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Habits of Using Private Gardens and Green Spaces in Suburban Villages around Nitra

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KEYWORDS

- suburbanisation
- green infrastructure
- gardening
- attitudes of residents

ABSTRACT

The growth of suburbs alters the traditional villagescape due to increasing population and new housing developments. This not only affects the buildings but also alters the green spaces within the settlements. The amount of green space is decreasing as more densely populated developments are built. Additionally, most green spaces in villages are privately owned, with gardens making up the majority of these areas. Our study examines the attitudes of the population towards gardening and greening in four settlements near Nitra, Slovakia. Through questionnaires we explore how the attitudes of both newcomers and local residents differ and how this varies between the different settlements, to identify any differences in attitudes towards gardening.

Introduction

Central Europe's rural areas are undergoing a major transformation. The traditional rural way of life is in decline, and villages are becoming increasingly urbanised. This process is having a significant landscape-transforming impact on the entire rural space (Antrop, 2004). The majority of village dwellers work in the nearby cities and commute there. They do not have time in their daily routine to cultivate a traditional village-like garden. They are also less and less likely to produce their own food in the gardens. Svobodová et al. (2021) cite the work of several authors in their study that 10% of the population in Western Europe and 35-60% in post-socialist countries are engaged in some form of self-provisioning food production. Obviously, there is a wide variation between types of settlement and between the habits of different countries. In any case, the last decade and a half has seen a radical change in this respect. The size, share, and types of green areas on residential plots have apparently altered. This process is particularly intense in the suburban areas of our cities. Expanding residential and other built-up areas are usually created by the development of valuable

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agricultural land (Johnson, 2001). This is indeed an important, widely researched environmental impact of suburbanisation (Bürgi et al., 2017; EEA, 2006, 2016; Hardi et al., 2020; Hlaváček et al., 2019; Izakovičová et al., 2021; Kahn, 2000; Lennert et al., 2020; Repaská et al., 2017). Our study, however, focuses on the loss and change of the greens in the interior of residential areas.

In urbanised regions, green areas, green fields, parks, etc., are of decisive importance as they can improve the quality of human life, help adaptation to climate change, and generally provide several natural services for the residents: microclimate regulation, drainage, biodiversity, habitats, interconnected green corridors (Haladová & Petrovič, 2015; Izakovičová et al., 2017; Lennert et al., 2020; Zhou et al., 2022). That is why the term "green infrastructure" has emerged over the last decades. The quality and quantity of these services are dependent on the quality of the green infrastructure management. In cities and city centres, the management of green spaces is mainly in the hands of municipalities (parks, urban forests, green belts, etc.) (Bobáľová et al., 2024) or other public bodies. In the fast-growing suburbs, garden cities, and exurbs, the green infrastructure is provided mainly by the private gardens and green fields owned by the residents. It is, therefore, very important to know how the population manages its gardens and how the immigrating population and suburbanisation, in general, are transforming gardening habits (Cameron et al., 2012; Mahmoudi Farahani et al., 2018; Warhurst et al., 2014).

Our study investigates the attitudes of the population towards gardening in suburban settlements around Nitra (Slovakia). Through questionnaires, we measured the extent to which the attitudes of the population towards gardening, the green spaces on plots of land are moving towards a developed municipal green space and the extent to which the habits of new residents of suburban settlements differ from those of local residents.

The impact of suburbanisation on the transformation of green spaces in residential areas

In Central Europe, suburbanisation, i.e. the migration of urban residents and urban functions to nearby settlements, typically accelerated after the turn of the millennium (Antrop, 2004; Ehrlich et al., 2012). This triggered rapid growth first around capital cities and then also around smaller towns, where peri-urban villages were transformed into suburban settlements (Bürgi et al., 2017; EEA, 2006, 2016; Izakovičová et al., 2021; Lennert et al., 2020; Repaská et al., 2017; Taubenböck et al., 2019). This transformation does not only mean an increase in population but also a change in the structure of the settlement due to the increase in built-up areas (Hirt, 2012; Kazakov et al., 2024; Kovács, 2014), with smaller and smaller residential plots and denser built-up areas. In essence, the settlement landscape itself is changing from a traditional rural settlement to an urbanised suburb (Haase & Nuissl, 2007; Haladová & Petrovič, 2015; Hills, 1994; Izakovičová et al., 2017; Kubeš, 2015; Lennert et al., 2020).

Traditional peasant plots of up to several thousand square metres are being converted into plots of 600 to 1,500 square metres, and the newly created residential plots maybe even smaller. Obviously, most of these plots are occupied (Kubeš, 2015) by houses and associated buildings, but some of the remaining areas are also paved, as space is needed for cars (Warhurst et al., 2014). This has a number of environmental impacts. There is a significant reduction in the proportion of green space in residential areas and an increase in the extent and proportion of impervious surfaces, thus reducing the infiltration of rainwater into the soil and consequently increasing the proportion and volume of water run-off on the surface.

The last two to three decades have seen a major change in the nature of green spaces in our peri-urban villages. The traditional village lifestyle has been replaced by an urban lifestyle. On the one hand, this means that gardening is no longer one of the main activities of the inhabitants, many of whom cannot even devote time to it because of their commuting lifestyle. Most food is now more economical to buy than to grow at home. On the other hand, the size of residential plots is getting smaller and smaller, so there is less and less space available for gardening (Hall, 2010). In addition, the number of cars is increasing, with the highest number of cars in these settlements (4-500 cars per thousand inhabitants). The storage and moving of cars also takes up space, either in residential or public areas. Thus, it is typical of the population of the suburbs that the majority tries to maintain as simple a green space as possible, with a mown lawn, a few shrubs, hedges and a lot of paved surfaces. The ecological value of these green spaces is extremely low. At the same time, the people who move out often include owners who are pursuing their hobbies in their new homes. We often see special gardens with exotic plants, and the owners also use the public space in front of the house for decoration. Less often, we also see innovators introducing new types of food production using different organic gardening methods (Gangopadhyay & Balooni, 2012; Russo et al., 2017).

The aim is obviously not to market benefits but to provide the family with better quality, healthier food (Svobodová et al, 2021). In short, according to the urban ecology literature, moving outwards along the urban-rural gradient, the highest biodiversity is found in the suburbs, but it is also where the most significant environmental impacts are experienced (Forman, 2008). At the same time, it is important to see that urban dwellers who move out during suburbanisation often change their place of residence because they want to have their own garden or green space, but once settled, real life

will, of course, determine what becomes a reality. The extent and size of green spaces within settlements is important. The larger the green space, the greater the positive impact on microclimate (Graffigna et al., 2023; Liu et al., 2019; Matthews et al., 2015). In this respect, large, mature trees, extensive shrubs and hedges are the most valuable. Their placement requires awareness, as shading them can save significant amounts of energy (less air conditioning operation). They provide shade and evaporation while providing habitat for a wide range of organisms (Lagucki et al., 2017). The lowest ecological value is found in mown, single-species lawns. However, they are, of course, better than paved surfaces, which prevent rainwater infiltration. These gardens contribute to biodiversity in many ways. On the one hand, the varieties planted, as people prefer many, often exotic, species (Čepelová & Münzbergová, 2012). This becomes a problem when these include invasive species that, if released from the garden (most often through inappropriate disposal of green waste (Csontos et al., 2020)), can cause damage in natural or semi-natural environments close to the suburbs.

