

URBAN–SUBURBAN RELATIONS AND QUALITY OF LIFE ALONG THE MARIBOR–GRAZ CORRIDOR: A STUDY OF FOUR SETTLEMENTS IN NORTHEAST SLOVENIA

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This paper examines spatial, demographic, and functional transformations in the Maribor city region through case studies of four cities—Šentilj, Miklavž, Maribor Studenci, and Kidričeve—located along the southern part of the Maribor–Graz corridor. Based on field surveys, interviews, municipal consultations, and direct observation conducted between 2024 and 2025, the study identifies suburbanisation, cross-border mobility, and post-industrial restructuring as the key processes shaping contemporary settlement development. Although each settlement exhibits distinct historical and economic trajectories, they share common challenges related to housing pressures, mobility patterns, demographic change, and administrative fragmentation. The findings show that the region is becoming increasingly integrated into an urban agglomeration influenced by labour migration to Austria and the central role of Maribor as the main employment centre. The paper concludes that coordinated spatial planning, sustainable mobility improvements, and strengthened cross-municipal cooperation are essential for managing future development within this evolving urban–suburban landscape.

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ODNOSI MED MESTOM IN PREDMESTJEM TER KAKOVOST ŽIVLJENJA OB KORIDORU MARIBOR–GRADEC: ŠTUDIJA ŠTIRIH NASELIJ V SEVEROVZHODNI SLOVENIJI

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Ključne besede:
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Miklavž,
Studenci,
postindustrijska preobrazba,
prostorsko načrtovanje.

Prispevek preučuje prostorske, demografske in funkcijске preobrazbe v mestni regiji Maribor na podlagi študij primerov štirih naselij – Šentilj, Miklavž, Maribor Studenci in Kidričovo – ki ležijo ob južnem delu koridorja Maribor–Gradec. Na podlagi terenskih anket, intervjujev, posvetov s predstavnikom občin in neposrednega opazovanja, izvedenih med letoma 2024 in 2025, raziskava prepoznavata suburbanizacijo, čezmejno mobilnost in postindustrijsko prestrukturiranje kot ključne procese, ki oblikujejo sodobni razvoj naselij. Čeprav ima vsako naselje svojevrstne razvojne poti, se soočajo s skupnimi izzivi, povezanimi s pritiski na stanovanjski trg, mobilnostnimi vzorci, demografskimi spremembami in upravno razdrobljenostjo. Ugotovitve kažejo, da se regija preobraža v urbano aglomeracijo, na katero vplivajo delovne migracije v Avstrijo ter osrednja vloga Maribora kot glavnega zaposlitvenega središča. Prispevek zaključuje, da so za usmerjanje prihodnjega razvoja v tem spremenljajočem se urbanem-suburbanem prostoru ključni usklajeno prostorsko načrtovanje, izboljšave trajnostne mobilnosti in okrepljeno medobčinsko sodelovanje.

1 Introduction

Researching the connection between urban areas and their surroundings has long been a topic of interest to urban geographers. In recent decades, cities and their surrounding settlements in Europe have begun to form an integrated spatial unit. In many cases, nearby villages with a distinctly rural character have also been absorbed into urban areas. Demographic growth, the territorial expansion of cities, and the transformation of relations between a city and its surroundings have altered the physiognomic appearance not only of cities but also of their wider surroundings. Because of this, many urban geographers describe the city and its immediate and broader surroundings as a single organism, often referred to as an urban region (Ravbar, 1990).

In the 1960s, the growth of the urban population slowed down across much of Western and Central Europe. Centripetal processes gradually shifted into centrifugal ones. The movement of residents and production activities toward the urban fringes not only led to the spatial expansion of cities but also strengthened functional links between urban and rural areas. The increase in population and related activities on the edges of cities and urban agglomerations is described with terms such as urban sprawl, slubs, rural–urban fringe, suburbs, and the rural–urban continuum (Kokole, 1976).

In Maribor, the phenomenon of suburbanization is understood as the spatial expression of broader social changes in society. The visible manifestations of these changes are not only reflected in the growth of areas with single-family, detached houses on the urban fringe, in the transformation of the agrarian landscape, and in the so-called “urban flight”. As illustrated in Figure 1, between 1991 and 2002, the population in the surroundings of Maribor increased, while the population within the city itself declined (Uršič, 2010). The population growth concentrated on the urban fringes and along major transport routes, such as toward Šentilj at the border with Austria, while the city core continued to lose residents.

This process has so far been impossible to prevent or mitigate, despite planning efforts at various levels, in Slovenia through national, regional, and municipal spatial plans, which have been carried out intensively since at least the mid-1970s, and in Europe, where such planning traditions are even longer (Ravbar, 1990).

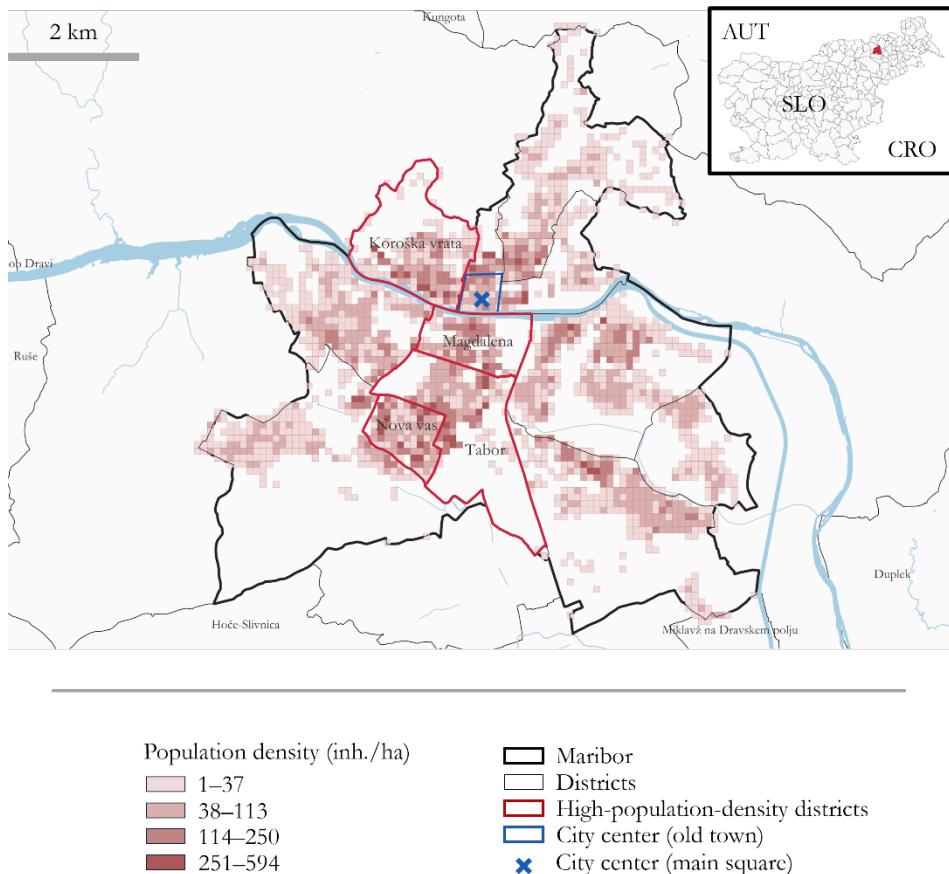


Figure 1: Within the administrative area of Maribor, the highest population density is not found in the historical city centre but in the outer residential zones (shown with darker red colours), showing suburbanization trends.

