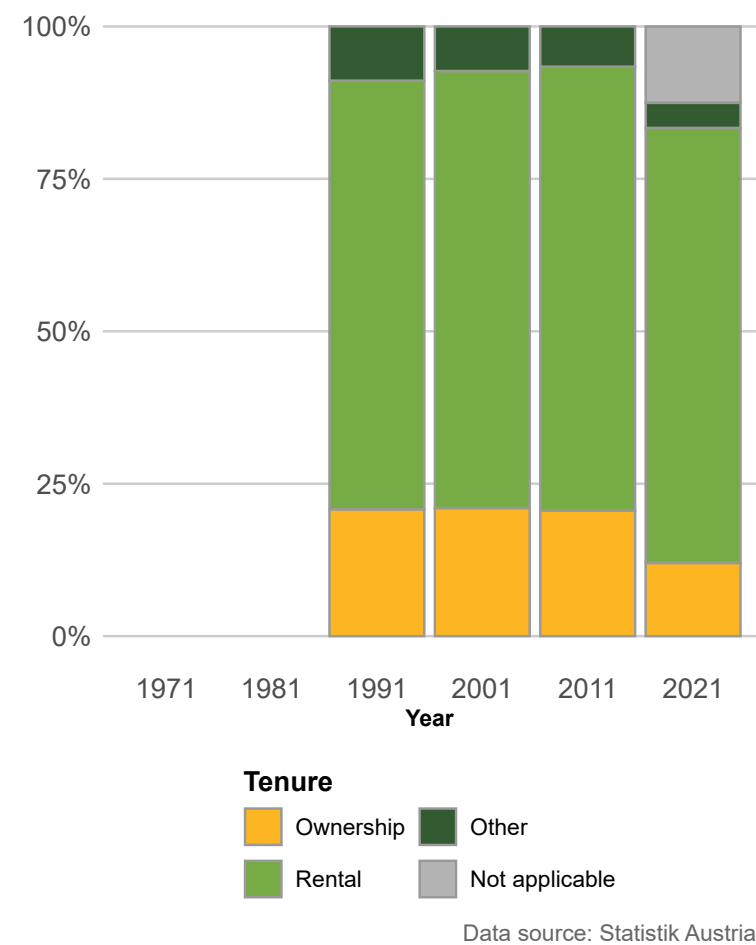
10. district, quarters of Favoriten

The 10. district offered (fourth quartal, 2025) the lowest average purchase price¹⁰ with 5,505€/m² and the ninth (middle-range) place in terms of rental price in Vienna¹¹ with 20.35€/m². It is important to note that the 10. district has a total area of 31.8 km² from which we are analysis 1.8km². There can be huge price differences between old and new, central and peripheral areas.

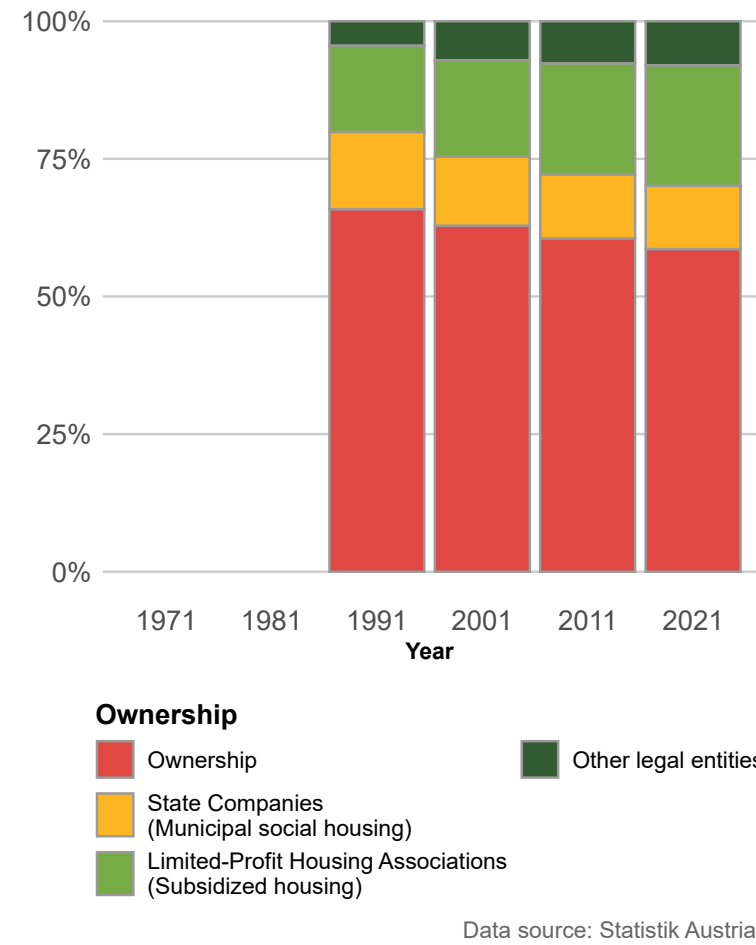
The number of dwellings has grown from 22,817 in 1991 to 27,817 in 2021. In the same period, the number of households has also grown from 20,544 in 1971 to 24,407 in 2021. The number of one person households has been stagnating around 40% in the past two decades. Most of the dwellings are in private ownership (60%), in the hand of cooperatives (limited-profit housing associations, around 25%) or in the hand of state companies (municipal social housing, around 10%). Around 80% of the dwellings were being rented in 2021.



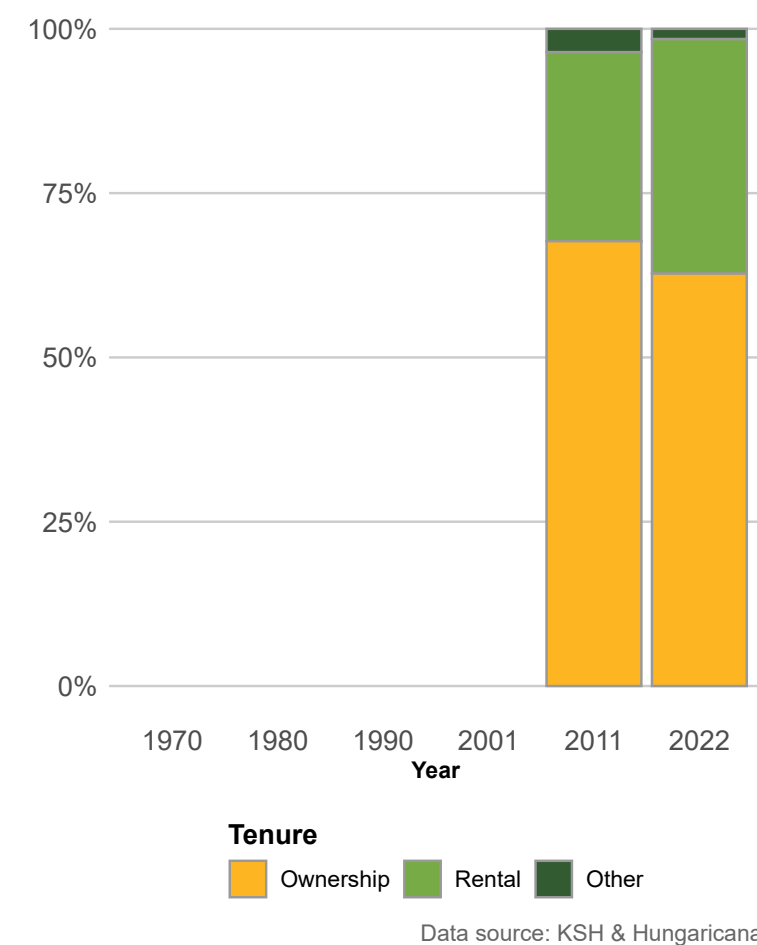
Case study areas: 10. district



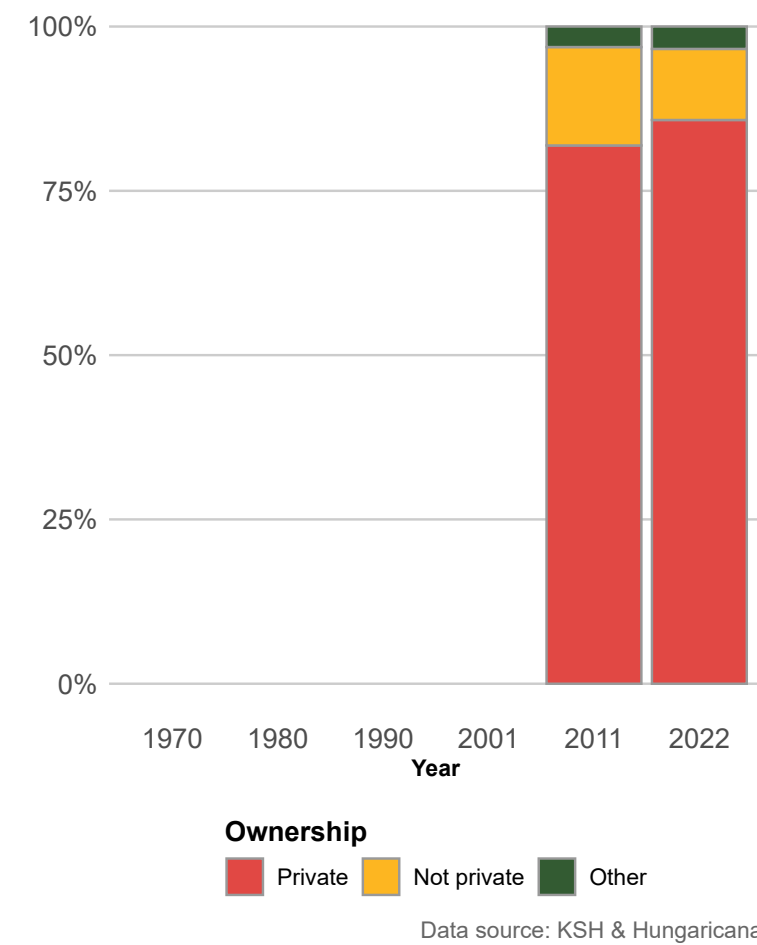
Case study areas: 10. district



Case study areas: 08. district



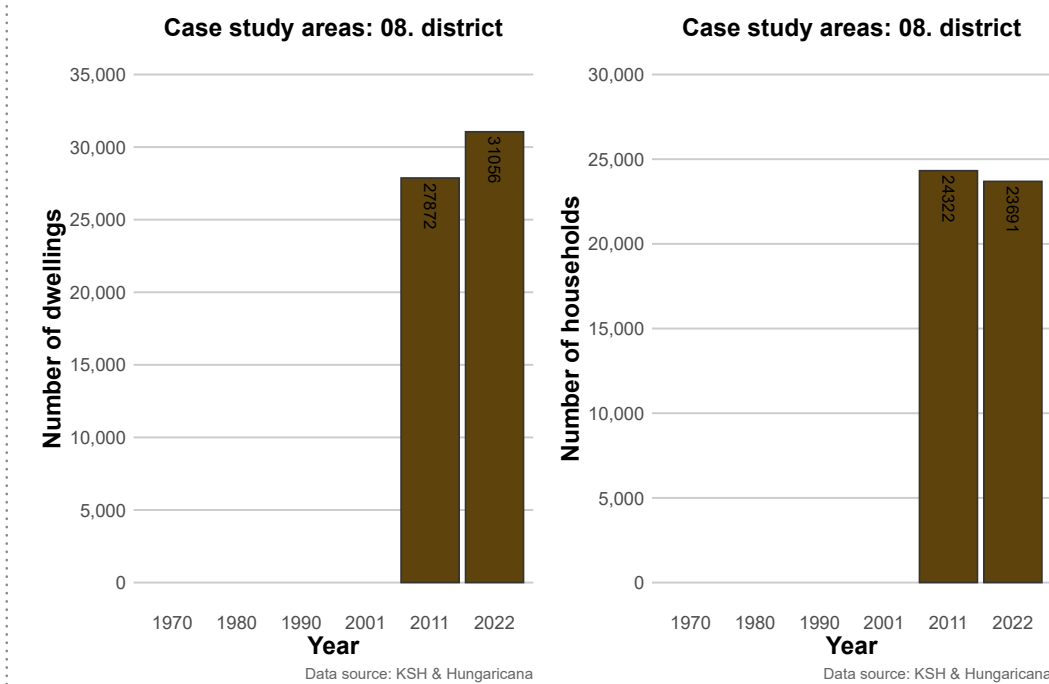
Case study areas: 08. district



8. district, quarters of Józsefváros

The 8. district offered (fourth quartal, 2025) some of the highest average rental prices in Budapest⁷ with 6,216Ft/m². Similarly, the area offered some of the highest average purchase prices in Budapest⁷ with 1,436,383Ft/m². With the rate of approx. 390Ft = 1€, these prices can be converted to 15.94€/m² for rental and 3,683€/m² purchase prices. The number of dwellings in the 8. district has grown from 27,872 in 2011 to 31,056 in 2022. During the same period, the number of households was reduced from 24,322 to 23,691. Simultaneously, the number of one person households has grown from below 50% in 2011 to around 60% in 2022. The number of dwellings in private ownership and use has grown to 80% between 2011 and 2022. In 2022, around 40% were private rental dwellings.

The district's urban planning company, Rév8 has been implementing projects of social rehabilitation since the 1990s in these quarters. One example is the EU funded rehabilitation of the *Magdolna* quarter (Alföldi, 2008).

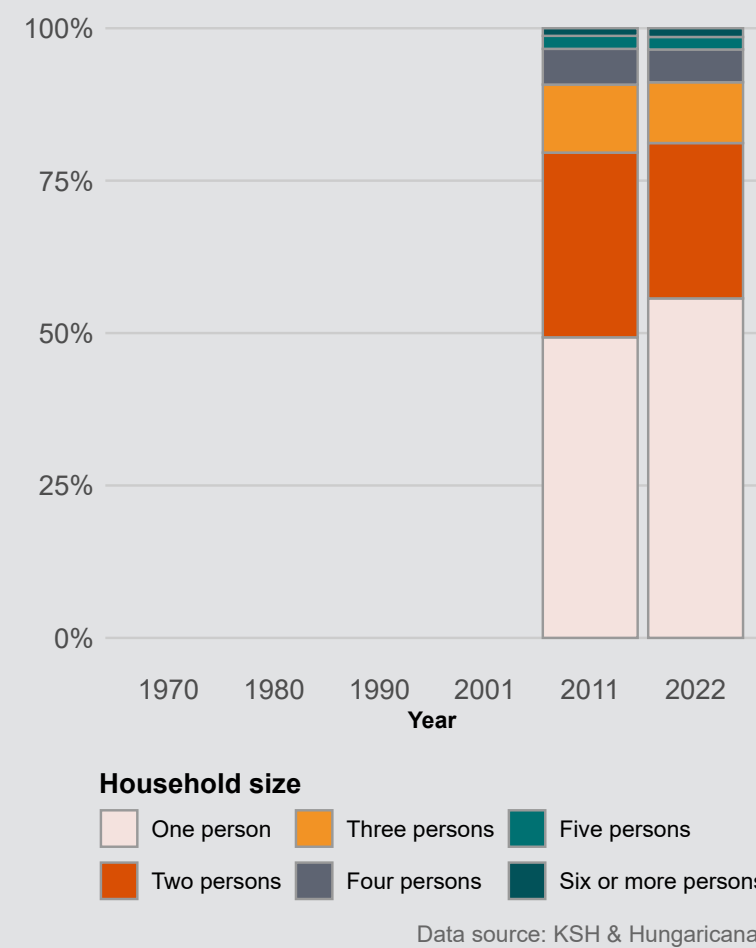


Budapest



3. Case study quarters

Case study areas: 08. district



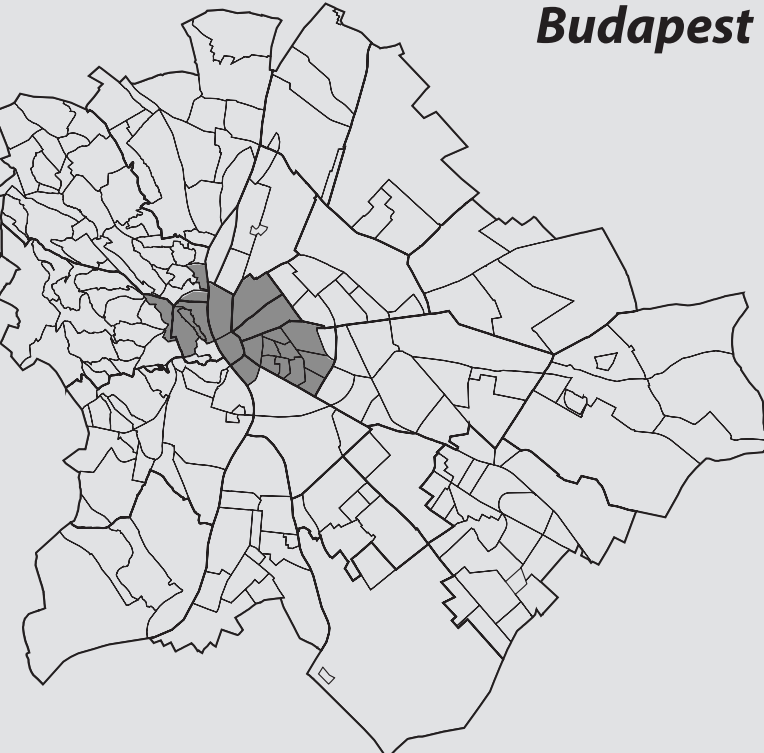
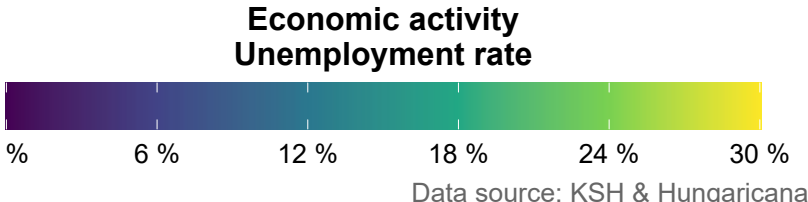
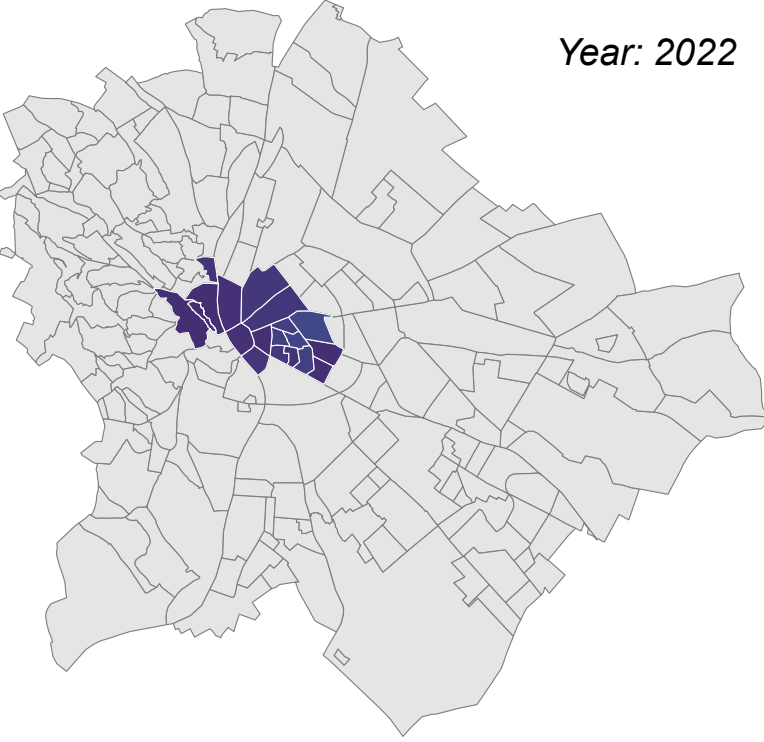
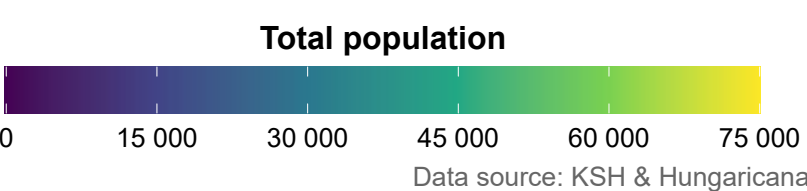
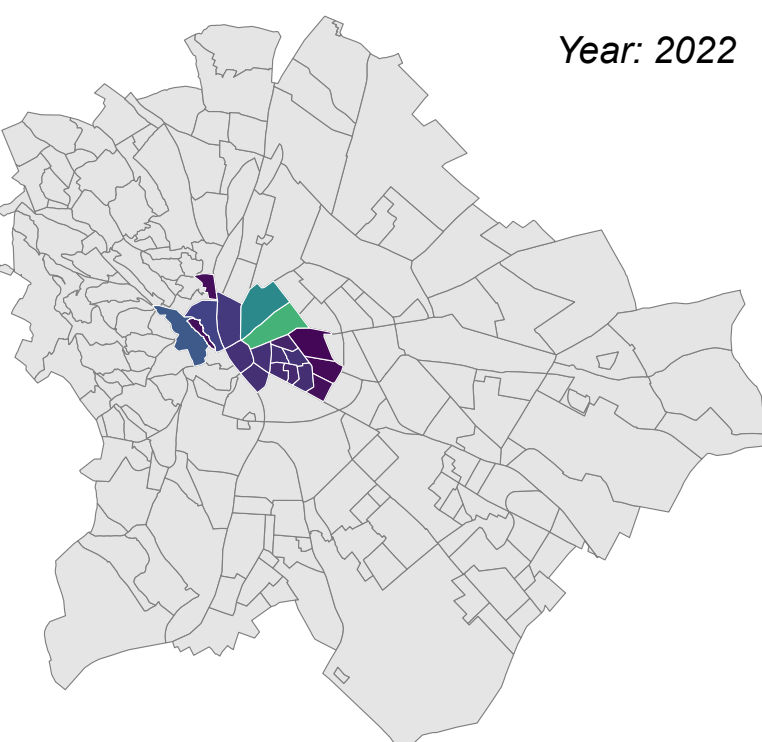
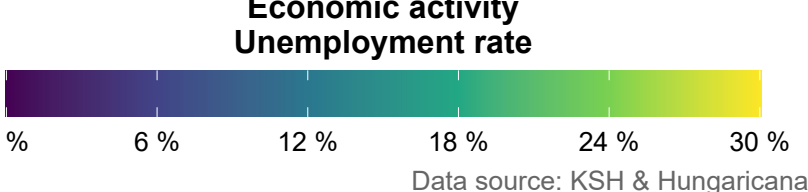
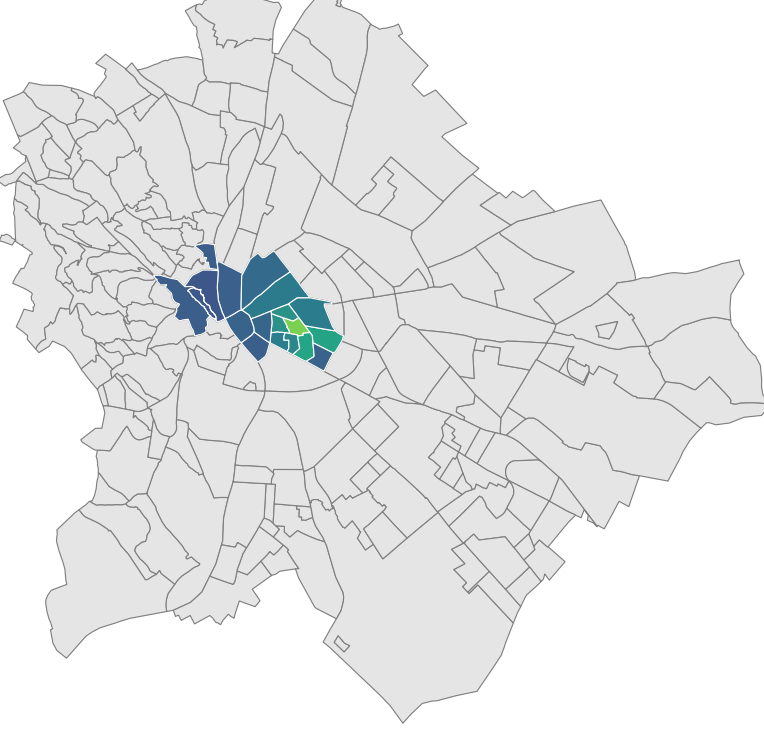
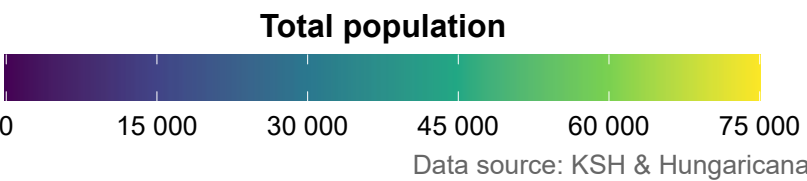
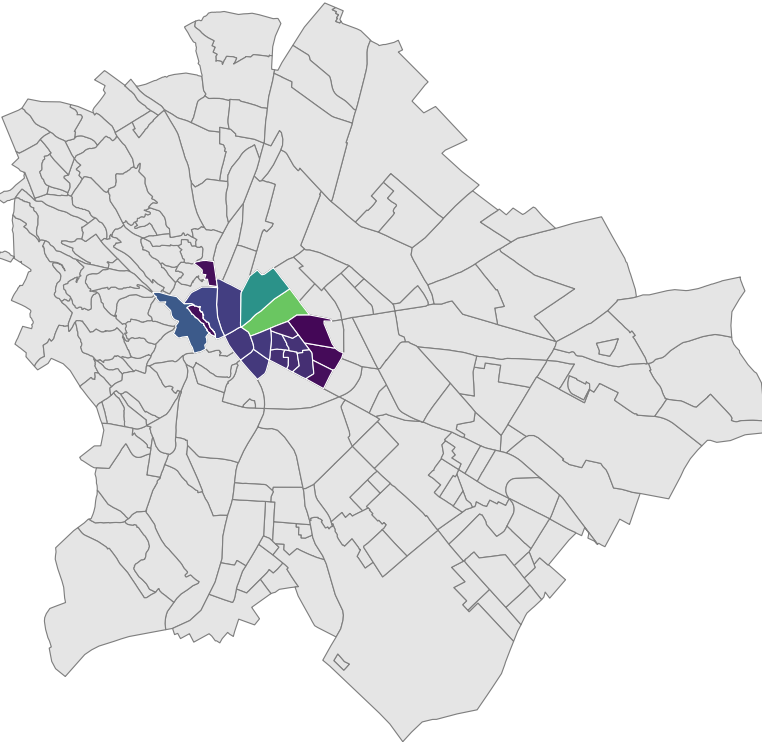
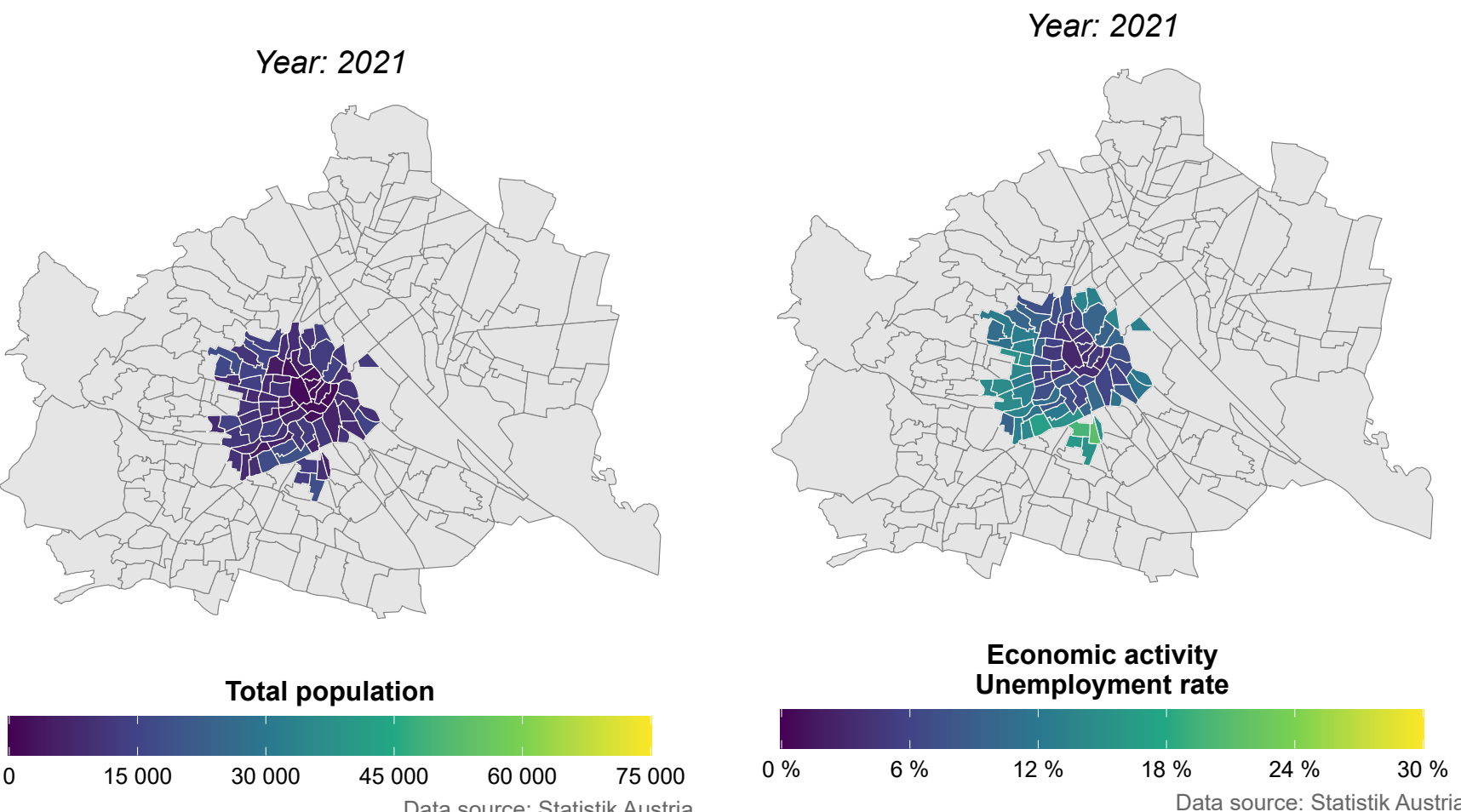
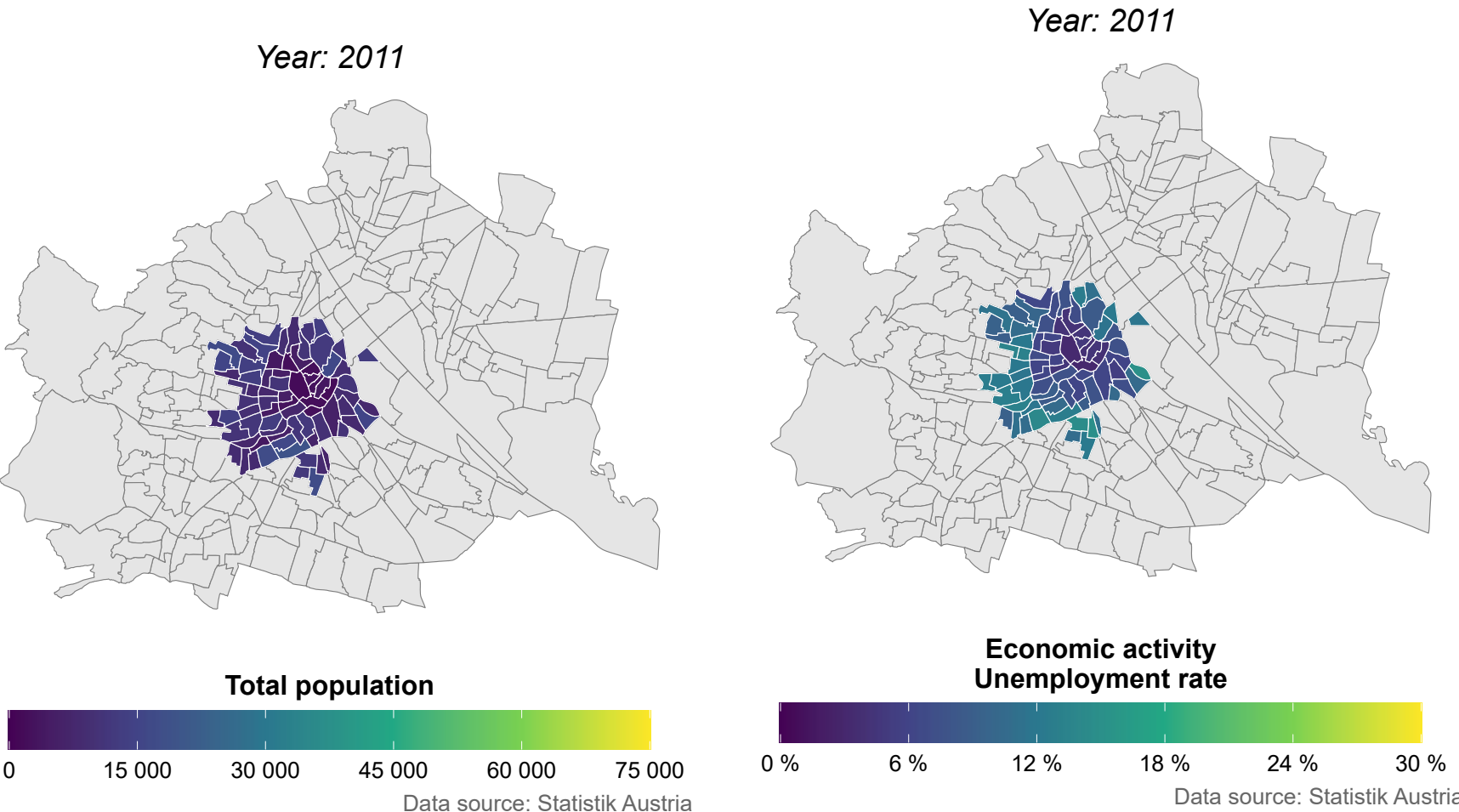
⁸ <https://www.ingatlanet.hu/statisztika/budapest-viii-kerulet>



4. Historic quarters

Number of population between 2011 and 2021 in the historic quarters of Vienna, as well as unemployed population in the same period.

Socio-economic structure in the historic quarters of Vienna and Budapest



4. Historic quarters

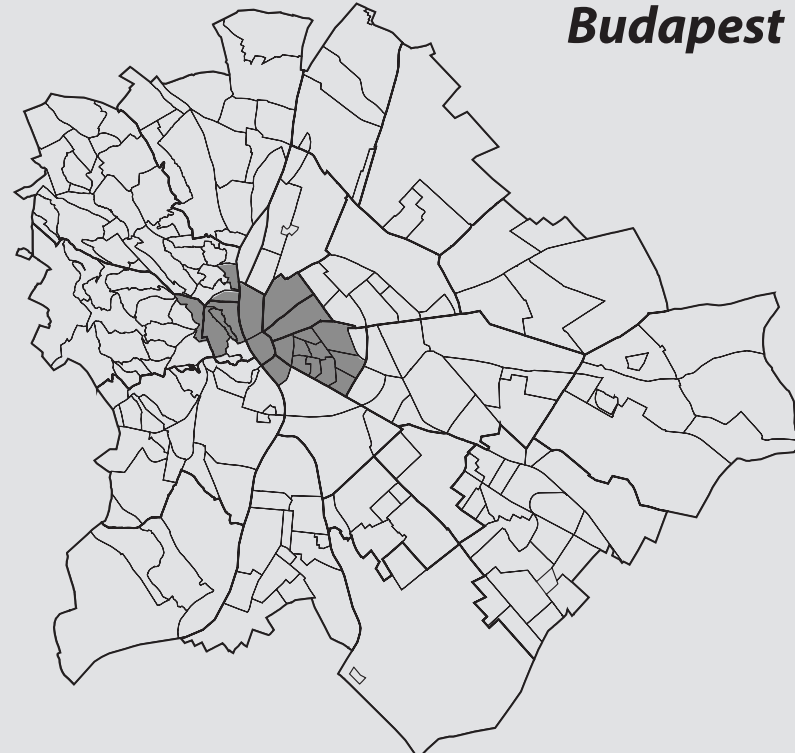
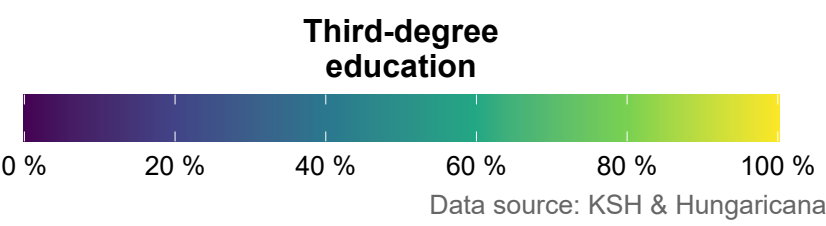
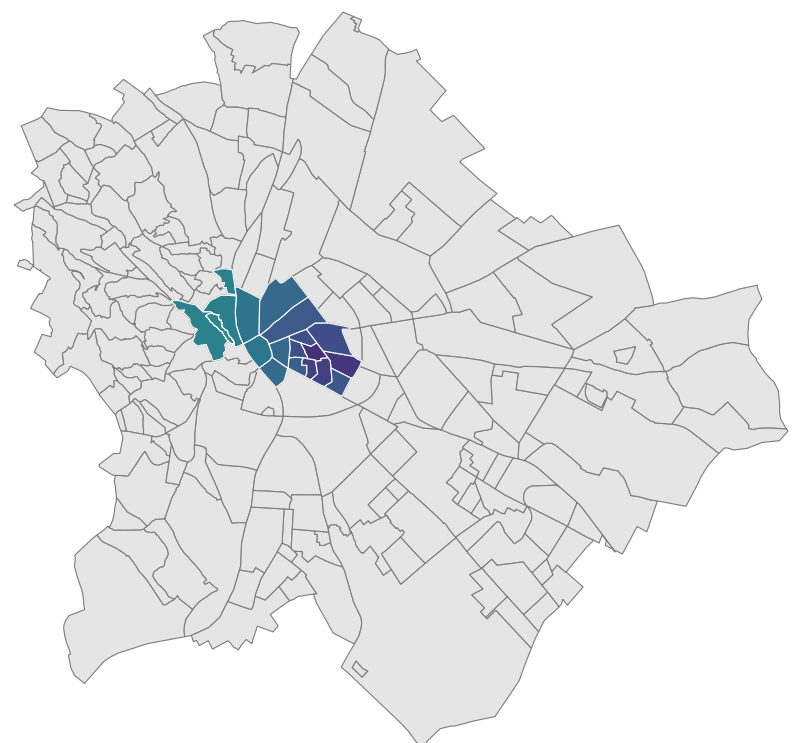
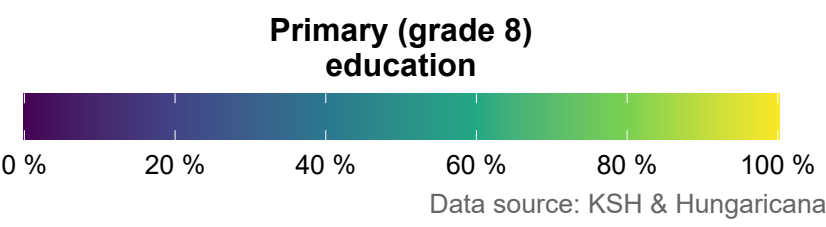
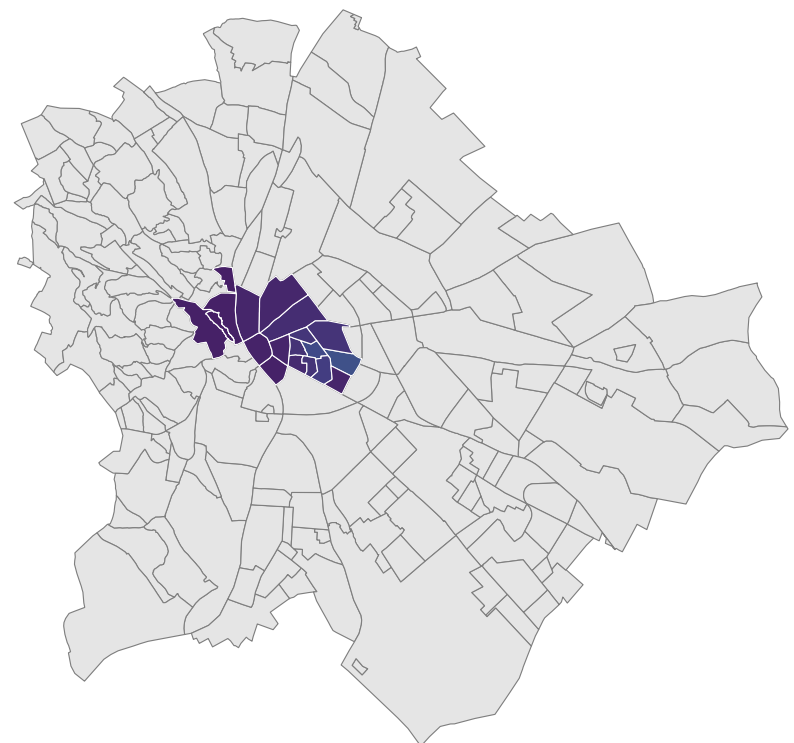
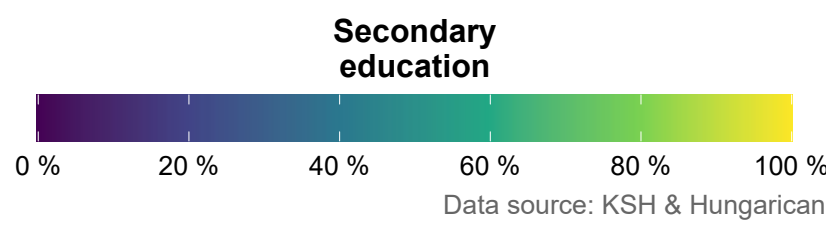
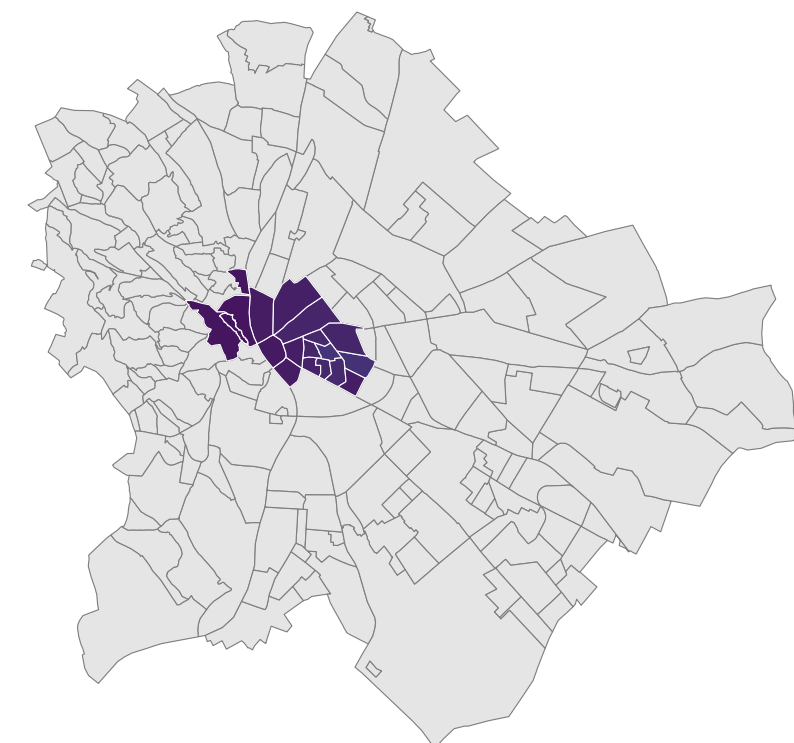
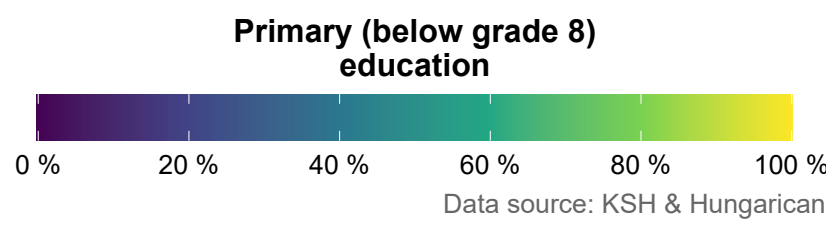
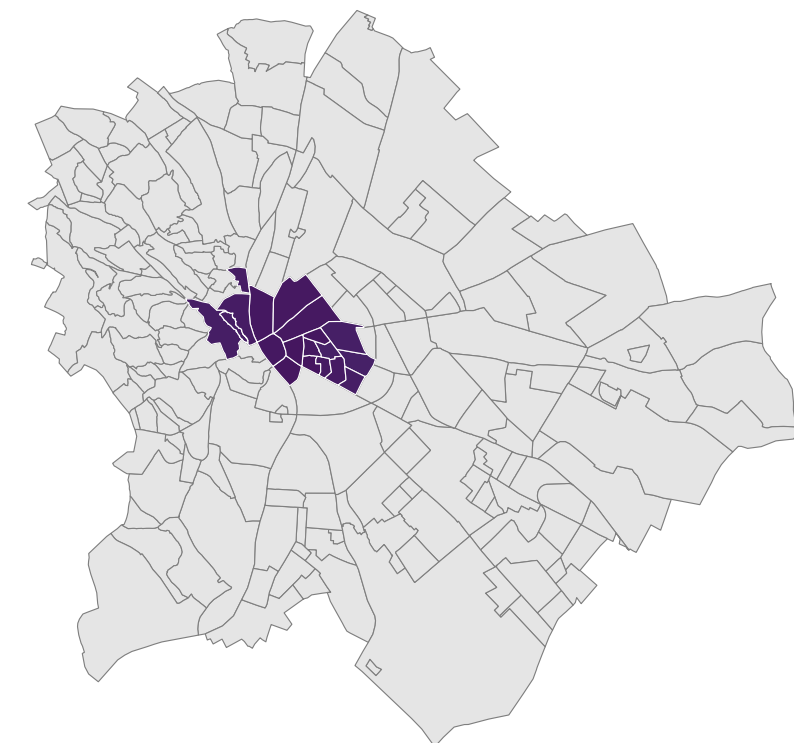
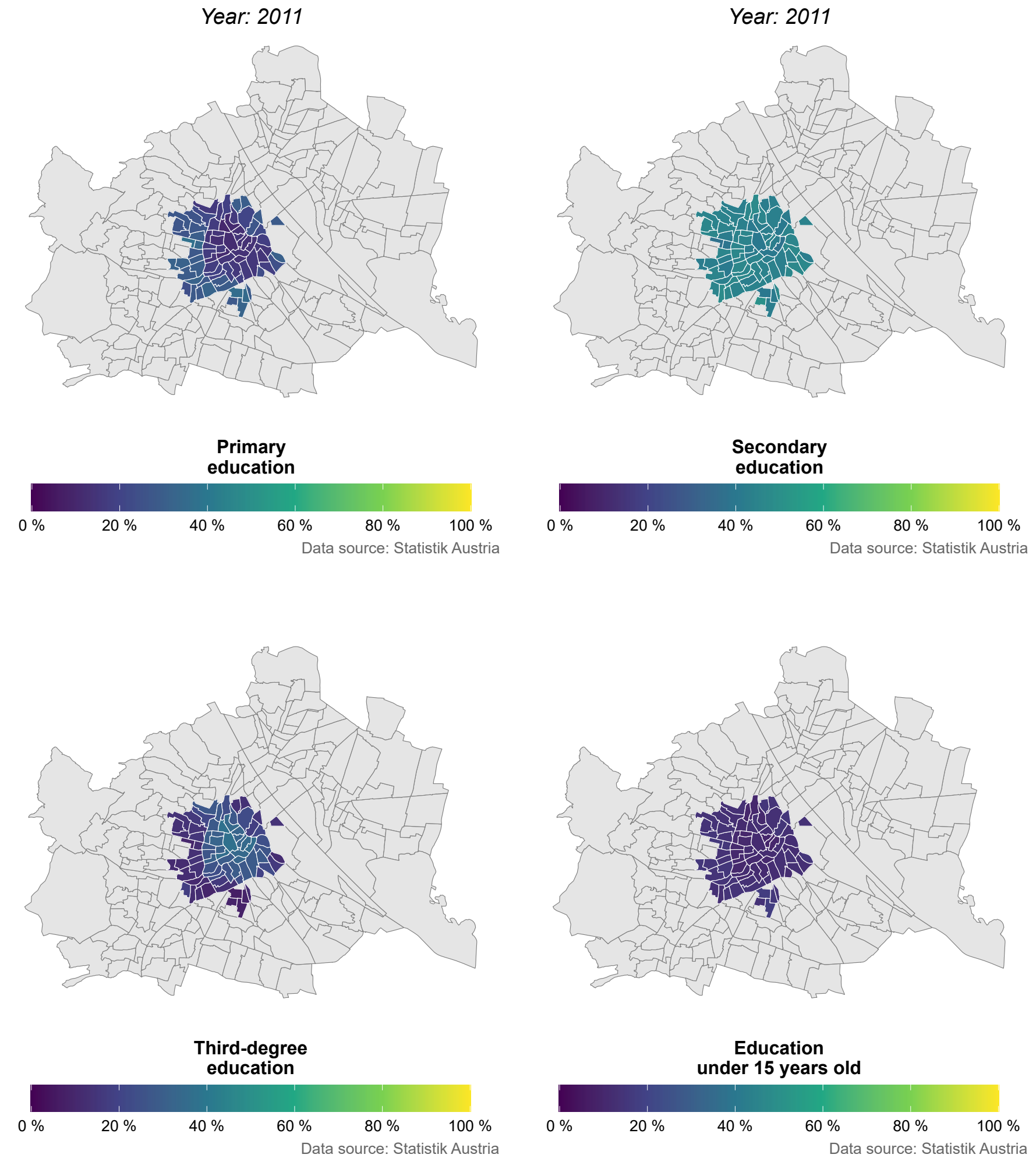
Number of population between 2011 and 2021 in the historic quarters of Budapest, as well as unemployed population in the same period.



