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Provision of central services in rural areas: views of the elderly population in Hrvatsko Zagorje, Croatia

Received/
Prejeto:
30 April 2025
Revised/
Popravljeno:
27 July 2025
Accepted/
Sprejeto:
1 August 2025
Published/
Objavljeno:
13 October
2025

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Abstract
This study explores demographic decline and the contraction of central services in the Zabok area of Hrvatsko Zagorje, Croatia. Using settlement-level analysis, a survey of residents aged 65+, and informal conversations, the relationship between long-term depopulation, ageing, and the spatial distribution of central services is examined. The results reveal spatial variation in the decline of education and retail, as well as differences in respondents' ability to meet their daily needs, by settlement type. Findings highlight uneven development trajectories and the growing vulnerability of elderly populations.

Keywords
small town, central services, depopulation, ageing, elderly, Croatia, Hrvatsko Zagorje

Povzetek
Zagotavljanje centralnih dejavnosti na podeželju: pogledi starejše populacije v Hrvaškem Zagorju, Hrvaška
Ta študija obravnava demografski upad in zmanjševanje centralnih dejavnosti na območju Zaboka v Hrvaškem Zagorju. Na podlagi analize na ravni naselij, ankete med prebivalci, starimi 65 let in več, ter neformalnimi pogovori smo ugotavljali povezavo med dolgoročnim odseljevanjem, staranjem prebivalstva in prostorsko razporeditvijo centralnih dejavnosti. Rezultati kažejo prostorske razlike v upadu izobraževanja in trgovine ter razlike v zmožnosti anketirancev za zadovoljevanje dnevnih potreb po storitvah glede na tip naselja. Ugotovitve poudarjajo neenakomerne razvojne poti in naraščajočo ranljivost starejšega prebivalstva.

Ključne besede
majhno mesto, centralne dejavnosti, prebivalstvo, staranje, starejši, Hrvaška, Hrvaško Zagorje

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1 Introduction

Central services include different public and private sector services located in a settlement, available to both its population and the population of nearby settlements (Lukić, 2012; Malić, 1981; Radeljak Kaufmann, 2015). The importance of the distribution of goods and services, of their tendency to concentrate in specific locations with corresponding gravitational areas, and of the formation of a hierarchy among various services and places was emphasised within the theory of central places, introduced by Walter Christaller in 1933 (Michel, 2016; Šišak, 2023). In spite of a certain lack of conceptual clarity concerning Christaller's depiction of central places and the real-world distribution of cities, as well as the concept of space in general and the way distances should be measured—in time, money or meters (Michel, 2016), Christaller's theory could be seen as corresponding well to the reality in rural areas. This view relies on a traditionally, relatively stable settlement structure in a rural area, in comparison to an urbanised post-industrial area, where the interconnection of services and settlement structures differs (Vaishar & Šťastná, 2021).

Also, taking into account the views of some authors that central place theory is an oversimplification of reality and overly static (Vaishar & Šťastná, 2021), and the ongoing debate on its relevance in contemporary geographical studies, we can still conclude that the significance of studying a set of services that contribute to the centrality of a settlement stems from the fact that these services are necessary in everyday life for both urban and rural populations (Šišak, 2023).

In the European Union, services such as transport, energy or telecommunications networks were already included in the normative and political context in the 1950s under the term "service of general economic interest" (Humer, 2022; Šišak, 2023). However, it was only in the 2000s and with the emergence of territorial cohesion as one of the EU's policy objectives (Humer, 2022; Neumeier, 2016) that the concept was extended to include social services of general interest (EC, 2004). The aim of territorial cohesion policy, among many other examples of the equal distribution of resources and opportunities, was to ensure sufficient accessibility to public services for all citizens, regardless of where they live. Some Member States, in particular Germany, have closely modelled their spatial planning policy on this example with the concept of *Daseinsvorsorge* (Neumeier, 2016). In 2004, the EU Commission published a Green Paper on services of general interest and defined a wide range of different activities that are considered necessary for the daily lives of citizens, such as health, education and other social services. The Paper also analysed the impact of the spatial scale and type of provision (market and non-market services). The OECD (2010, 2020, 2022) likewise addressed the issue of services of general interest, emphasising the role of private and public actors in the provision of these services and the need for equitable access to them. In addition, the OECD recognised services of exceptional importance to the community, services of moderate importance to the community and routine services that are primarily of private importance to the user. Emergency medical care, and primary education are for example considered as services of exceptional importance while post offices, rural shops or restaurants are of moderate importance.

Although the contemporary normative context in the EU clearly recognises the importance of the provision and accessibility of services of general interest, small towns and surrounding rural areas in Europe are still characterised by a decline in

services of general interest due to various processes of demographic and socio-economic change (Baudet-Michel et al., 2021; Cedering & Wihlborg, 2020; Christiaanse, 2020; Haartsen & Gieling, 2021; Kostanjšek & Marot, 2021; Lechowski & Jasion, 2021; Lehtonen, 2021; Neumeier, 2016; Vaishar & Šťastná, 2021; Velaga et al., 2012; Wiśniewski et al., 2021). In many areas, the declining population is leading to a decrease in demand for public services (Steinführer et al., 2014), the dismantling of local services and a thinning out of social networks (Abramsson & Hagberg, 2018). The maintenance of services and facilities (such as public transport, community centres, post offices), therefore becomes financially unsustainable (Noack & Bergmann, 2011). Based on a nationwide study in Poland, Wiśniewski et al. (2021) clearly showed that depopulation and ageing are associated with significant challenges in the accessibility of services. In addition to demographic trends, it has been recognised that changes in public policy have an important impact on the provision of services of general interest. Baudet-Michel et al. (2021) have presented a very interesting analysis of the impact of neoliberalism on the reform of welfare states and public services in France. Using the example of judicial and hospital facilities (2000–2016), the authors showed that the disappearance and reduction of courts and hospital beds mainly affects small towns.

Furthermore, the overall picture has also shifted with other developments over the last decades, including the widespread use of cars, technological advancements in general, and changes in how services are organised and delivered. The trend towards greater personal mobility and a potentially weaker link between residence and services, alongside an important trend towards spatial and organisational concentration of retail businesses, were pointed out by Powe & Hart (2009) as significant influences on the development of small towns, as central places. The demand for public transport decreases with the increasing motorization of the rural population, affecting its economic efficiency and leading to disruption of lines and connections (Vaishar & Šťastná, 2021). The high dependency on the personal transportation (cars) is thus both the consequence of an infrequent traditional public transportation, and a hindrance to the development of fully functional public transportation networks (Knierim & Schlüter, 2021). Moreover, the difficulty of access to basic services is not exclusively a matter of proximity to them, but of individual circumstances (Martínez Sánchez-Mateos & Ruiz Pulpón, 2025). People who are not able to use cars and are less mobile (especially the elderly) are at risk of social exclusion and their quality of life tends to decline (Knierim & Schlüter, 2021; Vaishar & Šťastná, 2021). In this sense, Christiaanse (2020), in her research on the decline of services in the Netherlands, suggested that spatial planning policies focused on mitigating the closure of facilities should be tailored to people with low mobility in small villages rather than depopulating areas, which are considered too general a category for the provision of measures.