(Source: Authors, 2025; Data: SURS, 2024; GURS, 2025; ARSO, 2025).

The urban region of Maribor (the area from which daily migration predominantly flows toward the city of Maribor) covers a large part of northeastern Slovenia (Drožg, 2006), including the municipalities of the Drava Valley, the western part of Slovenske gorice, and the Drava Plain (Figure 2). Daily migrants within the Municipality of Maribor represent only one-fifth of all migrants (Krojs, 2010).

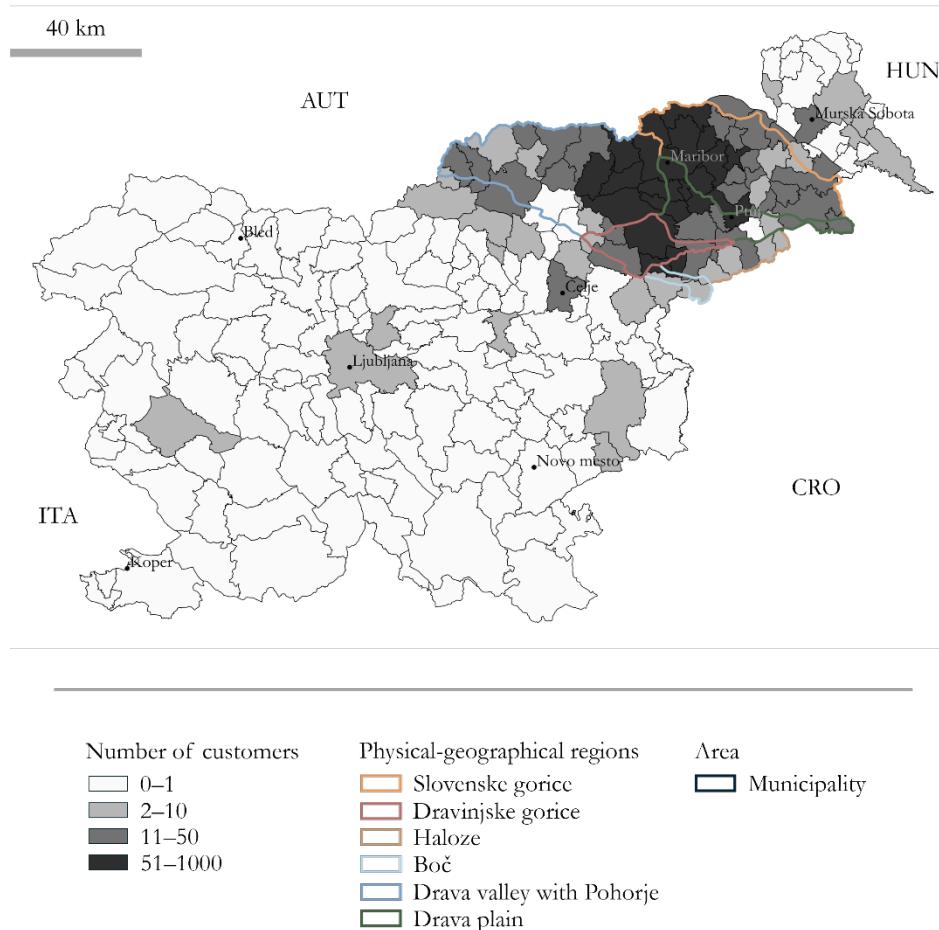


Figure 2: City region defined by the origin of customers visiting shopping centres in Maribor.

(Source: Authors, 2025; Data: Drozg, 2006).

Administrative, economic, and social ties have formed between Maribor and the surrounding settlements (Figure 3). The rapid development of transportation and the improvement of transport infrastructure have also had a significant influence on this process, as they reduced the time needed to travel from the city to suburban settlements and back (Krojs, 2010).

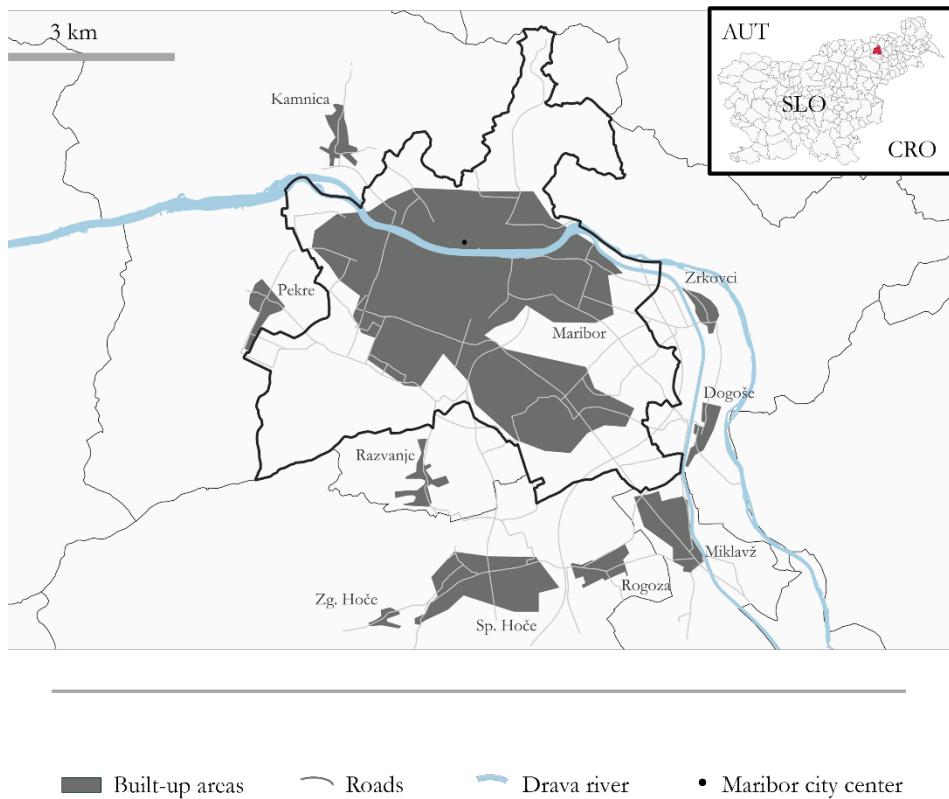


Figure 3: Urban region of Maribor, including the city and its surrounding satellite settlements.

(Source: Authors, 2025; Data: GURS, 2025).