4. Historic quarters

Percentage of different levels of completed education in the historic quarters of Vienna in 2011.

Socio-economic structure in the historic quarters of Vienna and Budapest



4. Historic quarters

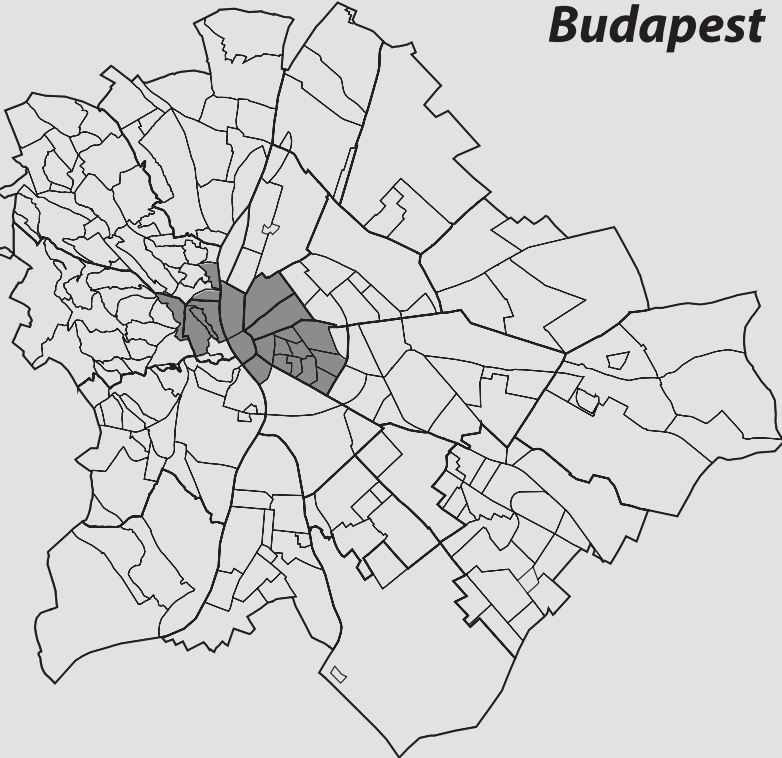
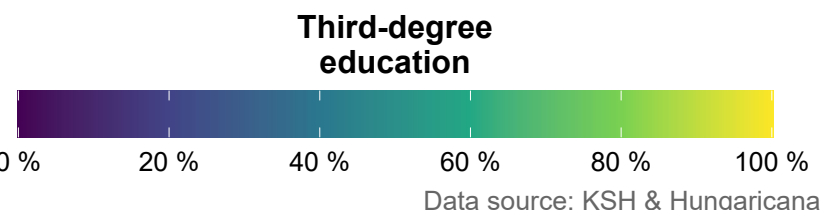
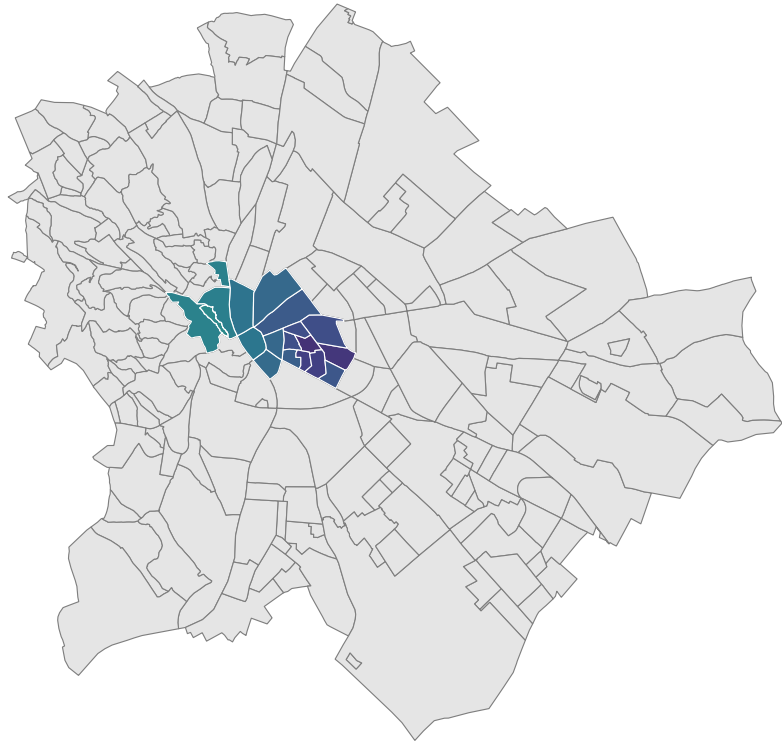
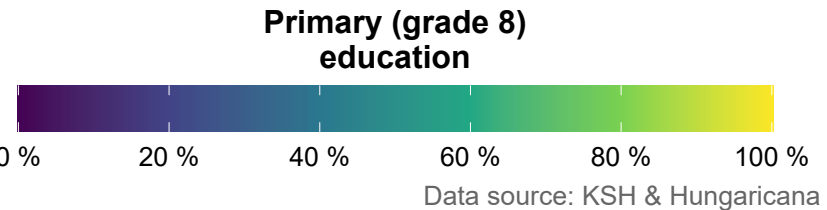
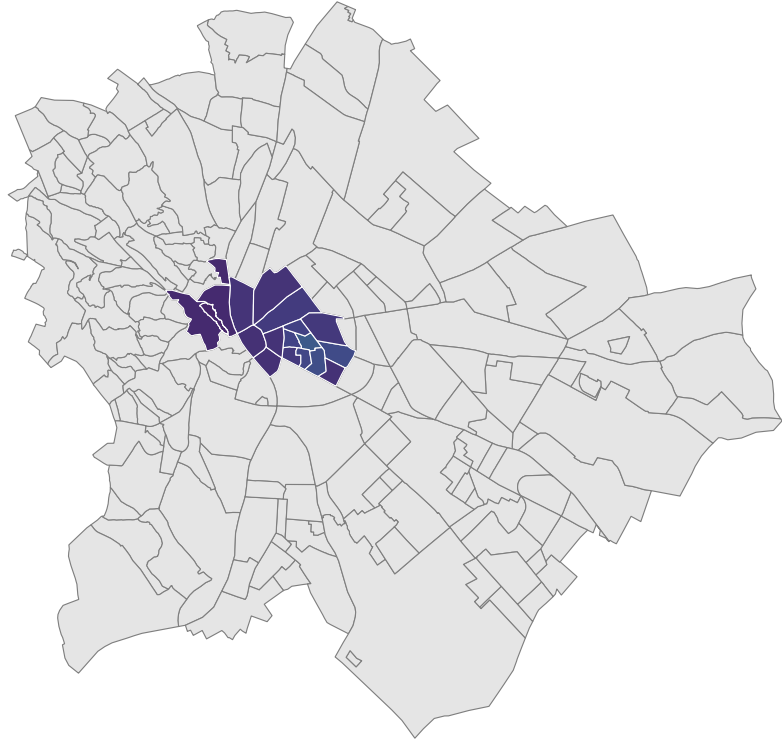
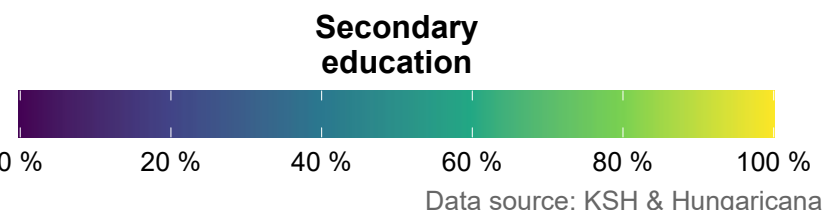
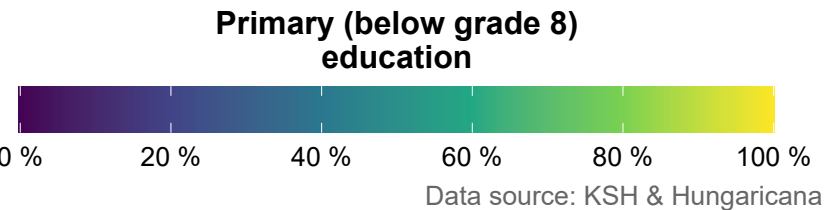
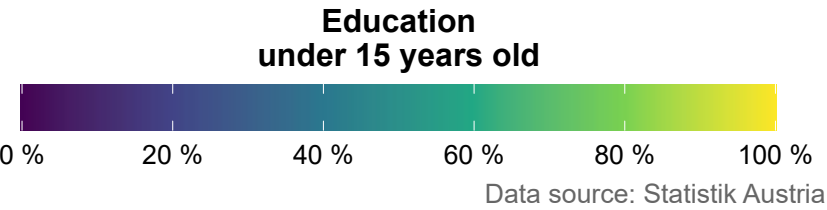
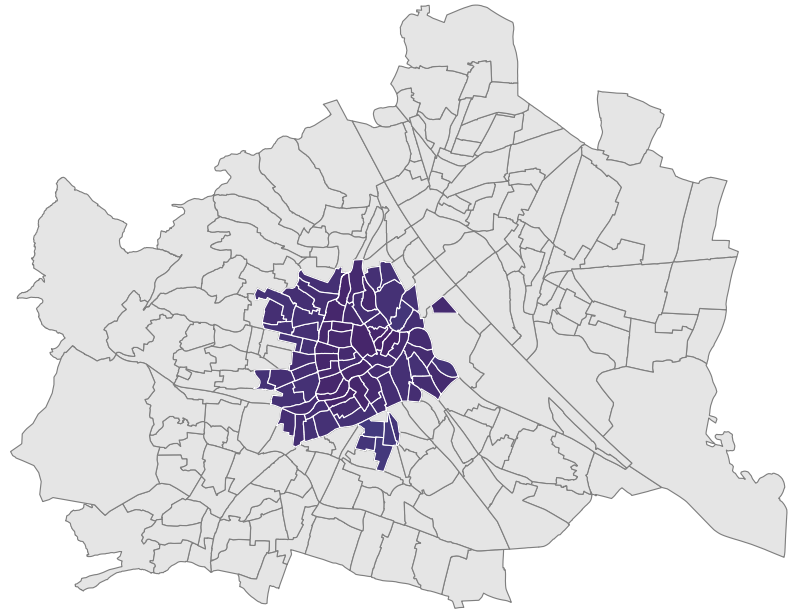
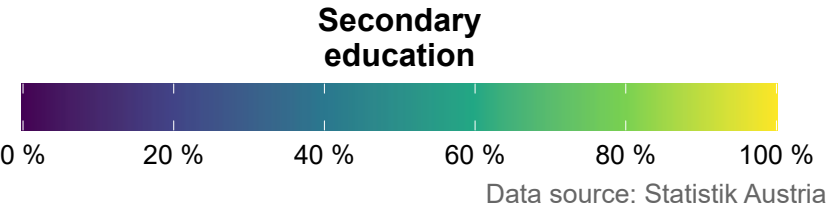
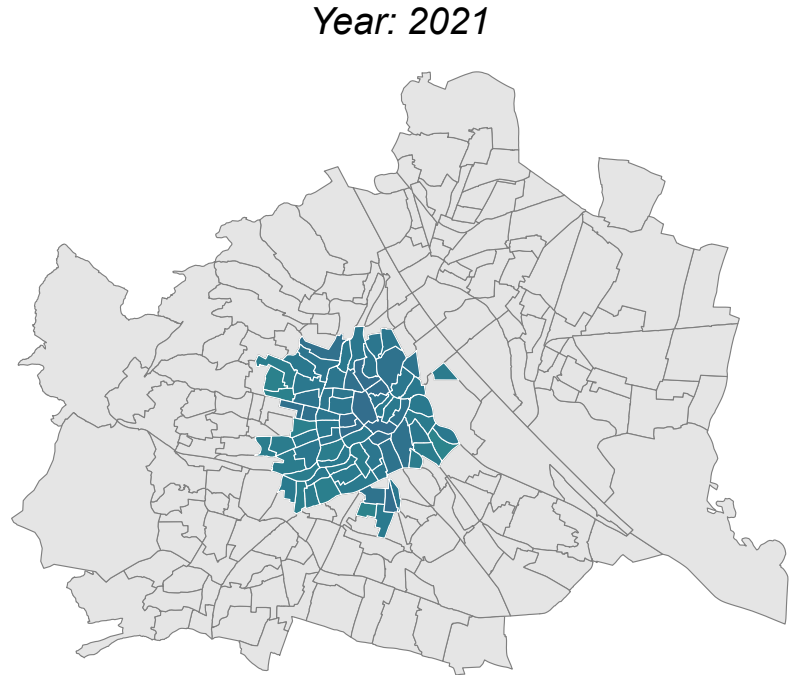
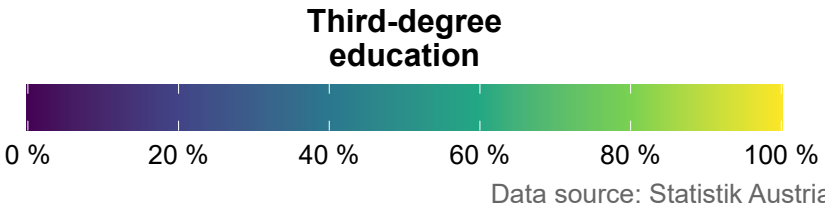
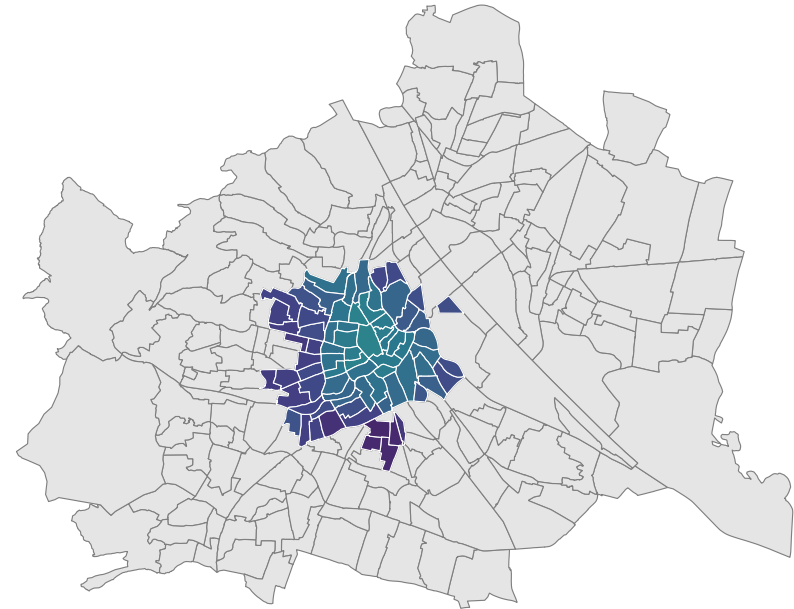
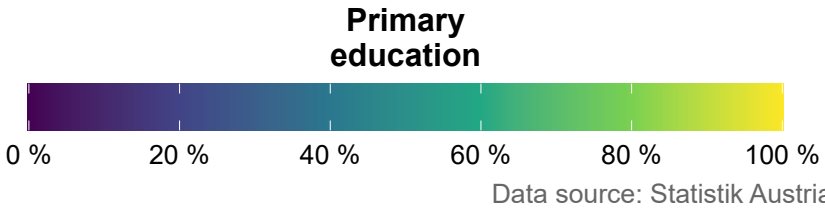
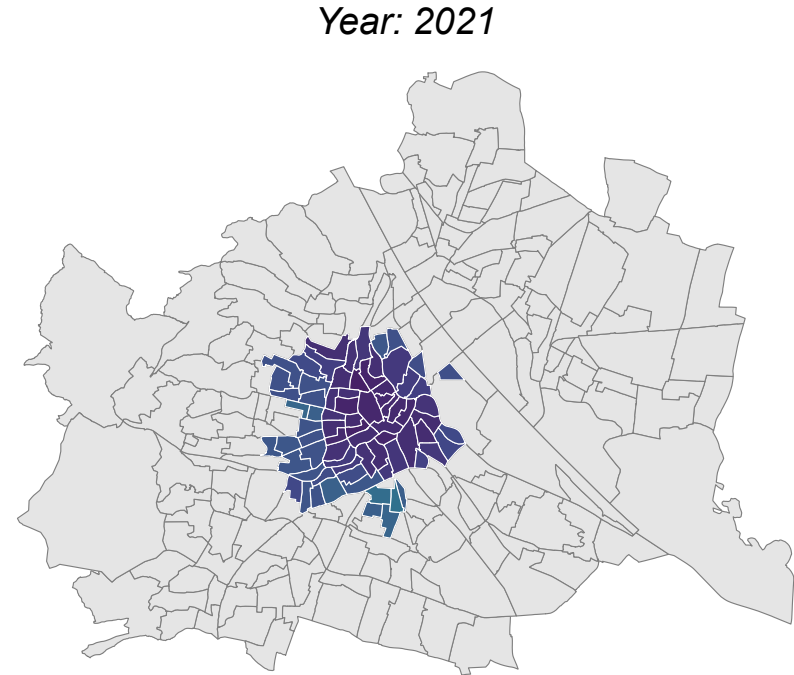
Percentage of different levels of completed education in the historic quarters of Budapest in 2011.



4. Historic quarters

Percentage of different levels of completed education in the historical quarters of Vienna in 2021.

Socio-economic structure in the historic quarters of Vienna and Budapest



4. Historic quarters

Percentage of different levels of completed education in the historical quarters of Budapest in 2022.

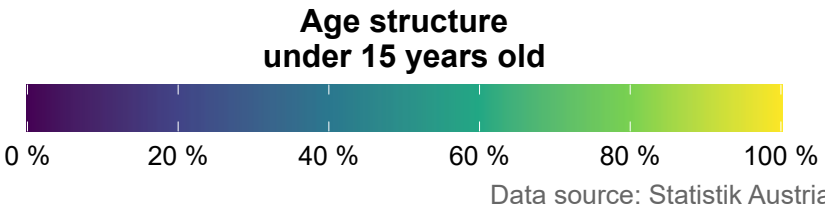
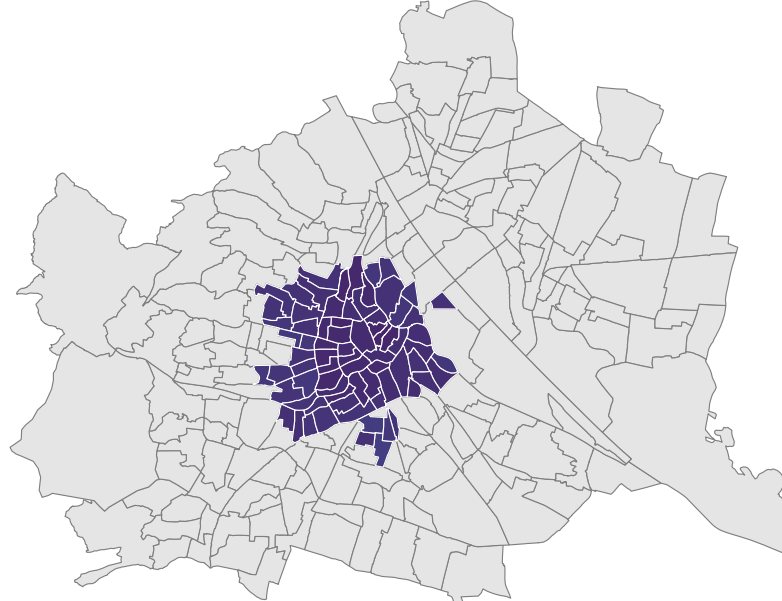


4. Historic quarters

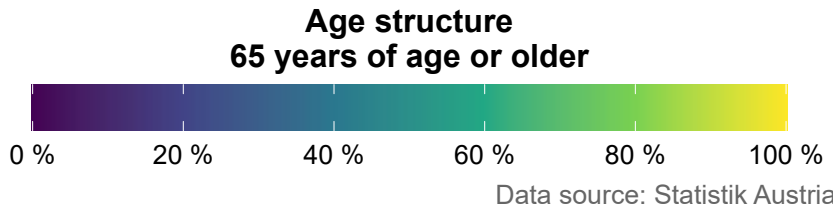
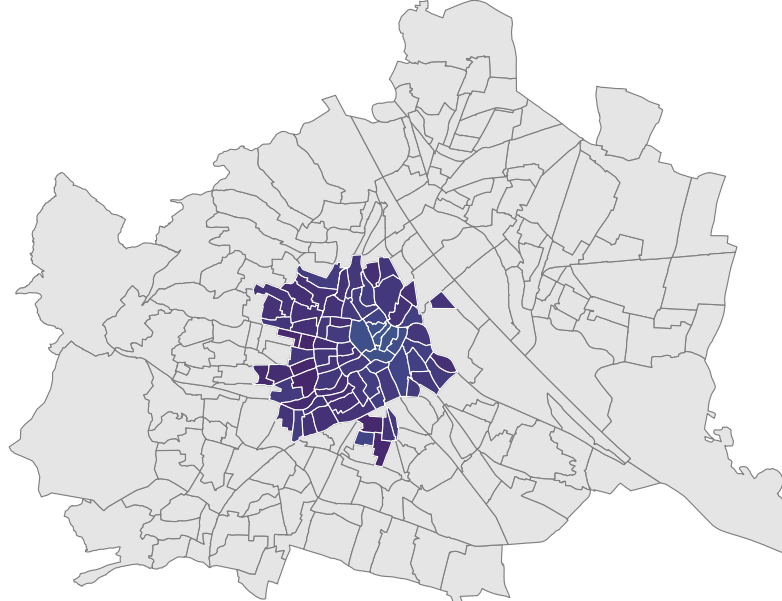
Age structure in the historic quarters of Vienna between 2011 and 2021.

Socio-economic structure in the historic quarters of Vienna and Budapest

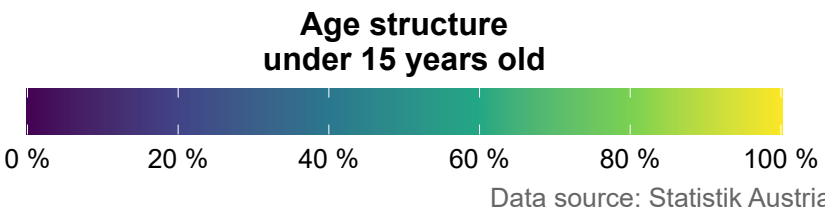
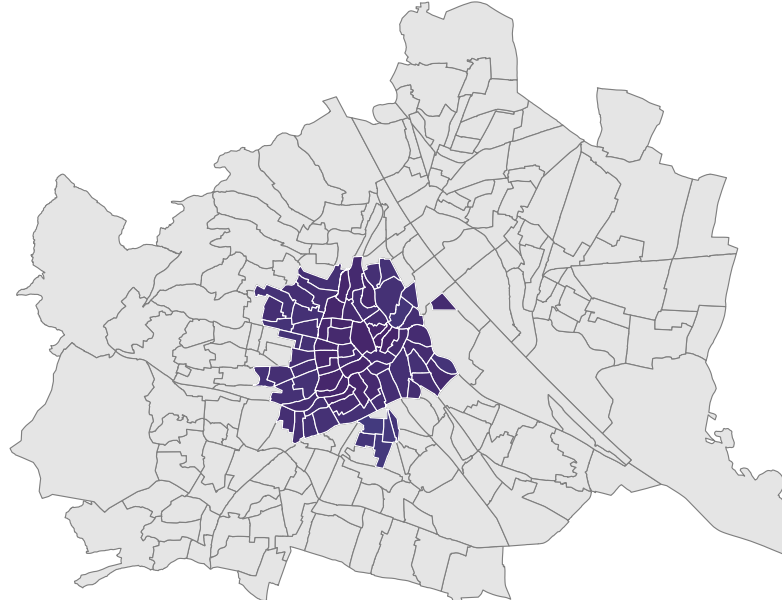
Year: 2011



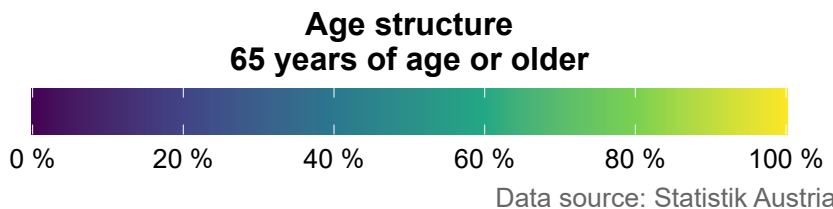
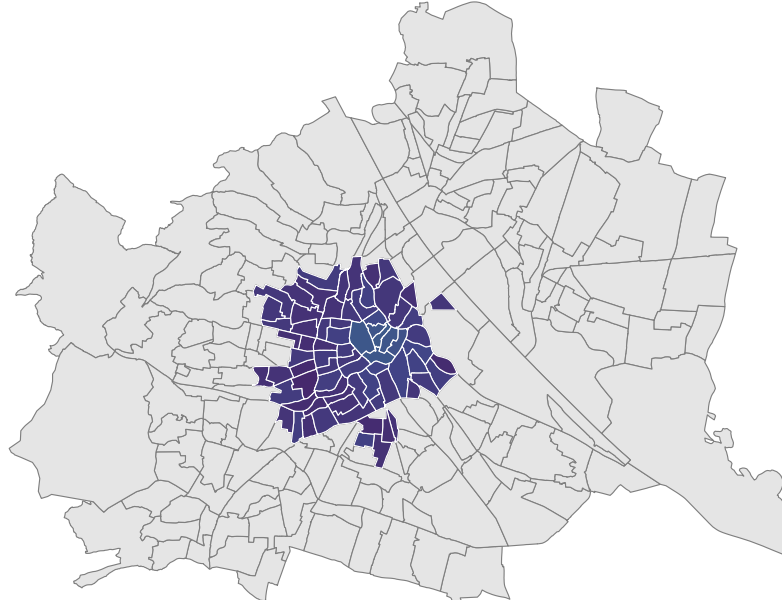
Year: 2011



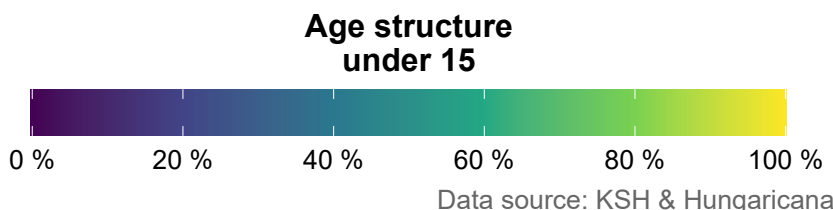
Year: 2021



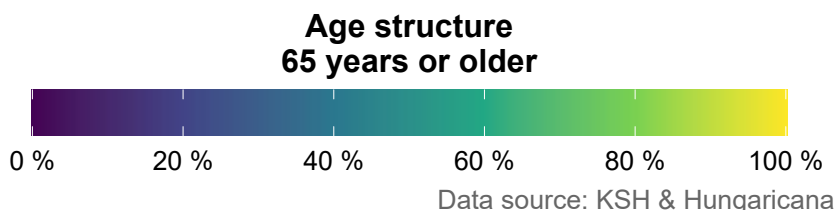
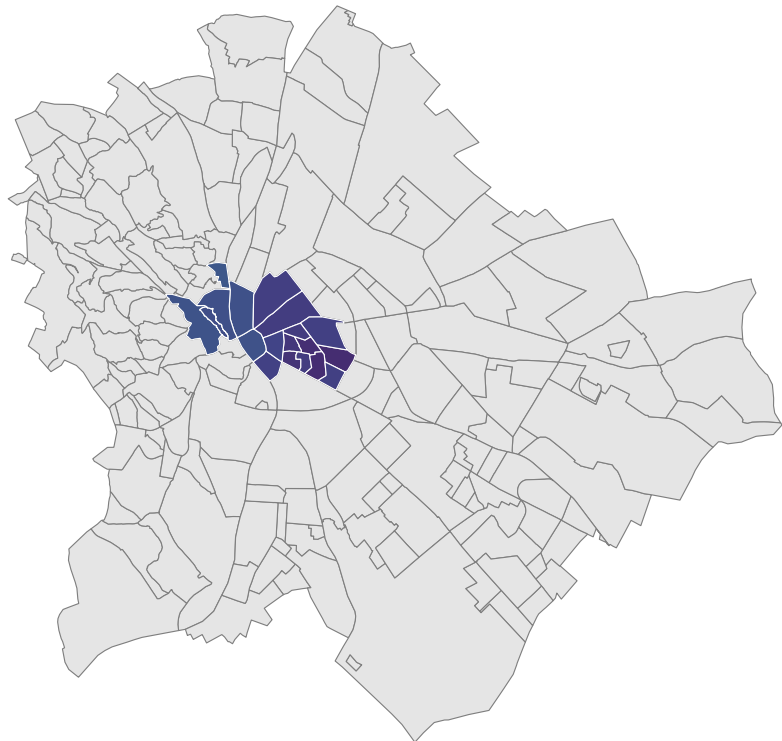
Year: 2021



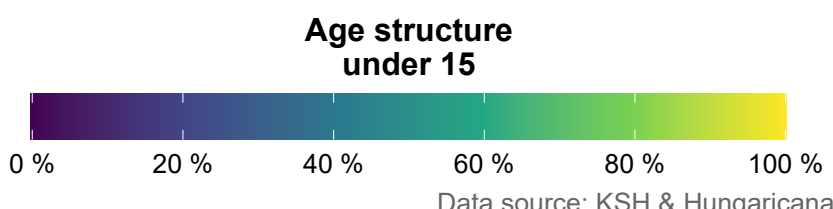
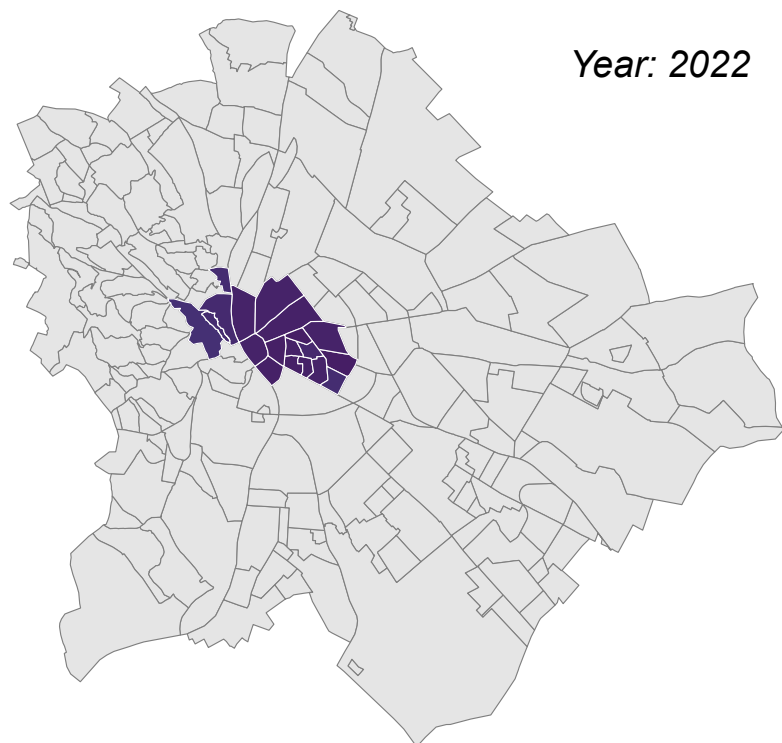
Year: 2011



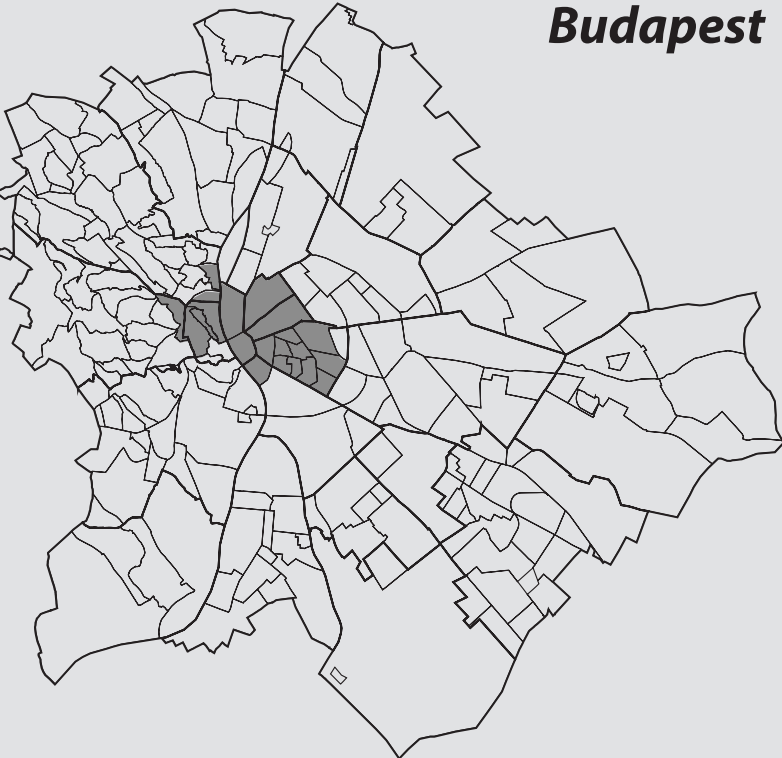
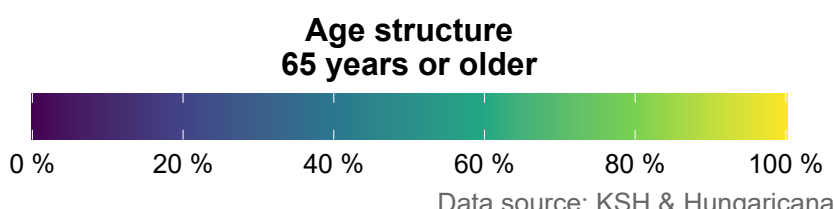
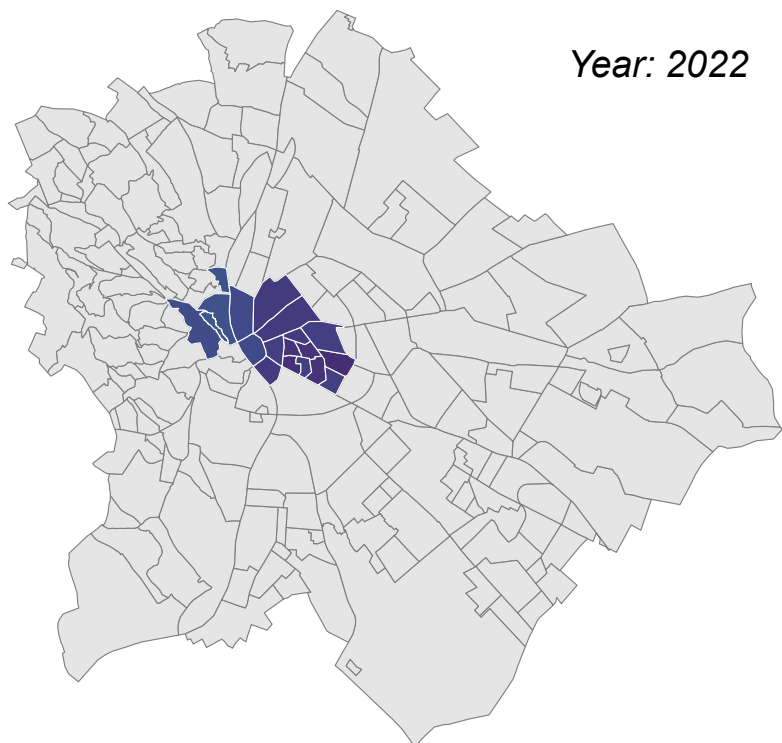
Year: 2011



Year: 2022



Year: 2022



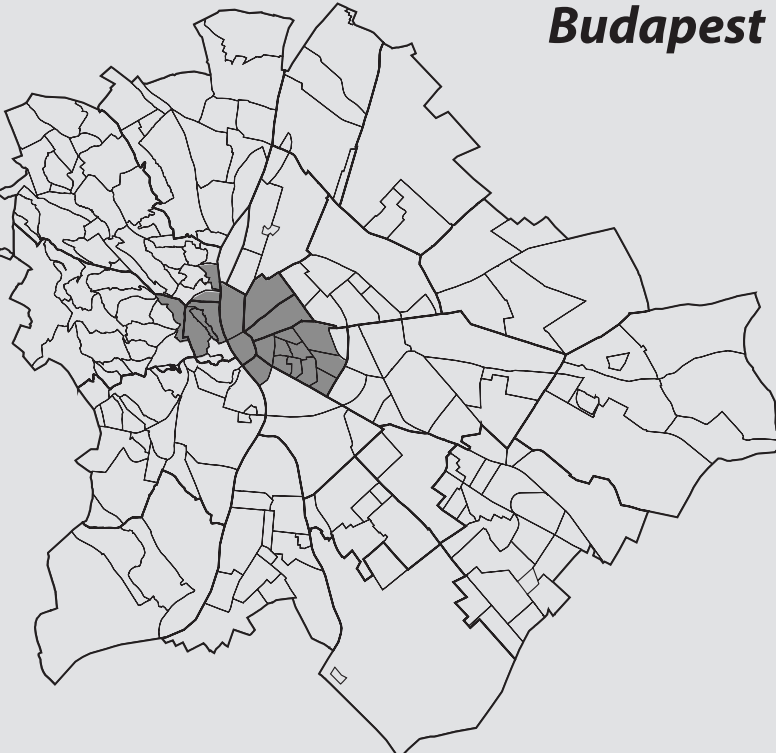
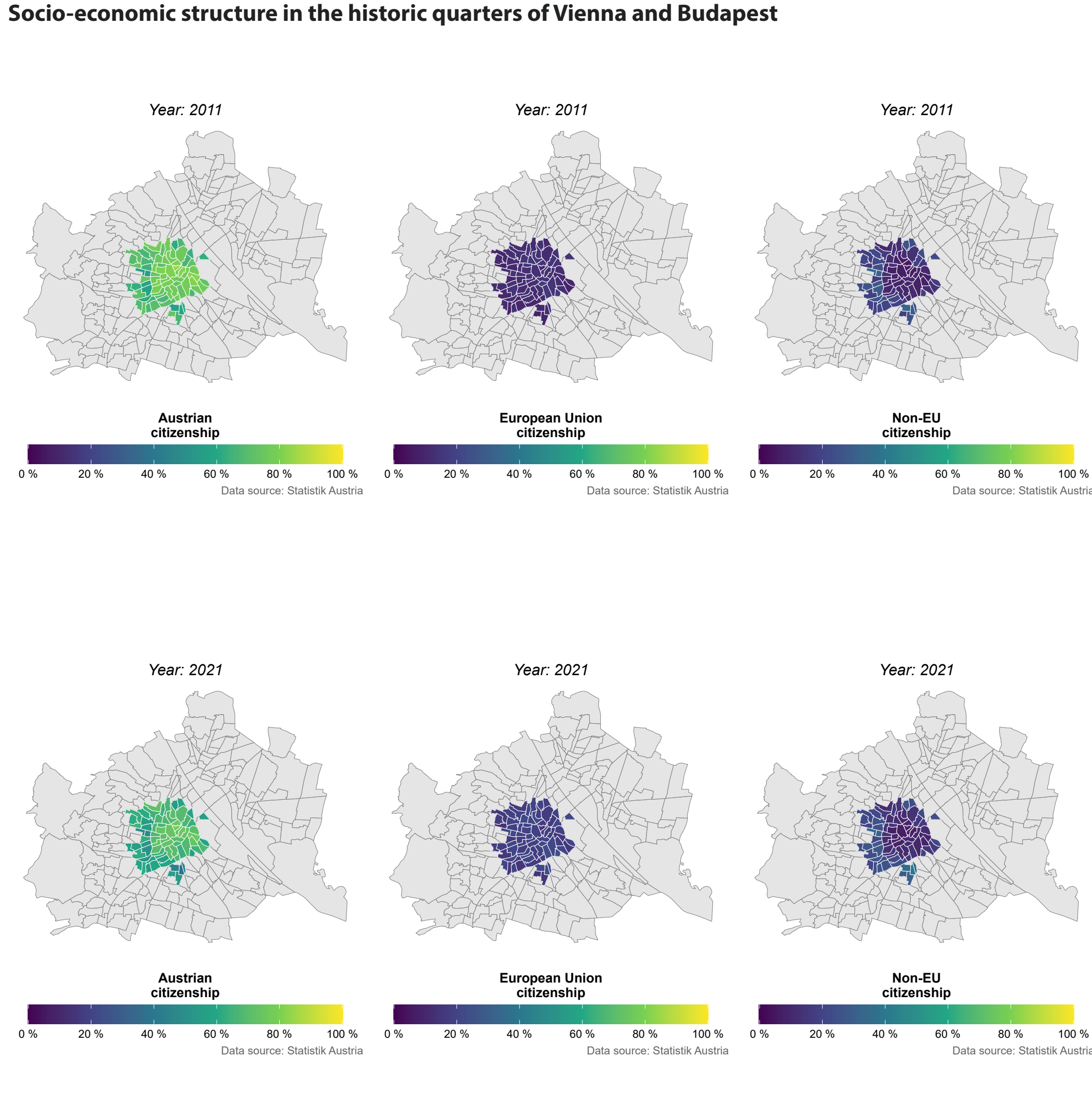
4. Historic quarters

Age structure in the historic quarters of Budapest between 2011 and 2022.



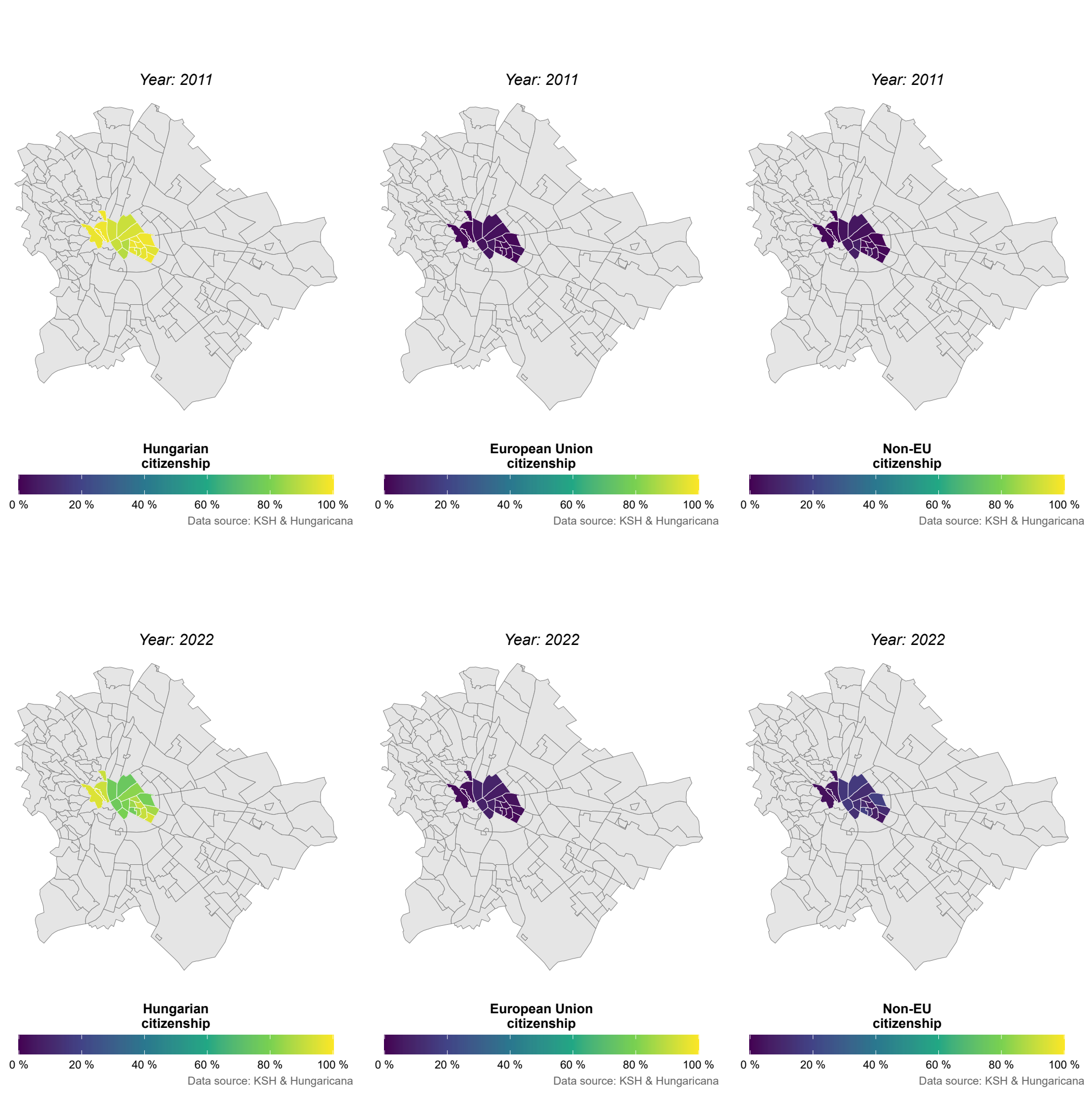
4. Historic quarters

Percentage of Austrian and foreign citizens in the historic quarters of Vienna between 2011 and 2021.



4. Historic quarters

Percentage of Hungarian and foreign citizens in the historic quarters of Budapest between 2011 and 2022.