The outmigration from rural areas, usually of younger and better-qualified people, in combination with low birth rates and increased life expectancy rates, has influenced the process of ageing (Abramsson & Hagberg, 2018; Nejašmić & Toskić, 2013; Noack & Bergmann, 2011; Perpiña Castillo et al., 2024; Steinführer et al., 2014). Unfavourable demographic processes have been common for Central and East European countries (Fihel & Okólski, 2019), although not universally characteristic for either urban or rural areas, including small towns (Krisjane et al., 2023; Perpiña Castillo et al., 2024; Vaishar et al., 2020). Due to decreasing birth rates, increasing life expectancy, rural exodus, decades-long emigration, and direct and indirect consequences of the Croatian War of Independence, Croatia finds itself with one of

the oldest populations among European countries. Depopulation and ageing became widespread towards the end of the 20th century, and have been especially pronounced in rural areas (Nejašmić & Toskić, 2013; Nejašmić & Toskić, 2016). Furthermore, one of the main characteristics of Croatia in terms of population geography is the inherited dispersed population distribution with a large number of small settlements and an underdeveloped system of regional and microregional centres (Nejašmić & Toskić, 2016). The aforementioned is the legacy of the political-territorial organisation prior to 1990s, which was based in a system of larger municipalities with municipal seats as centres of polarised development at the local level. In the contemporary urban system in Croatia, small towns are predominant, while there is a lack of mid-sized cities (Toskić & Njegač, 2003). This further highlights the important role of small towns in central services provision and local development.

This paper explores population development and the spatial dynamics of the decline in central services provision in small towns and rural settlements of Hrvatsko Zagorje (Croatia). This research focuses specifically on the Zabok area, consisting of 82 settlements located in the central and southern part of Krapina-Zagorje County. The goal of the research is to examine the unfavourable trends of population development in relation to declining central services in the Zabok area since the 1960s, and compare the present provision of central services from the point of view of the elderly population between urbanised and rural settlements. Given the general context of depopulation, population ageing, and decline in central services on the one hand, and a lack of research focusing specifically on the views of the elderly population in Croatian geographic literature, a face-to-face questionnaire survey (N=42) was conducted among the population aged 65 years and older, including informal conversations for more in-depth knowledge. Research aimed to explore the importance of central services for the elderly population, everyday activities and mobility, and their level of satisfaction with central services.

Following a more detailed description of research methods, we continue with a description of demographic trends and decline of central services in the Zabok area, prior to presenting the survey results. Research results are discussed with regard to corresponding research in the wider Croatian and European context, followed by concluding remarks.

2 Methodology

In order to operationalise the research, it was necessary to conduct a survey among the elderly population. The survey questionnaire consisted of 17 mostly closed-ended questions and was divided into two sections. The first section of the questionnaire collected data on the socio-demographic characteristics of the respondents (including sex, age, education level and settlement of residence), while the second section focused on three thematic areas: 1) central services (their perceived importance and user satisfaction), 2) everyday activities, and 3) mobility (including car ownership, possession of a driver's license, mobility opportunities, satisfaction with and accessibility of public transport, and satisfaction with transport infrastructure). Considering that the respondents were selected according to predetermined criteria (age), the sample was purposive. The survey was conducted between 10 and 14 April, 2023, using the face-to-face method. This method of data collection, although time-consuming and logistically demanding, was necessary. Considering that the elderly population, particularly in rural areas, often lacks internet access, online surveys, while simpler for researchers, would not be suitable in this case. Surveys via

telephone calls or postal forms were rejected due to uncertain outcomes. One of the advantages of face-to-face surveys is the opportunity to notate commentary on the part of the respondents, which contributes to an in-depth understanding of the phenomenon. Therefore, quantitative data will be supported by qualitative findings from the field.

Population data were gathered from the official statistical sources (Croatian Bureau of Statistics), while information on the locations of central services that once existed, but no longer exist, was obtained via informal conversations with residents and retired travelling salesmen who worked in the research area. Central services that are (still) operating were verified in the field.

The researched settlements can be divided into urbanised[1] and rural[2] settlements. These categories were used in order to provide better understanding of the problems and needs of the elderly population. Processing of the obtained data was carried out in MS Excel and SPSS Statistics. Descriptive (mean, ranks) and inferential statistics (Fisher's exact test, chi-square test and Mann-Whitney U test) were used, as well as the Likert scale. The Likert scale is structured so that lower scores correspond to lower levels of measured construct, while higher scores indicate higher levels. Conversely, the ranking system reflects the level of perceived importance, with rank one denoting the highest level of importance and rank five the lowest. Graphics were visualised using MS Excel, ESRI ArcMap and ArcGIS Pro.

Certain limitations should be mentioned. In one of the studied municipalities, locals were reluctant to participate in the survey. The reason was a lack of trust, caused by general distrust in the local authorities (*You are working closely with the municipality, I would rather not tell you anything*;…*I'm afraid of you telling my answers to the mayor*…[3]), as well as defeatism (*what can I tell you, you should ask someone younger, I will soon be gone anyway*…[4]). Therefore, in one of the field trips, only three out of 17 surveys offered were completed in the four-hour period. Also, it was extremely difficult to reach the respondents in more peripheral settlements in order to collect a significant number of completed surveys.

3 Results

Population development in the Zabok area

The research area covers the central and southern part of Krapina-Zagorje County, and includes the settlements of the Town of Zabok and the municipalities of Bedekovčina, Krapinske Toplice, Sveti Križ Začretje and Veliko Trgovišće. The whole area used to be part of the large Zabok Municipality with Zabok as the municipal seat

[1] Urbanised settlements include central services appropriate for centres of local importance (shop/store, primary school, general practitioner/family medicine doctor, post office; Lukić, 2012); urbanised settlements in which respondents reside: Bedekovčina, Krapinske Toplice and Sveti Križ Začretje.

[2] Rural settlements account for a maximum of three central services (shop/store, branch/primary school, general practitioner/family medicine doctor, post office; Lukić, 2012); rural settlements in which respondents reside: Brezova, Čret, Donje Vino, Družilovec, Grdenci, Gregurovec, Hršak Breg, Jalšje, Kebel, Klokovec, Oratje and Židovinjak.

[3] *Vi radite za općinu, ni bi vam niš povedala*; […] *ja se bojim da ne bi vi kaj rekla načelniku…*

[4] *kaj vam ja morem reći, pitajte nekoga mlajšega, mene tak več skora ne bu…*

until administrative-territorial changes in Croatia took place in 1992, and can therefore be considered as the wider Zabok area (Malić, 1981; Figure 1). After the change of the political system in the 1990s, a new political-territorial organisation of the country was introduced with counties as regional self-government units and municipalities and administrative towns as local self-government units. Local units where now much smaller in terms of population and territory. Together with over one-half of the former municipal seats in Croatia in 1991 and 2001 Zabok fell into the small-town category, i.e. up to 10,000 inhabitants (Toskić & Njegač, 2003).

In 2021, total population of the Zabok area was 30,930. The settlements in the Zabok area are generally categorised as low-population areas, with an average of 377 inhabitants per settlement. The smallest settlements, up to 100 inhabitants, make 15% of the total number of settlements, however, represent only 3% of the population (Table 1). Those with population ranging from 100 to 300 inhabitants account for one-quarter of the population. Approximately one-fifth of all settlements, containing an equivalent proportion of the population, have between 300 and 500 inhabitants each. Settlements with population ranging from 500 to 1,000 inhabitants represent 15% of all settlements, yet they contain over one-quarter (26.17%) of the population. Almost one-third of the population (29.02%) lives in the four largest settlements (5% of all settlements). Therefore, a clear polarisation and dispersion of the population is evident.

Most of the settlements (93.9%) are rural, while the centres of local self-government units are urbanised settlements. Zabok, with a population of 3,408 in 2021, is classified as a small town (Figure 1). Both Zabok and the other urbanised settlements have a more favourable position with regard to important national or regional roads. All centres of local self-government units (except for Krapinske Toplice) are also connected by railway to Zabok.

