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Accessibility of regional centre in the light of the number of used public transport lines: transport-disadvantaged rural areas from central Slovakia

Abstract: Town of Banská Bystrica, the middle-size regional centre (less than 80 thousand inhabitants) from central Slovakia has an eccentric geographical position in relation to the rest of the rural self-governing region of Banská Bystrica. This reality has an important impact on the public transport management from the perspective of the region and individual providers. The aim of the study is to identify municipalities and areas of this region which inhabitants are marginalised or excluded from using the public transport services to/from their regional centre. We used the concept of “daily accessibility” together with a priori accepted condition from the perspective of potential travellers about “the longest stay time in regional centre” as the decisive criteria for delimitation of territories (transport-disadvantaged areas), which inhabitants suffer not only from public transport exclusion, but also from the greater number of transport vehicle changes and used public transport lines (connections) during the return journey. Electronic database of train and bus timetables was used by procedure for obtaining the information about studied characteristics for return journey during 24 hours of working days (Wednesday) and the rest of the week (Sunday).

Keywords: daily transport accessibility, organization of public transport, transport-disadvantaged areas, Banská Bystrica self-governing region, Slovakia

The continuously increasing pressure on the economic efficiency of society's functioning, which leads to the spatial concentration of inhabitants and economic activities, brings rural areas, which are remote from the centres of economic growth and with dispersed population, a position of disadvantage and marginalization not only spatial, but also economic and social. The need to travel for work, education or various services not only leads to increased spatial mobility, which is closely linked to deterioration of the quality of the environment and increase in the number of traffic accidents, but also has a negative impact on the quality of life of the rural population through increased financial costs, time lost and various forms of discomfort. The situation of inhabitants from rural areas, living at greater distances from the towns, is further aggravated by the current transport policy of the state with its priorities in the sphere of transport infrastructure construction. Priority focus on the construction of motorways and expressways ("engineering principles" in national transport policy), in order to improve transport accessibility and reduce transport time between the economic centres of the state, is economically efficient based on accepted criteria, but contributes to the emergence of intra-regional rural peripheries and transport-disadvantaged areas, whose inhabitants may also be exposed to the problem of transport-related social exclusion. According to McDonagh (2006), who evaluates the Irish transport policy, this means that transport policy with an emphasis on the expansion of transport infrastructure (especially towards Dublin) may not necessarily lead to increasing and/or improving accessibility, mobility and the quality of life in rural areas. The definition of the term social exclusion, which is used by him, is based on the Irish government materials, where *"social exclusion is seen as cumulative marginalization from production (unemployment), consumption (income poverty), social networks (family, neighbourhood and community), decision-making and from an adequate quality of life"* (McDonagh, 2006, p. 356).

Southern part of central Slovakia as study territory: spatial distribution of population and transport infrastructure

In 1996, after the reorganization of the administrative division of Slovakia, the Banská Bystrica self-governing region was created in the southern part of central Slovakia (Fig.1). The governmental document "Rural Development Programme in Slovakia for the 2014-2020 programming period" recognises a territory of Banská Bystrica region (NUTS 3) classified as "predominantly rural region": rural population living in rural territories represents more than 50% of total regional population (Székely, 2016). Based on the surface area, it is the largest self-governing region in Slovakia (occupying 19.3% of the country's territory) and with the current (in 2019) number of about 645 thousand inhabitants (11.8% population of the whole state) is also the least populated region of Slovakia (68.3 inhabitants per km²).



Figure 1. The Banská Bystrica self-governing region: geographical location of study area

Source: own elaboration.

From administrative perspective the territory, on the level of municipalities (LAU 2), is relatively fragmented: the region consists of 516 mainly small municipalities (at the time of the last census in 2011 – 53.7% of the municipalities in the region belonged to the category with less than 500 inhabitants), while 24 of them are urban (town status) and 492 municipalities are rural. Hierarchically higher administrative units are districts; there are 13 districts in the region and their centres are in their largest towns. The centre of the self-governing region is the town of Banská Bystrica, with the population of 76 000 inhabitants (2019), less than 12% of the total population of the region.