Biodiversity is also affected by the way the garden is managed, whether the owner creates an environment that is bird-friendly or insect-friendly. The connectivity of green spaces can also be an important factor. Interconnected green spaces (e.g. hedgerows, adjacent trees, shrub areas) can increase the size and thus the impact of a connected green space and can also create municipal-level eco-corridors, green belts and networks (Cameron et al., 2012; Forman, 2008). These can multiply the value of green spaces. In the suburbs, this can only be achieved with the involvement of the population since they manage most of the green spaces (Byrne et al., 2015).

Data and method

Description of the study area: suburban zone of Nitra city – the settlements examined

The suburban zone of the city of Nitra currently consists of 15 rural municipalities (Figure 1). In these municipalities, the share of immigration from the city of Nitra in the total number of immigrants is higher than the share of immigrants from other directions. The spatial growth of the city and its expansion into the suburban landscape is a long-term process of the city's development from its inception to the present. In the suburban zone of Nitra, new residential complexes are growing up, and new streets and localities with new construction of family houses are being created (Gajdoš & Moravanská, 2013; Haladová & Petrovič, 2015; Hardi et al., 2020; Repaská, 2012; Repaská et al., 2017). Residential suburbanisation in the area around Nitra does not achieve comparable proportions to the cities of Western Europe or the large Slovak cities of Bratislava and Košice (Baj, 2010; Bobáľová et al., 2024; Czaková, 2010; Izakovičová et al., 2017, 2021; Slavík et al., 2011), but from a qualitative point of view, it brings changes in the system of settlement and land use that are irreversible.

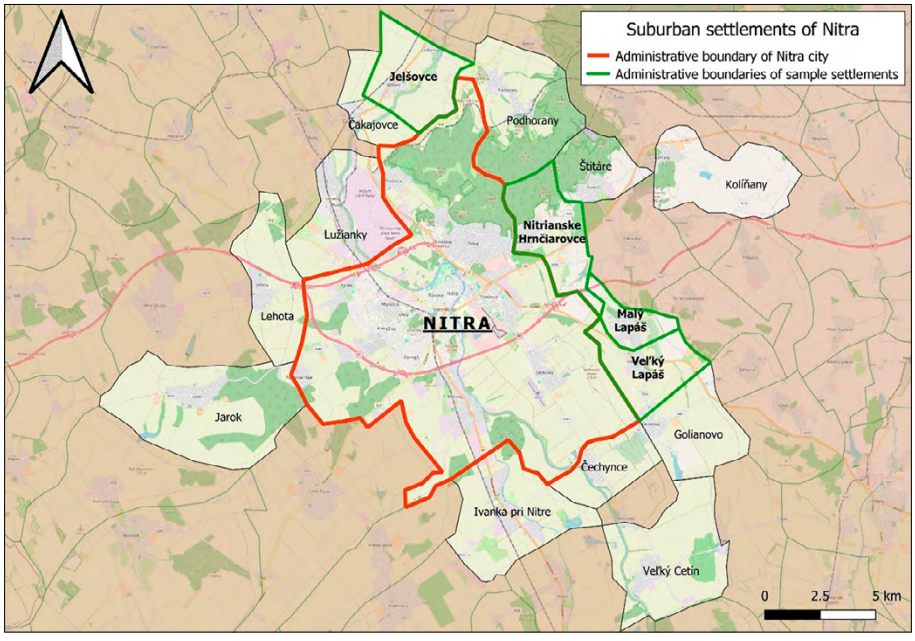

Figure 1. Suburban settlements of Nitra city (the sample settlements are highlighted)
Source: Authors based on OpenStreetMap using QGIS

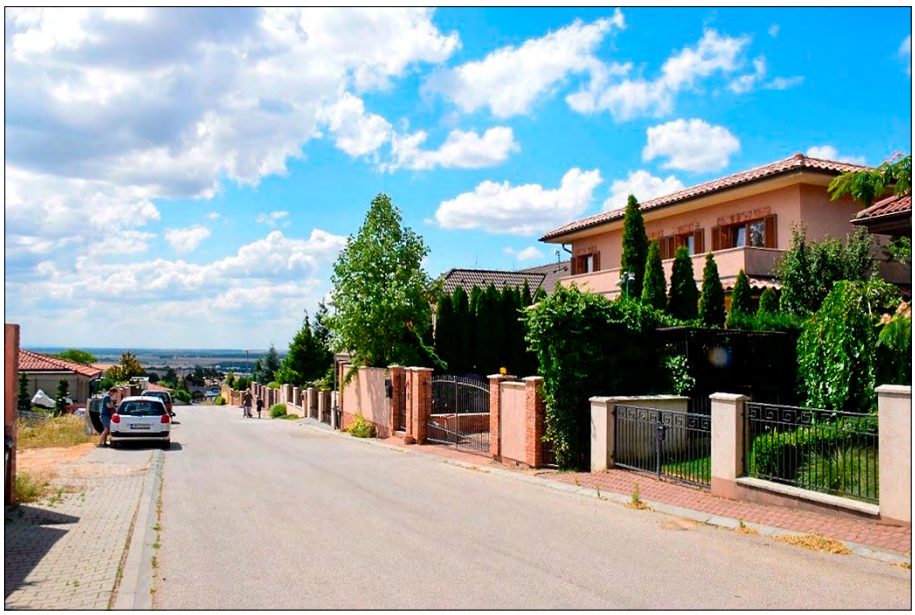

Figure 2. Higher prestige residences under Mount Zobor (Nitrianske Hrnčiarovce)
Source: Hardi T.

The village of Nitrianske Hrnčiarovce is the only one among all three villages located under the Zobor hill, which significantly increases its attractiveness. The share of migrants from the city of Nitra in the total number of migrants of the municipality averaged 70 % in the period 2001 - 2022. New locations of family and apartment houses were built in the municipality. The number of inhabitants is growing significantly, the municipality is one of the large municipalities with over 2000 inhabitants.

The municipalities Veľký and Malý Lapáš are neighbouring municipalities, which also intersect each other. Since they were one municipality called Lapáš until 1990, their buildings have common features. Suburbanisation started in these municipalities later, but has taken on significant proportions. The municipality Malý Lapáš is typical of all the municipalities in that old houses have been significantly revitalised and new houses are being built mostly on unused land between the old buildings. Later, new construction was built on vacant land in the northern part of the village, which the municipality gradually incorporated into its urban area. In Veľký Lapáš, suburbanisation began along the main transport route between Nitra - Vráble - Levice, but also on the 3rd class road between Veľký Lapáš and Golianovo. The location of the municipal-

Figure 3. Family houses on the edge of the forest (Malý Lapáš)
Source: Hardi T.