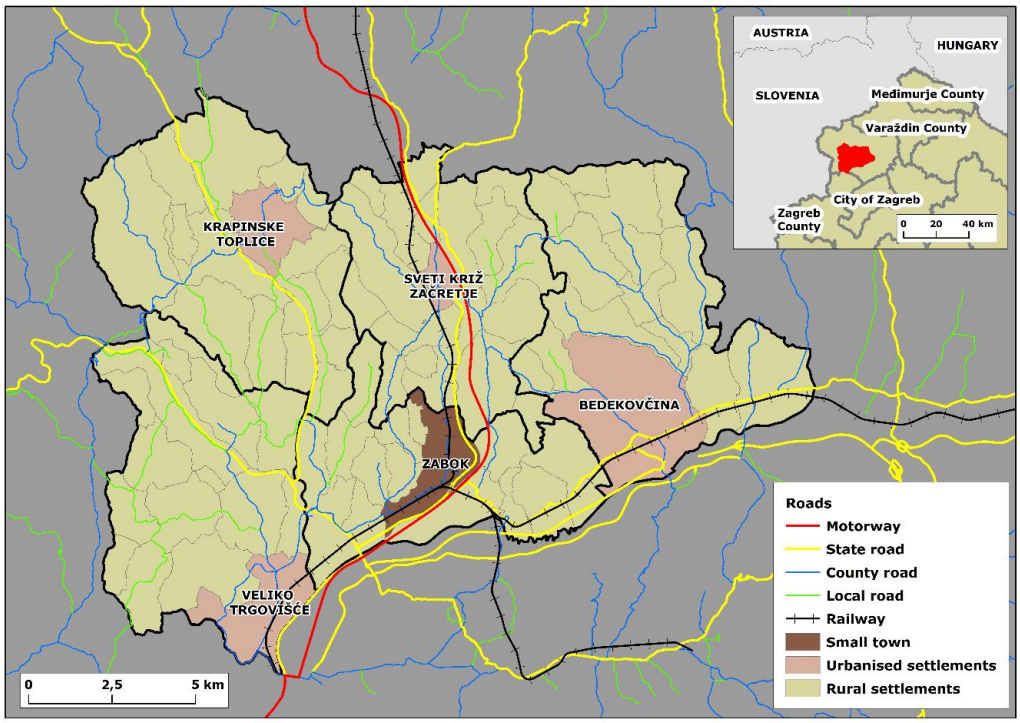

Figure 1: Research area.
Source: Authors according to DGU, 2016.

Settlements according to population size	Settlements			Population		
	Number	%	Cumulative (%)	Number	%	Cumulative (%)
0 - 100	13	15.85	15.85	926	2.99	2.99
100 - 300	36	43.9	59.76	6780	21.92	24.81
300 - 500	17	20.73	80.49	6153	19.89	44.81
500 – 1,000	12	14.63	95.12	8094	26.17	70.98
≥ 1,000	4	4.88	100	8977	29.02	100

Table 1: Settlements in the Zabok area according to population size.
Source: CBS, 2021.

After World War II, the process of significant depopulation of the whole region of Hrvatsko Zagorje began (Toskić, 1993). Throughout the second half of the 20th century, Hrvatsko Zagorje was more agrarian, yet more industrialised than the Croatian average. The processes of deagrarianisation and industrialisation occurred simultaneously (Feletar & Stiperski, 1992). Agrarian overpopulation resulted in large and cheap labour force. The area's favourable geographical position near the capital and the principal market (Zagreb) and good transport connections were an additional

incentive for industrial development. The processes of industrialisation and deagrarianisation of Hrvatsko Zagorje were also influenced by the decentralisation of the industry of Zagreb, which began in the 1950s and intensified during the 1960s and 1970s (Njegač, 1989).

In 1961, the whole Zabok area had a population of 36,531, which slightly decreased by 1991 (-222 inhabitants, or -0.61%). With industry predominantly situated along the railway *(*Vresk, 2002*)*, or in municipal (and town) centres, rural settlements faced substantial population decline. Thereby, between the 1960s and the 1990s, three-quarters of rural settlements (75.32%) recorded a decline in population (Figure 2). Only one-quarter of rural settlements (24.68%) had a slight increase in population. These were primarily settlements situated near municipal and urban centres that also grew. Conversely, Krapina-Zagorje County recorded a population decline (-20,173; -11.94%), which was the result of an underdeveloped urban network and the absence of a stronger centre that could serve as a growth pole (Nejašmić, 1992). In contrast, at the national level, Croatia experienced population growth during the same period (624,569; 15.01%).

Between 1991 and 2021 the population of the Zabok area as a whole decreased by -14.81% (-5,379 inhabitants), where only 11.69% of rural settlements and a single urban settlement experienced population growth. The demographic comparison between 1961 and 2021 highlights the profound effects of industrialisation on rural areas, with 80.52% of rural settlements recording lower population figures than in 1961. The population in settlements that are significantly more remote from the local centre has been reduced by half. Furthermore, the increase in population is present almost without exception in urbanised settlements, Zabok, and their neighbouring settlements. The share of the population of Zabok in the total population of the Zabok area increased from 5.77% in 1961 to 9.77% in 1991, and 11.02% in 2021, reflecting the processes of centralisation of both population and economic activities in Zabok. At the regional level, the population continued to decline in the 1991–2021 period (-28,077; -18.87%), during which the county experienced a more pronounced demographic weakening (Spevec, 2009). At the national level, the population decreased significantly in the same period (-912,382; -19.07%), falling below the population threshold recorded in 1961, to a total of 3,871,883.

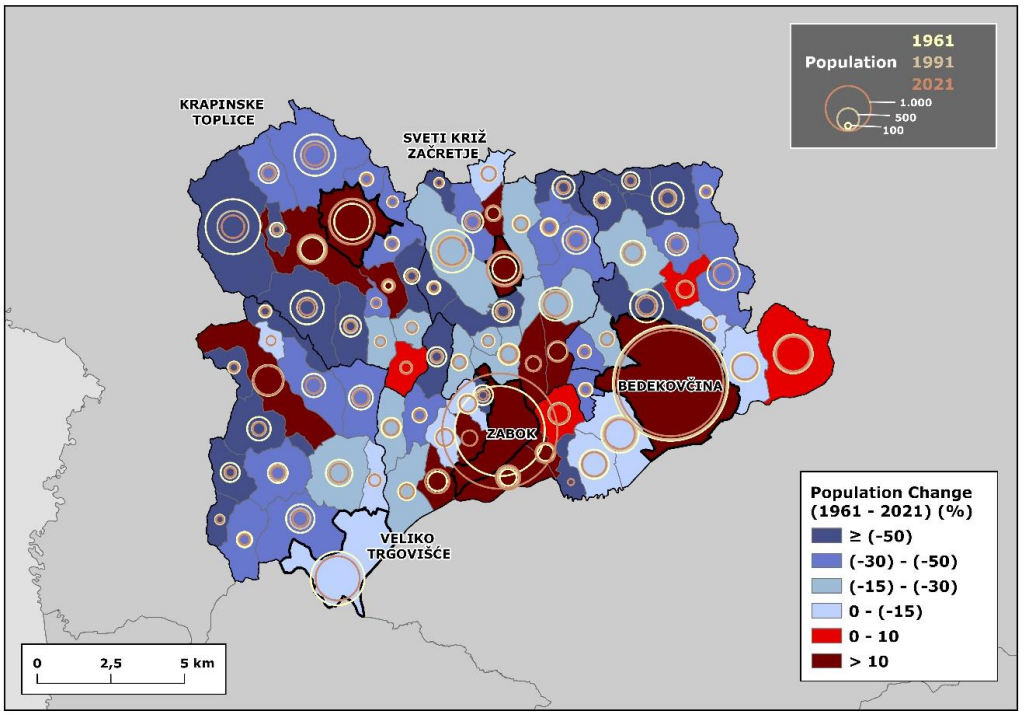

Figure 2: Population change (1961–1991–2021) and population change rate (1961–2021) in Zabok area.
Source: Authors according to CBS, 2005; 2021; DGU, 2016.

