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Abstract. The notion of "left-behind places" has emerged as a prominent theme in the discourse of geographical inequalities and has gained widespread usage in urban and regional studies. This term is employed to denote the particularly salient challenges faced by former industrial and remote rural regions that have been adversely impacted by population decline, globalisation, economic shifts, and technological advancements. This research investigates demographic and socio-economic variables to classify and map "left-behind places," as well as more prosperous centres of development, across the regions of Latvia. This study employs a set of variables derived from the Central Statistical Bureau of Latvia, analysing quantitative data on demographic and social change as well as economic performance. The results were obtained through multivariate ranking and quantitative data-sorting analyses. This study identifies territorial units affected by deprivation and assesses the geographical patterns of "left-behind places" across regions. The findings provide critical insights for regional development policies by highlighting how different dimensions and temporalities of demographic and socio-economic changes necessitate varied policy responses.
Keywords: *left-behind places, regional disparities, demographic change, uneven development, polarisation*

Introduction

Uneven socio-spatial development and polarisation are nested, multidimensional and multiscalar processes (Lang et al. 2022). Moreover, persistent regional differences

in demographic and socio-economic development have been widely acknowledged to be an intrinsic feature of contemporary society (Kühn 2015; Wei 2015). The increasing socio-spatial polarisation of countries into core and peripheral regions has reached levels that challenge social and territorial cohesion across Europe (Dijkstra et al. 2020; Rodríguez-Pose 2018). Peripheralisation, an increase in "left-behind places," and the processes of regional polarisation are particularly pronounced in Central and Eastern Europe (CEE), which has led to renewed interest in the demographic and socioeconomic effects of the post-socialist transition (Sokol 2001, Lang et al. 2015, Dobrzanski et al. 2024; Dijkstra 2024). The Baltic states show extreme rates of demographic and socio-economic polarisation (Pužulis, Kūle 2016; Ubarevičienė, Van Ham 2017; Raagmaa 2023). In these three countries, a distinct concentration of growth and development in the capital cities, on the one hand, and growing disparities with rural and former industrial regions, on the other, can be observed (Dzenovska 2020; Pociūtė-Sereikienė 2021). This study contributes to the literature by constructing a transparent, data-driven approach in order to identify and map left-behind places in Latvia using multivariate ranking and classification techniques. Specifically, we compile indicators for territorial units of demographic change, human capital, labour market performance, income, jobs, and access to services; develop a composite index; and apply sorting technics to delineate profiles of disadvantage and resilience. We aim to explore the questions: (1) which urban and rural areas can be considered left-behind under a multidimensional perspective? (2) How do spatial patterns of deprivation change across the regions of Latvia?

This paper is structured as follows: the next section outlines the data sources and methodological approach employed to identify and classify left-behind places; this is followed by a presentation of the results, which maps the spatial distribution of disadvantage across Latvia's regions and examines temporal shifts between 2017 and 2022; the final section concludes by discussing the implications of these findings for regional development policy and identifying avenues for future research

Data and methods

The data employed in this study are derived from the Territorial Economic Development tool maintained by the Central Statistical Bureau of Latvia and data arrays available on the Latvian Open Data Portal. The data set comprises highly accurate

demographic and socio-economic information through 17 variables (Table 1). The variables describing the demographic development, population and employment composition, and human capital of the small towns under study were calculated from the relevant census data.

Table 1. **Variables used for the analysis** (authors' calculations based on data from the Central Statistical Bureau of Latvia)

Description	Variable	2017			2022		
		MIN	MAX	AVG	MIN	MAX	AVG
Mean age	AGE_{AVG}	31	51	42.5	31	53	43.7
Ageing index[1]	AGEING	22.2	444.4	146.5	18.3	392.3	134.9
Crude birth rate	BIRTH	0.64	44.9	9.4	1.47	22.1	8.1
Crude death rate	DEATH	2.85	139.3	17.6	3.57	109.9	19.3
Migration intensity[2]	MIG_{int}	2.93	51.3	9.0	2.05	95.3	10.0
Number of emergency medical service (EMS) calls	EMS	1.7	25.3	8.1	3.5	28.7	10.8
Share of university-educated[3]	EDU_{high}	7.1	55.8	17.4	7.8	60.6	19.6
Share of primary-educated[4]	EDU_{low}	9.5	49.5	26.9	9.6	44.6	24.6
Employment rate[4]	EMP	22.3	73.4	44.0	27.3	68.6	52.5
Unemployment rate[5]	UNEMP	4.1	48.6	15.1	3	49.3	10.7
Number of jobs per 100 inhabitants	JOBS	2	245.8	46.3	4.7	306.9	50.4
Share of managers and professionals[6]	OC_{high}	1.8	39.2	17.1	8.1	55.3	21.2
Share of elementary occupations[6]	OC_{low}	0.4	46	13.9	4.5	28.6	14.1
Share employed in primary sector (NACE B+C)	$NACE_{BC}$	0.4	67.4	16.0	3.3	35.1	13.9
Share employed in knowledge-intensive sector (NACE J+K+M)	$NACE_{JKM}$	1	19.7	4.6	0.4	19.2	4.2
Share of anti-system vote	VOTE	3.6	52	21.1	2	68	16.9
Average wage compared to national average, %	WAGE	59.5	228.2	100.0	66.9	204.4	100.0

Notes: [1]the ageing index refers to the number of the elderly aged 65 years or over per 100 individuals younger than 14 years old; [2]includes international migrants, internal migrants and residential moves; [3]among adults aged 18 and over; [4]among adults aged 15 and over; [5]among adults aged 15 to 74; [6]among adults aged 15 and over, based on the International Standard Classification of Occupation (ISCO).

The methodological approach adopted in this study combines multivariate ranking procedures with quintile-based classification to identify and map left-behind places. The analytical framework consists of several sequential steps. First, all 17 variables were standardised to ensure comparability across different measurement scales. Second, each territorial unit was ranked according to individual indicators, with rankings reflecting the degree to which each unit exhibits characteristics associated with either deprivation or prosperity. Third, variables were categorised into two groups: negative indicators (where higher values indicate worse conditions, such as death rates, unemployment rates, and shares with low education) and positive indicators (where higher values indicate better conditions, such as employment rates, shares who are university educated, and average wages).

For the negative indicators, the territorial units with the highest values were assigned to the bottom quintiles (Q5), representing the most disadvantaged areas, while those with the lowest values were placed in the top quintiles (Q1). Conversely, for positive indicators, the units with the highest values were assigned to Q1, indicating more favourable conditions, while those with the lowest values were placed in Q5. This inversion ensures that across all variables, Q1 consistently represents the most advantaged territorial units and Q5 represents the most disadvantaged. Following the quintile assignment, a composite index was calculated for each territorial unit by summing the quintile scores across all 17 variables. This composite index provides an overall measure of relative disadvantage or advantage. Territorial units with composite scores in the highest quintiles were classified as "left-behind places," while those in the lowest were identified as centres of development. Units in the middle quintile represented transitional areas with mixed characteristics.

The analysis was conducted for two points in time, 2017 and 2022, allowing for an examination of temporal dynamics in regional development patterns. Spatial visualisation was performed using geographic information systems (GIS) to produce maps illustrating the distribution of left-behind places and centres of development across Latvia's planning regions (Figure 1). This temporal comparative approach enables the identification of territorial units experiencing improvement, decline or stability in their relative positions within the national settlement system.

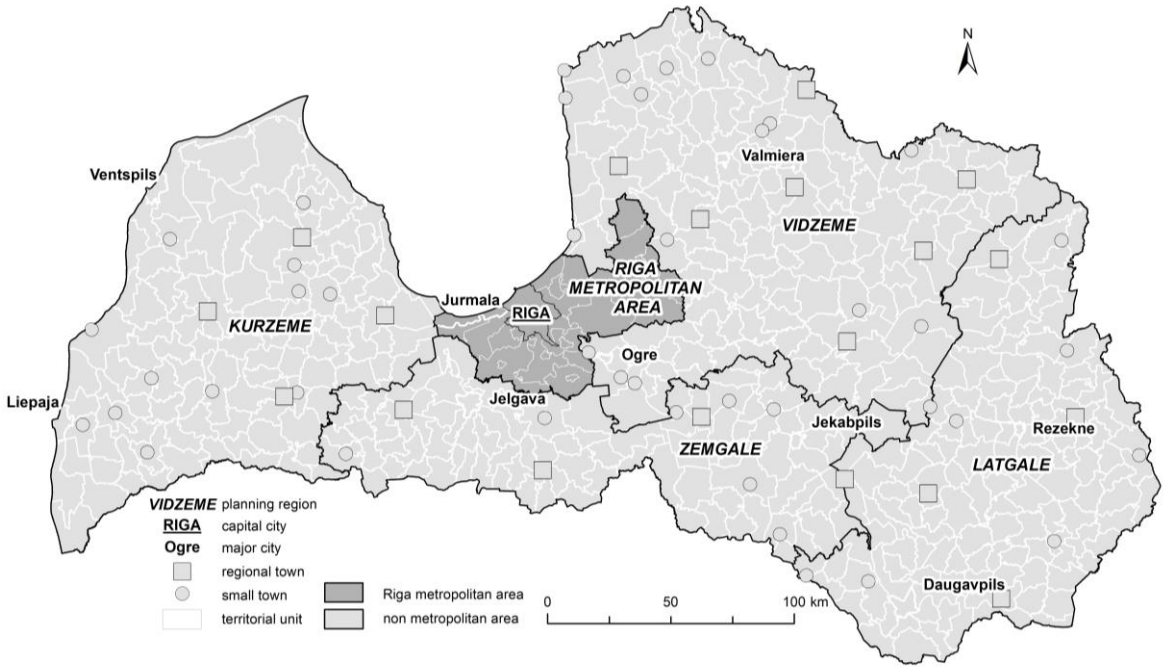

Figure 1. **Regional divisions and urban settlements in Latvia** (authors' figure based on the Central Statistical Bureau of Latvia)

Results

The multivariate quintile analysis reveals persistent spatial disparities across Latvia's municipalities between 2017 and 2022. Table 2 presents the average values of key demographic, socio-economic and labour market indicators for both years by quintile. The most disadvantaged quintile (Q5) consistently exhibits high mean ages, elevated ageing indices, low birth rates, and high death rates, reflecting demographic decline and population ageing in peripheral areas. For example, the mean age in Q5 increased from 44.8 years in 2017 to 46.2 years in 2022, while the ageing index remained above 185. Birth rates in Q5 had dropped to 6.1 per 1,000 by 2022, and death rates remained near 25, indicating natural population loss. Migration intensity was lower in Q5 than in Q1, suggesting lower population turnover and fewer inflows of working-age residents.

Human capital disparities remain pronounced. In 2022, only 14% of adults in Q5 municipalities had higher education, compared to 28.2% in Q1, while the shares of residents with only primary education were highest in Q5 (27.0%) and lowest in Q1 (19.8%). Labour market differences mirror these educational gaps: employment rates in Q5 increased to 46.9% by 2022, still well below the 57.6% observed in Q1, and

unemployment remained higher. Occupational structures and economic indicators highlight further inequality: Q5 areas employ fewer managers and professionals (16.2% in 2022 vs. 28.1% in Q1) and fewer workers in knowledge-intensive sectors. Average wages in Q5 were 12.3% below the national mean, while the inhabitants of Q1 municipalities earned 18.3% above the average. Anti-system voting, used as a proxy for political discontent, rose sharply in Q5 from 20.0% in 2017 to 30.9% in 2022, indicating growing socio-political divergence.

Table 2. **Variables ranked and divided into quintiles** (authors' calculations based on data from the Central Statistical Bureau of Latvia)

	2017					2022				
Index	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
AGE_{AVG}	40.6	41.9	42.4	42.8	44.8	41.3	43.0	43.4	44.5	46.2
AGEING	110.2	133.0	147.0	150.5	192.0	95.4	119.9	126.5	147.2	185.7
BIRTH	12.1	10.3	9.2	8.5	6.8	10.1	9.0	8.2	7.3	6.1n
DEATH	12.9	15.3	17.2	18.1	24.6	14.4	17.0	18.6	21.7	24.9
MIG_{int}	11.4	9.2	8.5	8.1	7.6	13.7	9.6	9.0	8.8	9.0
EMS	8.1	7.3	7.6	8.2	9.2	9.9	9.6	10.2	10.9	13.6
EDU_{high}	25.2	18.1	16.3	14.6	12.9	28.2	20.4	18.6	16.9	14.0
EDU_{low}	21.2	26.2	27.7	29.4	30.1	19.8	23.8	25.7	26.9	27.0
EMP	51.1	46.7	44.3	41.8	36.1	57.6	54.7	52.7	50.6	46.9
UNEMP	8.8	11.9	14.5	16.7	23.6	6.5	8.2	9.9	11.5	17.8
JOBS	62.7	50.4	44.8	39.0	34.4	68.8	53.1	49.8	44.0	36.3
OC_{high}	23.4	18.8	17.7	15.0	10.7	28.1	22.0	20.6	19.2	16.2
OC_{low}	13.3	14.3	13.9	14.4	13.6	12.5	14.5	14.5	14.6	14.6
$NACE_{BC}$	18.8	17.0	14.9	15.5	13.6	14.6	14.1	14.6	13.3	12.8
$NACE_{JKM}$	7.0	4.1	4.0	3.9	3.8	7.6	4.2	3.6	3.3	2.6
VOTE	20.1	21.7	21.6	22.2	20.0	13.5	12.2	12.7	15.4	30.9
WAGE	121.1	102.2	97.0	93.5	86.0	118.3	101.8	97.4	95.1	87.7

The regional distribution in 2022 emphasises a clear core-periphery structure. Riga and the surrounding metropolitan region dominate the top quintiles, while eastern

and north-eastern regions, particularly Latgale and parts of Vidzeme, remain heavily represented in Q5 (Figure 1). Moreover, some scattered low-performing municipalities appear in the inner peripheries of Kurzeme, as well as in areas near the southern border in both Kurzeme and Zemgale.

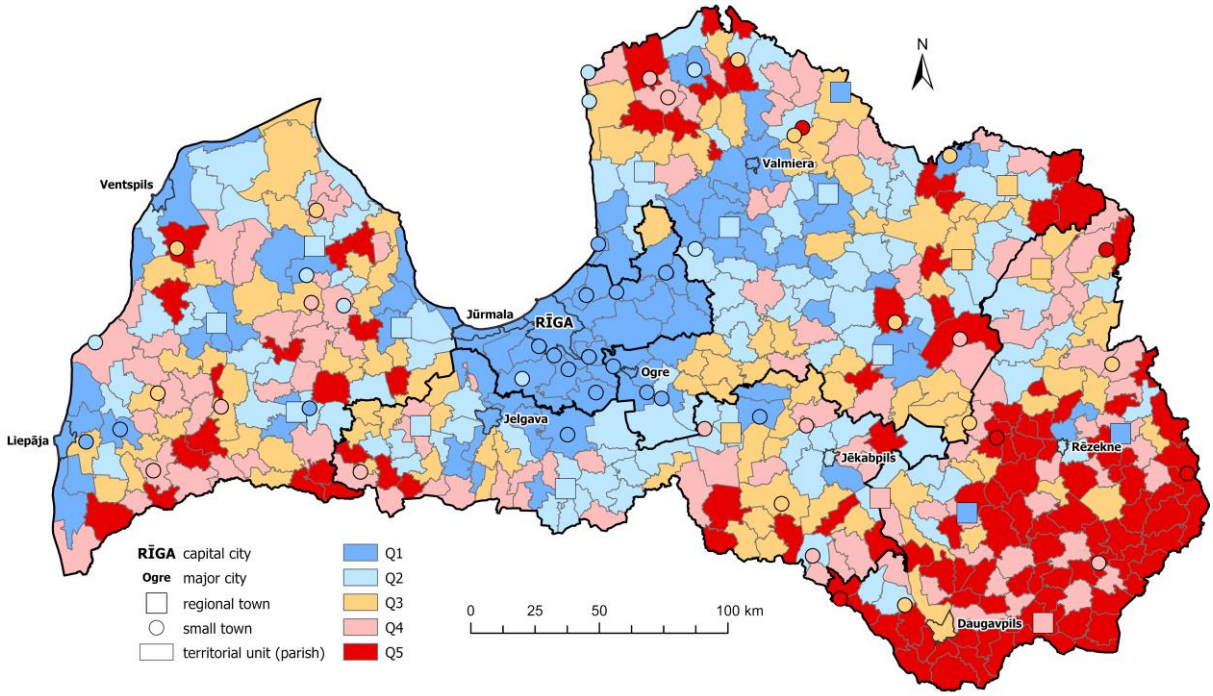

Figure 2. **Local geographies of left-behind places in Latvia, 2022** (authors' figure based on the Central Statistical Bureau of Latvia)

The spatial patterns of left-behind places in Latvia demonstrate both continuity and subtle shifts between 2017 and 2022 (Figure 3). In both years, the most disadvantaged municipalities remained concentrated in eastern Latgale and the north-eastern peripheries of Vidzeme, reflecting enduring core-periphery dynamics. The persistently low-performing areas are largely rural, distant from Riga and other regional centres, with limited access to economic opportunities and public services. While overall spatial clustering remained, some changes are evident: a few municipalities near urban centres such as Valmiera, Jelgava and Riga experienced moderate improvements due to spillover effects, including commuting and service sector growth. Conversely, new peripheries emerged in western Latvia – particularly in small towns in Kurzeme and the Zemgale plains – highlighting that left-behind status is not solely an eastern phenomenon, but can also develop where economic structures are vulnerable, infrastructure is ageing, and digital connectivity is limited. In Kurzeme, both inner

peripheries and municipalities closer to the southern border show scattered low-performing areas, suggesting multidimensional deprivation extends beyond the eastern regions where it is traditionally found.

