Co-financed by the European Regional Development Fund

Inspire Policy Making with Territorial Evidence

FINAL REPORT //

Cross-border housing markets in Europe

The Vienna – Bratislava corridor

Annex No. 2 Case Study // July 2022

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1 Austria – Slovakia Border Region

1.1 Narrative & Territorial Scope

The Austrian – Slovakian capital border region was selected as a case study as it showcases how cross-border synergies can develop between two capital cities through corridor development. As Vienna and Bratislava are twin cities with substantial functional integration, smaller municipalities at the border experience substantial impacts on their housing markets due to pressures stemming from the other side of the border. For example, the border communities in the Austrian municipalities of Kittsee or Hainburg an der Donau have experienced a substantial influx of Slovakian buyers as economic integration stimulates cross-border commuting patterns. This increase in the Slovakian population across the Austrian-side of the border region has implications in terms of delivering services of general interest with bilingual services. This case study will focus on the border region's housing market dynamics in view of these dependencies between the two capitals.

Regarding the territorial scope for this case study, we have chosen to focus specifically on the areas in between Vienna and Bratislava as it is within this area where corridor development and economic integration between the Austrian and Slovakian economies is most acute. We have also included the capital regions of both Vienna and Bratislava to mark the edges of this cross-border economic corridor. For this case study, we will specifically highlight and analyse the dynamics occurring in Austrian municipalities of Hainburg, Wolfsthal, Berg and Kittsee and the Bratislava boroughs bordering Austria.

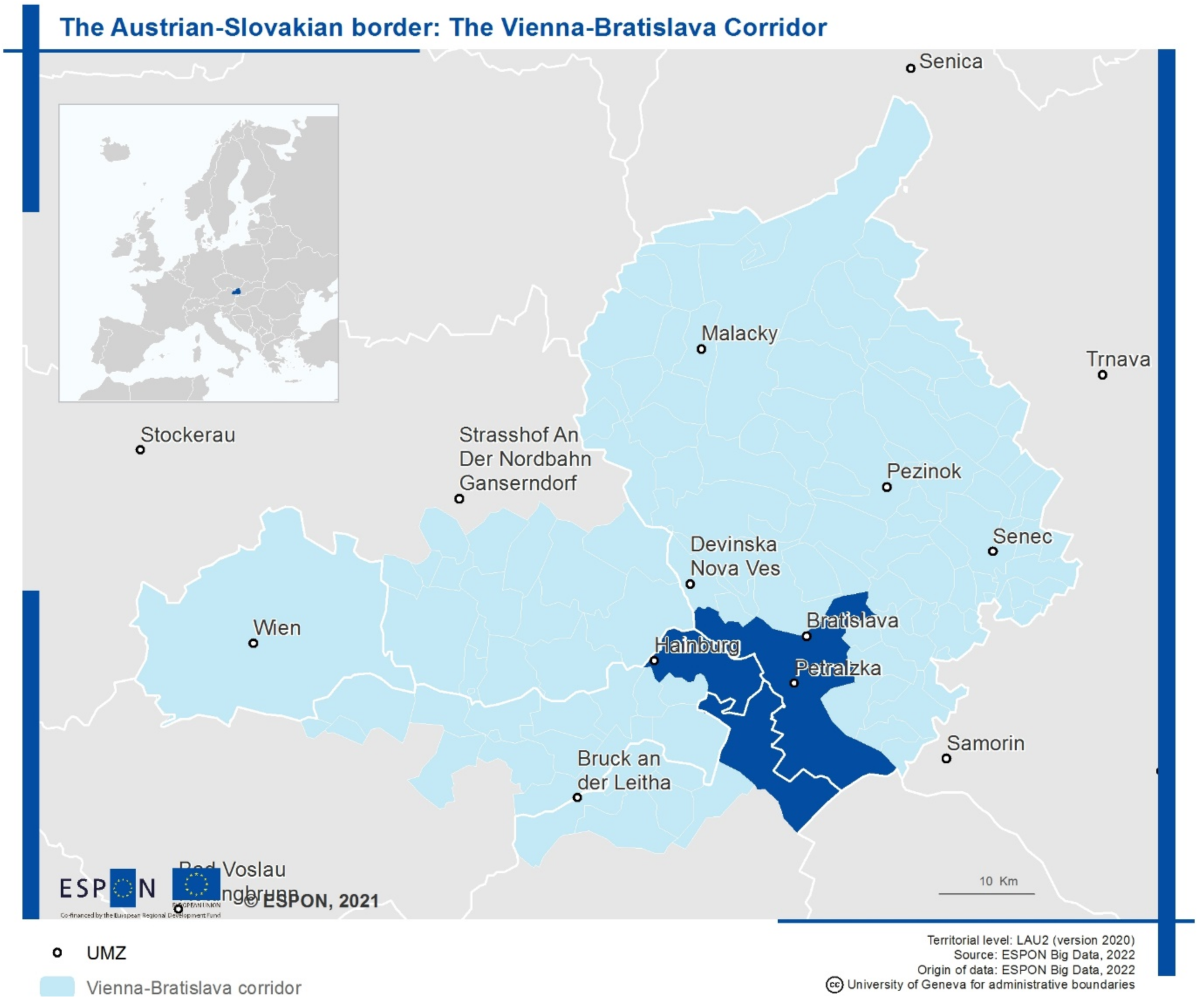


Figure 1: Case Study Area Vienna – Bratislava corridor

In the border region movements are of particular interest for people searching for cheaper housing or for a conventient location between the two cities. The Box 1 illustrates such a household through a scenario.

Box 1: Vienna-Bratislava Corridor Household Scenario

Ján and Katarína are recent university graduates preparing to move in together as they commence their careers. Having met during their university years in Bratislava, Ján has an engineering degree from the Slovak University of Technology while Katarína studied linguistics at Comenius University. Ján has landed a high paying mechanical engineering job in Bratislava's strong car industry which allows the young couple to access homeownership. Katarína has also been offered a well-paying job as a teacher in a bilingual kindergarten based in nearby Hainburg, Austria which further strengthens their financial profile. Living in Austria near the Slovak border appeals to the young couple as they are near both Vienna and Bratislava for socialising and culture. Furthermore, when they are prepared to start a family, their children will be raised in a multilingual environment and have full access to Austrian services. Any fears of missing Slovakia or raising their future children outside of their homeland are alleviated by the large number of Slovak ex-pats also living in the municipality along with many services being offered in both Slovakian and German. Hence, Ján and Katarína join a growing number of Slovakians migrating across the border to Austria as greater economic prosperity and integration allows for the different countries' housing markets to merge.

1.2 Administrative Systems

1.2.1 Austrian Administrative Structure

Austria is a federal republic with legal competencies subdivided among three levels of governance: the national government, federal states and local municipalities. According to the Austrian constitution, spatial planning matters are reserved for regional and local levels of governance; hence, the national government does not have a direct remit over spatial planning legislation but does coordinate activity through a central planning agency (OECD, 2017). At the regional level, federal states organise their own regional planning strategies. While there is no central framework which coordinates regional planning structures, most of the Austrian federal states have organised their regional planning structures in a compatible fashion which can easily facilitate interregional planning (Scharmann, 2020). At the local level, independent municipalities have statutory control over local land-use matters. Dependent on each federal state's planning framework, municipalities across Austria have different degrees of freedom from statutory controls placed on local planning at the regional level (OECD, 2017).

It is important to note that Vienna retains a special status within the Austrian administration system as it is both a federal state and an independent municipality with its own legal status of a chartered city (City of Vienna, 2021). For legislative purposes, this means that most legislative competencies in Vienna are run by one combined Vienna Provincial Government.

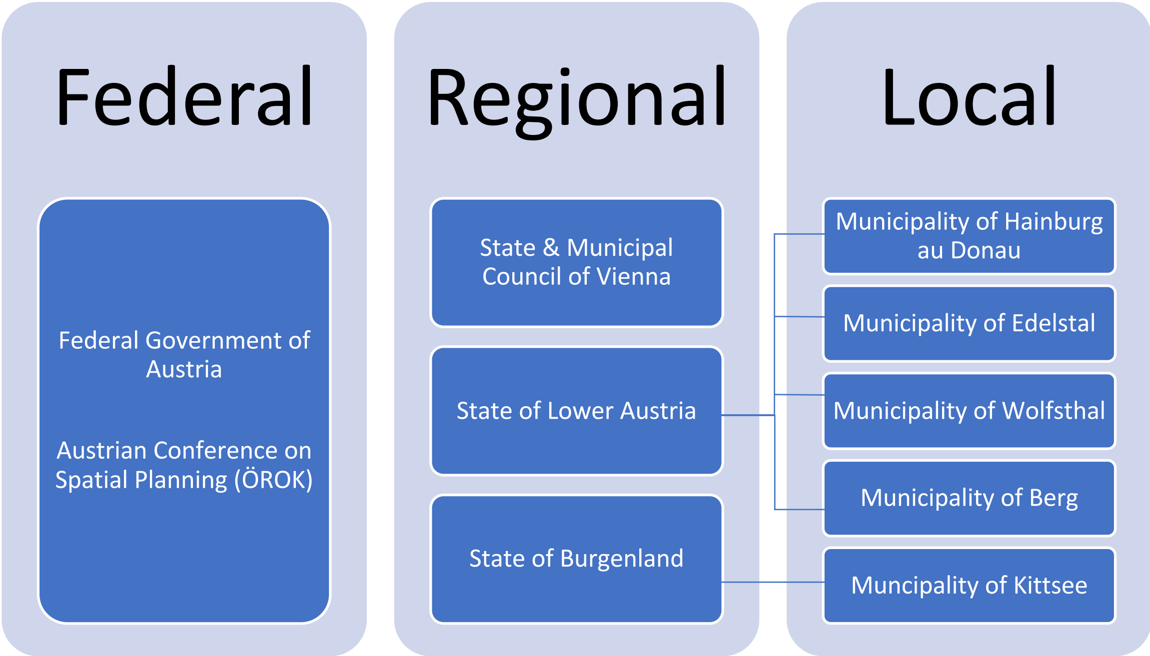


Figure 2: Administrative Schematic for Austria

1.2.2 Slovakian Administrative Structure

The Slovak Republic has a unitary form of government with the central government hierarchically organising lower levels of governance in accordance with its own policies and legislation (OECD, 2017). Beyond a strong central government, Slovakia incorporates regional and local governments through eight self-governing regional authorities and 2,926 independent local municipalities (OECD, 2017).

In Slovakia, Bratislava is treated both as a capital city and a capital region. In terms of governance organisation, this set up allows for a unified regional and local government system for Bratislava (OECD, 2017). Hence, housing policy, regional planning and development management are all under the competence of the Bratislava government (Staré Mesto Bratislava, 2021). For administrative purposes, Bratislava has been subdivided into five separate districts and seventeen boroughs. Boroughs within Bratislava are similar to local municipalities with each borough electing its own mayor and council to run the local government.

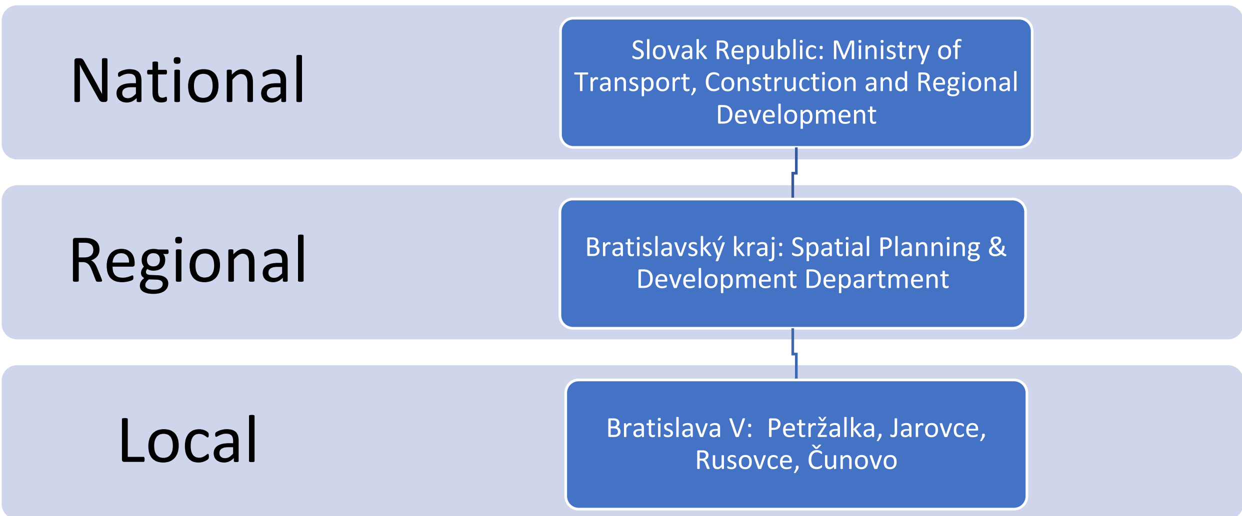


Figure 3: Administrative Schematic for Slovakia

1.3 Facts & Background

As Vienna and Bratislava have agreed to a twin city agreement, both metropolitan regions have agreed to coordinate activities in relation to transport infrastructure, economic cooperation, regional planning, flood and disaster protection, science and research, culture, education and youth, marketing and tourism and EU-funded projects (Hanzl-Weiss, et al., 2018). Collaboration between the geographically close cities has only been a recent development though as historic divides between East and West Europe along the Iron curtain have prevented this cross-border region from developing (Hanzl-Weiss, et al., 2018). When Slovakia joined the European Union as a member state in 2004, economic links and cross-border developments quickly followed suit between the two capitals. Moreover, when Slovakia joined the Eurozone in 2009, a unified currency further fostered economic integration and collaboration across the young cross-border region. In 2007, the A6 motorway was completed linking Bratislava and Vienna which fostered new corridor development in the towns situated near this motorway. Currently, works are being completed to upgrade rail links to high-speed electric rail between the two capitals. Hence, since both countries ascendance to the EU, infrastructural collaboration, and economic cooperation across the two regions have increased significantly (Hanzl-Weiss, et al., 2018).

Overall, the Vienna-Bratislava Twin City Region consists of over five million residents (consisting of 42% and 21% of each countries respective populations) and 2.5 million jobs (consisting of 46% and 21% of each countries respective GDP) (Hanzl-Weiss, et al., 2018). Hence, the Vienna-Bratislava Twin City Region is representative of a fast growing cross-border region where European integration has enabled the evolution of two historically separate regions into one cohesive megaregion which functions as a major economic centre to Central Europe and beyond (Hanzl-Weiss, et al., 2018). As Bratislava has become a growth pole with a particularly strong car industry, its income levels and purchasing power has substantially increased and even overtaken Vienna in some instances. For instance, Bratislava has the fifth highest GDP per capita in all of the EU as a consequence of its booming transport industry (Jaššo, et al., 2008). Conversely, Vienna acts as a major international centre for Central Europe and is home to many industries, the capital of Austria and an important international airport. Moreover, Vienna consistently ranks as one of the top cities in the worlds in terms of liveability and a high quality of life which draws firms and households also seeking to take advantage of the region's high living standards (IIBW, 2022). Hence, both Vienna and Bratislava play major roles within the greater region as generators for employment, growth and development (Hanzl-Weiss, et al., 2018).

1.4 Drivers & Factors

1.4.1 Distinct Housing Systems

One barrier to an integrated housing market are major differences in housing tenure across the region. In Slovakia, high homeownership (91% of the population are owner occupier) is a consequence of the privatisation of housing stock following liberalisation of the Slovakian economy. In Austria, homeownership is at one of its lowest rates in Europe at 55% (IIBW, 2022). Instead, many Austrians rent long term through either cooperative housing groups, public housing agencies or the private rental sector (IIBW, 2022). In Vienna, homeownership is even less common with only about 19% of its population living as owners (Antalovsky & Löw, 2019).

Hence, significant barriers remain in developing an interconnected housing sector as the Slovakian and Austrian housing sectors themselves are fundamentally different and are based off historically unique systems. For policymakers, this presents a challenge in terms of coordinating policy and collaborating on housing projects.

1.4.2 Price Inflation/Pressure in Vienna

Despite often being ranked as the most liveable city in the world, Vienna is experiencing an increase in housing prices which is adversely impacting affordability across the region (Stadt Wien, 2016). While many Austrians avail of public and cooperative housing associations to access affordable housing, prices in both the owner-occupied market and the private rental market are increasing as demand for housing places pressure on the market (Heinrich, 2019). Moreover, accessing social housing is difficult and waiting lists are long for new affordable units, so many households are forced to depend on the private rental sector for their housing needs (IIBW, 2022).

Given Vienna's reputation as a city with a high quality of life, demand for new housing will remain high as more people immigrate to the region to take advantage of the standard of living (Stadt Wien, 2016). While new supply and investment within the affordable housing sector continues to be built through the city's extensive affordable housing policies, the demand for housing still outstrips supply as the city continues to grow and attract more young households (Heinrich, 2019).