According to Wertheimer-Baletić (2001), the process of ageing begins when the average age of the population exceeds 30 years. Although the entire study area is affected by ageing, the average age is still higher in Zabok (44.77) than in urbanised (43.99) and rural settlements (44.44). Likewise, previous research indicated that the population can be considered old when the share of the elderly (population age 60 and over) in population exceeds 12% (Friganović, 1990). In this case, observing the population 65 and over, the share is higher in Zabok (29.49) than in urbanised (25.81) and rural (28.54) settlements. However, if we consider the ageing index, which differs from the previous indicators as it takes into account the proportion of both the elderly and the young population, rural settlements are characterised as the oldest (226.34), while urbanised settlements (211.35) and Zabok (213.83) are in a more favourable position in terms of age composition, showing a higher share of the young population.

Decline of central services and types of settlements in the Zabok area

Since the 1960s, the number of stores in the researched area has almost halved (Figure 3). In all studied local self-government units, at least five stores have closed, and some rural settlements have been left without a single store. At the same time, a concentration of stores is noticeable in Zabok and other urbanised settlements. The general decline of central services is also reflected in the decline in the number of students. For example, between the 2012/2013 school year and the 2022/2023 school year, the number of students who completed the first grade of primary school decreased by almost 15% (CBS, 2014, 2024). The decrease in the number of students is a consequence of long-term negative demographic trends, and has resulted in the

closure of branch schools in rural settlements, as is the case in Mala Erpenja (Krapinske Toplice), Temovac and Kozjak Začretski (Sveti Križ Začretje).

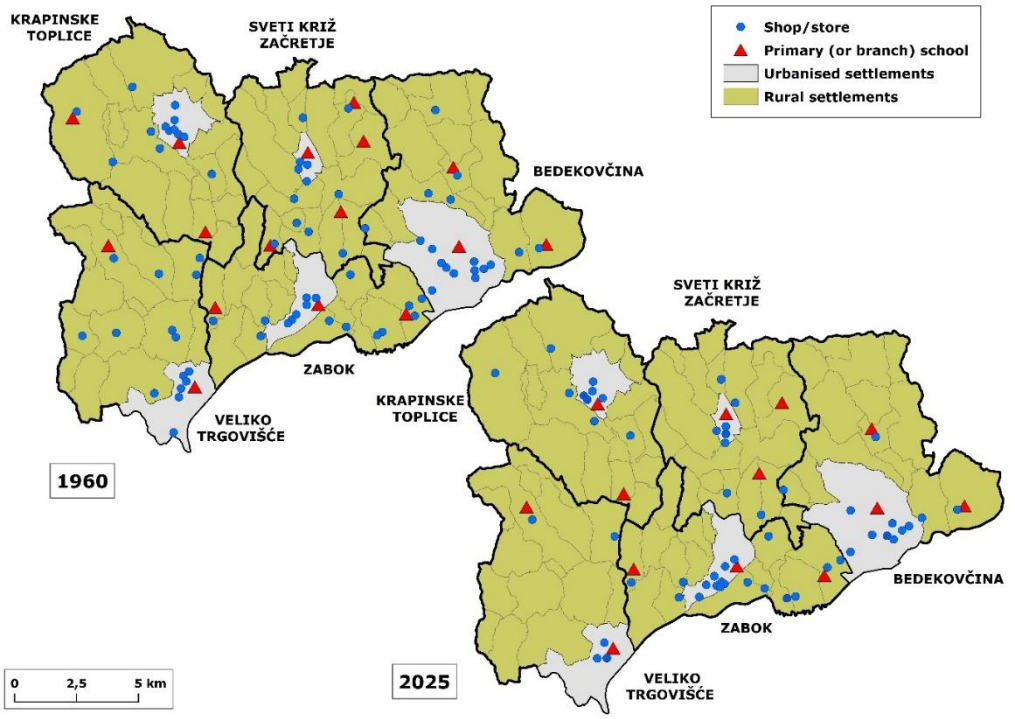

Figure 3: Active elementary (or branch) schools and retail stores in the Zabok area between the 1960s and 2025.
Source: Authors according to DGU, 2016.

With regard to the national development index, Krapina-Zagorje County is considered one of the more developed counties in Croatia. It is classified within the third group of regional self-government units, corresponding to the upper half of above-average developed counties. At the level of local self-government units (LAU2), the observed municipalities fall into different quartiles of above-average development: Zabok is positioned in the first quartile; Krapinske Toplice in the second; and Bedekovčina, Sveti Križ Začretje, and Veliko Trgovišće in the third (Decision on the Classification of Local and Regional Self-Government Units According to the Level of Development, 2025).

However, the LAU2 level tends to overly generalise the actual conditions, making it necessary to provide a more detailed analysis at the settlement level. According to the typology of urban and rural settlements in Croatia, the settlement of Zabok falls into the type of *dynamic, structurally stronger settlements*, characterised by a high proportion of daily commuters, indicating a well-developed labour function (Lukić, 2012). The labour function in these settlements is almost evenly distributed between the secondary and tertiary sectors, while the proportion of agricultural workers within the total population is significantly lower compared to other settlement types. Although the average rate of population change is negative, it is still more favourable than in other settlement types, particularly in the *rural periphery*. Therefore, it can be concluded that these settlements exhibit distinctly urbanised characteristics (Lukić,

2012; Lukić et al., 2022). In contrast, all other settlements observed in this research belong to the type of *more accessible, commute-dependent settlements*. The remaining seats of local self-government units meet the basic needs of the local population—offering essential services such as grocery stores, primary schools, healthcare centres, and post offices. However, more complex services, such as banking and secondary education, are lacking, clearly indicating that residents are compelled to commute to more functionally-developed settlements. Accordingly, these settlements record the highest share of daily commuters. Demographic trends in these settlements are less favourable compared to the aforementioned *dynamic settlements*, yet still more positive than those observed in the *rural periphery* (Lukić, 2012).

Within a recent typology based on the provision and accessibility of services in the wider Zagreb region, including the City of Zagreb, Zagreb County, and Krapina-Zagorje County (Šišak & Lukić, 2025), Zabok is part of a type characterised by a high number of well-developed higher-level services and excellent accessibility, while the remaining seats of local self-government units belong to a type in which basic services meet local needs, but access to higher-order centres is significantly limited. Compared to the previously discussed typology (Lukić, 2012), a notable difference lies in the identification of a group of settlements which, for the purposes of this study, are referred to as *rural settlements* where various issues affecting the elderly population are particularly evident. Given the diverse spatial distribution of these settlements, it is important to highlight certain characteristics. Those located along major transport routes and near the administrative centres of local self-government units generally benefit from better accessibility to more-developed settlements, supported by relatively adequate public transport. In contrast, more remote settlements fall into three types characterised by the lowest level of service provision. Since they represent most of the observed settlements, it is important to note that services, if present, are limited to the most essential—such as a local grocery store. Public transport, if accessible at all, is infrequent and limited in coverage (Šišak & Lukić, 2025).

Survey results

The survey was completed by 42 respondents from 15 settlements in all five local self-government units covered in the study. Most of the respondents live in rural settlements (66.67%; 28), while a third of respondents live in urbanised settlements (33.33%; 14) (Table 2). This corresponds with the general population distribution. Unusually, especially since the gender composition of the elderly population is usually skewed in favour of women, more men (57.14%; 24) than women (42.86%; 18; Porter & Whitcomb, 2005) participated in the study. Most respondents belong to the category of younger, 65–75 years old (40.48%; 17) and middle-aged, 75–85 years old (28.1%; 16) elderly population, while one-fifth of respondents (21.43%; 9) fall into the category of very old population, age 85 and over, which predominantly (88.89%; 8) resides in rural settlements. The largest proportion of respondents (40.48%; 17) reported completing vocational school as their highest level of education, followed by elementary school (33.33%; 14). At the lower end, only one-tenth (11.9%; 5) of respondents had completed post-secondary education, while 14.29% (6) had attained higher education. Urbanised settlements have a more favourable educational structure compared to rural—most respondents from rural settlements (85.71%; 24) lack formal academic education, they have only completed elementary (35.71%; 10) or vocational (50%; 14) school.