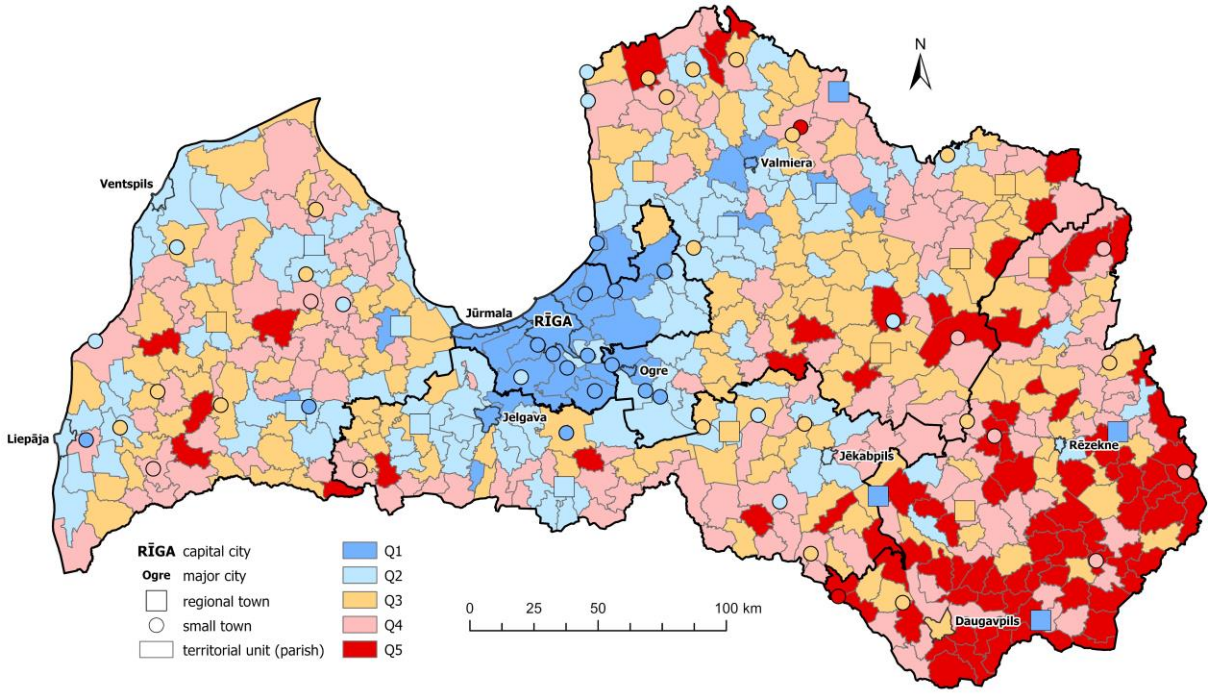

Figure 3. **Local geographies of left-behind places in Latvia, 2017** (authors' figure based on the Central Statistical Bureau of Latvia)

An analysis of quartile distributions across Latvia's regions between 2017 and 2022 highlights both stability and notable shifts in municipal performance (Figure 4). In Vidzeme, the number of municipalities in Q3 increased from 26 to 40, while Q4 declined from 40 to 25, suggesting upward mobility among previously lower-performing units. Zemgale experienced growth in Q2 and Q4, with Q2 rising from 28 to 32 and Q4 from 22 to 26, alongside a reduction in Q3 from 28 to 23, reflecting a partial redistribution of municipalities towards both higher and lower performance levels. Latgale remained heavily concentrated in the lowest quintiles, with Q5 largely unchanged at 75 municipalities, while Q4 increased from 24 to 36, indicating a decline among previously mid-ranking units. The Riga metropolitan region maintained its high performance, with minimal changes in the top quartiles. Overall, these patterns indicate gradual shifts in municipal rankings within certain regions, but persistent disadvantage in Latgale and sustained dominance in Riga, reinforcing the entrenched core-periphery structure observed in the quintile and spatial analyses.

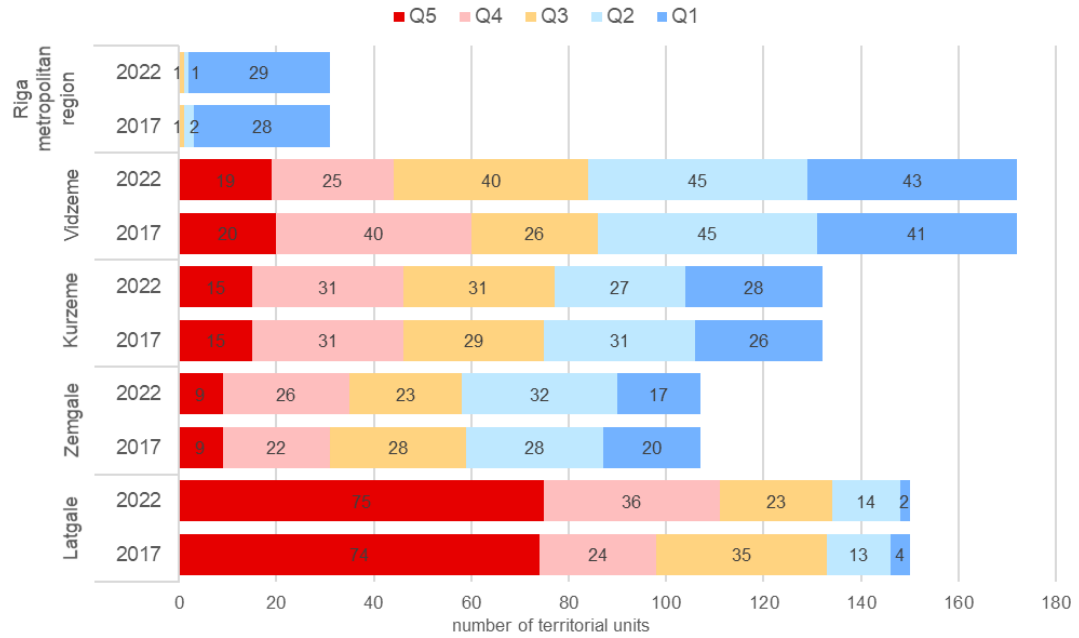

Figure 4. **Regional division of left-behind places in Latvia, 2017-2022** (authors' figure based on the Central Statistical Bureau of Latvia)

Conclusion

This study has mapped and analysed the spatial distribution of left-behind places in Latvia using a multivariate approach based on 17 demographic and socioeconomic indicators across two points in time, 2017 and 2022. The results reveal a clear and persistent core-periphery pattern, with peripheral rural and small-town areas – particularly in Latgale and north-eastern Vidzeme – consistently exhibiting the highest levels of disadvantage. These areas face overlapping demographic and economic challenges, including population decline, ageing, limited educational attainment, labour market weaknesses, and dependence on narrow economic structures. Such mutually reinforcing disadvantages reflect long-standing historical trajectories that continue to shape territorial development, contributing to path-dependent patterns of marginalisation.

The temporal comparison shows that these disparities have remained largely stable over time, while in certain domains they have intensified. This persistence underscores the difficulty of reversing entrenched socio-spatial divides through isolated or sector-specific measures. The multidimensional nature of the disadvantage highlighted in this study demonstrates the need for comprehensive, place-based policy

approaches that address demographic trends, human capital development, economic diversification, and access to public services simultaneously.

Methodologically, the integration of multivariate ranking and quintile-based classification provides a replicable framework for monitoring territorial inequalities and identifying areas where disadvantage accumulates. Future research could build on this by incorporating additional dimensions, such as social capital or environmental quality, or by complementing quantitative results with qualitative studies that explore local experiences of decline, resilience, and adaptation.

Overall, mapping left-behind places in Latvia reveals the urgent need for renewed attention to issues of spatial equity and territorial cohesion. The persistence and intensification of regional disparities threaten not only economic efficiency but also social justice and democratic legitimacy. Addressing these challenges requires political commitment, adequate resources, and innovative policy approaches that can reverse the trajectories of decline and create opportunities for all territorial units to participate in national development.

Acknowledgement

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Kopsavilkums

Jēdziens ‘nomales efekts’ ir nozīmīgs diskusijās par demogrāfiskās un sociāli ekonomiskās attīstības teritoriālajām atšķirībām starp reģioniem un apdzīvotajām vietām. Jēdzienu plaši izmanto ekonomiskajā ģeogrāfijā, vietu un reģionu pētījumos par teritoriju nevienmērīgo attīstību. Nomales efekts bieži tiek lietots agrāko rūpniecības centru ekonomiskā panīkuma un nomaļu lauku teritoriju sociāli ekonomisko problēmu izpētei. Galvenie iemesli nomales efekta attīstībai ir straujš iedzīvotāju skaita sarukums, sabiedrības novecošana, ekonomikas strukturālas pārmaiņas globalizācijas ietekmē, kā arī nespēja piemēroties dažādiem izaicinājumiem strauji mainīgos apstākļos. Rakstā analizēti vairāki demogrāfiskie un sociāli ekonomiskie rādītāji, lai klasificētu un vizualizētu teritoriju nevienmērīgās attīstības izpausmes Latvijas reģionos. Darbā izmantotas Centrālās statistikas pārvaldes apkopotās un publiski pieejamās teritoriju ekonomiskās attīstības rādītāju datu kopas. Rezultāti atspoguļo Latvijas pilsētu un pagastu sadalījumu, kas iegūts ranžējot teritorijas pēc aplūkotajiem rādītājiem. Šāda

daudzdimensionālu rādītāju un teritoriālā iedalījuma vienību šķirošana uzskatāmi atspoguļo ‘nomales efekta’ ģeogrāfiskās iezīmes Latvijā. Pētījums sniedz svarīgu informāciju reģionālās attīstības politikas pilnveidei, uzsverot demogrāfiskās attīstības un sociāli ekonomisko pārmaiņu nozīmi.

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INTERNATIONAL STUDENT RECRUITMENT STRATEGIES IN THE REGIONS OF LATVIA

ĀRVALSTU STUDENTU PIESAISTES STRATĒĢIJAS LATVIJAS REĢIONOS

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Abstract

In the context of declining local student enrolment, higher education institutions are developing and implementing internationalisation measures and attracting international students to regional universities. This study analyses the processes of internationalisation in higher education in Latvia's regional universities and the experience of integrating international students. This research employs a methodology consisting of quantitative statistical analysis and qualitative methods, including document analysis, interviews with staff from International Affairs departments, and semi-structured interviews with international students studying in Latvia. The findings demonstrate that regional universities maintain their competitive edge through personalised educational approaches, and affordable tuition and living costs, while simultaneously highlighting the substantial difficulties international students encounter when integrating socially into their new environment. The research also highlights the need to expand employment prospects for international students in the regions of Latvia, and to promote these students settling long-term in these regions following the completion of their studies.

Keywords: *Latvian regions, international students, higher education, internationalisation, student mobility.*

Introduction

The internationalisation of higher education is one of the main processes shaping modern higher education, and has a substantial impact on regional development (de Wit & Altbach, 2020). There is a close relationship between international student migration and regional development levels (Weber & Van Mol, 2023). A 2023 study examines the concept of student migration transition, showing how a country's economic

development influences its role in international student mobility. As countries develop, they gradually transition from being "exporters" of students to "importers." This model is particularly relevant in Latvia, where regional universities, facing a decline in local student numbers, are increasingly positioning themselves as study destinations for international students (Weber & Van Mol, 2023). The development of higher education institutions, together with regional socio-economic growth, largely depends on international students as an important resource (Chankseliani et al., 2021). Research on the internationalisation of higher education has become an important field that examines both university-level developments and local geographical aspects (Sharipov, 2020). Student mobility patterns and flows are constantly evolving, reflecting both global trends and regional characteristics. Decisions to study abroad are based on a complex set of factors, including personal and professional goals, as well as structural aspects (Van Mol & Timmerman, 2014). Non-traditional destinations, including Central and Eastern European countries, are becoming increasingly active in attracting international students by developing their own specific advantages and niche study programmes (Apsite-Berina et al., 2023). This trend creates new opportunities for regional universities, which can leverage their advantages in particular fields of study (Restaino et al., 2020).

Latvia's higher education system has undergone significant changes over the past few decades. The decline in the number of local young people, combined with intense emigration, has created a need for a new approach to maintaining the sustainability of the higher education system (Chankseliani et al., 2021). In the face of these challenges, universities' ability to attract international students while also integrating them into the relevant regions is becoming crucial (Karlsen et al., 2017). Latvia has successfully strengthened its position in the global higher education market. This positive trend is becoming crucial for regional development within the country, as universities serve as important cultural and economic centres in the regions where they are based (Apsite-Berina et al., 2023). Regional universities are becoming increasingly important in international higher education. International students, through their expenditures on tuition, accommodation and daily living costs, contribute directly to local economies by supporting businesses and generating employment. This economic stimulus is especially significant in peripheral regions, where higher education institutions serve as anchors of stability and help boost otherwise limited economic activity (Chankseliani et al., 2021;

Weber & Van Mol, 2023). Research shows that regional universities have the potential to act as important centres of development, promoting both economic growth and community cohesion (Kempton et al., 2021).

Data and methods

The use of mixed methods is significant in studies of international student mobility, as it allows a combination of quantitative data analysis with qualitative experience research, thereby providing both a broad context and a detailed understanding of the problem under study (Weber & Van Mol, 2023; Apsite-Berina et al., 2023). This study aims to investigate how regional universities in Latvia are responding to declining local student numbers through internationalisation, while examining both the advantages these institutions offer and the integration challenges faced by international students. Two main research questions guide this research. First, what strategies do higher education institutions in the regions of Latvia use to attract international students? Second, what determines international students' decisions to choose universities in the regions of Latvia? The research involved conducting a systematic analysis of scientific literature on international student migration, higher education internationalisation processes, and their impact on regional development.

The study analysed international student trends in Latvian higher education, using the Ministry of Education and Science report on higher education for the 2023/2024 academic year, Central Statistical Bureau data on student dynamics (1995–2023), unpublished CSB data on international students (2021–2023), and data on international student enrolment provided by higher education institutions. The internationalisation strategies of regional universities were examined, with key priorities and objectives identified. The study utilised data from semi-structured interviews with international students at Latvian regional universities and expert interviews with representatives of university international offices.

Results

Common priorities are evident in the internationalisation strategies of Latvia's regional universities. Firstly, all institutions aim to recruit international students by offering competitive, internationally accredited study programmes (Table 1). Daugavpils University (DU) aims to increase the proportion of international students to

5% by 2028; Riga Technical University Liepāja (RTU) plans to reach 15% by 2027; Ventspils University of Applied Sciences (VeA) aims to reach 10%. Secondly, the strategies emphasise the international mobility of academic staff, including participation in Erasmus+ and other programmes, as well as involvement in international research projects. Thirdly, universities are systematically developing international cooperation networks, establishing partnerships with universities, research institutions and businesses. The strategies also emphasise the creation of a multicultural study environment and the strengthening of global visibility, which align with contemporary trends related to the globalisation of higher education.

Despite these commonalities, university strategies differ in their level of detail and focus. DU and RTU Liepāja set clear, quantitative targets, such as increasing the proportion of international students and academic staff, and growth in the number of research projects (RTU Liepāja: +20%; VeA: +25%). The LBTU and RTU Rēzekne strategies are more general, focusing on promoting visibility and cooperation without having specific numerical indicators. RTU Liepāja stands out for its focus on STEM fields, while DU emphasises the development of international doctoral training programmes.

Two significant trends can currently be observed in Latvia's regional higher education institutions: a general decline in student enrolment in the 2023/2024 academic year compared to previous periods; an increasing proportion of international students at the majority of Latvian universities analysed, indicating the implementation of Latvia's higher education internationalisation strategy in an effort to compensate for the decrease in domestic student numbers.