The primary requirement for the possibility of relocating of the inhabitants is the existence of transport infrastructure consisting of roads and railways, the main goal of which is to connect individual settlements in the region. The transport infrastructure in the Banská Bystrica region is dominated by roads of various hierarchy with an overall above-average density (approximately 5 km per 1000 inhabitants). In terms of quality, expressways have the highest position. However, their share in the total length of the region's road network is small – only 128 km: the expressways represent only 4% of the total road network. Roads of the lowest quality have the highest share, but a large part of them is not used for public transport purposes. These are 3rd class roads, whose share in the regional road infrastructure is up to 57.3% with a total length of 1839 km. The 1st class (641 km) and 2nd class (602 km) roads are evenly represented. The railway lines have a similar total length (660 km), of which only a small portion is electrified. There are no motorways, which many experts consider to be one of the reasons for the region's economic underdevelopment.

Transport infrastructure is generally determined by the settlement structure and natural conditions. The settlement of the region is concentrated mainly in two natural units. In the north and west, it is the valley of the Hron River,

with the largest towns of Banská Bystrica, Zvolen, Žiar nad Hronom, Brezno, Žarnovica, Nová Baňa, and in the south – Juhoslovenská kotlina Basin with the towns of Lučenec, Rimavská Sobota, Revúca, Veľký Krtíš. The territory between these two natural units has a predominantly mountainous character and is less populated.

The eccentric location of the regional centre Banská Bystrica, which lies on the north-western edge of this region, is particularly significant. The most important transport corridors (expressway, electrified railway) are, therefore, located in this part and provide the connection of the region with the capital of the Slovak Republic, Bratislava. This location of the centre results from the fact that, historically, the current Banská Bystrica self-governing region has not formed as one homogeneous unit. Especially in the southern part of the territory, the settlement structure developed within the historical territorial units (Gemers, Novohrad, Hont, Malohont), which had their own centres and the connection to Banská Bystrica was unnecessary. In addition, the spatial distribution of the transport infrastructure is significantly determined by natural conditions, defined primarily by the relief. The road network and railways run mainly through river valleys and form a predominantly tree-like structure. They are separated by barriers of mountain ridges, which made it impossible to create a denser lattice network, which can form in the flat areas of the lowlands.

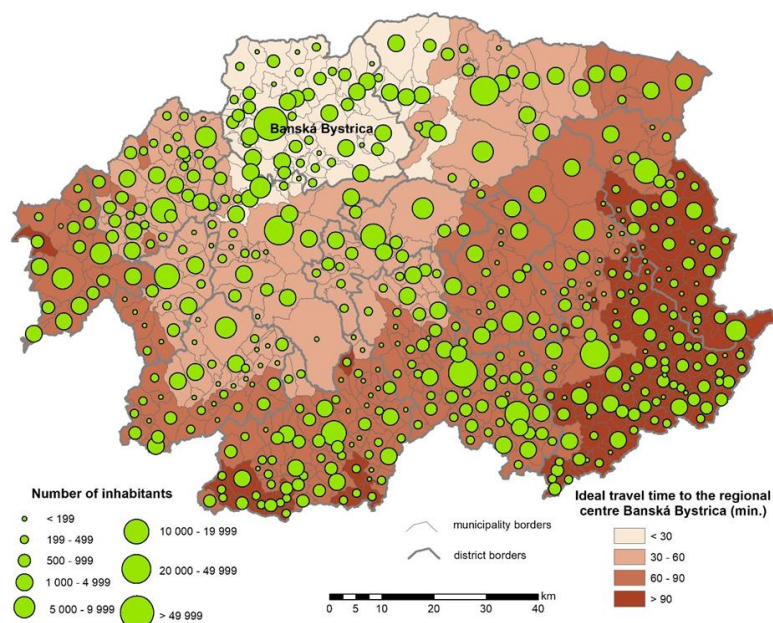


Figure 2. Ideal travel time to regional centre of Banská Bystrica and size structure of regional municipalities

Source: own elaboration.