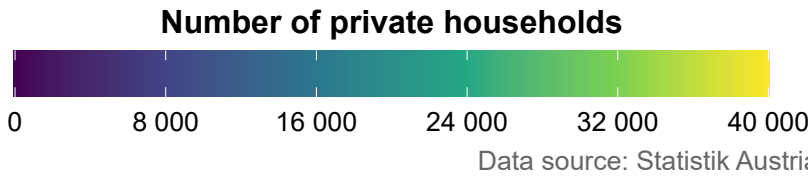
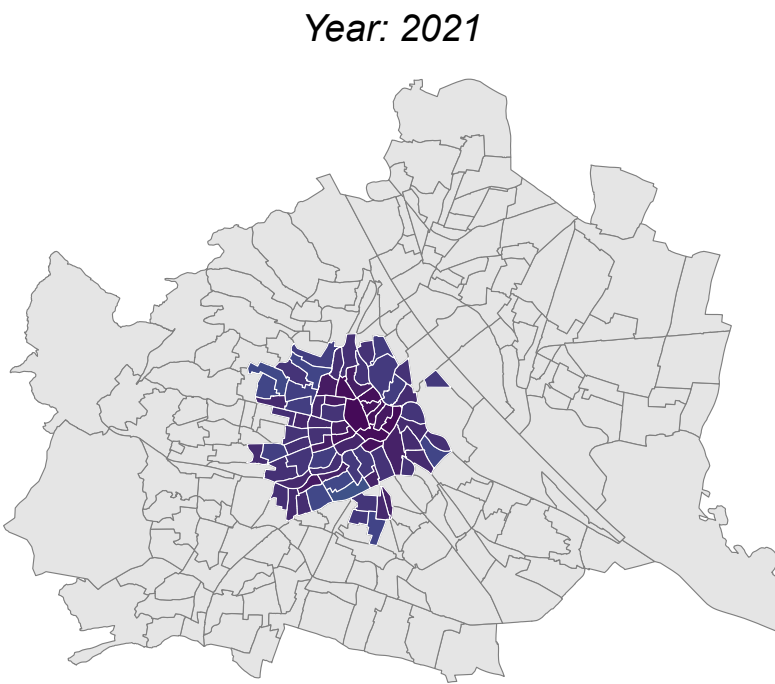
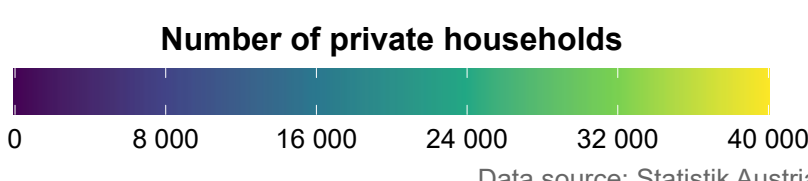
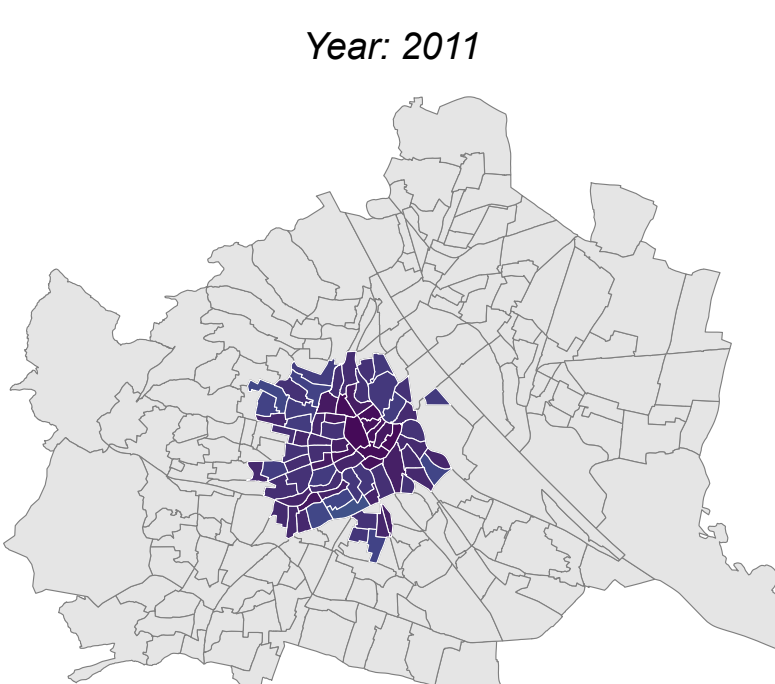
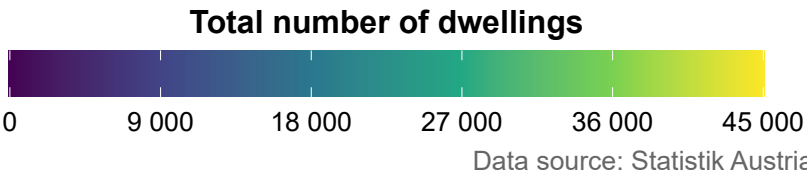
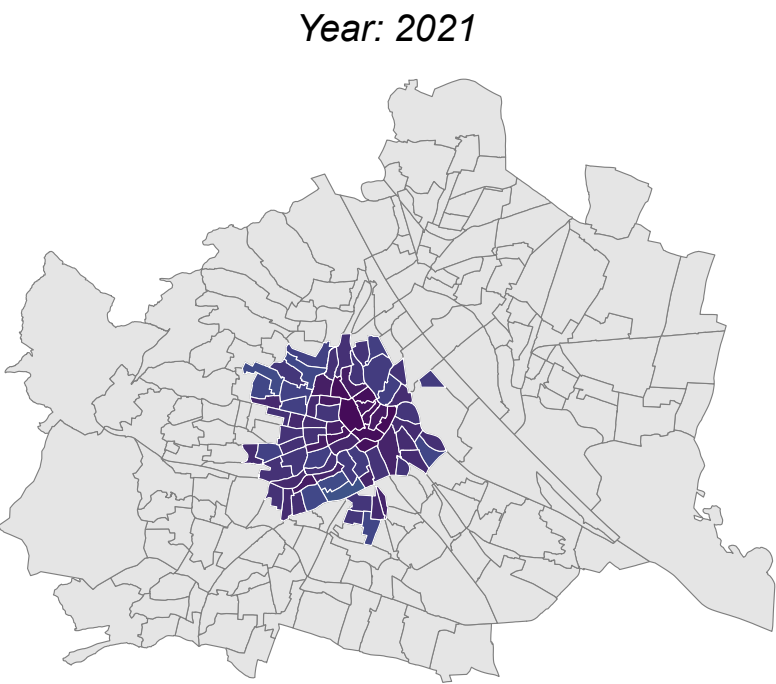
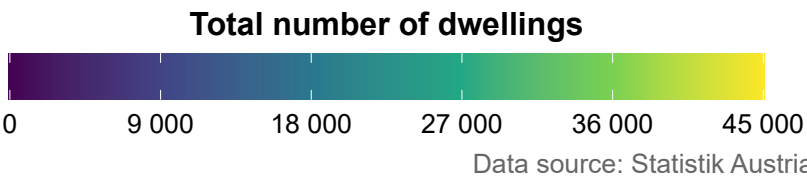
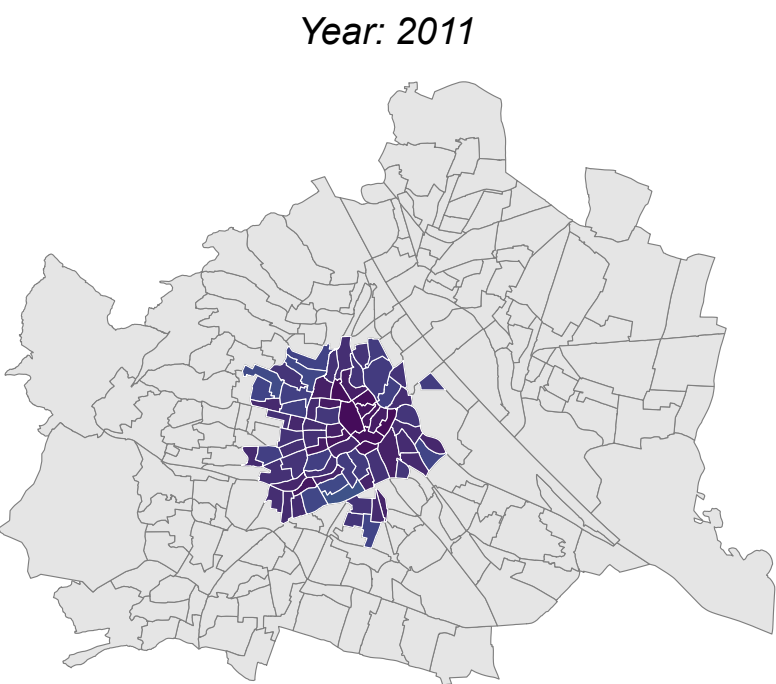




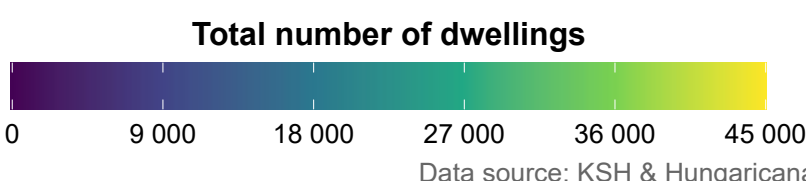
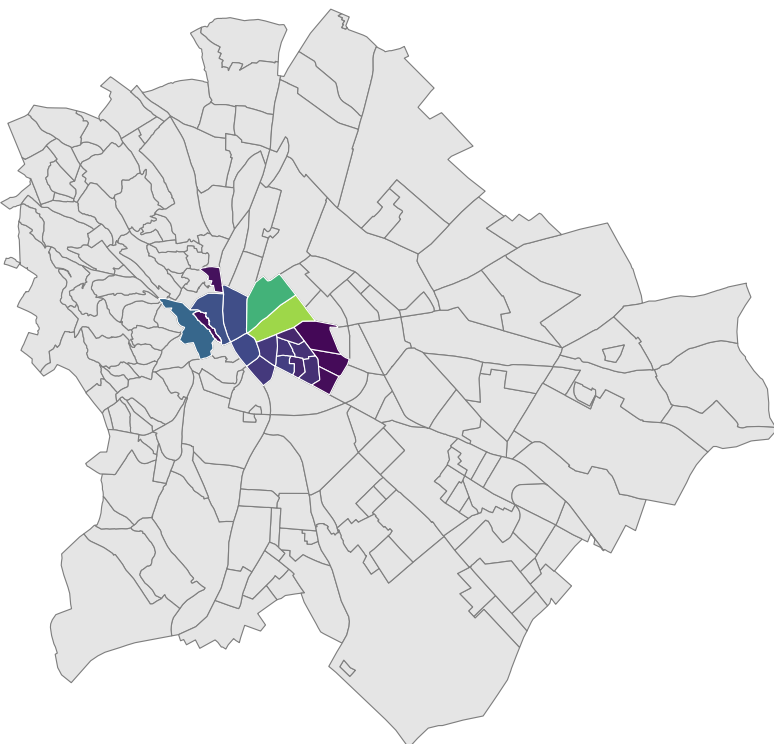
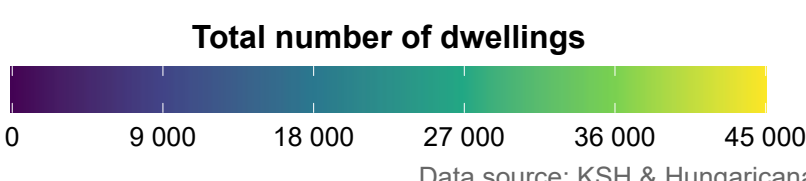
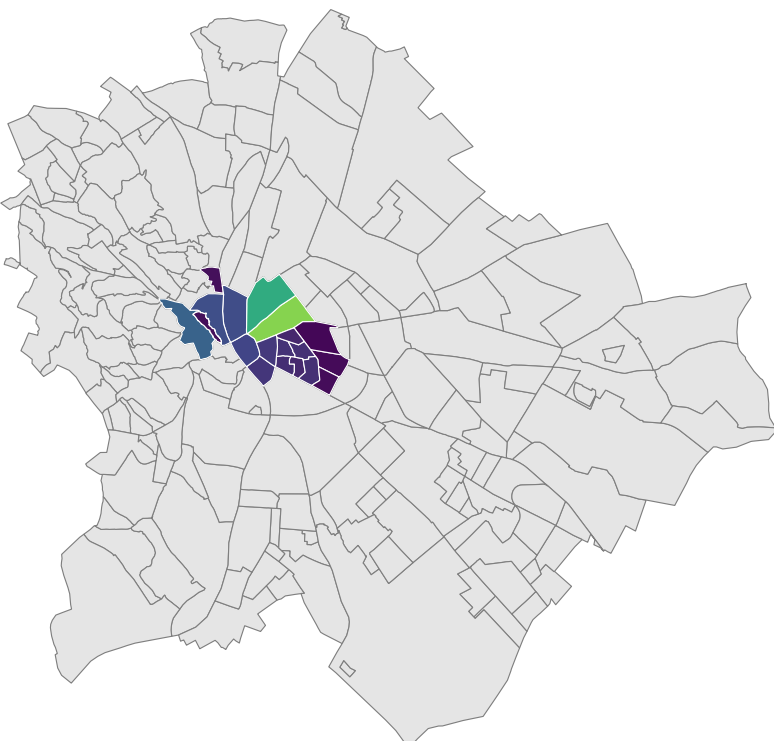
4. Historic quarters

Number of households and dwellings in the historic quarters of Vienna between 2011 and 2021.

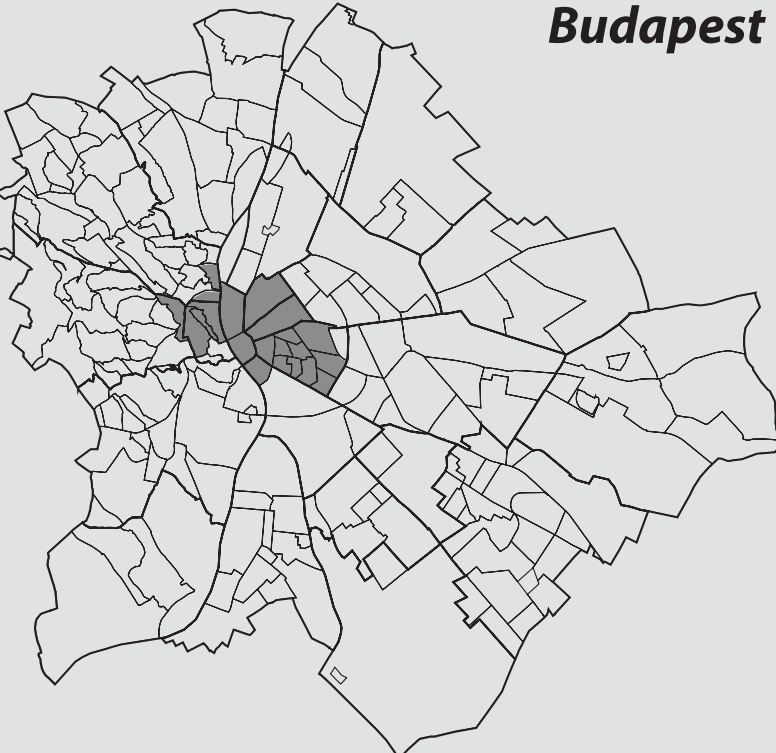
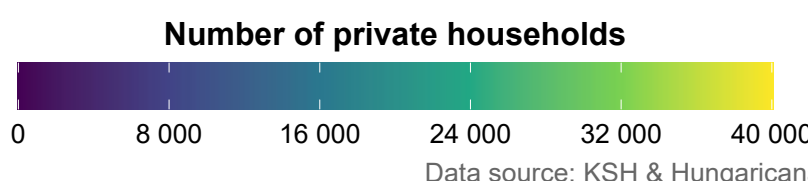
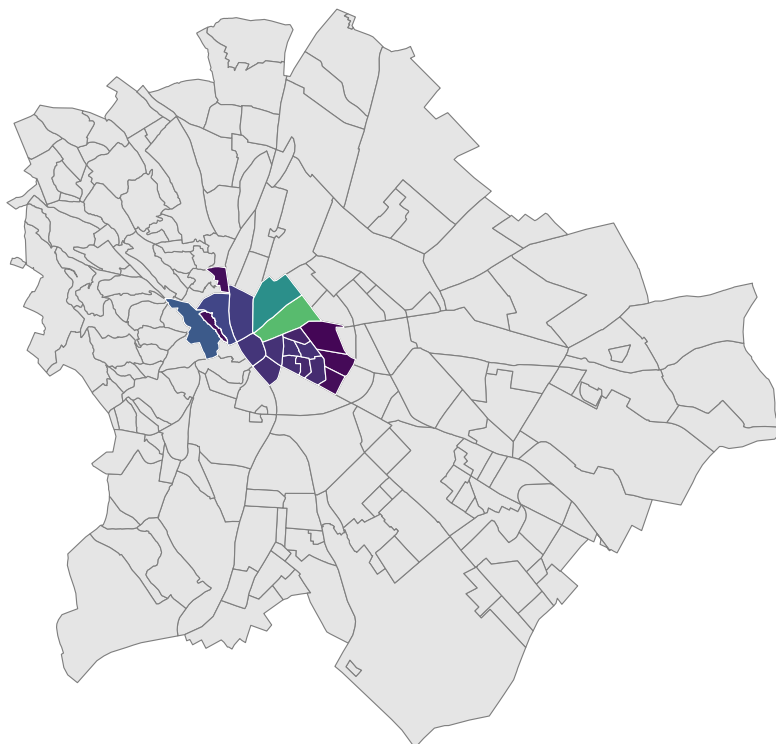
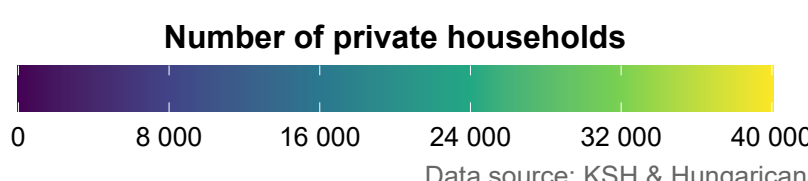
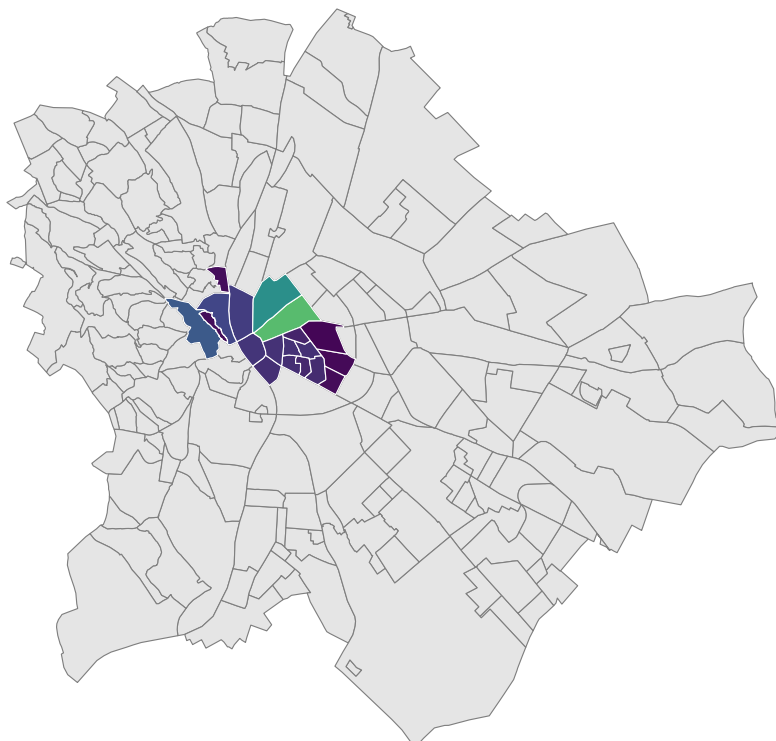
Dwelling & household structure in the historic quarters of Vienna and Budapest



Year: 2011



Year: 2022



4. Historic quarters

Number of households and dwellings in the historic quarters of Budapest between 2011 and 2022.

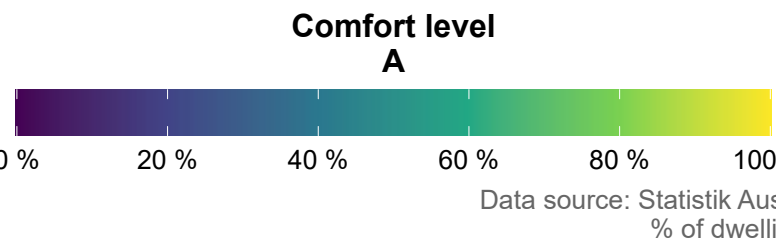
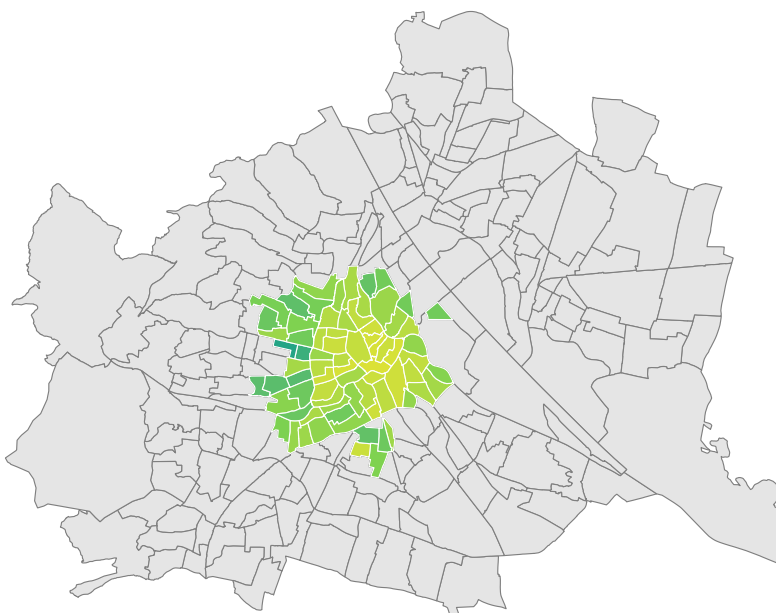


4. Historic quarters

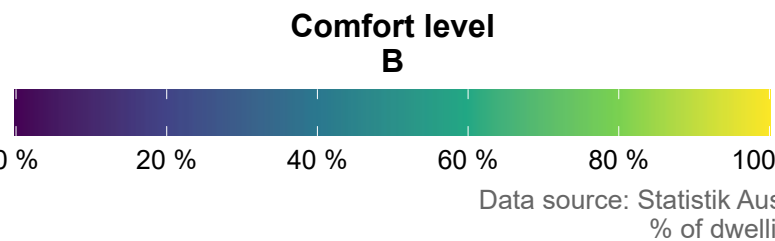
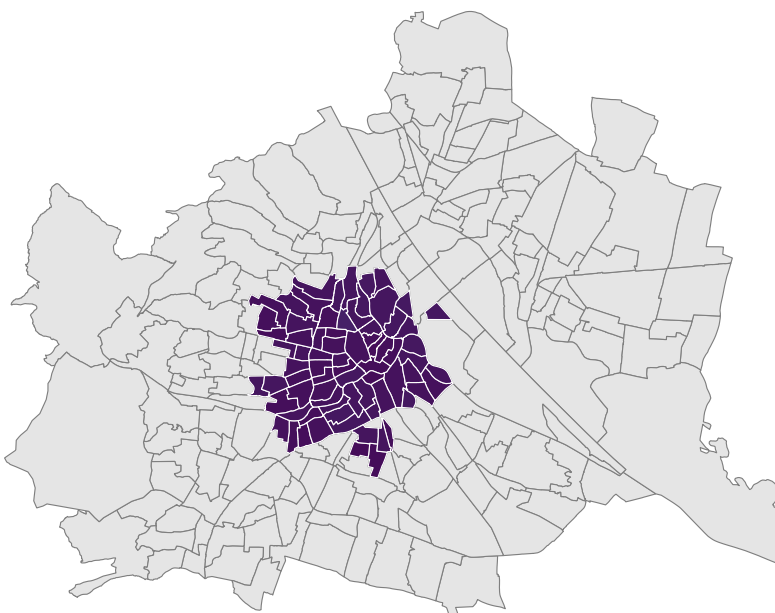
Comfort level of housing in the historic quarters of Vienna in 2011.

Dwelling & household structure in the historic quarters of Vienna and Budapest

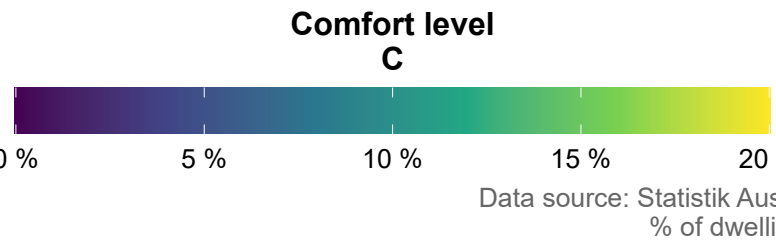
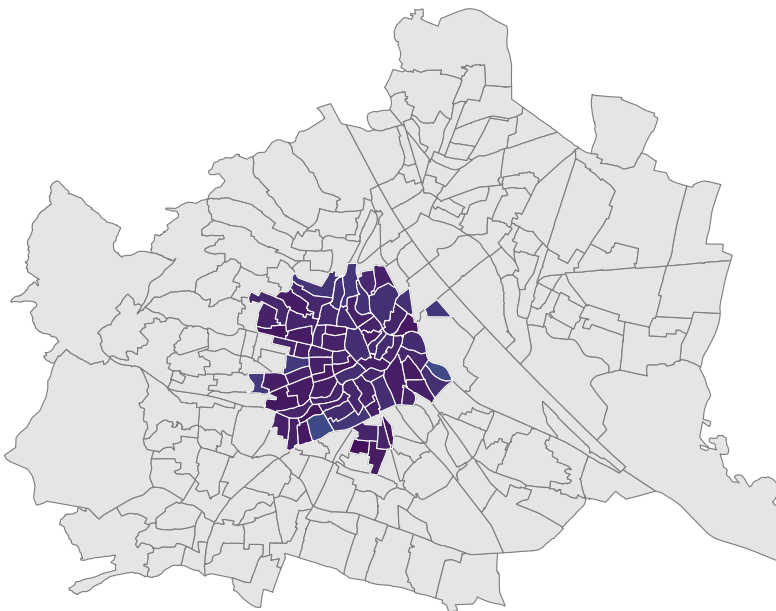
Year: 2011



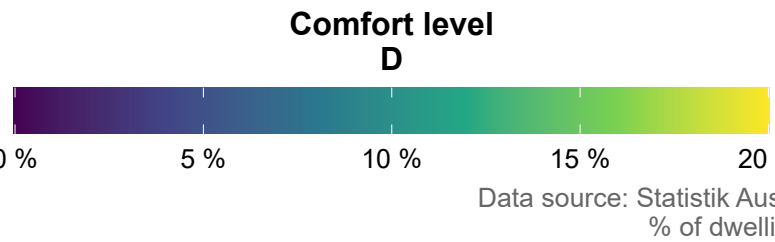
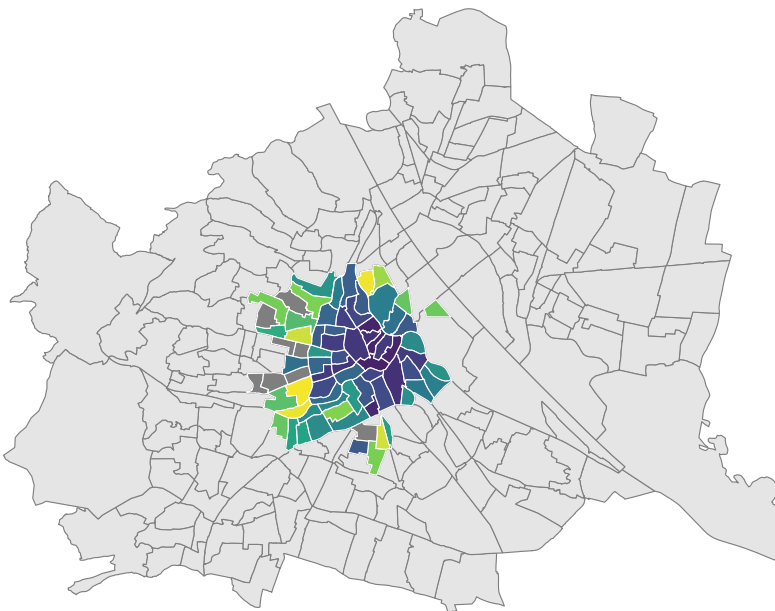
Year: 2011



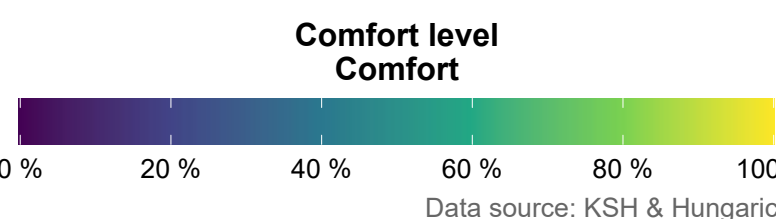
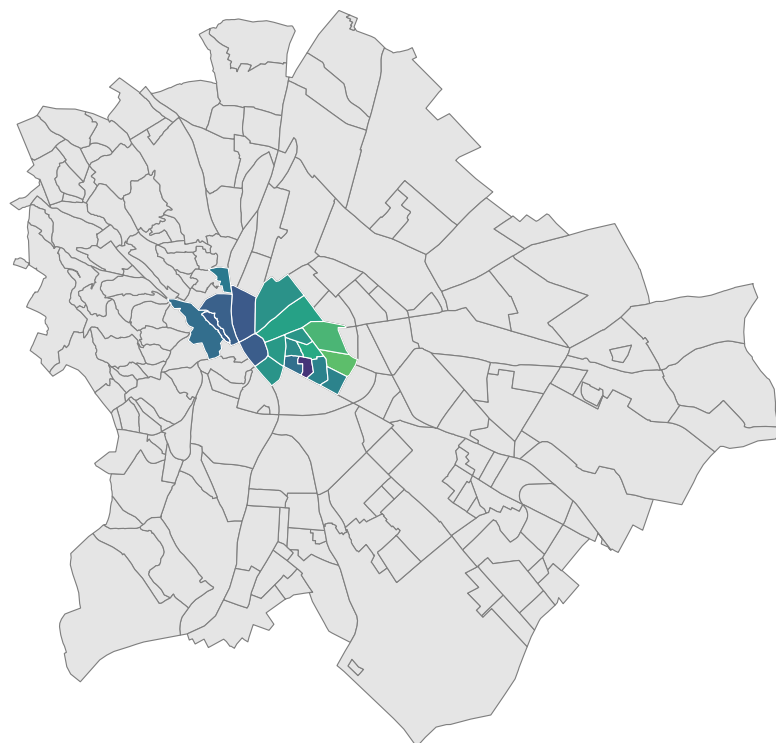
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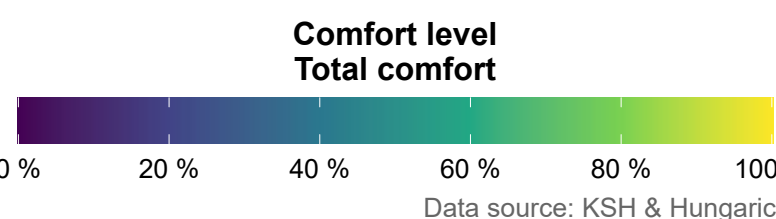
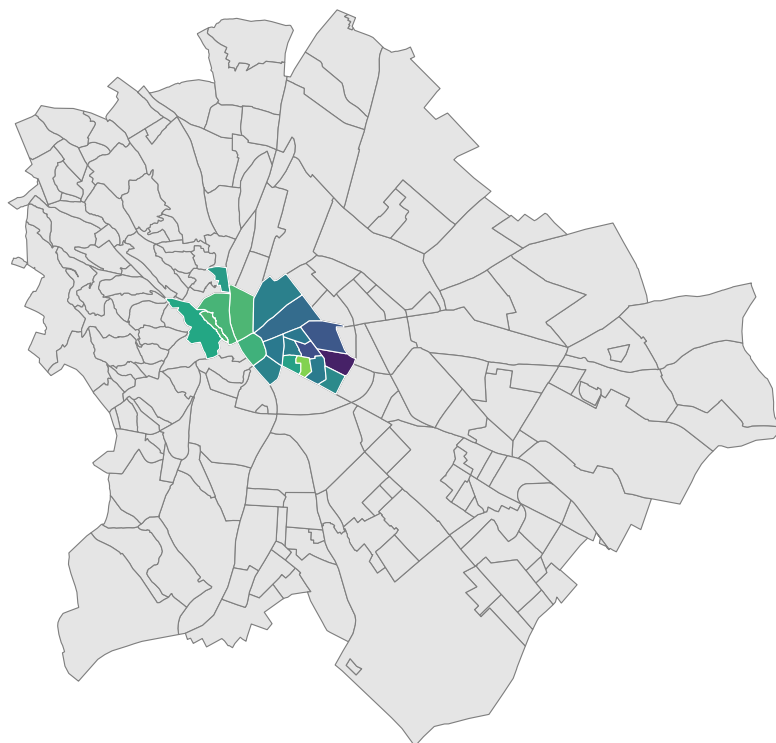
Year: 2011



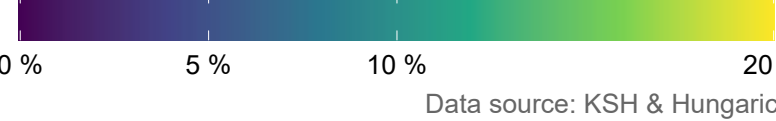
Year: 2011



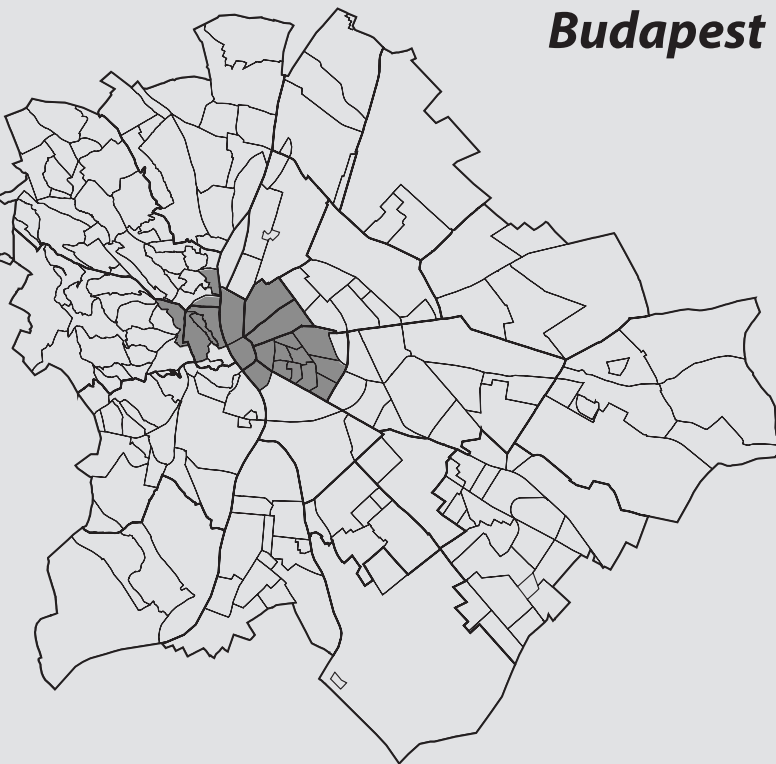
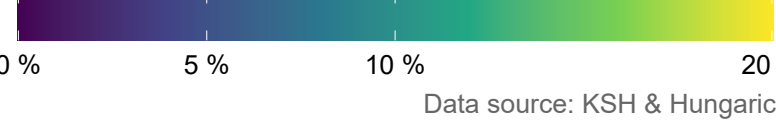
Year: 2011



Comfort level Without comfort



Comfort level Semi-comfort



4. Historic quarters

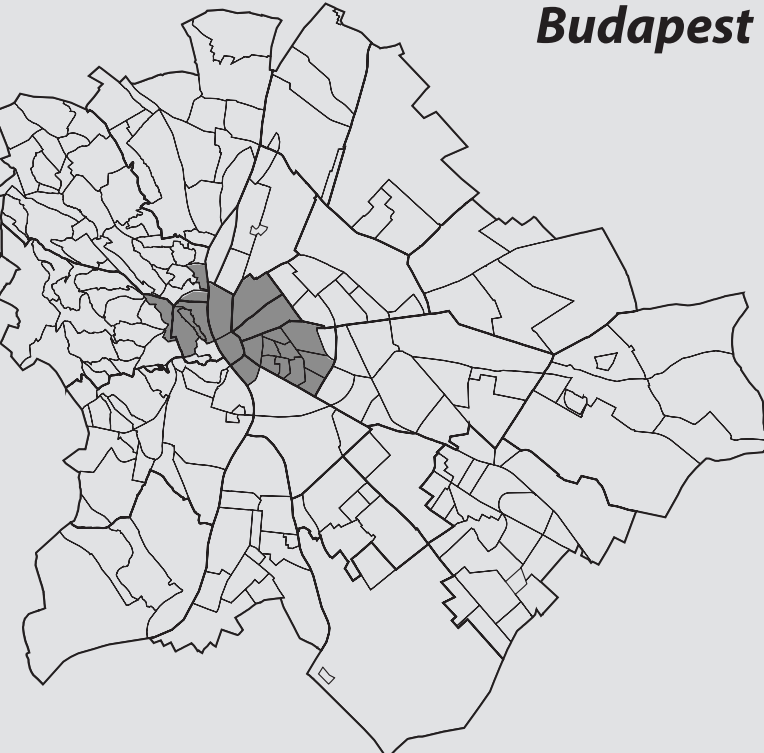
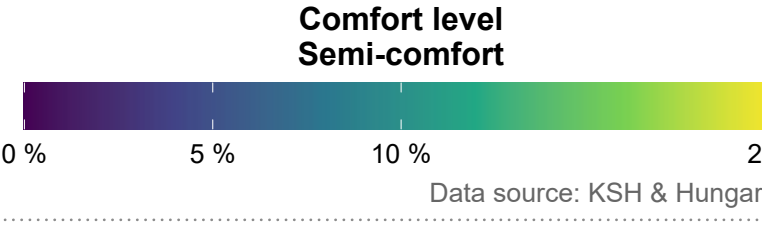
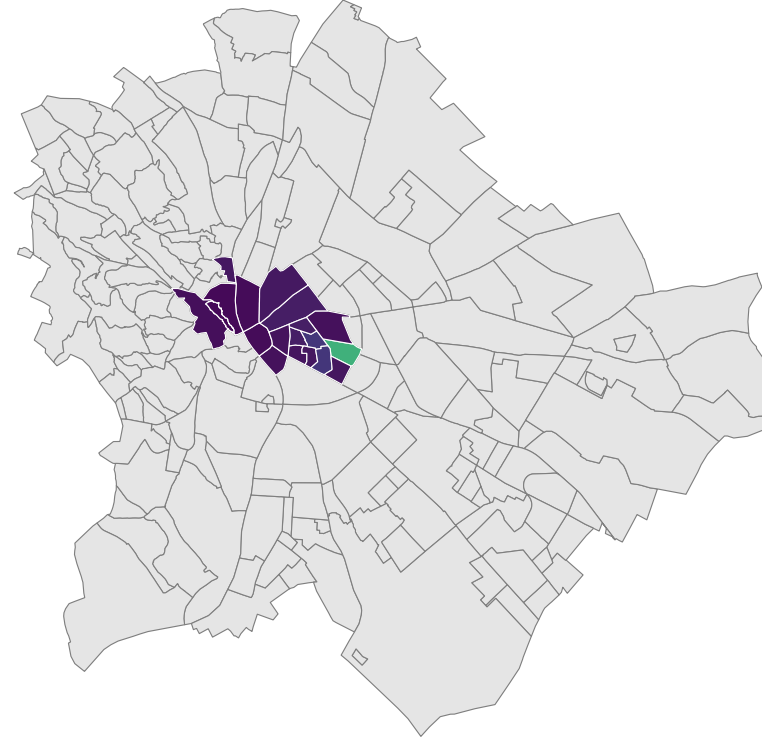
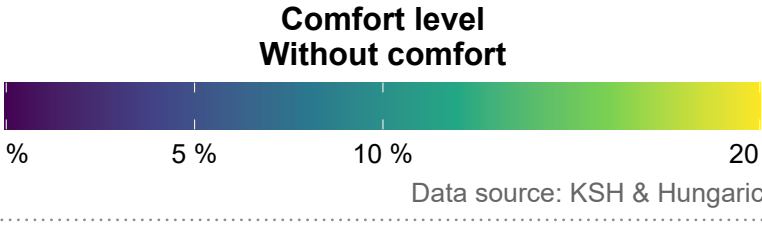
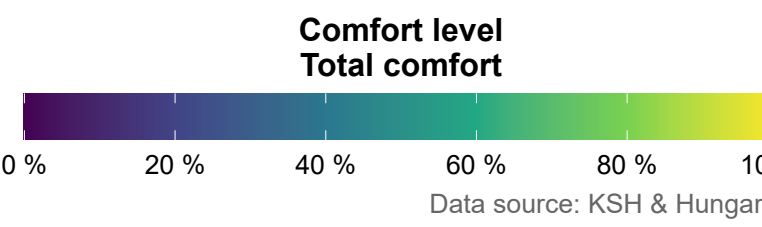
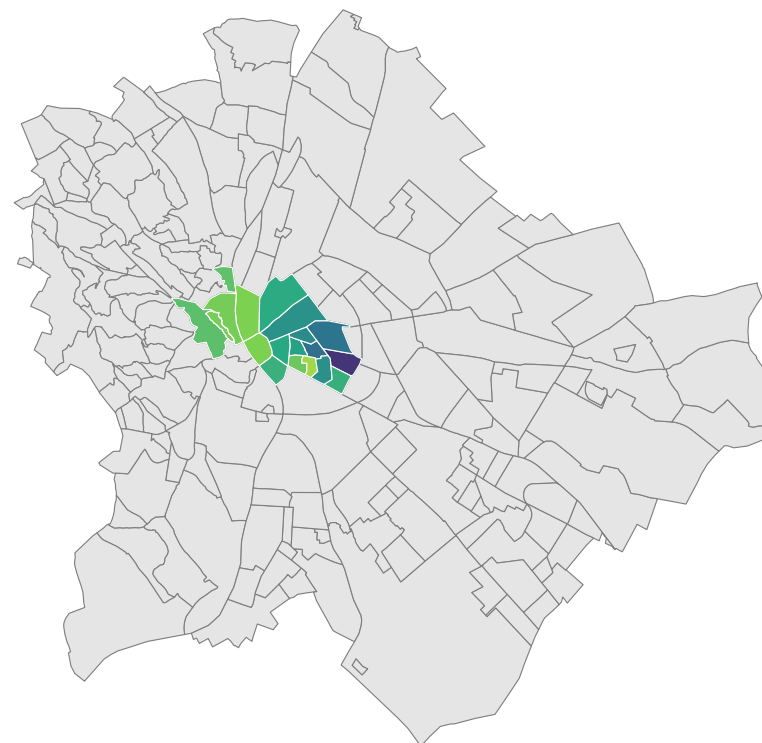
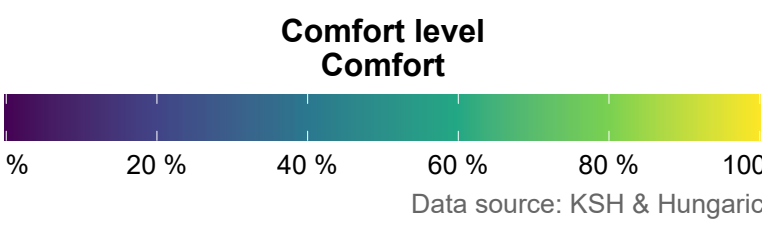
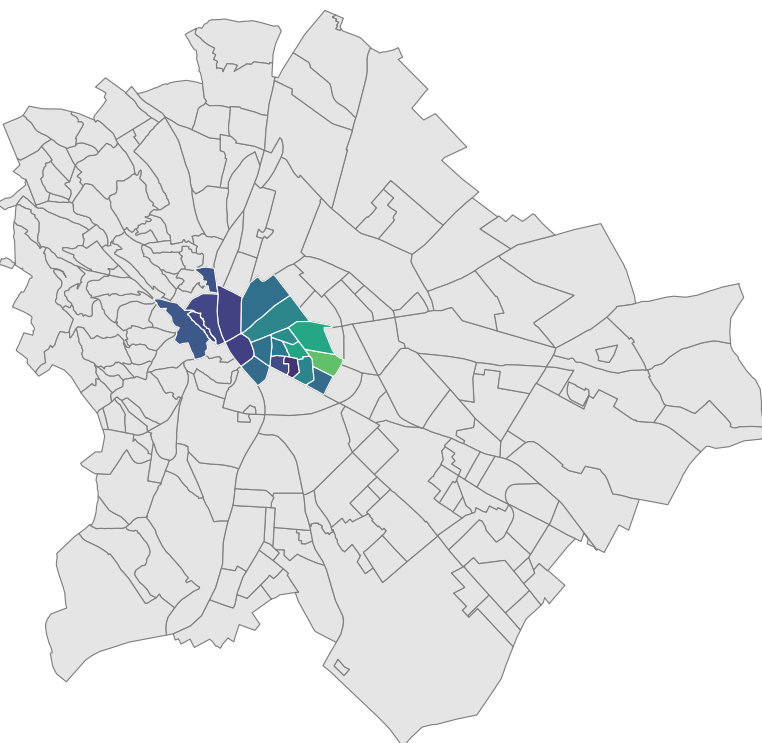
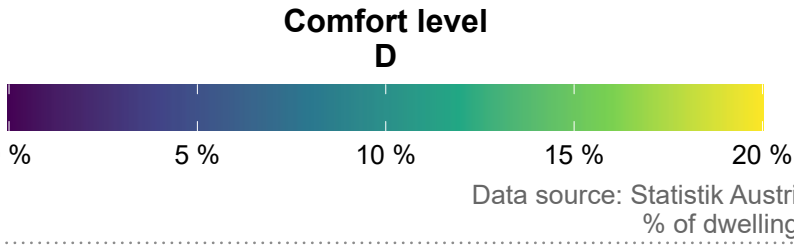
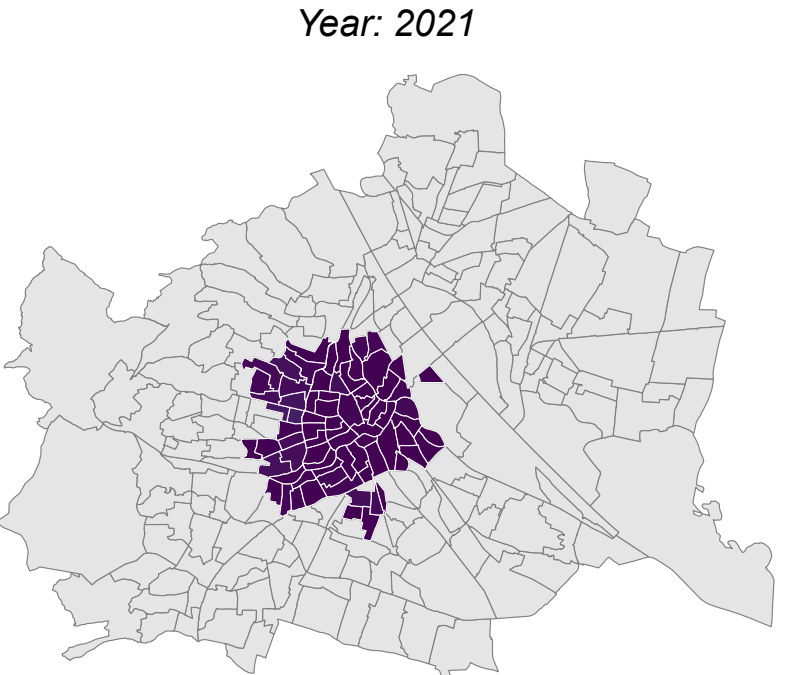
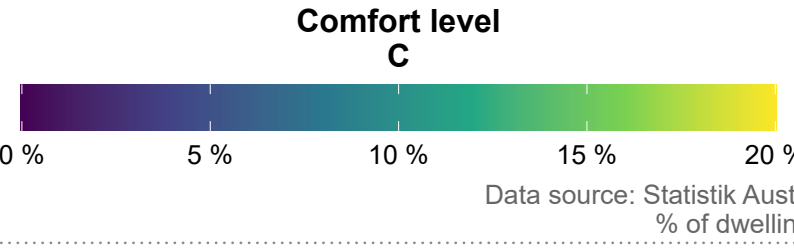
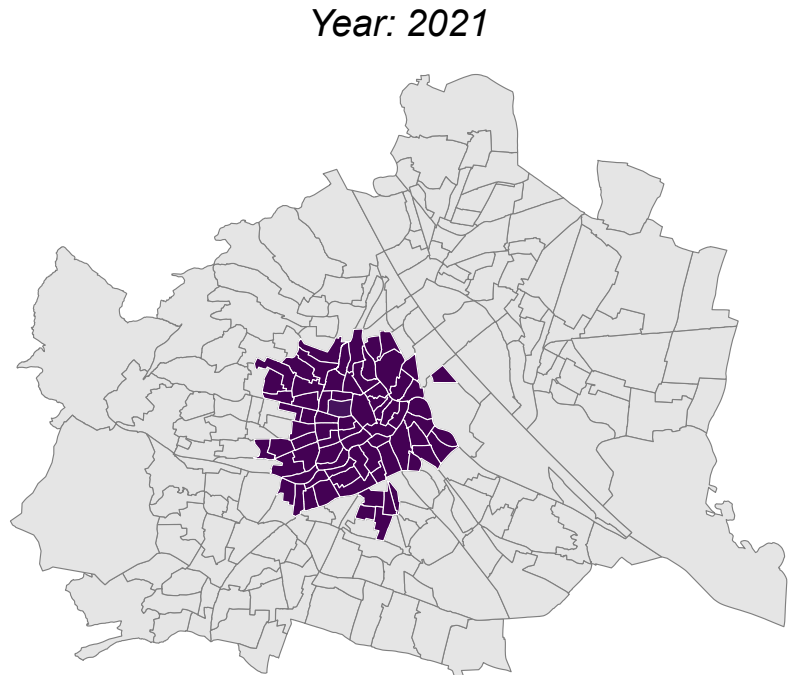
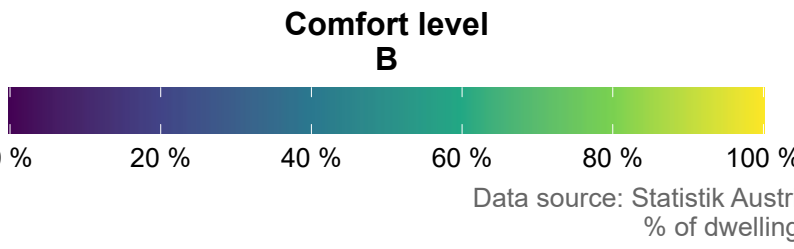
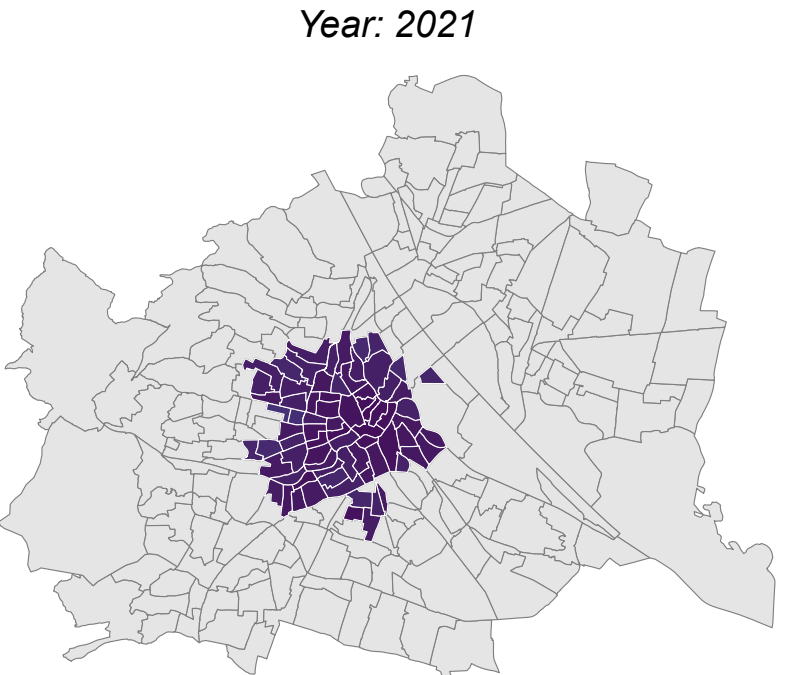
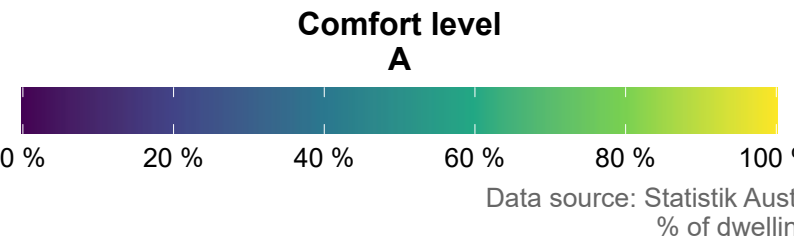
Comfort level of housing in the historic quarters of Budapest in 2011.