		SETTLEMENT TYPE		TOTAL
		URBANISED	RURAL	
Sex	Male	8	16	24
		19.05%	38.09%	57.14%
	Female	6	12	18
		14.29%	28.57%	42.86%
Age	65–75	7	10	17
		16.67%	23.81%	40.48%
	75–85	6	10	16
		14.29%	23.81%	38.1%
	≥85	1	8	9
		2.38%	19.05%	21.43%
Level of education	Primary school	4	10	14
		9.52%	23.81%	33.33%
	Vocational school	3	14	17
		7.14%	33.33%	40.48%
	Post-secondary non-tertiary education	4	1	5
		9.52%	2.38%	11.9%
	University degree/Master's programme	3	3	6
		7.14%	7.14%	14.29%
TOTAL		14	28	42
		33.33%	66.67%	100%

Table 2: Age, sex and educational structure of survey respondents.
Source: Survey research, 2023.

Importance of central services

According to age, as many as two thirds of respondents (69.05%; 29) highlight healthcare as the most important central service ($\chi^2 = 25.80$; df = 2; $p<0.05$). In addition to healthcare, significantly fewer respondents (14.29%; 6) emphasise supply and education as the most important services. Although the number of stores is falling, supply is a service that the elderly population considers very important. Banks and post offices are less important for meeting everyday needs, while educational institutions are of least importance (Figure 4). Results of the in-depth conversations indicate that the importance of educational institutions is closely linked to their role in ensuring the adequate quality of life for future generations (*I spend my free time helping my granddaughter with her homework, today I'm taking her to a dance, and tomorrow to an English class…on Friday we will go to the theatre in Zagreb*[5]; respondent No. 8). Also, there is no difference in responses between the rural and urbanised respondents. In addition to basic central services (Lukić, 2012),

[5] *Slobodno vrijeme provodim pomažući unučici u pisanju zadaće, danas ju vodim na ples, a sutra na engleski* […] *u petak ćemo ići u kazalište u Zagreb* (ispitanica br. 8)

respondents mentioned typical services (local bar; respondent No. 30) and other segments of life that they consider necessary for everyday function: associations, farm, socialising, a quality communication network (respondent No. 8), workplace (respondent No. 18) and gardening (respondent No. 23).

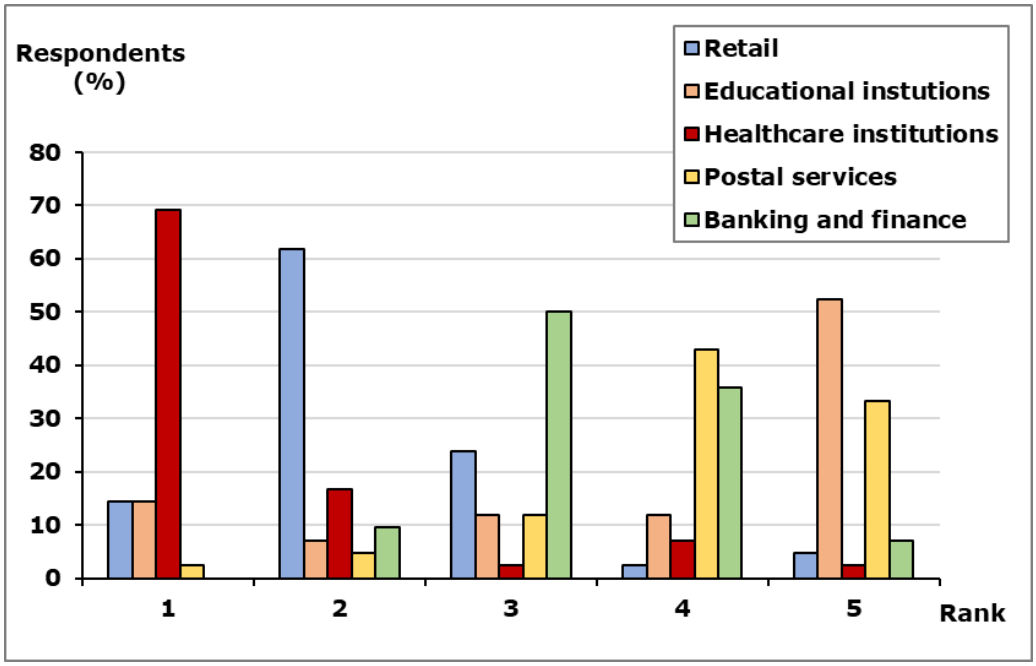

Figure 4: Importance of central services.
Source: Survey research, 2023.

Everyday activities and mobility

As the studied area is specific because it encompasses both urbanised and rural settlements with varying levels of infrastructure development and service availability, which is particularly relevant for the elderly (less mobile population), it was necessary to determine how respondents source the necessities for life (Figure 5) and perform daily activities (Figure 6). In urbanised areas, most respondents (71.43%; 10) go to a store to purchase necessities. However, despite the urbanised character of these areas, as many as two-thirds of respondents (64.29%; 9) produce at least a portion of their own food. On the other hand, almost all respondents from rural settlements (96.43%; 27) produce some proportion of their food themselves. Almost without exception, they also go to stores (89.29%; 25). Unlike residents of urbanised settlements, they buy produce from family farms (7.14; 2), but also informally exchange produce with neighbours and fellow villagers (3.57; 1). Residents of urbanised settlements are likewise members of solidarity exchange groups by which they obtain essential food items.

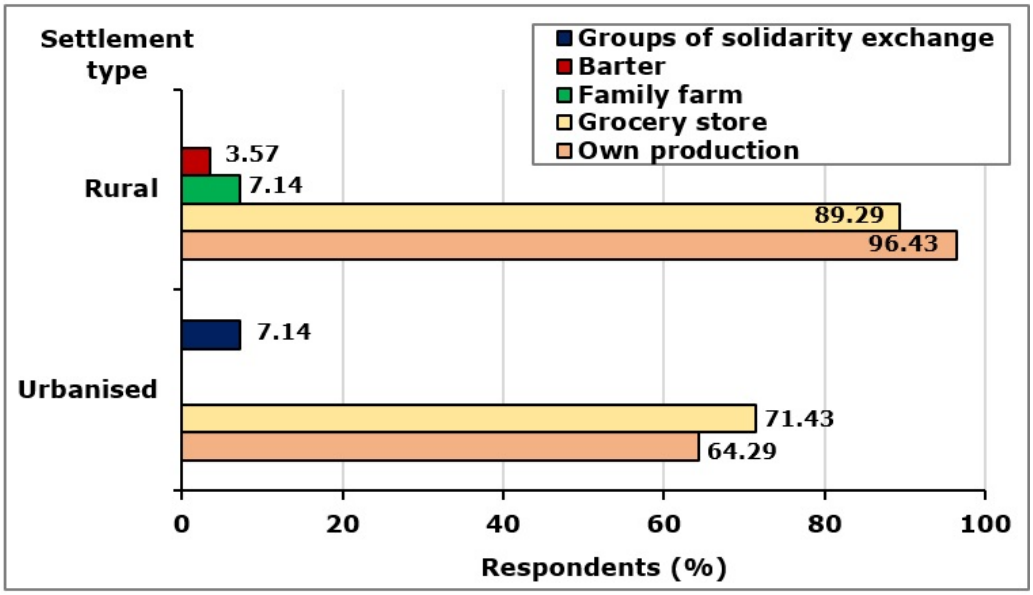

Figure 5: Ways to obtain necessities for life.
Source: Survey research, 2023.