The eccentric position of the regional centre causes problems with transport accessibility. A large part of the region's population (almost half) lives in municipalities (about 2/3 of the region's municipalities), which are more than 50 km away from their regional centre: it is a distance which, under ideal conditions and when using a personal motor vehicle, requires a minimum of one hour of transport time (Fig.2). However, not everyone can, or wants to use a personal motor vehicle for transport: the causes can be diverse and there are various groups of people in need of alternative transport (people without a car or driving license, children and young people, the elderly, people with different disabilities). In addition, ideal conditions can be disrupted on some days by inclement weather or traffic jams. Thus, there are many restrictions that increase the length of the real transport time.

Individual transport versus public passenger transport in the Banská Bystrica self-governing region

The number of motor vehicles in Slovakia increases constantly, but the reasons for the decision to buy a car may change. Once the purchase of a motor vehicle was a matter of prestige and pointing out the owner's solvency, nowadays it is in many cases a necessary way out of spatial isolation and subsequent social exclusion (Horňák, Kresáň, and Rochovská. 2016). According to statistical data published on the website of the Ministry of Transport and Construction of the Slovak Republic, 194,639 motor vehicles were registered in the Banská Bystrica Region in 1998, and by 2018 their number had increased by about 1.6 times to 315,300. This means that if in 1998 the degree of motorization (the number of inhabitants of the Banská Bystrica Region per 1 motor vehicle) was at the level of 3,409, by 2018 this value decreased to the level of 2,058. A specific group among motor vehicles are passenger cars, the growth of which is the most dynamic. If in 1997, around 134,921 passenger cars were registered in the Banská Bystrica self-governing region, by 2018 their number had increased by about 1.8 times to 248,702. And again, statistical data show that while in 1997 the degree of motorization (the number of inhabitants of the Banská Bystrica Region per 1 passenger car) was at the level of 4.519, by 2018 this value had fallen to the level of 2.609. The growth in the number of cars and the popularity of their use causes serious problems, such as noise, air pollution, congestions, or lack of parking space, especially in traffic-exposed areas of the region and at certain hours of the day.

Public transport, as a service of general interest, is represented in the region by bus (managed by self-governing region) and rail transport (managed by state). In relation to individual transport, public transport, provided by the state or private companies, is in a complementary and/or competitive position. The increase in the degree of motorization is therefore reflected in the continuous decline of passengers transported by public transport. Economic efficiency and sustainability of public transport are becoming disrupted, economic difficulties have emerged, which lead to a subsequent reduction in public non-economic transport lines (connections).

The priority of public transport in the region is to provide the transport of inhabitants to work, schools, medical and social facilities and to manage transport connections of all municipalities with the district towns of the region, including the regional centre (*Plán dopravnej obslužnosti...*, 2007/2008). In an effort to update the above-mentioned Transport Service Plan, in 2020 the representatives of the Banská Bystrica self-governing region signed an agreement on its execution. It should be a document based on a quantitative analysis (as well as its older version requiring innovative redesign) of the needs of transport services of the self-governing region while maintaining spatial and social justice. This means that not only disproportionate requirements for transport services should be reduced, but also justified requirements for improving the provision of interconnection of individual municipalities by public transport (new) lines should be saturated.

Data and methods

Given that the regional centre has an eccentric geographical location in the relation to individual municipalities of the Banská Bystrica self-governing region, and taking into account the basic, economically justified principles of public transport organization, it is reasonable to assume that it will not be possible to travel directly to the town of Banská Bystrica from all predominantly rural municipalities of the region. Transfers (change of transport mode or line) between individual transport connections, which are usually carried out in district centres (lower hierarchical level – LAU 1) and at traffic junctions, cannot be avoided.