Figure 4. Small plots, dense development (Veľký Lapáš)
Source: Hardi T.

ity on the route Nitra - Vráble gives the inhabitants of the municipality the possibility of quick access not only to Nitra but also to the industrial town of Vráble.

Municipality Jelšovce belongs to the smaller municipalities of the suburban zone. It is exceptional among the three selected municipalities in that it represents a typical rural development with only detached houses, with which it wishes to preserve its rural character. It is attractive to migrants because of its proximity to the Jaguar Land Rover Industrial Park. It has good transport accessibility thanks to the R1 expressway which also allows residents access to Trnava or the Slovak capital Bratislava.

In the village of Veľký Lapáš, residents have the opportunity to build on a minimum of 600 m^2 of land, with a maximum buildable area of 30%. The remaining 70% of the land is green land. However, the inhabitants of the municipality do not respect these parameters as they build garden sheds or gazebos. The situation is similar in Malý Lapáš, Jelšovce and Nitrianske Hrnčiarovce; the difference is only in the minimum land area, which is 400 m^2 in these municipalities. The maximum number of storeys in the villages is two; the only exception is the village of Jelšovce, which is not interested in building so-called apartment buildings and is trying to preserve the character of the rural environment. In the municipalities, different properties are available, which developers sell to interested persons, or they build turnkey houses on them and sell them for private ownership.

Table 1. Main characteristics of the sample settlements

Indicator	Nitrianske Hrnčiarovce	Jelšovce	Velký Lapáš	Malý Lapáš
Population (2022)	2393	986	2052	1492
index of population growth (2001/2022)	43,0	3,1	82,4	323,9
average number of immigrants (2001-2022)	65	22	56	48
of which from Nitra (2001-2022)	44	11	32	30
of which from Nitra (2001-2022) in %	67,7	50,0	57,1	62,5
number of households (2022)	952	392	770	470
housing growth index (2001/2022) in %	44,9	9,5	90,1	282,1
area of the municipality (km^2)	9,95	10,44	8,16	3,22
distance from the centre (minutes by car)	15	10	13	13
distance from centre (km)	14	5	10	10
average plot size (m2)	800	600	650	750
land use changes	permanent grassland, forest land	arable land	arable land	permanent grassland, arable land

Source: Statistical Office of the Slovak Republic, own calculations

Residential suburbanization is also affecting the natural environment of the municipality, altering its greenery. Some municipalities now have their own local documents - general binding regulations - which allow them to regulate negative impacts on green spaces. At the same time, all municipalities have their own spatial plan.

Among the above-mentioned municipalities, a significant loss of forest, vineyards and meadows occurred in the municipality of Nitrianske Hrnčiarovce, where the mass construction of family houses was built in the above-mentioned areas. In the other municipalities of the suburban zone of Nitra, the affected land was arable land; in the vineyards there can only be garden houses (Veľký and Malý Lapáš).

One of the most frequent conflicts between citizens and local authorities is about parking in the municipality. Residents park their cars in front of their own houses or fences but on communal roads or plots of land. The municipalities of Malý and Veľký Lapáš also have a generally binding regulation on the parking of vehicles in public spaces, but in the other municipalities, this regulation is absent. According to this regulation, residents can only park in public parking spaces in the municipality; it is not possible to park in local communications, public green spaces, and sidewalks. This regulation is not respected by all residents, mainly because residents are unaware of the regulation or short-term parking in the said area, etc. Parking on public roads is a problem, especially in winter, when it is impossible to clear the snow on the road, which is solved by the municipality.

The municipality takes care of the village's greenery by mowing and planting new trees. The mayors agreed that mowing is very time-consuming. Therefore, they concentrate on mowing in playgrounds (children's playgrounds, football fields), cemeteries, church yards, and parks. Between residents' private fences and the public road, the municipality staff rarely mows; mostly, the residents of the municipality clean it up themselves or do not care at all. In the public areas near residents' houses, residents are not allowed to plant trees or plant shrubs, as the land does not belong to them.

With regard to the planting of new trees, the leaders of all the municipalities were in favour of enriching the municipal green spaces. In Veľký Lapáš, the municipality has planted 64 new trees (mostly maple lime) in Jelšovce 36 new trees (mostly ash), with plans to plant another 130 in the newly created park. In the village of Nitrianske Hrnčiarovce, mainly lime trees have been planted to replace poplars, and in the village of Malý Lapáš, old trees are also being replaced by new ones. By planting new trees, the municipality is also resolving conflicts in the municipality, as the inhabitants of the villages tend to complain about the trees that cause allergies to the inhabitants. The municipalities are replacing them with other trees. Municipalities do not have general binding regulations on what type of greenery they can plant. They are mostly standard hedges in the form of honeysuckle, bird's-beak and yews. Invasive species are not planted by people, nor do they have any knowledge of this type of plant.

With regard to fruit trees, the immigrant residents planted mostly columnar forms of fruit trees in low numbers. Their gardens are mainly dominated by ornamental plants, with some cash crops grown in plant beds. The fences of the inhabitants mostly extend up to 2 meters, despite the fact that the inhabitants do not have restrictions on fence construction. Higher fences can only be on the frequented road in the municipality of Veľký Lapáš. Complaints from inhabitants of the municipality are also directed at falling branches or leaves from trees on neighbouring properties. The municipality assesses the adequacy of the complaint, which it resolves either by consulting the actors and asking for the disposal of these branches and leaves or by not upholding the complaint (e.g. if family houses are built in the forest protection zone). The municipality of Nitrianske Hrnčiarovce also deals with vegetation on private land if citizens request it.

Due to the construction of new roads and the concreting of private land, there is a problem with stormwater drainage. Citizens tend to include ditches that drain rainwater. In villages, they can do this, but they have to maintain a channel under the concrete to allow the water to drain away. They are then able to park on the concrete. The municipality of Malý Lapáš is problematic in this respect, as there are no ditches, and rainwater runs down the roads. The inhabitants of the villages, mostly householders, collect rainwater in collecting containers, which they then use for watering. Residents who have moved in have a drainage pit on their land, into which they have runnels and thus drain the rainwater. Drainage of rainwater to the road is not allowed in the villages. The study villages of the suburban zone have plans to construct dry polders to catch the rainfall.

Characteristics of the sample

The sample covers the three settlements with an equal number of cases, with an adequate representation of different types of residential areas (traditional and newly built). Total number of valid items is 153, with households as basic units of analysis. Since selection principle was the equal number per municipality, there was no need to weight the sample. Due to the limited number of cases in the sample, the study is not suitable for drawing generalisable conclusions that can be applied to the entire Nitra agglomeration. However, the selected villages represent the different types of suburban settlements. Nitrianske Hrnčiarovce is a partially urbanising municipality that is also spatially merging with the city; Lapáš is a municipality with classical processes of suburbanisation and Jelšovce

is a municipality characterised as a transition between the suburban and rural zones. Also, with regard to the number of sample elements, it is important to note that the analyses that can be performed are predominantly descriptive, and the conclusions that can be drawn on the basis of statistical significance are limited to simple segmentation (villager-settler dichotomy).