1.4.3 Suburbanisation

Another factor adversely impacting the Vienna - Bratislava twin city region is an increase in residential suburbanisation. This issue is especially acute on the Slovakian border as households are gaining wealth and can afford to live further from the city centre and commute to work (Dillinger, 2004). The issue is prevalent across the entire cross-border region though as Austrians are also seeking more suburban residential locations as housing prices near the city centre are unaffordable, and households seeking homeownership must look further from the central Vienna to afford owner-occupied housing (Dillinger, 2004). In spite of spatial planning policymaking which discourages urban sprawl and unsustainable greenfield residential communities, suburbanisation remains to be an issue across the twin city region due to changing cultural preferences from Slovakians and a growing affordability crisis in Vienna (Jaššo, et al., 2008).

Along the border specifically, suburbanising trends are especially playing an important factor within this region's cross-border housing market as Slovakians working in Bratislava's burgeoning economy can relocate their families to small Austrian towns to take make use of some Austrian services while commuting to work in Slovakia. This developing dynamic is placing increased pressure on transport and infrastructure services facilitating travel across the region as more Slovakians spread out from the centre of Bratislava and generate negative externalities from increased traffic congestion and increased carbon emissions (Jaššo, et al., 2008).

1.4.4 Bratislava Population Dynamics

Another important aspect impacting the housing market is a reversal of population decline in Bratislava. Over the last ten years due to Bratislava's emergence as a prominent agglomeration for car and transport manufacturing, declining population trends have reversed as people move to the region to take advantage of high paying manufacturing jobs (Statistical Office of the SR, 2022). This represents a change in trends since independence in 1993 where households were emigrating away from the region to find jobs and opportunities elsewhere across Europe (Statistical Office of the SR, 2022).

In terms of housing stock, this creates a unique situation. As population declined, lots of housing particularly in inner-city locations became vacant. This vacancy remains to be an issue within Bratislava's housing market. Nevertheless, demand for housing is growing as the population of Bratislava rebounds due to the city's growing economy. Yet, much of this new demand for housing is for new builds and suburban houses spurring new development on the outskirts of the region. Hence, residential vacancy remains to be a problem in many parts of central Bratislava as units remain unoccupied and fall into disrepair thereby increasing costs to repair and renovate these older homes. These might offer opportunities in some cases, however, in the case of Bratislava the costs of buying and renovating together seem to not fall into an affordable category.

1.4.5 Accessibility Across the Border

A central aspect to this research is how the formation of a cross-border housing market is integrated with the level of accessibility present across the border region. Hence, accessibility can act as either a driver or an impediment to promoting opportunities for further housing integration across border regions.

The following maps are exemplative of a well-connected, highly accessible region. Almost all the region is accessible by public transport by bus, and all urban areas are within a ten-minute walk of a bus stop or taxi rank. Likewise, the map showing rail illustrates how the urban agglomerations and commuter towns are well serviced by trains. Moreover, we observe the rail corridors connecting the capital cities which allow for the growth of a cross-border functional area as the two regions become further intertwined economically. In the accessibility to employment maps, we observe how the Austrian border region is within close proximity to Bratislava, the major employment centre of Slovakia while on the other hand, the Slovakian capital region has greater distance and less accessibility to Austrian employment centres in Hainburg or Vienna.

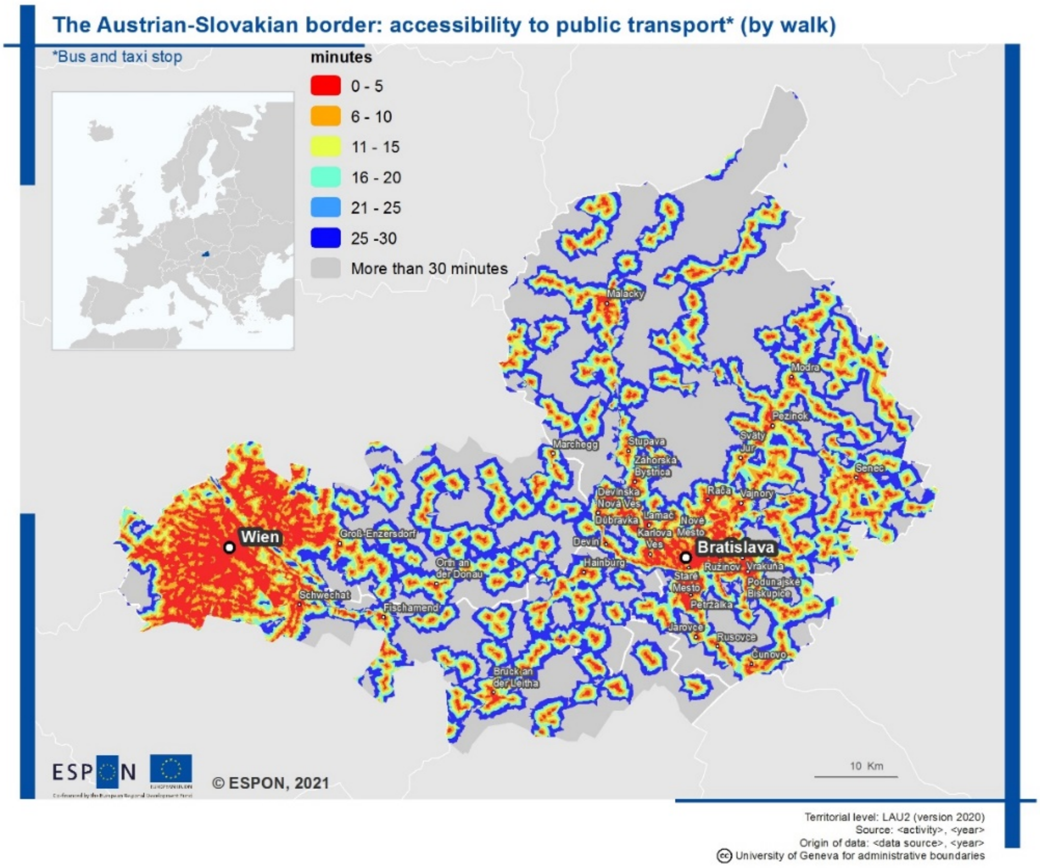


Figure 4: Accessibility Map of Public Transport

This map shows the accessibility to public transport bus and taxi stops, measured as the required walking time from any point in the analysed area to the nearest stop. Results are delivered as isochrones with a 5-minute interval. As such we can see that the two major cities Bratislava and Vienna are well connected, but also the cities next to the Slovakian border show good accessibility patterns to Bratislava specifically Hainburg and Kittsee.

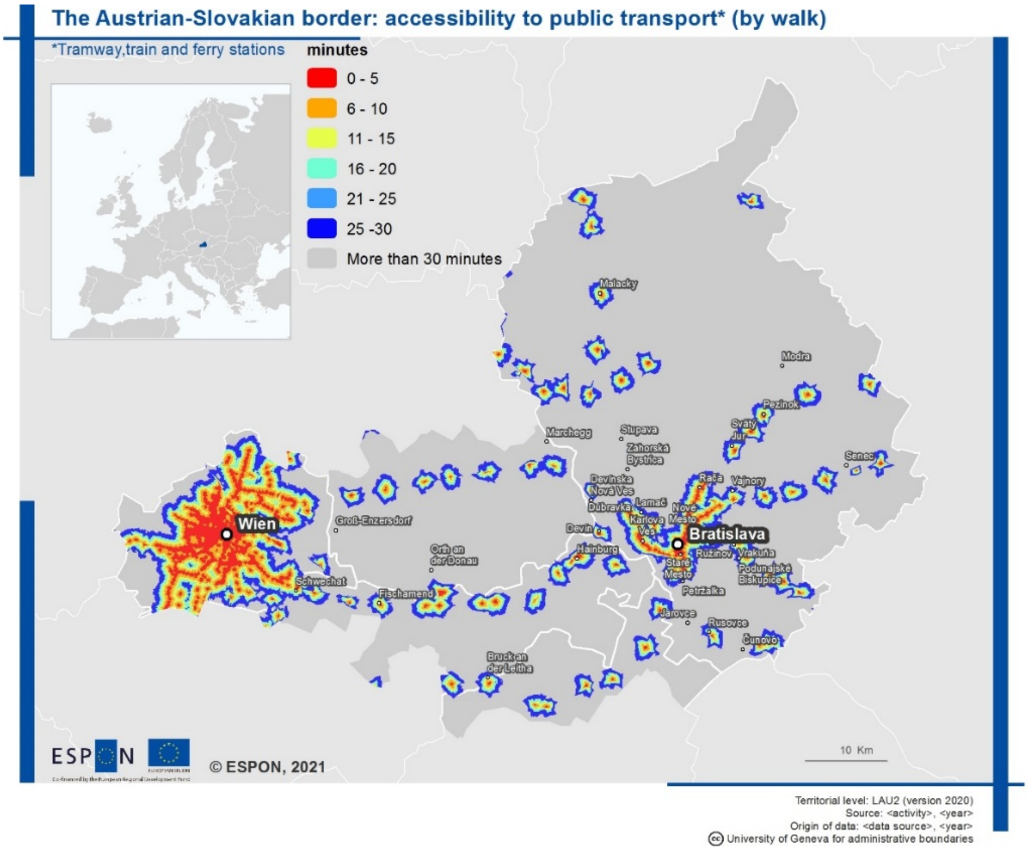


Figure 5: Accessibility Map of Public Transport (Rail)

This map shows the accessibility to public transport tramway, train and ferry stations, measured as the required walking time from any point in the analysed area to the nearest station. Results are delivered as isochrones with a 5-minute interval. There are few regions in the border regions that are very well accessible to rail transport, indicating the importance of Hainburg as a stopover on the way between Bratislava and Vienna.

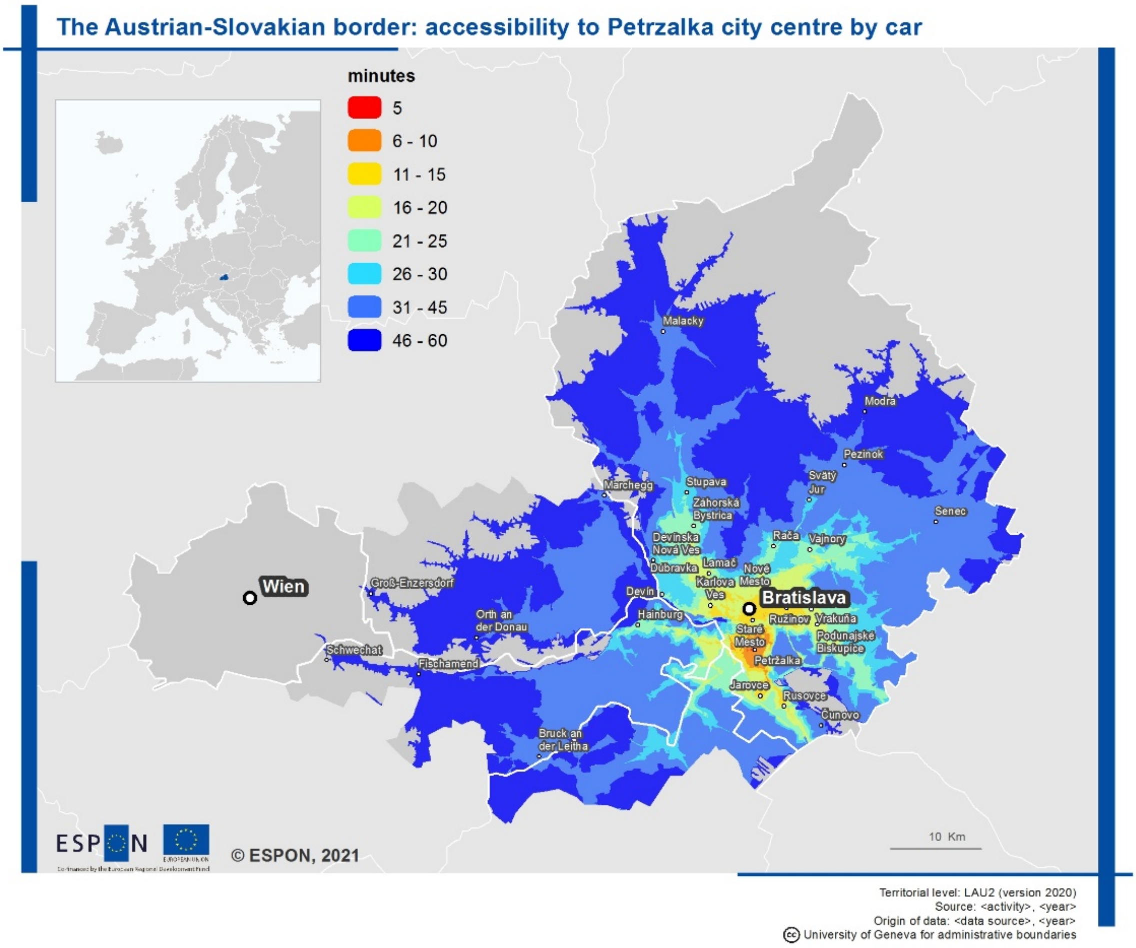


Figure 6: Accessibility to Employment Centres – Slovakian side

This map shows the accessibility to retail shops, measured as the required driving time by car from any point in the analysed area to the centre of Petrzalka. Results are delivered as isochrones with a 5-minute interval. This map is among the most important accessibility study as it indicates the border regions in accessibility to Bratislava, with Petrzalka from where further employment places can be reached, and which mirrors also the regions with higher prices.

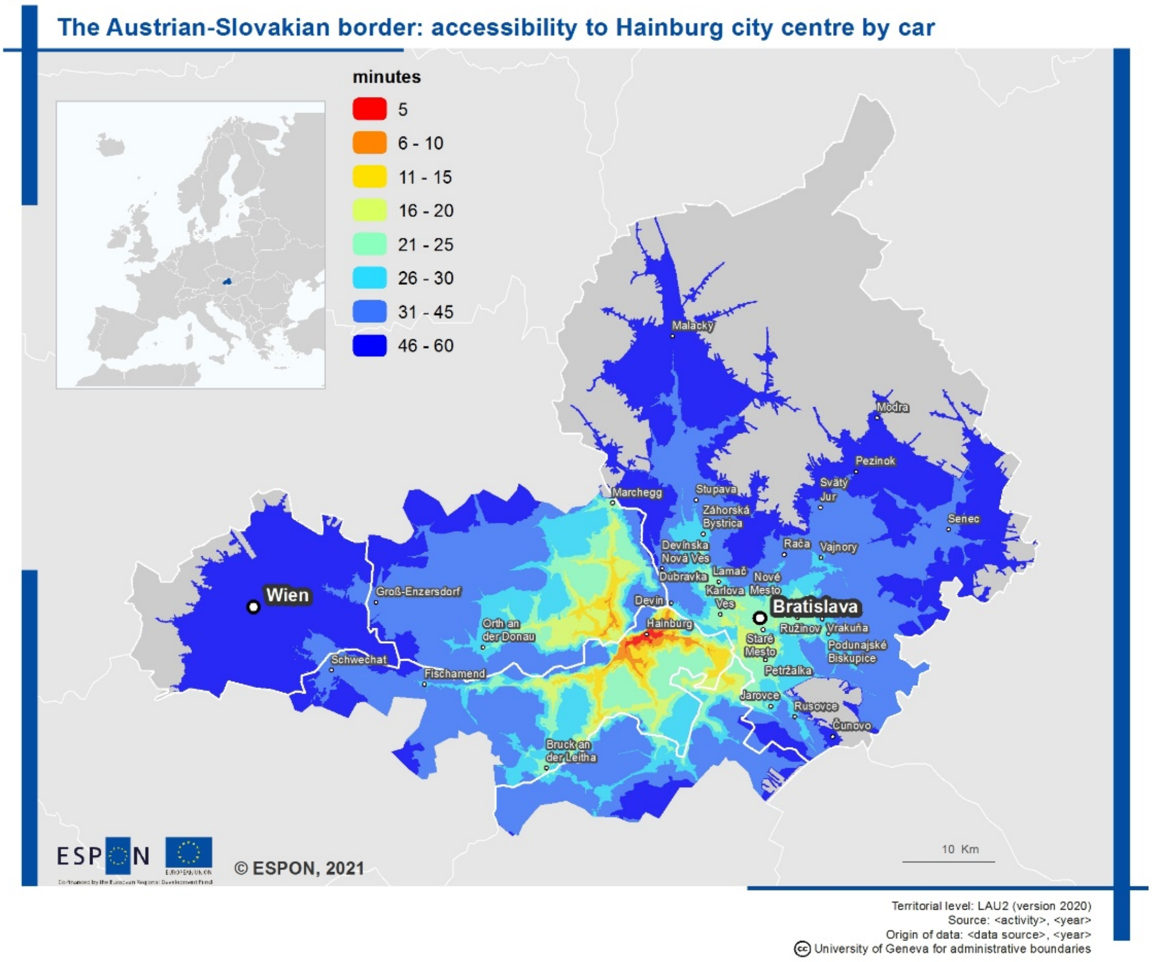


Figure 7: Accessibility to Employment Centres – Austrian side

This map shows the accessibility to retail shops, measured as the required driving time by car from any point in the analysed area to the city centre in Hainburg. Results are delivered as isochrones with a 5-minute interval. In view together with the other accessibility maps the importance of the direct border region becomes dominant, as this region is very accessible to both Bratislava as well as Hainburg as the local area of shopping and services.