Suburban settlements such as Kamnica, Pekre, Razvanje, Spodnje Hoče and Zgornje Hoče, Bohova, Rogoza, Miklavž, Zrkovci, and Dogoše have, because of these processes in the past, rapidly lost part of their independent functions (Lobnik, 1999). Suburbanization was followed by a fragmentation of the administrative territory. New municipalities were established (Figure 11), which granted them autonomy, yet they remained functionally dependent on the Municipality of Maribor (Čokert, 2005).

While this chapter focuses on the Maribor urban region, it forms part of a broader spatial development axis connecting three agglomerations: Graz (Gradec), Leibnitz (Lipnica) and Maribor. The two regional centres (the city of Graz in the Southern

Styria region, Austria and the city of Maribor in the Podravje region, Slovenia) are situated only 60 km apart. Strengthened global connectivity transformed settlement patterns, with large retail centres, logistics hubs, technology parks, and recreational complexes emerging between Graz and Maribor (Pogačar & Sitar, 2009).

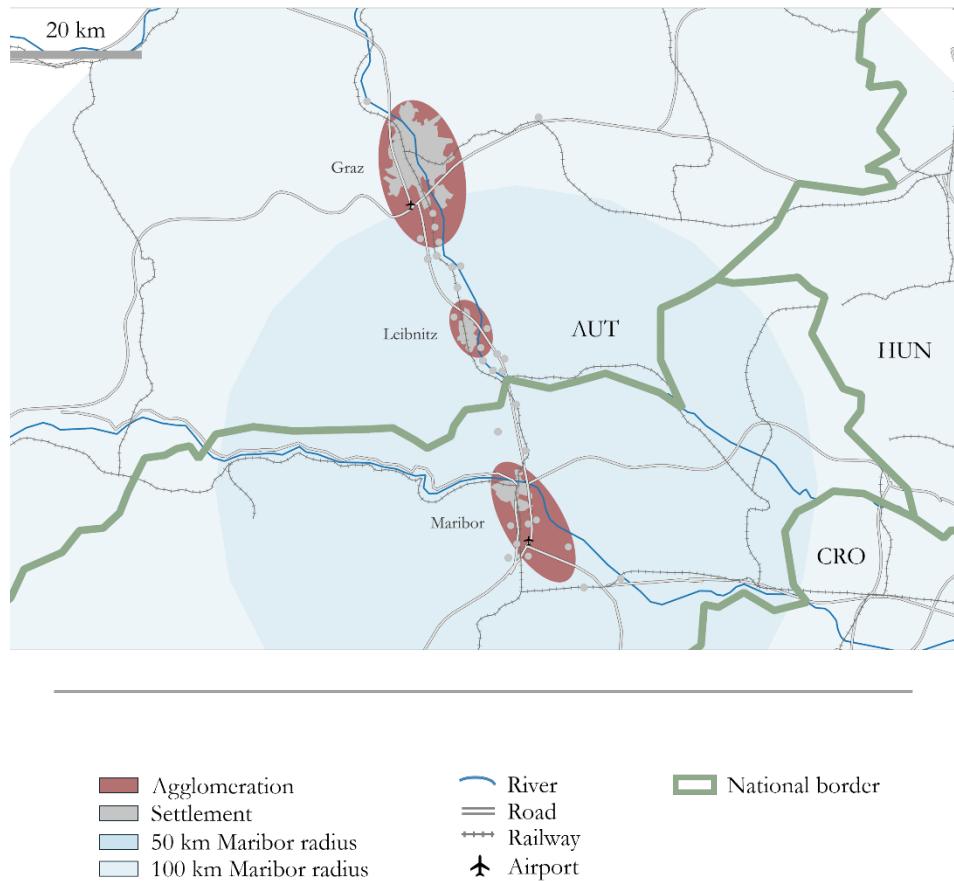


Figure 4: Agglomerations along the spatial development axis between Graz and Maribor, including settlements that are functionally part of these agglomerations.

(Source: Authors, 2025; Data: Pogačar and Sitar, 2009; Natural Earth, 2025).

A specific feature of this region is that its spatial development continues to be influenced by the national border, even though both Austria and Slovenia joined the Schengen Area in 2007, abolished internal border controls, and now share a common visa policy. The contrast across the border persists due to significant wage

differences and Austria's continued extension of its border controls with Slovenia, reintroduced in 2015 during the migrant crisis.

Border municipalities in northeastern Slovenia, situated along the Austrian border, continually face demographic decline and significant population loss, primarily driven by rural–urban migration. Increased mobility has also transformed local lifestyles, as daily activity spaces for work, education, and services increasingly extend beyond small settlements. While Maribor remains the main employment centre, media reports suggest that around 40,000 labour migrants commute daily from northeastern Slovenia to Austria (see for example: Bedek, 2025).

Urban development along the southern end of the Graz–Maribor transport corridor will be analysed through the concepts of compact settlements and the urban–rural dichotomy, both of which are clearly visible in the region.

2 History of the spatial development of the border region between Graz and Maribor

After World War II, southeastern Austria—especially Southern Styria and Burgenland—was in a disadvantaged geostrategic position along the Iron Curtain, becoming some of the country's poorest and most underdeveloped regions. Conditions began improving in the mid-1970s as relations with Yugoslavia softened. Subsequent decades saw strong social and economic progress, supported by regional development policies, subsidies for agriculture, tourism, and viticulture, as well as the rise of cross-border “shopping tourism”. Border towns such as Leibnitz, Strass, and Spielfeld experienced rapid urban growth through new retail and service facilities, while Graz strengthened its role in cross-border economic flows. Southern Styria continues to show positive demographic and economic indicators.

Within the Austro-Hungarian Empire, the Graz–Maribor area belonged to the Duchy of Styria and remained strongly connected through transport links, including the Vienna–Trieste railway. However, after 1918 and throughout the mid-20th century, the new national border and different political–economic systems led to separate development paths. Border areas on both sides became peripheral and depopulated, while Graz and Maribor developed as regional industrial centres—Maribor, in particular, as a major Yugoslav textile and metal industry hub.

From the 1970s onward, warming international relations increased cross-border flows. The construction of the Graz–Maribor motorway further enhanced mobility, turning the corridor into a major European transport route. Yet, economic disparities between Austria and Slovenia continued to grow. Graz continued its prosperous expansion, while Maribor entered a long period of industrial stagnation and rising unemployment.

After Slovenia's independence (1991) and entry into the EU (2004), cross-border cooperation intensified. Urbanisation spread beyond city borders, forming new urban nodes along the transport axis. At the same time, the opening of the border paradoxically reduced daily cross-border commuting, while public transport remained weak. The formerly important Šentilj–Spielfeld crossing lost much of its function (Pogačar & Sitar, 2009).

Maribor faced severe unemployment throughout the 1990s and early 2000s, peaking at almost 17% in 2004, while suburban areas expanded rapidly. Small and medium-sized enterprises became the main drivers of new employment. Maribor's recovery from the economic downturn strengthened particularly after the COVID-19 pandemic, which is now also reflected in renewed construction activity within the city (not just in the outskirts).