Almost half of the respondents not lived in the municipality since birth; the proportion of settlers[1] is close to 40%. There is some variation in this respect between the three municipalities, with the highest proportion of settlers in Lapáš. Regarding type of suburbanisation, the effect of distance is evident; proportion of people moving out of Nitra decreases outwards (Table 2).

Examining the socio-economic status of households was important in order to investigate its impact on attitudes. The status index is composed of three items (subjective perception of financial situation, person with higher education in the household, car ownership). The zonal character is clearly visible by the items one-by-one; the most favourable indicators are found in Nitrianske Hrnčiarovce, which is considered to be the most suburban municipality (Table 3). This trend is even more evident by the values of the aggregate index (Figure 5).

Another important question is the difference in socio-economic status between original villager and settler households. Overall, the higher status of settlers is well reflected, with their status index being significantly higher than that of original villagers in all three settlements (Figure 6). Average age of the settler households (35.6 years) is significantly lower than that of the original villager households (44.8 years).

Table 2. Distribution of the sample by migration patterns (%)

	Lives there from birth	Moved to settlement		Moved from Nitra
		Anytime	After 2000	
Jelšovce	61.7	38.3	29.8	50.0
Lapáš	42.9	57.1	50.0	65.5
N. Hrnčiarovce	62.0	38.0	34.0	70.6
altogether	54.9	45.1	38.6	62.7

Table 3. Individual elements of socio-economic index, % of households

	financial situation			tertiary degree	have car
	well-off	average	poor		
Jelšovce	40.4	36.2	23.4	53.2	95.7
Lapáš	46.4	41.1	12.5	32.1	84.3
N. Hrnčiarovce	64.0	32.0	4.0	74.0	94.0
altogether	50.3	36.6	13.1	52.3	91.2

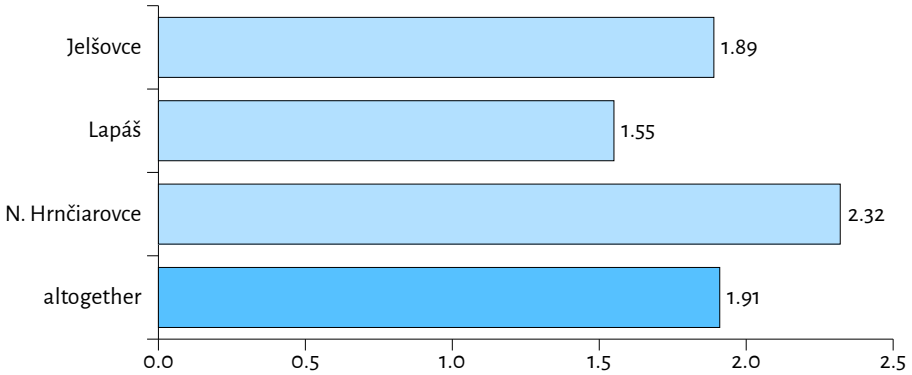

Figure 5. Average values of composite socio-economic indicator

[1] In the analysis, we refer to those who moved to the settlement after 2000 as settlers, those who have lived in the settlement since birth and those who moved there before 2000 as original villagers.

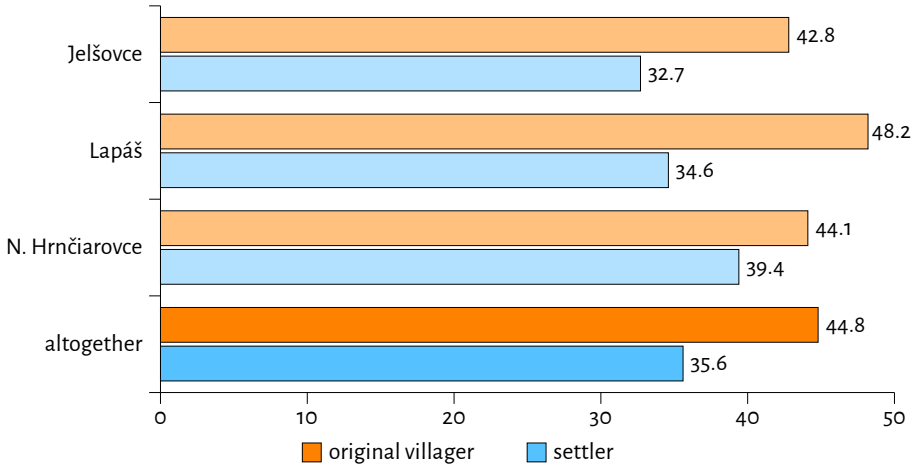

Figure 6. Proportion of households with high socio-economic status, %

Results

Motivations for move, evaluation of settlement

We looked at motivations of settlers for moving from three perspectives: in addition to the choice of settlement and plot, we also looked at how they valued the different characteristics of the settlement, with a particular focus on factors related to natural environment and green spaces.

Nitrianske Hrnčiarovce stands out in the case of differences between settlements in terms of motivational factors, where, with the exception of housing costs (their role is negligible here), the answers for the other factors were almost unanimous in that they were considered very important by the respondents (Table 4). Motivational factors can be divided into two groups based on whether they primarily reflect on the infrastructure or the environment. In the case of the two groups of factors, it can be said that importance attributed to "green" factors is slightly higher. In the case of the settlements, the difference between the evaluations of the factor groups is similar, and the gap that also characterized Nitrianske Hrnčiarovce in the case of the individual factors can be also seen (Figure 7).

Nitrianske Hrnčiarovce is also different by settlement selection factors; the picture is more polarized here compared to the agglomeration in general; factors related to the environment were considered important by everyone, while other factors (infrastructure, costs) have lower mention rate than of other settlements (Table 5).

Table 4. Motivations for move based on the proportion of those who consider the given factor to play a key role (%)

	Jelšovce	Lapáš	N. Hrnčiarovce	altogether
better quality of home	33.3	46.7	94.7	56.7
bigger house/flat	55.6	50.0	94.7	64.6
bigger plot	61.1	65.5	89.5	71.2
own garden	72.2	59.4	84.2	69.6
own green space	77.8	64.3	94.7	76.9
silence	27.8	46.9	100.0	56.5
natural environment	27.8	53.3	100.0	59.7
lower housing costs	22.2	17.9	10.5	16.9