1.5 Policy Analysis

1.5.1 Spatial Planning Strategies

Within Austria's federal administrative structure, spatial planning competencies have been devolved to the state level. The national government does function as a coordinator between national objectives and regional agencies (OECD, 2017). The Austrian Spatial Development Concept is a non-binding document which sets out the principles and aims for the country's development. The government also published sectoral plans which sets out nationwide strategies for nationally significant infrastructure projects (OECD, 2017). In addition to these plans, the Austrian government coordinates spatial planning activity among national, regional and local levels through the ÖROK (Austrian Conference on Spatial Planning). The ÖROK acts both as an agency and a forum to facilitate collaboration across regional and municipal planning authorities in Austria.

At the state level, regional planning agencies publish State Development Concepts (Landesentwicklungsprogramm [LEP]; Landesentwicklungskonzept [LEK]; Landesraumordnungsprogramm [LAROP]) which act as strategic frameworks for each region's spatial development (OECD, 2017). These regional frameworks are statutory guidelines which guides and coordinates development across local levels (OECD, 2017). Some federal states within Austria also publish Regional Development Concepts (Regionales Entwicklungsprogramm; Regionales Raumordnungsprogramm; Regionales Entwicklungskonzept; Regionales Leitbild) which function as intermediary documents for progressing state plans. Vienna does not publish Regional Development Concepts though and solely uses the discretion of its State Development Concepts (City of Vienna, 2021).

At the local level, municipalities function as the local agents for enacting planning policy. Local Development Concepts (Örtliches Entwicklungskonzept [OEK]; Räumliches Entwicklungskonzept (REK); Örtliches Raumordnungsprogramm) function as localised spatial development strategies which guide future development and is created through public participation processes (OECD, 2017). Beneath these Local Development Concepts, municipalities can also publish Land-use Plans (Flächenwidmungsplan), Concept Plans (Strukturkonzept) and Regulatory Plans (Bebauungsplan BP Gesamtbebaungsplan [GBP]; Teilbebauungsplan [TBP]) to further specify how local areas and districts should be developed.

Slovakia's spatial planning system is centrally organised with a strong hierarchy connecting national plans to the local level. The Slovak Spatial Development Perspective (Koncepcia Územného Rozvoja Slovenska) acts as the national long-term spatial planning development and land-use strategy (OECD, 2017). The national planning document functions as a binding, statutory document in order to ensure alignment across lower levels of governance. Regional Land Use Plans (Územný Plan Regiónu) function as regional planning strategies and it specifically lays out guidelines for regional projects and how the land should be utilised (OECD, 2017). At the local level of governance, municipalities and urban boroughs implement Local Land Use Plans (Územný Plan Obce) and Zoning Plans (Územný Plan Zóny) for neighbourhood planning and land-use control (Staré Mesto Bratislava, 2021).

1.5.2 Housing Policy

As Austria exhibits an expansive, diversified housing sector, its housing policies reflect the different needs of its many forms of tenure. A primary policy focus is funding public housing organisations to build new subsidised supply annually (Antalovsky & Löw, 2019). Due to the size and extent of Austria's cooperative and public housing sector, subsidised housing can compete with the private sector and is able to moderate prices within the private sector as households prefer the lower costs from the public and cooperative sector (IIBW, 2022). Additionally, the PRS is subject to many different rental regulations which provides for long-term secure tenancies for households living in the PRS and keeps rental prices from increasing at an unaffordable rate (Federal Ministry of Digital and Economic Affairs AT, 2021). The government also provides housing allowances to low-income households requiring assistance on their housing payments (IIBW, 2022). It should be noted that housing allowances can be used for all forms of rental tenure including the PRS and not just public housing. The Austria government provides housing subsidies and grants to developers of new housing in exchange for allocating a certain number of units for subsidised and affordable housing (Antalovsky & Löw, 2019). It should be noted that cooperative, public and private developers are eligible for housing subsidies and grants as long as they abide by the government's stipulations for receiving the funding (Federal Ministry of Digital and Economic Affairs AT, 2021). Across Austria, housing policy focused solely on impacting the owner-occupier market is relatively rare as the government's policy approach reflects a holistic consideration for its diversified housing sector.

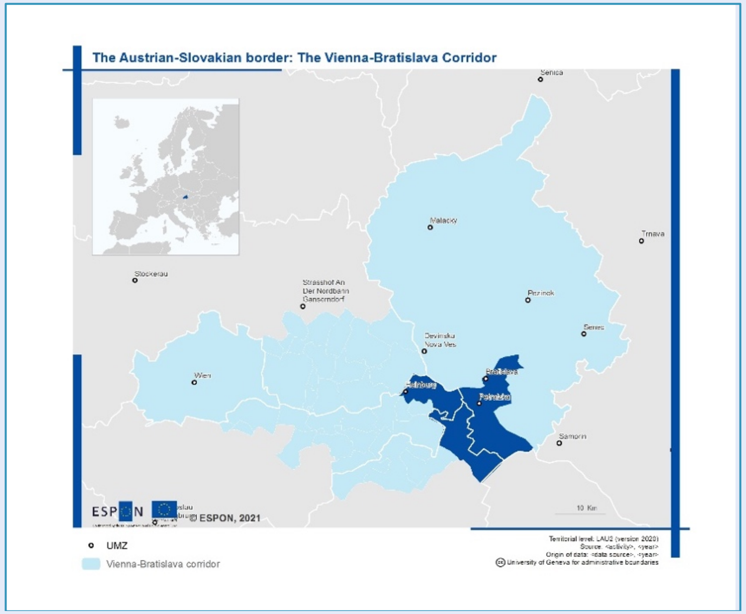
In Slovakia, housing policy is conceived of at a national level in five-year plans, and its housing policy is heavily impacted by social policies as its policymaking is influenced by historical trends where the provision of housing was considered an important aspect of social welfare. Following deregulation of its housing market and the privatisation of its housing stock during the 1990s, much of Slovakia's housing policy also reflects issues related to its high rate of homeownership (Housing 2030, 2022). Consequently, the country has a small PRS and an even smaller social housing sector. Hence, many Slovakian housing policy measures are aimed at growing its rental sector through investment and support, maintaining rental regulations for long-term tenancies and offering funding and grants for renovating and upkeeping older dwellings (Housing 2030, 2022).

Typology	Austria	Slovakia
Statutory	• Rent Law • Condominium Law • Limited Profit Housing Law • State & Local Development Concepts • Building Regulations	• State Housing Policy Concept to 2020/2025 • Civil Code • Act on the Lease and Sublease of Non-Residential Premises • Cadastral Registry for Property Ownership • State Fund for Promoting Housing Act
Fiscal	• Rental regulation • Federal housing tax • Housing subsidy scheme • Bauspar scheme - tax relief for housing supply bonds	• State Housing Development Fund • Building Saving Scheme • Mortgage Banking Act • Housing Development & Subsidy Programme for Social Housing • Subsidy to Purchase Rental Accommodation • Programme of state support for refurbishment of housing stock through bank guarantee of loans • Introduction of new financial instrument to develop PRS
Public	• Limited Profit Housing Associations • Municipal-owned Rental Dwellings	• Financing construction in public rental sector
Universal	• Housing allowances • Subsidised Refurbishment Scheme	• Rent regulation in denationalised flats • State aid for low incomes • Special housing allowances

Figure 8: Overview Table of Housing Policy for Case Study

Housing policies between Austria and Slovakia have clearly separate focuses as the needs of their housing sectors are different. Austria's housing policy primarily aims at funding new subsidised supply though different economic and regulatory instruments while its other housing policy's focus on strengthening its other housing sectors and needs through a suite of different measures meant to further incentivise housing investment and maintenance. On the other hand, many of Slovakia's housing policies are fiscally oriented as it seeks to further develop and diversify its housing sector while also supporting its extensive owner-occupied market.

2 Regional Fiche: Austria – Slovakia: The Vienna – Bratislava Twin City Region



Section 1: Housing

	Region-wide	Local-areas
Legislation	Rent Law – *AT* Condominium Law – *AT* Limited Profit Housing Law – *AT* Landlord and Tenants Law – *AT* Civil Code – *SK*	Article 68 of Constitution – *SK (on regional self administration)* Housing Promotion and Housing Rehabilitation Act 1989 – *Vienna*
Strategies	State Housing Policy Concept to 2025 – *SK*	Urban Development Plan 2025 – *Vienna* Bratislava Plan – *Development Strategy for Bratislava*
Administrations	Ministry of Transport & Construct – *SK* ÖROK (Austrian Conference on Spatial Planning) – *AT*	Building Authorities of Bratislava Municipalities – *Permits Housing Locally* Municipal Department for Housing Promotion and Arbitration Board for Legal Housing Matters – *Vienna*

2 Regional Fiche: Austria – Slovakia: The Vienna – Bratislava Twin City Region

Tenure	55.3% – *Homeownership Rate in AT* 92.3% – *Homeownership Rate in SK*	21% – *Owner-occupied Housing in Vienna*
Affordability	€1,531 – *Avg Price of House per sqm in AT* €3,046 – *Avg Price of Apartment per sqm in AT* €1,520 – *Avg Price of Urban House per sqm in SK*	€7,600 – *Avg Price of House per sqm Inner Vienna* €4,500 – *Avg Price of House per sqm Outer Vienna* €2,844 – *Avg Price of House per sqm Bratislava*

Section 2: Cross-Border Dynamics

	Region-wide	Local-areas
Inhabitants	2.6 million – *Vienna Metropolitan Population* 677,024 – *Bratislava Region Population*	6,837 – *Population of Hainburg* 1,146 – *Population of Wolfsthal* 905 – *Population of Berg* 3,307 – *Population of Kittsee*
Net Migration	~25,000 – *Slovakians Living in Austria*	37% – *Percentage of Foreign Inhabitants in Hainburg* 44.15% – *Percentage of Foreign Inhabitants in Wolfsthal* 38.23% – *Percentage of Foreign Inhabitants in Berg* 48.96% – *Percentage of Foreign Inhabitants in Kittsee*
Border Crossings	6 – *Physical Border Crossings*	2 – *Train Lines* 2 – *Motorway Crossings* 2 – *Local Roads*
Purchasing Power	€17,276 – *GDP per Capita of SK* €44,545 – *GDP per Capita of AT*	€51,000 – *GDP per Capita of Vienna* €39,704 – *GDP per Capita of Bratislava*
Inflation	1.39% – *Inflation Rate of SK* 2.01% – *Inflation Rate of AT*	
Unemployment	6.7% – *Unemployment Rate of AT* 6.9% – *Unemployment Rate of SK*	15.1% – *Unemployment Rate of Vienna* 4.99% – *Unemployment Rate of Bratislava*
Mortgage Interest Rates	1.34% – *Average Mortgage Interest Rate in AT* 2.54% – *Average Mortgage Interest Rate in SK*	*During the previous decade, average mortgage interest rates in Slovakia have fallen from 4.73% to its current low.*
Language Barriers	German – *Official Language of AT* Slovakian – *Official Language of SK*	English – *Common second language of both peoples*

Section 3: Spatial Planning Frameworks

	Region-wide	Local-areas
Regional Plans	EU Strategy for the Danube Region – *EU Macroregional Strategy*	*No regional plans currently exist between Vienna and Bratislava*
EU/Cross-Border Programmes	Interreg Central Europe – *EU Interreg Region* Interreg Danube Transnational Programme – *EU Interreg Region*	Interreg Slovakia-Austria – *EU Interreg Region* Interreg Slovakia-Hungary – *EU Interreg Region* Interreg Austria-Hungary – *EU Interreg Region*

2 Regional Fiche: Austria – Slovakia: The Vienna – Bratislava Twin City Region

Cooperative Agreements	Schengen Agreement – *Free Travel Movement Area*	Twin City Agreement – *Vienna and Bratislava*
Local Initiatives		Bilingual SGIs – *Border towns offering services in German & Slovakian*
Legal Frameworks	EU Directives – *Common European Laws*	

3 Indicators for Austria - Slovakia Case Study

This chapter reviews and analyses both the updated and new indicators in a cohesive fashion in order to arrive at some interim conclusions which provide us further detail on the activity of the cross-border housing market along with an understanding of general wellbeing in relation to the affordability of housing.

3.1 Offerings and Prices

This subchapter details information pertaining to the offerings and prices found in the web scraping process through a number of different indicators.

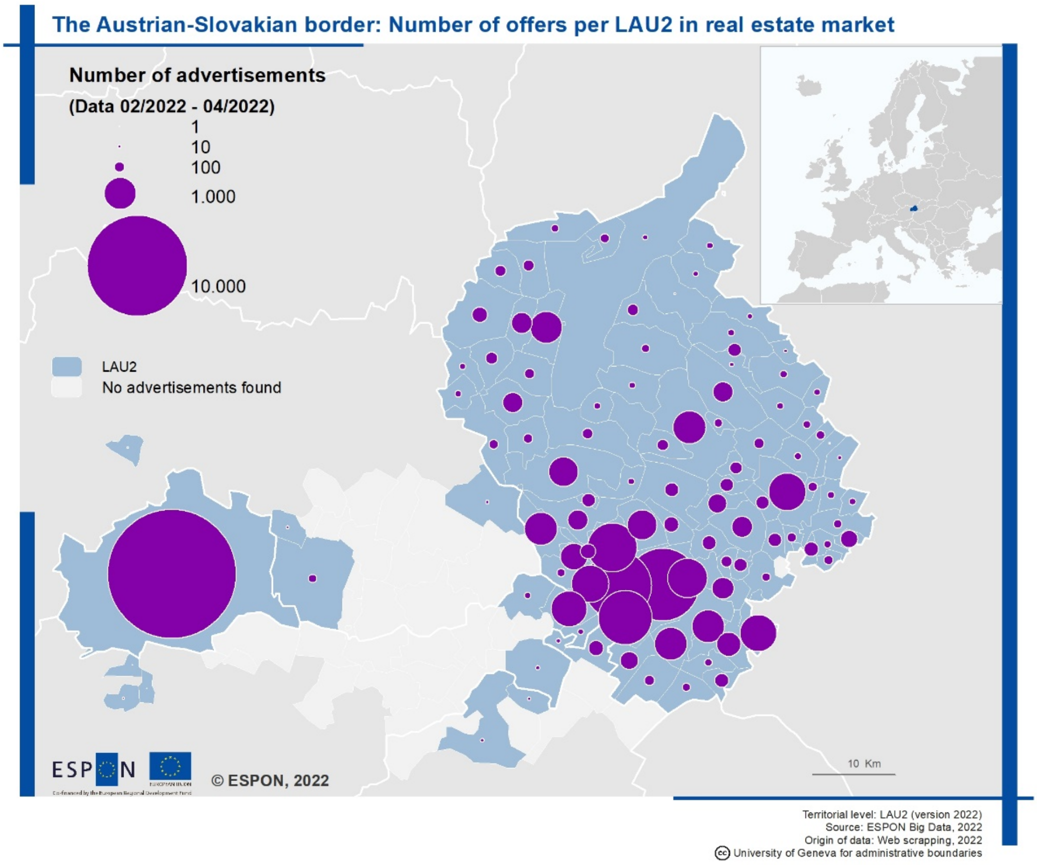


Figure 9: Number of Offers on Advertised Dwellings per Municipality across Real Estate Market

Indicator and data

This map displays the number of advertisements for buying dwellings scraped from web portals in the period of February to April 2022. The advertisements are aggregated at LAU2 level, and they are unique and avoid counting multiple instances of the same advertisement across time.

The collected advertisements are cleaned according to the methodology explained in the technical annex. For some LAU2 units, no valid advertisements are found. The list of valid advertisements is used in all subsequent indicators.

Trends and patterns

As one would expect the number of offers is highest in the metropolitan cities of Bratislava and Vienna with substantially fewer offers in the more rural areas to the east of Bratislava. Overall, Austria has more offerings in total (8726) while the number of offers on the Slovakian side is scattered across more municipalities with active listings (6739). In the corridor region between the two capitals, the web scraping did not reveal any offers in most of the municipalities. While at first, it may seem surprising that no offers would have been found at all, a challenge in interpreting the pattern results from the Covid-19 pandemic may mean that everything that was on the market has been sold, or if it sought after property comes onto the market, it gets bought immediately and is not picked up by the web scraping.