Given that most respondents (83.33%; 35) go to the store to meet personal needs, it is intuitive to ask how the elderly population approaches the store (and other important institutions such as health centres, pharmacies, banks, post offices), due to their reduced mobility, and also the often poorly-equipped state of rural settlements generally. A statistically significant difference was found in the performance of daily activities in the observed settlement types (Figure 6; $p<0.05$). The largest number of respondents (45.24%; 19) use a car to reach their destination. There is a noticeable difference in the number of respondents who have to use a car in rural (57.14%; 16) and urbanised areas (21.43%; 3). Namely, in urbanised areas, the elderly population most often walks (35.71%;5), while one respondent from rural areas uses a bicycle (We don't have a bus connection, I don't have a car.…I came by bicycle6; respondent No. 9). On the other hand, a significant part (42.86%; 11) of respondents from rural areas is dependent on others, most often family, neighbours or friends. At the same time, in urbanised areas, only five respondents are necessarily dependent on others (35.71%), and only one uses public transport, for the purpose of going to Zagreb or Zaprešić (I travel to Zagreb or Zaprešić by train, I just take a ride, run some errands and come back home. Now [that I'm retired] I have time for that7; respondent No. 8).

An intriguing fact is that more than one-third of respondents (38.1%; 16) necessarily depend on others (most often family and friends) to carry out their daily activities. Therefore, the question arises whether this is because they are not mobile, that is, they do not have a driver's license, a car, or are unable to use one? Similarly, we can ask ourselves whether there is adequate public transport that allows them to meet their daily needs. Since as many as one-third of respondents (32.14%; 16) do not

[6] *Nemamo busa, ja nemam auto.* […] *došla sam z bicikom* (ispitanica br. 9)
[7] *Idem vlakom, sjednem, obavim što trebam i vratima se. Sad* [kad sam u mirovini] *imam vremena za to* (ispitanica br. 8)

have a public transport stop in their residential area, owning or having access to a car is an imperative in rural areas. However, there are no significant differences in mobility possibilities between respondents (Table 3). The majority of respondents in urbanised (71.42%; 78.57%; 71.42%) and rural (67.86%; 85.71%; 82.14%) areas have a driver's license, a car or have the ability to use one. When the gender dimension of mobility is examined, however, the situation shows a significant shift. There is a statistically significant difference in the number of female and male respondents who have a driver's license ($p<0.05$). Namely, only five female respondents (27.78%) have a driver's license (*How could I not* [hold a driver's license]*? I have a wheelbarrow haha, but now, not even that.…The other day I went to rake the grass, but I stumbled over and fell*[8]; respondent No. 25), while all male respondents have one (100%). Two-thirds of female respondents own a car (66.67%), but almost all male respondents own one (95.83%; $p<0.05$). The same number of female respondents can use a personal car, which would mean that only two-thirds of them are mobile, while almost all male respondents (87.5%) are mobile.

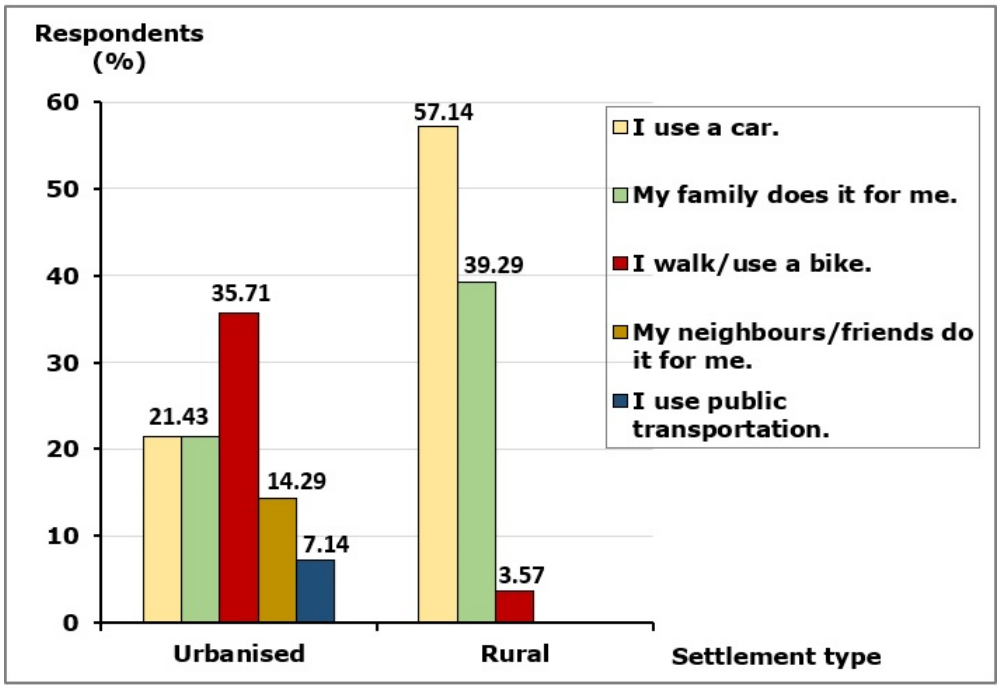

Figure 6: Ways to perform daily activities.
Source: Survey research, 2023.

[8] *Kak ne* [bih imala vozačku], *tačke haha, a sad već ni tačke ne.* […] *Išla sam pozubljati travu neki dan h tačke i onda sam se popičila i opala* (ispitanica br. 25)

	Urbanised (N=14)	Rural (N=28)	Male (N=24)	Female (N=18)	TOTAL (N=42)
Driver's license	10	19	24	5	29
	71.42%	**67.86%**	**100%**	**27.78%**	**69.05%**
Car	11	24	23	12	35
	78.57%	**85.71%**	**95.83 %**	**66.67%**	**83.33%**
Access to a car	10	23	21	12	33
	71.42%	**82.14%**	**87.5%**	**66.67%**	**78.57%**

Table 3: The percentage of respondents who have a driver's license, own a car, or have access to a car.
Source: Survey research, 2023.

Satisfaction with central services

As healthcare and retail services have emerged as the most important in addressing the everyday needs of the elderly population in both urbanised and rural settlements, particular analytical attention has been devoted to them. At the same time, since the aforementioned often depend on the mobility of the population, satisfaction with transport infrastructure and public transport services is also observed (Figure 7; Figure 8). Both urbanised (4.43) and rural (4.54) respondents report a high degree of satisfaction with the supply of food. Among all services, this one received the highest satisfaction ratings from respondents. The respondents also express high satisfaction with the most important service—healthcare. There are slight differences in satisfaction between the urbanised (4.43) and rural (4.46) respondents. However, they express dissatisfaction with the behaviour of healthcare workers and the digitalisation of the service (*The doctor would prescribe you your regular pills, the same ones that you have been using for 10 years…There's not a chance you could make an appointment* [with the doctor]*. Back in the days, I used to call, and a nurse would answer, I could tell her what* [medicines] *I need. But now she's retired… And other doctor has an automated voice system for prescribing medication… I guess that's not that hard* [to learn]*, but I know nothing. Sooner or later, I will not even know what my name is*[9]; respondent No. 25). On the other hand, respondents show strong dissatisfaction with transport infrastructure in both urbanised (2.78; *The roads are always being worked on…they are never open…*[10]; respondent No. 6) and rural (3.25; *The roads are full of potholes, when they are repairing them, they make another hole and then you wait for another year for them to patch that hole*[11]; respondent No. 25) settlements. Just as with transport infrastructure, respondents express dissatisfaction with public transport. Although not reflected in the average satisfaction value, the difference between urbanised (2.93) and rural (2.93)

[9] *Napiše ti obične tablete već 10 ljet furt jedne te iste, zde te već neće ni pogledati, ma kakvi, nejdeš* [doktorici]. *Prije sam zvala i onda se hjavila sestra i povedala sam kaj očem*. *Sad je sestra prešla h penziju… I doktorica druga ima govorni automat… Nije to tak teško gdoj zna, ali ja već niš ne znam. Još malo nem znala kak se zovem* (ispitanica br. 25)

[10] *Furt nekaj popravljaju* […] *im pa te ceste nisu nigdar nisu skroz otprte*... (ispitanik br. 6)

[11] *Ceste su zropane, kad krpaju, napraviju jamu i onda čakas ljete dan da ju zakrpaju* (ispitanica br. 25)

settlements is statistically significant (U = 84, p < 0.05). Namely, more respondents from rural areas (28.57%) are completely dissatisfied with public transport (*The train looks the same as the one that use to operate 70 years ago*…[12]; respondent No. 29) than those from urbanised areas (14.29%). This is also supported by the low satisfaction with the frequency of public transport, which is lower in rural areas (2.8; [N]*ow, a bus operates three or four times a day, back in the days it used to operate whenever, it had been taking us to the church and wherever. Now, I don't go anywhere, but the bus takes the children to school, that I can see*[13]; respondent No. 25) than in urbanised areas (3.5).