3 Methods

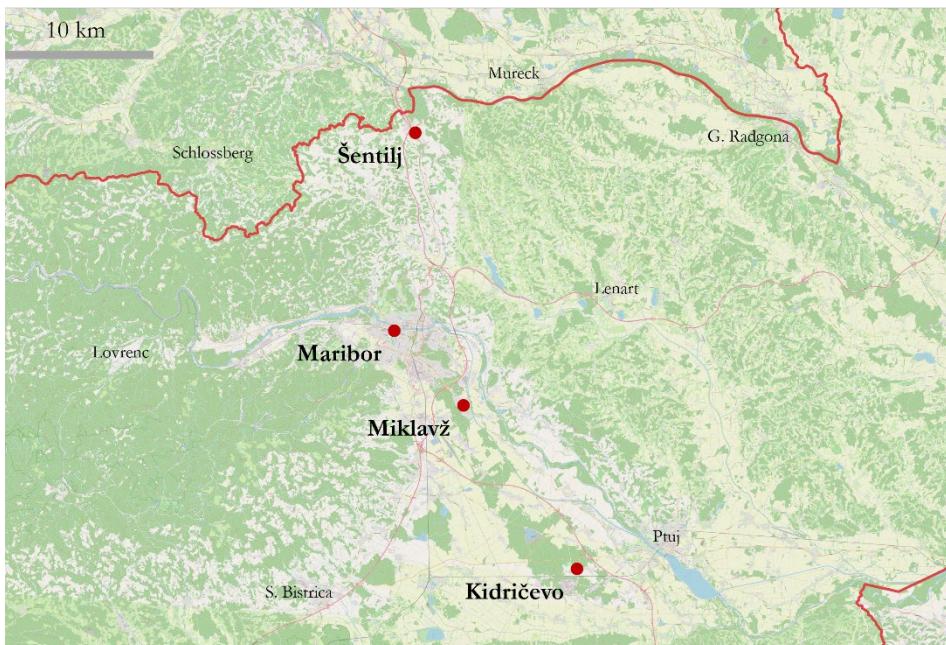
The results of this chapter are based on three phases of field-based activities conducted with students at the University of Maribor (partly in cooperation with the University of Graz) in four case studies (Šentilj, Maribor Studenci, Miklavž and Kidričevo). The methodological approach combines a short resident survey, field observation, and walking interviews (Table 1).

In Phase 1 (December 2024), students of the Geography of Settlements course (academic year 2024/2025) conducted an on-site questionnaire survey with passers-by in Kidričevo ($N = 61$). The average age of respondents was 41 years. The questionnaire covered four main themes: residents' perceptions of the settlement's urban design, the quality of the living environment, mobility and access to services, and social connectedness within the community.

Table 1: Research phases in the selected case studies

Phase	Field-based activity	Timeframe	Approach
1	Survey in Kidričovo	December 2024	Short street survey with residents
2	Interviews in Miklavž	October 2025	Semi-structured walking interviews
3	Fieldwork and consultations	November 2025	Field observation and structured consultations

In Phase 2 (October 2025), students conducted semi-structured interviews with residents of Miklavž na Dravskem polju. The interviews explored suburbanisation processes, daily mobility, and perceptions of living in a rapidly urbanising settlement.

**Figure 5: Locations of four case studies for field-based activities.**

(Source: Authors, 2025; Data: GURS, 2025; Open Street Map, 2025).

In Phase 3 (November 2025), students of the Urban Geography and Geography of Settlements courses (academic year 2025/2026) carried out field observations in four settlements (Šentilj, Maribor Studenci, Miklavž and Kidričovo), together with students from the University of Graz. In Šentilj, Miklavž and Kidričovo, the group

held structured discussions with the mayor, the head of municipal administration and representatives of the spatial planning department, focusing on spatial development, heritage protection, and demographic change. In Maribor Studenci, the informant was the representative of the leading real estate investment company in Maribor.

Survey results, field observations, and interview findings were combined to provide an integrated understanding of spatial trends and urban–suburban dynamics along the Šentilj–Kidričeve section of the Graz–Maribor corridor.

4 Spatial trends in four towns in north-east Slovenia

4.1 Case study I: Šentilj, a cross-border transit town

The first case study town is Šentilj v Slovenskih goricah, which is also the largest settlement and the administrative seat of the Municipality of Šentilj (roughly 8,500 inhabitants). It is located in the northwestern part of the Slovenske gorice hills (the hilly area between the Drava and Mura rivers). The town lies along the Maribor–Graz railway line and the motorway at the border with Austria, which gives it a strong transit character.

The town expanded along the Maribor–Graz railway line (the Austro-Hungarian Southern Railway reached the town as early as 1843), while today's residential development is found mainly on the slopes of the surrounding hills (Ivanič, 2011; Figure 6).

Due to its favourable position near the border (many residents work in Austria), the population increased by 30% between 1961 and 1991. The municipality currently has a positive migration rate, as more people move in than move out. However, there are spatial differences: rural areas are experiencing depopulation, whereas urban settlements are attracting new residents.

In 2023, there were 2,770 employed residents, of whom 28.16% worked within the municipality, while the rest commuted elsewhere. Most worked in Maribor (37.17%), Ljubljana (7.62%), and Lenart (5.85%), which shows a high level of daily commuting. The labour migration index of 62.6 indicates that the municipality is classified as a

moderately habitable residential municipality (as opposed to an employment-based municipality). It demonstrates a strong dependence on external job opportunities, including those in Austria. Because of better working conditions and higher salaries, many residents commute daily across the border.

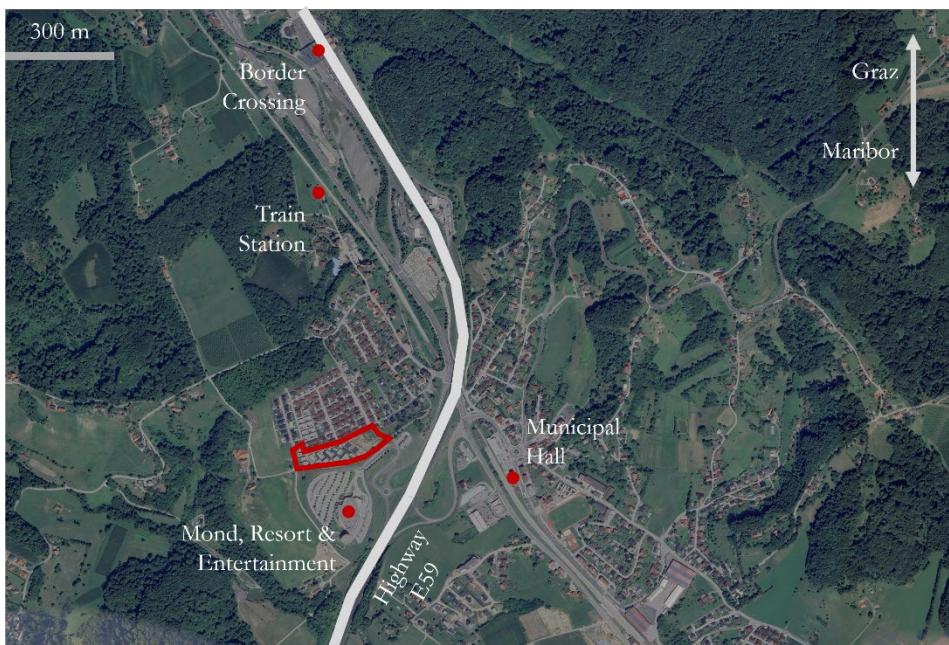


Figure 6: The town of Šentilj between the border crossing and Mond, showing the construction site near the highway.