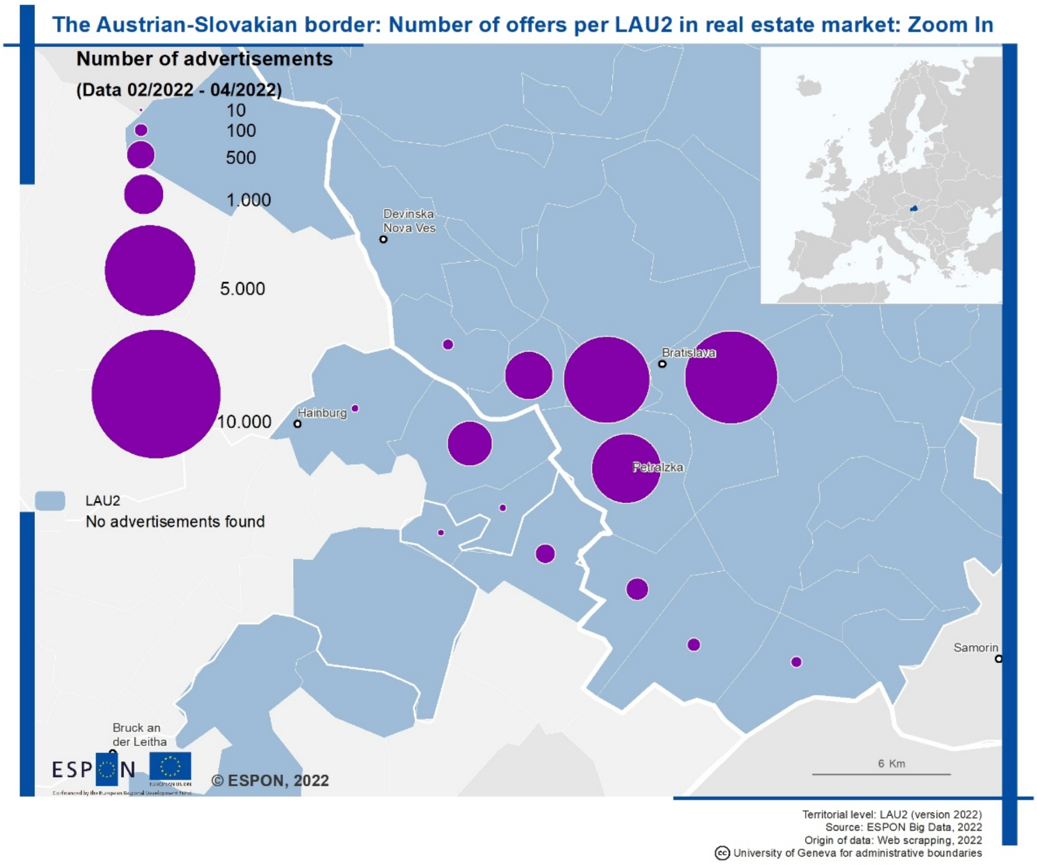


Figure 10: Border Zoom In - Number of Offers on Advertised Dwellings per Municipality across Real Estate Market

Indicator and data

This map displays the number of advertisements for buying dwellings scraped from web portals in the period of February to April 2022. The advertisements are aggregated at LAU2 level, and they are unique and avoid counting multiple instances of the same advertisement across time.

The collected advertisements are cleaned according to the methodology explained in the technical annex. For some LAU2 units, no valid advertisements are found. The list of valid advertisements is used in all subsequent indicators.

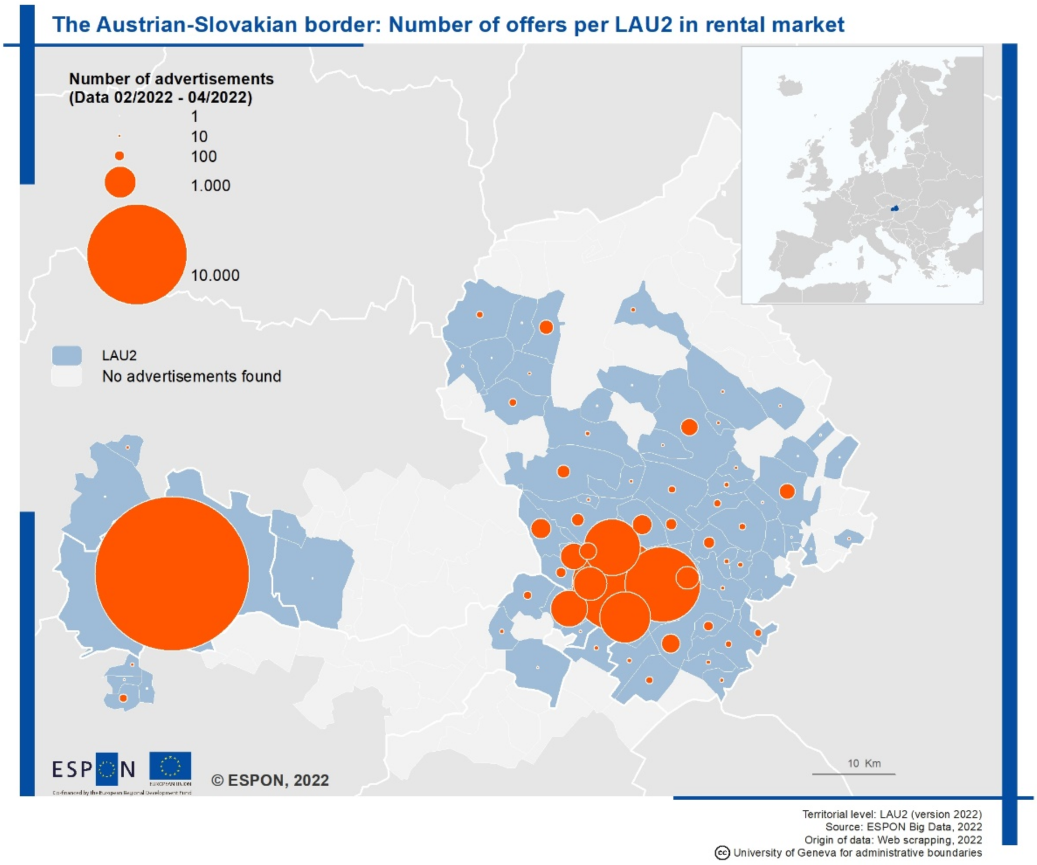


Figure 11: Number of Offers on Advertised Dwellings per Municipality across rental market

Indicator and data

This map displays the number of advertisements for renting dwellings scraped from web portals in the period of February to April 2022. The advertisements are aggregated at LAU2 level, and they are unique and avoid counting multiple instances of the same advertisement across time.

The collected advertisements are cleaned according to the methodology explained in the technical annex. For some LAU2 units, no valid advertisements are found. The list of valid advertisements is used in all subsequent indicators.

Trends and patterns

The total offers in Austria are 12883 offers in comparison to 6454 offers on the Slovakian side. The most offers are thus to be found in Austria and specifically in Vienna. On the Slovakian side, the numbers are high in the LAU2 units surrounding Bratislava except in LAU2 units on the Austrian side of the border. Most of the offers stem from the capital region in Austria. This pattern is quite interesting as it indicates that in this corridor region the rental market is mainly an urban phenomenon as well as an Austrian phenomenon. This corresponds with the knowledge of the general functioning of these two housing markets found in Ch 1.4.1, and a higher owner-occupied orientation in Slovakia (see as well the Annex 1 Technical Guidance Document).

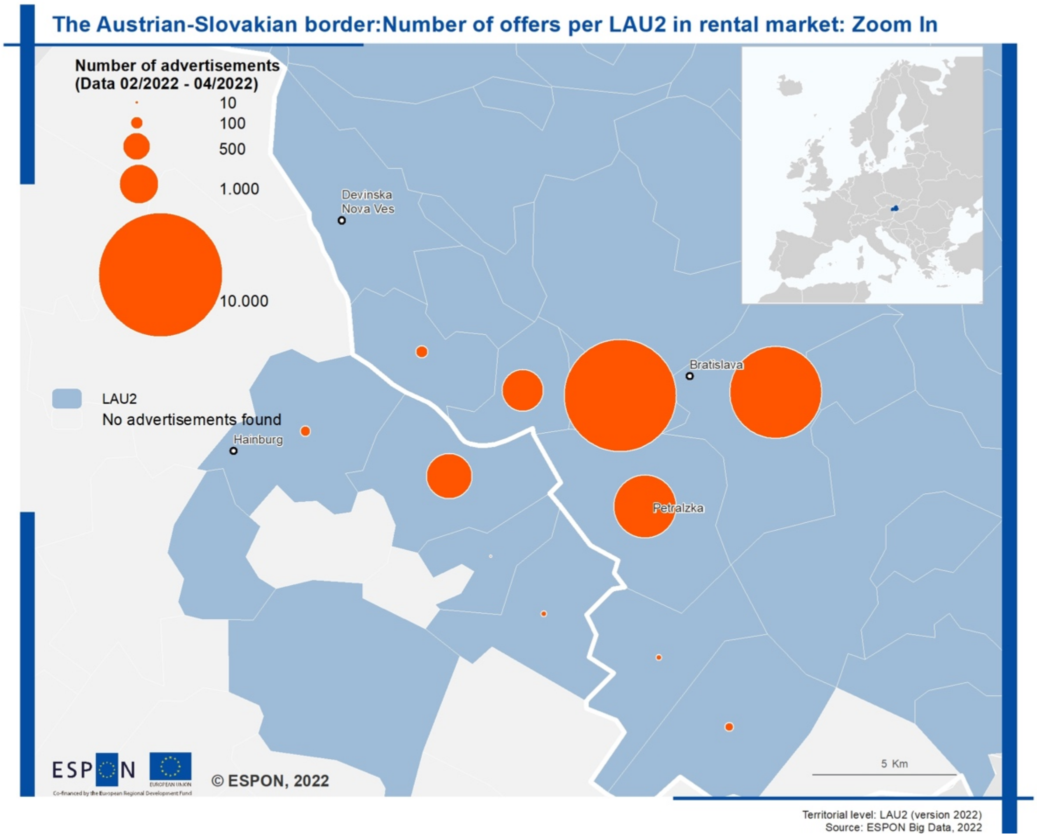


Figure 12: Border Zoom In - Number of Offers on Advertised Dwellings per Municipality across rental market

Indicator and data

This map displays the number of advertisements for renting dwellings scraped from web portals in the period of February to April 2022. The advertisements are aggregated at LAU2 level, and they are unique and avoid counting multiple instances of the same advertisement across time.

The collected advertisements are cleaned according to the methodology explained in the technical annex. For some LAU2 units, no valid advertisements are found. The list of valid advertisements is used in all subsequent indicators.

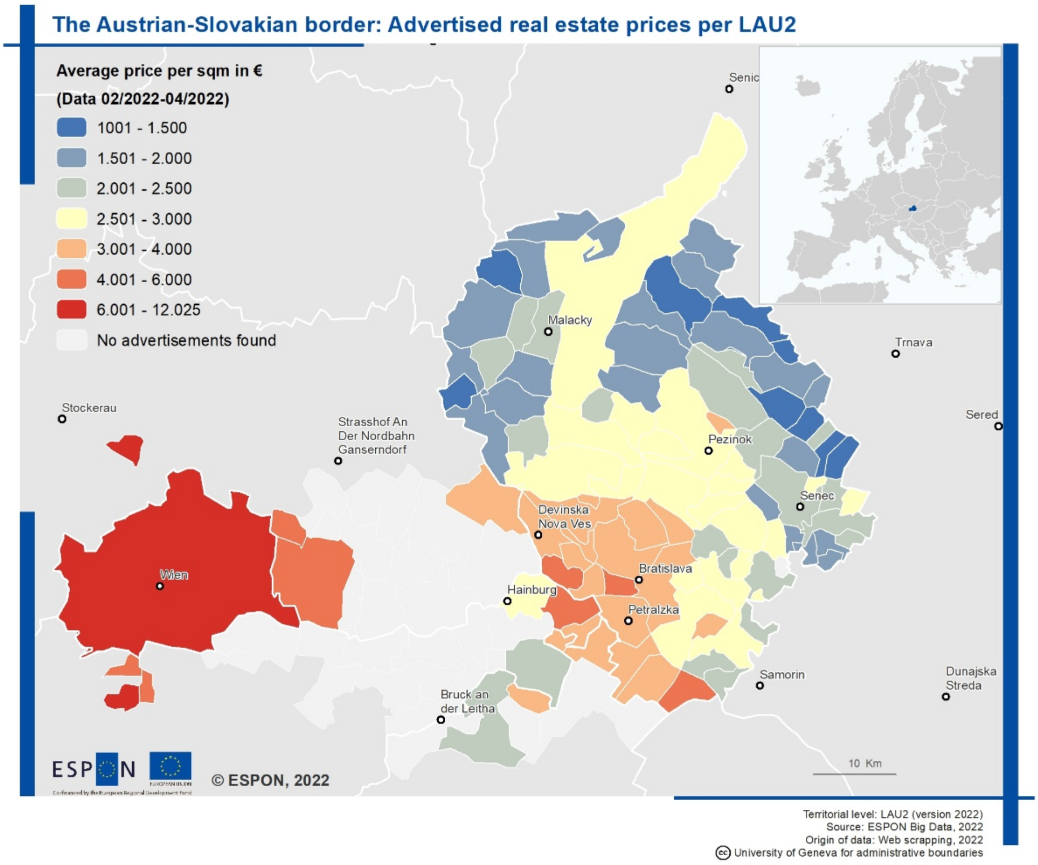


Figure 13: Advertised Price of Residential Property for Sale

Indicator and data

This visualization shows the advertised price of real estate. The data shown is the average price of buying a property in €/sqm per LAU2 unit computed from web scraped data obtained from online portals. All typologies are included (multifamily / single family, new / old) Data availability within the scraped period limits the calculation of the indicator, thus whenever no adds exist for a given LAU2, the indicator is empty.

Trends and patterns

The spatial pattern indicates an overall high price of residential property for sale in Vienna, as well as with high prices in the centre of Bratislava. Yet the prices in the centre of Bratislava do not match the level of prices in Vienna with levels from 4501 and more. The few offers for residential property in the Austrian border region indicate that these areas are comparatively cheaper with prices increasing on the border with Bratislava. The lowest prices are to be found in the north-eastern parts of the case study regions. This indicates that the border itself is not a deterrent for housing markets whereas on the Slovakian side distance seems to remain a key factor in view of demand.

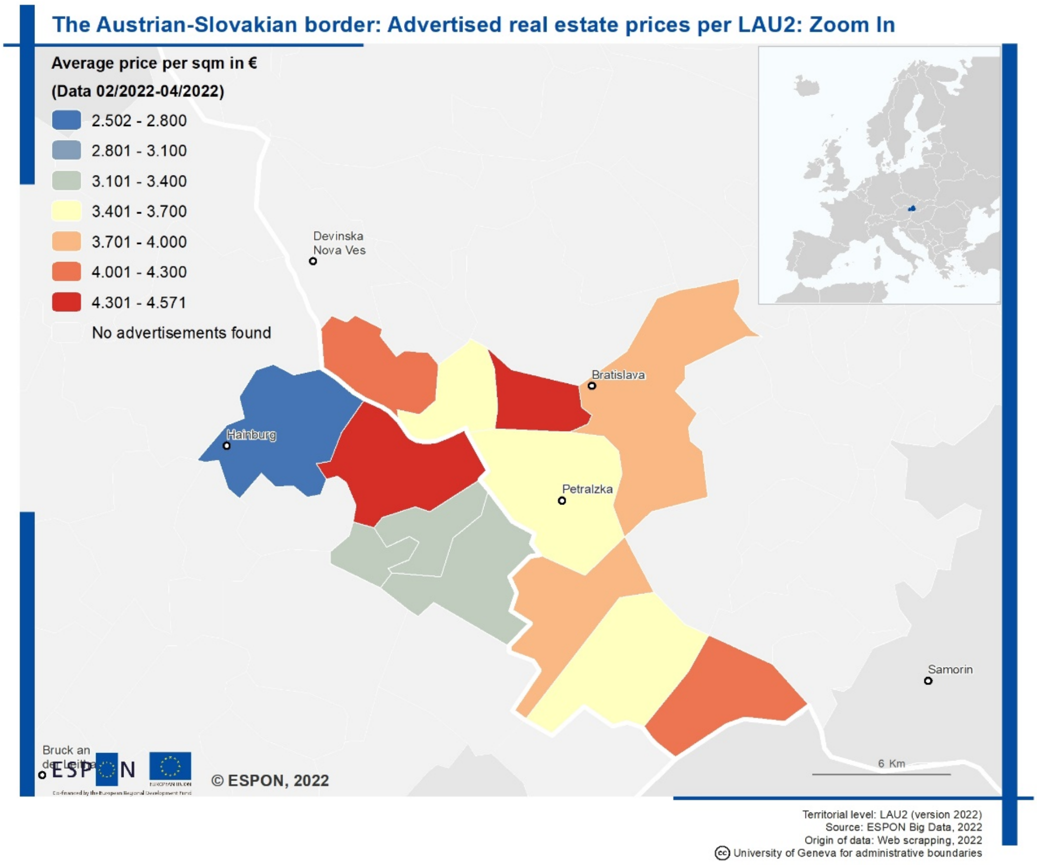


Figure 14: Border Zoom In - Advertised Price of Residential Property for Sale

Indicator and data

This visualization shows the advertised price of real estate. The data shown is the average price of buying a property in €/sqm per LAU2 unit computed from web scraped data obtained from online portals. All typologies are included (multifamily / single family, new / old) Data availability within the scraped period limits the calculation of the indicator, thus whenever no adds exist for a given LAU2, the indicator is empty.