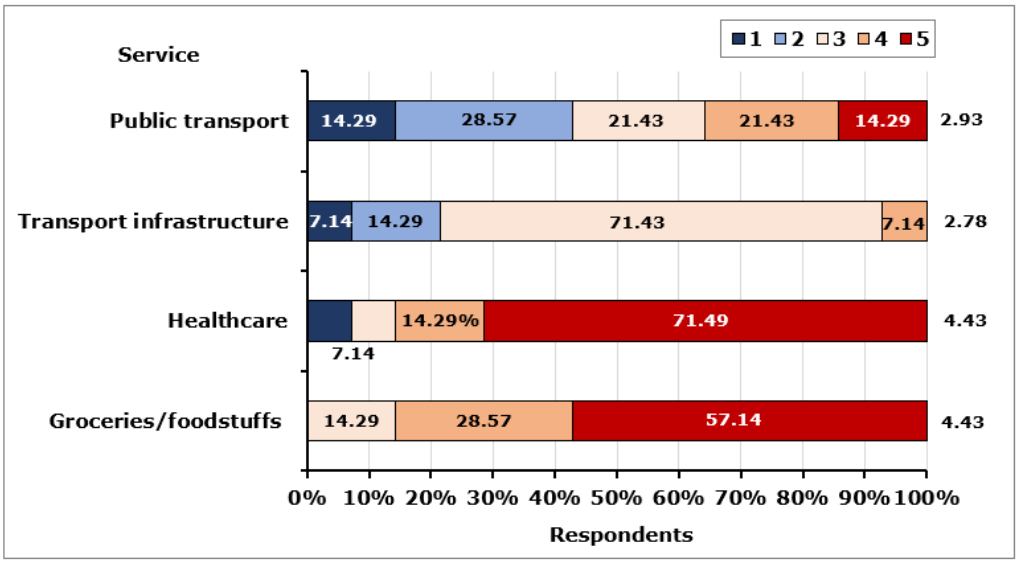

Figure 7: Satisfaction with central services (urbanised settlements).
Source: Survey research, 2023.

[12] *Cug zgleda isto kak i prije 70 ljet…* (ispitanik br. 29)

[13] [A]*li imaš tri četri put liniju na dan, prije je išel gda god, i k meše nas je vozil i sikak. Sad nejdem nikam pa ne znam, ali da decu vozi u školu, te vidim* (ispitanica br. 25)

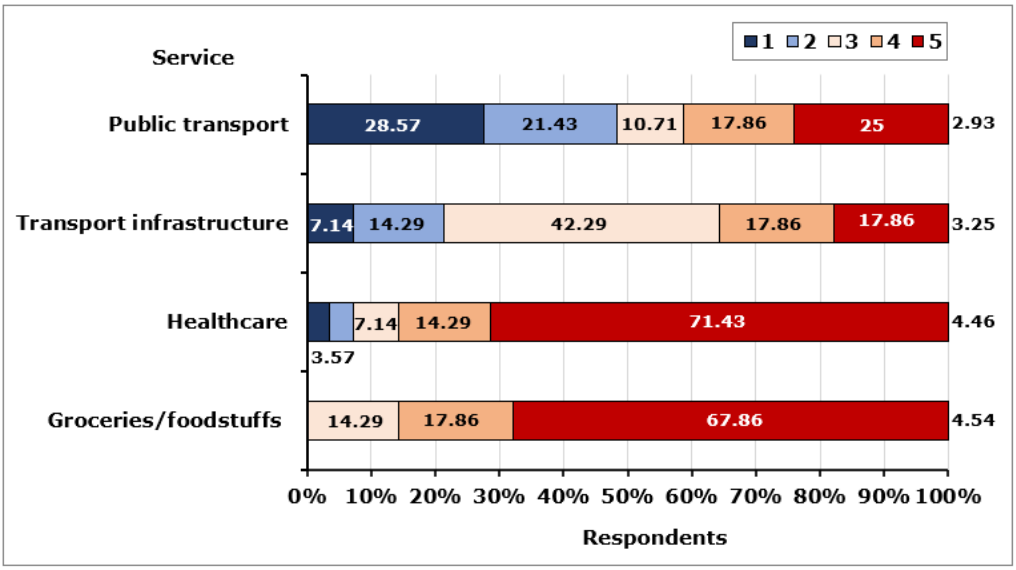

Figure 8: Satisfaction with central services (rural settlements).
Source: Survey research, 2023.

4 Discussion and Conclusion

The research results show that Hrvatsko Zagorje, and the Zabok area more specifically, has been characterised by depopulation in the examined periods: 1961–1991 and 1991–2021, predominantly in rural settlements. The increase in population has been present almost without exception in Zabok itself, urbanised settlements, and their neighbouring settlements. Depopulation inevitably affected the ageing of the population of Hrvatsko Zagorje, as previously stated also by Toskić (1993); a process that is discernible in many rural areas of the European Union (Perpiña Castillo et al., 2024). Although the entire Zabok area is affected by ageing, different indicators of ageing (the average age, the share of the elderly in total population, and the ageing index) show slight differences in the order of values depending on the type of settlement, with the most favourable situation in urbanised settlements. Taken together, however, these three indicators point to a level of homogenisation; as stressed by Nejašmić & Toskić (2016), rural, as well as urban population in Croatia is characterised by an equally high degree of ageing, placing Croatia in line with countries of Central and Eastern Europe with very unfavourable trends of population development. In our research, this level of homogenisation is likewise visible with regard to different development types of settlements (See: Lukić, 2012; Šišak & Lukić, 2025), even in the context of a fairly developed county in Croatia.

A varied spatial distribution of the decline in central services was found in the Zabok area, which resulted in their concentration in Zabok and other urbanised settlements, corresponding to the legacy and long-term effects of the polarisation and concentration of population and economic activities at the local level, from the previous communal system. Decline in central services was shown in the case of stores, whose number almost halved since the 1960s, and some rural settlements have been left without a single store. Retail, as the most frequent central service (Njegač, 1999), subject to the laws of supply and demand, is slowly fading from rural

areas. Apart from shifts in population size and structure, this should be seen in light of increased population mobility (Woods, 2005) and changes in the labour function alongside the characteristic diversity of services in cities (Vresk, 2002) affecting consumer habits, where residents of rural areas started to shop in cities and shopping centres, further away from their place of residence (Woods, 2005). Changes such as the construction of hypermarkets at highway junctions or the digitalisation of some services (Vaishar & Šťastná, 2021) should be stressed as well. Retail provision has thus become more concentrated in large centres, accessible to many rural residents, who are likewise becoming more demanding (Powe & Hart, 2009). The weakening of the supply function in rural settlements of Hrvatsko Zagorje is further influenced by low profits, competition from larger stores, and higher wholesale prices for local businesses than for large retail chains (Mak & Knežević, 2017).

Stores are not the only services closing. Schools in rural areas have also closed and the number of students has declined as a consequence of long-term negative demographic trends. Closure of schools especially affects the long-term development perspective due to its significance for younger people and families, as was found by Woods (2005) and Kuzmić et al. (2021). In general, the economic and demographic restructuring of rural areas has had significant effects for the remaining population in rural areas, and the rural way of life (Cifrić, 2018).