Table 1. **Internationalisation Strategies** (based on DU 2023; LBTU 2023; RTA 2023, RTU 2023)

University	*Internationalisation strategy*
Daugavpils University (DU)	Attracting international students to study programmes at all levels Strengthening international cooperation with partners and creating new partnerships Strengthening involvement in scientific networks Expanding staff participation in outgoing mobility activities Organising international doctoral training programmes as part of all doctoral study programmes The goal for 2028 is to achieve 5% of international academic staff (3% in 2022) and 5% of international students (1.8% in 2022)
Latvia University of Life Sciences and Technologies (LBTU)	Strengthen LBTU's international recognition in the education and research space Promote student and staff mobility by participating in Erasmus+ and other programmes Develop partnerships with foreign universities, companies, and scientific institutions Attract international students by offering competitive programmes Support the involvement of academic staff in international projects and networks
RTU Rēzekne	Establish RTU Rēzekne as an internationally recognised higher education and science institution Promote the recruitment of international students and the improvement of study programmes Promote international mobility of students, academic, scientific and general staff Develop a multicultural environment
RTU Liepāja	Increase the number of international students, especially in STEM fields Promote international mobility and recruitment of academic staff to strengthen research and teaching quality Develop strategic partnerships with leading universities and research institutions worldwide Promote international recognition for RTU by participating in global initiatives and projects Reach 15% of the total student number being international students Increase the number of international research projects by 20% Ensure that at least 25% of academic staff participate in international mobility programmes

The percentage of international students has increased at many universities (Fig. 1). A particularly notable rise can be observed at RTU Rēzekne, where the proportion of international students grew from approximately 9% in 2019/2020 to nearly 12% in 2023/2024. LBTU, which is the largest of the analysed institutions, shows a relatively low proportion of international students in 2023/2024 (approximately 8%), although in previous years it was even lower.

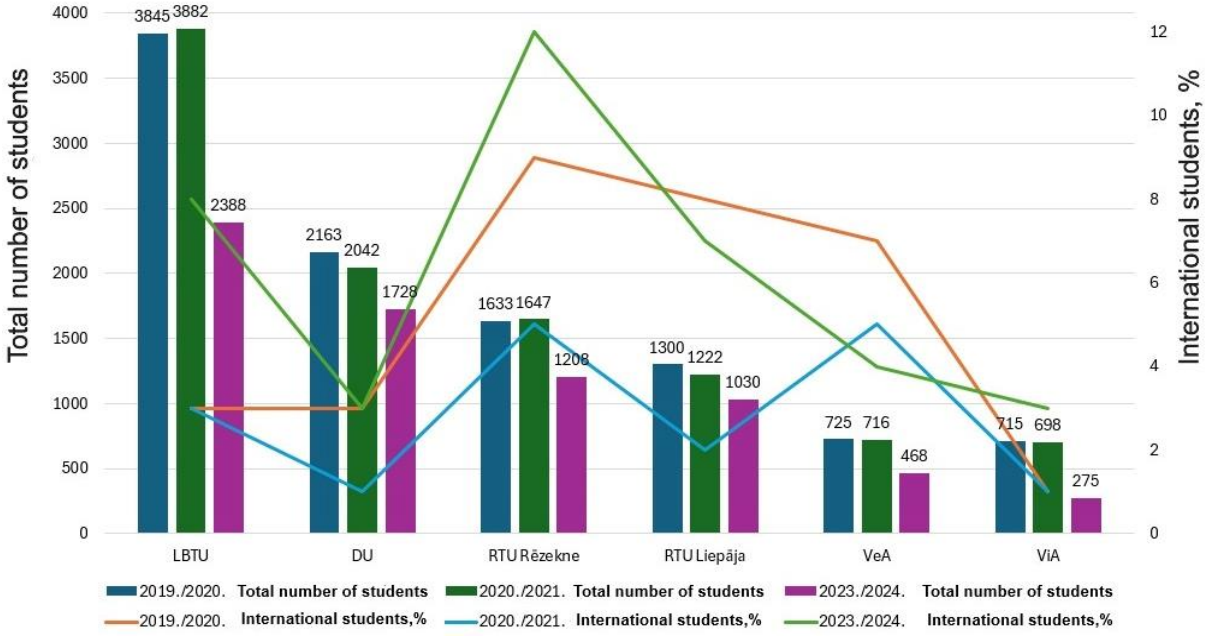

Figure 1. International students at regional universities in Latvia (authors' figure based on Ministry of Education and Science, 2019; Ministry of Education and Science, 2020; State Education Information System, 2025)

International students at regional universities are primarily attracted by specific study programmes that are often unique, recognised among international students, and in demand in the labour market. LBTU is most widely recognised for veterinary medicine (particularly among EU students), business administration, food science, sociology, and IT studies. RTU Liepāja attracts the most international students to its IT bachelor's and master's programmes. At RTU Rēzekne, international students overwhelmingly study on the master's programmes in business administration and management science. In contrast, at Vidzeme University of Applied Sciences, the most popular programmes are the IT bachelor's programme and the Virtual Reality master's programme.

Currently, full-time students at higher education institutions in the regions of Latvia are predominantly third-country nationals from Uzbekistan, India, Belarus,

Russia, Sri Lanka, Cameroon or Pakistan. One exception is the Latvia University of Life Sciences and Technologies (LBTU), where students from Europe study veterinary medicine. The Erasmus+ programme is also often the only means by which students from EU countries reach regional universities.

The main advantages of regional universities include a more individualised approach to students; compact, easily accessible spaces for daily activities; guaranteed accommodation in dormitories; lower living costs; and lower tuition fees than in Riga. Additionally, they provide students with greater opportunities to participate in the Erasmus+ exchange programme due to less competition and a safer, more peaceful environment.

A significant challenge in attracting and integrating international students into Latvia's education system is the varying approaches to study organisation, assessment, and overall educational quality across students' countries of origin. Consequently, the knowledge and preparedness of students entering Latvia's education system do not always align with the expectations of instructors and the host institution as a whole.

The integration of international students into local society varies. Universities offer Latvian language courses to first-year students to facilitate successful integration into the local community. However, the language barrier often remains a significant obstacle to full participation in local society. For some students arriving from certain countries – for example, Uzbekistan – their knowledge of Russian serves as an important communication tool, particularly in everyday situations such as shopping or using public transport. However, for students arriving from other countries, integration into society is hindered, as English language proficiency among Latvian residents varies. Unfortunately, cases occur in Latvia where international students are subjected to racism and xenophobia due to their physical appearance.

A lack of proficiency in the state language and limited employment opportunities in the regions characterise the complexity of international students' integration into the local labour market. On one hand, labour market accessibility is an essential part of the student experience and sense of belonging; on the other hand, its absence creates unequal access to resources and professional development opportunities. Concurrently, differing experiences are observed among students from various fields (e.g., IT professionals), indicating specific demands and competency alignment with the labour

market, which can serve as a significant resource for integration. Thus, students' labour-market experiences can vary, suggesting diverse integration experiences.

Students utilise opportunities to work for food delivery companies such as Bolt and Wolt, where available. Meanwhile, IT students most frequently find employment in their field of specialisation either in Latvia or abroad through Erasmus+ internship exchanges, thereby working internationally while continuing their studies in Latvia. Bachelor-level students in Latvia are limited to 20 hours of paid work a week, while master's students are not.

Conclusion

Four of the six regional universities in Latvia have developed structured internationalisation strategy documents with specific quantitative targets. Their strategies focus on increasing the number of international students, promoting academic staff mobility, and developing international cooperation networks. Analysis of the internationalisation strategies reveals that existing strategies pay insufficient attention to qualitative aspects – integration quality, retention of graduates within the regions in question, and long-term socio-economic impact. The total number of students is declining, both nationally and specifically at higher education institutions in the regions of Latvia, while the proportion of international students is increasing. Among the institutions examined, the highest proportion of international students is at the RTU Rēzekne branch, while the lowest is at the Latvia University of Life Sciences and Technologies.

A combination of economic and qualitative factors determines international students' choice of higher education institutions in the regions of Latvia. The most significant motivating factor is economic accessibility, as Latvia is considered a low-cost option that offers high-quality education within the European Union. Universities' specific advantages include an individualised approach (smaller study groups and closer contact with academic staff) and lower daily expenses than, for example, in Riga, as well as guaranteed dormitory accommodation and a safe environment.

The increasing reliance on international students as a stabilising force in regional higher education reflects broader global and regional trends described in the literature on internationalisation (de Wit & Altbach, 2020; Weber & Van Mol, 2023). As Latvia transitions toward becoming a destination country for international students – a process

consistent with the student migration transition model – the role of regional universities becomes especially significant. Their ability to attract and retain international students directly influences regional economic resilience, demographic renewal, and labour market vitality (Chankseliani et al., 2021; Benneworth & Dahl, 2019). However, the analysis suggests that current internationalisation strategies do not sufficiently address these wider developmental linkages.

The lack of emphasis on integration quality and graduate retention points to a strategic gap that could undermine the long-term potential of internationalisation as a regional development tool. Research shows that successful integration depends not only on educational factors but also on students' everyday experiences – including language learning, social belonging, and access to employment – none of which are uniform across the regions of Latvia (Karlsen et al., 2017; Apsite-Berina et al., 2023). The challenges that international students report, such as language barriers, limited labour-market opportunities, and occasional experiences of discrimination, indicate that attracting students is only the first step. Without more comprehensive support systems and clearer pathways to employment and settlement, universities risk losing highly skilled and motivated graduates who could otherwise contribute to regional societies and economies.

At the same time, the competitive advantages of regional universities – individualised teaching, compact and safe environments, lower living costs, and niche academic programmes – align with emerging trends in student mobility toward non-traditional destinations (Restaino et al., 2020). These strengths should be leveraged more explicitly in strategic planning. Integrating internationalisation efforts with regional development priorities, strengthening cooperation with local employers, and improving language and integration support could enhance long-term outcomes for both students and the regions in which they study.

Overall, the study demonstrates that while regional universities in Latvia are actively pursuing internationalisation and attracting an increasing share of international students, the next step requires a more balanced approach – one that combines quantitative growth with qualitative development, labour-market alignment, and strategies to retain graduates in the regions. Such an approach would allow internationalisation to fulfil its potential as a driver of sustainable regional development.

Acknowledgement

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Kopsavilkums

Pētījumā analizēti internacionalizācijas procesi Latvijas reģionālajās augstskolās un ārvalstu studentu iekļaušanās pieredze, izmantojot pieeju, kas apvienoja statistisko analīzi ar padziļinātām intervijām ar studentiem un augstskolu darbiniekiem. Rezultāti rāda, ka četras no sešām reģionālajām augstskolām ir izstrādājušas internacionalizācijas stratēģijas ar konkrētiem mērķiem, tomēr tajās galvenā uzmanība tiek pievērsta ārvalstu studentu piesaistei un akadēmiskā personāla mobilitātei. Mazāk uzmanības veltīts iekļaušanās kvalitātei, studentu labbūtībai un absolventu ilgtermiņa noturēšanai reģionos.

Lai gan kopējais studentu skaits reģionos turpina samazināties, ārvalstu studentu īpatsvars pieaug; pārsvarā tie ir jaunieši no Uzbekistānas, Indijas, Baltkrievijas, Krievijas, Šrilankas, Kamerūnas un Pakistānas. Viņus piesaista specifiskas studiju programmas, salīdzinoši zemās izmaksas, individualizēta pieeja, garantēta dzīvesvieta un droša vide. Tomēr studenti saskaras ar būtiskiem iekļaušanās šķēršļiem – valodas barjeru, atšķirīgu izglītības pieredzi, ierobežotām nodarbinātības iespējām un atsevišķiem rasisma un ksenofobijas gadījumiem. Pētījuma secinājumi uzsver nepieciešamību stiprināt sociālās integrācijas pasākumus, veidot ciešāku sadarbību ar vietējiem darba devējiem un attīstīt absolventu piesaistes stratēģijas, lai veicinātu ārvalstu studentu ilgtermiņa palikšanu un ieguldījumu Latvijas reģionu attīstībā.

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ETHNIC FOODSCAPE: DISTRIBUTION OF IMMIGRANTS' TRADITIONAL CUISINES IN RIGA

ETNISKĀ ĒDIENU AINAVA: IMIGRANTU TRADICIONĀLO ĒDINĀŠANAS IESTĀŽU IZVIETOJUMS RĪGĀ

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Abstract

In the contemporary world, the gastronomic diversity observed in cities is shaped not only by local trends and migration dynamics but also by broader global processes, as reflected in the range of dishes offered by catering establishments. These processes and their spatial expressions are examined within gastro-geographical research, a field closely linked to gastronomy and the conceptual framework of the foodscape. This study aims to explore the spatial distribution of ethnic catering establishments in the neighbourhoods of Riga and identify their affiliations with specific ethnic groups, as well as classifying these establishments and analysing their correlation with the declared places of residence of residents from the countries in question. The results included in this paper show that there is no correlation between ethnic catering establishments and the location of the relevant ethnic groups in the neighbourhoods of Riga. Nonetheless, a relatively significant correlation was observed with Central Asians on the one hand, and East/South Asians on the other.

Keywords: *gastro-geography, foodscape, urban environment, ethnic cuisines, Riga*

Introduction

These days, globalisation and migration processes can be observed in many parts of the world, manifesting, for example, in trends in catering establishments and the variety of dishes they offer (Lincicome & Bagley, 2023; Pilcher, 2023). Such processes and manifestations are examined in gastro-geographical studies (Kowalczyk & Derek, 2020; Derek, 2017; Choi et al., 2011; Stalmirska & Ali, 2025), which closely consider the subjects of gastronomy and foodscapes. Gastronomic and foodscape studies in urban

environments cover an extensive range of topics, including tourism (Zvirbule & Dobele, 2018; Koufadakis & Manola, 2020; Zvirbule et al., 2023), the popularity of particular cuisines (Choi et al., 2011; Gwiazdowska & Kowalczyk, 2020; Litavniece & Silicka, 2016), the location of catering establishments (Derek, 2020; Derek et al., 2020), changes in their location (Derek et al., 2020), etc. The urban environment is a particularly important context for conducting gastro-geographical research, as this is where dynamic, rapidly changing phenomena can be most clearly observed. This environment is particularly suitable for analysing topics influenced by migration, globalisation and other socio-spatial processes, thereby providing an appropriate empirical basis for studying such phenomena.

Gastro-geography refers to the geography of food preparation and eating habits, determined by climate, soil, crops, history, traditions, psychology, trade, and national character (Gillespie, 2011). Based on this definition of gastro-geography, it can be concluded that this sub-field of geography is closely related to research into aspects of physical, human, medical, and economic geography (Weightman, 2011; Branco & Mohr, 2020; Gristai, 2001; Koufadakis & Manola, 2020). Of course, gastro-geography consists not only of the concept of geography, but also of gastronomy. Gastronomy is, in essence, the science and art of selecting, preparing, serving and enjoying food (Rogers, 2024). In gastronomy, the emphasis is on the interconnection between food, culture and traditions, a development that has often been influenced by geographical location and available resources. Gastronomy is closely linked to the culture and heritage of a particular region. What local people eat – and when, where and how they eat – are visible expressions of culture (Klosse, 2019). Historically, gastronomy has offered an opportunity to learn about a particular culture through the enjoyment of food, mainly as a result of migration. In the present day, migration is an essential driver of the emergence of restaurants offering cuisine from other cultures. Still, other processes associated with globalisation, such as the popularisation of cuisines from certain cultures, also contribute to the establishment of such restaurants (Derek, 2017).

This paper examines cuisines of the following ethnic groups - Central Asia, East Asia and South Asia including Vietnamese. Riga was chosen as the study area because it is the city in Latvia with the highest concentration and diversity of ethnic restaurants. Nine neighbourhoods were selected for the study, in which ethnic restaurants were digitised for spatial analysis. There are two research questions to examine the topic:

1) What are the types and locations of traditional ethnic restaurants in the neighbourhoods of Riga?
2) What is the relationship between the location of traditional immigrant restaurants and the declared places of residence of representatives of specific ethnic groups in the neighbourhoods of Riga?

This study aims to identify the types and locations of traditional ethnic restaurants in the neighbourhoods of Riga, as well as to investigate the correlation between the locations of traditional immigrant restaurants and the declared places of residence of representatives of specific ethnic groups in the neighbourhoods of Riga.

Data and methods

The study used both empirical data obtained during field research and secondary data and materials from existing sources, including the databases of the Central Statistical Bureau.

The boundaries of selected neighbourhoods in Riga, obtained from Riga City Council's database of the neighbourhoods of Riga, and a base map of the streets of the world, available from ArcGIS Online, were used to map catering establishments. Data on the locations and types of catering establishments were collected during field surveys, and these were recorded in the Field Maps application on a smartphone, then exported and processed in ArcGIS Pro. Information available on Google Maps and Google Street View about the locations, names and operating status of catering establishments was also used. To find more detailed information, such as menus, the websites of ethnic catering establishments were consulted; if these did not exist, the offerings available from them on the Wolt and Bolt websites were consulted.

The types of catering establishments were identified by reviewing typologies in other works and examining their main criteria for classification. These criteria were summarised, and the following new ones were created:

- whether the establishment is a restaurant
- type of service
- range of food and beverages offered
- production and marketing characteristics.

The criteria mentioned above were developed to create a typology for classifying ethnic catering establishments. Due to these specific requirements, types of catering

establishments usually classified as canteens, pubs, clubs, pizzerias, etc., were not included, as they do not serve dishes characteristic of the selected cultural cuisines. The types that were distinguished are as follows: restaurant, café, bistro, grocery store, and sushi bar.

To perform calculations and determine the correlation between the place of catering and the declared places of residence of the studied population, data on the declared places of residence of the selected population in 2021 were used, which were obtained from the unpublished georeferenced data from the 2021 population census. In addition to the calculations, data obtained from the field study of catering establishments and their locations in the suburbs of Riga were used. Using these data, the Pearson correlation coefficients were calculated and further analysed.