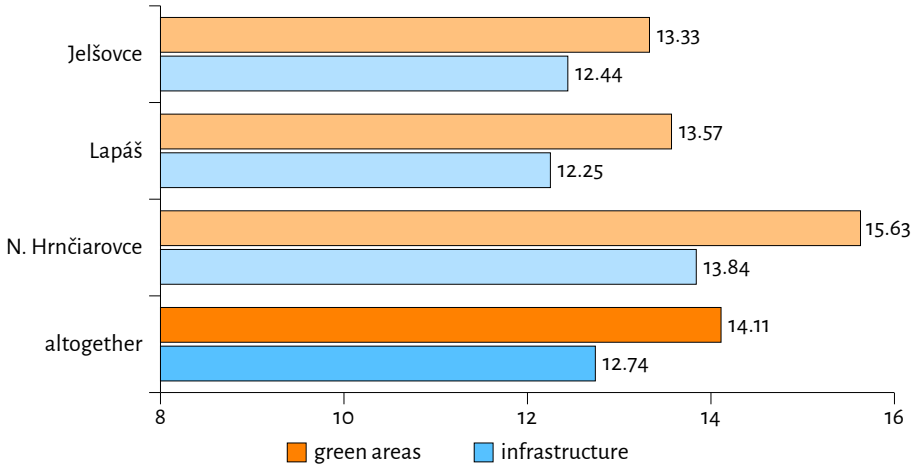

Figure 7. Average scores of merged motivational factors

Table 5. Factors of settlement selection, mention rates (%)

	Jelšovce	Lapáš	N. Hrnčiarovce	altogether
accessibility	77.8	56.3	52.6	60.9
property prices	88.9	65.6	10.5	56.5
family bond	27.8	28.1	5.3	21.7
village/street view	83.3	75.0	100.0	84.1
lots of green space	88.9	59.4	100.0	78.3
village atmosphere	88.9	65.6	100.0	81.2
urban character	5.5	9.4	0.0	5.8
good infrastructure	22.2	46.9	31.6	36.2
high prestige	5.6	37.5	94.7	44.9
natural environment	94.4	62.5	100.0	81.2
quality of life	94.4	71.9	100.0	85.5
living costs	61.1	59.4	21.1	49.3

Regarding whether respondents moved from Nitra or elsewhere, we can find significant differences by several factors. Among those who moved from Nitra, a significantly higher proportion mentioned rural character, village atmosphere and prestigious living environment, but adequate real estate prices and lower living costs played a lesser role for them. In terms of satisfaction with the settlement, Nitrianske Hrnčiarovce stands out, all factors have the most positive evaluation here (Table 6).

Table 6. Satisfaction with settlement, average score

	Jelšovce	Lapáš	N. Hrnčiarovce	altogether
quantity of green space	2.87	2.73	3.28	2.95
quality of green space	2.68	2.85	3.24	2.92
green space management	2.53	2.46	3.09	2.68
natural environment	3.06	2.98	3.91	3.30
tranquility	2.79	2.98	3.85	3.19
infrastructure	2.49	2.57	3.20	2.74
accessibility	2.74	2.78	3.26	2.92
services	1.83	2.09	3.24	2.38
leisure opportunities	1.96	2.45	3.72	2.69
townscape	2.70	2.96	3.98	3.20

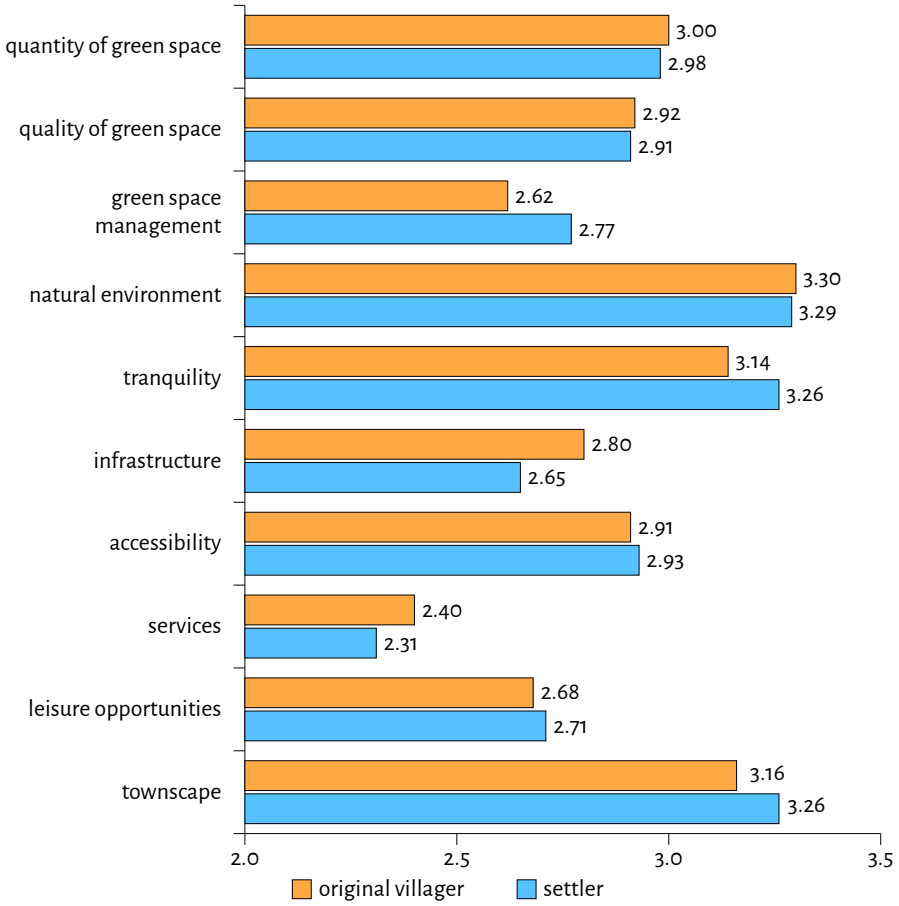

Figure 8. Satisfaction scores among original villagers and settlers

There are no significant differences in the assessment of the characteristics of the settlement between the original villagers and settlers, all that can be said is that among the settlers, the management of green areas, tranquillity, and the image of the settlement receive a slightly more favourable evaluation, while infrastructure and services are evaluated less favourably (Figure 8).

Regarding the selection of plot, it should be emphasized that the 'close to nature' factors, such as beauty of the landscape, proximity of natural areas, as well as the village-scape and atmosphere, played a particularly important role in moving.

Management of green spaces

Of the households interviewed, the vast majority (95%) have a house standing on an independent plot. Average plot is 1,158 square meters, and it is interesting to note that the smallest average size is characteristic of Jelšovce, which is farthest from Nitra. Difference between the three settlements - regardless of the difference in plot sizes - is primarily shown in the fact that the proportion of green space is much lower in Nitrianske Hrnčiarovce and the proportion of uncultivated land is much higher (Table 7).