In determining the objective of the study, we assumed that any transfer during the journey to reach the destination, any change of mode or line of transport is a physical and mental burden on the passenger(s). Frequent cases of delays in public transport caused by traffic jams, machine failures, or by the use of alternative transport in the case of repairs on railway lines increase the uncertainty of achieving the destination in the required time. On the other side, longer waiting times for the next connection disproportionately prolong the travel time. Another problem may be that the stops at the place of required traffic change can be separated by a relatively large distance. Transfers between individual bus and/or railway stops in a limited time frame, as well as real or potential problems with heavy luggage transfer can be, and for selected groups of passengers (disabled people), are often an insurmountable barrier to the use of public transport for travel to the regional centre.

The aim of the study was to find out how many transfers (changes of modes or lines) in public transport connections are necessary for residents of individual municipalities of the Banská Bystrica self-governing region, so that they can spend as long time as possible in the centre of the region, leaving their place of residence and returning thereto in 24 hours of the same calendar day (“daily accessibility” indicator – Gutiérrez, 2001). We consider municipalities, from

which the inhabitants have to transfer (to change) more often to another mode or line of public transport, and thus use more transport connections, in terms of a negative perception of necessary transfers as territories of transport disadvantage. There is not only a potential, but also a real danger that the inhabitants of these municipalities may be hypothetically exposed to the pressure of transport-related social exclusion due to the difficult conditions of transport accessibility of the regional centre with its wider (in comparison with the hierarchically lower district centre) range of offers (e.g. Farrington and Farrington, 2005; McDonagh, 2006; Shergold and Parkhurst, 2012; Lucas, 2012, 2019; Horňák and Rochovská, 2014; Jaroš, 2017).

To obtain data on the total number of all buses and/or trains during return traveling from all municipalities of the Banská Bystrica self-governing region to the centre of the region, to town of Banská Bystrica, we used the portal www.cp.hnonline.sk (Train and bus timetables), which provides information on arrivals and departures of trains, buses and urban mass transportation connections. The analysis focused on comparing the conditions during the working day (Wednesday, 18 September 2019) and the rest day (Sunday, 22 September 2019), while several basic rules were applied in obtaining the data:

1. Individual municipalities differ according to the size of their territory (surface area) and number of traffic stops, so we set the start and end point of the transport connection as the centre of the urban municipality (the main bus and railway stations) or rural municipality (place of the municipal office).
2. When selecting connections (transport lines), the priority criterion was to achieve the maximum time that could be spent in the regional centre. This meant that we did not take into account the presumed potential behaviour of passengers (e.g., in terms of time optimisation while travelling).
3. One exception to point 2 was accepted: with a maximum difference of 10 minutes when leaving the departure site (municipality or regional centre) or on arrival at the destination site (municipality or regional centre), a connection requiring a smaller number of transfers – changes of transport mode or line (with the aim of reducing the risk of travelling by public transport) was preferred. The total time spent in the regional centre was in rare cases reduced by a maximum of 20 minutes when this exception was applied.
4. We did not take into account departure times shortly after midnight or cases where travellers arrived at the regional centre before 4.00 am.
5. If the transport lines – connections did not go directly into the municipality, then the distance of the nearest transport stop within 2 km from the municipality was accepted as a valid journey and municipality has been accessible by public transport. If the distance was greater, we defined the municipality as inaccessible by public transport.
6. Due to the fact that the reasons for visiting the regional centre are very diverse and since we do not know which specific places are commuters visiting within it, traveling by urban mass transportation and moving around the territory of Banská Bystrica were not taken into account.

A data matrix of 515 (municipalities in the region) x 4 (2 days – Wednesday, Sunday – x 4 indicators – number of transport modes or lines changes, and number of used transport connections to/from regional centre during the return travel) was then created, consisting of data extracted (and calculated) from the www.cp.hnonline.sk website, concerning the daily accessibility of the regional centre of Banská Bystrica from individual municipalities in the NUTS 3 administrative region. The matrix was necessary for statistical and spatial analyses and for subsequent interpretation of the results.