Trends and patterns

The zoom in reveals substantial price differences within the region, where specifically Hainburg itself is much cheaper in contrast to the neighbouring regions where are conveniently located between Hainburg and Bratislava.

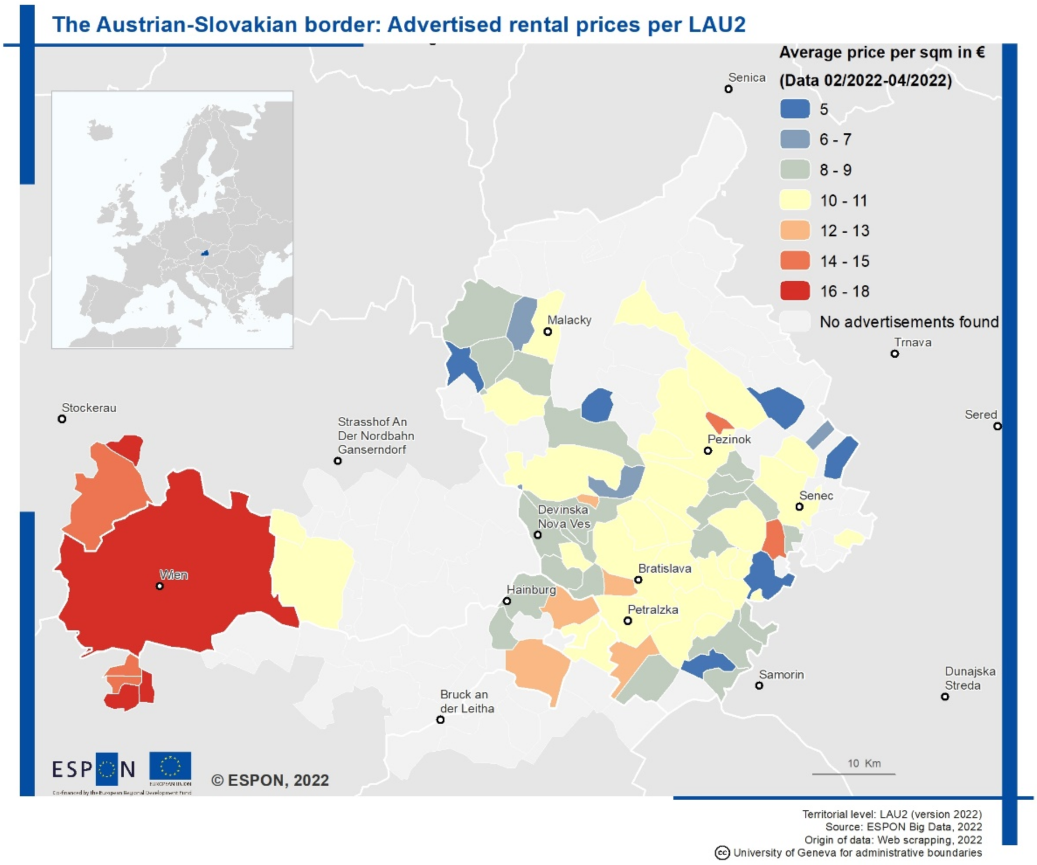


Figure 15: Advertised Price of Residential Property for Rent

Indicator and data

This visualization shows the advertised price of rental. The data shown is the average price of renting a property in €/sqm per LAU2 unit computed from scraped data obtained from online portals. All typologies are included (multifamily / single family, new / old) Data availability within the scraped period limits the calculation of the indicator, thus whenever no adds exist for a given LAU2, the indicator is empty.

Trends and patterns

The advertised prices for rent per sqm are consistently high in Vienna and its surroundings with between 13-19€ per sqm. On the Slovakian side, the prices show a wider range of prices, ranging mainly between 6 to 12€ per sqm. Interestingly, the border regions of Austria around Wolfsthal show similar prize ranges as Vienna. Combined with the information provided by the number of offers, it becomes clear that the rental sector is not as active on the Austrian side, and thus one has to be cautious in interpreting the offers as representative of the region. Yet, one can assume that the renting prices at the border are higher than they might be in the corridor between Vienna and Bratislava.

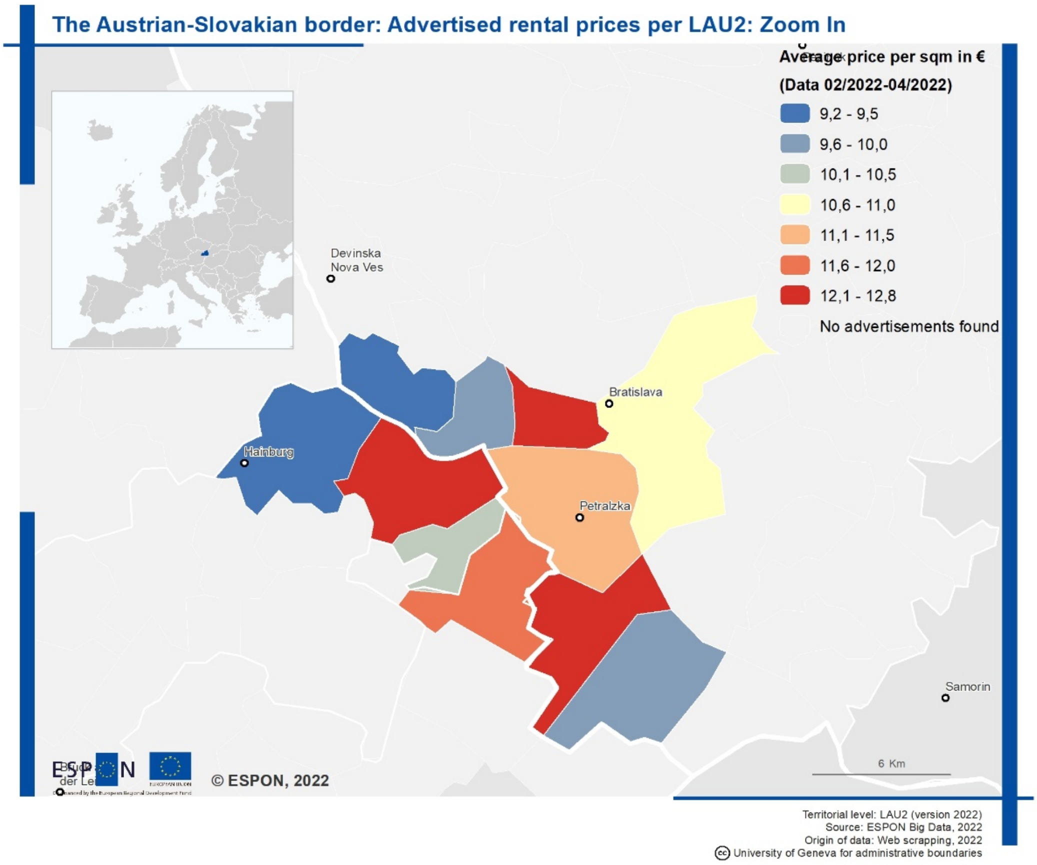


Figure 16: Border Zoom In - Advertised Price of Residential Property for Rent

Indicator and data

This visualization shows the advertised price of rental. The data shown is the average price of renting a property in €/sqm per LAU2 unit computed from scraped data obtained from online portals. All typologies are included (multifamily / single family, new / old) Data availability within the scraped period limits the calculation of the indicator, thus whenever no adds exist for a given LAU2, the indicator is empty.

Trends and patterns

The rental patterns mirrors the buying region, indicating that the regions next to main centres are higher priced.

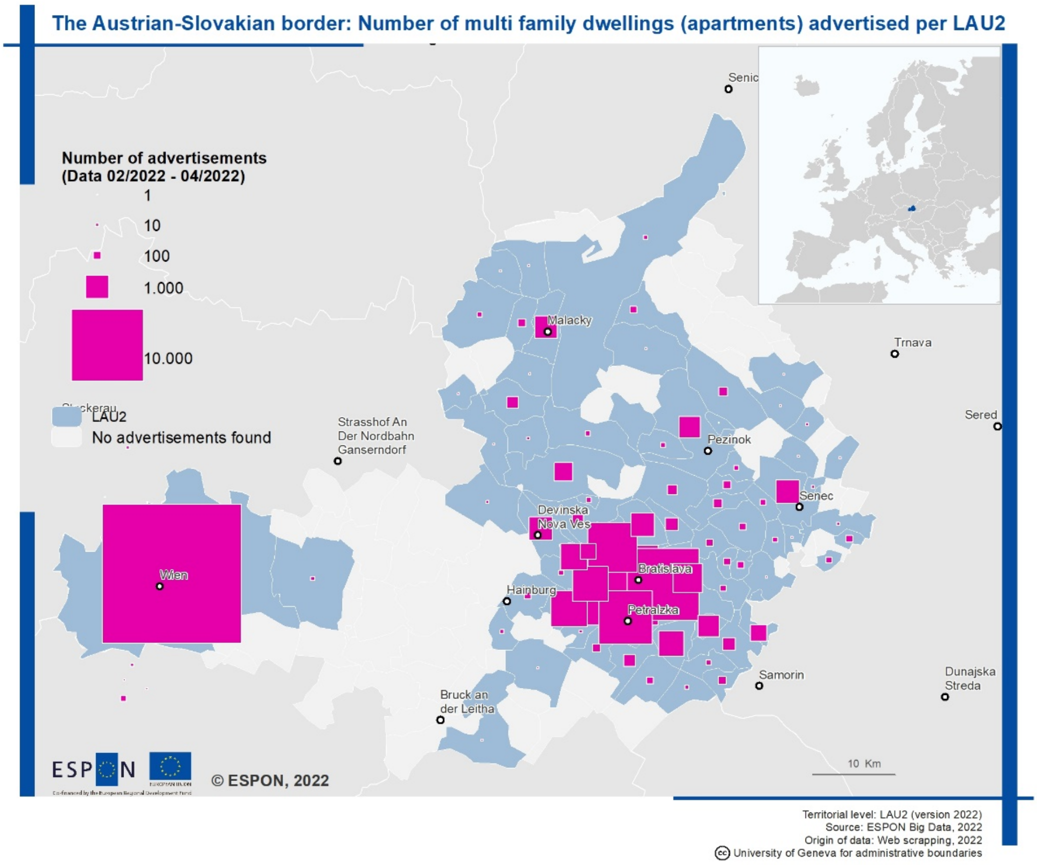


Figure 17: Multifamily Housing Type

Indicator and data

The indicator shows the number of valid scraped advertisements for multifamily dwellings (apartments) aggregated at LAU2 level. It includes both rental and buying advertisements and requires homogenising the housing typologies, which are slightly different in each country.

Trends and patterns

Within the duration of the web scraping, a total of 20559 advertisements for multifamily housing types have been advertised in Austria and 11212 in Slovakia. It is evident that in Slovakia the advertisements for renting and buying are closer to one another (6076 for renting and 5136 for buying) than in Austria (12673 for renting and 7886 for buying). This can likely be explained by the concentration of the Austrian offers being located in Vienna rather than the countryside. In Slovakia, we see the offers more dispersed throughout the case study region.

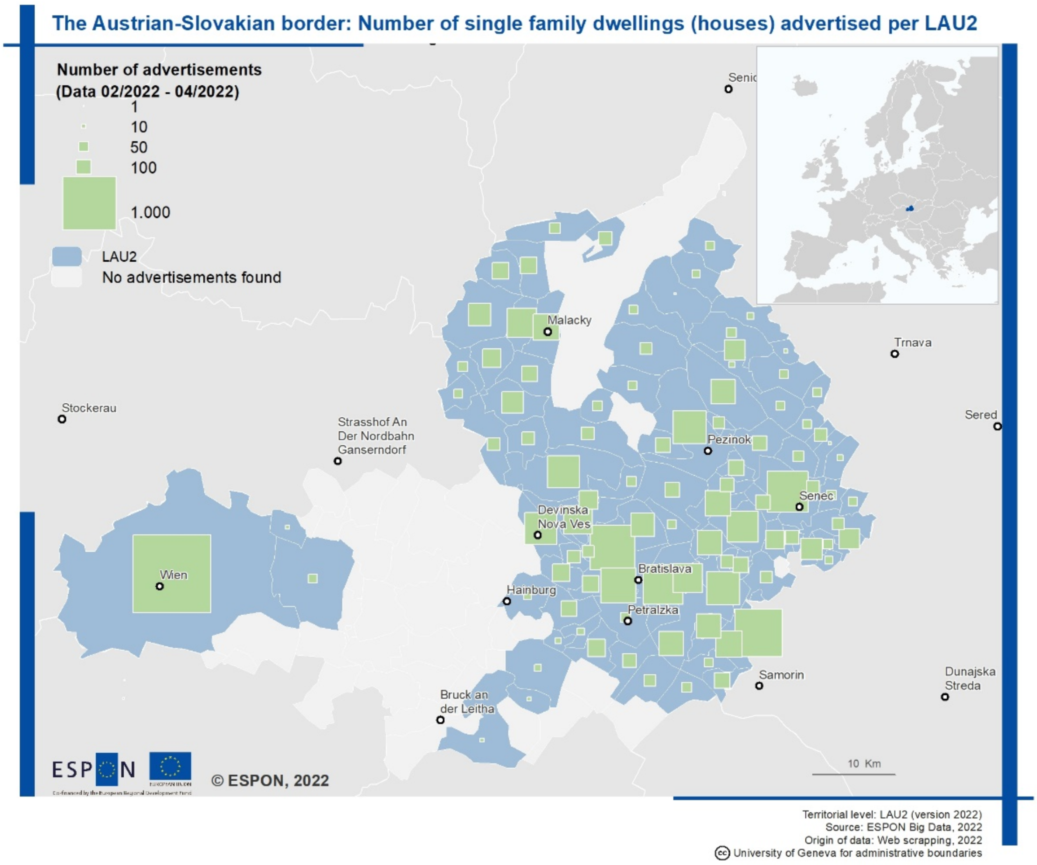


Figure 18: Single Family Housing Type

Indicator and data

The indicator shows the number of valid scraped advertisements for single family dwellings (single houses) aggregated at LAU2 level. It includes both rental and buying advertisements and requires homogenising the housing typologies, which are slightly different in each country.

Trends and patterns

In view of the advertisements for single-family houses, we see substantially less units than in the multifamily segment. In Austria, a total of 1050 advertisements were published in the timeframe scrapped, and in Slovakia, 1981 units were advertised. As expected, it becomes evident that single family units in comparison to multifamily units are more advertised in rural areas.

3.1.1 Interim Conclusions: Prices and Offerings

Given that Vienna is a larger city, it is unsurprising that Vienna has the larger market with more offerings found through the web scraping. It is interesting to note how concentrated the Viennese market remains with very few adverts scraped in the outlying metropolitan area of Vienna. As we expected to see more market activity and offerings available between Vienna and Bratislava given the growth of its intercity economic corridor, we were disappointed that the web scraping did not collect any data within this area. While a longer scraping period would certainly pick up more adverts and fill in the blank LAU2 units, we can surmise that Covid-19-induced preferences for larger, more rural dwellings with greater access to green space contributed to such an active 2021 market so that the residential real estate and offerings in this urban growth corridor have been tapped out for Q1 of 2022. Hence, a longer scraping period over multiple quarters would allow us to better understand the dynamics at play within the changing market.

We do note however while Vienna has the most expensive real estate and rental prices, some of the offerings within the Austrian border area are at or below the prices of the Bratislava market. This similarity in prices entices Slovakians to consider purchasing across the border. Given how the adverts for the Austrian border area were found on Slovak real estate webpages, we observe a trend of Slovakians buying across the border in Austrian municipalities with proximity to central Bratislava. This confirms our preliminary research findings as to how the cross-border housing market is developing.