(Source: Authors, 2025; Data: Google Satellite, 2025).

The increasing share of people older than 60 (which requires additional investment in age-friendly infrastructure) and the stabilised, non-growing number of young residents pose a challenge. This is due to the fact that many working-age inhabitants are not officially registered in this municipality. Therefore, Šentilj is considered a “dormitory town”, similar to some tourist municipalities, and many residents do not pay taxes locally.

The mayor emphasises that they want to attract young families, which is supported through concrete policy measures: numerous new housing units are being built, and young families are eligible for reduced municipal utility fees. The municipality also

aims to attract young professionals who could contribute to the development of the town and the wider municipality.

The local economy is based on small businesses and crafts, while good transport connections and proximity to the border give the municipality strategic importance as a transit area. Šentilj also hosts a metal industry plant, and part of the active population commutes to Maribor or to Sladki Vrh, home of the prominent Paloma factory. Paloma represents a major source of income for the wider area and employs many workers from Šentilj and neighbouring municipalities. As a result, Šentilj functions as a smaller gravitational centre attracting daily commuters from the broader region.

Municipal income also comes from taxes paid by the casino company Mond (Figure 7 owned by the Nova Gorica-based company HIT), where 80% of customers are Austrians, including a considerable number of Chinese visitors. Because of the casino, Šentilj ranks among the fastest-growing tourist municipalities in Slovenia. The municipality recognises this but stresses that it does not want to pursue mass tourism.

Economic potential also lies in micro-tourism, focusing on hiking and cycling. Important features include the cycling route along the Mura River towards Graz (the Mura ferry transports around 20,000 cyclists per year), as well as the sports hall that hosts international volleyball matches.

From the second half of the 19th century onwards, tensions between the German-speaking and Slovene-speaking populations increased, and separate associations were established (Kmetijsko bralno društvo, Südmark, Schulverein, Slovenska domovina, Posojilnica). In the struggle for the northern border after World War I, the residents of Šentilj supported General Rudolf Maister, who had his headquarters in the town for several days. During the Slovenian War of Independence, on 2 July 1991, members of the Territorial Defence recaptured the border station in Šentilj. Today, however, strong cultural ties exist between the communities on both sides of the border.

Casino Mond serves as a significant link between Šentilj and neighbouring Austria. Cooperation extends far beyond tourism—the municipality and Austrian neighbouring communities collaborate in many areas: mutual firefighting assistance,

a shared cycling trail and ferry on the Mura River, joint festivals, village celebrations, and sports events. Some Austrian sports clubs, for instance, regularly play matches in the Šentilj sports hall.



Figure 7: Promotional image of Casino Mond in Šentilj, foregrounded by cyclists to showcase recreational cycling as a main local attraction.

Source: Pogačar & Sitar, 2009.

4.2 Case study II: Market-driven housing development and inner-urban densification in Maribor, Studenci

The Studenci district is located on the south bank of the Drava River (opposite the oldest part of the town, called Lent). The oldest part of Studenci, located along the river and around the Church of Saint Joseph, developed due to the establishment of workshops for the purposes of the Austro-Hungarian Southern Railway. The name Studenci (German: Brunndorf) derives from the murmuring springs of water in the area.

Studenci is a significant residential and transportation area of the city of Maribor, where numerous procedures are underway concerning changes in land use, urban planning conditions, public infrastructure, and the coordination of interests between residents and the municipality.

The southern part of Studenci (Figure 7) is currently the most sought-after area in Maribor for new construction, with several active building sites. Since the mid-20th century, the city's expansion has focused on this area (Mestna občina Maribor, 2025), partly due to the compact city planning concept, which aims to concentrate urban development in designated growth areas and prevent sprawl in rural surroundings. This expansion slowed in the 1990s due to deindustrialisation and Maribor's economic downturn and has only recently re-emerged with the city's economic recovery.

The newest residential neighbourhood is emerging near the Supernova (Qlandia) shopping centre (Figure 7). Our informant, a representative of the company Novogradnje—currently one of the largest private investors in residential buildings in the region—purchased this land from a city-owned company that had gone bankrupt. At this site, construction is underway to cater to upper-middle-class clientele. Five residential buildings have already been completed, and 3–5 additional buildings are either under construction or in the planning phase. The land is suitable for the construction of 1,000 apartments over the next 10 years. The apartments cost on average 3,500 € per square meter, meaning that the price for an average apartment is around 300,000 €.

Apartments are selling extremely quickly. In May 2025, during the sale of apartments planned for one of the buildings, as many as 75 units were sold in a single day, which demonstrates a strong demand and the success of the project. About 75% of buyers are from Slovenia, while 25% are investment buyers who later rent out the apartments. On average, one to two apartments per building remain vacant due to “property speculation”, while most are rented out. Since the COVID-19 crisis, prices have increased by 90% (making it a secure investment), even though many expected housing prices to fall at that time.



Figure 8: The area of Maribor between the Supernova shopping centre and Tabor sport hall, showing the construction site near the Engels Street.

(Source: Authors, 2025; Data: Google Satellite, 2025).



Figure 9: Group of students and professors from the University of Maribor and the University of Graz visiting the largest construction site of residential buildings in Maribor (November 2025)

Source: Authors

In the vicinity of the new buildings, amenities include a shopping centre, a bike-sharing station, and a car-sharing service. One of the present limitations in Studenci is the lack of schools and kindergartens nearby. The construction of a new school near the shopping centre is planned; however, it will not be financed by the company but rather by public funds. Besides schools, urban planning conditions for Studenci include the arrangement of squares, green areas, as well as requirements for greening and compliance with water protection regulations. A more frequent circular public bus line, Studenci–Tabor–Pobrežje–Melje–Center–Studenci, has already been established.

The average number of parking spaces per apartment is 1.5, whereas trends in sustainable plans of cities (for example in Graz) aim for one parking space per apartment.

4.3 Case study III: Suburbanization of the rural settlement of Miklavž in the gravitational area of Maribor

The old, medieval city centre of Miklavž na Dravskem polju (first mentioned in 1202) developed on the edge of the Drava terrace south of Maribor. The newer part of the settlement expanded in the 1960s and 1970s along the feeder canal of the Zlatoličje hydropower plant and into the Tezno forest area.