Attitudes related to green spaces were examined primarily through expectations. Based on the importance of the various factors, differences between original villagers and settlers, as well as between settlements, can be examined. There are certain differences between the structure of factors considered important by original villagers and settlers. While factors related to the preservation of the environment and biodiversity (providing habitat, increasing green space, etc.) and production for supply of

Table 7. Size of plots and land use characteristics

	Size of plot	Ratio, %				
		built-up	green area	lawn	gravel	uncultivated
Jelšovce	900	15.5	51.0	14.0	1.7	7.8
Lapáš	1 050	19.2	52.8	9.1	1.3	3.5
N. Hrnčiarovce	1 515	19.3	34.1	6.6	2.3	21.8
altogether	1 158	19.4	46.1	9.8	1.8	10.8

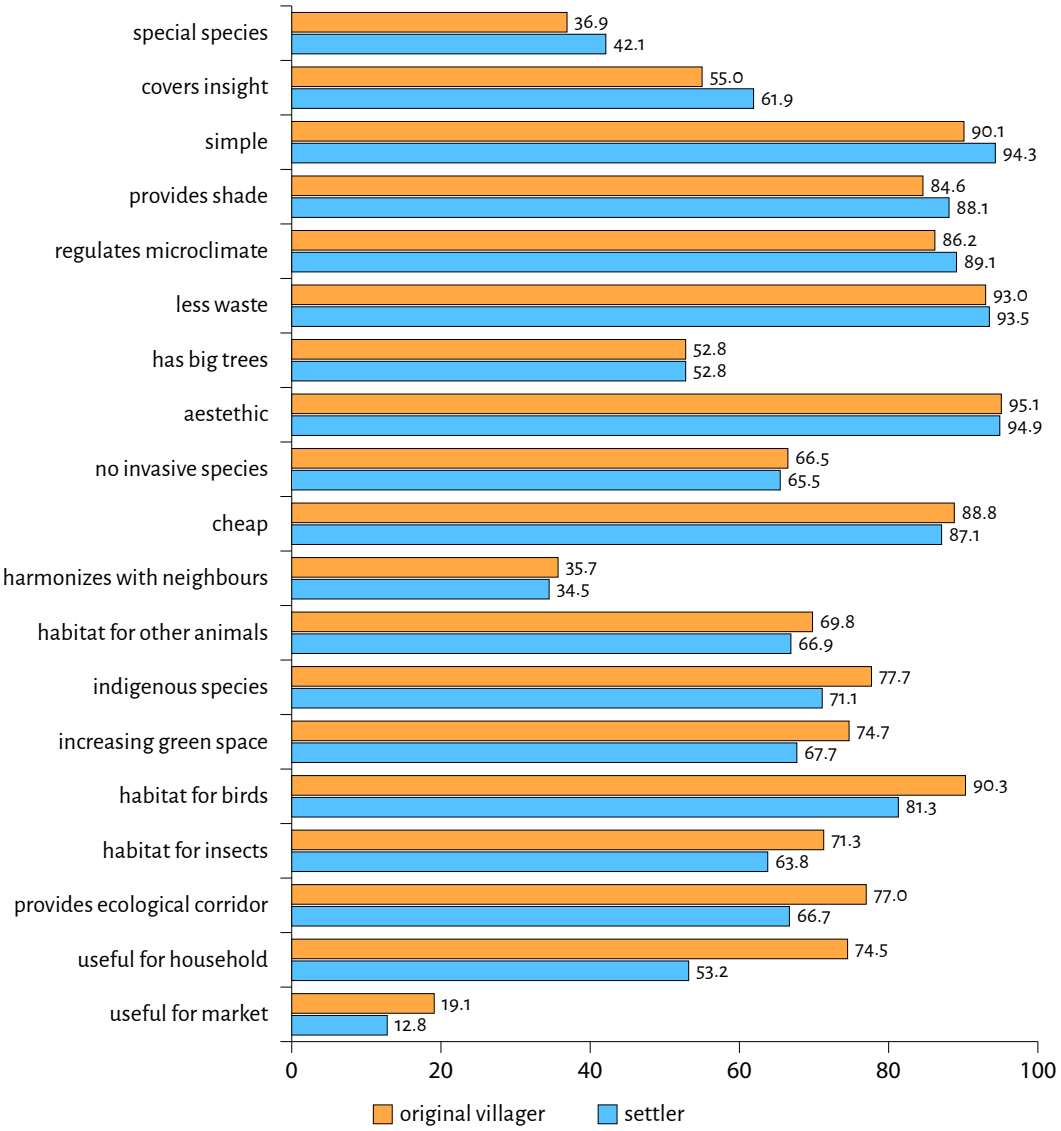

Figure 9. Assessment of factors deemed important among original villagers and settlers, mention rates (%)

households are considered more important for the original villagers, settlers mentioned only two factors in a significantly higher proportion; presence of special plant species, and that the design of the green areas harmonizes with neighbours (Figure 9).

Regarding differences in the importance of the factors between settlements, some factors correspond to the zonal structure. Moving from outside to inside, importance and presence of special species and covering of insight are clearly increasing, while as we move further from the city, utility for the household, increase of green space and provision of ecological corridor is more important (Figure 10).

Attitudes belonging to the listed factors were also examined in the form of thematic indices of six dimensions (utility, ecological awareness, convenience, biodiversity, native species, climate awareness). We computed variables based on factor scores, and also dichotomous variables for each dimension, indicating whether the respondent is generally characterized by compliance with the content of the given dimension. No significant differences can be found between settlers and villagers, except convenience, which is significantly more important for settlers. Differences between settlements are significant, with the exception of convenience and climate awareness, but directions are different. While Nitrianske Hrnčiarovce stands out in terms of biodiversity and the preference for native species, the situation is reversed in terms of usefulness and ecological awareness (Figure 11).

Regarding types of plants and cultivation of gardens, significant differences appear between villagers and settlers. In general, it can be said that the prevalence of different varieties and types of cultivation is higher in the case of villagers (lawn is the only exception to this, but the difference is not significant). Biggest differences in favour