Results

The results section presents the mapped, digitised eateries in the neighbourhoods of Riga, their typology, and the results of the Pearson correlation coefficient calculations.

Location and types of eateries

Field surveys were conducted, and information from Google Maps and Google Street View was collected between 18 January and 5 May 2025 to create a map showing all identified ethnic eateries (104) in nine districts of Riga: Vecpilsēta, Latgale, Centrs, Brasa, Grīziņkalns, Dārzciems, Purvciems, Teika and Avoti (see Figure 1). Ethnic restaurants offering Uzbek, Japanese, Korean, Chinese, Indian, Nepalese and Vietnamese cuisine were examined in detail. Of the cultures of the Central Asian region, only Uzbek eateries were identified, and no establishments offering traditional Mongolian cuisine were found in Riga.

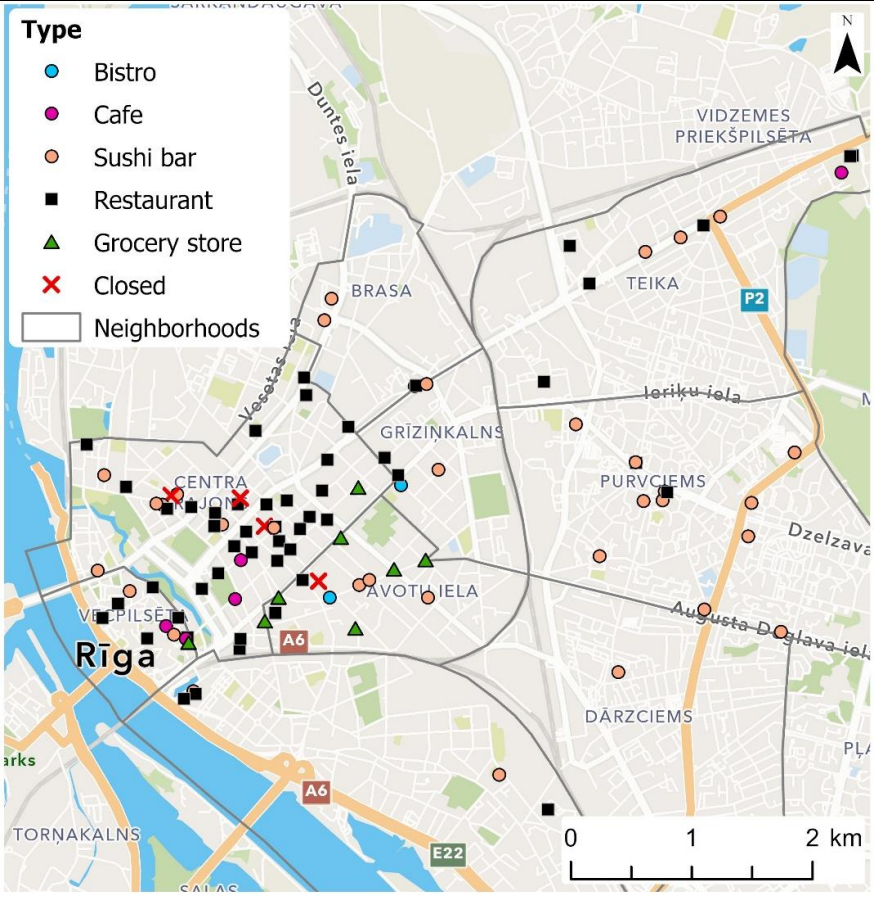

Figure 1. **Ethnic eateries in neighbourhoods of Riga** (authors' figure, based on Esri ArcGIS Online basemap and Riga City Council's neighbourhood border geospatial data)

In the central part of Riga, which includes the Vecpilsēta, Centrs, Avoti, and the north-western Latgale neighbourhood (see Figure 1), there is a high concentration of eateries. The high concentration and density of these establishments can be explained by their location in an area of importance to the city – close to major transport hubs, which encourage increased flows of residents and visitors to the city and longer stays in these areas. As one moves away from the city centre, the number and density of ethnic catering establishments decrease. Still, there is a noticeable tendency for them to be concentrated on the main streets throughout the city. This can be observed, for example, in the Avoti neighbourhood, where a large proportion of ethnic restaurants are located on Avotu Street. In the Teika neighbourhood, this can be observed on Brīvības Gatve; in Purvciems, on Gunāra Astras Street and Dzelzavas Street; in the NE part of the Centrs; and in Brasa, on Krišjāņa Valdemāra Street. Being located on a street that serves as a central transport corridor in a particular neighbourhood and in Riga as a whole offers higher potential for customer traffic than streets of secondary importance, which

users may not use as frequently to reach other essential destinations in the neighbourhood or the city.

An interesting observation relates to the location of grocery stores, which are predominantly concentrated in the Avoti neighbourhood and its surroundings. Five of the eight specialised grocery stores are located in the Avoti neighbourhood, and two others are very close to it. The only grocery store located further away is in the Vecpilsēta neighbourhood, although this is also relatively close to Avoti on the scale used. Outside the aforementioned central area and the surrounding neighbourhoods, the variety of catering establishments decreases, with restaurants and sushi bars predominating; there is also one café in Teika. Sushi bars are the only type found in all neighbourhoods, followed by restaurants, which are also found in most neighbourhoods.

During the survey, catering establishments that were not in operation were also recorded. The closed ethnic catering establishments were concentrated in specific areas, namely the central part of the city centre and the western part of Avoti. Three of the four catering establishments of this description are located on or in the immediate vicinity of the interconnected thorough Ģertrūdes Street and Baznīcas Street, forming an almost linear section. The fourth, currently closed establishment is situated nearby on Antonijas Street.

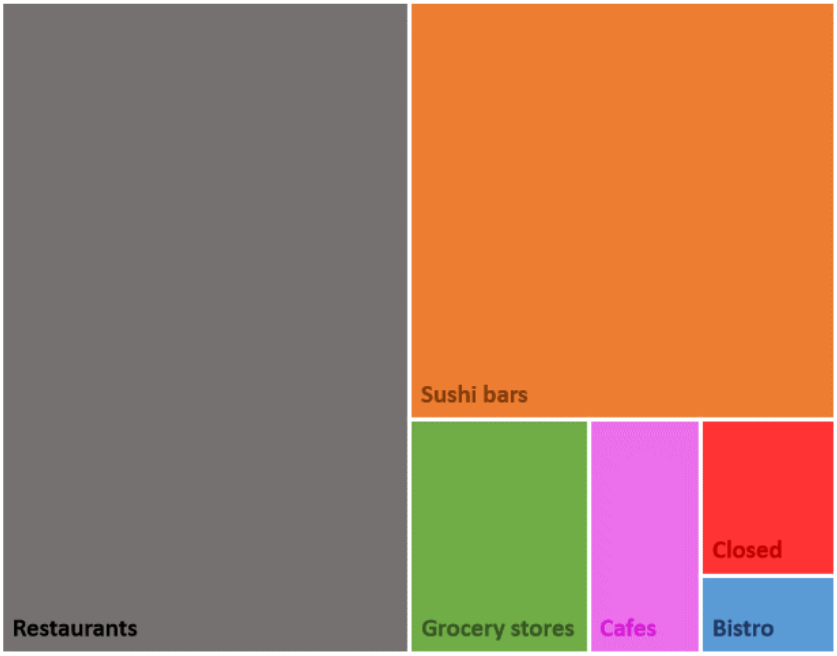

Figure 2**. Ethnic eatery types and their percentage distribution** (n=104) (authors' figure)

The most common type of ethnic eatery is the restaurant, with 51 establishments, or 49% of the total (see Figure 2). The second-largest category, by number, is sushi bars, with 34 establishments (33% of the total), accounting for one third of all catering establishments. The remaining categories (eight grocery stores and five cafés) do not exceed 10% of the total. The least common type is the bistro; only two establishments, or 2% of the total, were identified as such. In addition to the identified types of catering establishments, four establishments were also found that are currently closed, but where visual and digital evidence of their previous activities remains. These include the names and opening hours of the establishments visible in the windows, as well as entries on Google Maps with preserved user reviews. Two of these establishments, Tavs Banh Mi and Pandas Virtuve, were recorded during the first field survey as showing signs of activity, but when the survey was repeated, it was observed that the establishments were closed. It is possible that the location of these establishments in the area with the highest concentration of ethnic eateries limited their competitiveness, as they were probably unable to compete effectively with other similar eateries in the area.

Calculating correlation using the Pearson coefficient

The Pearson correlation coefficient was used to calculate the correlation, and the analysis was performed in OriginPro 2025 10.2. To perform the calculations in the aforementioned programme, the information available in ArcGIS Pro about eateries and declared places of residence was exported to Microsoft Excel and was then entered into OriginPro 2025 10.2.

Table 1. **Correlation between people's declared places of residence and the location of ethnic eateries in neighbourhoods** (authors' calculations)

Eateries	Pearson correlation coefficient			**p-value**
	All nationalities	**Central Asia**	**East/South Asia**	
	0.12	0.084	0.11	<0.05

The correlation between the declared places of residence of the representatives of all of the nationalities surveyed; of Central Asians and East/South Asians as separate groups; and the locations of catering establishments recorded in field work was

calculated (see Table 1). Based on the results, all calculated Pearson correlation coefficients indicate a positive, but very weak, correlation. Since all values are less than 0.3, they do not meet the threshold for a statistically significant or noteworthy correlation. The lowest correlation coefficient value is for the Central Asian ethnic group, at 0.084; it's slightly higher for the East/South Asian ethnic group, at 0.11; and the highest for all ethnic groups combined, at 0.12. The p-value was also obtained using OriginPro 2025 10.2. The p-value is <0.05, indicating a statistically significant possibility that the data did not arise by chance.

Table 2. **Correlation between declared places of residence of Central Asian, East Asian, and South Asian residents in neighbourhoods** (authors' calculations)

	Pearson correlation coefficient	**p-value**
Central Asia	**East/South Asia**	
	0.29	<0.05

The correlation between the declared places of residence of Central Asian and East/South Asian people was also calculated (see Table 2). After calculating Pearson's correlation coefficient, a value of 0.29 was obtained, indicating a weak positive correlation. Based on this result, it can be concluded that Central Asian and East/South Asian people choose to live in similar areas in Riga. In this calculation, as in the previous one, the p-value is <0.05, which indicates a statistically significant possibility that the data did not arise by chance.

The correlation analysis between the spatial distribution of ethnic restaurants and the settlement patterns of corresponding immigrant groups reveals generally weak-to-moderate relationships. This suggests that the location of ethnic eateries in Riga is not solely determined by the residential concentrations of immigrants, but is also influenced by broader urban dynamics, including proximity to commercial corridors, transport hubs, and areas with high pedestrian traffic. The weak correlations indicate that many ethnic restaurants cater to a diverse, cosmopolitan clientele rather than exclusively serving ethnic communities, reflecting globalised consumption patterns. Additionally, socio-economic factors such as rent costs, accessibility, and business opportunities likely shape choices of restaurant location, sometimes outweighing residential proximity. These findings align with gastro-geographical research in other European

cities, which highlights that foodscape patterns emerge from a combination of cultural, economic and urban structural factors, rather than simply from demographic clustering. Thus, while immigrant communities contribute to the diversity of the foodscape, restaurant locations reflect a complex interplay of market-driven and cultural considerations.

Conclusion

The spatial distribution of ethnic catering establishments in Riga, showing a marked concentration in the central areas – Vecpilsēta, Centrs, Avoti, and Latgales NW aligns with existing gastro-geographical research on urban centres. This phenomenon is often attributed to the high accessibility, infrastructure for pedestrians, and economic vitality of core city districts (Derek, 2020; Derek et al., 2020). The clustering of these businesses suggests an orientation toward capturing the flows of both residents and tourists, a pattern consistent with the role of gastronomy in tourism and local economic development (Zvirbule & Dobele, 2018; Koufadakis & Manola, 2020). The positioning of eateries on major transport corridors, such as Avotu Street or Brīvības Gatve, further reinforces this strategy, maximising visibility and the potential customer base within the wider urban foodscape.

The dominance of restaurants (49%) and sushi bars (33%) among the identified establishments reflects the powerful influence of globalisation processes on local culinary scenes (Lincicome & Bagley, 2023; Pilcher, 2023). Sushi bars, found across all surveyed neighbourhoods, are a prime example of a global culinary trend that transcends specific ethnic migration patterns. This trend highlights how gastronomy is shaped not only by the local presence of immigrant communities but also by the worldwide popularisation of specific cuisines, a key element of the evolving foodscape (Derek, 2017). Conversely, the lower prevalence of specialised types, such as grocery stores, suggests that these establishments, which primarily serve as cultural resources for specific ethnic groups, may follow a different location logic.

Crucially, the weak positive correlation observed between the locations of ethnic eateries and the declared places of residence of the associated ethnic groups indicates a lack of strong spatial association between ethnic residential patterns and commercial food provision. This finding contradicts the traditional model, in which ethnic businesses often cluster within residential enclaves to serve their immediate

communities. Instead, Riga's ethnic food businesses appear to function more as nodes of cultural globalisation and consumption targeted at the broader, multi-ethnic urban population and visitors, rather than as purely service-oriented businesses for specific residential groups. This separation between ethnic residence and ethnic commerce is a significant insight into the dynamic socio-spatial processes of a city's food culture.

Finally, the study provides a basis for viewing Riga's culinary diversity through the lens of gastro-geography, with the recognition that gastronomic choices are intrinsically linked to culture, history and geographical location (Gillespie, 2011; Klosse, 2019). The weak positive correlation between Central Asian and East/South Asian residential locations suggests a shared preference for specific residential characteristics, even if this preference does not strictly dictate the placement of their associated food businesses.

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Kopsavilkums

Mūsdienās gastronomiskā daudzveidība pilsētās tiek ietekmēta ne tikai no vietējām tendencēm un migrācijas ietekmes, bet arī no globālajiem procesiem, kas var izpausties, kā piedāvātā ēdienu daudzveidība ēdināšanas iestādēs. Šādus procesus un to izpausmes apskata gastroģeogrāfiskajos pētījumos (Kowalczyk, Derek 2020; Derek 2017; Choi et al. 2011; Stalmirska, Ali 2025), kuri ir cieši saistīti ar gastronomiju un ēdienu ainavas jēdzienu. Pētnieciskais darbs izstrādāts ar mērķi izpētīt etnisko ēdināšanas iestāžu telpisko izvietojumu Rīgas apkaimēs, identificēt to piederību noteiktām etniskajām grupām, klasificēt ēdināšanas vietu tipus, kā arī analizēt to korelāciju ar attiecīgo tautību iedzīvotāju deklarētajām dzīvesvietām pilsētas teritorijā. Darba ietvaros netika konstatēta korelācija starp etniskajām ēdināšanas iestādēm un etnisko grupu izvietojumu Rīgas apkaimēs, bet tika novērota salīdzinoši nozīmīga korelācija starp Vidusāzijas un Austrumāzijas-Dienvidāzijas imigrantu deklarētajām dzīvesvietām.

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IZGLĪTĪBAS NOZĪME UN IZGLĪTOŠANĀS LAIKS: ATŠĶIRĪBAS BĒRNU UN VECĀKU VIDŪ LATVIJAS REĢIONOS, PILSĒTĀS UN LAUKU TERITORIJĀS

THE ROLE OF EDUCATION AND TIME SPENT IN EDUCATION: INTERGENERATIONAL DIFFERENCES ACROSS REGIONS AND THE URBAN–RURAL DIVIDE IN LATVIA

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Kopsavilkums. Šajā pētījumā analizētas izglītības ieguves rādītāju ģeogrāfiskās atšķirības un sociālā mobilitāte pēc iegūtās izglītības starp pieaugušajiem iedzīvotājiem un viņu vecākiem Latvijā, tādējādi sniedzot ieguldījumu izglītības ģeogrāfijas pētniecībā. Raksta mērķis ir raksturot izglītības nozīmi profesionālās kvalifikācijas veidošanā, kā arī analizēt izglītošanās ilguma un iegūtās izglītības atšķirības starp vecākiem un viņu pieaugušajiem bērniem dažādos Latvijas reģionos un apdzīvojuma veidos. Latvijā darbspējīgo iedzīvotāju vidū turpina pieaugt augstāko izglītību ieguvušo īpatsvars. Līdzīgi kā citās Eiropas valstīs, arī Latvijā iegūtie rezultāti apliecina, ka augstāks izglītības līmenis ir nozīmīgs priekšnoteikums augstākai profesionālajai kvalifikācijai un labākām iespējām darba tirgū, vienlaikus veicinot augstāku ienākumu līmeni un iedzīvotāju labklājību. Pētījuma rezultāti liecina par ciešu saikni starp vecāku un bērnu izglītības līmeni: personām, kuru vecākiem ir augstākā izglītība, ievērojami biežāk ir arī augstākā izglītība. Vienlaikus konstatētas izteiktas ģeogrāfiskās atšķirības. Augstāks iedzīvotāju izglītības līmenis un ilgāks vidējais izglītošanās laiks raksturīgs Rīgā un tās piepilsētas teritorijās, kā arī citās valstspilsētās un reģionālās nozīmes attīstības centros. Lai gan Latvijā pakāpeniski pieaug sociālā mobilitāte un bērni arvien biežāk iegūst augstāku izglītību nekā viņu vecāki, joprojām saglabājas ievērojamas atšķirības starp pilsētu un lauku teritorijām, kā arī starp Rīgu un pārējiem reģioniem.