4. Historic quarters

Comfort level of housing in the historic quarters of Vienna in 2021.

Dwelling & household structure in the historic quarters of Vienna and Budapest



4. Historic quarters

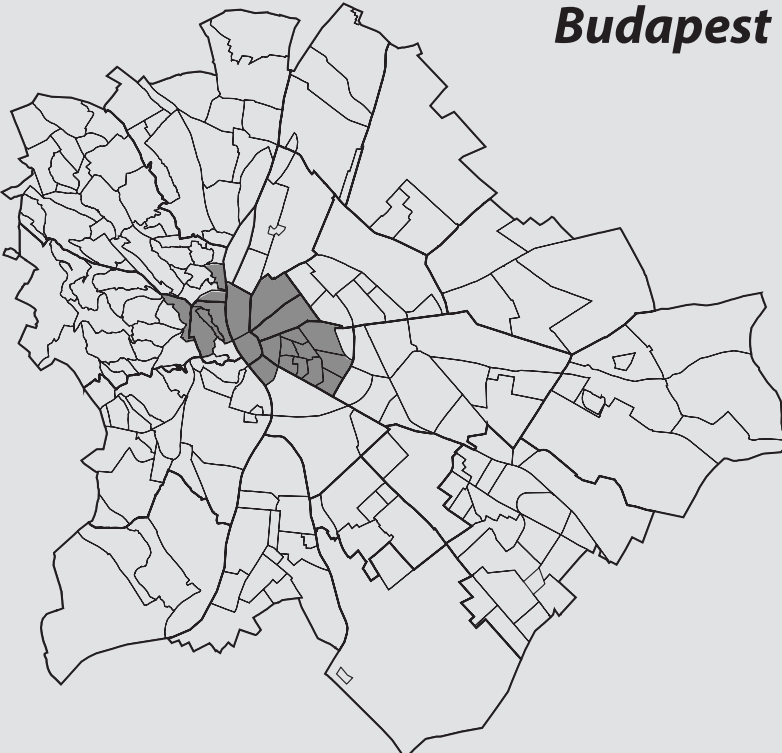
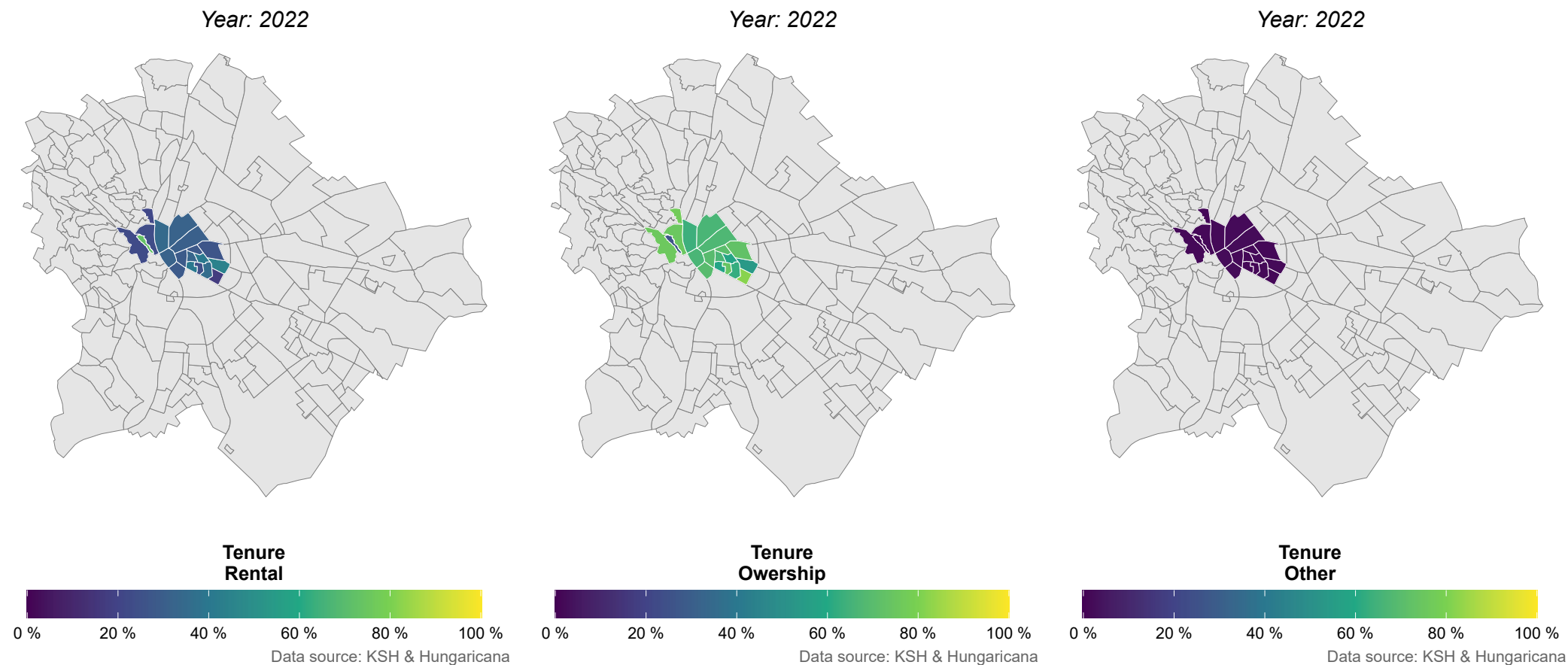
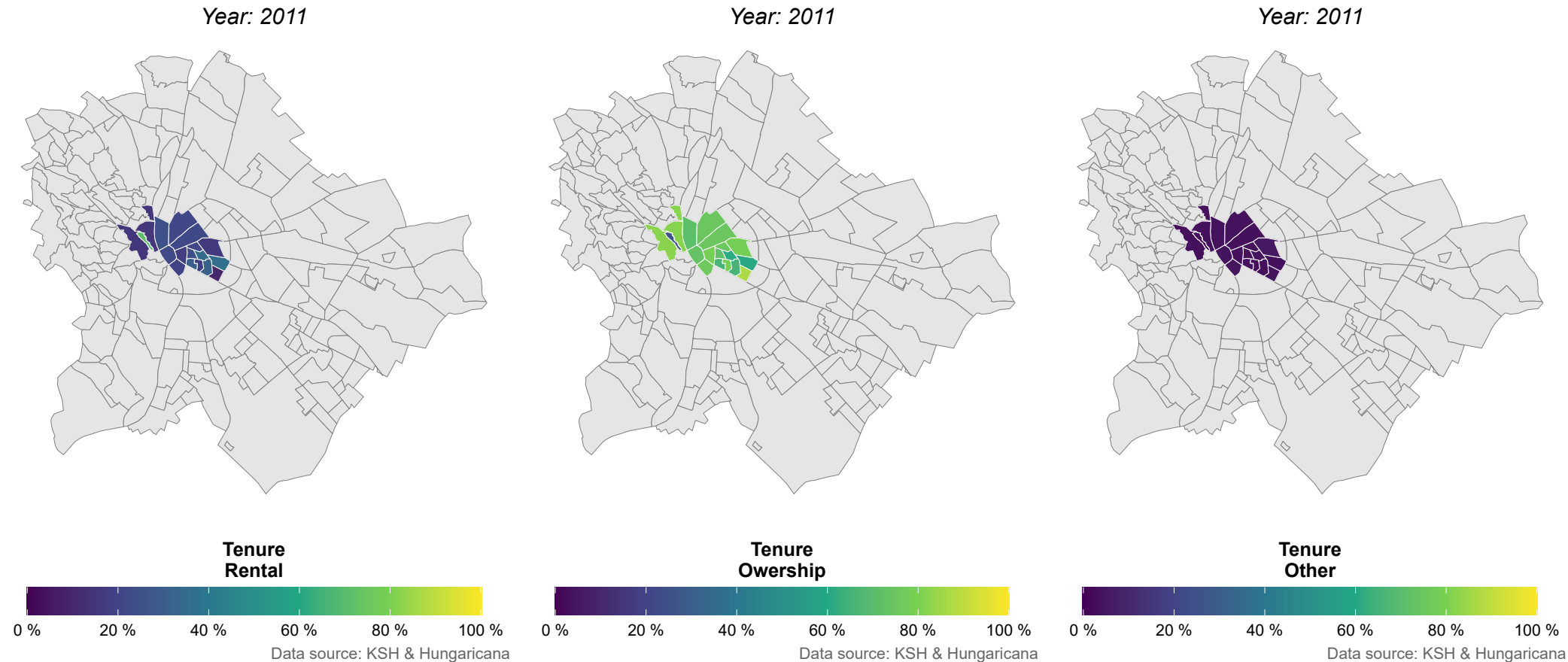
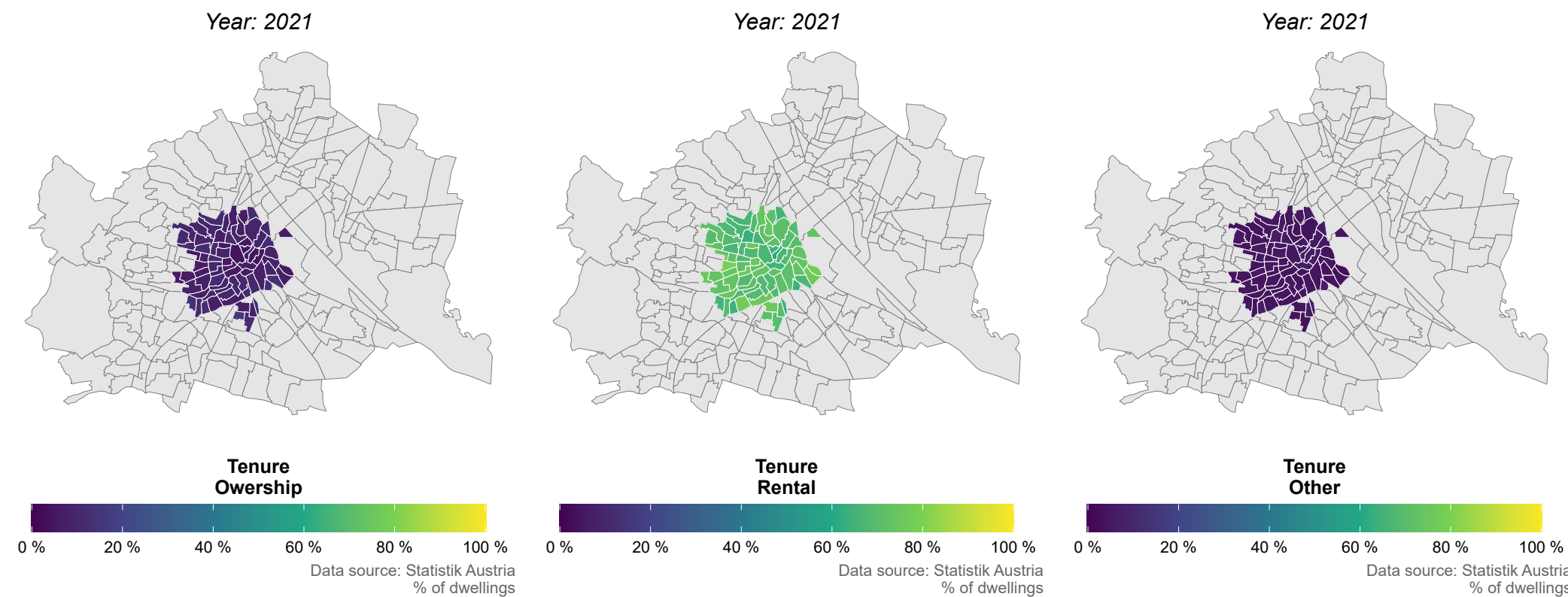
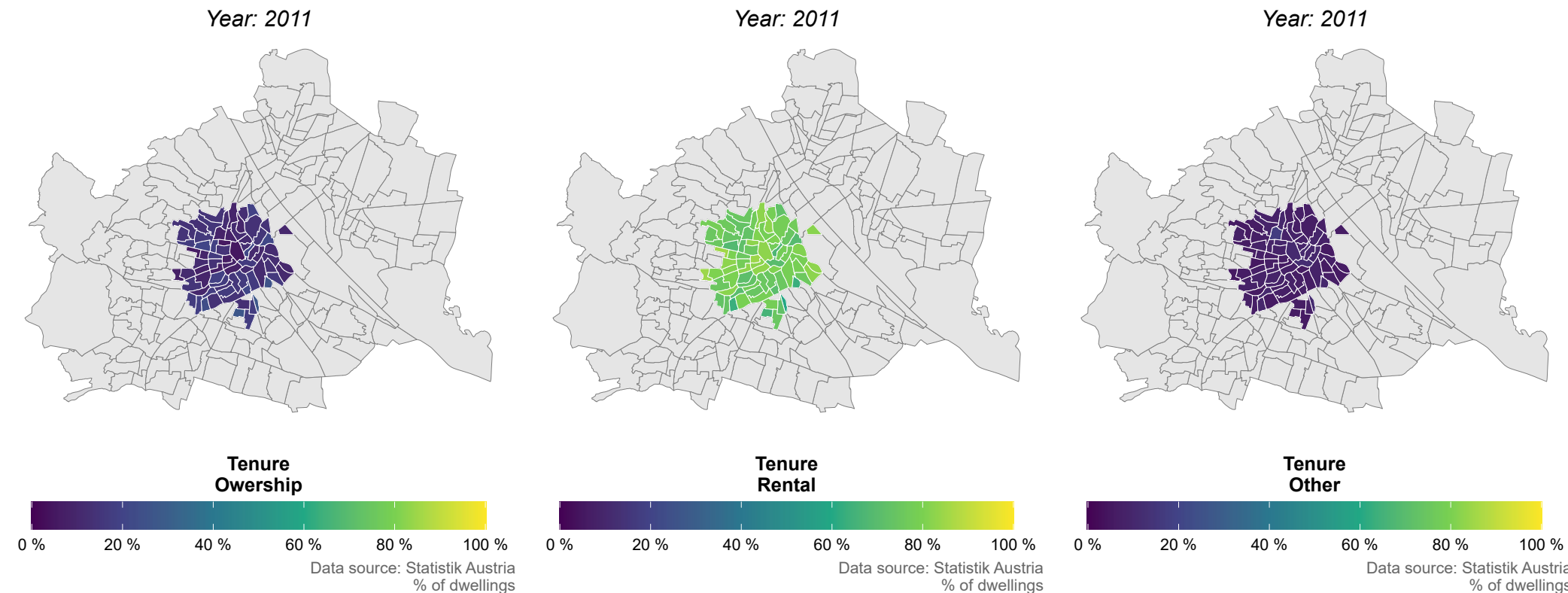
Comfort level of housing in the historic quarters of Budapest in 2022.



4. Historic quarters

Percentage of tenancy rights in the historic quarters of Vienna between 2011 and 2021.

Dwelling & household structure in the historic quarters of Vienna and Budapest



4. Historic quarters

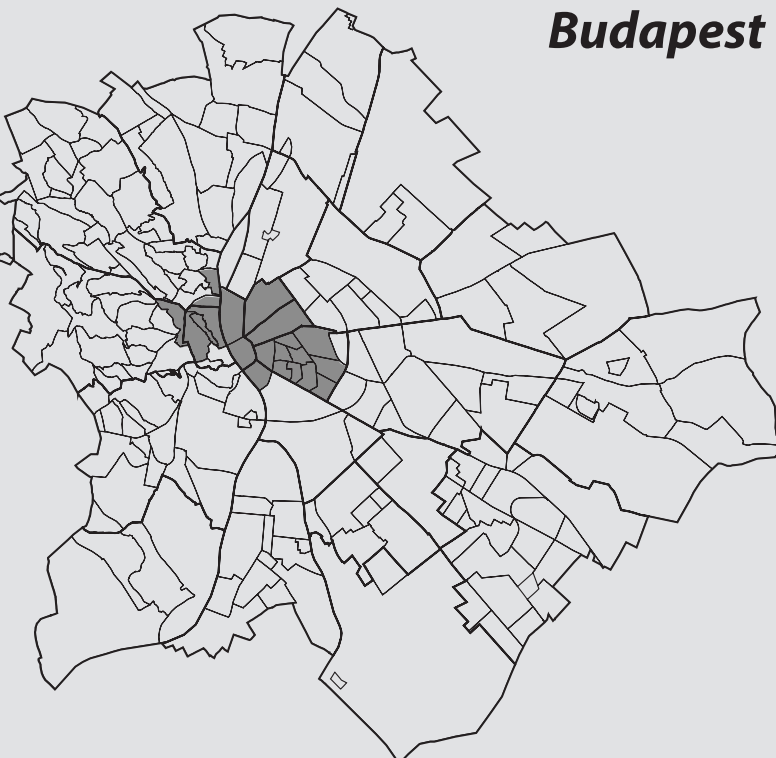
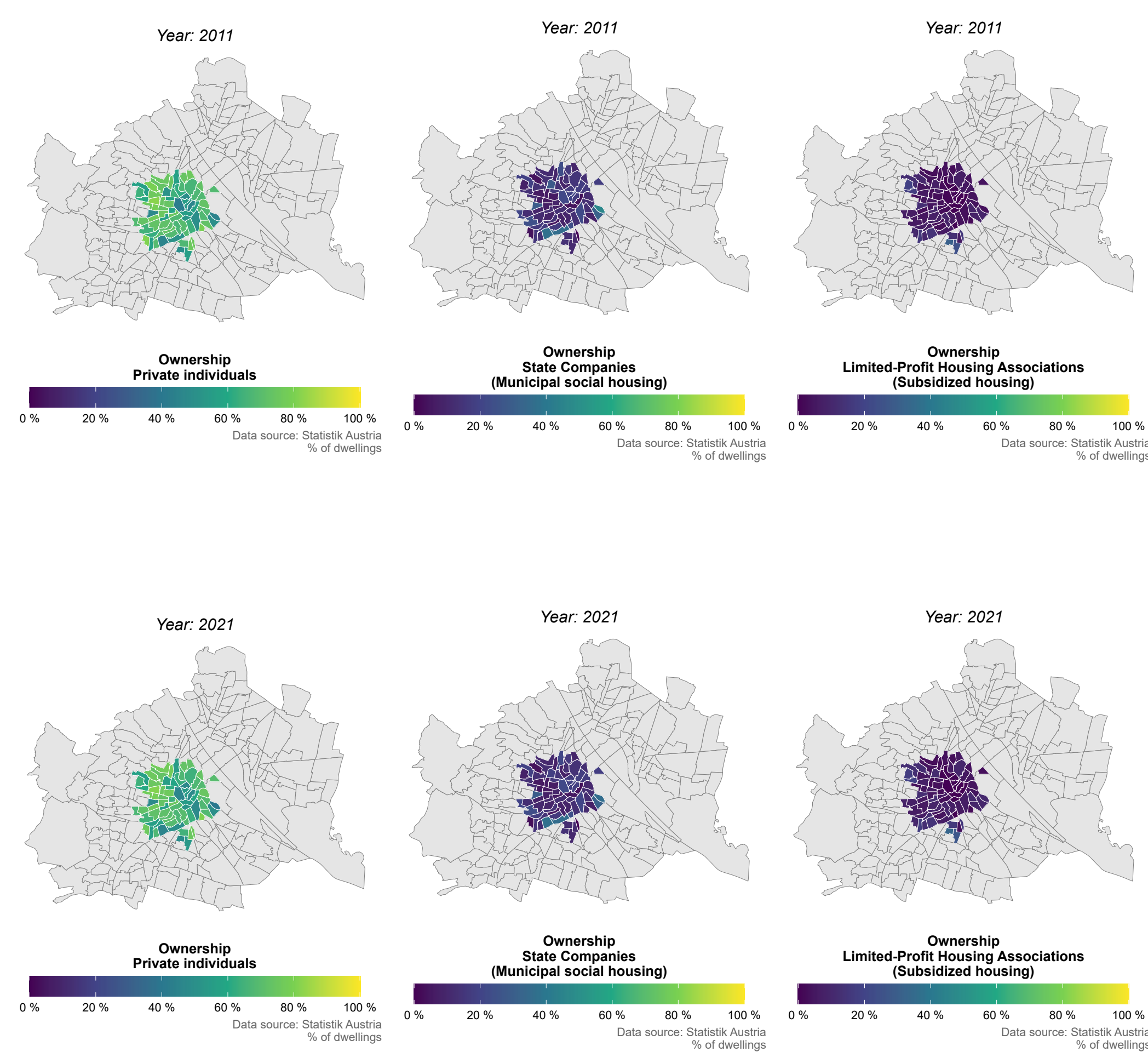
Change in the percentage of tenancy rights in the historic quarters of Budapest between 2011 and 2022.



4. Historic quarters

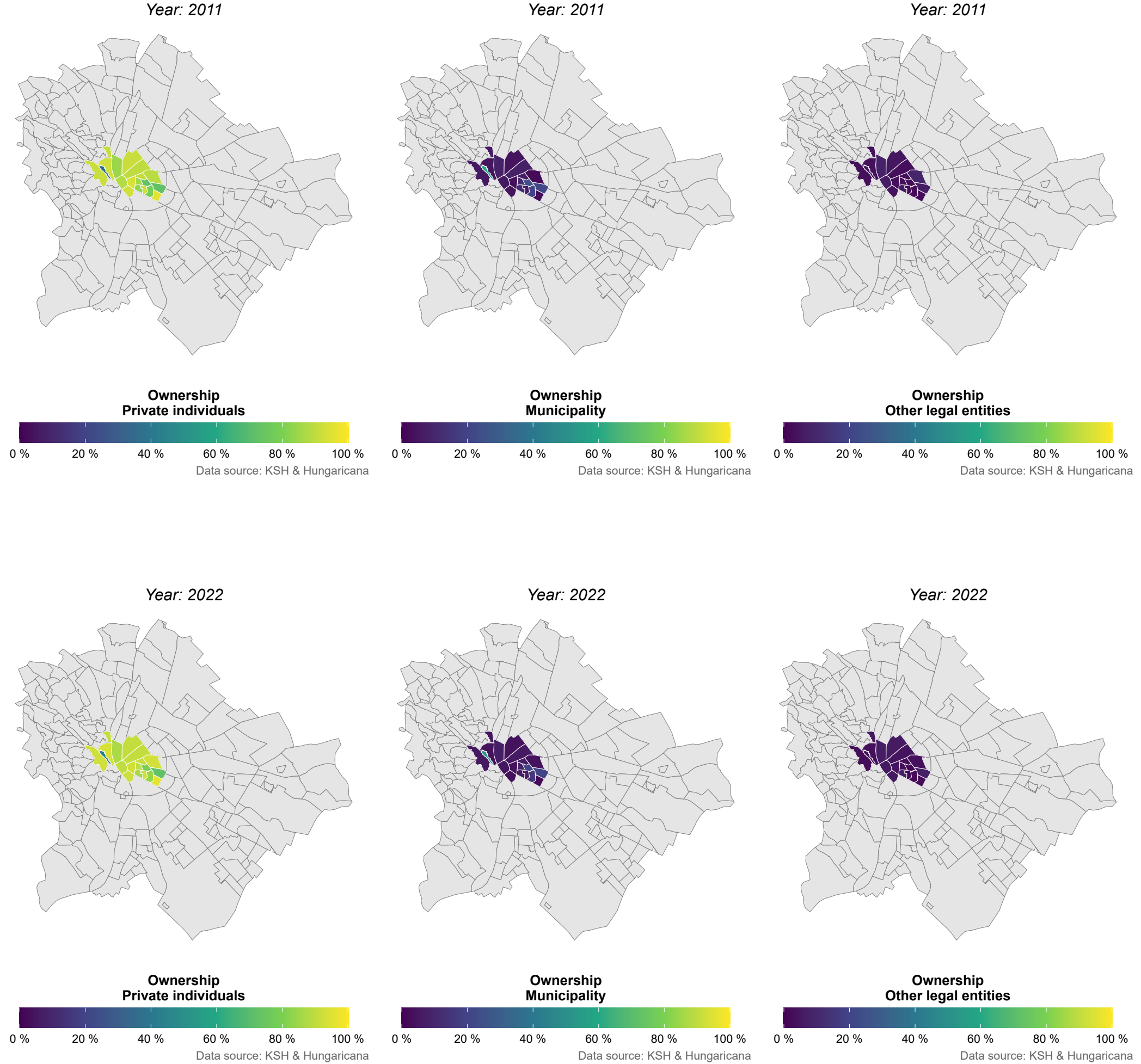
Percentage of ownership distribution in the historic quarters of Vienna between 2011 and 2021.

Dwelling & household structure in the historic quarters of Vienna and Budapest



4. Historic quarters

Percentage of ownership distribution in the historic quarters of Budapest between 2011 and 2022.

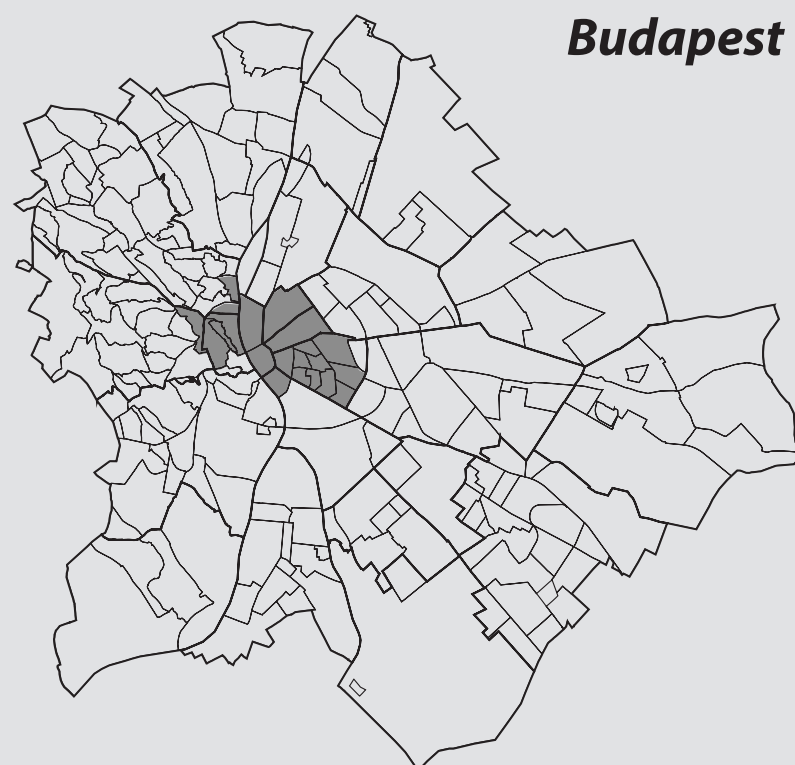
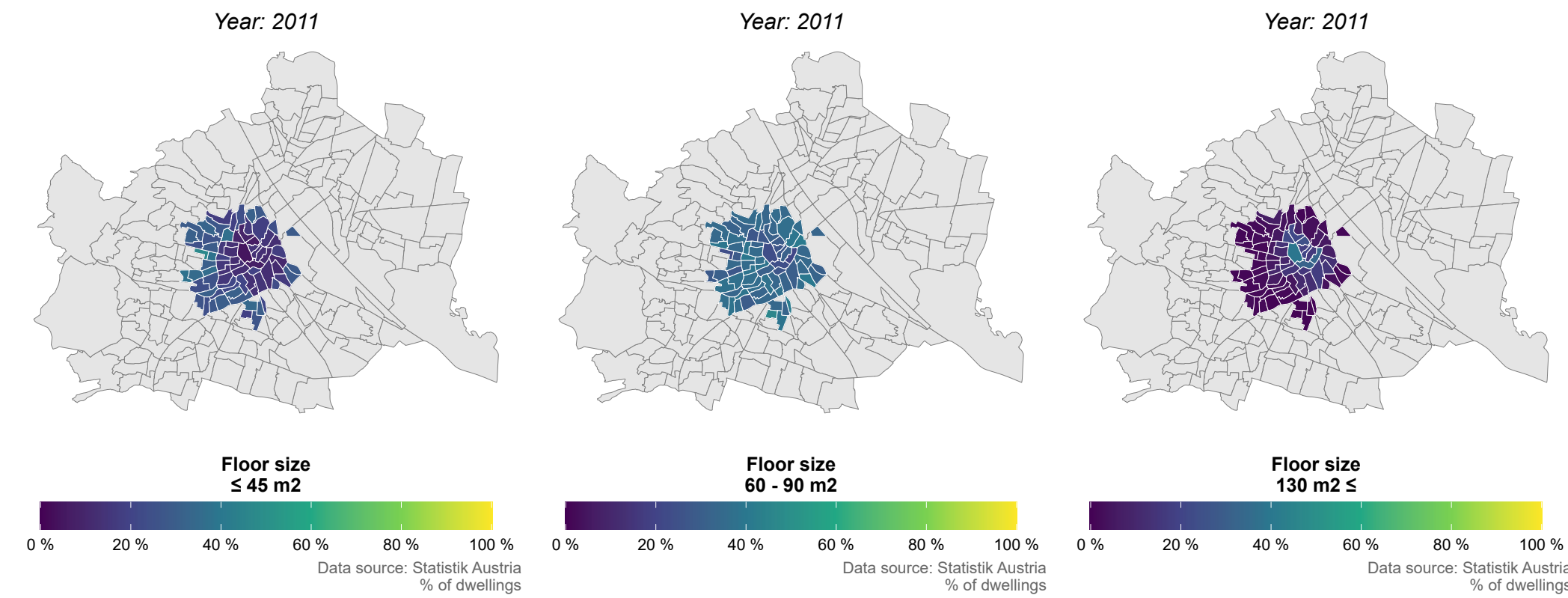
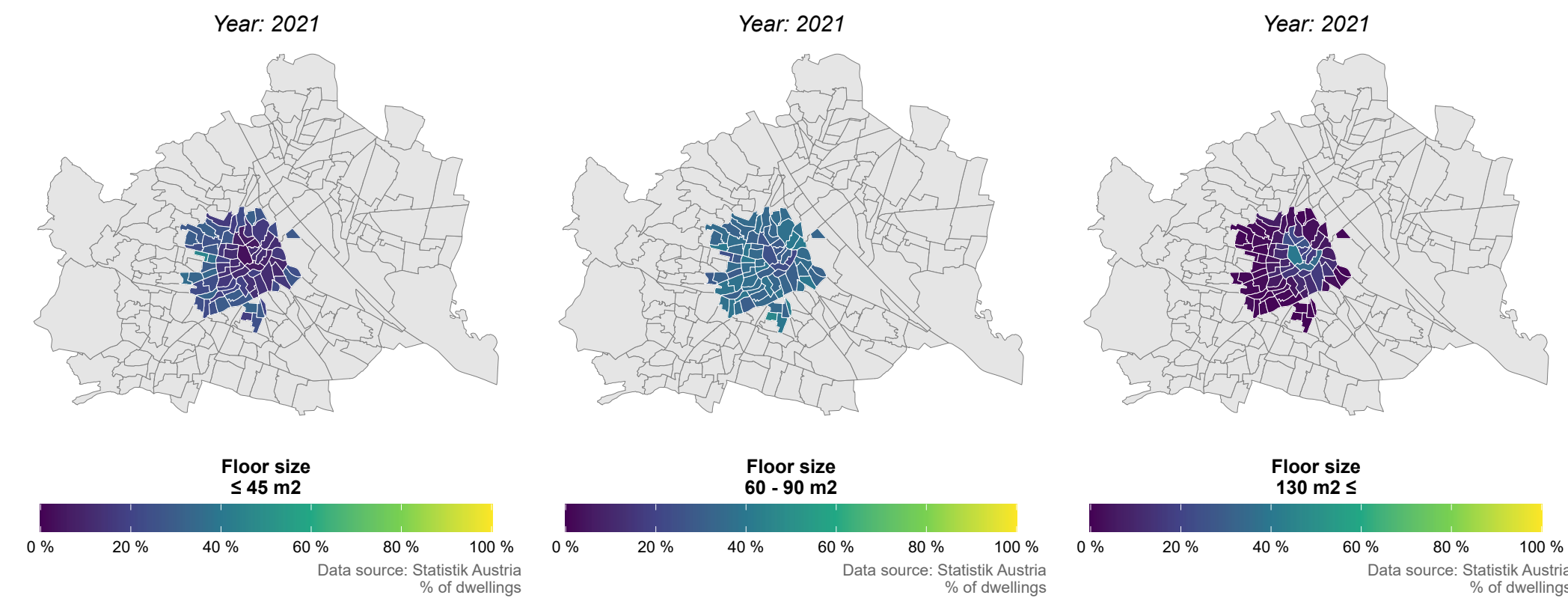




4. Historic quarters

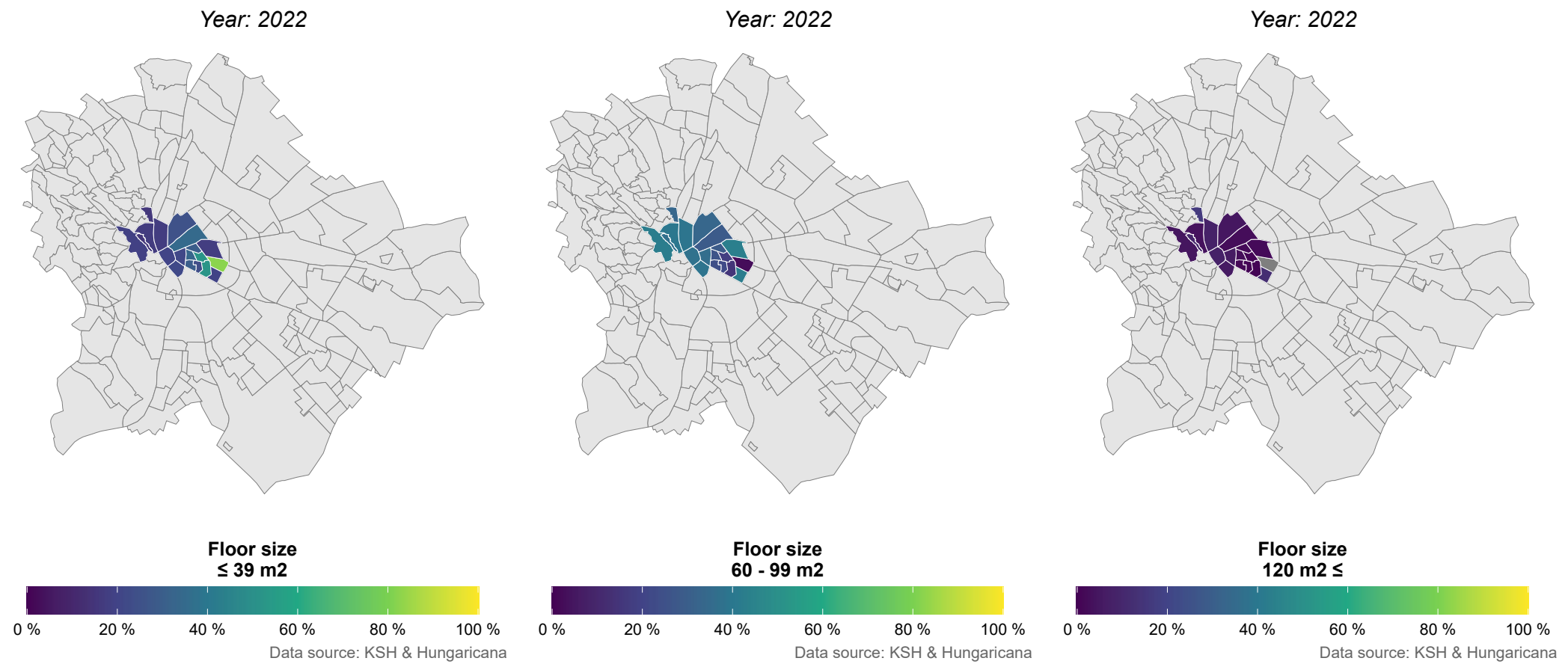
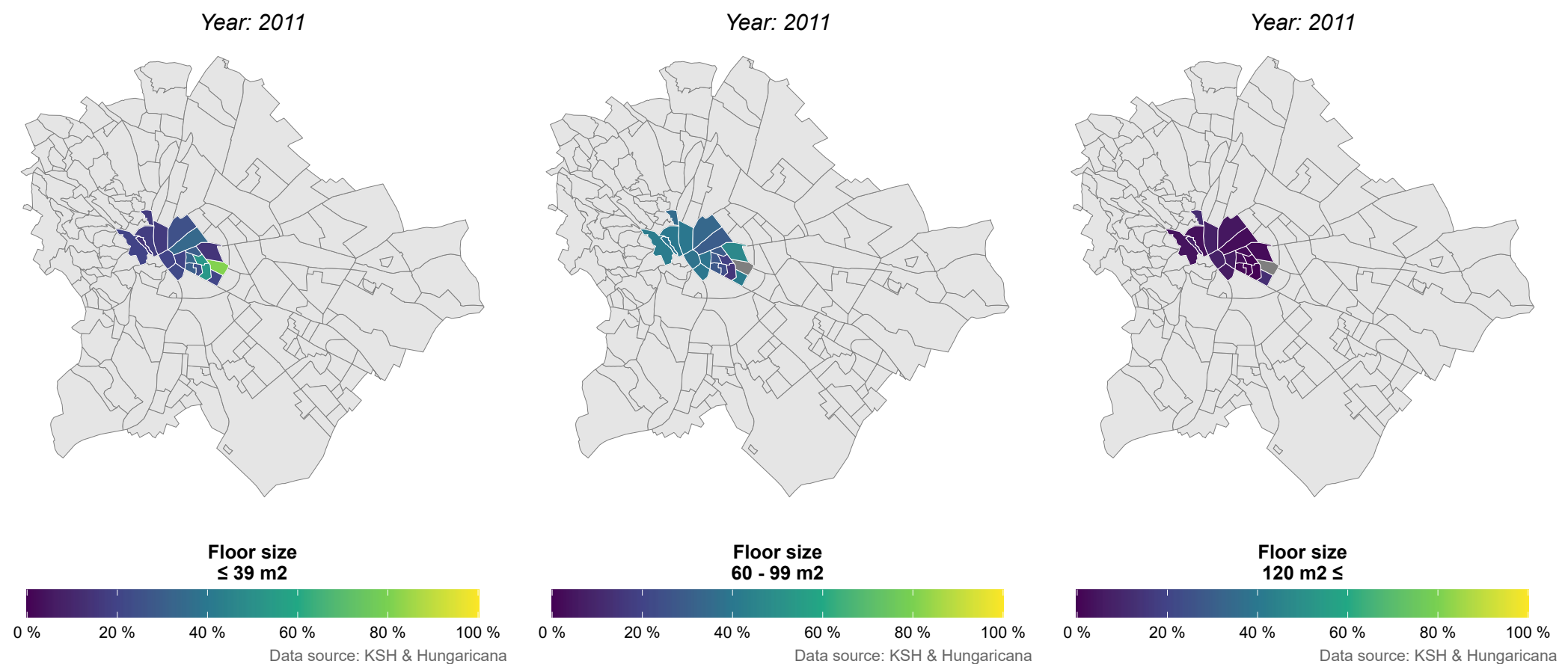
Percentage of small, mid-size and large apartments in the historic quarters of Vienna between 2011 and 2021.

Dwelling & household structure in the historic quarters of Vienna and Budapest



4. Historic quarters

Change in the percentage of small, mid-size and large apartments in the historic quarters of Budapest between 2011 and 2022.

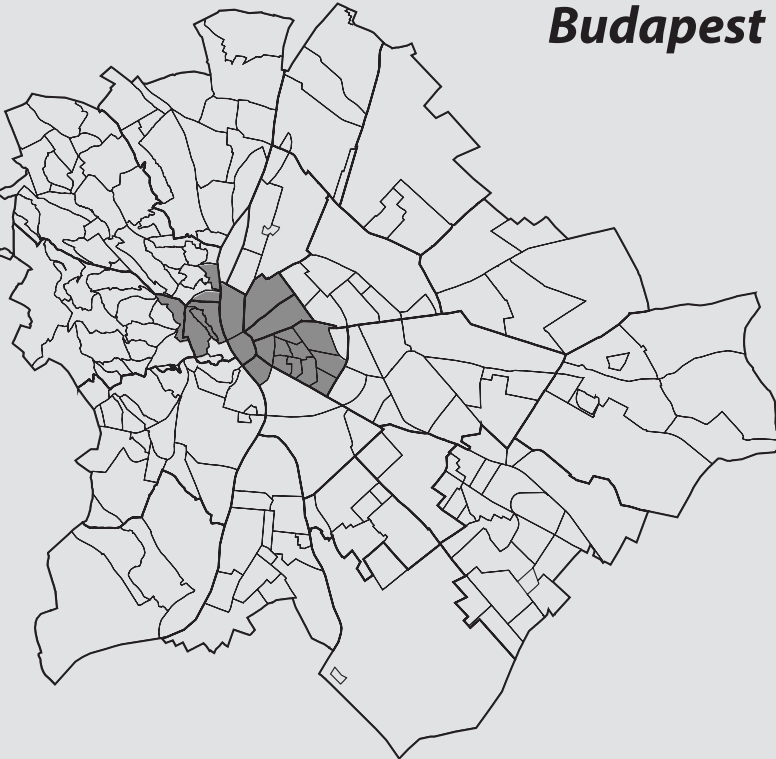
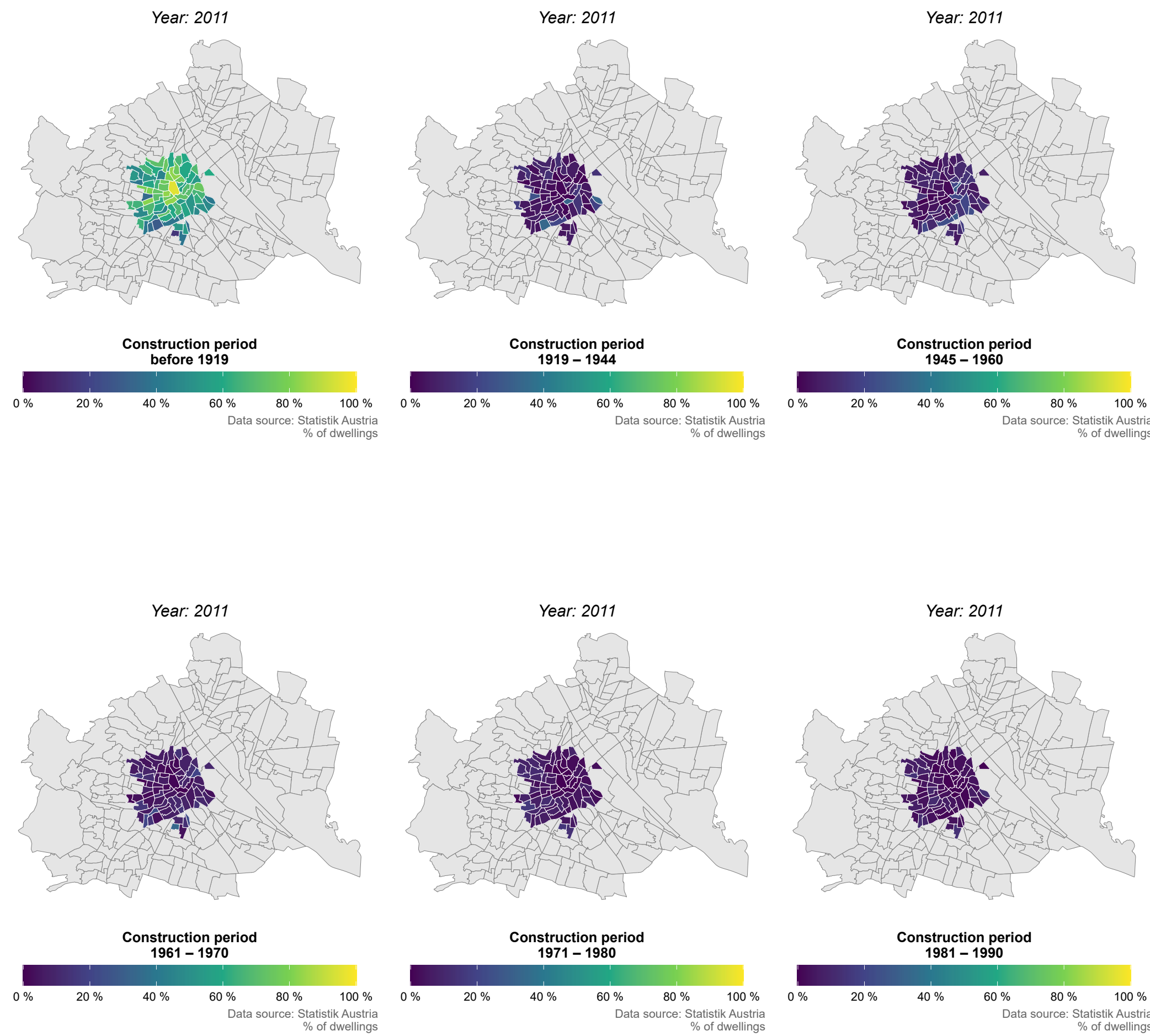




4. Historic quarters

Percentage of buildings from different construction periods in the historic quarters of Vienna until 1990, in 2011.