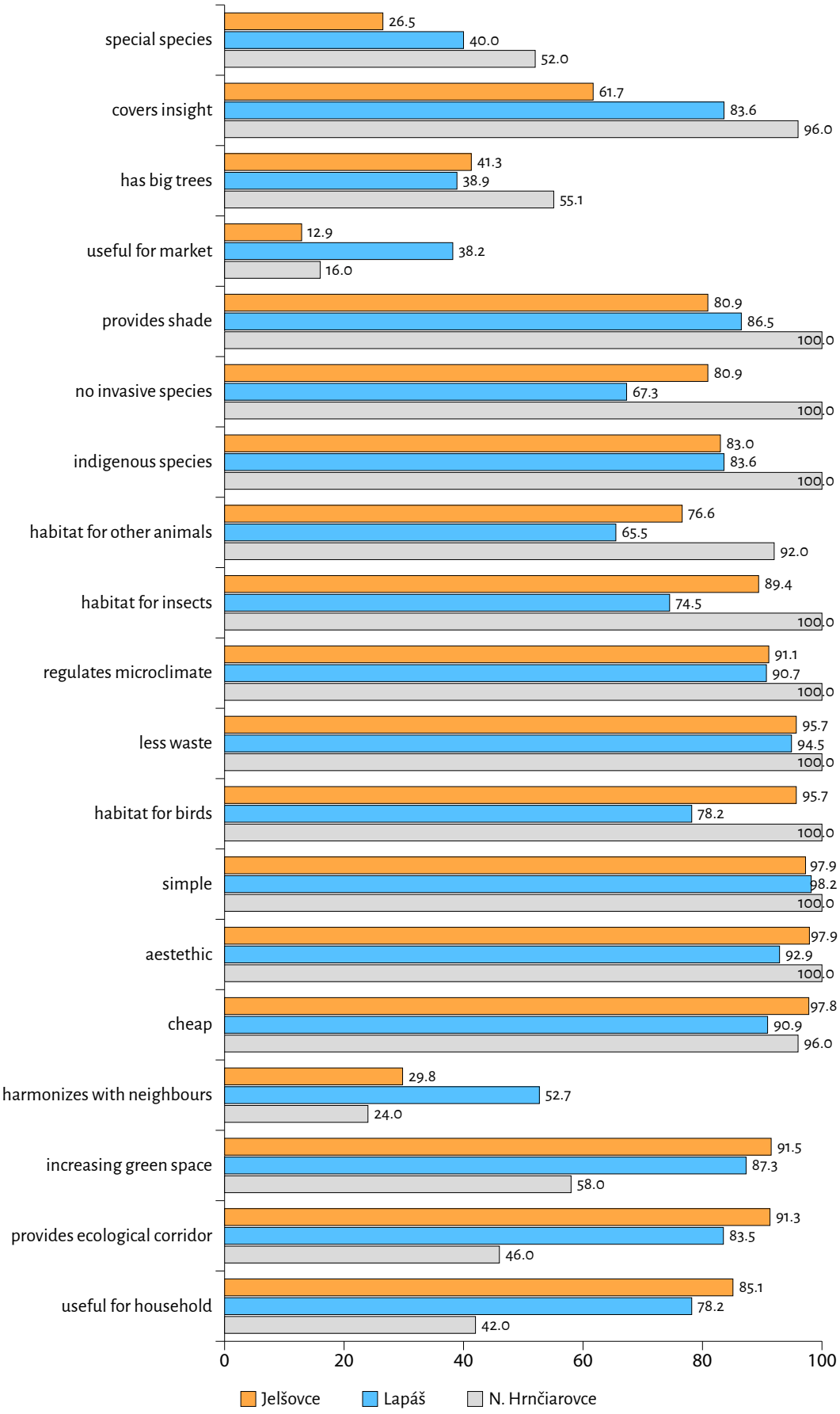

Figure 10. Assessment of factors deemed important by settlement, mention rates (%)

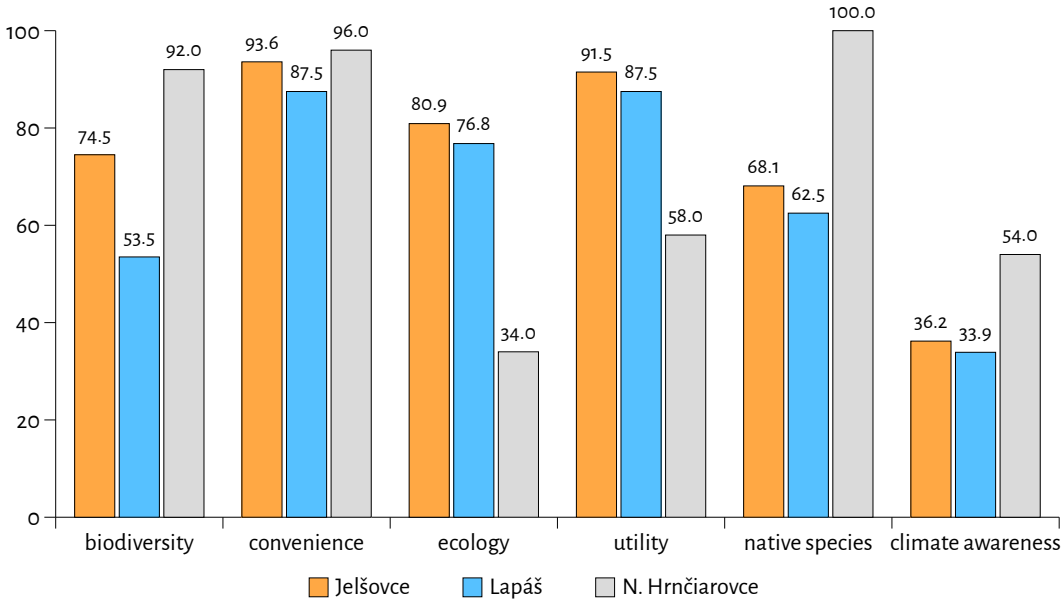

Figure 11. Differences between settlements based on the complex dimensions

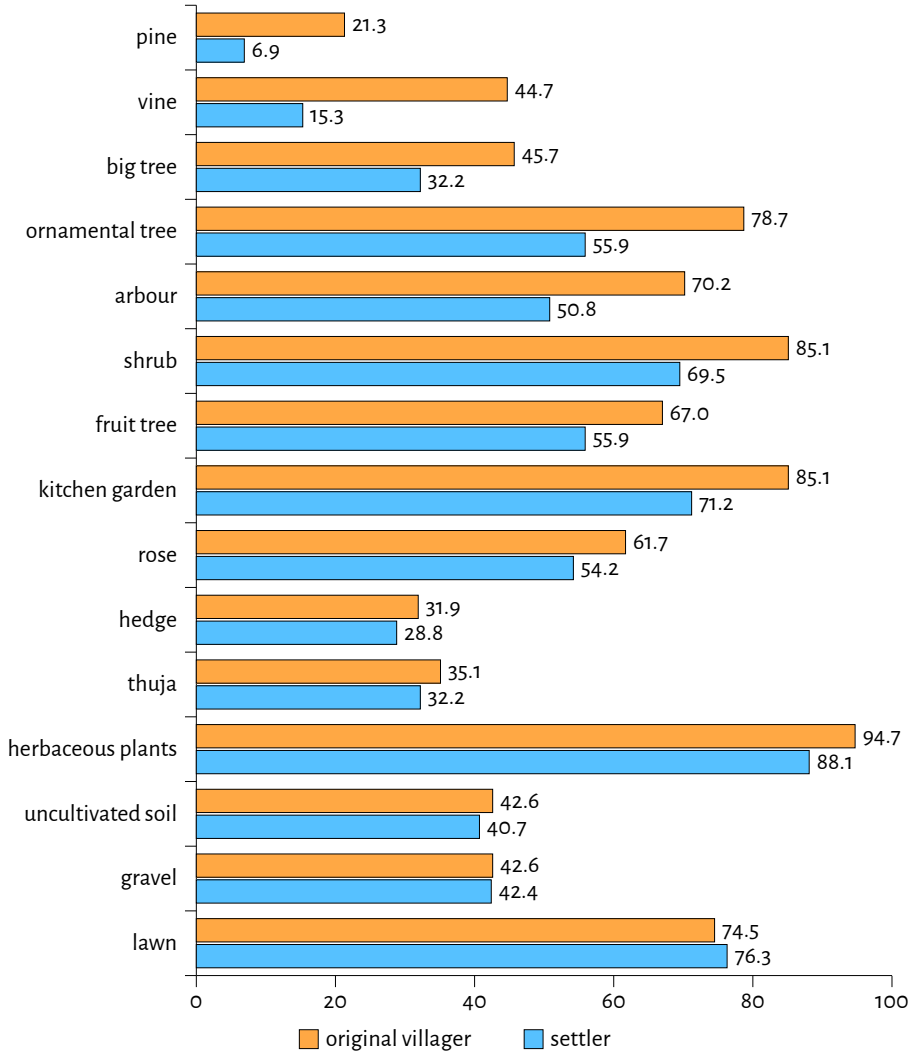

Figure 12. Presence of plant species and types of cultivation among original villagers and settlers (%)

of the original villagers are shown in the case of different trees and types that require a significant amount of care (vineyard, kitchen garden) (Figure 12). This also shows that villagers' gardens have a higher degree of biodiversity in general.