Atslēgvārdi: *iedzīvotāju ģeogrāfija, izglītība, izglītošanās laiks, reģioni, apdzīvojums*

Ievads

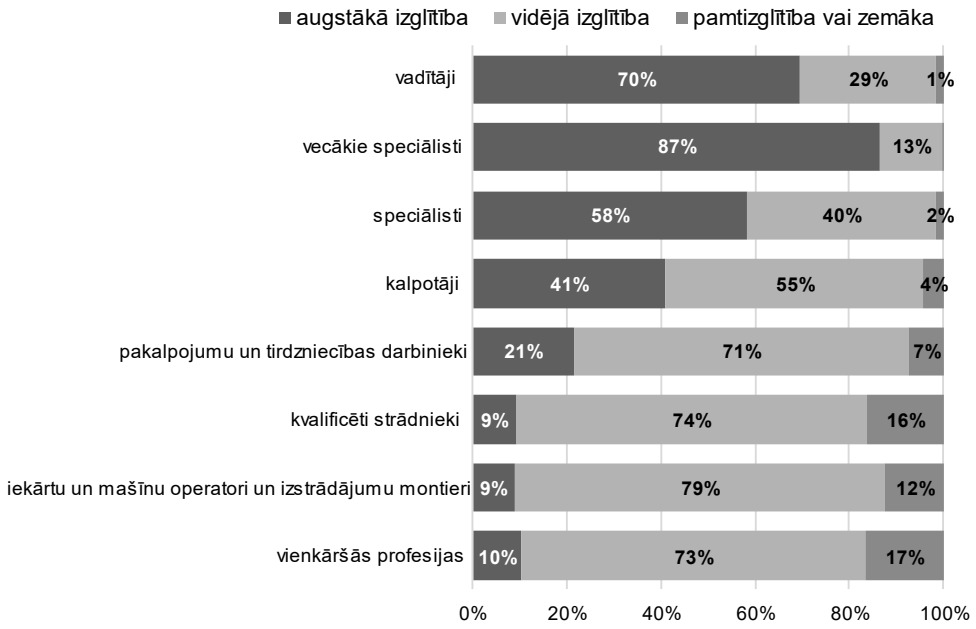
Izglītībai ir izšķiroša loma cilvēkkapitāla attīstībā, veicinot gan indivīdu, gan sabiedrības kopējo labklājību. Iepriekšējos pētījumos plaši analizēta izglītības nozīme sociālās nevienlīdzības mazināšanā vai pretēji – tās veicināšanā un pastiprināšanā (Breen et al., 2010). Indivīda izglītības sasniegumus būtiski ietekmē vecāku izglītības līmenis, sociāli ekonomiskais statuss un finansiālās iespējas nodrošināt bērniem piekļuvi kvalitatīvai izglītībai un labākajām izglītības iestādēm (Davis-Kean et al., 2021). Vairākas desmitgades Eiropā un Ziemeļamerikā pētnieki, politikas veidotāji un izpildvaras lēmumu pieņēmēji analizē sociālās nevienlīdzības ietekmi uz indivīdiem**,** vietējām kopienām un sabiedrību kopumā, vienlaikus meklējot risinājumus tās mazināšanai (van Ham et al., 2024).

Pētnieku paustās bažas par sociālās nevienlīdzības izpausmēm īpaši akcentē iedzīvotāju izglītības, nodarbinātības, profesionālās kvalifikācijas, ienākumu, veselības un vispārējās labklājības rādītāju būtiskās ģeogrāfiskās atšķirības. Tās atspoguļo sociālās nevienlīdzības negatīvo ietekmi ne tikai uz indivīdu iespējām un sniegumu, bet arī uz dzīvesvietas jeb apkaimes efektu, kas būtiski ietekmē dažādu pakalpojumu pieejamību un nodrošinājumu (Nieuwenhuis &Hooimeijer, 2016). Vairāki pētījumi ir pierādījuši, ka cilvēki dzīvesvietai, izglītībai un darbam, kā arī brīvā laika pavadīšanai izvēlas noteiktas ģeogrāfiskas vietas, kur norisinās dažāda veida mijiedarbība ar apkārtni un līdzcilvēkiem, veidojas noteikti uzvedības modeļi un prakse, kā arī nākotnes izredzes un iespējas turpmākā dzīvē (Van Ham &Manley, 2012). Sociālā nevienlīdzība bieži tiek pārmantota starp paaudzēm, piemēram, zems izglītības līmenis un izglītības vērtība, savukārt sociāli telpiskās diferenciācijas nelabvēlīgā ietekme indivīda dzīves laikā var atkārtoties atkarībā no dzīvesvietas izvēles, tādējādi pastiprinot nevienlīdzības reproducēšanos (Van Ham et al., 2018). Pētnieki šo fenomenu apzīmē kā sociāli telpiskās nošķiršanās apburto loku (angļu val. – *vicious circles of segregation*), īpaši akcentējot ģeogrāfisko faktoru nozīmi (Tammaru et al., 2021). Izglītībai ir būtiska loma sociālajā mobilitātē un centienos pārraut šo apburto loku, ko bieži ietekmē paaudzēs pārmantoti uzvedības modeļi un nelabvēlīga apkārtējās vides ietekme. Tāpēc rakstā analizēta izglītības nozīme profesionālajā kvalifikācijā, kā arī izglītošanās laika un iegūtās izglītības atšķirības starp vecākiem un bērniem pieaugušo vecumā Latvijas reģionos un apdzīvojumā. Līdzšinējie pētījumi Latvijā sniedz ieskatu pieaugušo izglītības rādītājos reģionālā griezumā. (Sloka et al., 2022; Hazans et.al., 2024). Tāpat

līdz šim veikti dažādi izglītības pētījumi, piemēram, OECD Starptautiskās skolēnu novērtēšanas programma „PISA 2022" (Geske et al., 2023), starptautiskās lasītprasmes novērtēšanas pētījums IEA PIRLS 2021 (Ozola et al., 2023), norāda, ka Latvijā pastāv reģionālas atšķirības skolēnu mācību sasniegumos. To ietekmē ģeogrāfiskas sociāli ekonomisko apstākļu atšķirības ne tikai reģionos, bet arī apdzīvotās vietās. Raksturīgs ir Rīgas un pārējo valstspilsētu skolēnu mācību augstāks sniegums, salīdzinot ar novadu pilsētām un lauku teritorijām. Pašlaik Eiropā aktualizēta diskusija par kvalitatīvas izglītības nozīmi, lai mazinātu sociāli telpiskās nošķiršanās apburtā loka efektu un sekmētu ikviena indivīda "dzīves iespējas", vērtējot izglītības snieguma saikni ar teritorijas sociāli ekonomisko potenciālu (Boterman et al., 2019; Boterman & Lobato, 2022).

Izglītības nozīme profesionālajā kvalifikācijā

Latvijā darbspējīgo iedzīvotāju vidū turpina palielināties augstāko izglītību ieguvušo iedzīvotāju īpatsvars un 39 % iedzīvotāju 25–64 gadu vecumā ir augstākā izglītība (OECD, 2023). Turklāt visās Ekonomiskās sadarbības un attīstības organizācijas (OECD) dalībvalstīs darbspējīgo iedzīvotāju vidū augstākā izglītība kļūst arvien izplatītāka. Saskaņā ar 2021. gada tautas skaitīšanas rezultātiem no visiem iedzīvotājiem 15 un vairāk gadu vecumā 30 % ir augstākā izglītība, tajā skaitā 19 % ir maģistra grāds (Centrālā statistikas pārvalde, 2022). Tautas skaitīšanas dati liecina, ka 2021. gadā vairums augstāko izglītību ieguvušo jeb 34,5 % bija vecuma grupā no 30 līdz 44 gadiem. Savukārt vispārējo vidējo, profesionālo vidējo izglītību vai arodizglītību ieguvušo vidū lielākais iedzīvotāju īpatsvars jeb 30,6% ir vecuma grupā no 50 līdz 64 gadiem. Vērtējot vecuma grupas atsevišķi, iedzīvotājiem vecumā no 30 līdz 39 gadiem augstākā izglītība ir vairāk nekā 40 %. Jaunākajā tautas skaitīšanā 34,9 % sieviešu un 23,6 % vīriešu 15 un vairāk gadu vecumā bija iegūta augstākā izglītība. Uzskatāmākas atšķirības iegūtajā izglītībā ir nodarbināto profesionālajā struktūrā (1. attēls).



1. attēls. **Vismaz 25 gadus vecu nodarbināto iedzīvotāju iegūtā izglītība dažādās profesiju pamatgrupās pēc 2021. gada tautas skaitīšanas rezultātiem** (izveidojuši autori, izmantojot Centrālās statistikas pārvaldes datus)

Līdzšinējie pētījumi Eiropā atklāj, ka laba izglītība ir būtisks faktors augstākai profesionālajai kvalifikācijai un priekšrocībām darba tirgū (Di Stasio, Bol, & Van de Werfhorst, 2016; Hardy et al., 2018). Jāņem gan vērā arī katras valsts darba tirgus specifika, ekonomikas nozaru struktūra un valstī pastāvošā izglītības sistēma. Labi izglītoti un augsti kvalificēti speciālisti ir valsts stratēģiskais potenciāls un izglītībai cilvēkkapitāla attīstībā ir liela nozīme. Latvijas nodarbināto profesionālo kvalifikāciju var aplūkot pēc Starptautiskās standartizēto profesiju klasifikācijas (ISCO-08) profesiju pamatgrupām (LR Labklājības ministrija, 2024) sadalījumā pēc iegūtās izglītības. Profesiju klasifikators ir sistematizēts profesiju (arodu, amatu, specialitāšu) saraksts, kas veidots, lai nodrošinātu starptautiskajai praksei atbilstošu darbaspēka uzskaiti un salīdzināšanu. Šeit uzskatāmi redzams, ka augstākās kvalifikācijas profesiju pamatgrupās (vadītāji un vecākie speciālisti) ir ievērojams augstāko izglītību ieguvušo pārsvars. Tāpat vidējas profesionālās kvalifikācijas pamatgrupās (speciālisti un kalpotāji) apmēram puse nodarbināto ir ieguvuši augstāko izglītību. Savukārt zemas kvalifikācijas profesiju nodarbināto vidū raksturīgs zems augstāko izglītību ieguvušo īpatsvars. Šajās profesijās strādājošo vidū izteikts pārsvars ir vidējo vispārējo un profesionālo izglītību ieguvušajiem. Darba tirgū novērtētas zināšanas un augstāks

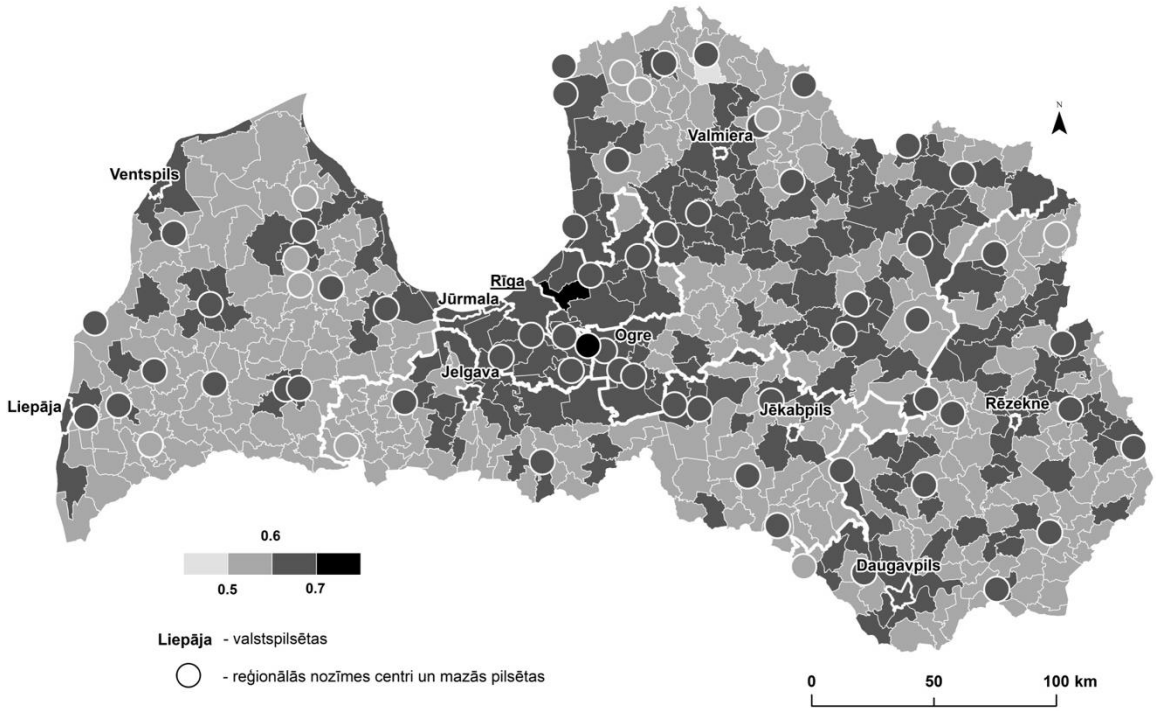
izglītības līmenis ir pamats ne tikai labākai profesionālajai kvalifikācijai, bet arī palielina ienākumu līmeni un veicina labklājības nodrošinājumu. To apliecina Valsts ieņēmu dienesta dati par vidējām stundas tarifa likmēm un nodarbināto ienākumiem profesiju sadalījumā (LR Valsts ieņēmumu dienests, 2024).

Vidējā izglītošanās laika ģeogrāfiskās atšķirības

Izglītības ilgums ir nozīmīgs rādītājs, kas arī ļauj novērtēt iedzīvotāju izglītības līmeni. Turklāt informācija par šo rādītāju tiek apkopota ģeogrāfiski detalizētā mērogā, jo Centrālā statistikas pārvalde datus par vismaz 25 gadus vecu Latvijas pastāvīgo iedzīvotāju vidējā izglītošanās laika indeksu sniedz teritoriālajās vienībās (pilsētās un pagastos). Lai noteiktu pastāvīgo iedzīvotāju vidējo izglītības līmeni, statistikā aprēķina teritorijā dzīvojošo iedzīvotāju vecumā virs 25 gadiem vidējā izglītošanās laika indeksu, ko izsaka skalā no 0 līdz 1. Zemākā vērtība nozīmē, ka attiecīgajā teritoriālajā vienībā dzīvojošajiem iedzīvotājiem ir zemāks izglītības līmenis, bet augstākā vērtība norāda augstāku izglītības līmeni. Latvijā vidējais izglītošanās laika indekss ir 0,6 un tas atbilst 13,2 izglītošanās gadiem. Salīdzinājumam var minēt, ka vispārējās vidējās izglītības iegūšanai ir nepieciešami 12 gadi. vidējā izglītošanās laika indeksa vērtības atšķiras atkarībā no apdzīvojuma, un augstākas tās ir pilsētās, īpaši nacionālās un reģionālās nozīmes attīstības centros, kā arī galvaspilsētas tuvumā esošajās piepilsētas teritorijās (2. attēls).

Izteikti augsts vidējā izglītošanās laika indekss ir Rīgā un tās apkārtnē, Jelgavā, Daugavpilī, Rēzeknē un daudzviet Vidzemes reģionā. Savukārt zemākas vidējā izglītošanās laika indeksa vērtības ir valsts pierobežas teritorijās visos reģionos un vairumā pagastu Kurzemes un Zemgales reģionā. Kopumā var secināt, ka iedzīvotāji ar augstāku izglītības līmeni koncentrējas blīvāk apdzīvotās vietās un piepilsētu teritorijās ne tikai ap Rīgu, bet arī ap citām lielajām pilsētām un reģionālās nozīmes attīstības centriem (piemēram, Kuldīgu, Talsiem, Cēsīm, Madonu u.c.). Salīdzinot ar 2011. gada tautas skaitīšanas datiem, vidējā izglītošanās laika indeksa vērtības 2020. gadā ir augstākas visā valsts teritorijā. Mazāks pieaugums novērojams teritorijās, kur indeksa vērtības jau iepriekš bija augstas – galvenokārt pilsētās un Rīgas apkārtnē, savukārt lielāks pieaugums fiksēts Latgales reģionā, kur 2011. gadā vidējā izglītošanās laika indeksa vērtības bija viszemākās. Indeksa ģeogrāfiskās atšķirības sniedz iespēju novērtēt un savstarpēji salīdzināt teritorijas ne tikai pēc iedzīvotāju izglītības līmeņa,

bet ļauj arī spriest par izglītības infrastruktūras nodrošinājumu, izglītības pakalpojumu un izglītota darbaspēka pieejamību. Vienlaikus jāuzsver, ka augstāks vidējā izglītības ilguma indekss ne vienmēr ir tiešs apliecinājums lielākam iedzīvotāju īpatsvaram ar iegūtu augstāko izglītību.