Construction period in the historic quarters of Vienna and Budapest



4. Historic quarters

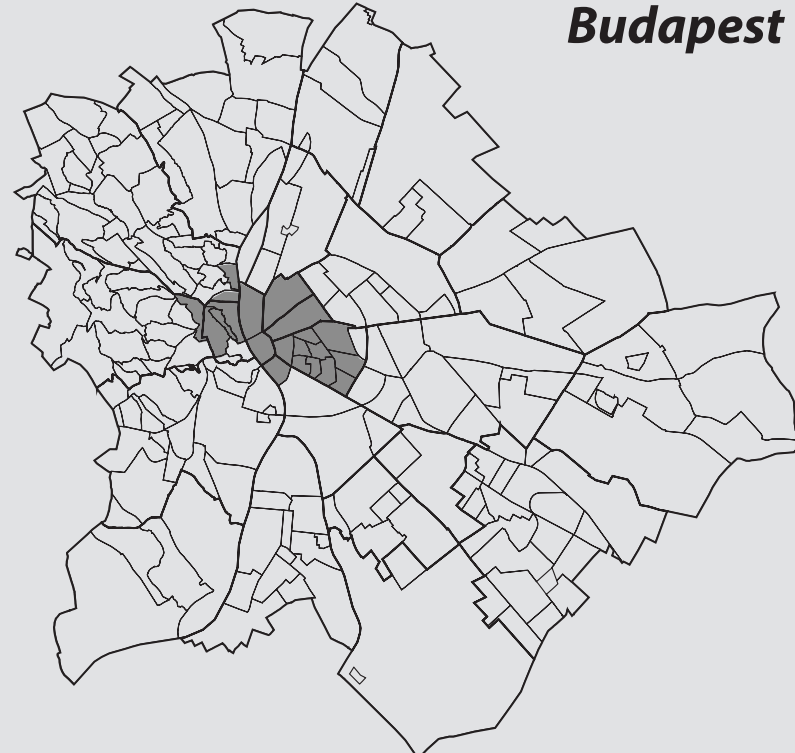
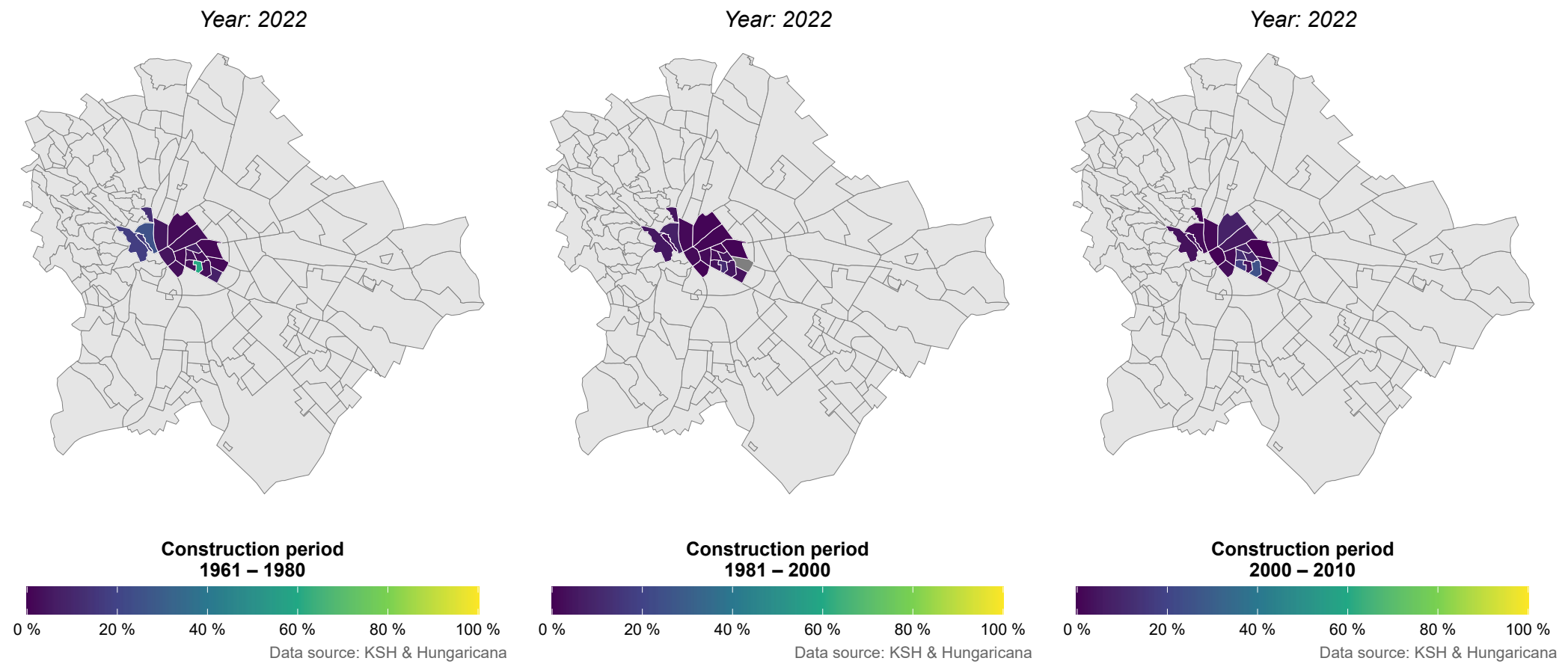
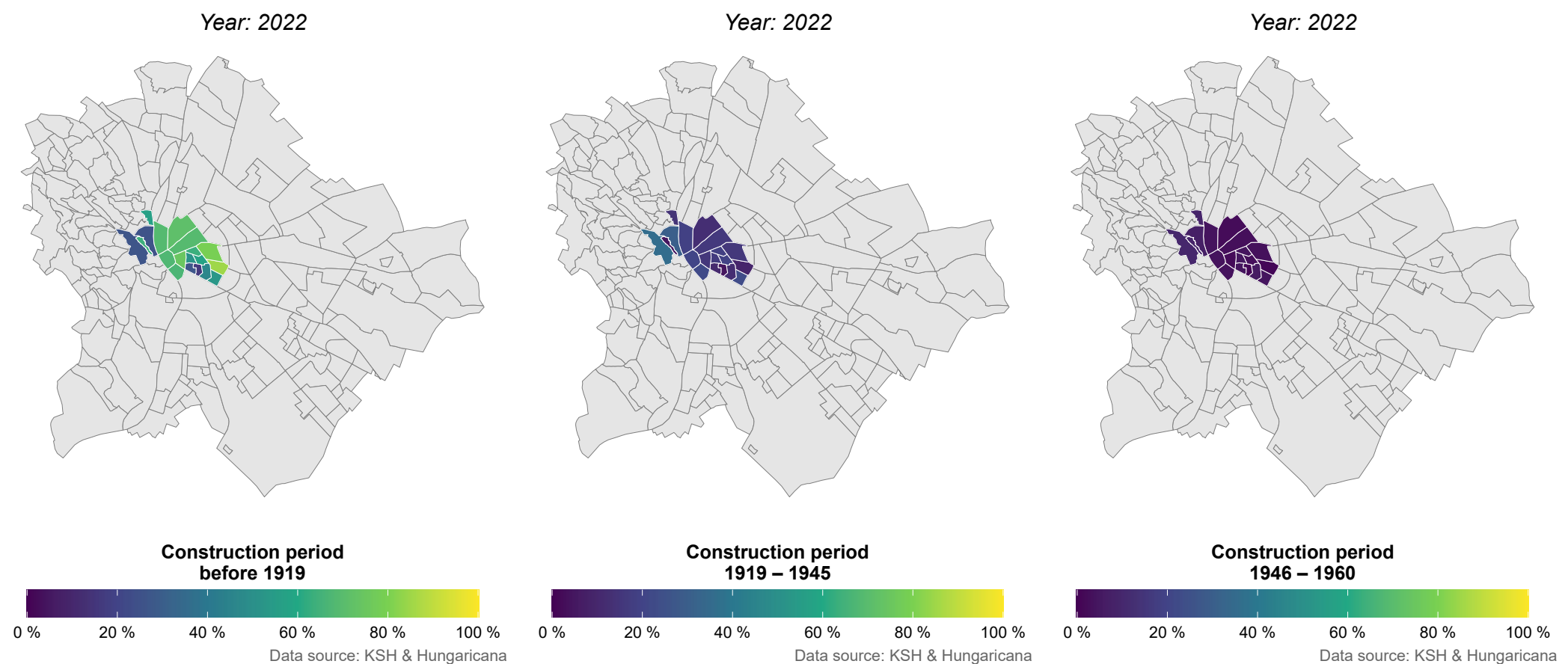
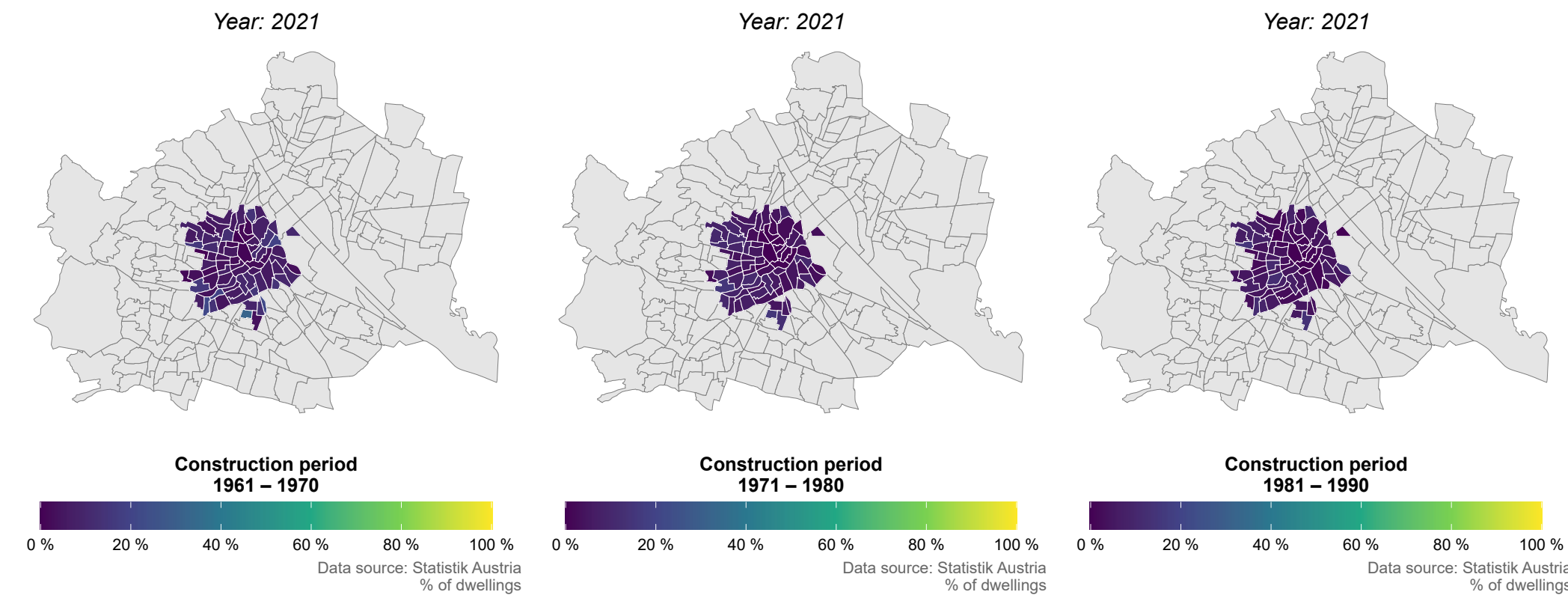
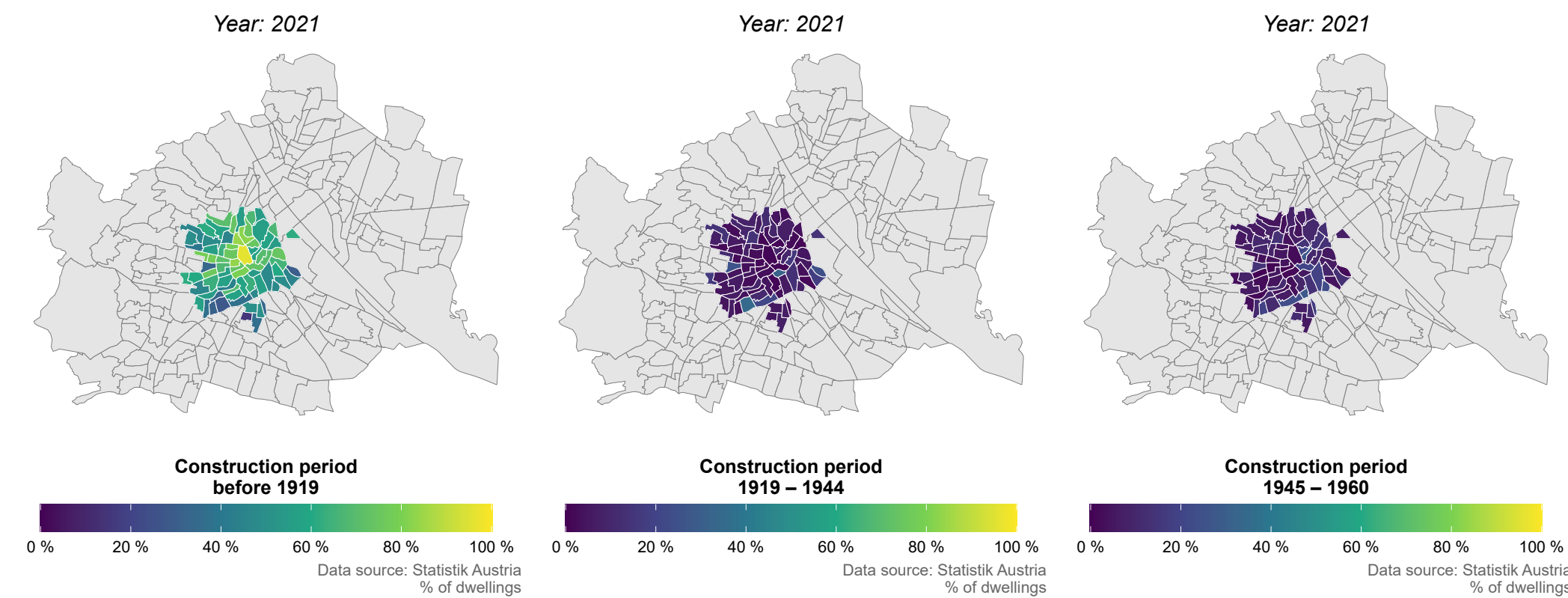
No available data on the percentage of buildings from different construction periods in the historic quarters of Budapest until 1990, in 2011.



4. Historic quarters

Percentage of buildings from different construction periods in the historic quarters of Vienna until 1990, in 2021.

Construction period in the historic quarters of Vienna and Budapest



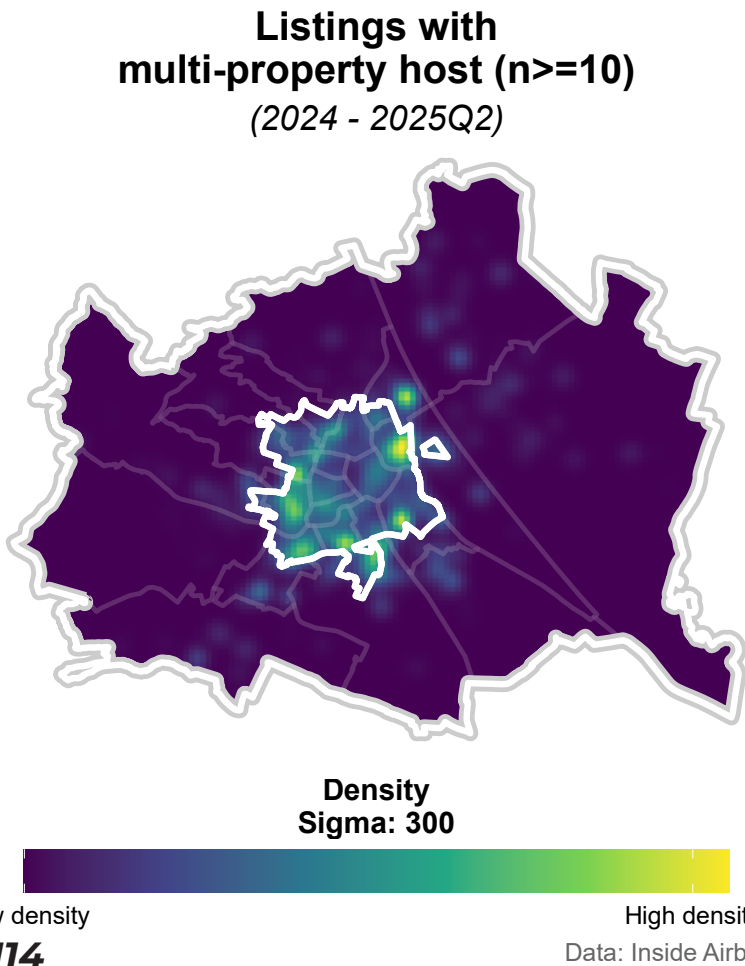
4. Historic quarters

Percentage of dwellings from all construction periods in the historic quarters of Budapest until 2010, in 2021.

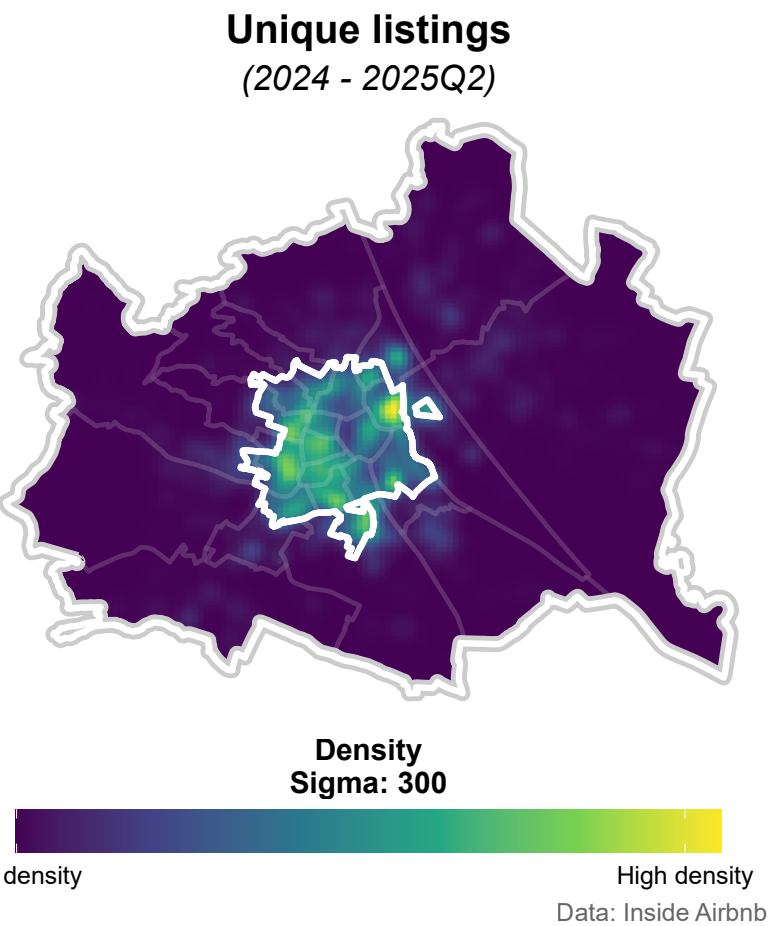
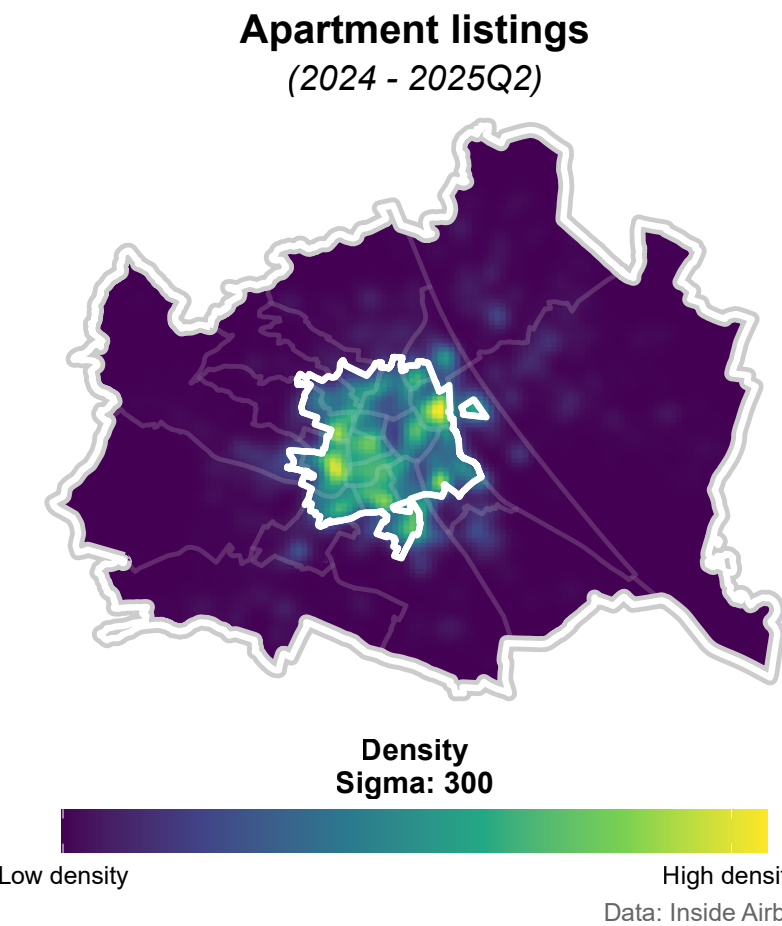
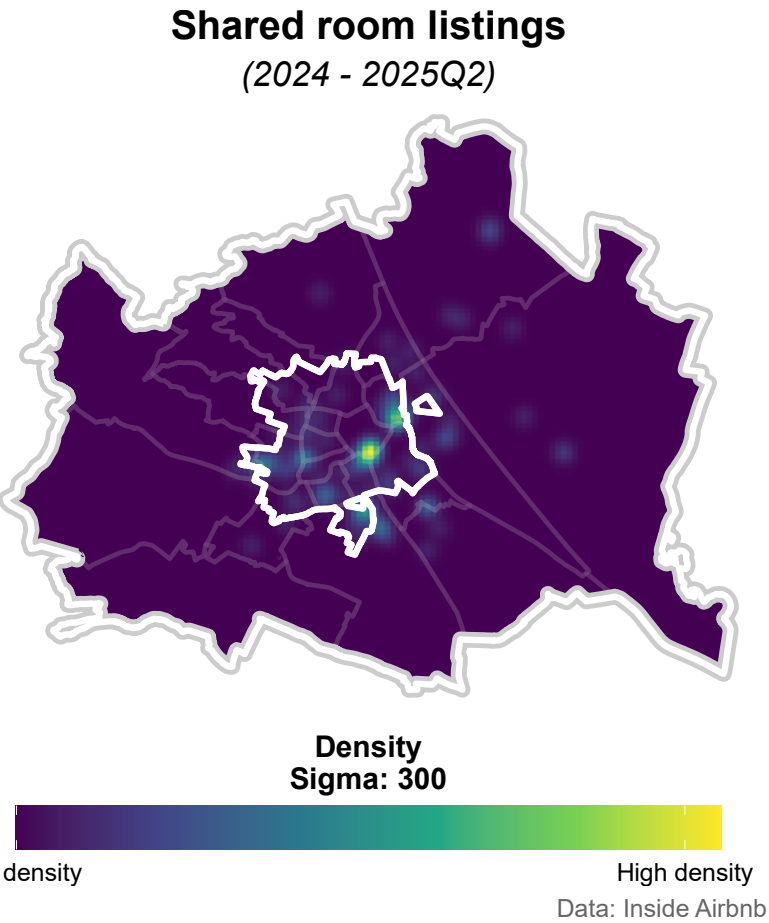
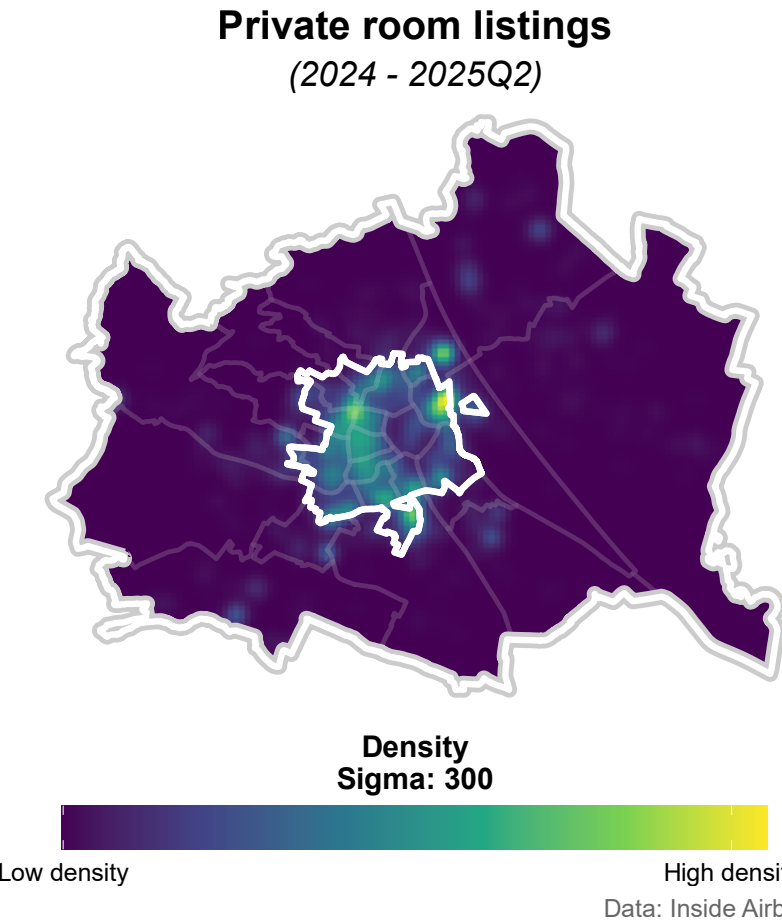


4. Historic quarters

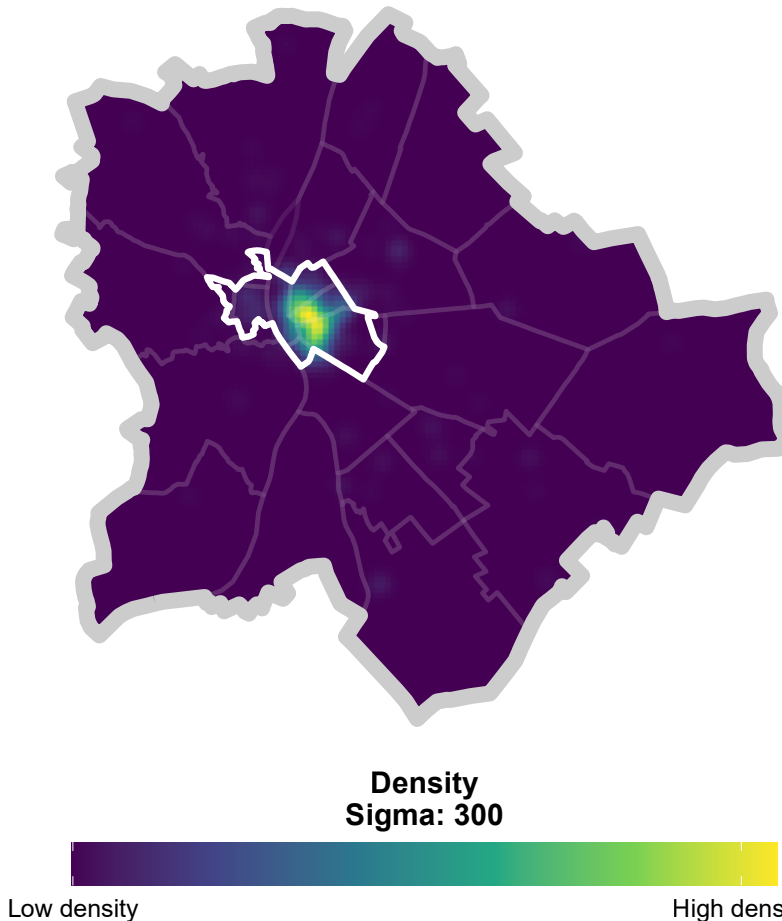
Density and type of Airbnb listings in the historic core of Vienna between 2024 and the second quarter of 2025.



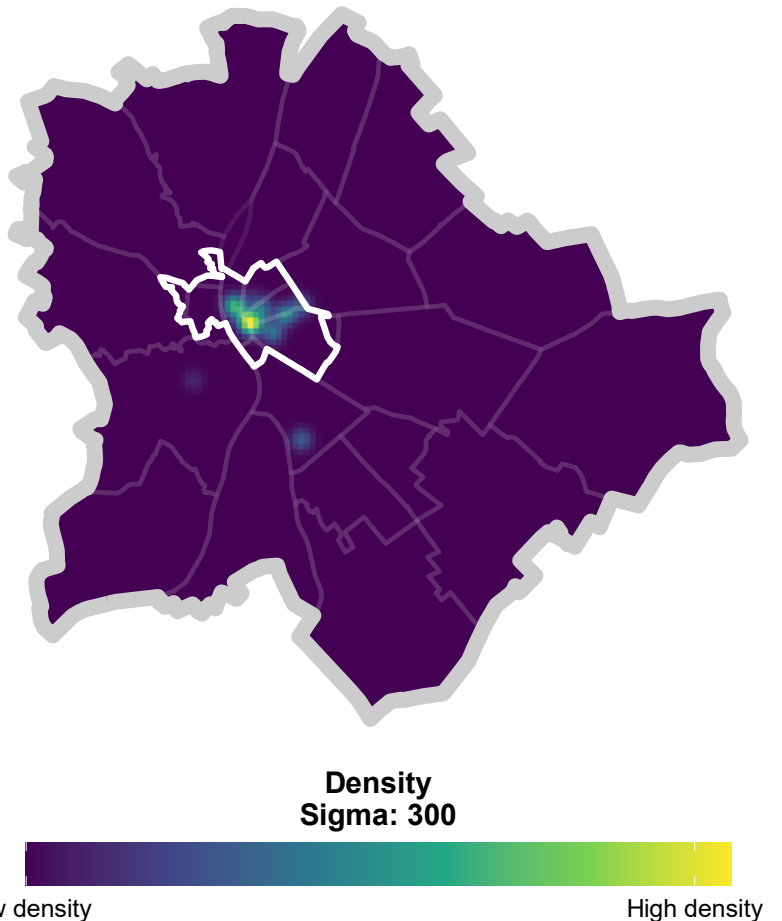
Airbnb data in the historic quarters of Vienna and Budapest



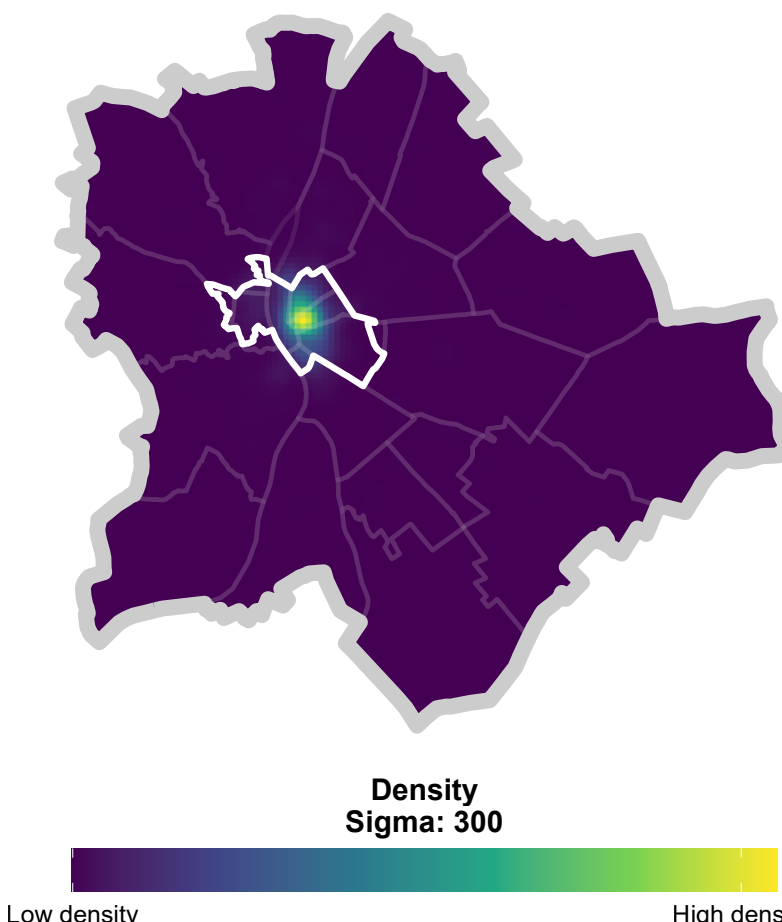
Private room listings
(2024 - 2025Q2)



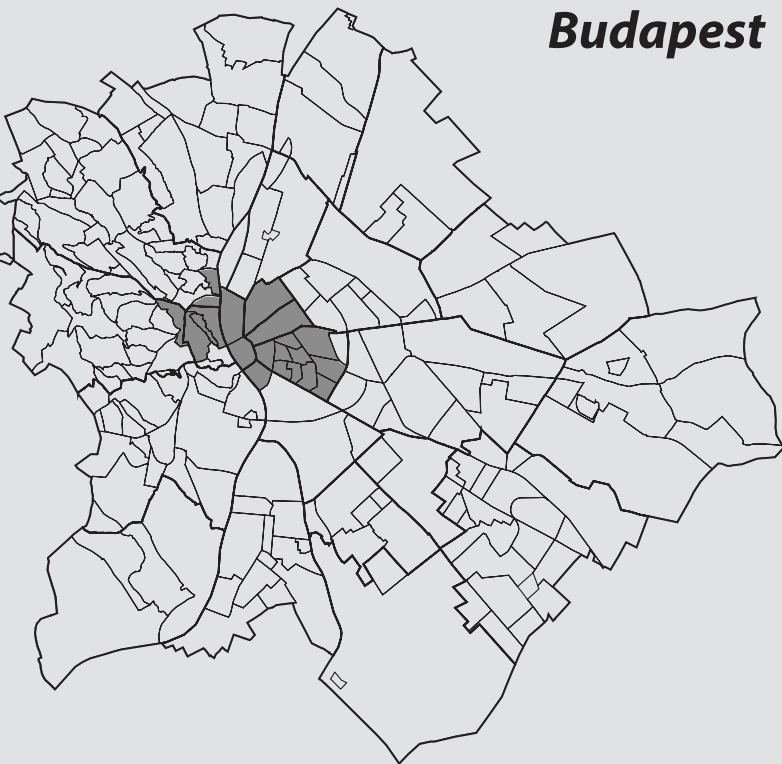
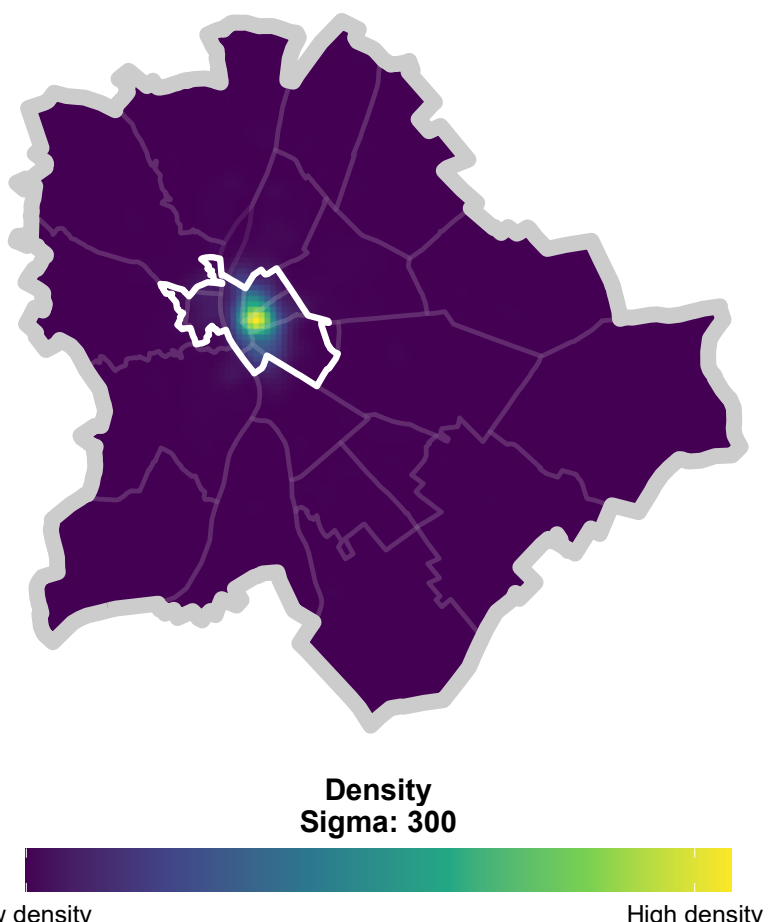
Shared room listings
(2024 - 2025Q2)



Apartment listings
(2024 - 2025Q2)

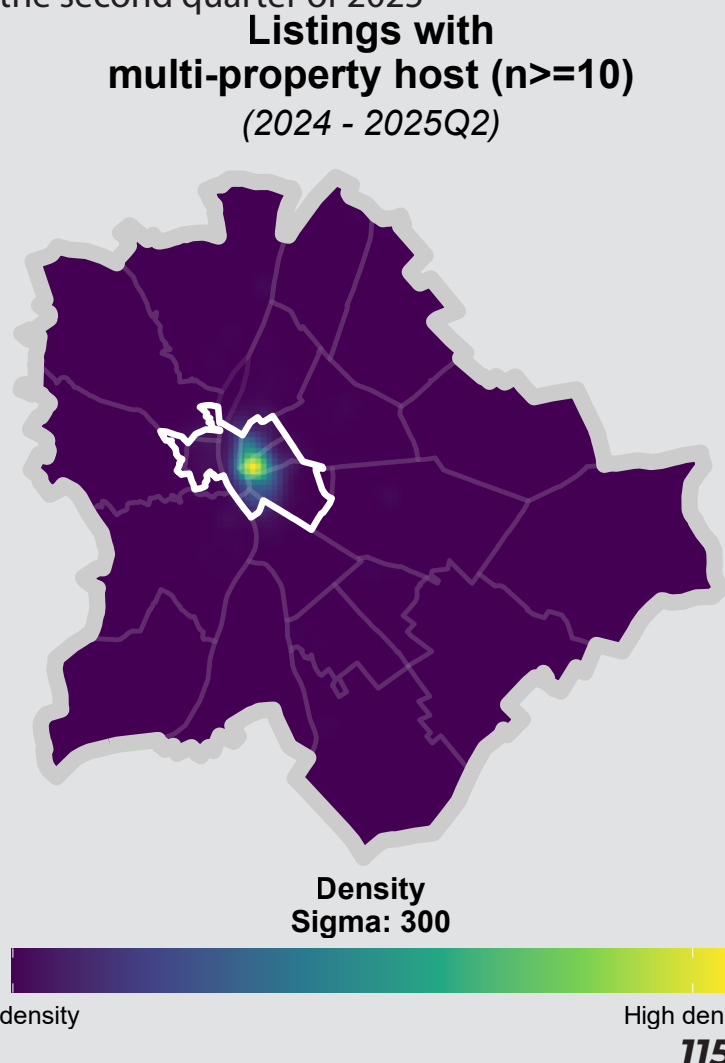


Unique listings
(2024 - 2025Q2)



4. Historic quarters

Density and type of Airbnb listings in the historic core of Budapest between 2024 and the second quarter of 2025



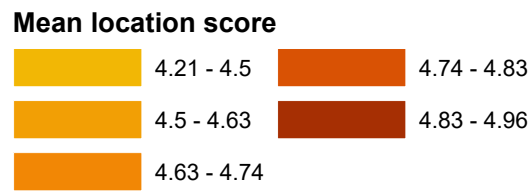
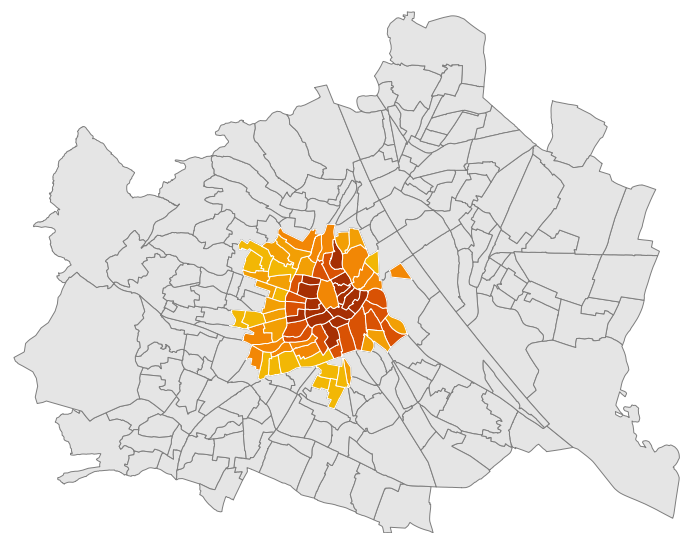


4. Historic quarters

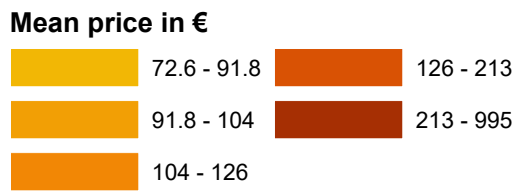
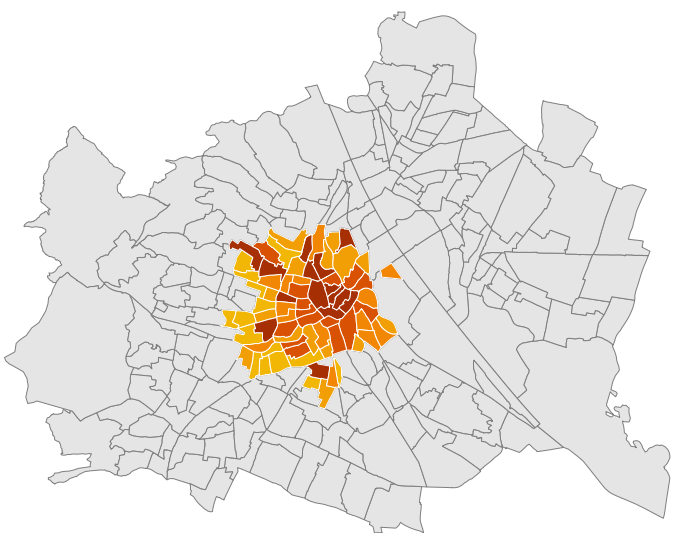
Mean price, mean rating and number of Airbnb listings in the historic core of Vienna between 2024 and the second quarter of 2025.

Remark: The maps showing mean location score and mean rating (averages) only include listings that received at least 10 ratings to avoid distortion by listings that have 1-2 unusually high ratings.