The qualitative dimension of the research, which was realized in the selected municipalities in the form of a questionnaire with the inhabitants, was complemented by interviews with the representatives of the individual municipalities. Based on the results of the interviews with the mayors, it can be concluded that all the representatives of the individual municipalities are introducing measures to regulate the negative impact of the residents on the green spaces and to enrich the municipalities with additional green spaces. Despite the fact that suburbanisation has reached significant proportions in the municipalities surveyed and has reduced the proportion of green spaces in the municipalities, all municipalities are taking the approach of planting new trees to replace damaged or allergy-causing trees. The attitude of the population towards green spaces varies according to the survey, and at first glance there are obvious differences between the different social groups of the population, as well as between the old settlers and the immigrants. While the old settlers prefer traditional fruit and vegetable cultivation, the immigrant population prefers ornamental gardens. In the higher income communities, spectacular and special gardens are also noticeable, with exotic trees, paved areas for cars and a swimming pool. Ornamental gardens with smaller usable areas are built in middle-income communities. According to interviews with mayors, this type of garden dominates in newly built sites, where owners plant hedges, columnar fruit trees, and shrubs that are not demanding in terms of soil composition and climatic conditions. Although traditional crop cultivation is gradually disappearing, the mayors agreed that the design of the individual gardens in the newly developed sites is harmonious within the neighbourhood, beautifies the village and the hedges have a beneficial effect on the microclimate. However, with different planting there are also conflicts between residents with each other and between residents and the village government. The mayors pointed out the most common problems. One of the main problems was mostly related to branches and leaves falling on neighbouring plots. Municipal officials consider each complaint individually, dealing with it mainly by asking for the disposal of these branches and leaves, or rejecting the complaint (e.g. if family houses are built in the forest protection zone). The other problem is parking in public spaces. The mayors agreed that residents should park on their own land in the first place, or then in constructed car parks, but never on grass areas. Some municipalities have drawn up a general binding regulations for the above. In those municipalities where there is no such regulation, the mayor's plan to draw one up in the near future. According to the mayors, one of the other major problems in the municipality is the care of the greenery between the public road and the residents' fences. This is a public space and belongs to the municipality. The vast majority of residents do not take care of this piece of green space as they do not own it. The mayors agreed that mowing is very time-consuming, and they do not have enough staff and equipment to cover the mowing of these areas. They concentrate on mowing playgrounds, cemeteries, parks or green areas located along the main road. These smaller areas are left unmowed, and residents are advised to groom them so as not to detract from the overall ornamental impression of the individual streets and locations in the municipalities.

Discussion

The results from our survey indicate that suburbanization is significantly changing the landscape and green spaces in settlements. It affects both their size and quality. As a result, living conditions and lifestyles are also being transformed, impacting the gardening habits of the population. This is particularly evident as newcomers have different attitudes and habits compared to traditional rural residents. These differences diminish as one moves outwards along the urban-rural gradient in more remote settlements. One key discovery is that differences exist between various suburban settlements. Municipalities closer to the city with beautiful natural surroundings (e.g. N. Hrnčiarovce) tend to attract higher-income residents. More distant municipalities draw in less affluent individuals, including those from rural areas, which makes their attitudes more similar to local residents than those who moved from the city.

Most of the literature treats suburban areas as a whole, making no distinction between zones. Our survey shows that the status of the settlement and its distance from the city are essential characteristics; the design of green spaces and habits differ somewhat. We can also detect an urban-rural gradient in this respect. This is illustrated by the tradition of food production. The literature shows that in Central Europe the proportion of people who grow food in their gardens for their own consumption is still 38%, compared with an average of 10% in Western Europe. In our experience, this activity is disappearing, with no more than 10-15% of food producers here. Of course, this varies from zone to zone, as we have seen.

One of the main features of suburbanisation is that higher-income out-migrants tend to seek out more naturally valuable places to live. At the same time, their own greening attitudes tend to attract them to more spectacular and special gardens. At the same time, the reality is that there is a growing preference for lawns and more secluded gardens. In contrast, in lower-income communities, the traditional approach tends to persist. The proportion of people who continue to use the garden to produce products for their self-consumption is relatively higher.

It may be interesting to note that we also see differences in the attitudes of the population across countries. Typically, the Slovak sample is closer to a Western European approximation than we thought before reading the literature. Aesthetics and environmental considerations are much more in the foreground. The specific features of the individual sub-elements include, for example, the strong role of vegetation in the Nitra pattern as a space divider and as an obstacle to the view of the plot. Already during our first field visit, we noticed that, especially in the case of higher-income plots, the owners were very concerned about the role of fences as an obstruction to the view (high, compact fences). This is much more prevalent than in other agglomerations studied. So, obviously, the need for hedges also arises.

Local authorities try to regulate the green management of the residents. Their most common tools are the village-scape, town-scape prescriptions, rules, and bans, which they are not able to control. Systematic advice on gardening and green infrastructure would be more helpful. Community events could be included to promote green solutions and increase eco-consciousness. Promote the spread of certain garden species, e.g. through free plant giveaways. Our research shows that the majority of people are interested in gardening. Knowing their habits, local authorities could organise targeted campaigns.

Conclusions

Suburbanisation is driven by various factors, one of the most significant being the desire of city residents to have their own green spaces and gardens. This influences their choice to settle in villages near the city. Additionally, rural inhabitants who relocate to urban areas for work often opt to live in suburban villages to maintain the values of their former homes. The preference for detached houses and more living space is also linked to a desire for gardens and greenery. In addition to this motivation, their attitudes seem to be influenced by the ecological knowledge of today, which appears in public discourse. Nevertheless, motivations and ecological attitudes are moderately realised. In fact, most owners prefer low-maintenance, sustainable plots. However, these plots often have limited ecological value as there are few large trees and hedgerows, preventing the development of necessary ecological green networks. This situation is not ideal for climate adaptation. To encourage appropriate gardening practices, local and national organisations need to emphasise and promote them, which would benefit the local community.

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