2. attēls. **Vismaz 25 gadus vecu pastāvīgo iedzīvotāju vidējā izglītošanās laika indeksa teritoriālās atšķirības Latvijas pilsētās un lauku teritorijās (pagastos) 2020. gadā** (izveidojuši autori, izmantojot Centrālās statistikas pārvaldes datus)

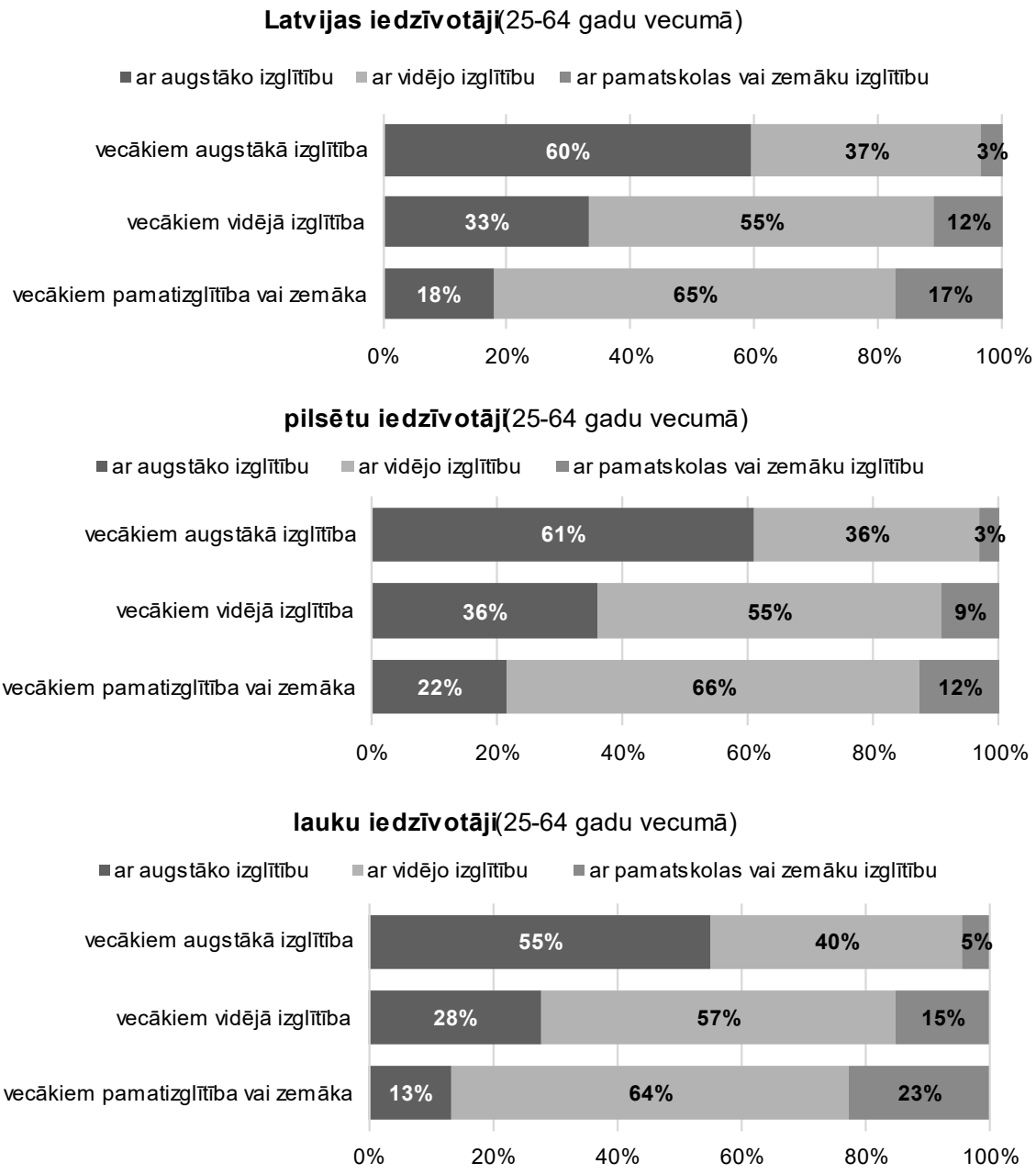
Vecāku izglītības līmeņa ietekme uz pieaugušo iedzīvotāju izglītību: atšķirība Latvijas apdzīvotajās vietās un reģionos

Rakstā analizēta vecāku izglītības nozīme, pētot pieaugušo iedzīvotāju (25–64 gadu vecumā) iegūto izglītības līmeni. Šim nolūkam izmantota Centrālās statistikas pārvaldes nodrošināta izglītības datu kopa, kurā iekļautas 15 gadu vecumu sasniegušas personas – Latvijas pastāvīgie iedzīvotāji pēc 2020. gada iedzīvotāju reģistra datiem. Šajā datu masīvā katrai personai reģistrēts augstākais iegūtais izglītības līmenis. Dati par iedzīvotāju iegūto izglītības līmeni var būt nepilnīgi, ja persona izglītību ieguvusi sen vai arī ja augstāks izglītības līmenis iegūts ārvalstīs, un iegūto izglītību nav bijusi nepieciešamība pielīdzināt Latvijas izglītības sistēmas standartiem. Informācija par izglītības ieguves vietu šajā datu kopā nav pieejama. Pētījuma nolūkos vecāku iegūtā izglītība tika analizēta tikai pieaugušo iedzīvotāju grupā vecumā no 25 līdz 64 gadiem.

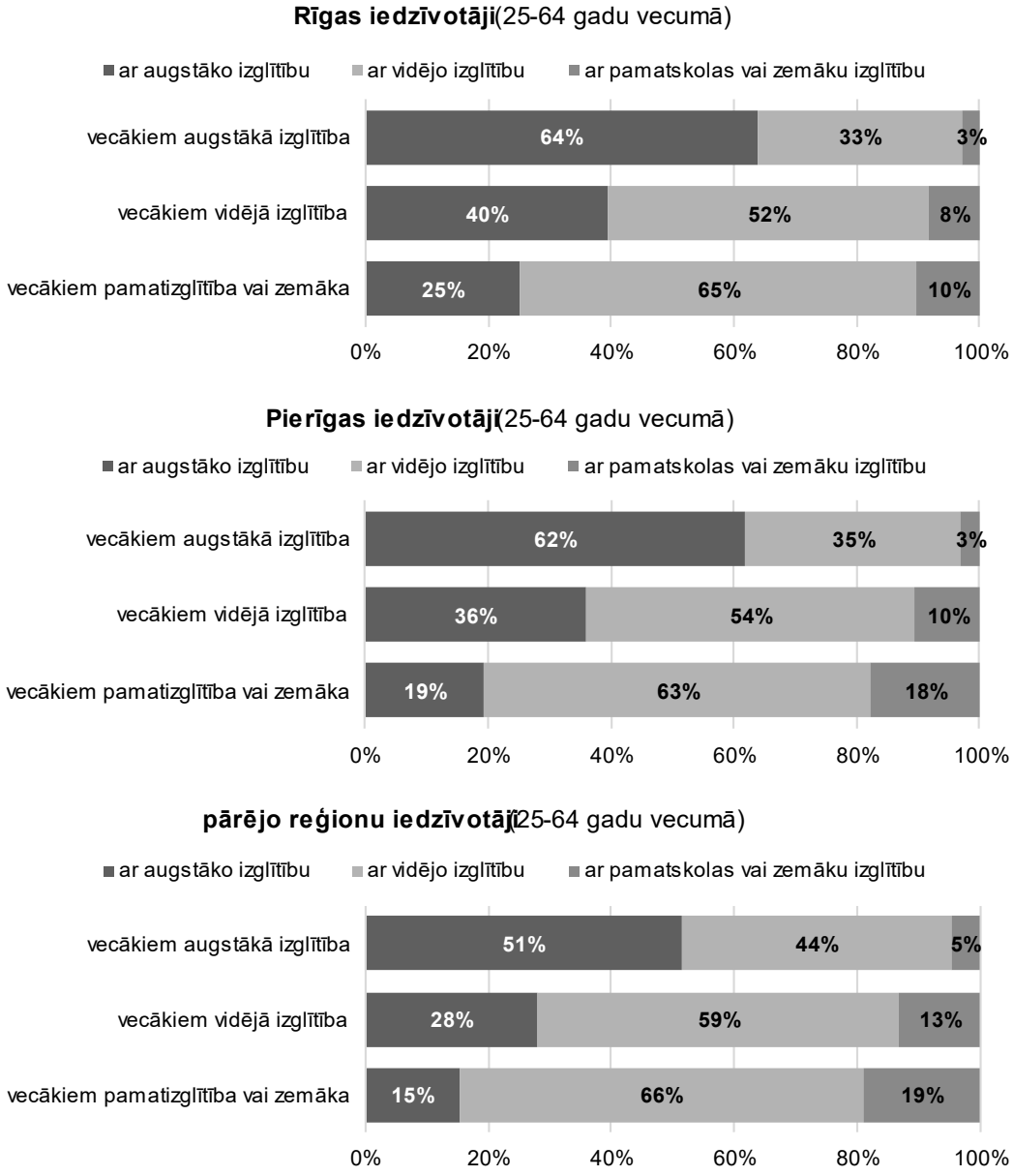
Šāda pieeja sniedz labāku darbspējīgo iedzīvotāju un viņu vecāku iegūtās izglītības salīdzinājumu, jo jaunāku iedzīvotāju vidū, kuri vēl nav sasnieguši 25 gadu vecumu, ir mazāks augstāko izglītību ieguvušo īpatsvars. Tāpat iedzīvotājiem vecumā no 50 gadiem un vecākiem pastāv lielāka iespējamība, ka viņu vecāku iegūto izglītības līmeni būs grūtāk precīzi noteikt iepriekš aprakstīto datu nepilnību dēļ. Pētījumā izmantotajā datu kopā iekļauta informācija par 1 022 332 Latvijas pastāvīgajiem iedzīvotājiem vecumā no 25 līdz 64 gadiem, ietverot datus par šo pieaugušo iedzīvotāju un viņu vecāku iegūto izglītības līmeni. Iegūtie dati ļāva analizēt izglītības līmeņa atšķirības starp vecākiem un viņu pieaugušajiem bērniem, nodalot pilsētu un lauku apdzīvotās vietas, kā arī atsevišķi katrā no sešiem Latvijas statistiskajiem reģioniem. Šajā darbā izmantotas statistisko reģionu robežas un administratīvais iedalījums, kāds pastāvēja līdz 2024. gada 1. janvārim (Centrālā statistikas pārvalde, 2024).

Latvijā tikai 18 % pieaugušo iedzīvotāju, kuru vecākiem ir pamatskolas vai zemāks izglītības līmenis, paši ir ieguvuši augstāko izglītību. Savukārt 60 % pieaugušo iedzīvotāju, kuru vecākiem ir augstākā izglītība, paši ir ieguvuši augstāko izglītību. Tas ļoti uzskatāmi apliecina, ka indivīdu izglītības sasniegumi ir cieši saistīti ar vecāku izglītību un bieži arī ar lielāku finanšu resursu pieejamību izglītībai. (Vārpiņa, 2019). Pavisam maz pieaugušo iedzīvotāju vidū (3 %) ir tādu, kuriem ir tikai pamatizglītība, bet kuru vecākiem ir augstākā izglītība (3. attēls).

Salīdzinot Latvijas pilsētu un lauku iedzīvotājus, redzams, ka laukos ir mazāks iedzīvotāju īpatsvars (13%), kuri ieguvuši augstāko izglītību, ja vecākiem ir tikai pamatskolas vai zemāks izglītības līmenis. Turpretī gandrīz ceturtajai daļai pamatizglītību ieguvušo, arī vecākiem ir tāds pats izglītības līmenis. Pilsētās šādu iedzīvotāju īpatsvars ir mazāks, un tikai 12 % pamatizglītību ieguvušo arī vecākiem ir pamatizglītība vai zemāks izglītības līmenis. Rīgā vairumam pieaugušo iedzīvotāju jeb 64 % ar augstāko izglītību arī vecākiem ir iegūta augstākā izglītība. Galvaspilsētā ceturtā daļa pieaugušo iedzīvotāju, kuru vecākiem ir pamatskolas vai zemāks izglītības līmenis, paši ir ieguvuši augstāko izglītību.



3. attēls. **2020. gadā Latvijas pilsētu un lauku apdzīvoto vietu pastāvīgo iedzīvotāju izglītība pēc vecāku iegūtā izglītības līmeņa** (izveidojuši autori, izmantojot Centrālās statistikas pārvaldes datus)



4. attēls. **2020. gadā Rīgas pilsētas, Pierīgas un pārējo statistisko reģionu pastāvīgo iedzīvotāju izglītība pēc vecāku iegūtā izglītības līmeņa** (izveidojuši autori, izmantojot Centrālās statistikas pārvaldes datus)

Rīgā, kas ir Latvijas apdzīvotības un ekonomiskās attīstības centrs, ir novērojams augstāks pieprasījums pēc izglītota un kvalificēta darbaspēka, kā arī plašākas iespējas iegūt augstāko izglītību. Līdzīgi arī Pierīgas statistiskajā reģionā vairāk nekā pusei pieaugušo iedzīvotāju ar augstāko izglītību arī vecākiem ir augstākā izglītība. Pārējos statistiskajos reģionos ārpus Rīgas un Pierīgas pieaugušo iedzīvotāju sadalījums pēc vecāku izglītības ir līdzīgs. Latgalē ir nedaudz mazāks to iedzīvotāju īpatsvars, kuru vecākiem ir augstāks izglītības līmenis. Pētījuma gaitā atsevišķi tika

aplūkots arī tēva un mātes izglītības līmenis. Salīdzinot pieaugušo iedzīvotāju izglītību ar tēva un mātes izglītību, ievērojamas atšķirības Latvijas reģionos un apdzīvotajās vietās netika konstatētas. Apmēram pusei iedzīvotāju vecumā no 25 līdz 64 gadiem ir tāds pats izglītības līmenis kāds tas ir vienam vai abiem vecākiem. Šajā sadalījumā pastāv nelielas atšķirības starp Rīgu, pārējām pilsētām un lauku apdzīvotajām vietām, kur pilsētās ir lielāks iedzīvotāju īpatsvars ar tādu pašu vai augstāku vecāku iegūtās izglītības līmeni, nekā lauku apdzīvotajās vietās.

Nobeigums

Latvijā novērotās ģeogrāfiskās atšķirības izglītošanās laikā, kā arī bērnu un vecāku iegūtās izglītības līmeņu un citu izglītības ieguves rādītāju salīdzinājumā nav unikālas, bet gan atspoguļo plašākas tendences, kas vērojamas visā Eiropā. Vairākos pētījumos ir konstatētas būtiskas atšķirības gan izglītošanās ilgumā, iegūtajā izglītības līmenī un izglītības sniegumā starp pilsētu un lauku teritoriju, kā arī starp lielpilsētu metropoļu reģioniem un nomaļiem reģioniem ar zemu iedzīvotāju blīvumu (Rodríguez-Pose & Tselios, 2011; Popescu et al., 2022). Kopumā Latvijas iedzīvotāji ir labi izglītoti, un augstāko izglītību ieguvušo īpatsvars pieaugušo iedzīvotāju vidū ir augsts citu Eiropas Savienības un Ekonomiskās sadarbības un attīstības organizācijas dalībvalstu kontekstā**.**

Veiktais pētījums apliecina, ka izglītība un zināšanu līmenis ir nozīmīgs iedzīvotāju labklājību veidojošs faktors, kā arī būtisks cilvēkkapitāla attīstības un valsts ekonomiskās izaugsmes rādītājs. Apkopotie 2021. gada tautas skaitīšanas dati liecina, ka nodarbināto iedzīvotāju vidū augstāks izglītības līmenis ir saistīts ar labāku profesionālo kvalifikāciju un attiecīgi arī augstākiem ienākumiem no algota darba. Ģeogrāfiski augstāks izglītības līmenis un ilgāks izglītošanās laiks raksturīgs Rīgā un piepilsētas teritorijās, kā arī citās valstspilsētās un vairumā reģionālās nozīmes attīstības centru. Vecāku iegūtais izglītības līmenis ir būtisks faktors, kas ietekmē viņu bērnu sasniegumus izglītībā, kā arī izredzes darba tirgū un iespējas nodrošināt augstāku labklājības līmeni sev un ģimenei. Latvijā pakāpeniski pieaug sociālā mobilitāte, un bērni arvien biežāk iegūst augstāku izglītību nekā viņu vecāki. Tomēr joprojām saglabājas ievērojamas atšķirības starp pilsētām un laukiem, kā arī starp Rīgu un pārējiem reģioniem.