Today, it is an urbanised settlement (Figure 9) and the administrative centre of the municipality bearing the same name, located in the influence area of Maribor, with approximately 3,808 inhabitants. With ongoing urbanisation, the built-up area has been expanding rapidly, forests and fields are being converted, and the number of commercial and recreational surfaces is increasing. In recent years, numerous new buildings have emerged, and Miklavž is characterised by large single-family houses. The settlement is increasingly merging with Maribor, which has led to well-developed transportation connections between the two. The municipality is becoming increasingly built-up, population density is rising, and real estate prices are increasing in parallel with infrastructure development. The area mainly attracts young families seeking a quieter environment.

This is a suburban area of Maribor. For about fifty years, residents of Maribor have been relocating to Miklavž; however, in recent years this trend has intensified, marking a phase of pronounced suburbanisation, as Miklavž expands rapidly due to

in-migration. Suburbanisation is also visible in the work locations of residents. Most of the active population is employed in service activities (crafts, trade, hospitality, transport, and communications) (Ivanič, 2011). One of the weaknesses of the municipality is the lack of an industrial zone. Numerous small companies have emerged, but once they expanded, they had to relocate either to the Tezno Industrial Zone in Maribor or to the Hoče zone.



Figure 10: Transformation (urbanization) of the central part of Miklavž, originally rural in character. Renovations by the younger generation often do not adequately consider the settlement's traditional building heritage.

Most residents only live in Miklavž but commute to Maribor for work. The settlement is connected to Maribor by a well-maintained cycling path and a bus line that runs every 15 minutes during working days. Despite this, around 80% of residents use private cars for their daily commute, while 20% use public transport. The municipality is also considering joining the MBajk bike-sharing system, given its suburban position in relation to Maribor.

The Municipality of Miklavž na Dravskem polju was established in 1998, having previously been part of the larger Municipality of Maribor (Figure 11). Several new municipalities formed around Maribor, each with around 8,000 inhabitants. Miklavž covers only 12.5 km² and has 5,915 inhabitants (2011). Therefore, it collaborates with Maribor and shares certain public services, such as waste management, sewage systems, and spatial planning. As the mayor noted, becoming an independent municipality created a significant development “boom”, as, in his view, Miklavž

would not have developed to the same extent had it remained part of Maribor. One contributing factor is financial: the municipality now operates with an annual budget of €10 million, a level of funding it would not receive if it remained part of Maribor (the budget of which is €150 million). The mayor also drew a comparison between Miklavž and Radvanje, a neighbourhood of Maribor: although both have similar population sizes, Radvanje lacks a family doctor and a school, unlike Miklavž.

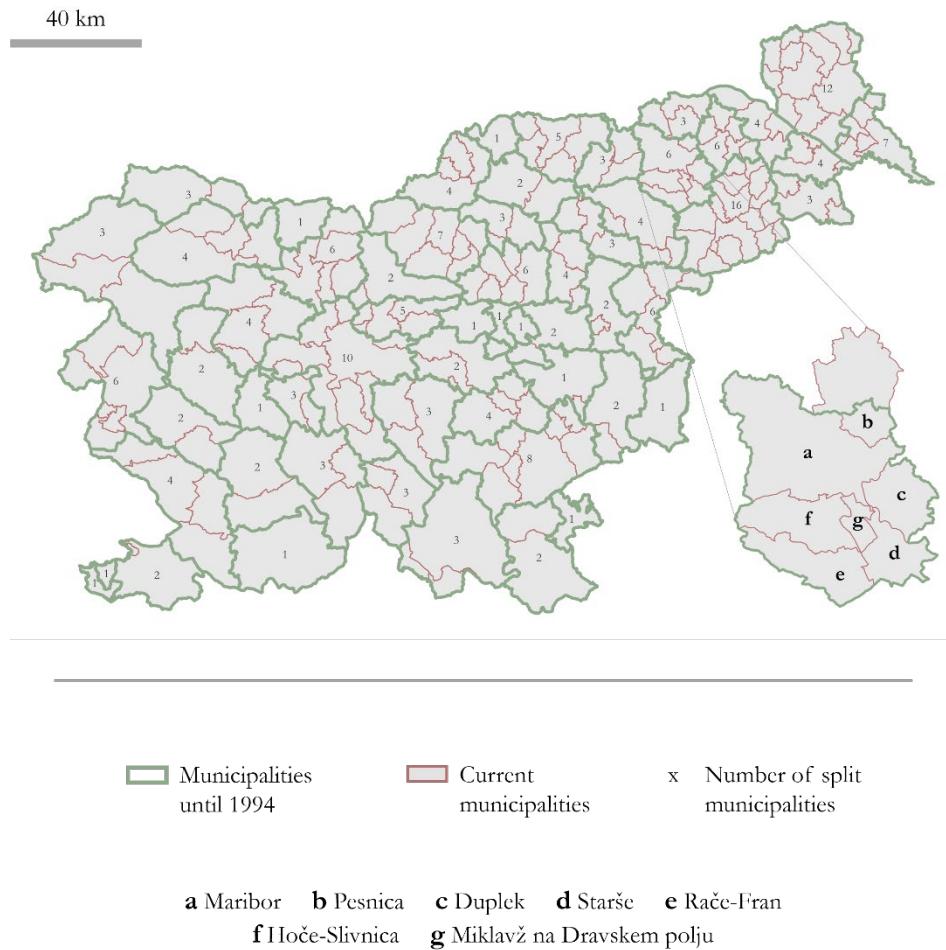


Figure 11: Comparison between former larger municipalities (green lines), which remained almost unchanged until 1994, and present-day municipalities (red lines). The figure illustrates the process of fragmentation of the local self-governing system and the challenges of managing very small municipalities.

(Source: Authors, 2025; Data: GURS, 2025).

The settlement is surrounded by agricultural land, with cattle breeding and crop production (mainly cereals) being the key agricultural activities. Given the municipality's small size, land must be managed carefully, with particular emphasis on protecting the remaining agricultural areas. Farming must adhere to environmentally sustainable practices, as the area encompasses a water protection zone and the main groundwater pumping station for the wider Maribor region.

During the peak of Maribor's industrial era, many residents worked in TAM (truck manufacturer) or Metalna in Tezno, which is within cycling distance. This is also the part of Maribor that blends most strongly with Miklavž.

The main road through Miklavž has always been a significant route. Historically, it formed part of the major route between Munich and Istanbul. After the motorway was built, traffic on this road declined significantly, yet it remains the main connection between Miklavž and Maribor. Mobility in Miklavž is strongly car-oriented, as most residents commute daily to Maribor. This contributes to high traffic volumes and occasional congestion during peak hours. Commercial and service facilities are developing along the main road, while areas further away from the main routes primarily function as residential zones.