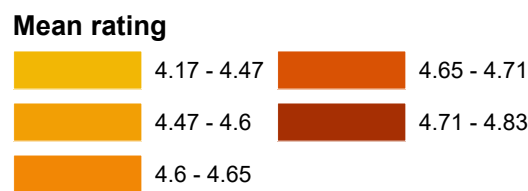
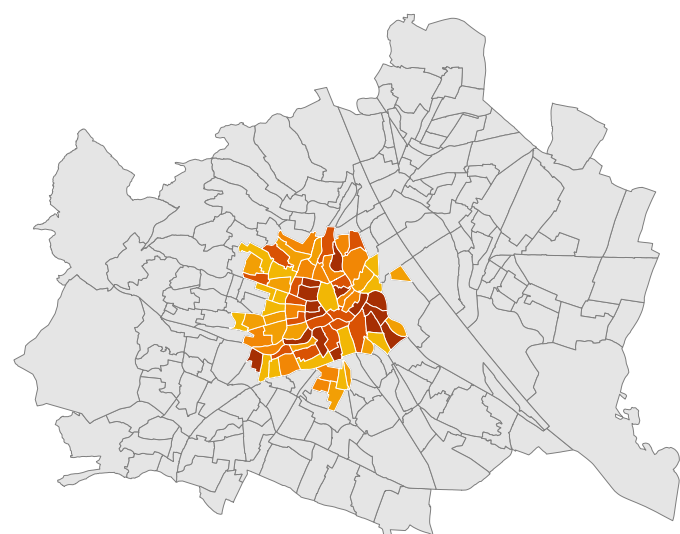
Airbnb data in the historic quarters of Vienna and Budapest



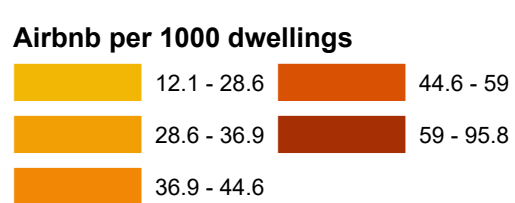
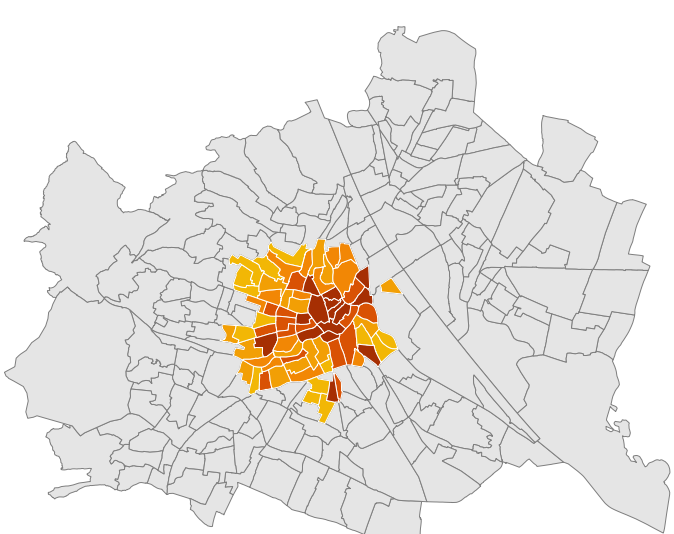
Data: Inside Airbnb
Listings with at least 10 reviews
2024Q1-2025Q2



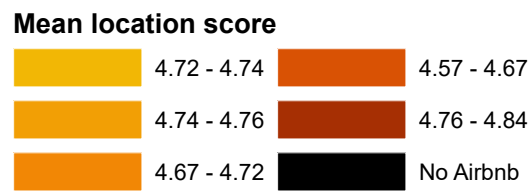
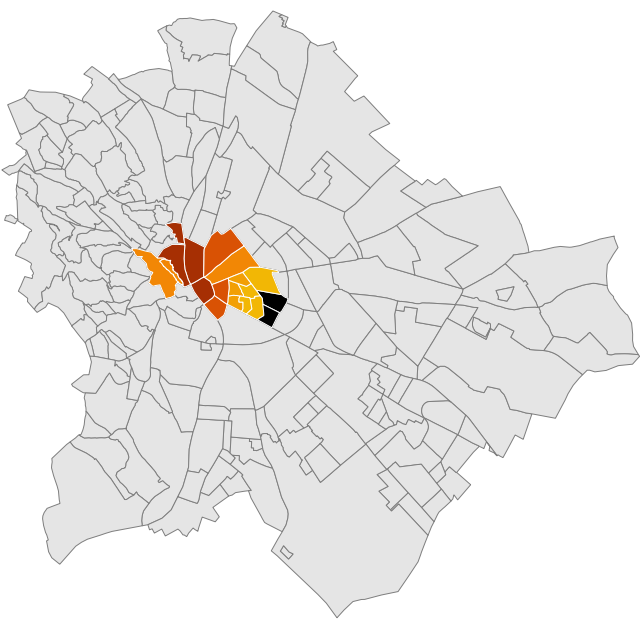
Data: Inside Airbnb
Listings with at least 10 reviews
2024Q1-2025Q2



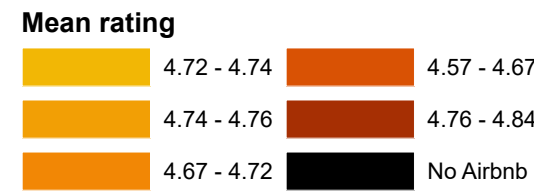
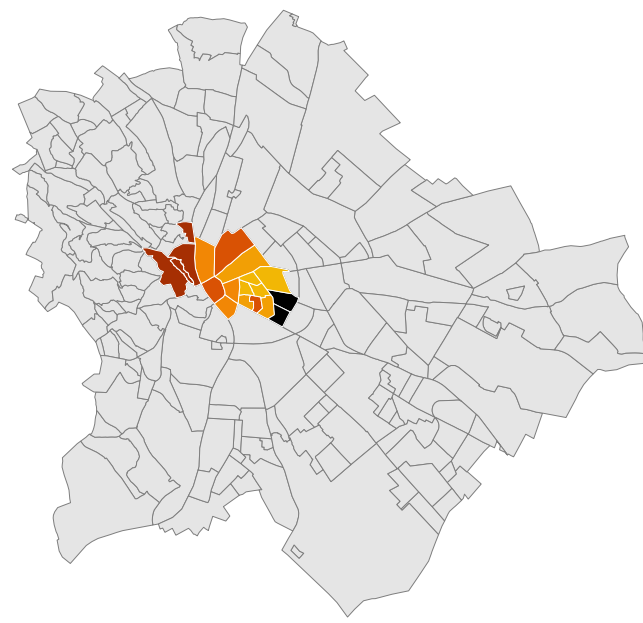
Data: Inside Airbnb
Listings with at least 10 reviews
2024Q1-2025Q2



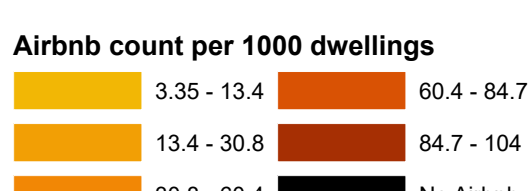
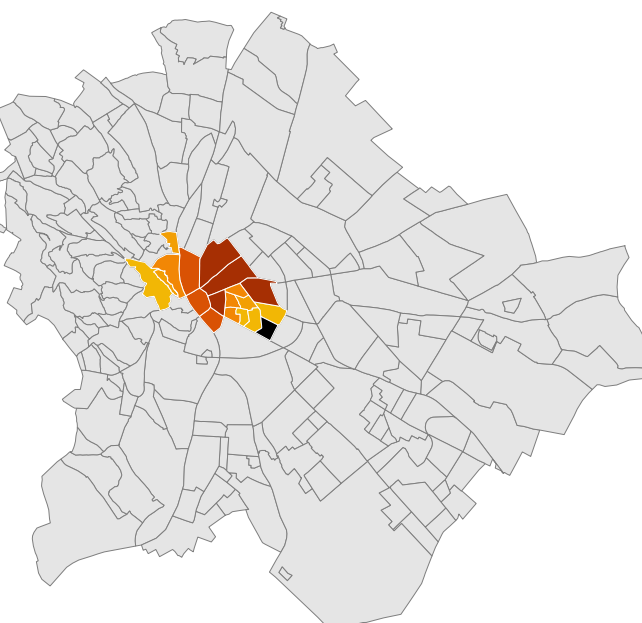
Data: Inside Airbnb
2024Q1-2025Q2



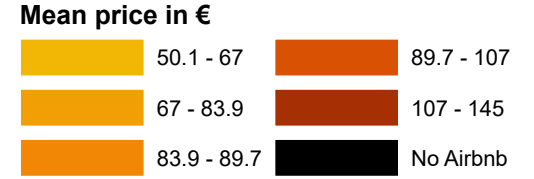
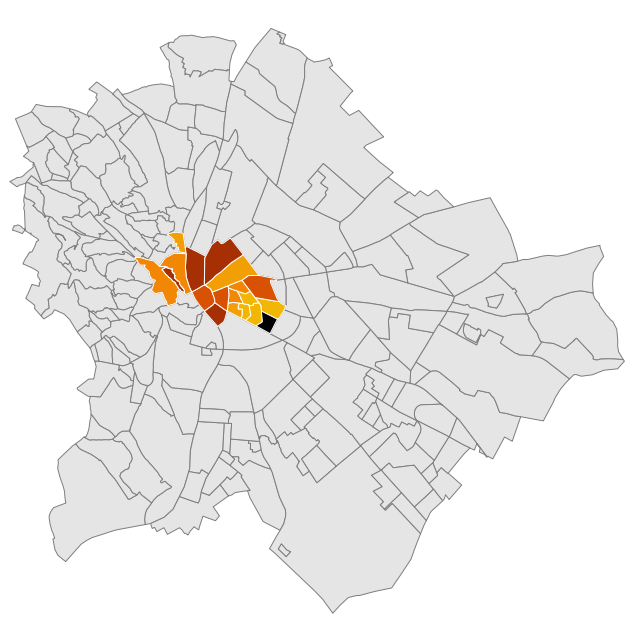
Data: Inside Airbnb
Listings with at least 10 reviews
2024Q4-2025Q2



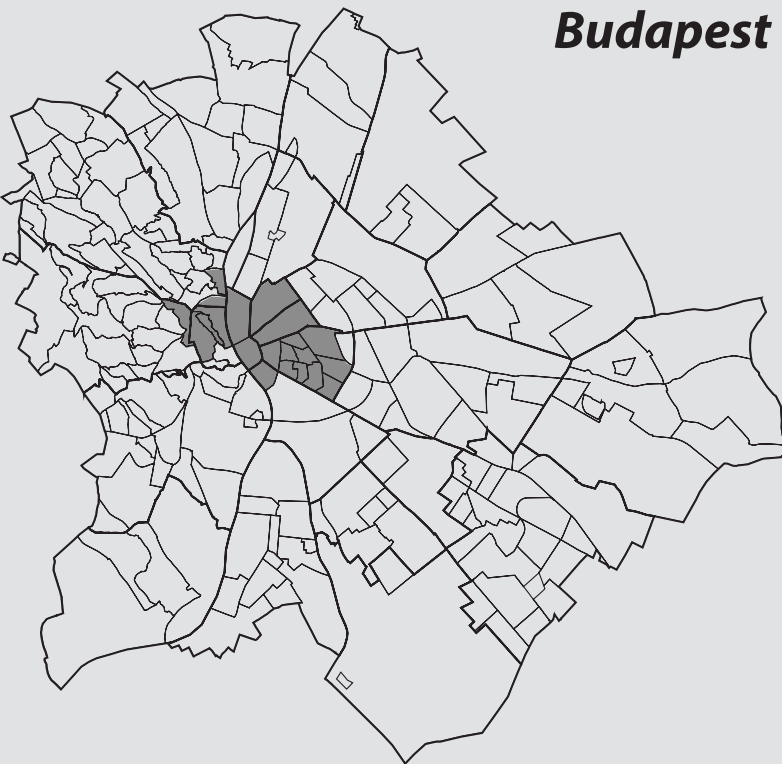
Data: Inside Airbnb
Listings with at least 10 reviews
2024Q4-2025Q2



Data: Inside Airbnb
2024Q4-2025Q2



Data: Inside Airbnb
2024Q4-2025Q2
€=390 HUF



4. Historic quarters

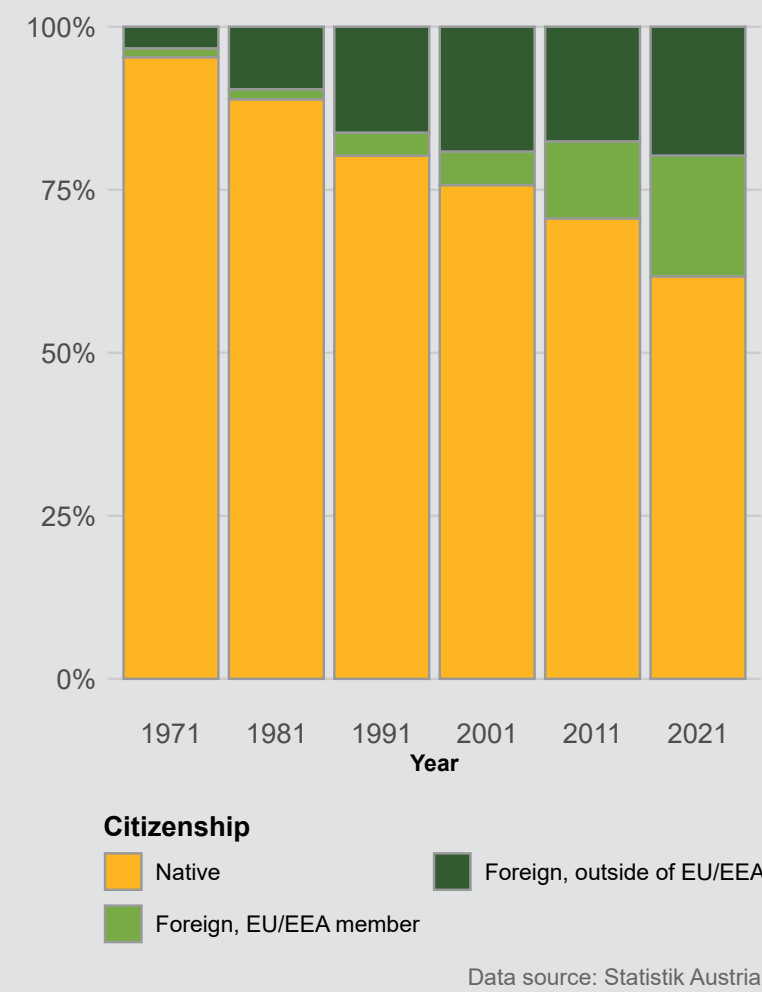
Mean location score, mean price, mean rating and number of Airbnb listings in the historic core of Budapest between 2024 and the second quarter of 2025.

Remark: The maps showing mean location score and mean rating (averages) only include listings that received at least 10 ratings to avoid distortion by listings that have 1-2 unusually high ratings.

Vienna

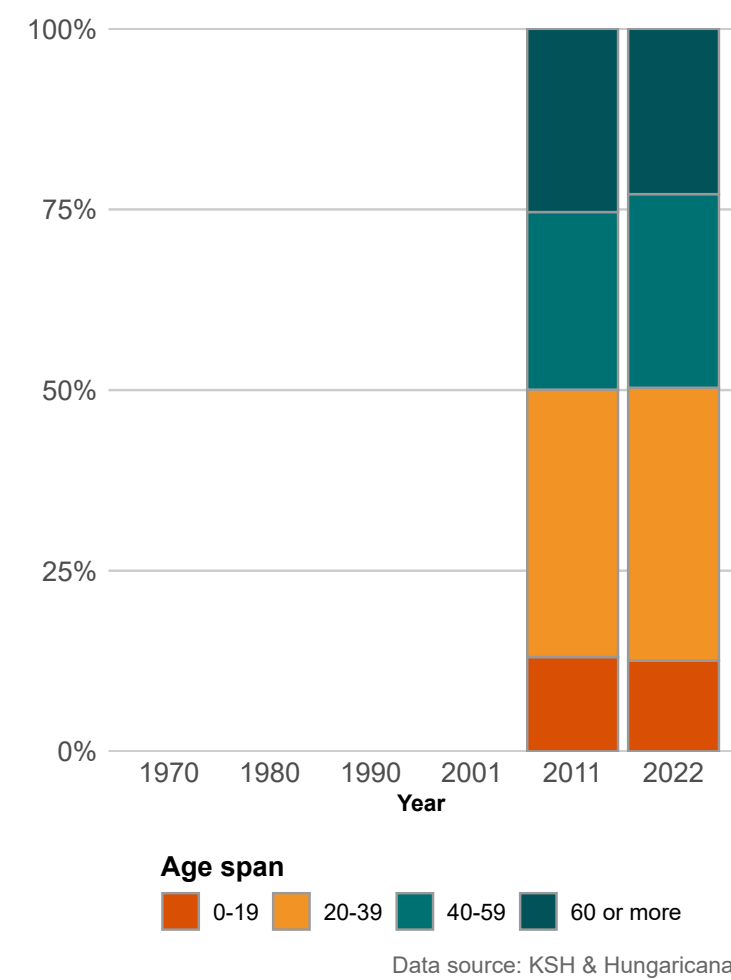
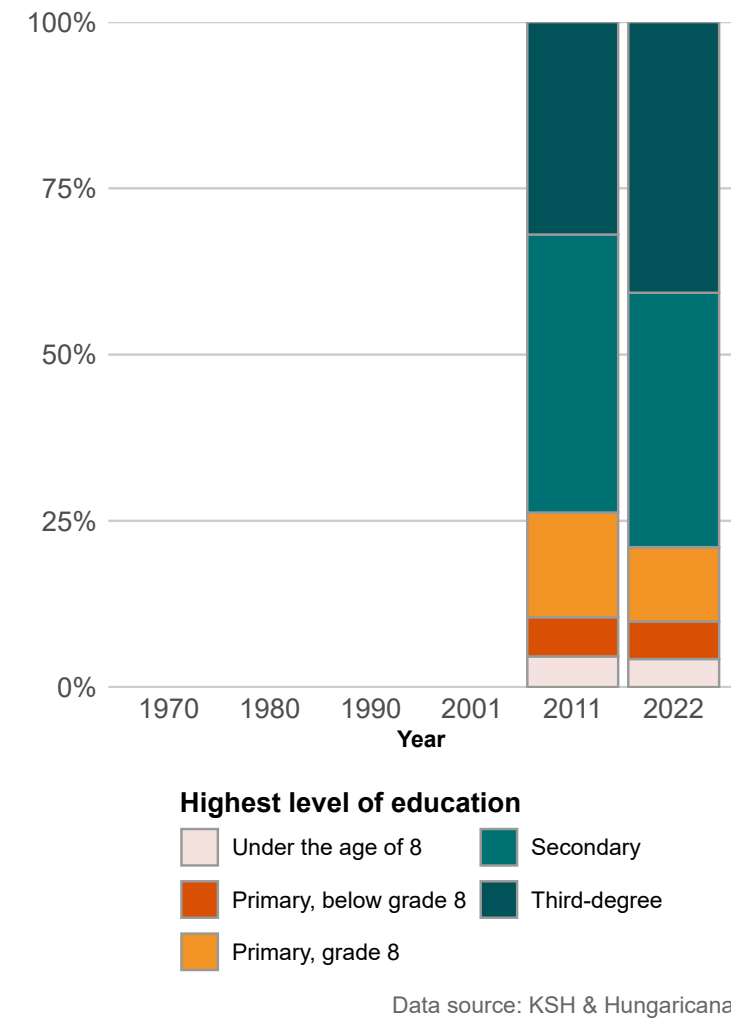
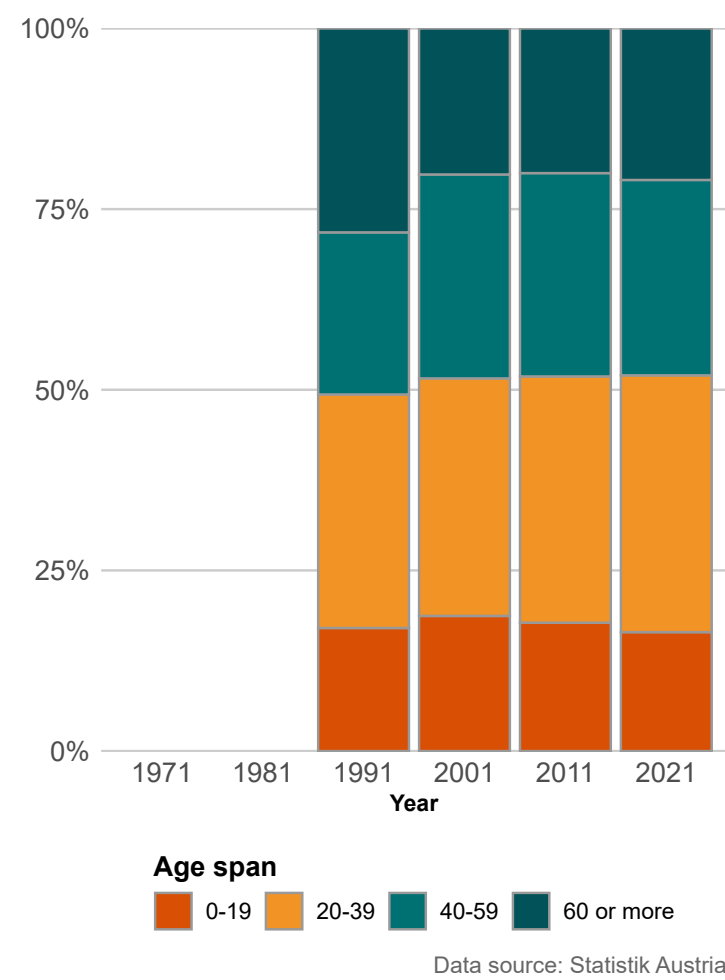
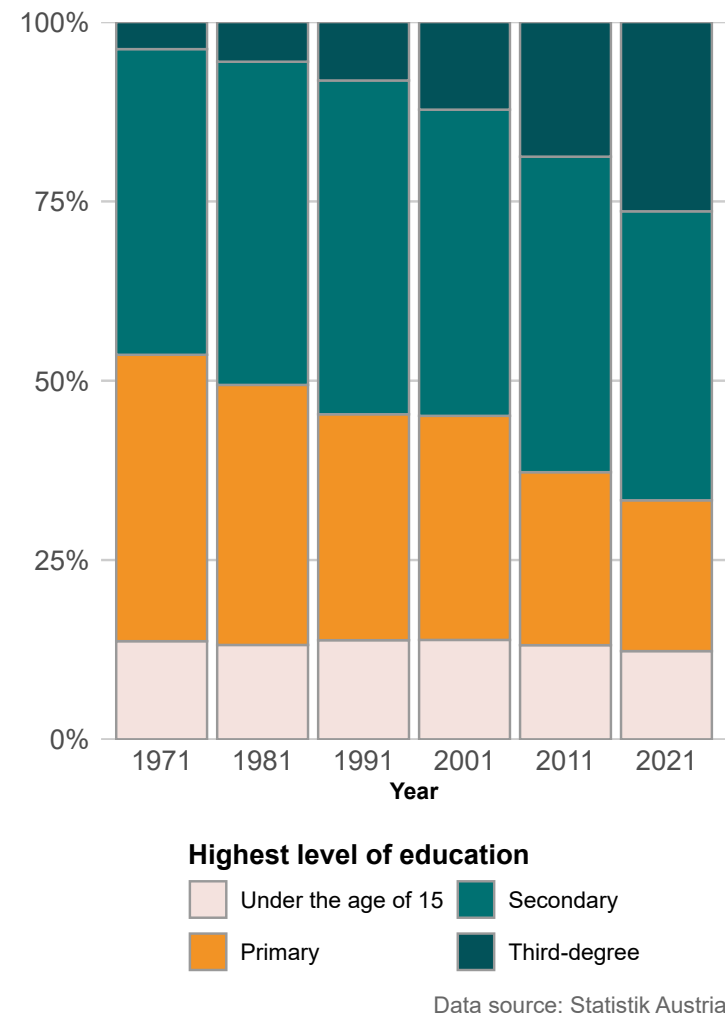
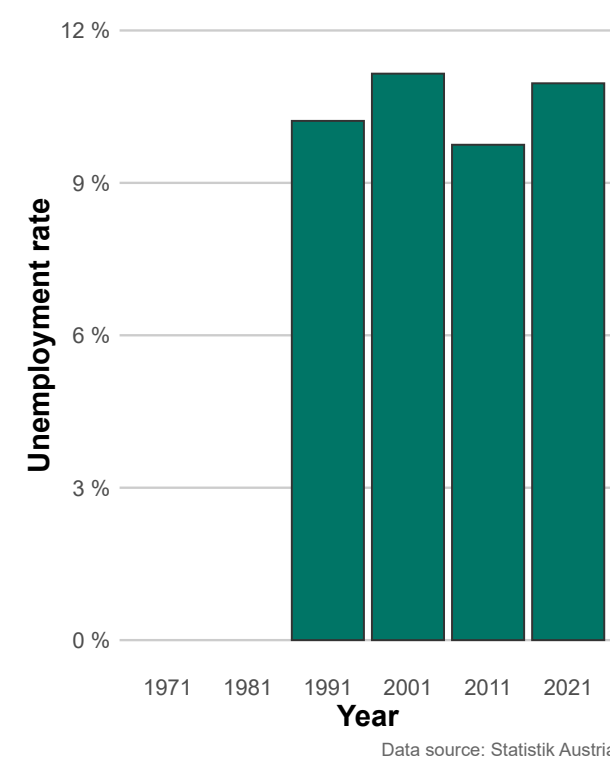
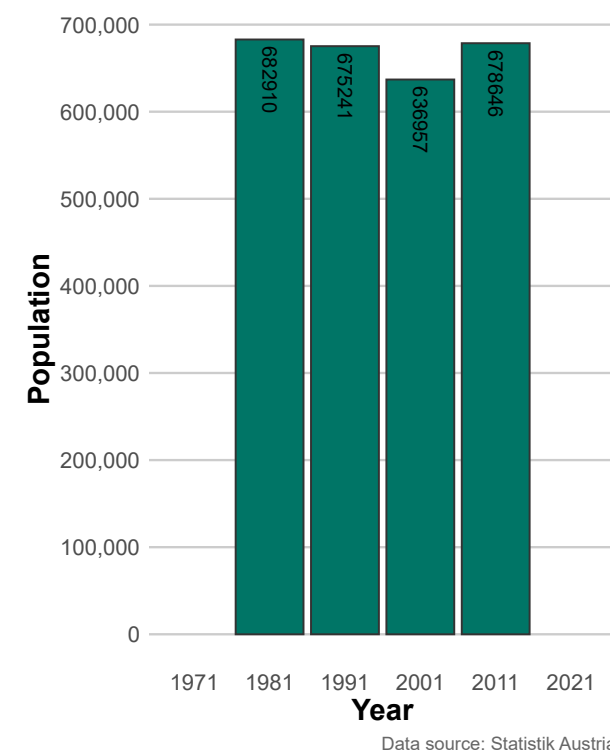


4. Historic quarters



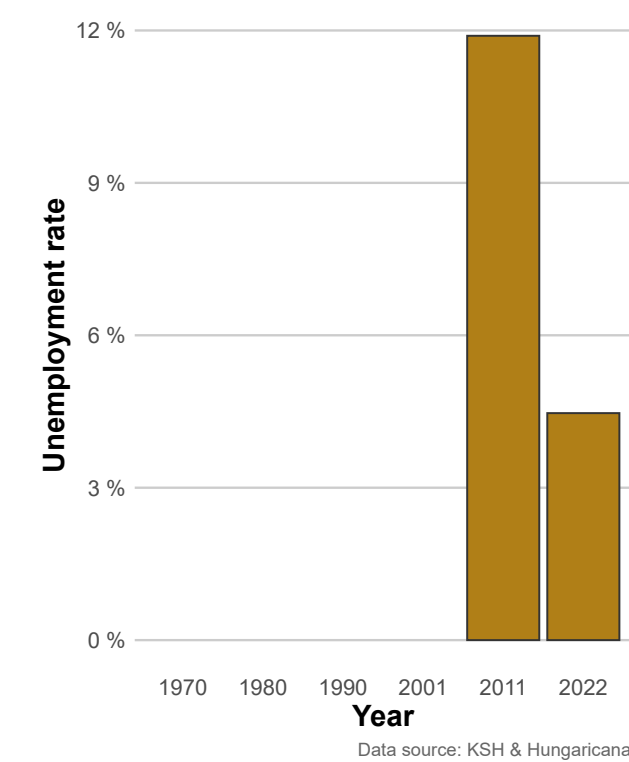
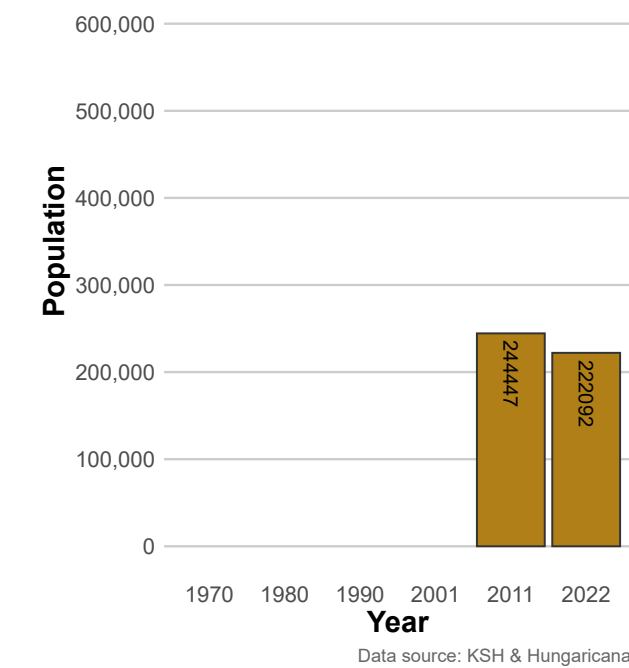
Data of historic quarters in Vienna

Historic quarters of Vienna have a growing percentage of population with a non-EU citizenship. Whereas in 1971, this percentage was around 3%, in 2021 it has reached almost 20%. There is a growing number of population with a third degree level education. Their percentage reached almost 30% in 2021. The number of elderly people is decreasing. While the percentage of 60 years old or more almost reached 30% in 1991, in 2021 this percentage has been reduced to around 20%. The unemployment rate has been changing since 1991, from 9 to 11%.

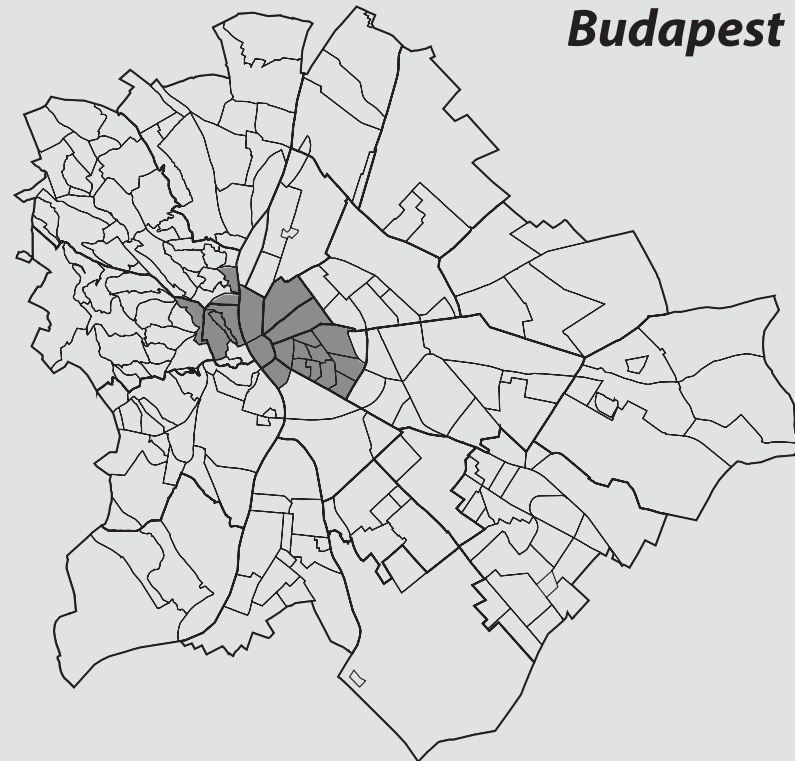


Data of historic quarters in Budapest

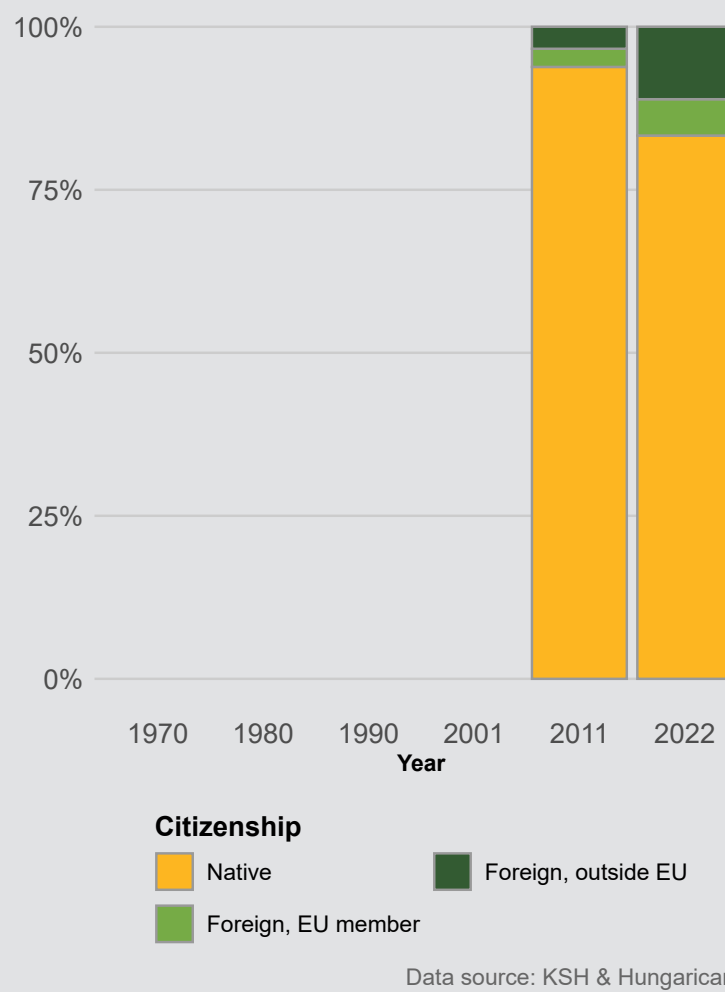
Historic quarters of Budapest have a growing percentage of population with with a non-EU citizenship. Whereas in 2011, this percentage was around 3%, in 2022 it has reached around 10%. There is a growing number of population with a third degree level education. Their percentage reached more than 40% in 2022. The number of elderly people is getting lower. While the percentage of 60 years old or more almost reached more than 25% in 2011, in 2022 this percentage has been reduced to around 20%. The unemployment rate has been changing significantly since 2011, from almost 12% to around 5%.



Budapest



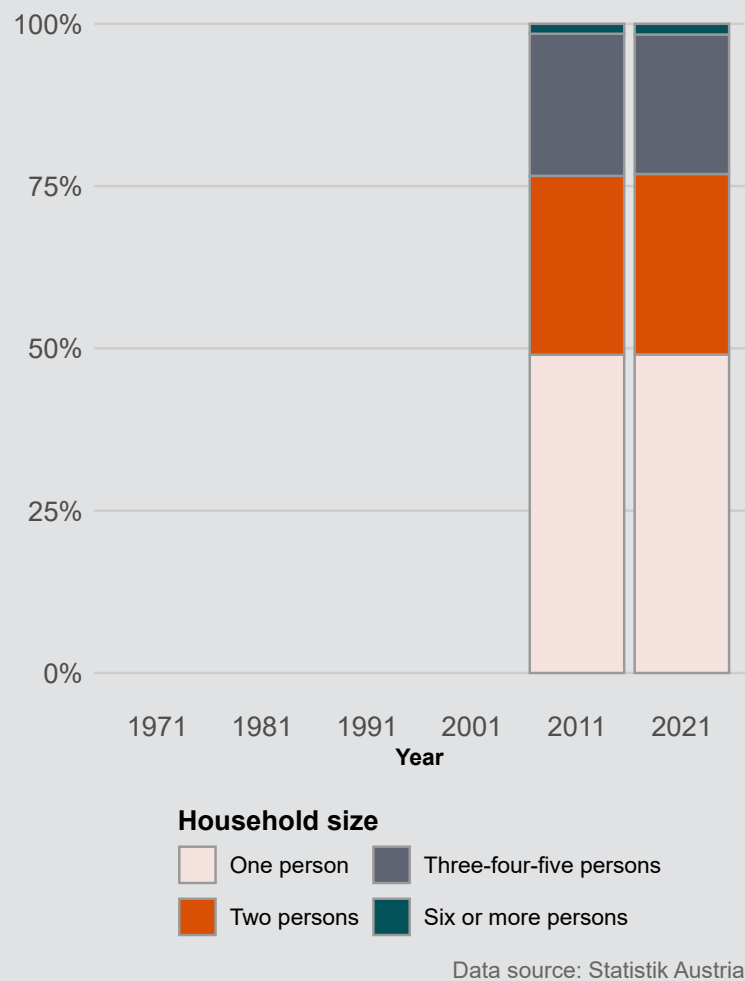
4. Historic quarters



Vienna

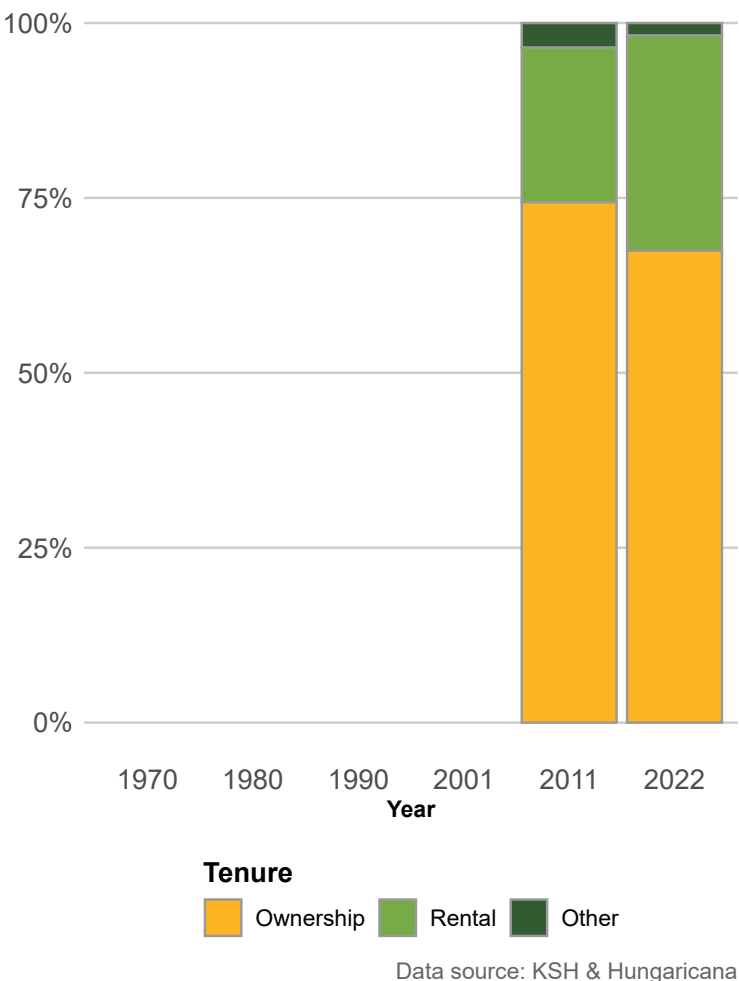
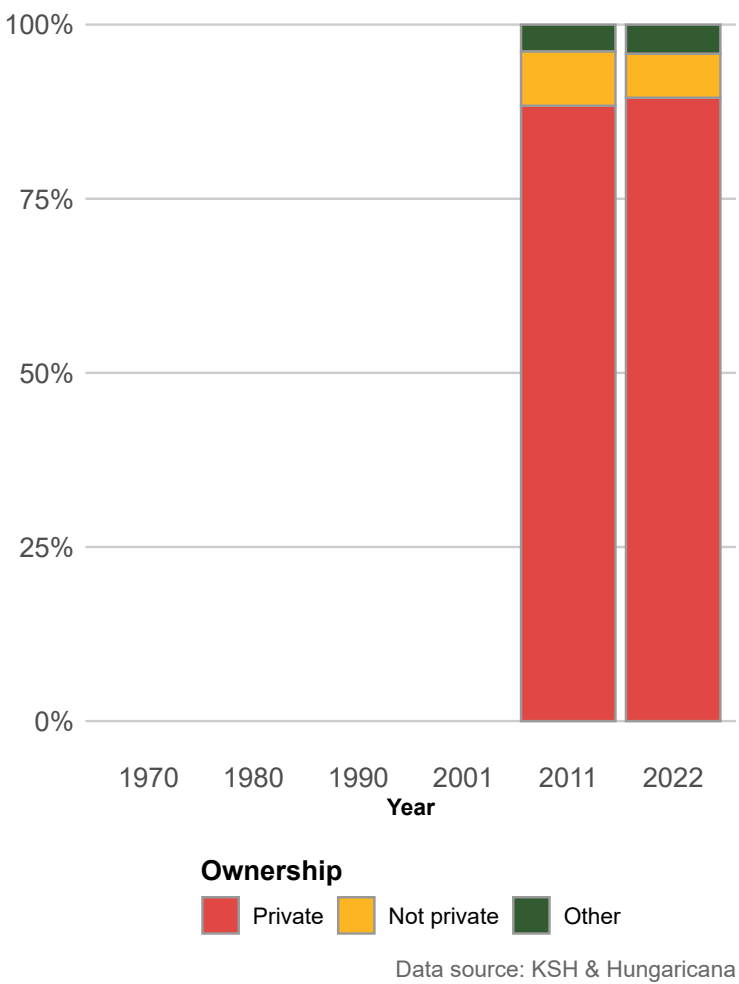
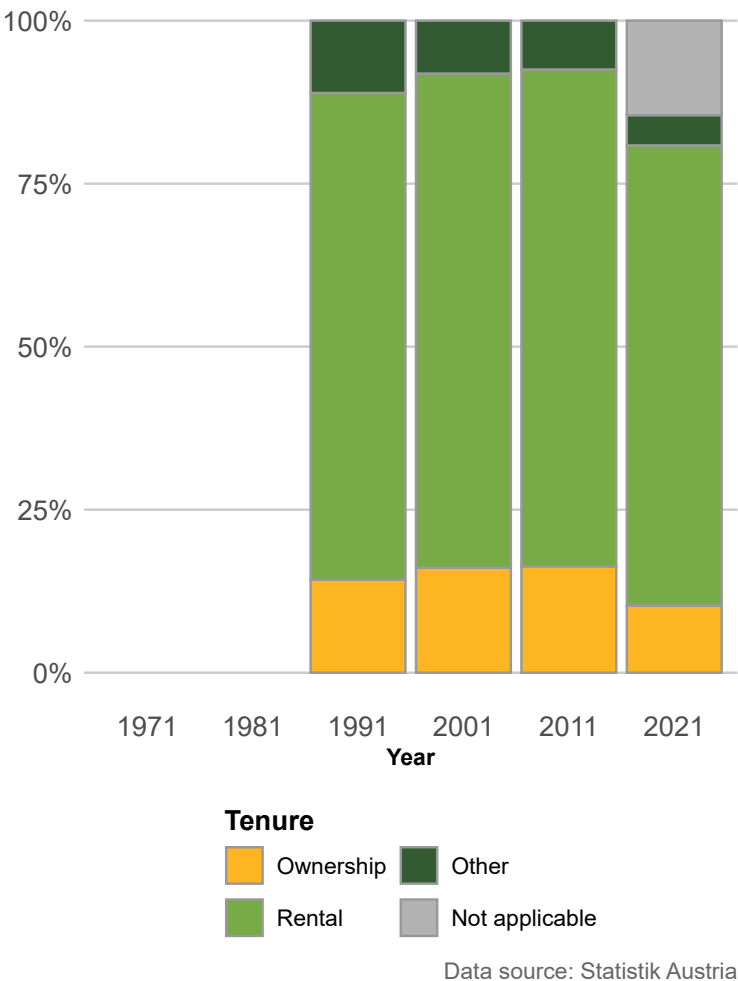
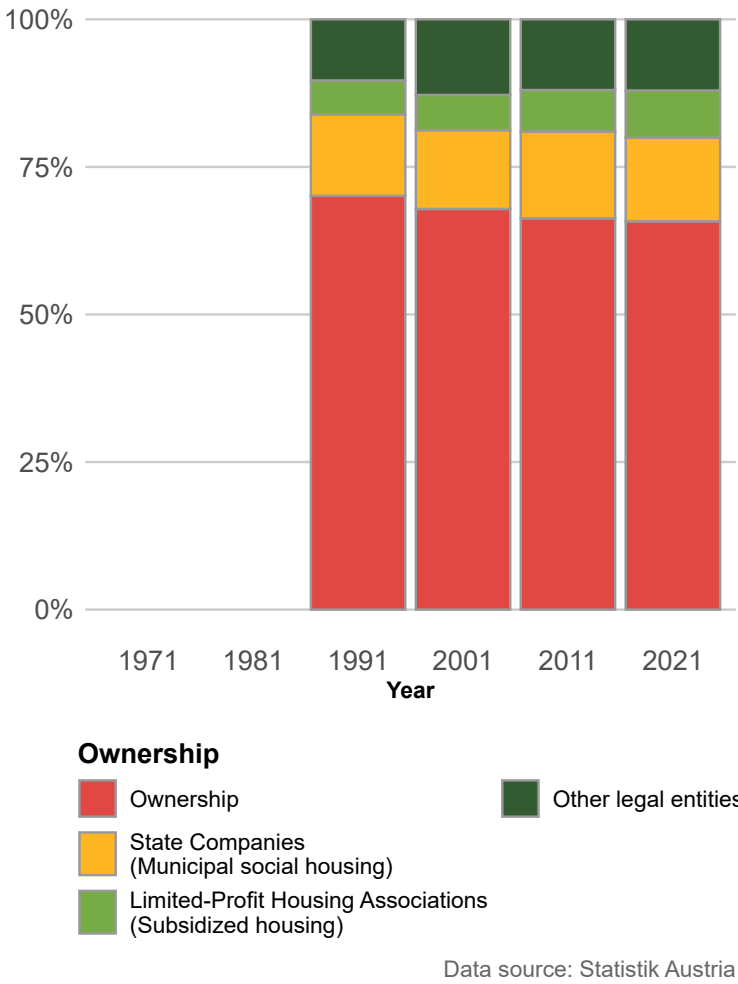
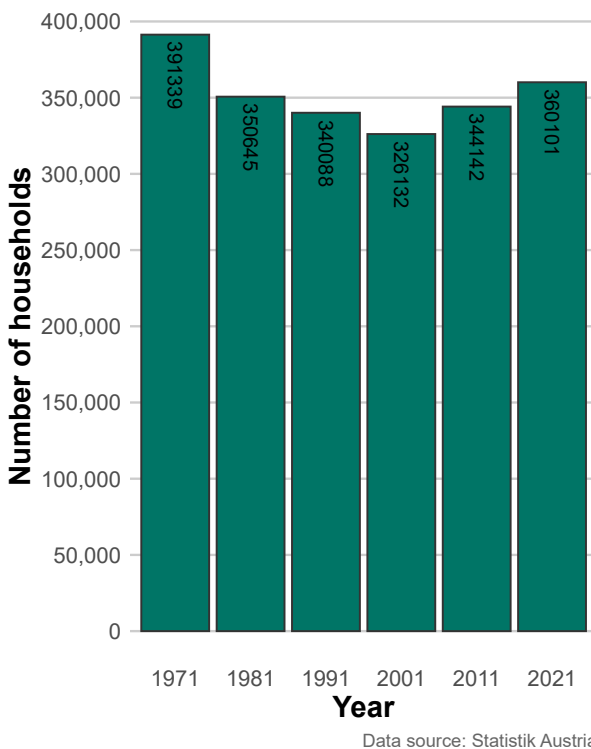
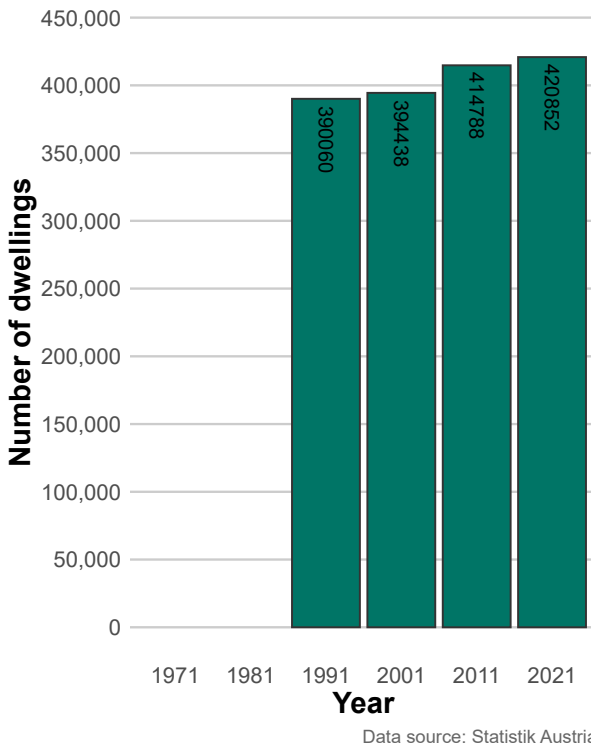


4. Historic quarters



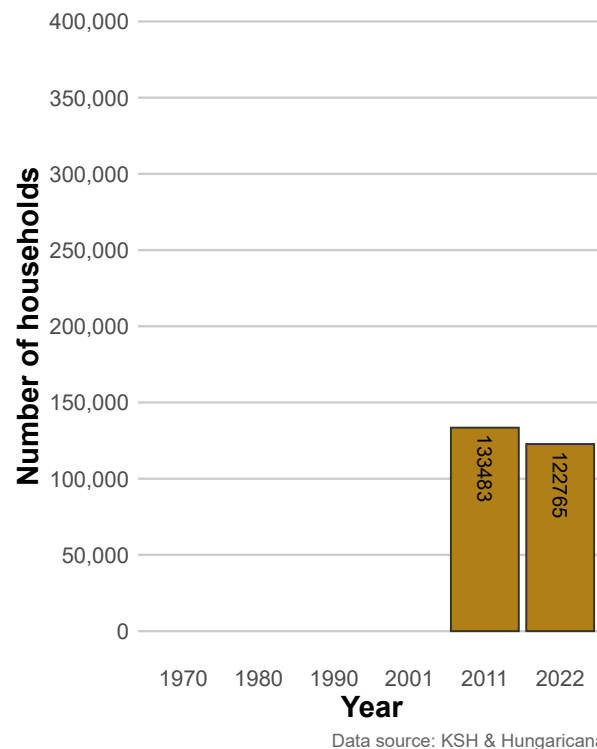
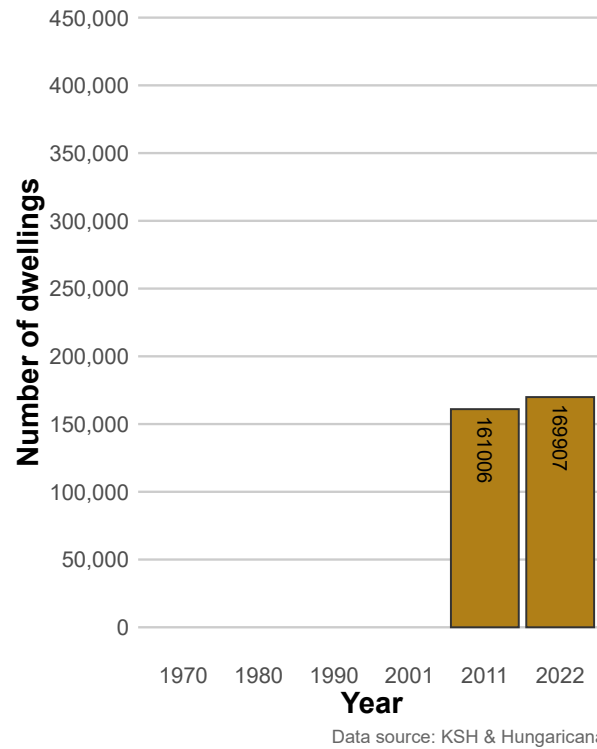
Data of historic quarters in Vienna

The number of dwellings has been growing from 318,338 in 1991 to 337,979 in 2021. At the same time, the number of households has been reduced from 323,924 in 1971 to 287,752 in 2021. Household sizes remained similar in the past decade, with 50% of one-person households, around 27% of two-person households, around 22% of three-four-five-person households and 1% of six-person or more. The percentage of rental units (tenancy right) has been reduced from 90% to 78% between 1991 and 2021.