Another particularity to this case study is in relation to the different systems of tenure adopted in each country. Austria (and the Vienna region in particular) has a large rental market due to both a robust cost rental system and a competitive private rental sector. (See Ch 1.4.1 for more on the housing systems.) Hence, it is not surprising that Austria has so many rental offerings from the indicator. Slovakia, on the other hand, has a relatively small rental sector where over 90% of the country lives in owner-occupied accommodation. Hence, what we are observing from the indicators on the Slovakian rental sector is the development of a small but growing private rental sector. We surmise that economic growth from new agglomerations in Bratislava are contributing to the Slovak capital's growing rental sector as new and young households move to the region to take advantage of the new job opportunities but cannot necessarily afford or wish to purchase a dwelling.

In relation to the type of dwellings available, we note that there is a predominance of multifamily dwellings in urban areas. We also note how there are more single-family dwellings on offer across the Bratislava metropolitan area. This observation is exemplative of a suburbanisation trend taking place across post-Soviet cities where households have a preference for single-family dwellings located outside of the city in growing commuter belts.

3.2 Affordability and Profitability

This subchapter details information pertaining to the affordability and profitability of the cross-border housing market found in the web scraping process through the incorporation of several different indicators.

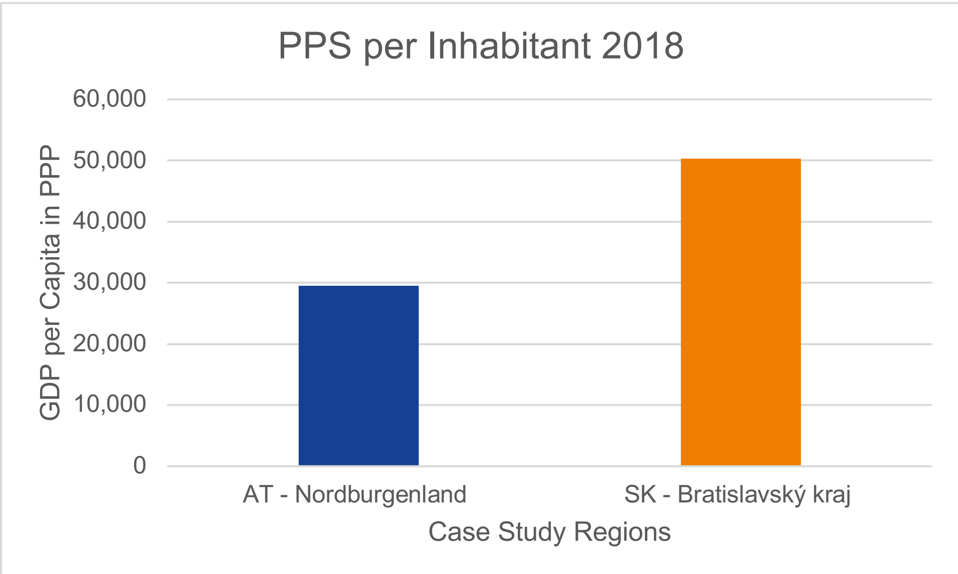


Figure 19: PPP (at NUTS3)

Indicator and data

This chart displays an indicator measuring income differences on either side of the border for each case study. Data is available as PPP per capita at NUTS3 level for the case studies with the most recent year of complete information being 2018, which represents a pre-pandemic year. The PPP for Austria comes from the region of **Nord Burgenland (AT112)** while the PPP for Slovakia comes from the **Bratislava Region (SK010)**.

Trends and patterns

It is clear that the Austrian GDP per capita in PPP lies substantially below the Slovakian GDP which is a trend that has been growing. While the PPS per inhabitant is a relevant figure to contextualize how well off in general terms the population is in comparison to other countries, for Bratislava, one has to take caution as Bratislava hosts many

Southeast European headquarters and as such has a dominant position in GDP terms. However, this does not necessarily translate to all citizens to the extent the numbers suggest due to the agglomeration economies. However, the advertised prices of the real estate market as displayed in Figure 15 confirm that the prices of an advertisement in a relatively rural area are substantial higher than compared to other Austrian regions. As such, the purchasing power of Bratislavians increases prices across the border.

3.2.1 Sales Price Affordability

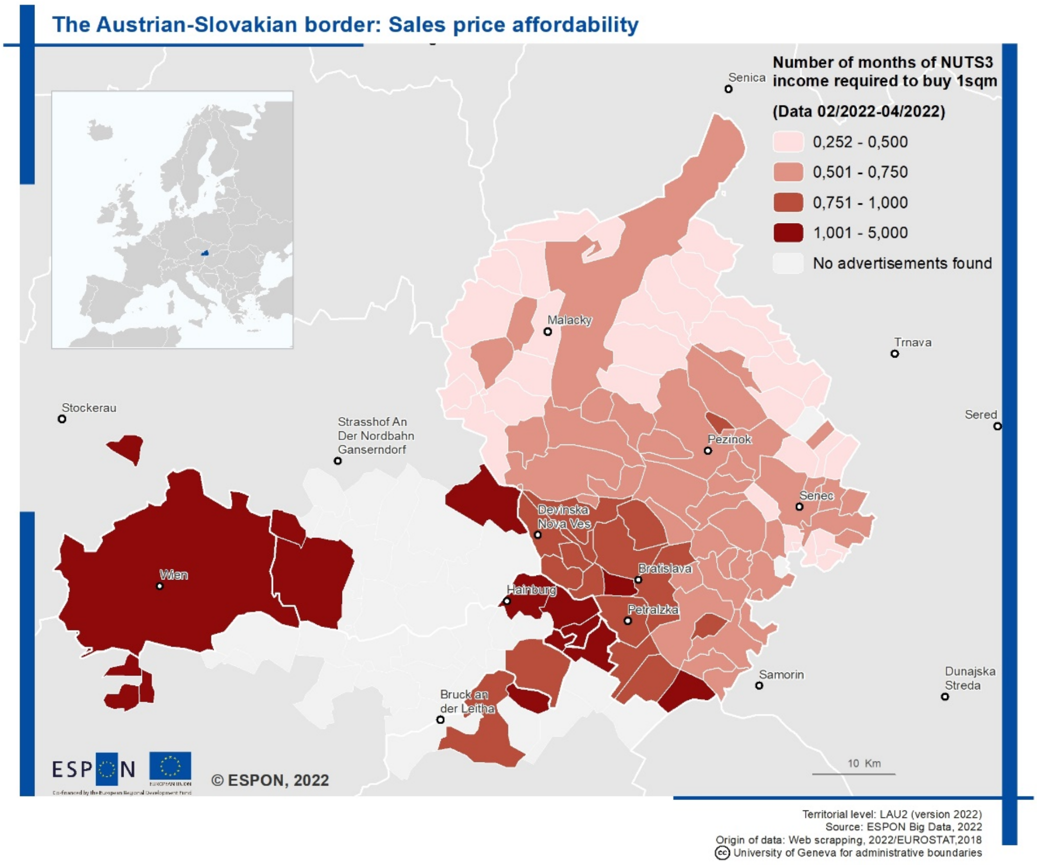


Figure 20: Sales Price Affordability

Indicator and data

This map displays a composite indicator on affordability of buying real estate. The indicator is calculated as the average price per sqm in each LAU2 over the monthly income measured as PPP in the NUTS3 region in which the advertisement is located. The resulting figure is the number of months of income required to buy a sqm of property.

Trends and patterns

The measure of number of months of NUTS2 income required to buy 1sqm, discussed as sales price affordability for the case study regions indicates a clear border effect. In average most of the Austrian border regions are in the category of 1-5 months whereas much of affording property in Bratislava requires .4 to 1 month of savings.

Overall, this indicator illustrates the growing unaffordability within the Vienna region while also highlighting how property within the Slovakian capital is also beginning to increase in price and become increasingly unaffordable.

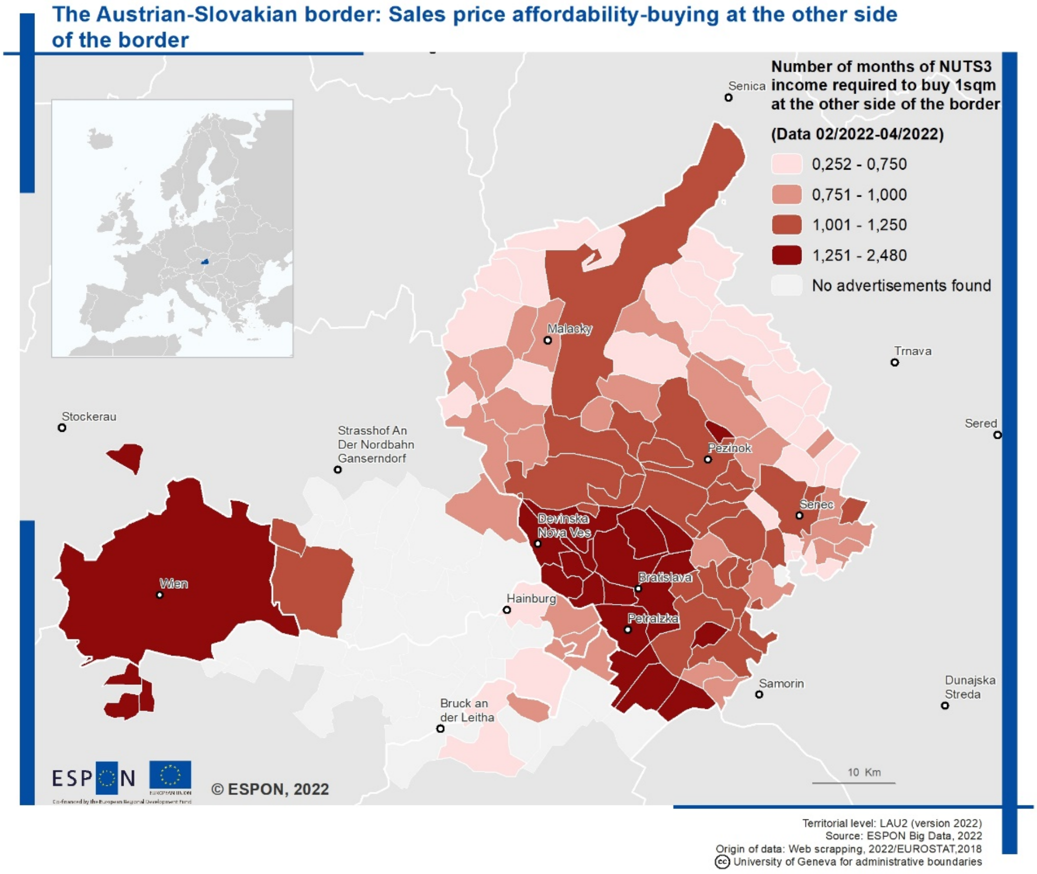


Figure 21: Sales price affordability-buying at the other side of the border

Indicator and data

This map displays a composite indicator on affordability of buying a dwelling. The indicator is calculated as the average price per sqm in each LAU2 over the monthly income measured as PPP in the NUTS3 region opposite to that in which the advertisement is located. The resulting figure is the number of months of income required to buy a sqm of dwelling on the other side of the border. So here we simultaneously see for example how many months of income from Bratislava Region (SK010) would be needed to buy 1 sqm in Hainburg and how many months of income from Nord Burgenland (AT112) would be needed to buy 1 sqm in Petrzalka.This map needs to be seen in conjunction with Figure 20.

Trends and patterns

In view of the mean difference in Income Affordability to Purchase 1sqm, we can see a border effect. While for a Slovakian citizen buying in Vienna would require working 1-3 months, it would take less than one month in the border region. This means that for a Slovakian the Austrian border region is relatively affordable. For Austrian citizens living in the border region, it would require 1-3 months to buy on the Slovakian side. So, overall, one can say that there is in average not a huge difference in income need required to buy a sqm on the other side of the border. However, at the border itself, less time is required for Slovakians to buy across the border.

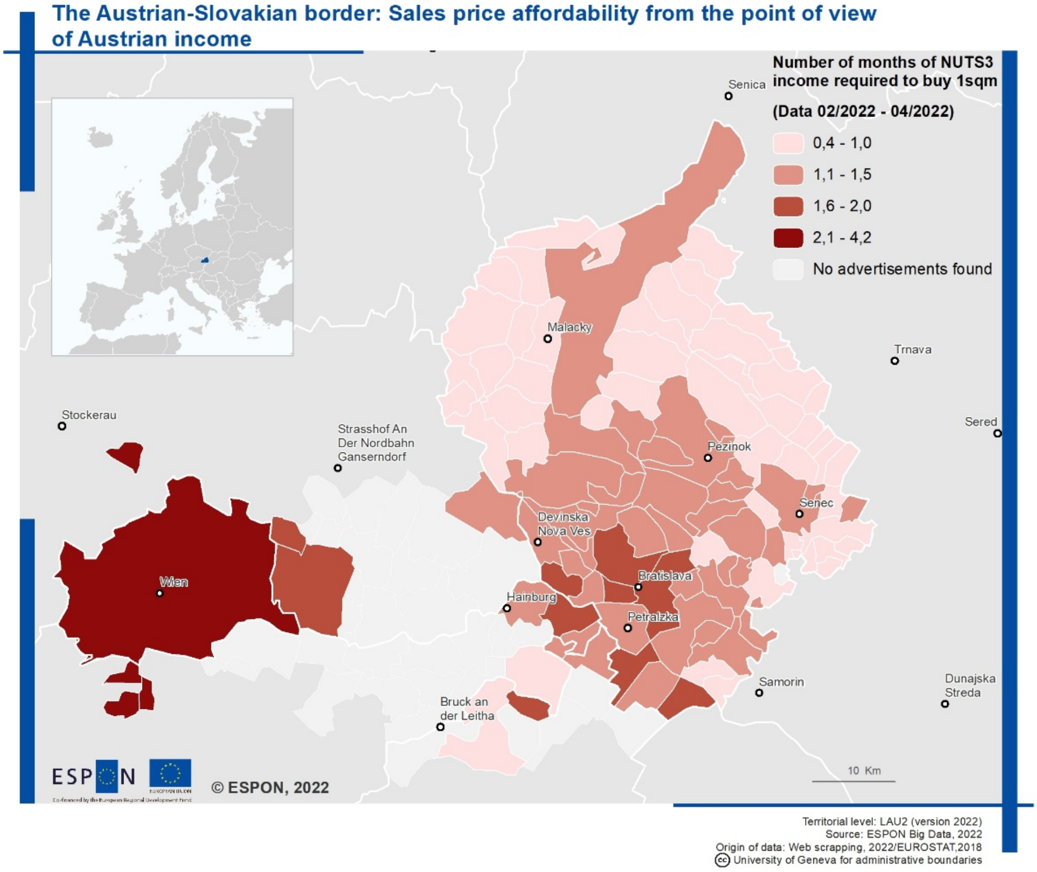


Figure 22: Sales Price Affordability - from an Austrian worker's perspective

Indicator and data

This map displays a composite indicator on affordability of buying a dwelling. The indicator is calculated as the average price per sqm in each LAU2 over the monthly income measured as PPP in the NUTS3 region of Nord Burgenland. The resulting figure is the number of months of income required to buy a sqm of dwelling in any municipality of the analysed area. This tells us how expensive it is for a person working in the Austrian side to live in the cross-border area.

Trends and patterns

What we observe in this map is how Austrian workers are struggling to afford residential properties within their home region as Vienna and its outlying communities become increasingly expensive and less affordable for the average household. In relation to Austrian worker’s buying in Slovakia, prices in Bratislava are either similar or more expensive than prices within the Austrian border community, so there is no economic gain in migrating across the border and living in Slovakia.