With regard to the point of view of the elderly inhabitants of the Zabok area specifically, the survey results show that the majority of respondents highlight healthcare as the most important central service. Trips to health facilities (such as doctors, clinics, and hospitals) were also reported as the most important trips for older people in the research by Ahern & Hine (2015). Not surprising, given that with advancing age, people seek medical treatment significantly more often than at a young age (Noack & Bergmann, 2011) and that demand for medical care in an ageing population rises (Noack & Bergmann, 2011; Steinführer et al., 2014). Furthermore, as noted by Martínez Sánchez-Mateos & Ruiz Pulpón (2025), limited access to healthcare services in rural areas can result in disparities in the health and well-being of rural communities.

Supply is a service that the elderly population considers important, while education received varying degrees of importance. These views can be explained by the smaller personal significance of education given that respondents have completed their educational journey, but some are also positioning education as very high on the scale of meeting life's needs, and are oriented towards the future and younger generations, as supported by the in-depth conversations.

It was found that the ways in which respondents meet their own needs differ depending on the type of settlement where they live. The majority of the inhabitants of central settlements buy their food supplies in stores. In addition, they most often walk to get to a store, clinic or pharmacy, which can be linked to availability of a larger number of central services provided in their settlement (as pointed out also by Steinführer et al., 2014). Respondents from rural areas largely shop in stores as well. A large number of respondents from both urban and rural settlements, however, produce their own food to some extent. This is connected to the rural character of the area and the possibility for agricultural production on their own land. The tradition of combining agriculture with other sources of income (usually work in industry) that was common during socialism (Bićanić, 1996) should also be mentioned. Respondents further commented that their own production was a strategy to respond to rising food

prices in stores, or, as was often the case, that working in their garden was a way to spend their abundance of free time. The importance of working in a garden for the elderly, as a way to spend their free time was confirmed by Slavuj Borčić et al. (2016) in their research on urban gardens in Zagreb, where the respondents often originally came from rural areas and identified strongly with rural identity.

The mobility of the population, be it physical or virtual, is a precondition for accessing services (Šišak, 2023). The largest number of respondents (45.24%) use a car to reach their destination, with a noticeable difference between urbanised (21.43%) and rural (57.14%) settlements. Since as many as one-third of respondents do not have a public transport stop in their residential area, owning a car is an imperative in rural areas. Apart from issues related to the poor public transport service (Noack & Bergmann, 2011), other researchers mention the value of independence that a car brings (Abramsson & Hagberg, 2018). As pointed out by Ahern & Hine (2015), maintaining good quality of life is connected to being able to participate in different activities and services, and access to a car allows older people to partake in more activities and services.

The majority of respondents in both types of settlements have a driver's license, a car, or have the ability to use one. In line with other research (Ahern & Hine, 2015), significantly more men have a driver's license, i.e. all male respondents have one, in comparison to slightly more than one-quarter of female respondents. Likewise, less women than men own a car, or have access to one.

Creation of a car-dependent society in rural areas can imply neglect of the needs and the mobility of those without cars; in the case of older people, no longer being able to drive can likewise lead to transport deprivation (Ahern & Hine, 2015), which should, nevertheless be considered in terms of resources and infrastructure available in a settlement but also in terms of the needs and habits of rural residents (Ranković Plazinić & Jović, 2014). Ranković Plazinić & Jović (2014) further stress that although the issue of transport deprivation for rural women is closely related to the issue of social exclusion, it remains unclear whether the transport deprivation necessarily causes social exclusion, possibly depending on how well people are integrated into the local community.

More than one-third of respondents necessarily depend on others (most often family, neighbours, and friends) to carry out their daily activities; even more in rural settlements (42.86%). The significance of relying on family and friends for shopping, access to medical care, and participation in various activities has been highlighted by other researchers (Abramsson & Hagberg, 2018; Noack & Bergmann, 2011). In a way, from the point of view of the local population, dealing with changed public services (coping) can be stressed as part of the model of living and residing in rural areas; it can, however, be exacerbated by old age and decreasing mobility, as well as shrinking social networks in depopulating areas (Steinführer et al., 2014).

Among all services, respondents reported a high degree of satisfaction with the supply of food, linked to well-equipped stores in the wider area, and the alternative forms of stores that exist in some areas, such as the so-called "van stores" (Mak & Knežević, 2017). Respondents also express a high level of satisfaction with the fairly well-accessible healthcare. Low levels of satisfaction were expressed with transport infrastructure and public transport, due to the lack of availability, low frequency of connections, and maintenance issues. Limitations of public transport are a frequently-

mentioned issue among contemporary rural problems, generally caused by decreasing passenger numbers and the motorization of rural people (Vaishar & Šťastná, 2021). The high costs of a traditional transport network and low level of demand make investments in public transport more difficult and ineffective (Sitanyiova & Misso, 2019). Thereby new public transport services (Sitanyiova & Misso, 2019) and alternative forms of transport come to the fore as a possible solution to extend the range of public transport in rural areas and ensure accessibility of services, as indicated by Knierim & Schlüter (2021) in case of demand responsive transport systems, which can be especially beneficial for less mobile population.

Abramsson & Hagberg (2018) describe two pictures presented in research on ageing and of being old in the countryside. The first picture depicts depopulating countryside, where the old population that remains has to travel further to obtain services, for whom contacts with the younger generations are decreasing, and the traditional type of life is disappearing. In the small towns it is becoming increasingly difficult to maintain what makes a place a society—jobs, shops, culture, associations, and means of communication. The second, contrasting picture shows the strength of the countryside, based on a mix of seminal trades as well as the maintenance of old trades and industries; social networks are created and maintained, creating security for old people.

The research results point to a difference in the possibility of research respondents to meet their daily needs depending on the settlement type. Therefore, in line with the latter picture, the role of accessible small towns and urbanised settlements that are well-equipped with various central services is highlighted as of central importance for local development and the quality of life in rural areas.

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Povzetek

Ta članek se posveča razvoju prebivalstva in prostorski dinamiki upadanja zagotavljanja osrednjih storitev v manjših mestih in podeželskih naseljih Hrvaškega Zagorja (Hrvaška). Osrednje storitve vključujejo različne javne in zasebne storitve, ki se nahajajo v naselju in so dostopne tako prebivalcem naselja kot prebivalcem naselij v bližini (npr. izobraževanje, zdravstvene storitve, trgovina, pošta, bančništvo ipd.). V Evropi so majhna mesta in okoliška podeželska območja pogosto zaznamovana z upadanjem osrednjih storitev, kar je posledica različnih procesov demografskih in družbeno-ekonomskih sprememb. Dva procesa, ki sta bila na Hrvaškem močno prisotna proti koncu 20. stoletja, sta bila depopulacija in staranje prebivalstva, pri čemer je bilo to še posebej izrazito na podeželju. To je veljalo tudi za Hrvaško Zagorje, regijo v severozahodni Hrvaški, zaradi neenakomernega razvoja industrije in storitev, ki so bile večinoma skoncentrirane v mestnih središčih, ter zaradi upada kmetijstva. Raziskava se je osredotočila predvsem na območje Zaboka, ki ga sestavlja 82 naselij v osrednjem in južnem delu Krapinsko-Zagorske županije. Cilj raziskave je bil preučiti neugodne trende razvoja prebivalstva v povezavi z upadanjem osrednjih storitev na območju Zaboka od šestdesetih let 20. stoletja naprej ter primerjati trenutno zagotavljanje osrednjih storitev z vidika starejšega prebivalstva med urbaniziranimi in podeželskimi naselji. Med prebivalci, starimi 65 let in več, je bila izvedena anketa (N=42), vključeni pa so bili tudi neformalni pogovori za poglobljeno razumevanje. Rezultati raziskave kažejo na raznoliko prostorsko porazdelitev upadanja osrednjih storitev na območju Zaboka ter na razlike v zmožnosti anketiranih prebivalcev, da zadovoljijo svoje vsakodnevne potrebe po storitvah glede na tip naselja.