Residents express strong appreciation for Miklavž's good location, peaceful environment, and well-developed local infrastructure, which together offer the benefits of near-urban living without the drawbacks of the city centre. At the same time, they voice concerns about rapid urbanisation, including loss of green areas, increasing traffic congestion, and pressure on local businesses from expanding residential development (Table 2).

The municipality hosts 55 associations, offering numerous opportunities for residents to participate in community life. Yet, key challenges include the loss of traditional settlement character and the weakening of social cohesion due to urbanisation. The expansion of the settlement also creates environmental pressures—high car traffic, the clearing of forest areas, and the loss of agricultural land. Opportunities lie in the continued in-migration of young families, who contribute to the vitality of the area.

Table 2: Residents' positive and negative perceptions of living in Miklavž

Type of perception	Interview excerpt (translated)
Positive	"If you're lucky, you can reach Tržaška Road [the main arterial road to Maribor] in ten minutes, so the location is excellent. I think that's why the settlement is expanding—people don't want to live right in the city centre because of parking problems and parking garages. Many apartment blocks don't have parking, and it's hard to get a plot there. So Miklavž is now the second-best option."
Positive	"Limbuš is part of the Municipality of Maribor, but it takes them longer to get to the city centre than it does from here."
Positive	"Here you have peace, good infrastructure, a school, a kindergarten—everything is close. You are outside the city but at the same time almost in the city."
Negative	"In 10 or 20 years, I imagine that it will no longer be possible to get a plot for new construction unless they start cutting down the forest again. Where our house stands today, there used to be a forest, and they cleared everything to create space for new development."
Negative	"The rush hour starts around half past five or a quarter to six in the morning for all those coming from the motorway, and then again for 15–20 minutes before seven and before eight. In the afternoon, traffic jams occur between three and four, and on Fridays even earlier, around half past one to three. This means longer travel times."
Negative	"They have started building apartment blocks, and it's uncertain how long local craftsmen—like the car painter or the metalworker—will still be able to stay. There are blocks around them already, and people will want this area to become fully residential."

Source: Walking interviews with residents (October 2025)

4.4 Case study IV: Kidričeve – a socialist planned town facing post-industrial pressures for residential expansion

The settlement developed on the site of Sternthal (Šterntal), where, during the First World War, a camp made of wooden barracks was first established for prisoners of war of the Austro-Hungarian Army, later serving as a military hospital.

The development of present-day Kidričeve is closely linked to the establishment of an industrial complex, which began when the German occupier built an alumina factory in 1942 in Strnišče to supply the German military industry in the nearby city of Maribor. For the construction of the factory, a large labour camp was built nearby. After the Second World War and the victory of the communist revolution in Slovenian and Yugoslav territory, the new revolutionary authorities took over the labour camp and turned it into an OZNA (secret police of communist Yugoslavia) concentration camp.



Figure 12: Present-day Kidričevo, where the defining features are large apartment blocks situated within extensive inter-block green spaces (right part of the picture). The large agricultural area on the left is now considered a potential site for future settlement expansion.

(Source: Reiter & Reiter, 2022).

The Yugoslav authorities took over the alumina factory and decided to introduce aluminium production in Strnišče, continuing the construction. With the development of the factory, the former camp around the Strnišče/Sternthal manor (today the seat of the Municipality of Kidričevo) was modernised. The wooden barracks were demolished and replaced with masonry buildings that gradually took on the characteristics of a settlement. The camp inmates were replaced by workers and their families employed in the newly established alumina and aluminium factory (named TGA).

The camp could no longer accommodate the rapid expansion of the factory, which provided work and housing for factory workers and their families. A decision was made to build a new settlement, and a development plan was adopted for the area north of the railway line, prepared by architect Danilo Fürst, a graduate of the renowned Slovenian architect Jože Plečnik.

The first industrial town in Slovenia was planned in the middle of a pine forest, covering an area of two square kilometres. The multi-apartment blocks were built according to the principles of functionalism. Set in a green environment, they are surrounded by trees and large park areas.



Figure 13: Residential blocks in Kidričeve surrounded by spacious green areas—a characteristic of the settlement's functionalist form.

(Author: Kumer, 2024).

Most residential blocks were built between 1947 and 1954. Fürst later invited architect Edvard Ravnikar—known for designing Slovenia’s other major socialist planned town, Nova Gorica—to contribute; however, his plans were never carried out. Due to limited financial resources, as construction relied heavily on self-contribution schemes (which was common in post-war Yugoslavia), public facilities were added only gradually over a longer period, including a primary school, a multipurpose hall with a restaurant, and a post office (Koselj, 2000).

Fürst is also the author of the administrative building of the Talam factory (the successor of TGA), located near the residential blocks. The settlement has always been closely tied to the industrial complex, which was historically a heavy and highly polluting industry—long-term residents still recall winters when the snow would turn black from soot.

Reflecting on a documentary showing the demolition of the old factory's chimney in 1996, one resident commented:

“/.../ how many years did that chimney stand, how many years did it poison us. We had black snow in winter, and in summer you couldn't step from the balcony into the living room because the carpet would immediately turn dirty from all the soot.” (Facebook post, 2016)

Today, the apartments provide a high standard of living: they are relatively spacious by current building norms (with an average size of around 100 m²), feature high ceilings, include several shared spaces, and offer views of the surrounding greenery. The residential buildings for factory employees are located near the industrial complex, set in a green environment surrounded by trees and lawns (Figure 13). This combination—housing close to workplaces and a green living setting—recalls the garden city paradigm that emerged in Western Europe at the beginning of industrialisation and later became a widely adopted model of urban development. Central functions are located along the main road, while residential blocks are arranged on side streets in an orthogonal layout, with buildings positioned in rows and slightly offset from one another (Figure 12). Pedestrian pathways run along the roads, and garages—an element of urban culture—are positioned slightly away from the residential buildings. There is also ample parking, which is essential given the limited public transport and the population's strong reliance on cars.

Our 2024 study shows that residents are generally satisfied with the settlement's urban design, suggesting a high-quality living environment (Figure 13).

The statements from the 2024 survey summarise the general views expressed by most residents regarding their satisfaction with the settlement's urban design:

A: Well planned and easy to navigate. Functional, but in need of some improvements.

B: Good, compact, with plenty of shops and green areas.