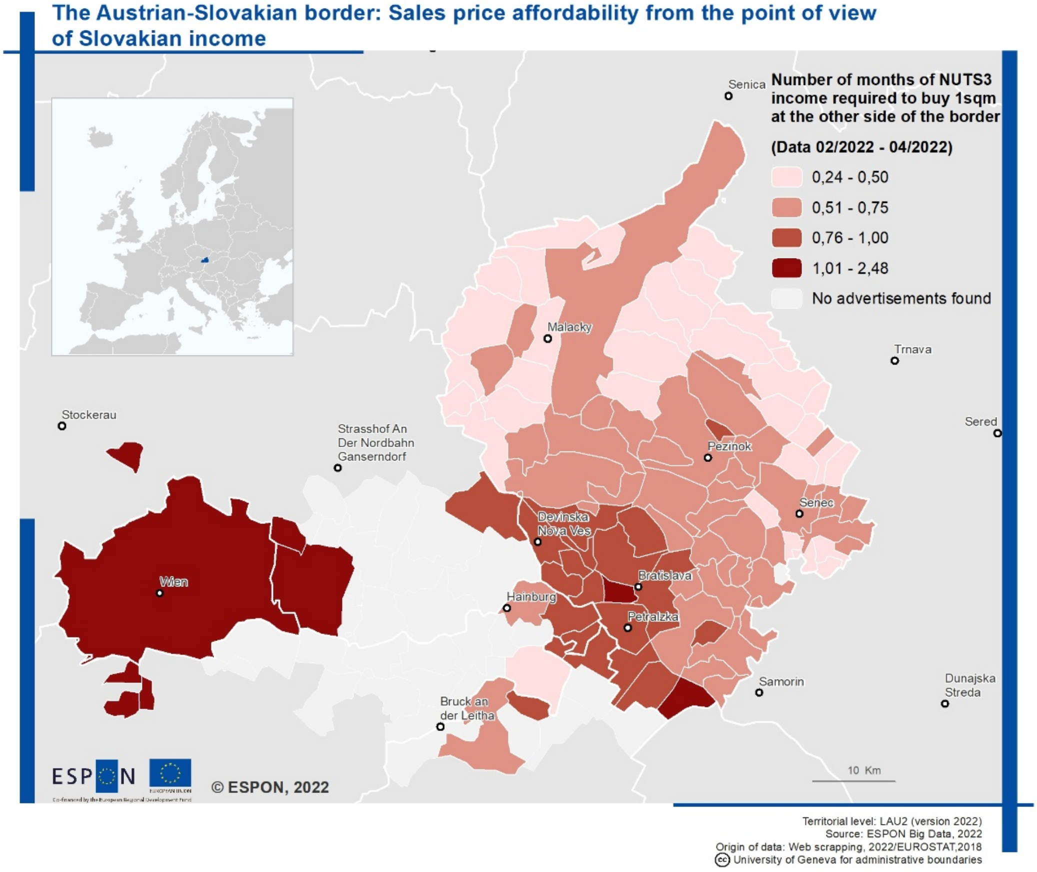


Figure 23: Sales Price Affordability - from a Slovakian worker's perspective

Indicator and data

This map displays a composite indicator on affordability of buying a dwelling. The indicator is calculated as the average price per sqm in each LAU2 over the monthly income measured as PPP in the NUTS3 region of Bratislava. The resulting figure is the number of months of income required to buy a sqm of dwelling in any municipality of the analysed area. This tells us how expensive it is for a person working in the Slovakian side to live in the cross-border area.

Trends and patterns

In this map, we observe that the affordability of the Austrian border region is similar or slightly more affordable than housing in Bratislava. Hence, we can predicate that a cross-border housing market is beginning to emerge as Slovakians seek housing further afield from Bratislava and across the Slovakian border to gain access to different amenities and service of general interest at an affordable and competitive price that is comparable to buying within central Bratislava.

Months to Buy 1 sqm	Austrian income	Slovakian income
Austrian LAU	1,32	0,77
Slovakian LAU	1,56	0,91

- Prices are 41% more affordable on average with a Slovakian salary
- Prices are 15% more affordable on average in the Austrian side

Figure 24: Mean Difference in Sales Price Affordability

Indicator and data

This indicator is built using the affordability per LAU2 unit considering the income of either sides of the border. In this case, we restrict ourselves to actual cross border LAU2 units (the dark blue area appearing in the case study definition map)

We calculate the average affordability measured as number of months of salary needed to buy 1 sqm of property. Given that we do not have the real average salary figures, we use the GDP per capita PPP as a proxy.

The indicator provides 4 figures with the affordability of property at either country, with the perspective of a person working at either side of the border. In addition, we calculate the affordability variation depending on the country and depending on the income.

Trends and patterns

According to this indicator's calculations, Slovakian incomes are the strongest within the cross-border housing market while Slovak households can find the most value for their money in purchasing residential property in the Austrian border region. When these calculations are considered against the previous affordability mappings, it encapsulates how Slovakian households are the major actors within this growing cross-border housing market. Slovakian households are in an economically advantageous situation where their housing decision to migrate across the border, outcompete local Austrian incomes within the housing market and settle in more affordable housing causes a cross-border flow to emerge. When we quantify and analyse this cross-border flow, we begin to see how a cross-border housing market is beginning to emerge within this region as households from neighbouring regions are pooled together for the same supply of housing. Thus, without this unique economic position for Slovakian households, there would be no border effect on housing and a cross-border housing market would not be materialising.

3.2.2 Rental Price Affordability

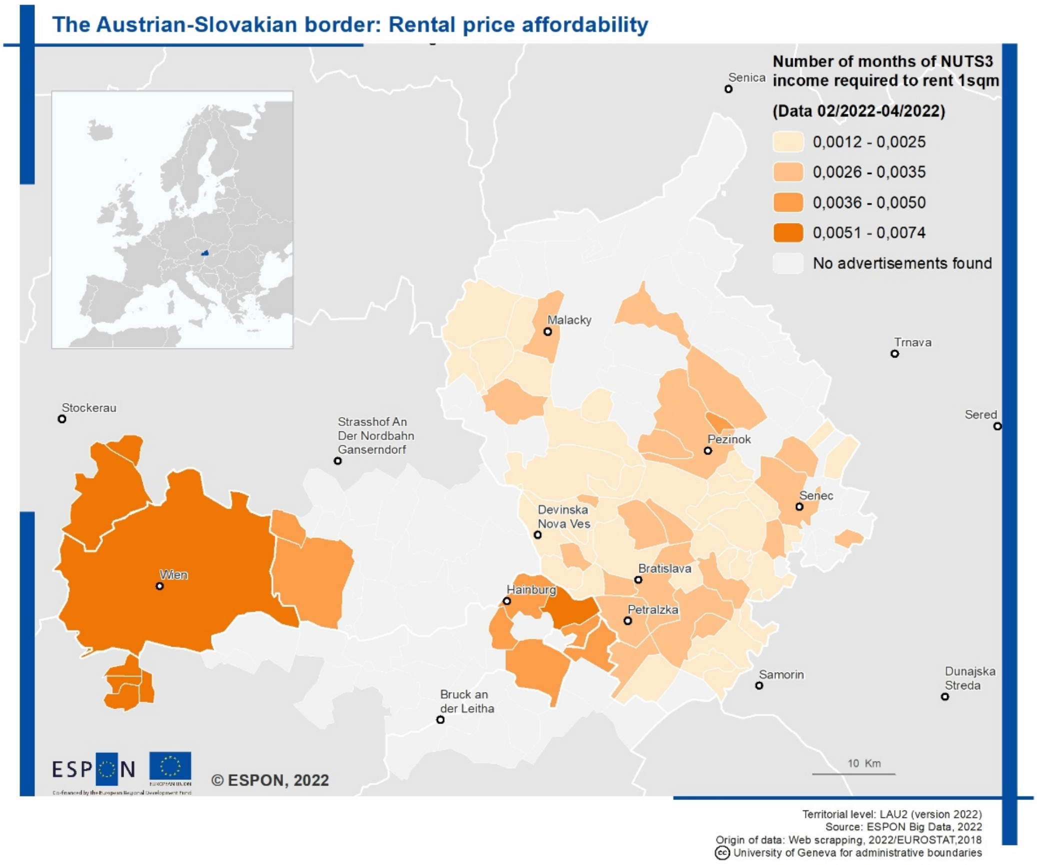


Figure 25: Rental Price Affordability

Indicator and data

This map displays a composite indicator on affordability of renting a dwelling. The indicator is calculated as the average price per sqm in each LAU2 over the monthly income measured as PPP in the NUTS3 region in which the advertisement is located. The resulting figure is the number of months of income required to rent a sqm of dwelling.

Trends and patterns

Similar to the affordability of sales prices, the disparities between Austria and Slovakia indicate that affordability is less in Austria municipalities in comparison to Slovakian municipalities. The metropolitan area of Vienna has higher prices than all Slovakian municipalities. In contrast to sales prices, the spatial pattern is more homogenous on the Slovakian side with 0,002 to 0,004 months needed to work to rent 1 sqm.

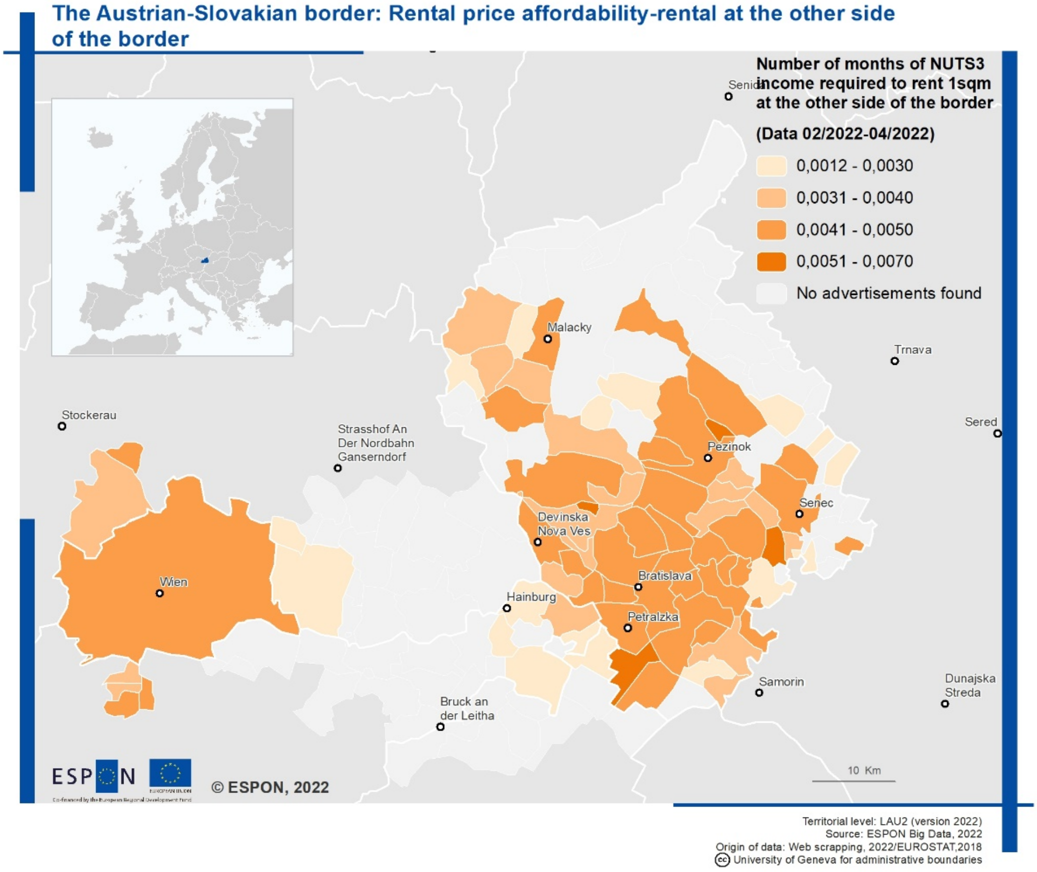


Figure 26: Rental price affordability- rental at the other side of the border

Indicator and data

This map displays a composite indicator on affordability of renting a dwelling. The indicator is calculated as the average price per sqm in each LAU2 over the monthly income measured as PPP in the NUTS3 region opposite to that in which the advertisement is located. The resulting figure is the number of months of income required to rent a sqm of dwelling on the other side of the border. So here we simultaneously see for example how many months of income from Bratislava Region (SK010) would be needed to rent 1 sqm in Hainburg and how many months of income from Nord Burgenland (AT112) would be needed to rent 1 sqm in Petrzalka.

Trends and patterns

The rental price affordability displays some differences from citizens on each side of the border. For a person living in Nord Burgenland, it would take more monthly work to rent in Slovakia then for a Slovakian to rent in Austria.

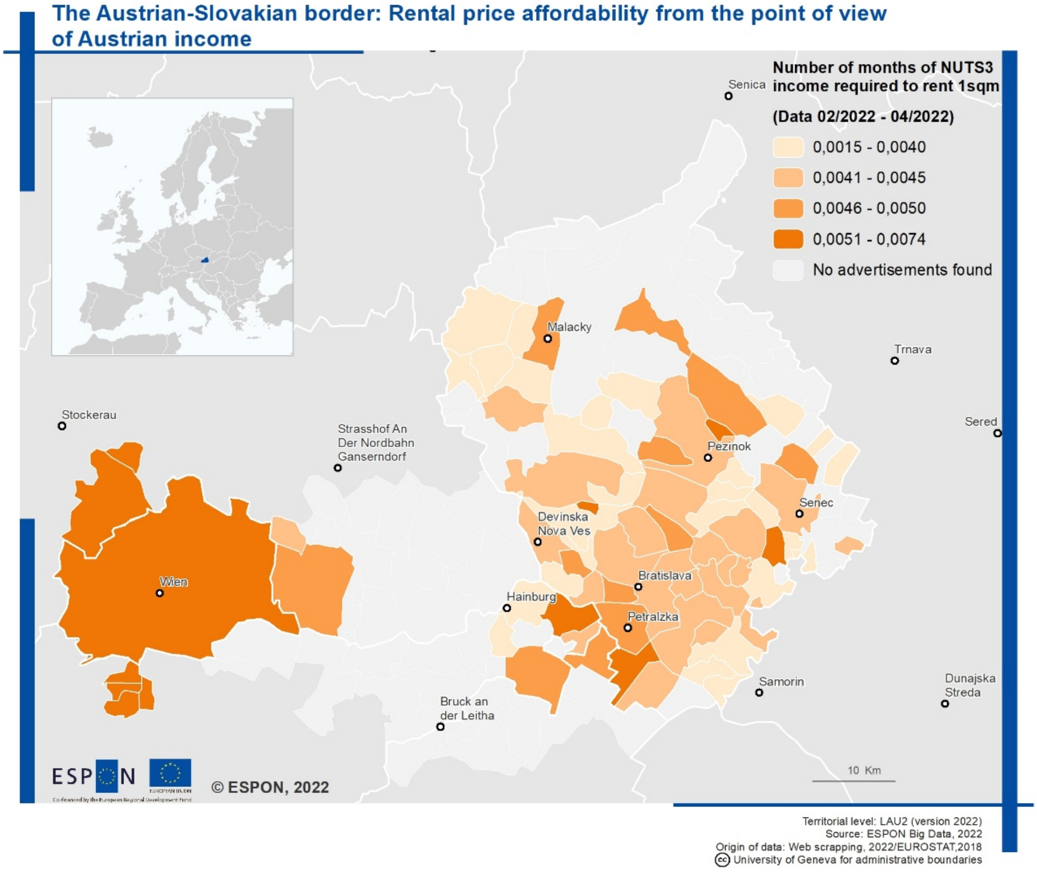


Figure 27: Rental Price Affordability - from an Austrian worker's perspective

Indicator and data

This map displays a composite indicator on affordability of renting a dwelling. The indicator is calculated as the average rent per sqm in each LAU2 over the monthly income measured as PPP in the NUTS3 region of Nord Burgenland. The resulting figure is the number of months of income required to rent a sqm of dwelling in any municipality of the analysed area. This tells us how expensive it is for a person working in the Austrian side to live in the cross-border area.

Trends and patterns

What we observe in this map is that the Austrian renters are being squeezed within the private rental sector as prices in Vienna are becoming increasingly expensive (and less affordable as a result) while prices within the Austrian border region and across the border in Slovakia are not only becoming less affordable but are also subject to Slovak households who can outbid the average Austrian household with their higher incomes.

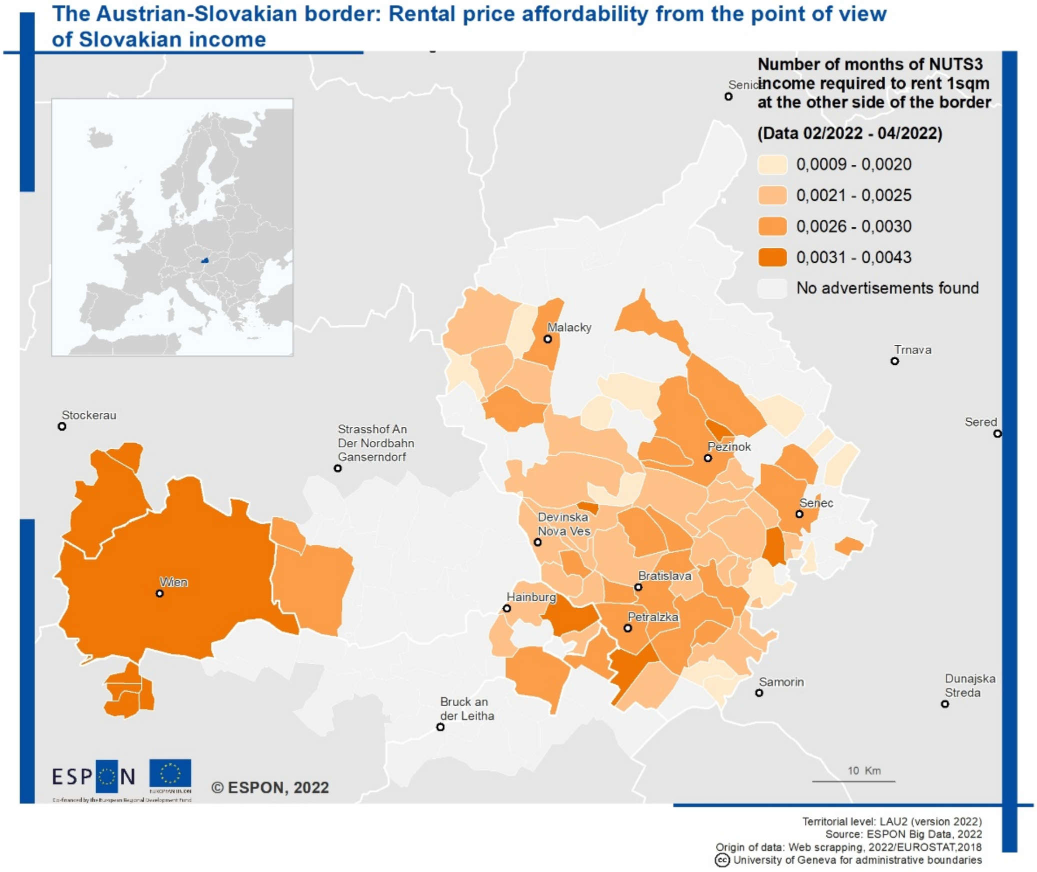


Figure 28: Rental Price Affordability - from a Slovakian worker's perspective

Indicator and data

This map displays a composite indicator on affordability of renting a dwelling. The indicator is calculated as the average rent per sqm in each LAU2 over the monthly income measured as PPP in the NUTS3 region of Bratislava. The resulting figure is the number of months of income required to rent a sqm of dwelling in any municipality of the analysed area. This tells us how expensive it is for a person working in the Slovakian side to live in the cross-border area.