Data of historic quarters in Budapest

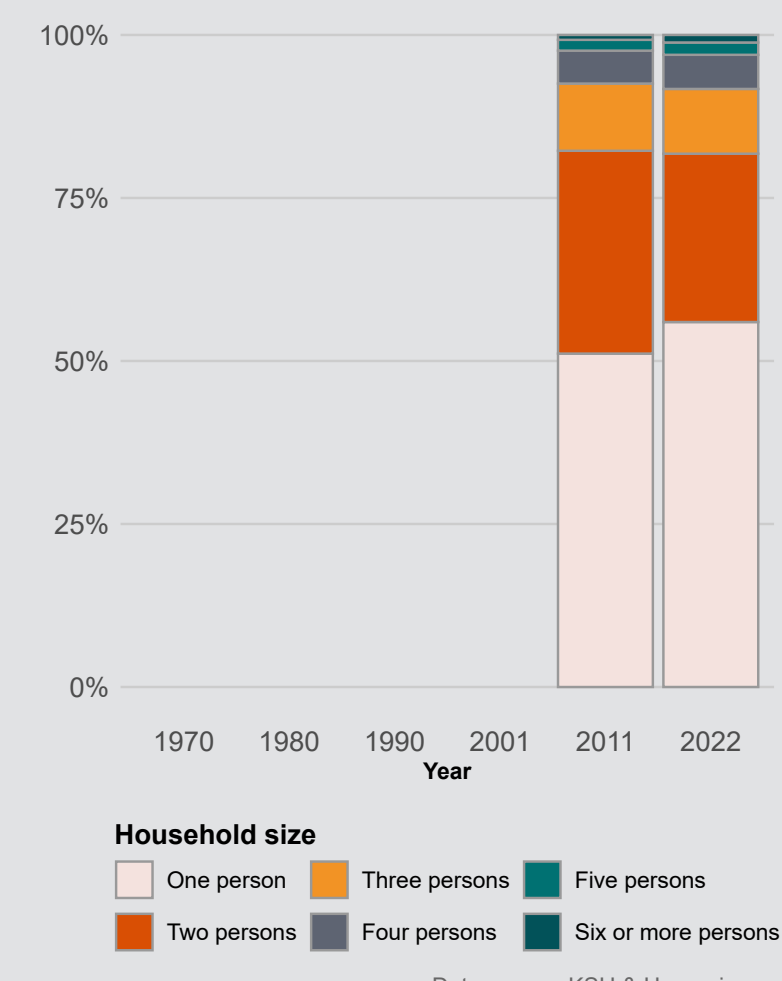
The number of dwellings has been growing from 167,115 in 2011 to 175,715 in 2022. At the same time the number of households has been reduced from 133,520 in 2011 to 127,004 in 2022. Household sizes have changed in the past decade, as the percentage of one-person households grew from 50% to 55% and the percentage of two-person households has been reduced from 31% to 25% . The percentage of rental units (tenancy right) has grown from 23% to 32% between 2011 and 2022.



Budapest



4. Historic quarters



Vienna



4. Historic quarters

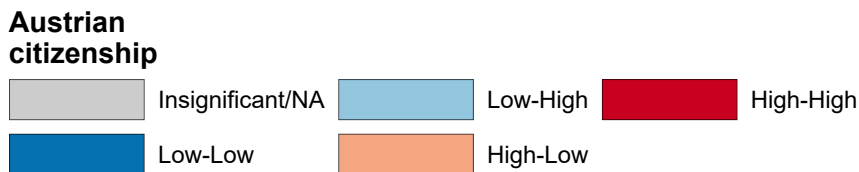
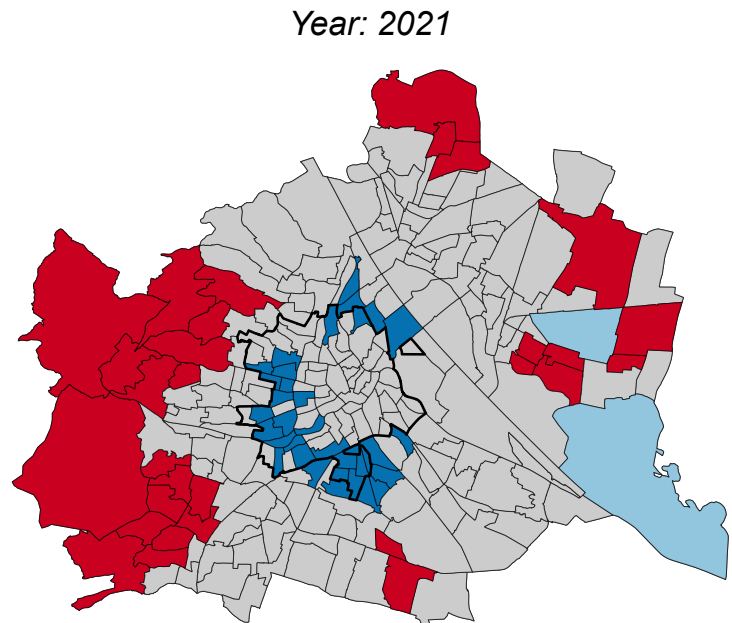
Local Moran analysis

Spatial autocorrelation

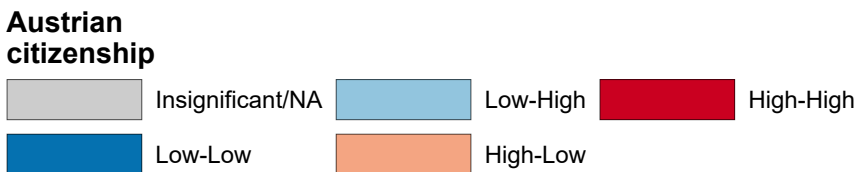
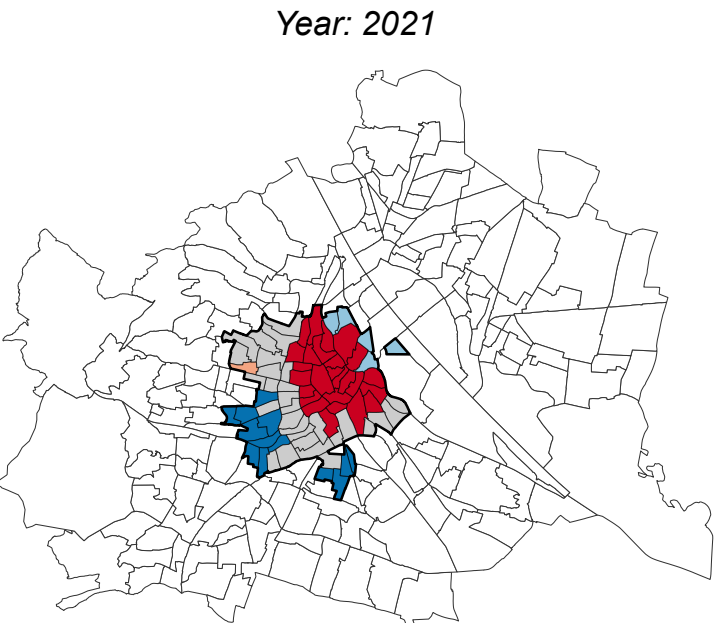
Spatial data are usually characterised by a kind of spatial autocorrelation or spatial dependence, which means that nearby locations have more similar variables than distant locations. In the words of Tobler (1970), “Everything is related to everything else, but near things are more related than distant things.” These spatially autocorrelated areas usually indicate background processes and actors that are not initially noticeable and that shape and change the variable (Fortin and Dale 2009). The most commonly used method to detect spatial autocorrelation is to examine Moran’s I statistics (Renshaw, Cliff, and Ord 1982). The null hypothesis of Moran’s I is spatial randomness, so if significant values are obtained and Moran’s I is positive, we can speak of clustering, while a negative value is a checkerboard-like shape. The Moran’s I statistic is global, i.e. it is a linear inference for the whole data set, and is not suitable for measuring autocorrelation on a smaller area. Furthermore, although this method can detect clustering of data, it cannot represent clusters on maps. Anselin (Anselin 1995) created the Local Moran’s I (LISA) statistic to measure some small areas of a large data set. This analysis gives a value for each unit or polygon under study, which is compared to the global Moran’s I value and assigned a significance level. The resulting significant values can then be plotted on a map, showing the pattern of negative and positive spatial dependencies (low value, surrounded by low values; high value, surrounded by high values) and spatial outliers (low value, surrounded by high values; high value, surrounded by low values) (Anselin 1995).

An important step in determining autocorrelation is to choose the correct spatial weight matrix. The ideal weighting must be chosen so that the resulting areas are large enough to describe the spatial dependence, but small enough to be interpreted as separate clusters. The choice of an appropriate spatial weight matrix has bogged down spatial research (O’Loughlin 2003). Although there has been much academic debate about which is the most appropriate, there is still no consensus. One possible option is to use k-nearest neighbour (Knn) spatial weights, whereby a predefined number of near neighbours are searched for by the algorithm for all units under study (Anselin 2003). We looked at studies that examined 250 quarters in Vienna and looked for spatial autocorrelation in socioeconomic or housing-related variables. Kadi and his colleagues (Kadi, Banabak, and Schneider 2022) worked with a spatial

City area



Historic core



Local Moran analysis

matrix of the five nearest neighbours. In their studies, they found that their results are not sensitive to the application of other spatial neighbourhood matrices. Reiner and Musil (Reiner and Musil 2023) also performed a LISA analysis, but the study does not indicate exactly which spatial weight matrix was used. The use of the right spatial weight matrix is more important in spatial modelling, and we should then have many more techniques available to determine the most optimal one.

List of outputs

For each variable

Local Moran’s I plots for each census year with data

Number of quarters in each cluster by year

Percentage of quarters in each cluster by district and year combinations

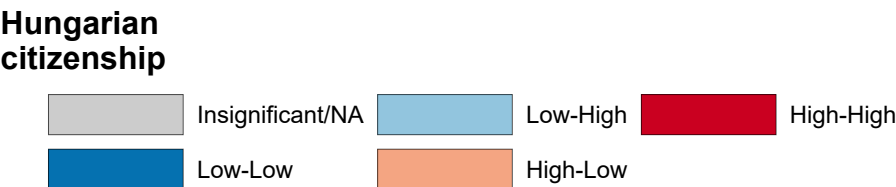
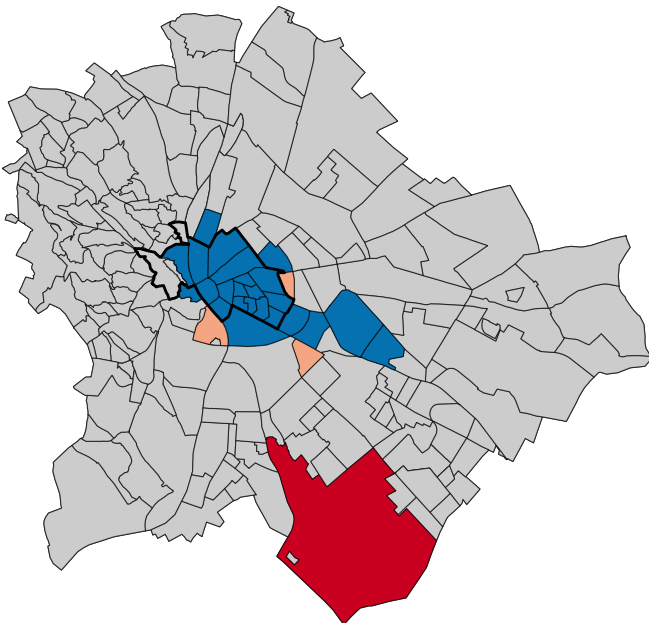
Stable Low-Low and High-High quarters. These quarters belonged to the same category both in the first and the last census year (if there are years in between, the quarters may have belonged to another cluster in those years).

For each census year

After each quarter name, the variables for which the quarter belongs to any relevant cluster (Low-Low, Low-High, High-Low, High-High) are listed.

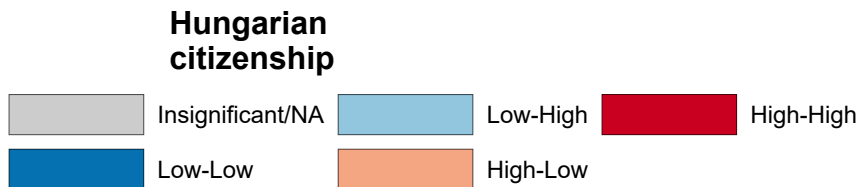
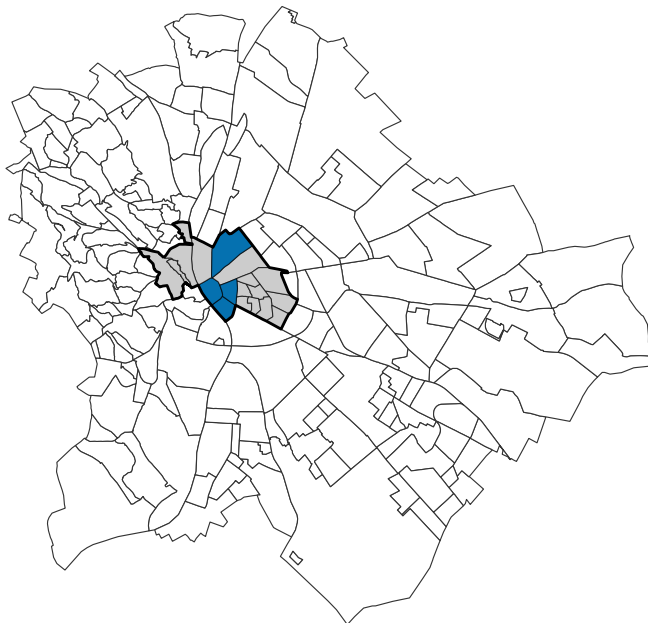
City area

Year: 2022

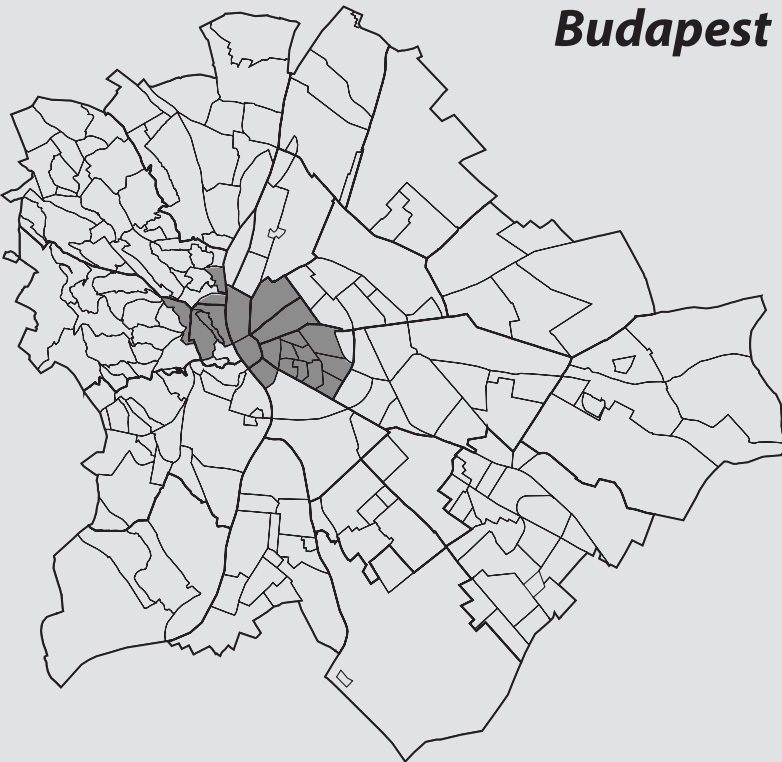


Historic core

Year: 2022



Budapest



4. Historic quarters

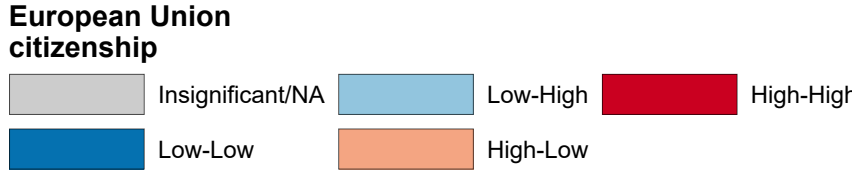
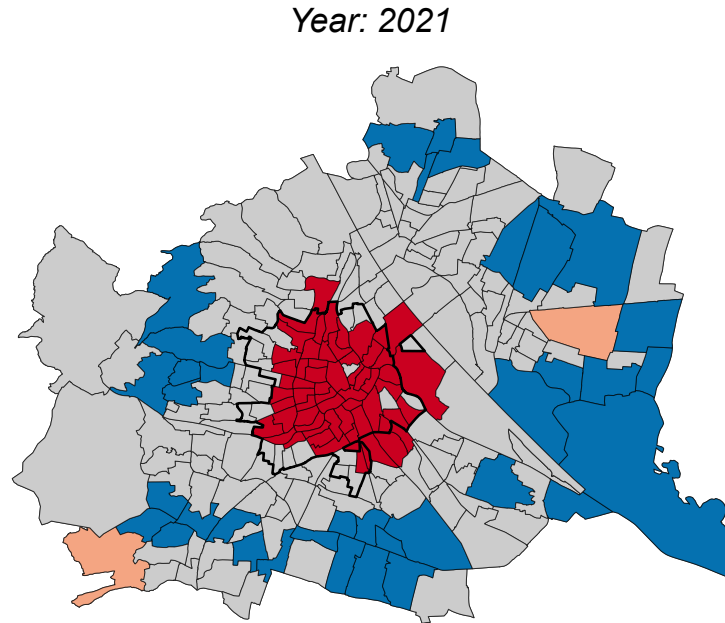
Vienna



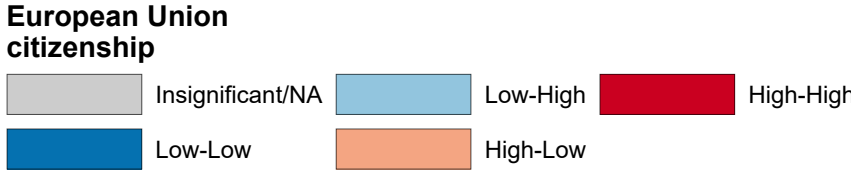
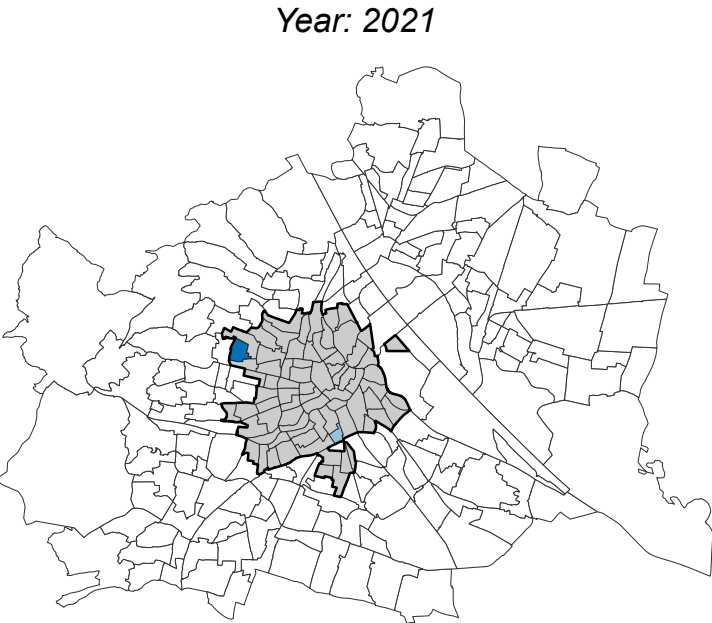
4. Historic quarters

Local Moran analysis - citizenship in Vienna

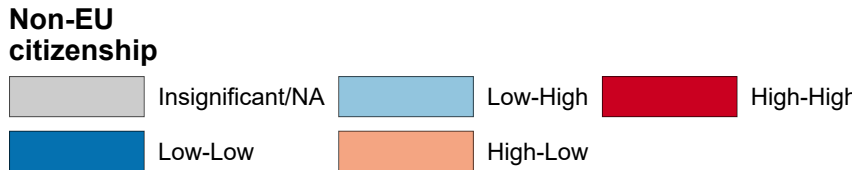
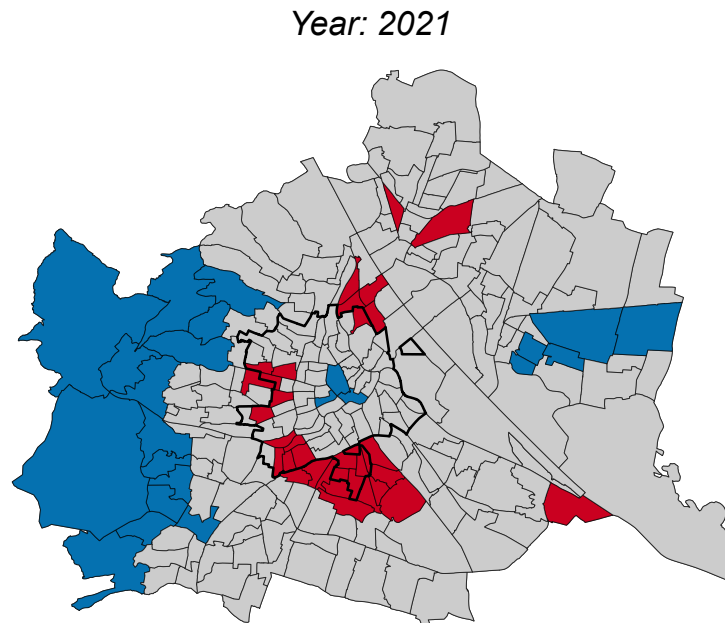
City area



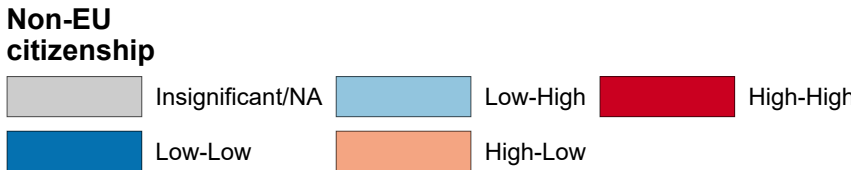
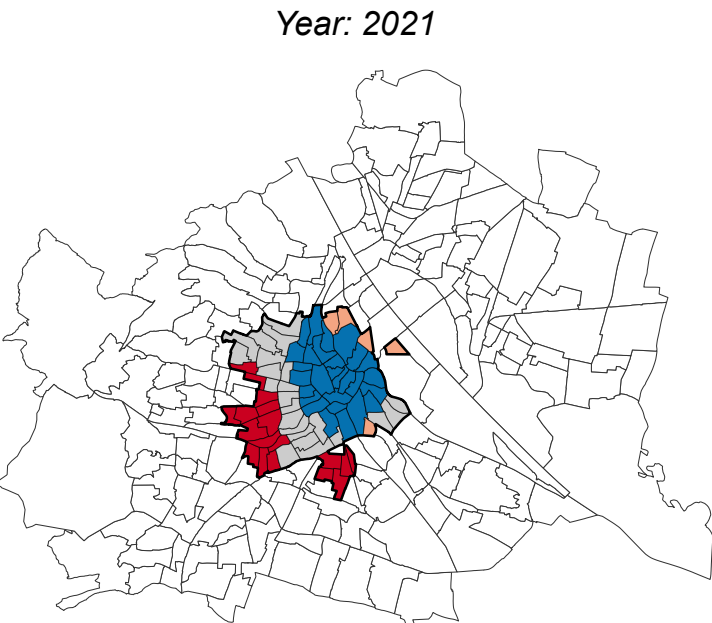
Historic core



City area

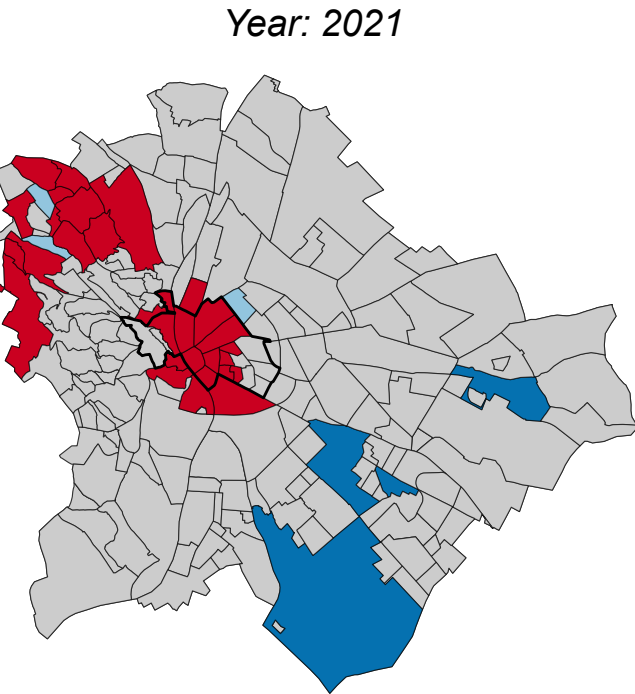


Historic core

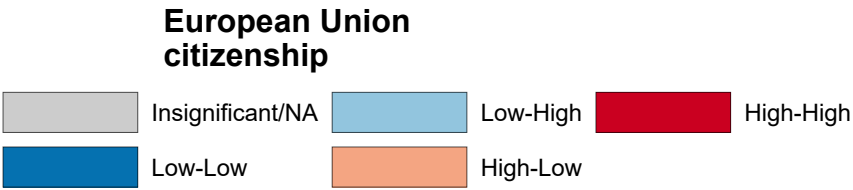
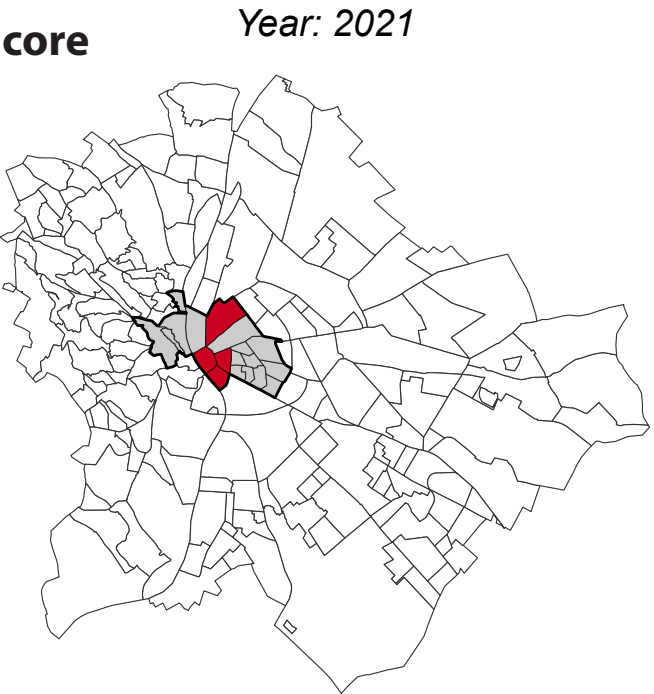


Local Moran analysis - citizenship in Budapest

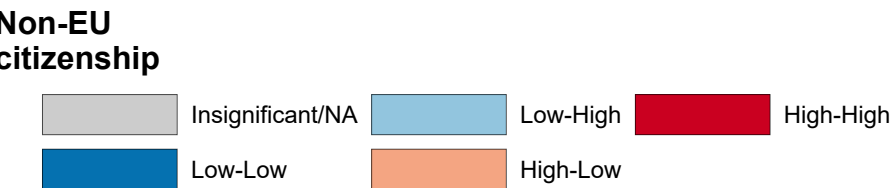
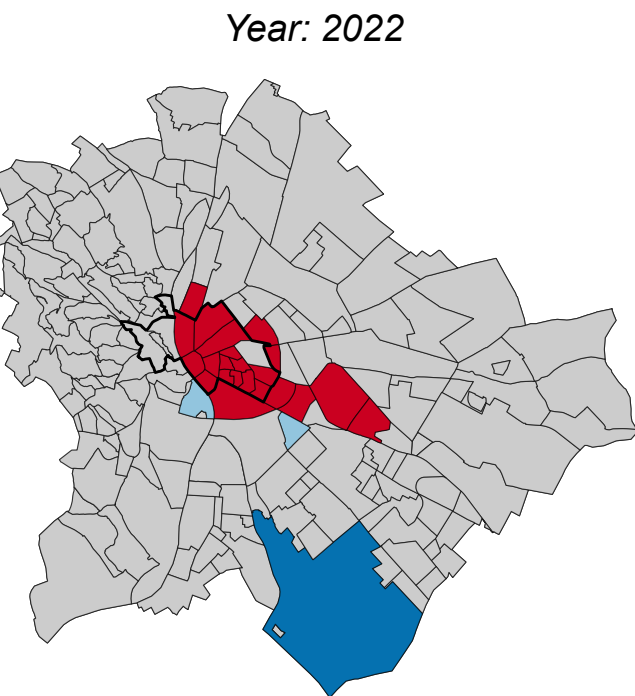
City area



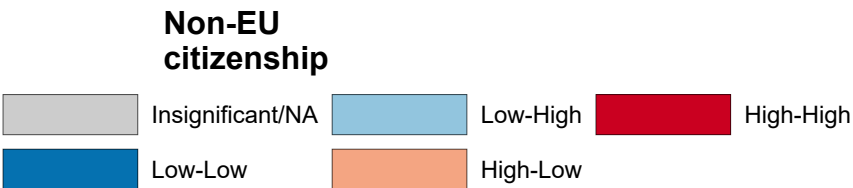
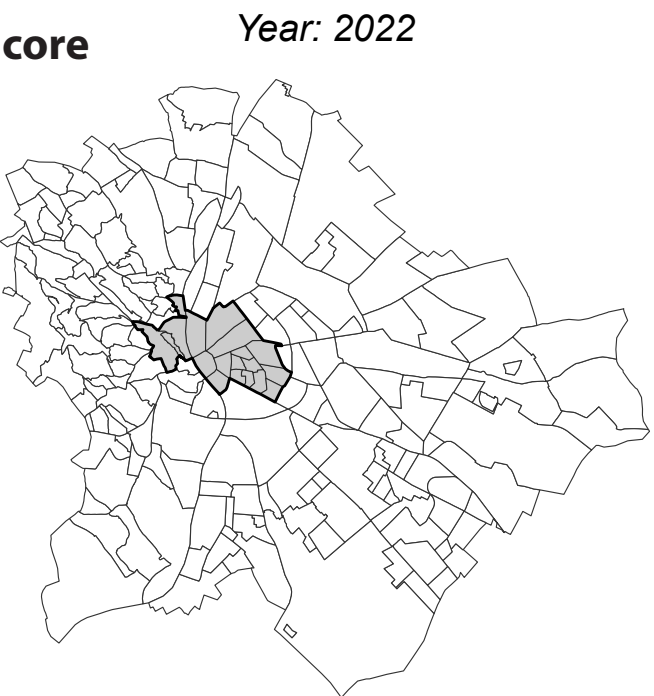
Historic core



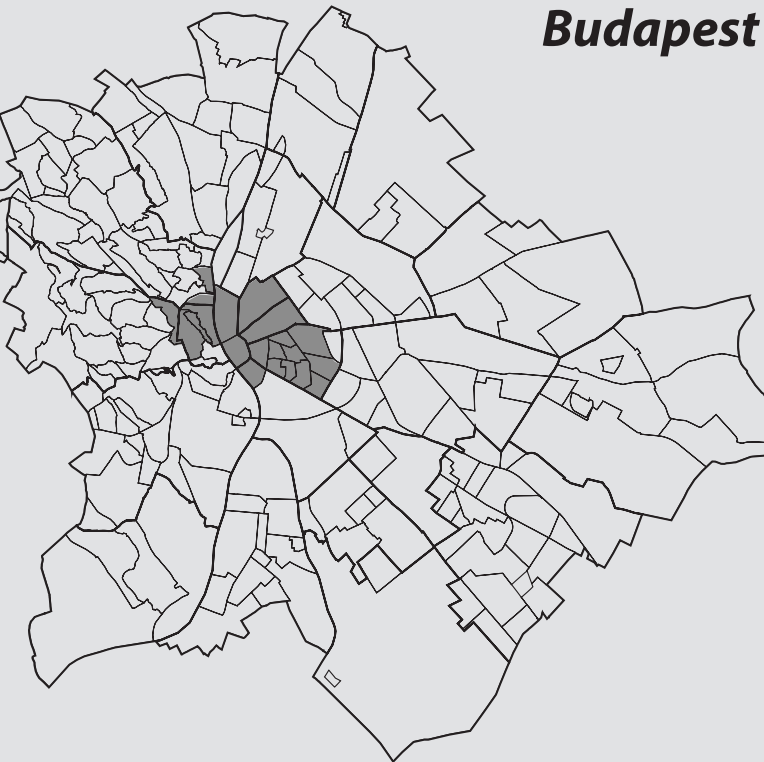
City area



Historic core



Budapest



4. Historic quarters

Vienna

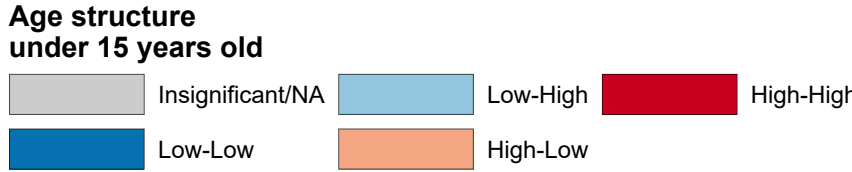
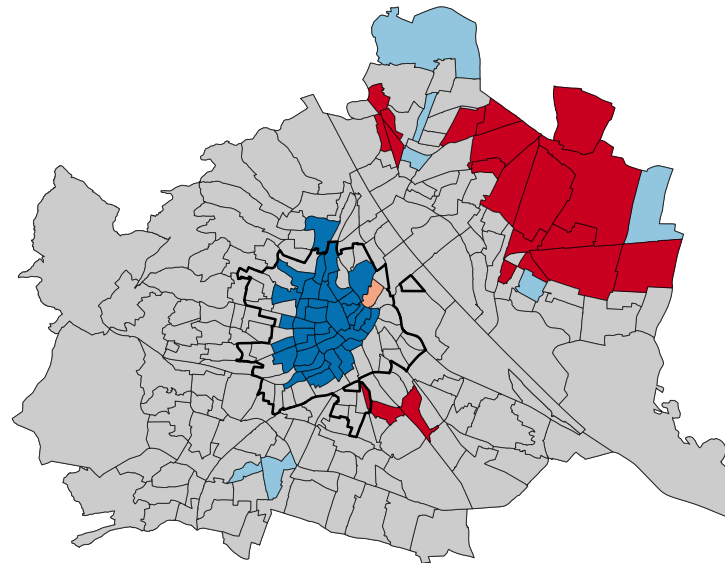


4. Historic quarters

Local Moran analysis - age groups in Vienna

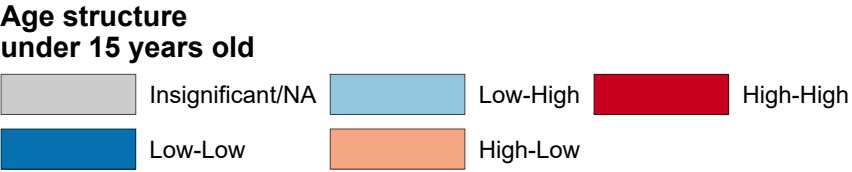
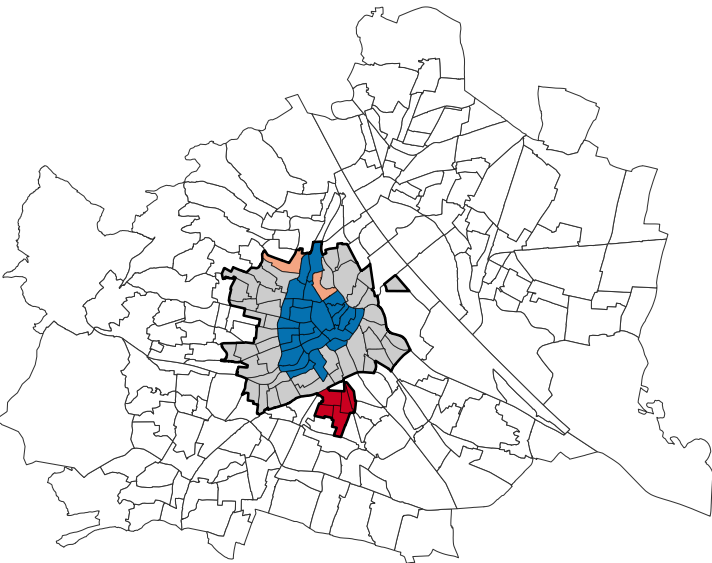
City area

Year: 2021



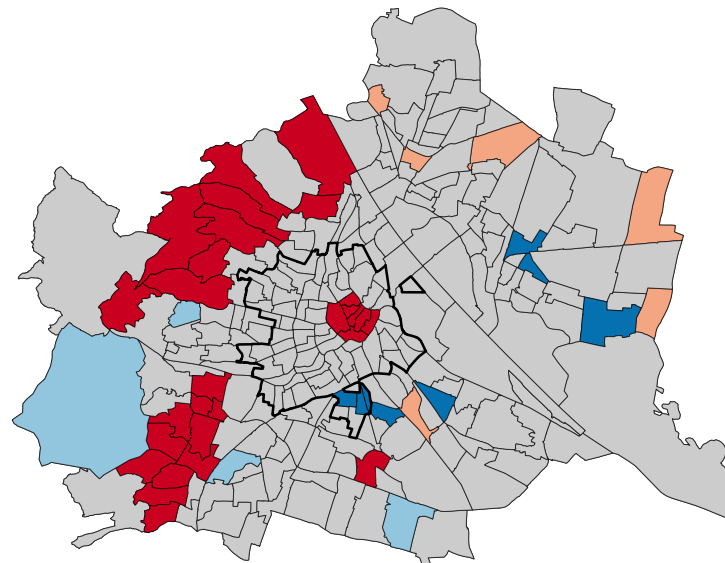
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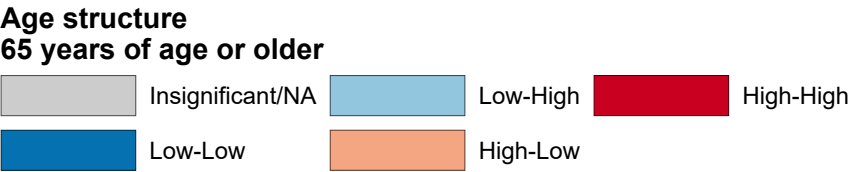
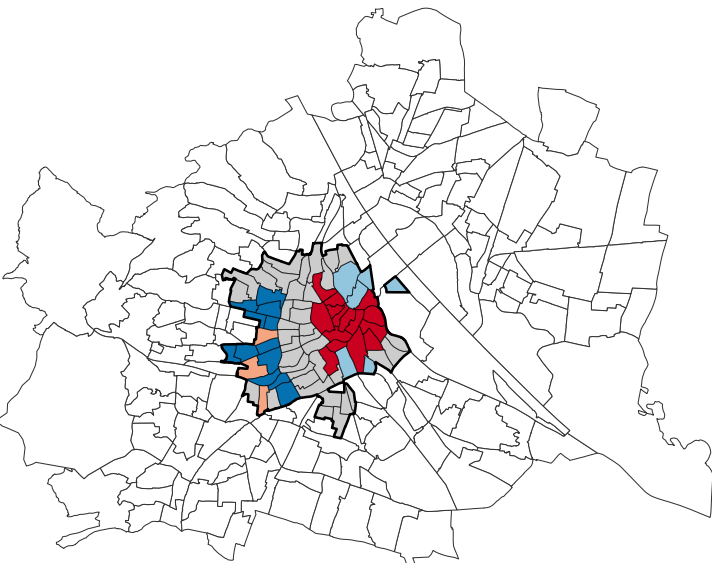
City area

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Historic core

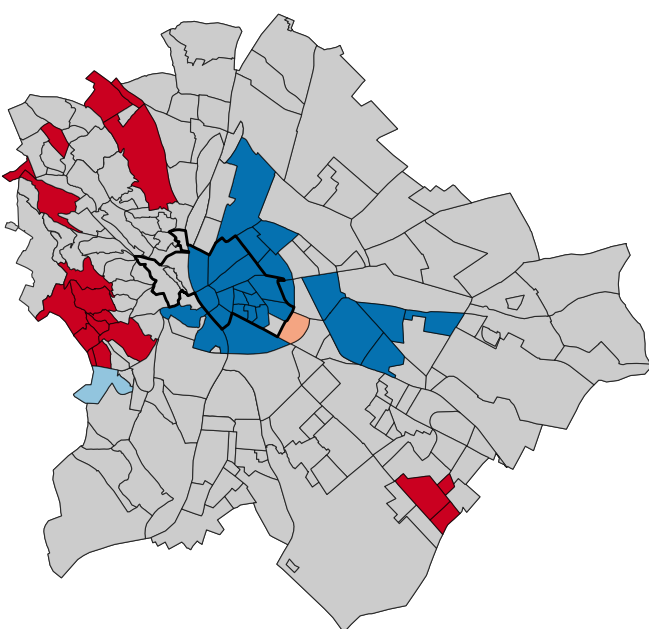
Year: 2021



Local Moran analysis - age groups in Budapest

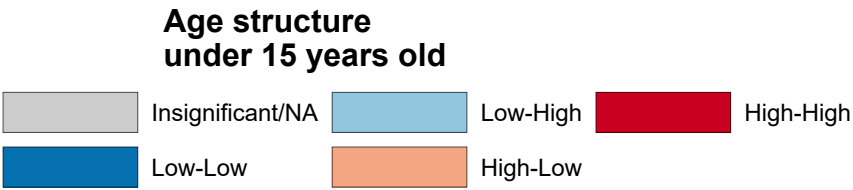
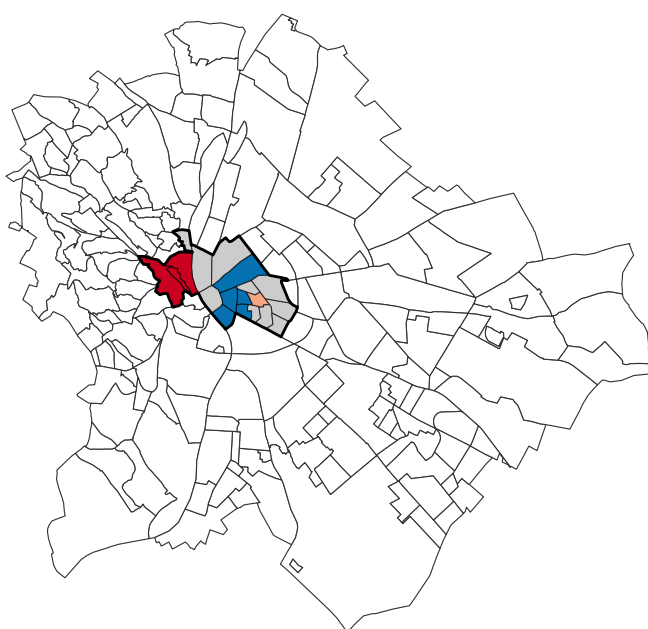
City area

Year: 2022



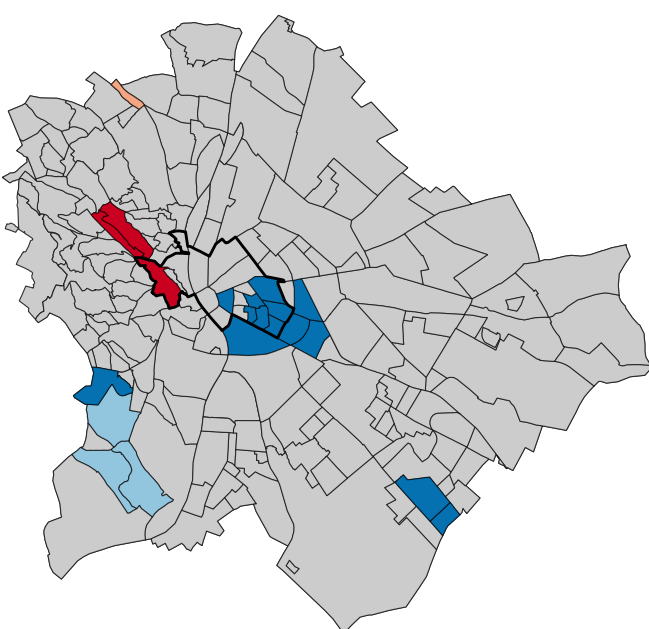
Historic core

Year: 2022



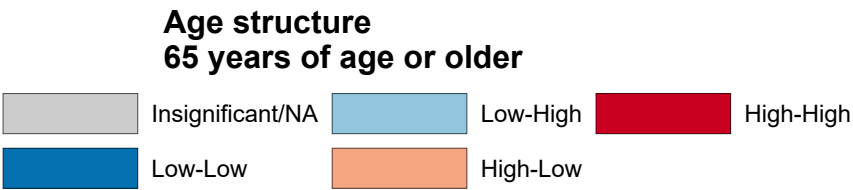
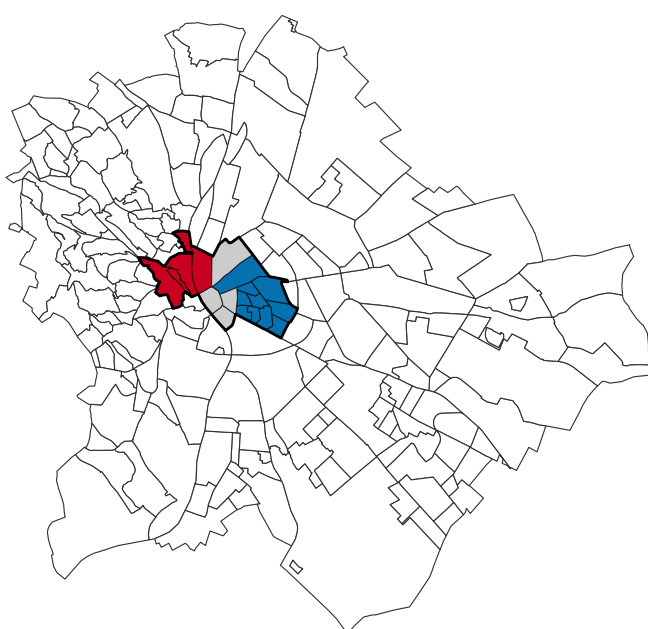
City area