C: *Everything is great as it is; everything is accessible.*

D: *It's fine, although the quality of the apartments could be better. The façades of the blocks could be renovated, but this is currently impossible due to cultural heritage protection.*

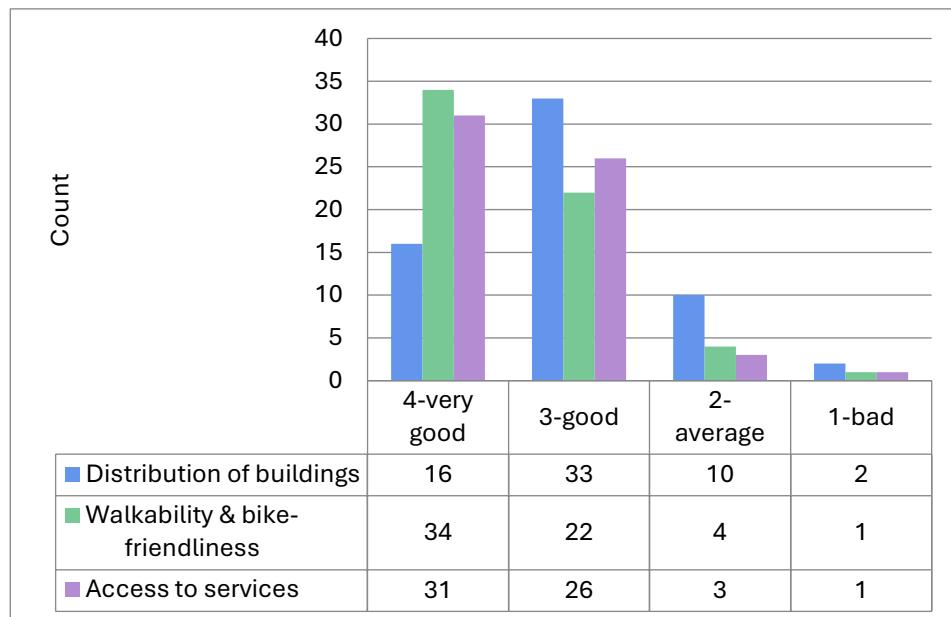


Figure 14: Residents' satisfaction with urban design (N=61)

Today, the town is inhabited primarily by the second generation of the original residents, resulting in a relatively high average age. Although the settlement is attractive to young families, moving in is difficult because apartments typically become available only after the owners pass away. Many units require renovation, including energy-efficiency upgrades, yet such improvements are often constrained by cultural heritage protection regulations. Because current planning regulations do not allow spatial expansion, Kidričeve has not experienced suburbanization, unlike other towns in the region. However, due to its large industrial zone, the town functions as a gravitational centre for the regional workforce, attracting many daily commuters.

The development of the settlement is strongly influenced by the economic performance of the municipality. According to the municipal development coefficient, Kidričeve ranks among the top 10% of the most developed

municipalities in Slovenia. The state-owned company Talum shut down its last primary aluminium smelting furnaces in April 2023—after 70 years of operation—during the period of Europe’s energy crisis. Primary aluminium production moved to Asian countries due to high energy prices and falling aluminium prices. However, the company successfully shifted towards aluminium processing, focusing on the production of slugs and other aluminium products.

Another textile company in the industrial zone, Boxmark Leather, a producer of leather covers for the automotive and aviation industries, continues to operate; however, it relocated its serial production to Croatia and Bosnia and Herzegovina, where labour costs are lower. This resulted in the dismissal of a few hundred employees in the years following the COVID-19 pandemic, although most later found new employment elsewhere in the region.

In the past, Talum was an extremely energy-intensive industry—back in 2018, it consumed 8.4% of all electricity in Slovenia (Zwitter, 2020). Today, more than half of its production comes from recycled aluminium purchased within Europe. The company has committed to achieving carbon neutrality by the end of the decade and is therefore steadily increasing the share of recycled aluminium, since recycling requires only about five percent of the energy needed for former primary production (Artiček, 2025).

Due to the town’s controversial history linked to environmental challenges and ecological impacts—for example, from the beginning of aluminium production in Kidričeve until the discontinuation of alumina production from bauxite—the factory generated large quantities of red mud. This waste was deposited near the village of Strnišče, and during peak production years, as much as 160,000 tons were produced annually. Over time, this created a 48-hectare elevated disposal site rising several metres above the surrounding Dravsko polje landscape. Because of these environmental burdens, along with past deforestation, the town is now steering toward a green transition. Plans include constructing a large solar power plant on top of the covered red-mud landfill. In 2020, Talum also opened the largest electricity storage facility in the wider region.

The settlement has significant potential for further spatial development, and local planners stress that future concepts must build on the existing conditions.

Opportunities for expanding residential and service functions should therefore be sought outside the protected cultural-heritage zone. Given the existing built structures and infrastructure, it would be sensible to direct residential expansion toward the north and west (however, it would destroy the pine forest and agricultural land). New development would follow Fürst's original geometric concept—the layout of buildings that creates a pattern reminiscent of a forest.

The local economy remains strongly tied to the operations of the Talum factory, which benefits from high-quality infrastructure (railway, gas pipeline, electricity network). Consequently, the town's future development depends heavily on the economic prosperity and strategic direction of the company.

5 Discussion and conclusion

The analysis of four settlements along the southern part of the Maribor–Graz corridor demonstrates how spatial, demographic, economic, and functional changes are reshaping the urban–suburban landscape of northeastern Slovenia. Although all four settlements lie within the gravitational influence of Maribor, their development trajectories differ significantly due to their geographic position, historical legacies, planning frameworks, and economic structures.

Across all cases, suburbanisation emerges as the dominant spatial process, but its intensity and expression vary. Šentilj illustrates a transit-oriented settlement strongly shaped by cross-border labour migration and economic ties with Austria. Miklavž represents a typical suburban municipality experiencing rapid in-migration, rising population density, and increasing pressure on agricultural land. The Studenci district in Maribor exemplifies inner-urban densification and market-driven residential expansion aligned with compact-city planning. Kidričevo, by contrast, stands out as a post-industrial planned town whose growth is constrained by heritage protection, while its future remains closely tied to the restructuring of the Talum industrial complex.

Despite these differences, several common themes emerge. First, mobility represents the strongest integrative force shaping daily life in all four settlements. While motorway and partially rail infrastructure link the region into a functional urban corridor, car dependency remains very high, particularly in suburban municipalities.

Public transport integration between Maribor and the surrounding settlements continues to lag behind mobility needs.

Second, while population ageing and out-migration of younger residents are typical for the rural hinterland of the examined municipalities, the tendency for in-migration of young families is high in all four settlements. Cross-border commuting to Austria plays an increasingly important role in shaping household income levels and preferences on where to live (particularly in Šentilj).

Third, the fragmentation of municipalities around Maribor, following administrative restructuring in the 1990s, complicates coordinated spatial planning. Although local autonomy enabled dynamic development in some municipalities, it also created challenges in areas requiring shared infrastructure, environmental management, and housing policy.

Fourth, the case of Kidričeve highlights the long-term consequences of industrial path-dependence. The settlement's urban design continues to provide high living standards, but environmental burdens and strict cultural-heritage rules limit spatial expansion. At the same time, the town's strong economic position suggests potential for green transformation, particularly through renewable energy and circular-economy initiatives.

Overall, the findings confirm that the Maribor–Graz corridor is evolving into a polycentric border-region urban system in which development is shaped by cross-border economic relations, mobility patterns, industrial restructuring, and suburbanisation processes. Strengthening cooperation between municipalities, improving sustainable mobility, protecting agricultural land, and addressing housing pressures will be essential for managing future development along this increasingly interconnected urban axis.

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