Trends and patterns

In this map, we observe how the Slovakian household is able to potentially move across the border and rent Austrian accommodation for at a more affordable price than what they could in Bratislava. This provides an interesting insight as the Slovakian private rental sector is quite small (especially compared to Austria), and it illustrates that despite the cultural preference for owner-occupied housing in Slovakia, parts of Inner Bratislava are becoming increasingly less affordable to rent from as the region's economy continues to grow so rapidly.

Months to Rent 1 sqm	Austrian income	Slovakian income
Austrian LAU	0,0048	0,0028
Slovakian LAU	0,0044	0,0026

- Prices are 41% more affordable on average with a Slovakian salary
- Prices are 9% more affordable on average in the Slovakian side

Figure 29: Mean Difference in Rental Price Affordability

Indicator and data

This indicator is built using the affordability per LAU2 unit considering the income of either sides of the border.

We calculate the average affordability measured as number of months of salary needed to rent 1 sqm of property (or 1 room in the case of Ireland-Northern Ireland). Given that we do not have the real average salary figures, we use the GDP per capita PPP as a proxy.

The indicator provides 4 figures with the affordability of property at either country, with the perspective of a person working at either side of the border. In addition, we calculate the affordability variation depending on the country and depending on the income.

Trends and patterns

According to this indicator's calculations, Slovakian incomes are the strongest within the cross-border housing market while Slovak households can find the most value for their money in renting residential property within their home region. Hence, a border effect is not observed on the rental market within this functional cross-border area.

3.2.3 Profitability

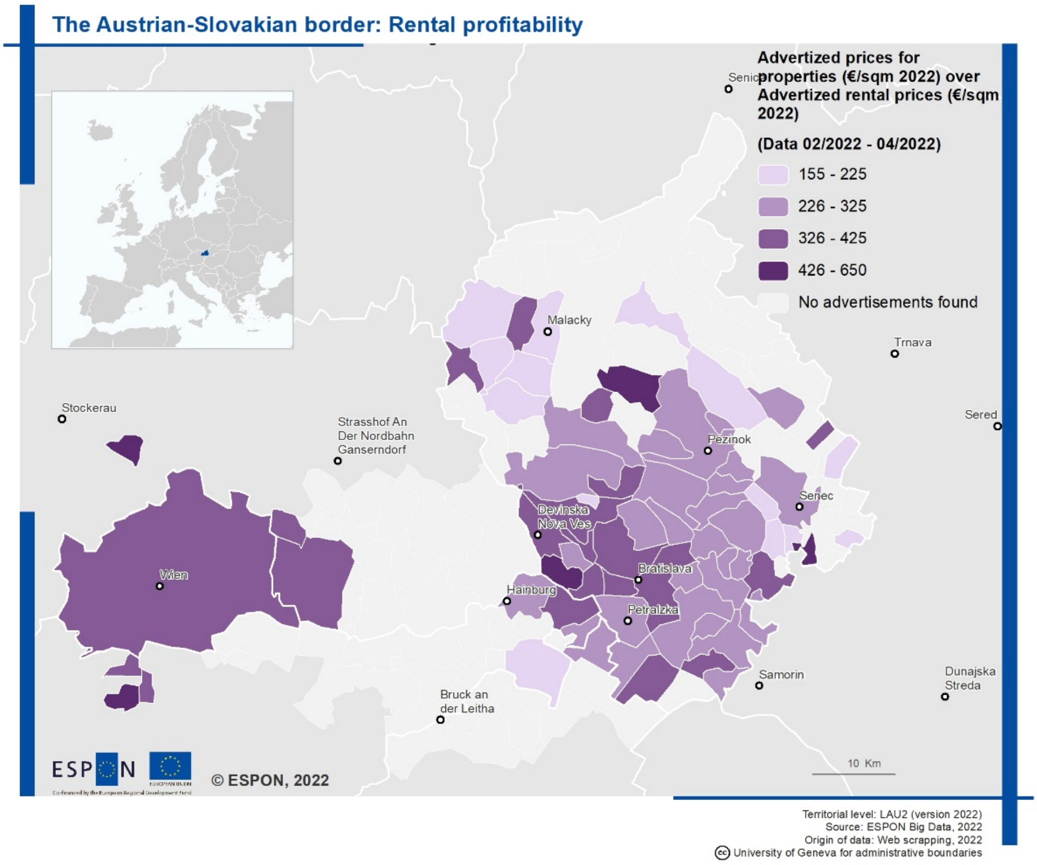


Figure 30: Rental Profitability

Indicator and data

This indicator is a quotient between the average buying price over the average rental price in each LAU2 unit, both prices are calculated in previous indicators. It is available only in LAU2 units where both valid buying and renting advertisements exist.

Given that buying price is much higher than renting (per square meter), this quotient is always a big number and so it is never even (equal to one). To interpret the map, we need to compare values across the different LAU2 units: higher values indicate that buying is proportionally more expensive that renting; thus, renting might be a better option. Lower values indicate the opposite.

Trends and patterns

The maps on rental profitability, however, indicate that purchasing is most expensive and least profitable in urban centres in addition to some hotspots in certain rural areas. In Slovakia, for example high profitability in renting can be found in LAU2 units to the north of Bratislava despite not presenting overall high prices in housing.

3.2.4 Interim Conclusion: Affordability and Profitability

The main factor influencing differences in affordability across this region is the strength of the GDP per capita of Bratislava over its neighbouring Austrian region (North Burgenland). As reported within the policy context, a primary driver inducing a cross-border housing market within this region is the growth of the Bratislava economy due to its car and transport industry agglomerations. With more Slovak households sustaining greater incomes and more wealth than their Austrian neighbours, Slovakians can outcompete Austrians for housing in the border region. From an affordability point of view, Austrians in the border region are negatively impacted by the influx of Slovak migrants pushing up prices. This is phenomenon is distinctly observed in the affordability maps of the opposite country's income where we can clearly see how Slovakians are at an advantage over their Austrian counterparts in terms of less time required for saving income to afford an Austrian border property.

Another aspect potentially fuelling the growth of the housing market in this border region is the growing unaffordability of Vienna and Bratislava. As both capital cities experience economic growth and demand for housing further increases, housing prices continue to spiral upward within the cities' boundaries and housing affordability consequently decreases. Hence, housing in the peripheral border region becomes more enticing as city dwellers seek housing further afield in order to satisfy their housing needs within the confines of their income. This phenomenon is particularly observed in the Slovak household moving into the Austrian border region to take advantage of similar affordability as central Bratislava where bilingual services of interest can suit their household requirements.

Furthermore, the mean difference in sales affordability for this region truly epitomises the type of border effect that we were seeking to find from this study. Through a few simple calculations, we can trace how the mean difference intertwines with the narratives emerging on regional housing affordability to indicate how there are economic advantages for a Slovakian household to migrate across the border and purchase housing in Austria. In terms of future study, this finding provides a basis for how housing should be treated as a cross-border issue and that the phenomena of cross-border housing markets will continue to generate regional inequalities which can challenge social cohesion policies of the EU.

Regarding profitability, an interesting finding from the data shows how it can be potentially more profitable to rent in Bratislava. This reinforces the idea set forth in 3.1.1 that Bratislava has a growing private rental sector. Given how it would be more economically advantageous to rent in Bratislava, we may be observing a trend that renting is becoming an increasingly popular choice of tenure for households in Slovakia coinciding with international trends within the private rental sector. Across the entire region though, the profitability indicator indicates that it is less expensive to rent in both cities. In more rural locals, renting becomes increasingly less profitable than purchasing, but in general, this cross-border region can be characterised by having a cheaper rental market.

3.3 Advertisement Duration

This subchapter details information pertaining to duration of how long the advertisements were posted and adds a temporal dimension to the indicators and analysis.

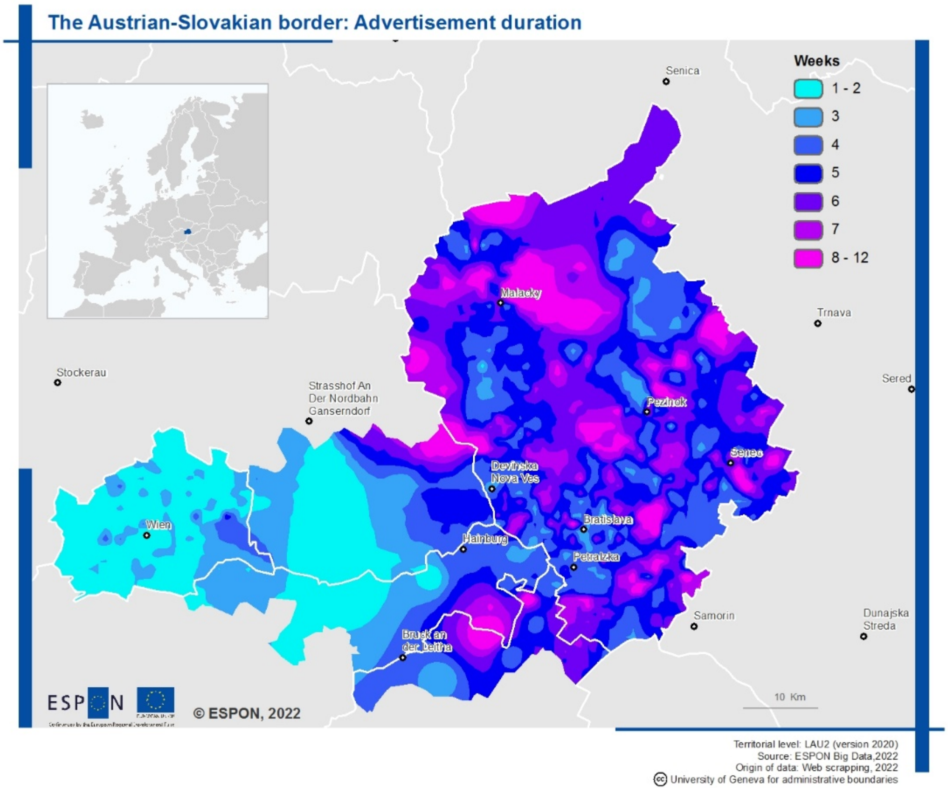


Figure 17: Length of Advertisement Posting

Indicator and data

This map shows average length of the scraped advertisements. It is computed by counting how many times each advertisement appears during the 7 weeks we have scraped data (so it takes a value from 1 to 7). Afterwards, we apply the Inverse Distance Weight (IDW) methodology from ArcGIS toolbox to compute a surface grid to extrapolate the advertisement length in the whole region analysed.

Trends and patterns

The analysis of the duration of advertisements reveals that overall, the duration of offers staying online in Vienna is roughly 2-3 weeks whereas in most of the Slovakian area it is 5 weeks or longer. Thus, the time is shorter in Austria indicating that there is more activity and a faster turnaround for offers. Yet, the graphic also indicates a longer duration at the border suggesting dynamics closer to the timeframes of the Slovakian market than the Austrian market. Furthermore, the timeframes of 5-8 weeks in the border region are longer than in the centre of Bratislava indicating that the demand in the border region may not be as high – or that the type of offers on the market does not meet the specific needs of the prospective population.

3.3.1 Interim Conclusion: Advertisement Duration

Based on the indicator detailing the length of advertisement posting, Vienna has the most active market within the region which illustrates the high demand to live in the Austrian capital. Bratislava also has an active market albeit not as fast as the Viennese market. Rural areas have the least active market with the longest advert postings including the Austrian border region. In fact, the Austrian border region's activity shares more in common with certain parts of the Slovakian market than the highly active Viennese market. Given the longer advert postings within the border region, we can conject that the border region either had a poor offer of housing available during the scraping period, the area itself is not as desired as other parts of the region or the most desired market offerings were not listed on webpages.

4 Discussion & Conclusions

This case study has focused on the twin city region of Vienna and Bratislava and has specifically investigated how a cross-border housing market is manifesting itself across the region. We note how the migration of Slovakian households into the Austrian border region has acted as an instigator for developing cross-border dynamics where bilingual services and reasonable housing prices entice new households to make this move.

Overall, there is a border effect evident where there is an incentive for Slovakian citizens to buy across the border as both renting and buying with a Slovakian income is allowing Slovak households to buy a place with more sqm for less money. The price range in the corridors cannot be analysed coherently though due to **a lack of advertisements found within the corridor**. However, analysis of the accessibility maps illustrates how integrated the border region is specifically via train and car.

Hence, there is clear evidence of a cross-border housing market evolving as more Slovakians households begin to **take advantage of regional imbalances in economic purchasing power** to migrate across the border and settle in the Bratislava hinterland across the Austrian border. This cross-border housing market is a **primarily Slovakian phenomenon** though as we see few pull factors motivating Austrians to settle in Bratislava and commute back to work in Austria.

Slovakians are motivated to move into the Austrian border region for a number of reasons beyond just price and affordability though. Many Slovakian households wish to avail of bilingual services within the Austrian social system as they can access different educational opportunities for their children across the Austrian border region. Nevertheless, the **rapid growth of the Bratislava economy and the higher GDP per capita within the Slovakian capital region** has allowed this cross-border housing market to manifest as **more Slovak households can take advantage of economic asymmetries** present across the border which can better serve the needs of their household.

Box 2: Household Scenario Conclusion

After searching for some time, Ján and Katarína found a single-family house in the municipality of Hainburg which met their needs. When they placed an offer on the house, they entered a bidding war against a local Austrian household also interested in purchasing the house. Due to Ján's strong income from his well-paid engineering job, Ján and Katarína were able to outbid the other interested party, and now they own a home in Austria. Despite the bidding war and high local demand for the house, Ján and Katarína are happy with their purchase as it matches their current needs and the final sale's price was still cheaper than similar properties in central Bratislava. Beyond these economic whims though, Ján and Katarína are satisfied to be living in a community with access to unique service of general interest and other amenities which suit their needs.

Another key determinant affecting the results of this research has been **the impact of Covid-19** on the case study region. Given the unpredictability of the pandemic, all of our results must be considered with regard to its major impact. While research on how Covid-19 has impacted housing trends is still forthcoming, we understand that demand for more rural, single-family houses with greater access to greenspace has been in high demand since the second half of the pandemic as households acclimatised to teleworking and mandatory public health guidelines regarding social distancing. For our focus on the rural border region of Austria, this will have meant that housing is in high demand as households leave the city for more spacious environs. As our research takes place in Q1 of 2022, when many of the pandemic's restrictions were coming to an end, we must caution that our results will have been skewed by the disproportionate effect the pandemic has had on changing housing trends and demands.

In order to observe more concrete evidence of a cross-border housing market between Bratislava and its Austrian hinterland, further data scraping and communication with local realtors and landlords on housing prices can provide further detail as to how the cross-border housing market functions and whether this dynamic will continue to emerge post-covid. It is important to note that many of the jobs which have spurred the economic growth in Bratislava are connected with the transport and manufacturing industries which do not support teleworking roles. Hence, efficient access to the major employment centres of Bratislava is essential for sustaining its regional competitiveness. Nevertheless, the indicators from this study do illustrate a certain border effect on the housing market observed in Slovakian households migrating to the Austrian border region to take advantage of emerging economic asymmetries as a consequence of Bratislava's growing economy.

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