Latvijā pakāpeniski pieaug sociālās nevienlīdzības jeb noslāņošanās līmenis, kas arī ģeogrāfiski izpaužas nevienmērīgā sociāli ekonomiskās situācijas attīstībā dažādās, pēc lieluma un nozīmes atšķirīgās apdzīvotajās vietās. Reģionāli vērojama sociāli ekonomiskā polarizācija starp Rīgas metropoles areālu un pārējiem reģioniem, īpaši teritorijām valsts austrumu pierobežā (Lang et al., 2022). Izglītības iegūšanas ceļā sociāli ģeogrāfiskās atšķirības ietekmē izglītības pakalpojumu nodrošinājumu, pieejamību un kvalitāti, kur labākas iespējas ir teritorijās ar augstākiem sociāli ekonomiskā sastāva rādītājiem iedzīvotāju vidū. Tādējādi šāda izglītības sistēma veicina un pastiprina sociālo noslāņošanos un mudina vecākus meklēt bērniem labākas izglītības iespējas (Vārpiņa 2019). Lai mazinātu šīs atšķirības un veicinātu vienlīdzīgas iespējas visiem Latvijas iedzīvotājiem, ir nepieciešams turpināt darbu izglītības kvalitātes un pieejamības uzlabošanu visos reģionos un apdzīvotajās vietās.

Analizējot izglītības ieguves rādītāju ģeogrāfiskās atšķirības un sociālo mobilitāti pēc iegūtās izglītības starp iedzīvotājiem pieaugušo vecumā un viņu vecākiem, šis pētījums sniedz ieguldījumu izglītības ģeogrāfijā. Tas sniedz pārskatu par Latvijai raksturīgām iezīmēm, kas ir salīdzināmas ar citviet Eiropā novērotām tendencēm, skaidrojot izglītības rādītāju ģeogrāfiskās atšķirības.

Pateicība: Raksts tapis ar Horizon Europe projekta "RePLace Reframing non-metropolitan left behind places through mobility and alternative development" (granta līguma Nr. 101094087), atbalstu.

Summary

This study analyses geographical differences in educational attainment and social mobility based on educational attainment among adult residents and their parents in Latvia, thereby contributing to the research on the geography of education. The paper highlights the significance of education in shaping professional skills and examines the variations in average time spent in education and achievement between parents and their adult offspring across regions and urban system in Latvia. The proportion of the working-age population with higher education continues to grow. Similar to other European countries, the results obtained in Latvia confirm that a higher level of education is an important prerequisite for higher professional qualifications and better opportunities in the labour market, while also promoting higher income levels and the well-being of the population. The results of the study show a close link between the levels of education of parents and children: people whose parents have higher levels of

education are significantly more likely to have higher levels of education themselves. Simultaneously, notable geographical disparities have been identified. Riga and its suburban areas, as well as other major cities and regional towns, exhibit higher educational attainment and extended average time spent in education. Despite a gradual increase in social mobility in Latvia, where children are progressively achieving higher educational levels than their parents, pronounced differences remain between urban and rural areas and between the capital city of Riga and non-metropolitan regions.

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ECOSYSTEM SERVICES AND CULTURAL VALUES OF THE GREAT KEMERI MIRE

LIELĀ ĶEMERU TĪREĻA EKOSISTĒMU PAKALPOJUMI UN KULTŪRĀLĀS VĒRTĪBAS

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Abstract. Several studies have focused their attention on Great Kemeri Mire, one of the largest peatland areas in Latvia. These included its formation, hydrological regime and value within the historical development of Kemeri National Park. While previous studies have detailed various ecological and cultural aspects of the Great Ķemeri Mire, no comprehensive research has evaluated the overall value of the mire to nearby areas in a holistic way. To address this, we used open-source forestry, geological and population density data, along with pollen analysis, to provide a comprehensive look on Great Kemeri Mire and describe ecosystem services it provides to nearby communities. We conclude that The Great Kemeri Mire has historically served as a vital area for local communities while also playing a crucial role in combating climate change by acting as a carbon sink. Additionally, it supports biodiversity through diverse forest habitats, contributing to ecosystem services and facilitating biodiversity conservation.
Keywords: *peatland degradation; quaternary deposits; pollen analysis; population density*

Introduction

Peatlands are essential ecosystems for climate regulation and biodiversity but are increasingly threatened by human activities and climate change (Swindles et al. 2019, Antala et al. 2022). History of anthropogenic impact and use of wetlands is vast and dates back to oldest known civilizations across the globe (Williams 1990, Denevan 2001). Peatlands have seen a significant decrease in their area during the last century mainly due to human activities (Fluet-Chouinard et al. 2023). This has resulted in

substantial changes not only in greenhouse gas emissions, but also a decline in provided ecosystem services value, which wetlands are known for (Mitsch et al. 2015).

Great Kemeri Mire is one of the largest mires in Latvia, covering an area of more than 6000 km^2. Like the majority of Latvian mires, Great Kemeri Mire experienced degradation during the Soviet occupation. While there have been numerous studies on the formation, development and hydrological properties (Daņiļēvičs 2010, Prols 2010, Kleinhofa 2022, Skomorohovs 2024), no analysis has been performed on the ecosystem services provided by the mire. Ecosystem values require the functioning of the entire wetlands ecosystem, not just a few species of plants, animals, or microbes, to mitigate regional climate hazards, improve water quality and even sustain human cultures (Mitsch et al. 2015). Ecosystem services provided by peatlands are beneficial to human communities, and they can be grouped into three categories: regulating and supporting services, provisioning services, and cultural services (Varin et al. 2019).

The aim of this study is to assess the ecosystem services and cultural values provided by the Great Kemeri Mire. By doing so, we observe relevant factors in a holistic approach including both published and unpublished information from pre-history to the present day.

Data and methods

In the current study, Great Kemeri Mire (located in the central of Latvia) and its nearby territories were selected as a research area (see Figure 1). Boundaries of the research area are based on natural and human made objects and their role in limiting the expansion of flora and fauna. Study area comprises 25 342 ha spanning over most of the Kemeri National Park and ending along Lielupe river on the east, with Slampe village on the west as well roads and rivers in the north and south.

The pre-Quaternary sedimentary rocks consist of Middle and Upper Devonian formations, including dolomite, sandstone, clay, and gypsum-bearing layers. These rocks are overlain by various Quaternary deposits, dominated by peat, glaciolacustrine silts and clays, and locally by glacial and aeolian sands. Raised type bogs, such as Great Kemeri Mire, contain thick peat layers. The landscape is largely flat, with minor undulations in areas shaped by aeolian sand dunes (Ķemeru nacionālā parka fonds, S.a).

Geospatial analysis (ESRI ArcGIS Desktop 10.8.2. and QGIS 3.40) and Forest Soil Inventory were used for analyzing recent and current environments. The population

density map used in this study is based on 2021 Census data using 1 km^2 grid cells (Oficiālās statistikas portāls 2021). The study area includes the municipalities of Tukums, Jelgava and Mārupe, as well as the city of Jūrmala.

As historic information on vegetation cannot be observed from maps but is crucial in understanding for current overall land cover situation, pollen analysis was carried out to prolong the insights into historic forest composition in the region. Due to its size, Great Kemeri Mire pollen results represent regional vegetation patterns (Hellman et al. 2007), thus, ideal, to reconstruct overall dominant tree species within the region.

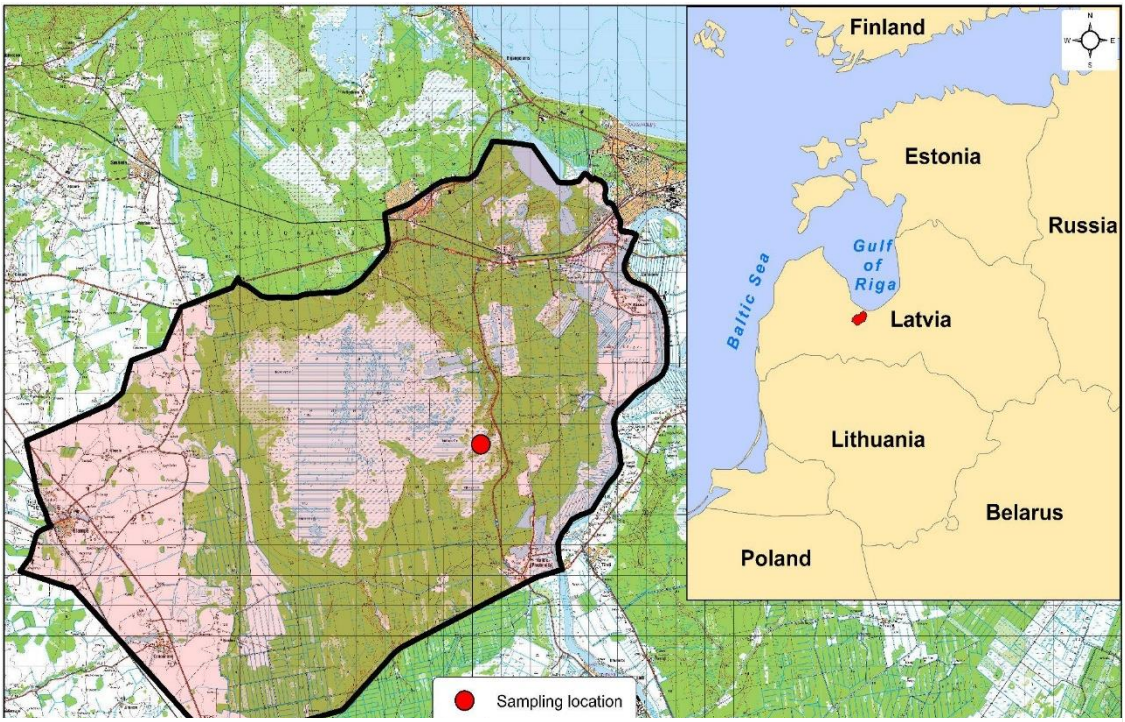

Figure 1. **Research area and pollen sampling location. Sample collection located at 56°52'21"N, 23°31'44"E.** (authors' figure)

Great Kemeri Mire was sampled in September 2024 using a peat corer with a diameter of 5 cm. Peat samples for pollen analysis were collected from a core site located at 56°52'21"N, 23°31'44"E (see Figure 1). The sampling site was chosen to minimize edge effects and ensure representation of regional vegetation patterns. The sediment thickness reached 300 cm. Lithologically, sediment sequence consisted of peat (20 cm fen type peat at the base and 280 cm raised mire peat on top of it) which formed above the Quaternary sand sediment. Peat subsampling was done in the field following known information on peat age of similar peat thickness and characteristics nearby locations analysed by Skomorohovs (2024). Altogether ten subsamples were taken for

pollen analysis (depths, cm: 0-5, 18-20, 30-31, 35-36, 40-41, 44-45, 48-49, 54-55, 69-70 and 109-110).

Pollen analysis was done in the Quaternary Environment laboratory, Department of Geology at the University of Latvia. Pollen samples of known volume (1 cm^3) were treated with 10% HCl, boiled in 10% KOH and then acetolysed for 5 min using standard acetolysis procedures (Berglung and Ralska-Jasiewiczowa 1986). At least 50 terrestrial pollen per sample were counted and identified to the lowest possible taxonomic level using published pollen keys. The percentage of dry-land taxa was calculated using arboreal and non-arboreal pollen sums (excluding sporomorphs). Counts of spores were calculated as percentages of the total sum of terrestrial pollen. Pollen results were visualized using the RStudio environment (v. 2024.04.0+735, R Core Team 2024) using the riojaPlot package (Juggins 2024).

Assuming simultaneous vertical growth of the whole bog surface (Ilomets et al. 1984) and lateral peat surface expansion fixed at zero for the entire studier period, we employed an age-depth modelling to associate chronology for analysed peat samples. Using ^{14}C data from Skomorohovs (2024), we applied the latest IntCal20 calibration data set, producing an age-depth model in the R environment using the Clam package (Blaauw 2010).

Results

Our analysis shows that approximately 3.5% of the total research area has been subject to mineral extraction over various time periods (see Figure 2). However, based on data from the Subsurface Information System of the Latvian Center for Environment, Geology, and Meteorology, as well as analysis of cartographic materials such as topographic maps and satellite imagery, it can be concluded that nearly all mining activities in the area have ceased or been discontinued for other reasons. The only active site is the medicinal mud extraction site “Sloka” (see Figure 2).

With the retreat of the glacier from the territory of Latvia about 15 000 years ago, the Great Kemeri Mire could begin to form. Thanks to glacioisostasy, the area began to rise, ensuring that it was initially covered by the waters of the Baltic Sea’s development stages (the Zemgale Ice-Dam Lake and the Baltic Ice Lake, Pēcleduslaikmeta shēma 1981). With the end of the Baltic Ice Lake, the water level in the Baltic Sea dropped by 25 meters, resulting in the Great Kemeri Mire area becoming dry. This led to the

formation of dune relief (still recognized under and within the Great Kemeri Mire itself) due to wind action. Radiocarbon dating (Skomorohovs 2024) indicates that organic matter in the Great Kemeri Mire began to accumulate around 9885 cal BP. Initially, it developed as a fen-type mire and remained so until 2300 cal BP, when it transitioned into its next development phase – a raised mire.

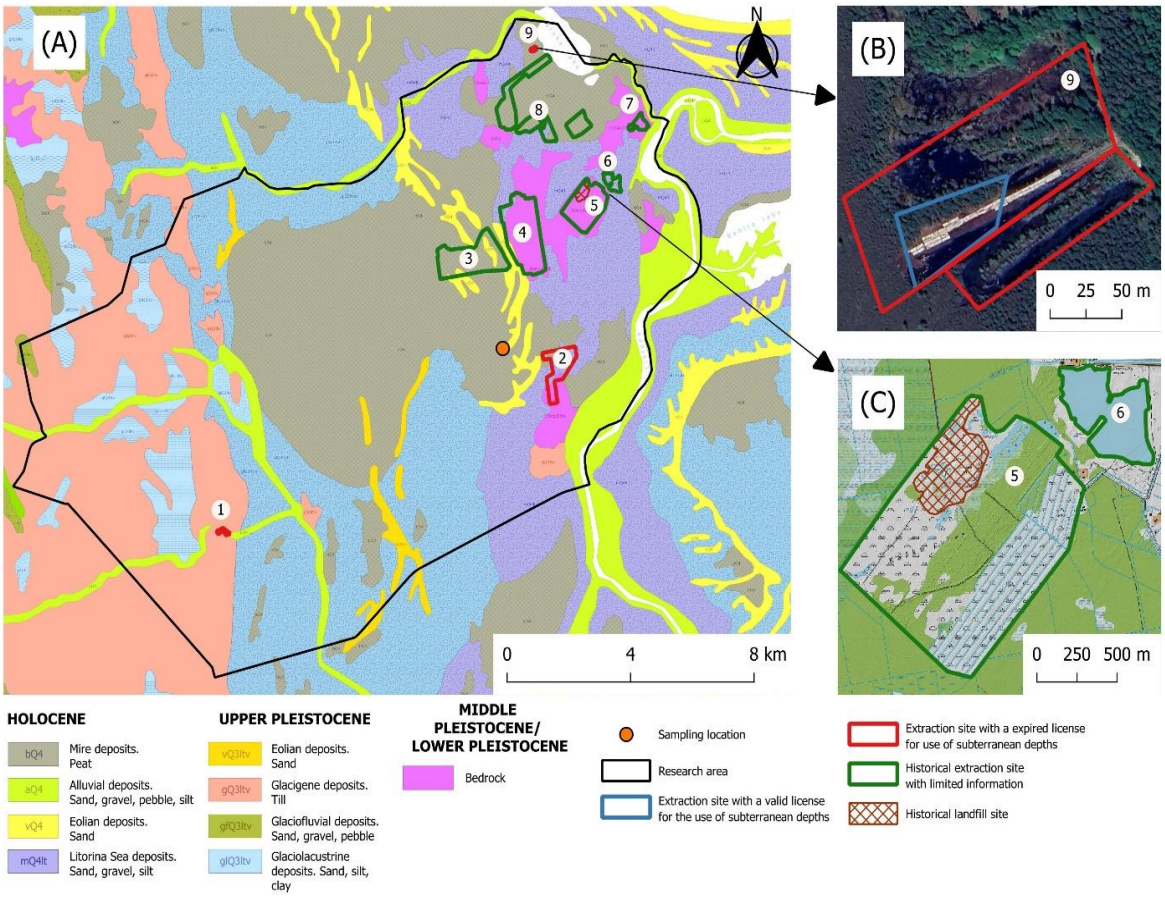

Figure 2. **(A) Overview of extraction sites across Quaternary sediments (**basemap: LEGMC 2001**): 1. Dolomite extraction site "Lancenieki"; 2. Dolomite extraction site "Kalnciems II"; 3. Peat extraction site "Lielais Ķemeru tīrelis"; 4. Peat extraction site "Labais purvs"; 5. Peat extraction site "Kašķu purvs"; 6. Dolomite extraction site "Sloka 2.laukums"; 7. Dolomite extraction site "Sloka"; 8. Peat extraction site "Slokas (vecais) purvs"; 9. Medicinal mud extraction site "Sloka". (B) Detailed view of the healing mud extraction site "Sloka", showing areas with expired and valid licenses for material extraction** (basemap: Google 2024**). (C) Peat extraction site "Kašķu purvs" featuring landfill and adjacent dolomite extraction site "Sloka 2.laukums"** (authors' figure using LGIA basemap**)**

According to the population density map, the area has low or no population (Figure 3). The highest population density is observed in the northern part of the territory - in the area of Jūrmala City and Marupe Municipality, where the maximum population

reaches 978 people per grid cell. A relatively high population density is also observed in Slampe which is located in Tukums municipality. In general, the most densely populated areas are concentrated around cities and villages. Most of the grid cells with high population density cover the border of the study area