Year: 2022

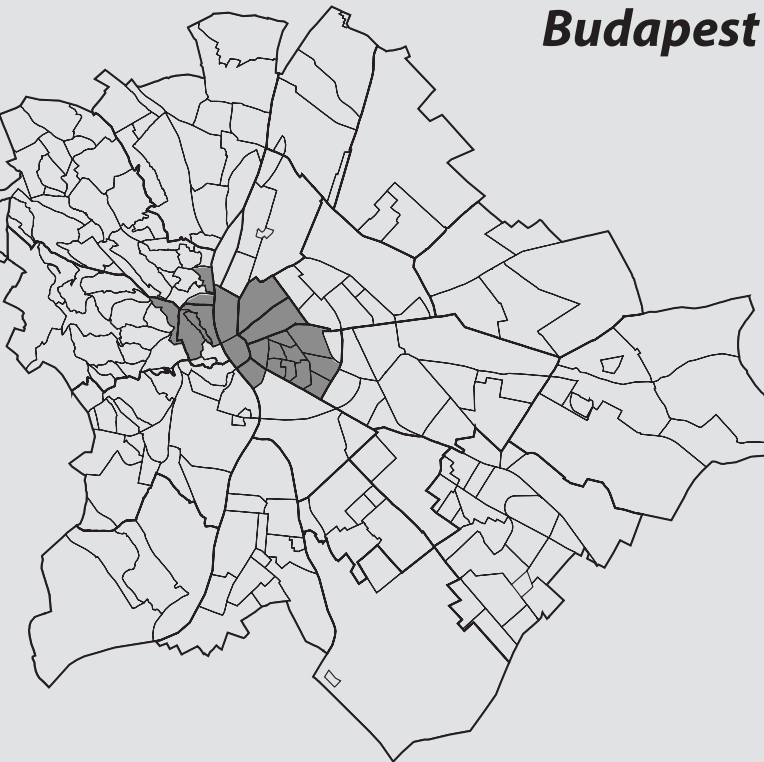


Historic core

Year: 2022



Budapest



4. Historic quarters

Vienna

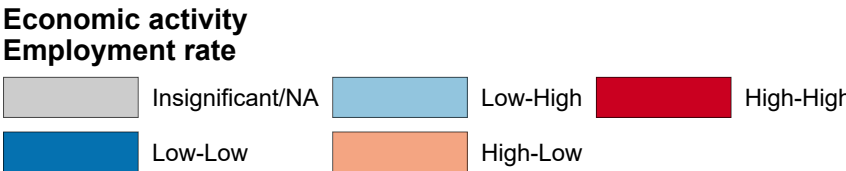
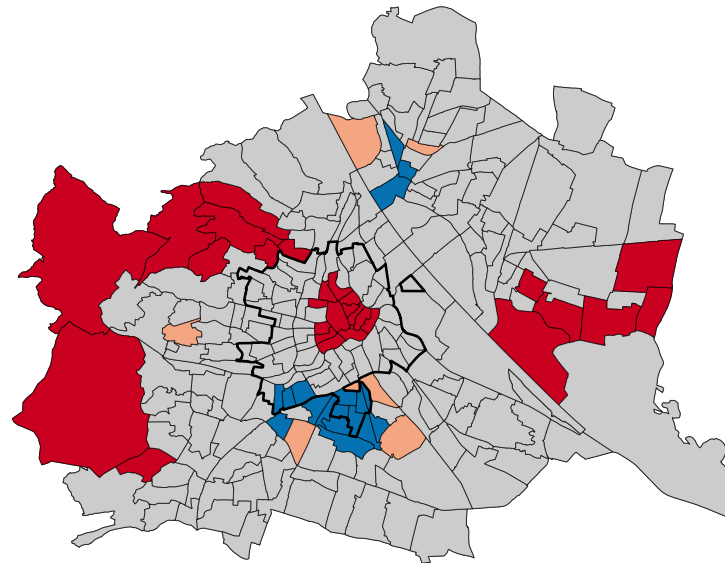


4. Historic quarters

Local Moran analysis - employment status in Vienna

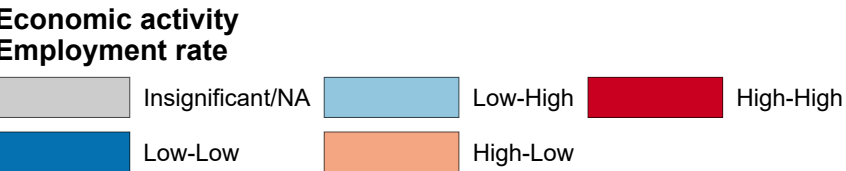
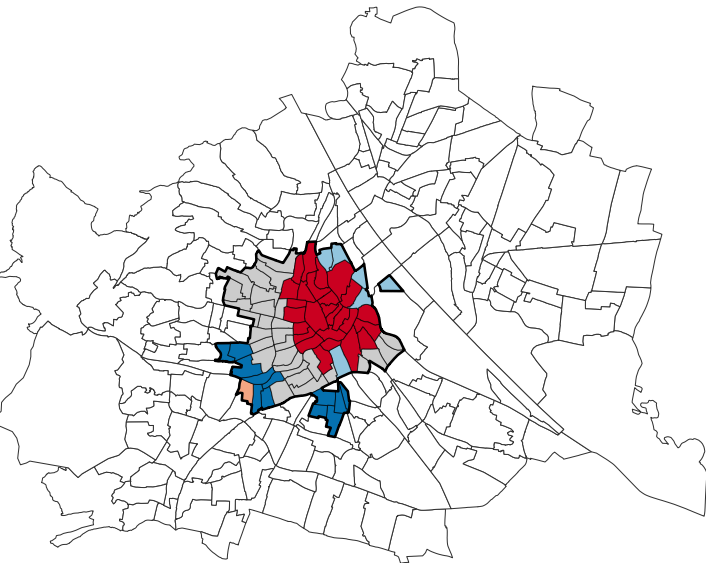
City area

Year: 2021



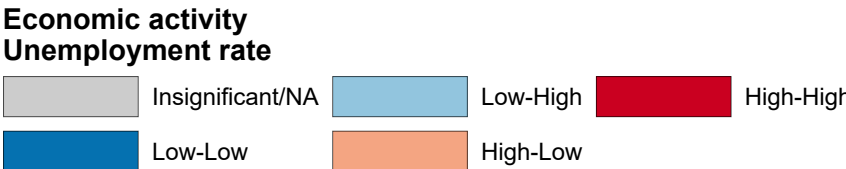
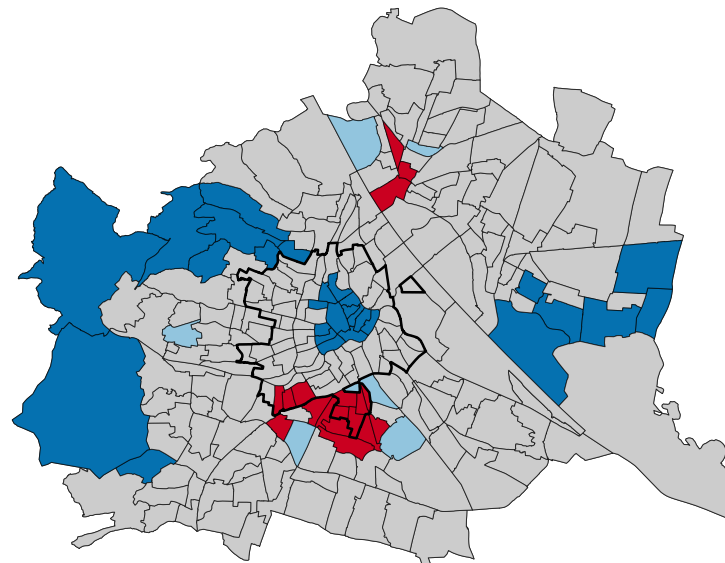
Historic core

Year: 2021



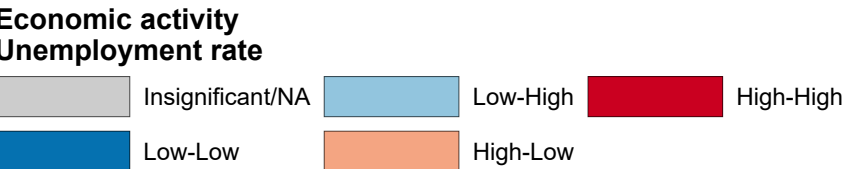
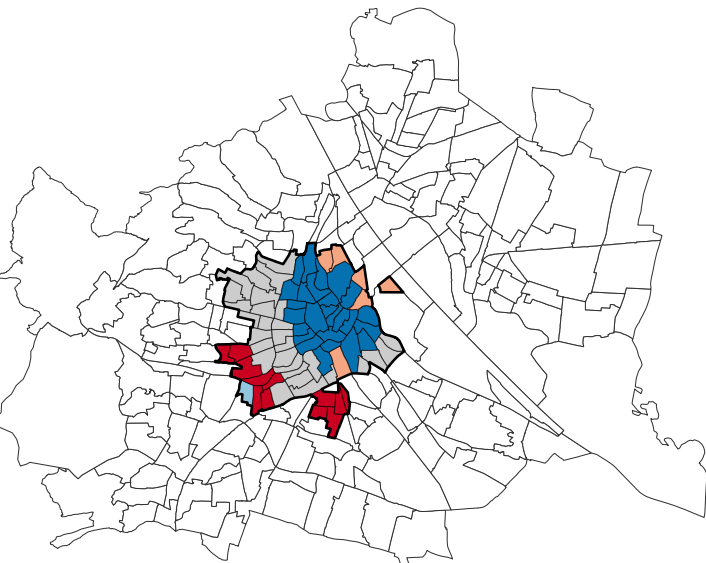
City area

Year: 2021



Historic core

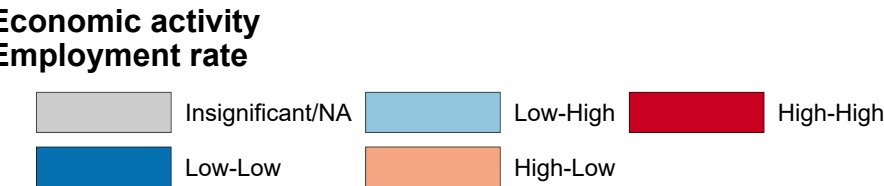
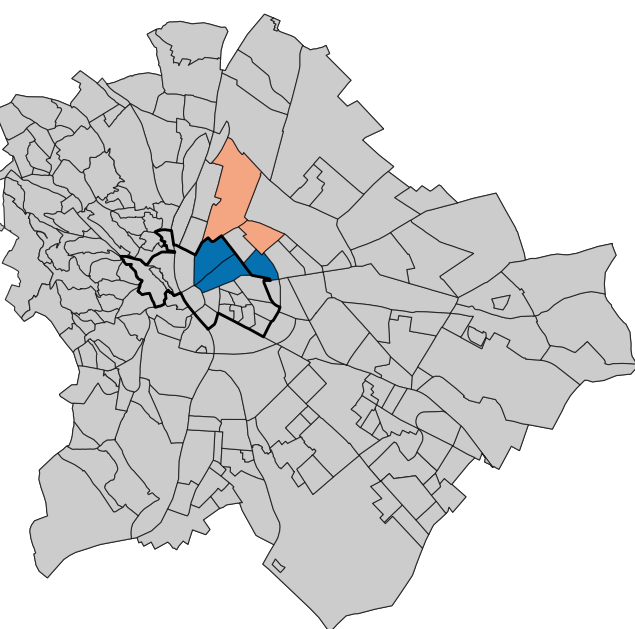
Year: 2021



Local Moran analysis - employment status in Budapest

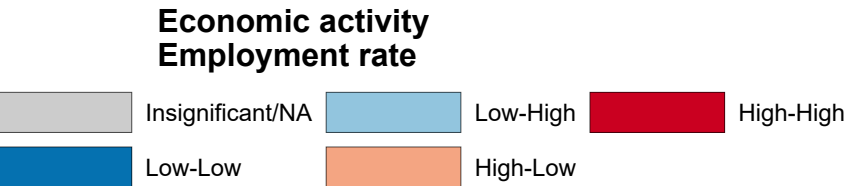
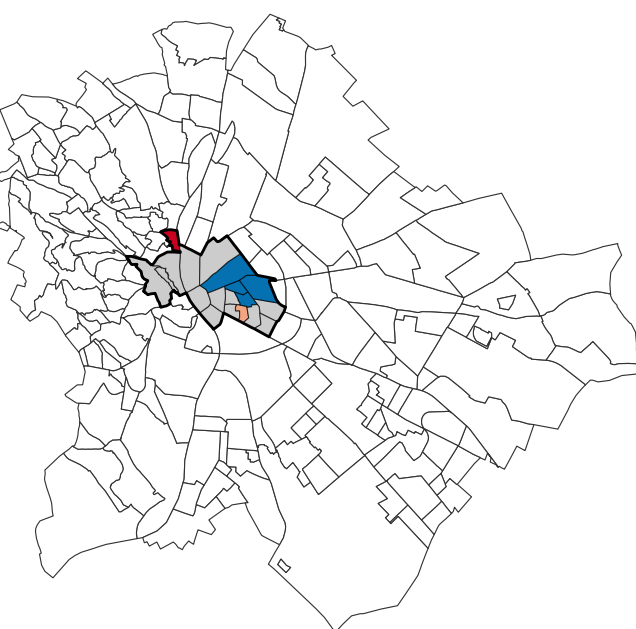
City area

Year: 2022



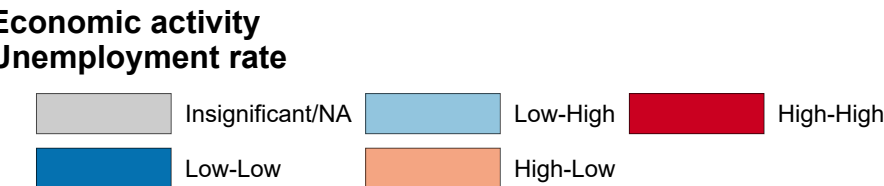
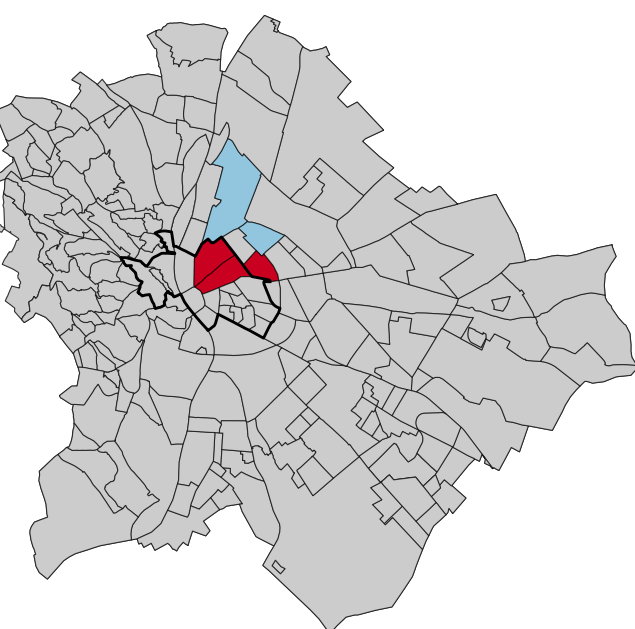
Historic core

Year: 2022



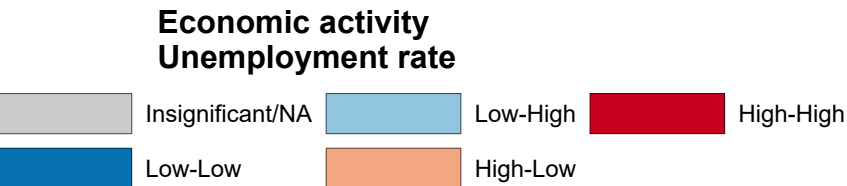
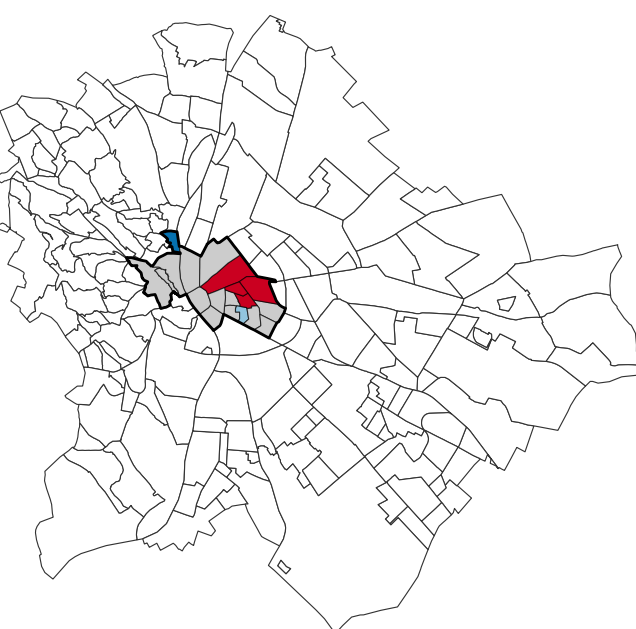
City area

Year: 2022

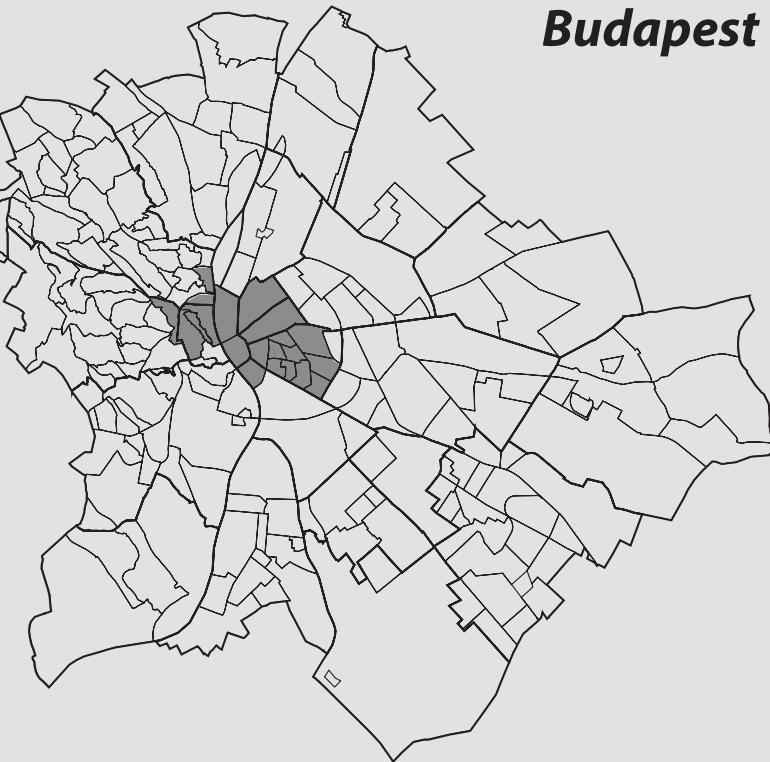


Historic core

Year: 2022



Budapest



4. Historic quarters

Vienna

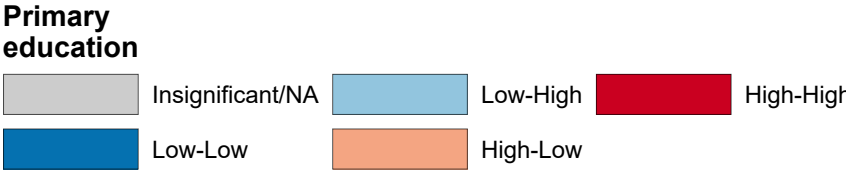
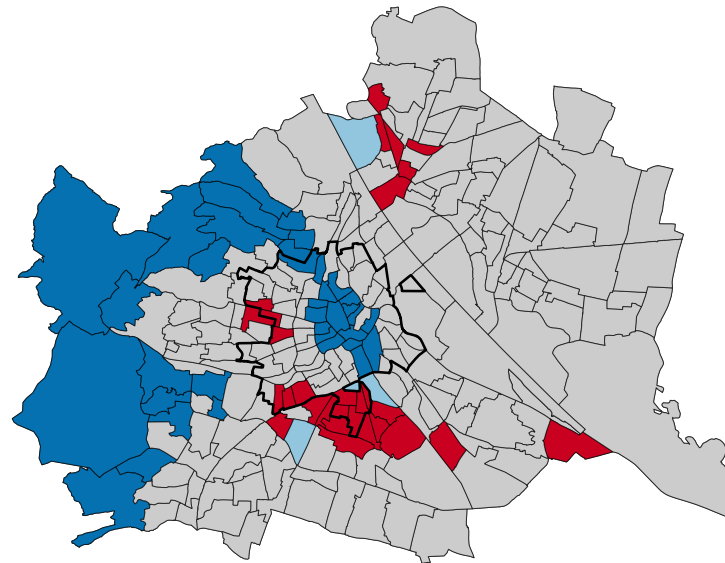


4. Historic quarters

Local Moran analysis - education status in Vienna

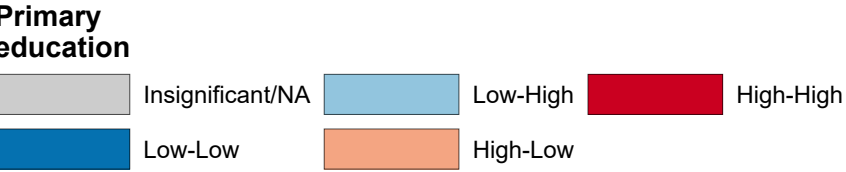
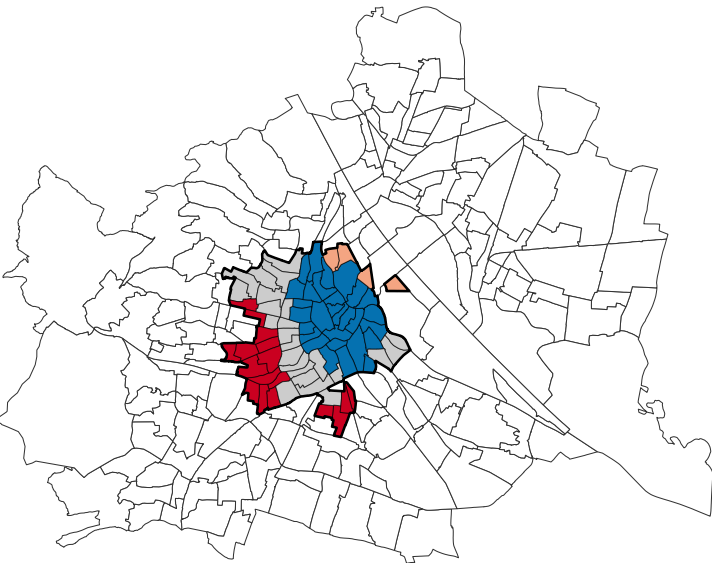
City area

Year: 2021



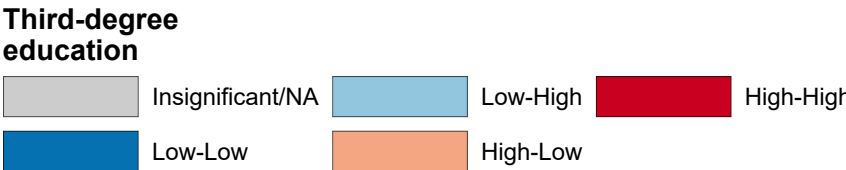
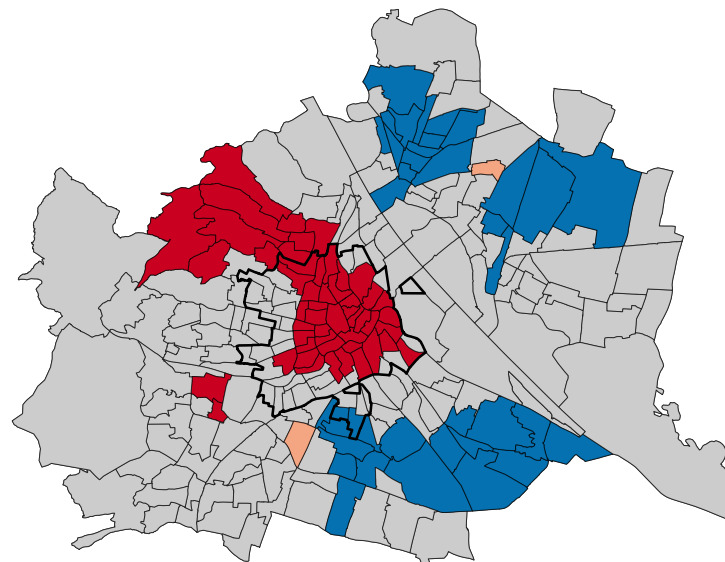
Historic core

Year: 2021



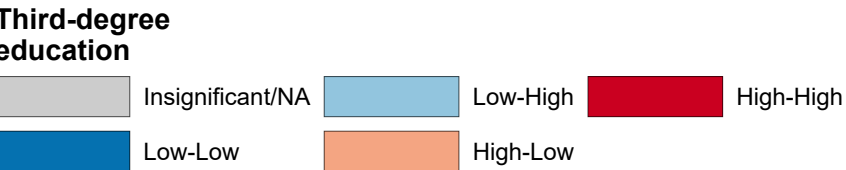
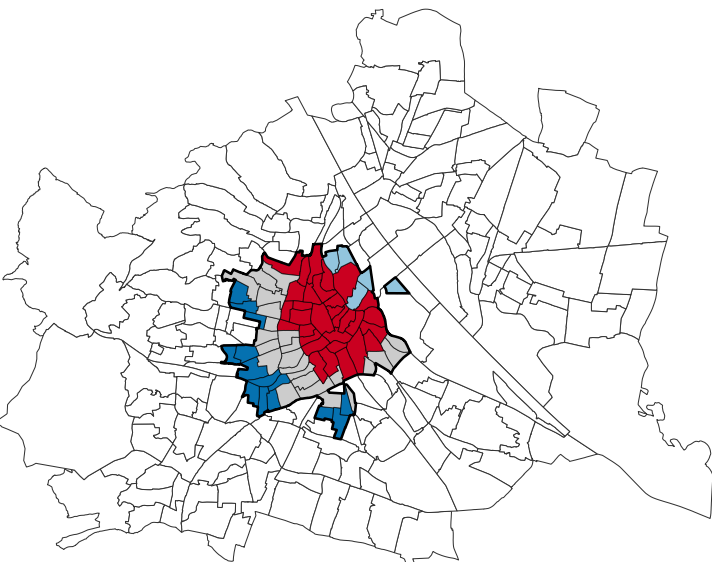
City area

Year: 2021



Historic core

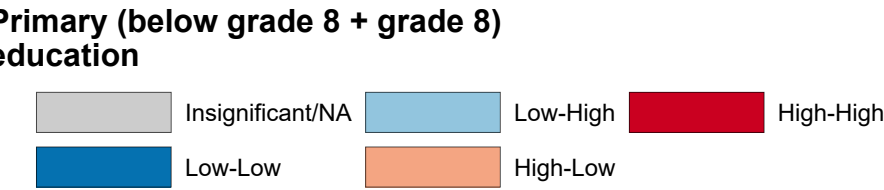
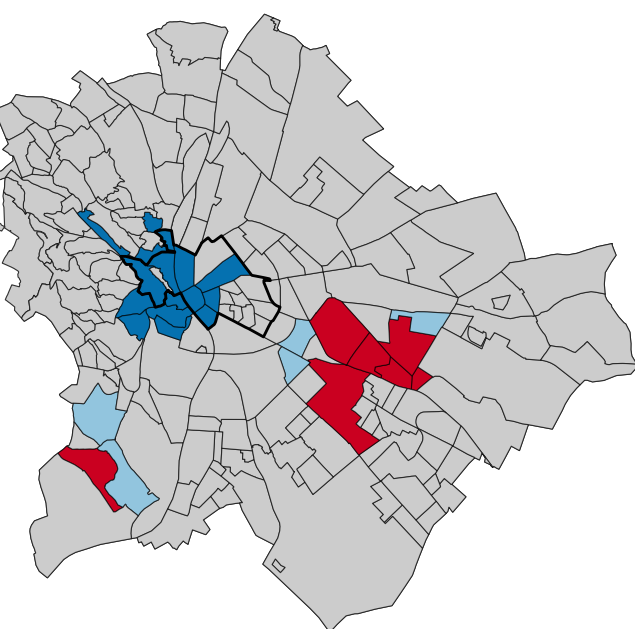
Year: 2021



Local Moran analysis - education status in Budapest

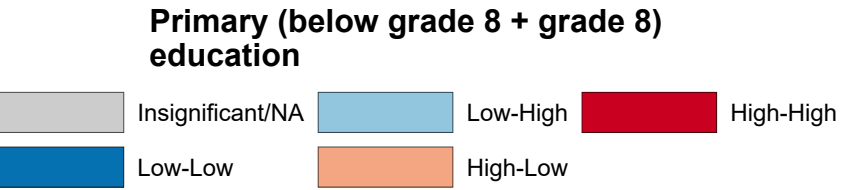
City area

Year: 2022



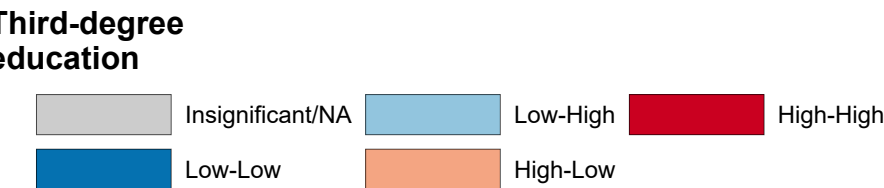
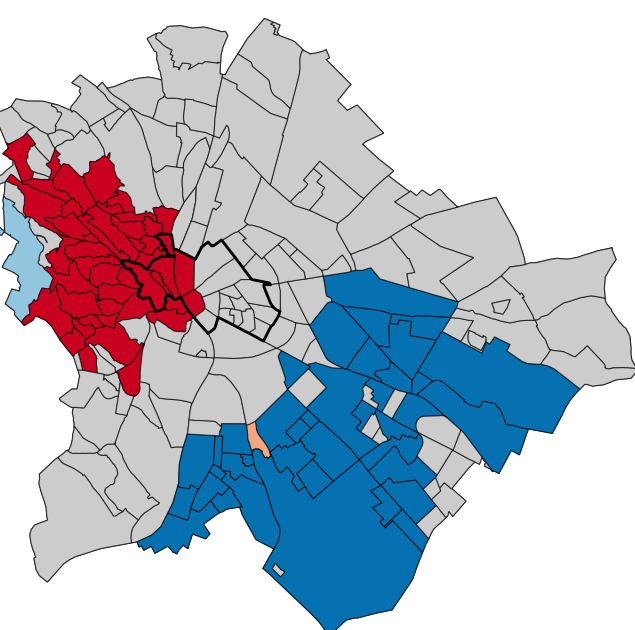
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Year: 2022



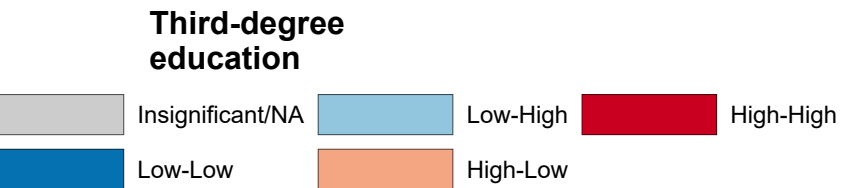
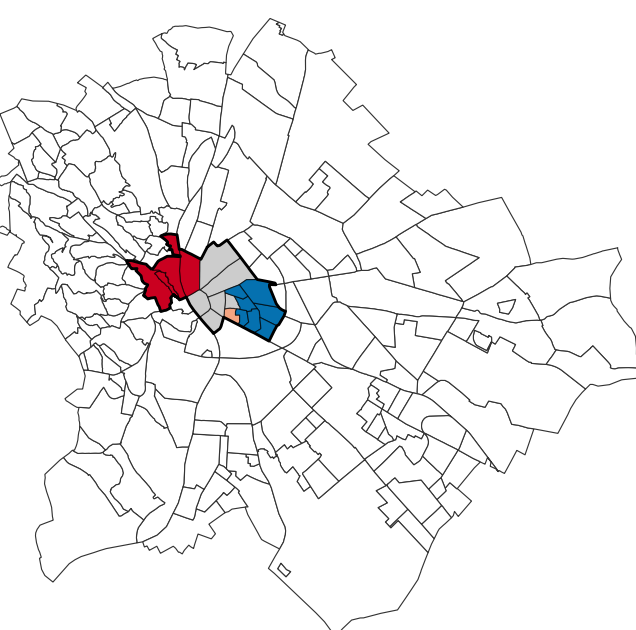
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Year: 2022

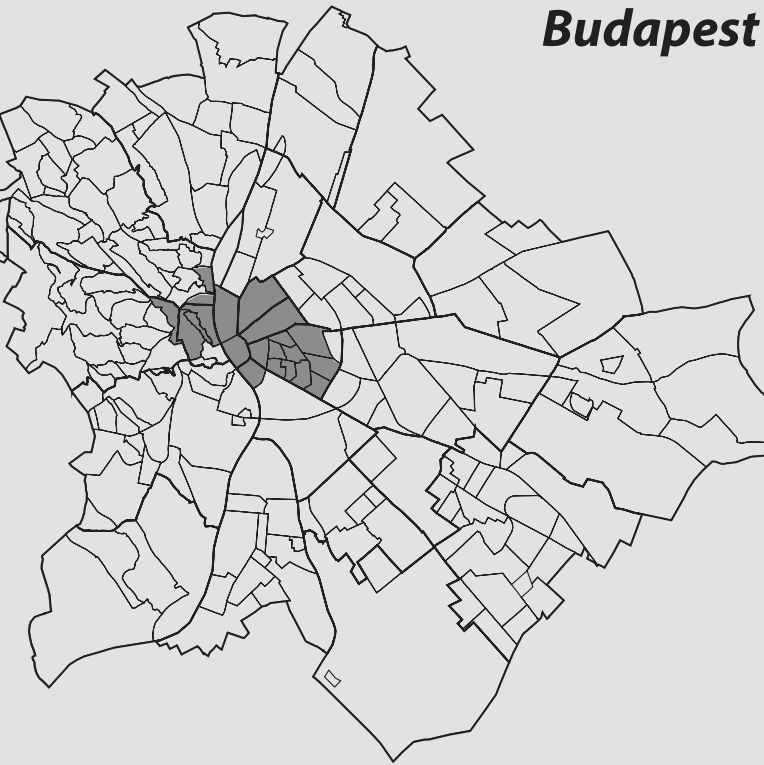


Historic core

Year: 2022



Budapest



4. Historic quarters

Vienna



Conclusion

TransHerit. Towards a new heritage regime?
Financialisation of the historic housing stock (Gründerzeit) in Vienna and Budapest.

Project supported by the Austrian Science Fund
Grant P37101
DOI Grant-DOI 10.55776/P37102

Results of the Data Analysis

In this data analysis booklet, we have visualized and analyzed socio-economic and housing data (from Statistics Austria and the Hungarian Central Statistics Office), as well as other datasets, such as the listing data from InsideAibnb for both Vienna and Budapest. We conducted an analysis on multiple levels: city level, district level, quarter level and the level of the historic quarters. While Viennese quarter boundaries have been constant through census years (see page 6), the quarter boundaries of Budapest have been modified. We therefore developed a methodology to work with statistical data across census years in the Hungarian capital (see pages 7, 9, 11). Furthermore, we put together a methodology to delineate the historic city of Vienna and Budapest by combining multiple algorithms (see pages 12-13). At the city level (see pages 14-21), we have observed an increase in population for Vienna and a decrease for Budapest, while a growth in foreign citizens (from inside and outside the European Union) has been observable in both cities. While Vienna can be depicted as a "city of renters", with around 67% of rental tenure (2022), Budapest can be characterized as a "city of owners" with around 80% ownership (2022) resulting from the wave of privatization in the 1990s. However, these numbers hide rental units that have been rented out but not declared as such. Historic housing (built before 1919) represented 26% of the housing stock in Vienna and 20% of the dwelling stock in Budapest in 2022. The comfort category of dwellings has been significantly improved though rehabilitation programmes implemented by the City of Vienna. The substandard category went from 20% in 1991 to around 1% in 2022. At the same time in Budapest, the category "without comfort" was reduced from 30% in 1970 to 1% in 2022, mainly due to private interventions in the privatized housing stock, next to some district level rehabilitation programs for the municipal housing (historic housing stock in the hands of municipalities). At the district level (see pages 22-39), socio-economic differences between areas inside and outside of the Gürtel in Vienna, as well as between the Buda and Pest sides in Budapest have been present throughout the census years (1970/71-2022). Traditionally and still today, the inner districts of Vienna and the districts of Buda have a higher percentage of inhabitants with third-degree education, as well as a lower unemployment rate (exception for the inner city of Pest). The four selected case study districts for the TransHerit project were selected in the outer districts of Vienna and the areas outside of the second ring in Pest. Case study districts were analyzed more in detail (see pages 40-53). Despite having a high proportion of historic housing built before 1919 (around 70% in the 15th district of Vienna and in the 7th district of Budapest and around 50% in the 10th district of Vienna and the 8th district of Budapest) in 2022, the case study districts differ in many aspects. *Rudolfshheim-Fünfhaus* (Vienna 15.) has a stagnating population, a growing number of non-EU citizens (25% in 2022), as well as a growing number of inhabitants holding third-degree education (35% in 2022). In *Erzsébetváros* (Budapest 7.) we have observed a shrinking population, a growing number of non-EU citizens (12% in 2022), as well as a growing number of inhabitants with third-degree education (38% in 2022). These numbers could be the sign of the studentification of the area and the departure of family looking for larger housing. On the contrary, *Favoriten* (Vienna 10.) has a growing population, a growing number of non-EU citizens (25% in 2022), as well as a growing number of inhabitants holding third-degree education (35% in 2022). *Józsefváros* (Budapest 8.) holds a growing population, a growing number of non-EU citizens (10% in 2022), as well as a growing number of inhabitants with third-degree education (34% in 2022). This could mean that this district is attracting students or qualified migrants arriving in the city.

Later, we analyzed socio-economic and housing data for the historc cores of Vienna and Budapest (see pages 54-77). Case study quarters were selected within the historic core (see pages 78-79). In Vienna, these quarters are the following: 1004 (*Quellenplatz*), 1005 (*Arthaberplatz*), 1006 (*Erlachplatz*), 1007 (*Belgradplatz*) in the 10. district and 1502 (*Reithofferplatz*) and, 1506 (*Rauscherplatz*) in the 15. district. In Budapest, these quarters are the following: *Corvin quarter*, *Csarnok quarter*, *Népszínház quarter*, *Magdolna quarter*, *Orczy quarter* in the 8. district and the *Chicago* and *Middle-Józsefváros* parts of the 7. district (one quarter). At the level of the case study quarters (see pages 80-87), we observed a growing number of foreign population from EU and non-EU countries. This is especially the case in quarters of *Favoriten* (Vienna 10.), where non-EU population has reached around 30% in 2021, a percentage higher than the city (20%), as well as the district (28%) average. Similarly, in *Erzsébetváros* (Budapest 7., one quarter), outside EU citizenship reached around 12% in 2022, higher than the city (4%) average. While the number of population in the quarters of *Rudolfshheim-Fünfhaus* (Vienna 15.) has remained relatively even, the population of the quarters of *Józsefváros* (Budapest 8.) and *Favoriten* (Vienna 10.) has grown in the past decades. Most remarkable is the decrease of population in *Erzsébetváros* (Budapest 7., one quarter) by more than a 50% between 1970 and 2022, while the number of dwellings has remained relatively even during the same period. Finally, we analyzed all the historic quarters and completed it with a Local Moran I spatial autocorrelation analysis (see pages 122-131). Our analysis confirmed that quarters with a high percentage of buildings built before 1919 host the highest density of Airbnb listings in both cities. Location scores, as well as listing prices are characteristically higher in the inner districts of Vienna (especially the first district), in the inner city of Pest (fifth district) and on the Buda side. Local Moran's I plots showed High-High clusters of EU citizenship, economic activity and third-degree education within the historic core of Budapest and Vienna. Low-Low cluster of outside-EU citizenship has been identified in the historic core of Vienna, while Low-Low cluster of Hungarian citizenship has been identified in the inner districts of Budapest.

This socio-economic booklet on the status of the historic housing stock in Vienna and Budapest from 1970/71 to 2022 was created within the scope of the TransHerit research project at the Institute for Urban and Regional Research (ISR) of the Austrian Academy of Sciences (ÖAW) with the aim to visualize and describe the most important socio-economic trends and dynamics and the historic housing market. The data collection, analysis and visualization was done by our team at ISR, supported by our interdisciplinary expert partners. This analysis booklet supports some of our most recent publications that are shared on our website. Further research activities, knowledge transfer and dissemination of the TransHerit project can be found on our website.

The project is led by **Sandra Guinand**, urban geographer and planner, based at the Institute for Urban and Regional Research (ISR), Austrian Academy of Sciences (ÖAW) and supported by an interdisciplinary team:

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Maren Beaufort, **Josef Seetahler** and **Konrad Bleyer-Simon**, comparative media and communication studies; CMC/ÖAW;

Hanna Szemző, sociologist, Metropolitan Research Institute, Budapest; **Florian Brand**, architect, HuB Architekten, Vienna.



TransHerit Website

<https://www.oeaw.ac.at/projects/transherit/home>

Budapest



Vienna



Bibliography

Alföldi Gy. (2008). Szociális városrehabilitáció a Józsefvárosban. In Falu Város Régió (Vol. 2008/2, pp. 27–34). VÁTI Kht.

Anselin, L. (1995). Local Indicators of Spatial Association—LISA. *Geographical Analysis*, 27(2), 93–115. <https://doi.org/10.1111/j.1538-4632.1995.tb00338.x>

Anselin, L. (2004). GeoDaTM 0.9.5-i Release Notes. Spatial Analysis Laboratory Department of Agricultural and Consumer Economics University of Illinois, Urbana-Champaign Urbana, IL 61801. <https://geodacenter.github.io/docs/geoda095i.pdf>

Assunção, R. M., Neves, M. C., Câmara, G., & Da Costa Freitas, C. (2006). Efficient regionalization techniques for socio-economic geographical units using minimum spanning trees. *International Journal of Geographical Information Science*, 20(7), 797–811. <https://doi.org/10.1080/13658810600665111>

Beconytė, G., Gružas, K., & Spiriajevas, E. (2024). Areas of Crime in Cities: Case Study of Lithuania. *ISPRS International Journal of Geo-Information*, 13(1), 1. <https://doi.org/10.3390/ijgi13010001>

Caliński, T., & Harabasz, J. (1974). A dendrite method for cluster analysis. *Communications in Statistics*, 3(1), 1–27. <https://doi.org/10.1080/03610927408827101>

Chavent, M., Kuentz-Simonet, V., Labenne, A., & Saracco, J. (2018). ClustGeo: An R package for hierarchical clustering with spatial constraints. *Computational Statistics*, 33(4), 1799–1822. <https://doi.org/10.1007/s00180-018-0791-1>

Cucca, R., & Friesenecker, M. (2022). Potential and limitations of innovative housing solutions in planning for degrowth: The case of Vienna. *Local Environment*, 27(4), 502–516. <https://doi.org/10.1080/13549839.2021.1872513>

Duque, J. C., Ramos, R., & Suriñach, J. (2007). Supervised Regionalization Methods: A Survey. *International Regional Science Review*, 30(3), 195–220. <https://doi.org/10.1177/0160017607301605>

Fortin, M.-J., & Dale, M. R. T. (2009). Spatial Autocorrelation. In A. S. Fotheringham & P. A. Rogerson (Eds.), *The SAGE Handbook of Spatial Analysis: Spatial autocorrelation* (pp. 89–104). SAGE Publications Ltd. <https://doi.org/10.4135/9780857020130.n6>

Guinand, S., & Lélek, V. (2025). Les transformations du bâti historique de la période Gründerzeit à Vienne (Autriche). *Géoconfluences*. <https://geoconfluences.ens-lyon.fr/informations-scientifiques/dossiers-thematiques/de-villes-en-metropoles/articles-scientifiques/grunderzeit-vienne-autriche>

Guinand, S., & Lélek, V. (forthcoming). Patrimoine ordinaire et concurrence des territoires. Quel patrimoine pour les quartiers excentrés de Vienne et de Budapest ?

Kadi, J., Banabak, S., & Schneider, A. (2022). Widening gaps? Socio-spatial inequality in the “very” European city of Vienna since the financial crisis. *Cities*, 131, 103887. <https://doi.org/10.1016/j.cities.2022.103887>

Kirsch-Soriano da Silva, K. (2024). Die Entwicklung eines Instrumentariums der Sanften Stadterneuerung. In *Sanfte Stadterneuerung Revisited: Wiener Handlungsstrategien für den Bestand* (pp. 75–80). JOVIS. <https://doi.org/10.1515/9783986121549>

Budapest



Kovács, Z. (1992). A budapesti bérlakásszektor privatizációjának társadalmi- és városszerkezeti hatásai. *Tér És Társadalom*, 6(3–4), 55–73. <https://doi.org/10.17649/TET.6.3-4.252>

Li, X., & Anselin, L. (2021). rgeoda: R Library for Spatial Data Analysis. R package version 0.0.8.6.

Musil, R., Brand, F., Huemer, H., Köck, P., & Wonaschütz, M. (2021). Die Transformation der Wiener Gründerzeitstadt. Dynamiken am Wiener Zinshausmarkt 2007–2019: Vol. ISR-Forschungsbericht Heft 55. Verlag der ÖAW. https://doi.org/10.1553/ISR_FB055

Musil, R., & Reiner, C. (2023). Disparities of regional building land prices in Austria, 2000-2018 (LBS Working Paper No. 20). Lauder Business School. https://lbs.ac.at/wp-content/uploads/2023/02/WP-LBS-No-20_2023.pdf

Olt, G., Simonovits, B., Bernát, A., & Csizmady, A. (2024). Housing Commodification and Increasing Potential Ground Rents in Post-Socialist Budapest. *Tijdschrift Voor Economische En Sociale Geografie*, 115(1), 126–141. <https://doi.org/10.1111/tesg.12592>

O’Loughlin, J. (2003). Spatial Analysis in Political Geography. In *A Companion to Political Geography* (pp. 30–46). John Wiley & Sons, Ltd. <https://doi.org/10.1002/9780470998946.ch3>

Openshaw, S. (1977). A Geographical Solution to Scale and Aggregation Problems in Region-Building, Partitioning and Spatial Modelling. *Transactions of the Institute of British Geographers*, 2(4), 459–472. <https://doi.org/10.2307/622300>

Openshaw, S., & Rao, L. (1995). Algorithms for reengineering 1991 Census geography. *Environment and planning A*, 27(3), 425-446. DOI: 10.1068/a270425

Renshaw, E. (1982). [Review of Spatial Processes, Models and Applications, by A. D. Cliff & J. K. Ord]. *Biometrics*, 38(1), 287–288. <https://doi.org/10.2307/2530324>

Sammons, R. (1978). A simplistic approach to the redistricting problem. In I. Masser & P. J. B. Brown (Eds.), *Spatial representation and spatial interaction* (pp. 71–94). Springer US. https://doi.org/10.1007/978-1-4613-4067-6_4

Soares, M., Fonseca, F., & Ramos, R. (2022). A quantitative spatial methodology for delimiting historical centers—An application in Guarda, Portugal. *Journal of Spatial Information Science*, (25), 1–28. <https://doi.org/10.5311/JOSIS.2022.25.164>

Tobler, W. R. (1970). A Computer Movie Simulating Urban Growth in the Detroit Region. *Economic Geography*, 46, 234–240. <https://doi.org/10.2307/143141>

Wei, R., Rey, S., & Knaap, E. (2020). Efficient regionalization for spatially explicit neighborhood delineation. *International Journal of Geographical Information Science*, 35, 1–17. <https://doi.org/10.1080/13658816.2020.1759806>