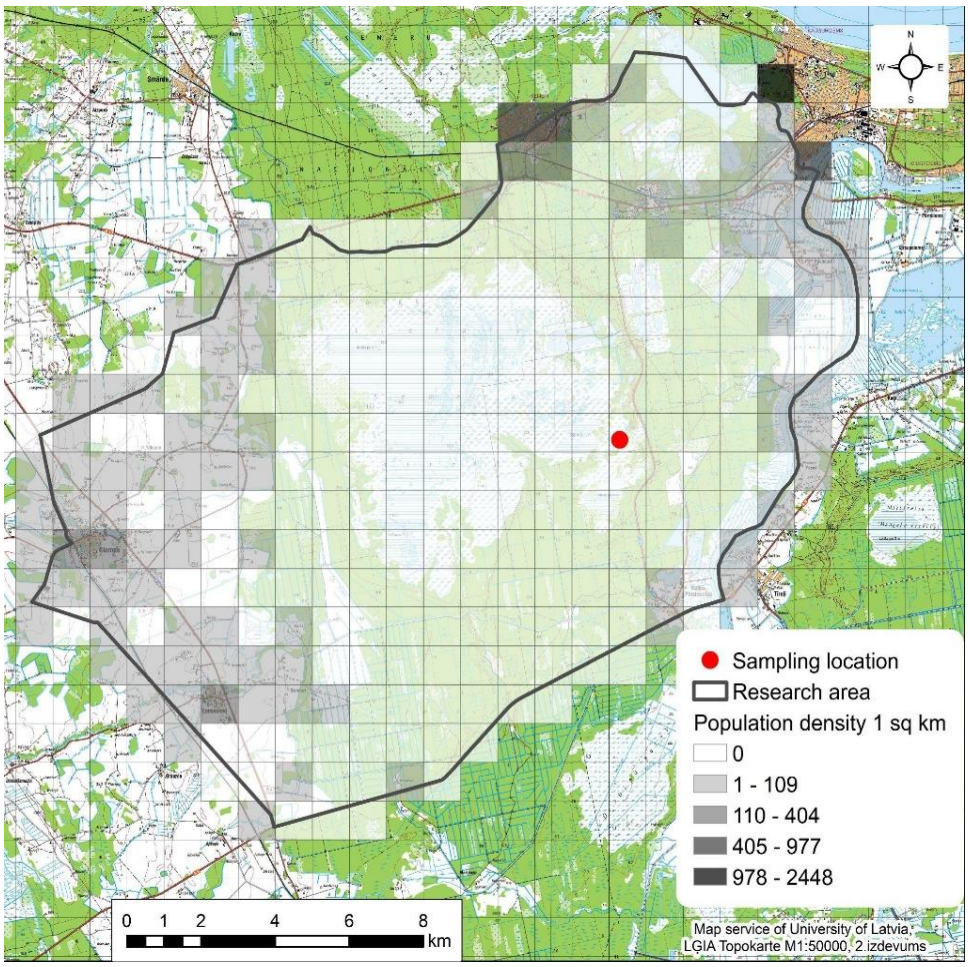

Figure 3. **Current population density within the study area**

Pollen analysis of the sampled peat profile reveals pine dominance throughout the entire profile (30-70%, see Figure 4). Notably, a significant increase during the last 200 years was observed, likely due to the proximity of the sampling location to the bog's edge and the expansion of pines there. Birch (15-40%) and alder (3-10%) also had notable occurrences but their presence has been less stable over time. This may suggest that around 1500-1700 CE, nearby forests experienced changes in flora as evidenced by a sudden increase in Pteridium spores and graminoid pollen during this period, which could be attributed to agricultural activities or early logging. Spruce values were generally low, averaging approximately 4%.

Sphagnum spores show a relatively high continuous presence throughout the time. The low moss values observed in some of the oldest dated samples might indicate hydrological changes from transitional to raised bog conditions.

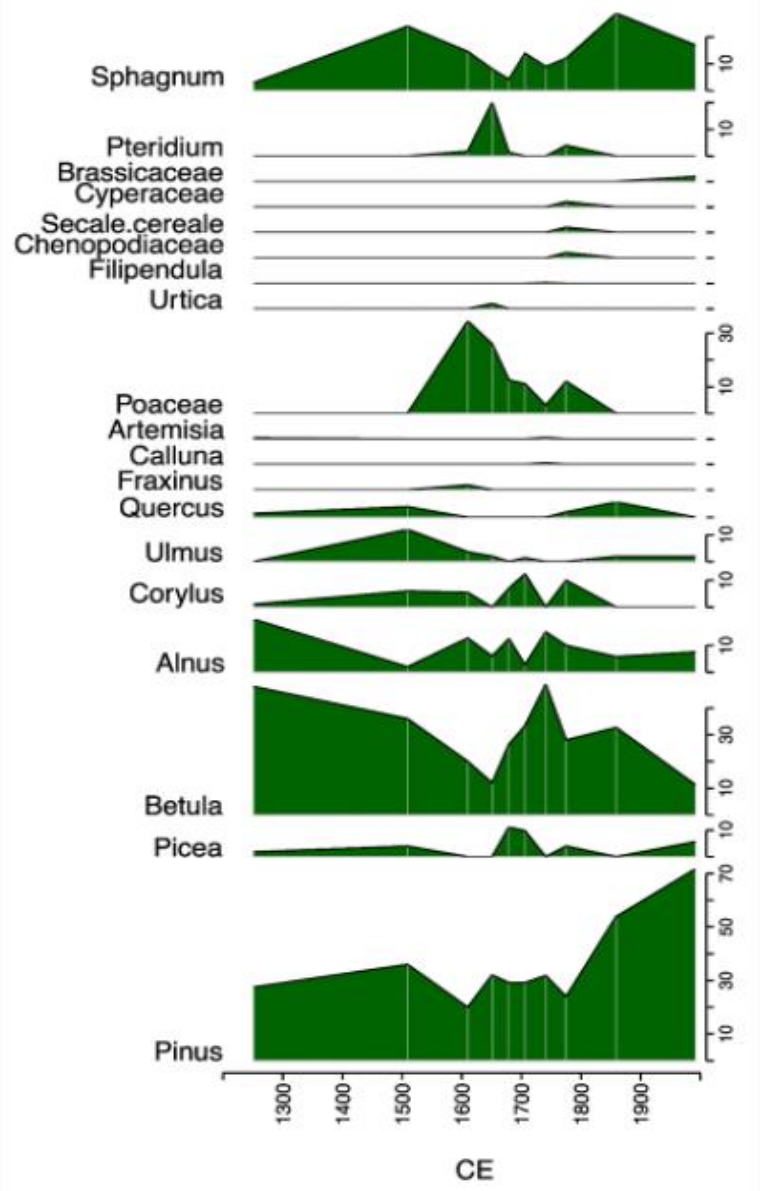

Figure 4. **Pollen and spore analysis results from Great Kemeri Mire. Chronology (calendar years, CE) on y axis and pollen taxa with subsequent percentage (%) share on x axes.** (authors' figure)

Figure 5. **Aerial view of eastern peatland extraction sites in November 2024 (56°54'39"N, 23°32'07"E).** (photo by M.A. Zuperka)

The oldest available cartographic records of wetland existence near Kemeri date back over 200 years, with the Atlas von Liefland maps from the (Dodies.lv, S.a., Vāvers 2021). Since then, the wetlands have accumulated a considerable amount of peat. Large quantities of peat were extracted from the northeastern part of the mire during Soviet times. Although some areas have largely recovered their natural vegetation following these extraction activities (see Figure 5), certain sites continue to remain flooded and are unlikely to recover without intervention for several years. Fortunately, the affected area is relatively small compared to the overall size of the Great Kemeri Mire, which remains predominantly natural. This natural state is crucial for providing essential habitats for wetland-specific fauna and flora, mitigating flood risks, and ensuring water resources accessibility for local residents. Aerial imagery and field observations also indicate that the eastern part of the mire is susceptible to woodland expansion, which was also noted in pollen analysis.

Historical maps also reveal that major drainage systems were constructed around the mire during the last century. These actions explain the high percentage of wet and dry drained forests around the study area (see Figure 6). Drainage negatively impacted

the carbon sequestration potential of these forests by both promoting peat layer oxidation due to reduced groundwater levels, as well as restricting new peat formation. Nevertheless, a high forest taxonomic diversity is observed around the Great Kemeri Mire, which positively impacts the ecosystem services provided. Dry forests are known for recreational activities like hiking and mushroom or wildberry picking among local population. Naturally moist forests are mostly located on fertile soils, promoting biodiversity.

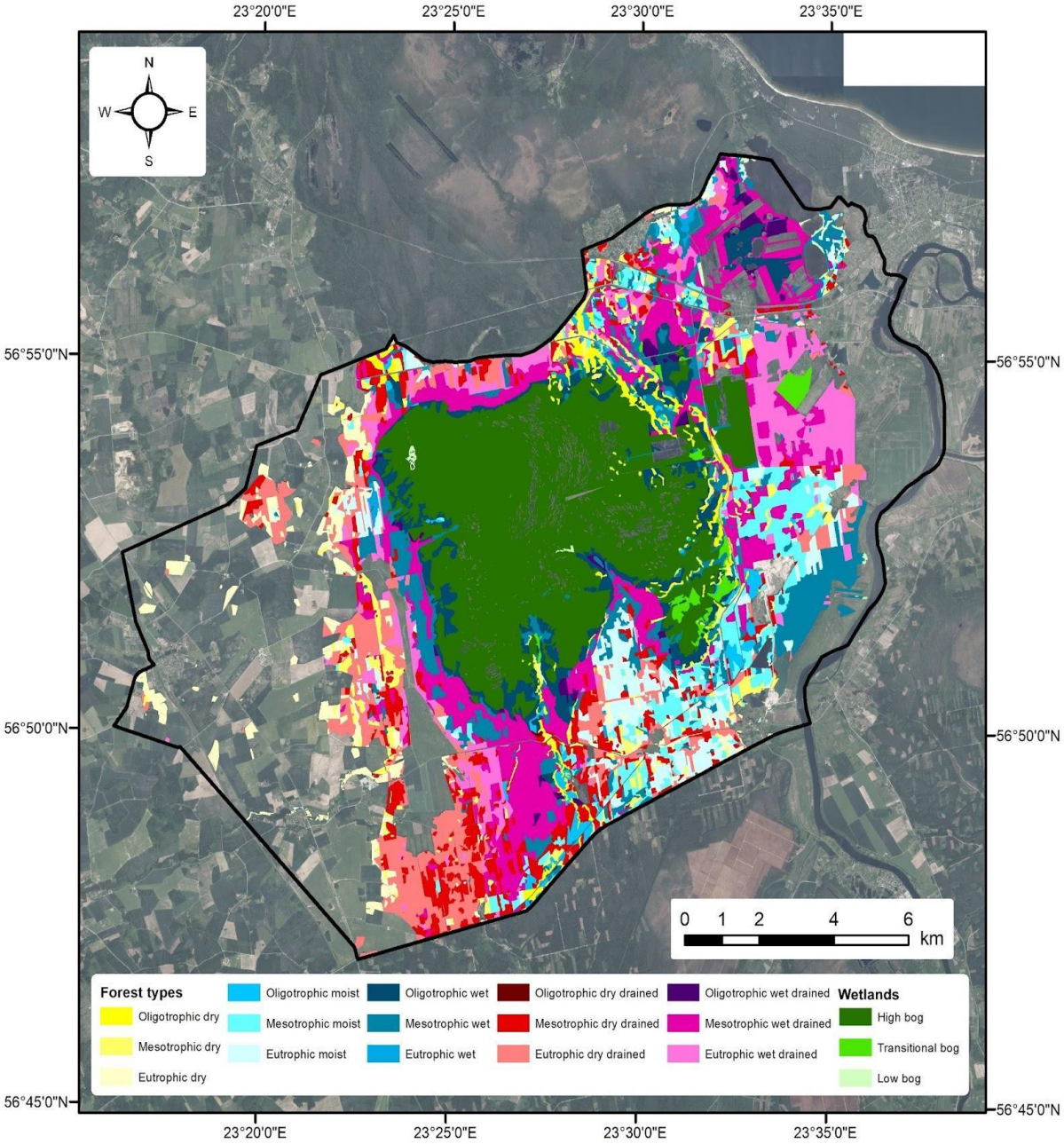

Figure 6. **Forest and wetland types in the research area. Data courtesy of National Forest Registry** (Valsts meža dienests 2025).

While Great Kemeri Mire has not been a central area for urban development, provided ecosystem services have been used extensively. Due to wet nature, mire as such is not the primary area for living. Indeed, both historic and current information on population density and distribution (e.g., Fig. 3) indicate higher population densities along marginal positions of Great Kemeri Mire. Nevertheless, Great Kemeri Mire provides several critique services underlined also by the United Nations (see Figure 7). Area is used for recreation activities and provides various berries. Mire itself serves as huge sponge holding high amount of freshwater and ensuring lower flood-risk for surrounding area. While there is sufficient water level within the mire, a healthy natural ecosystem can persist and ensure life within the mire. Due to photosynthesis, new carbon dioxide is captured from the air and stored in the peat in a form of carbon for centuries and millennia. Hence, Great Kemeri Mire is crucial for climate change mitigation. These values are somewhat forgot or unappreciated but forms a backbone of defining cultural values of this region.

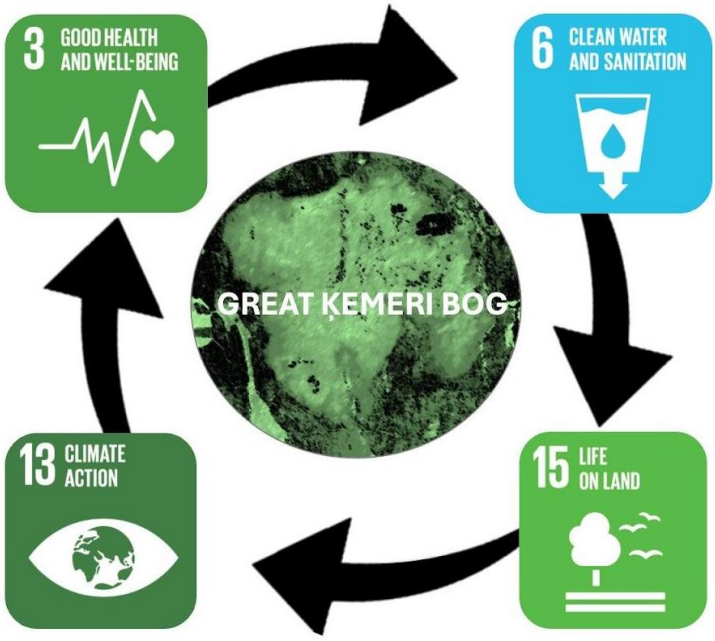

Figure 7. **The role of Great Kemeri Mire in scope of the United Nations goals.** (authors' figure)

Conclusion

This study investigated multiple dimensions of the Great Kemeri Mire, providing an integrated assessment of its ecological and cultural significance. Pollen and spatial

analyses indicate that parts of the area were historically influenced by agricultural activity, whereas current trends suggest progressive encroachment of woody vegetation from the mire margins. Numerous inactive peat extraction sites and associated remnants reflect the historical importance of the area for surrounding communities, despite the presently low population density. The mire encompasses a diversity of forest ecosystems that provide habitat for a wide range of species and support recreational use, while its extensive wetland complexes play a substantial role in carbon sequestration and climate regulation. Overall, the results emphasize the multifunctional role of the Great Kemeri Mire in biodiversity conservation, ecosystem service provision, and sustainable land-use planning, while also contextualizing its present state within its historical development.

Kopsavilkums

Lielais Ķemeru tīrelis laika gaitā ir piesaistījis daudzu pētnieku uzmanību. Tas rezultējies vairākos pētījumos par tīreļa hidroloģisko režīmu, veidošanos un kultūrvēsturisko vērtību, tomēr trūkst holistisku pētījumu par Lielā Ķemeru tīreļa nozīmi gan ekosistēmu pakalpojumu skatījumā, gan vietējiem iedzīvotājiem, tādēļ rakstā tika apskatīti dažādi Lielā Ķemeru tīreļa ģeogrāfijas aspekti, piemēram purva hronoloģiskās attīstības un zemes izmantošanas veidu pagātnē rekonstrukcijas pēc putekšņu analīzēm un esošo mežu daudzveidības raksturojums. Rezultāti parāda ka Lielais Ķemeru tīrelis ir bijis aktīvi izmantots un nozīmīgs resursu avots vietējiem iedzīvotājiem vairākus gadsimtus, uz ko norāda gan putekšņu analīžu rezultāti, gan mūsdienu ekoloģiskie procesi tīreļa apkārtnē. Tīrelis aizvien ir svarīgs gan vietējiem iedzīvotājiem, nodrošinot plašu klāstu ekosistēmu pakalpojumu, gan klimata pārmaiņu seku mazināšanā, veicinot oglekļa piesaisti un bioloģisko daudzveidību.

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