Results

We have pointed out that any transfer, change of transport mode or line during the journey can possibly cause various difficulties, the negative perception of which may discourage passengers from using public transport. Any transport connection is unique and in the system of time-coordinated organization of public transport in the region, the disruption of the timetables of individual connections is a serious problem that affects the reliability of public transport and can lead to the loss of clients. As the number of necessary transfers, changes of transport mode or line, to reach the destination of the journey increases, so does the potential risk of undesired disruption of the time coordination of the transport system and undue prolongation of travel time.

It should be emphasized that the organization of public bus transport is within the competence of the Banská Bystrica self-governing region and is based on the principle of organizing public transport in districts (or functional regions determined on the basis of commuting to work, schools and services), while connections between districts are dominated by the orientation to the regional centre, Banská Bystrica. Despite several years of efforts to change, the organization of rail passenger transport remains within the competence of the state, which causes problems in the overall harmonization of public transport.

During a normal working day in the middle of the week, almost all inhabitants of the region (with the exception of the inhabitants of 1 municipality) have the opportunity to make the return trip to Banská Bystrica by using public transport (Tab. 1). Even from the most remote villages, located at the upper ends of the mountain valleys, it is possible to come to Banská Bystrica, stay in the regional centre for some time and then return to the village from which the passenger leaves in the morning before midnight, although such a trip would be extremely complicated (early morning wake up and numerous transfers). Due to the numerous potential complications and the significantly limited time of possible stay in the regional centre, it is reasonable to assume that the use of public transport by the inhabitants of the most peripherally located municipalities will be rather sporadic. Inhabitants of such municipalities are likely to decide to use public transport only as a last resort, if they need to travel to the regional centre and all attempts to provide an alternative, more advantageous form of transport (help from family or neighbours) have failed.

Table1. Wednesday: Municipalities and population influenced by organization of public transport during the daily return travel to the regional centre of Banská Bystrica from all municipalities of the region (principle of maximizing the time of stay in the centre of the region)

	Wednesday			
	Number of		% share of	
	municipalities	population	municipalities	population
Regional centre of Banská Bystrica	1	80 003	0.19	12.11
No connection	1	40	0.19	0.01
2 connections	49	113 269	9.50	17.15
3 connections	17	19 184	3.29	2.90
4 connections	136	248 114	26.36	37.56
5 connections	132	107 311	25.58	16.25
6 connections	111	65 664	21.51	9.94
7 connections	49	19 562	9.50	2.96
8 connections	15	5 830	2.91	0.88
9 connections	5	1 586	0.97	0.24

Source: own elaboration based on data obtained from Census 2011, Statistical Office of the Slovak Republic, and data obtained from <https://cp.hnonline.sk>.

Analysing the electronic timetables, we learn that during one calendar day, inhabitants from 49 municipalities (9.5% of municipalities in the region) can travel to and from the regional centre by direct train or bus connections (using only 2 transport lines-connections per day), in which, however, live more than 17.5% of the total population of the Banská Bystrica self-governing region (Tab. 1). These municipalities are located in close proximity to the regional centre, mostly in the district of Banská Bystrica, or in the adjacent parts of the neighbouring districts Zvolen and Brezno (Fig. 3).

One transfer (change of transport mode or line) and three transport connections have to be used by the inhabitants of another 17 municipalities, if they want to spend as long a time as possible in the regional centre. If they waived this criterion, they would be able to make the return journey without a transfer, using only the direct connections between the regional centre and the municipalities from which they have started in the morning. In different situation are inhabitants of another 136 municipalities, who have to use 4 transport connections when traveling to their regional centre and returning home. It is a common way of transporting for people from the municipalities of the districts, which are proximately adjacent to the district of Banská Bystrica. The first part of the trip leads to the centre of their functional zone, from which the second connection reaches the regional centre. Such a model

of public transport organization could be found mainly in the municipalities of the districts of Zvolen, Brezno and Detva, but we also meet it in some municipalities from the districts of Banská Štiavnica, Krupina, Veľký Krtíš, Žarnovica, Žiar nad Hronom and Lučenec, which are located near major transport lines – such model as a way to reach the regional centre is usually accepted by inhabitants of these municipalities.

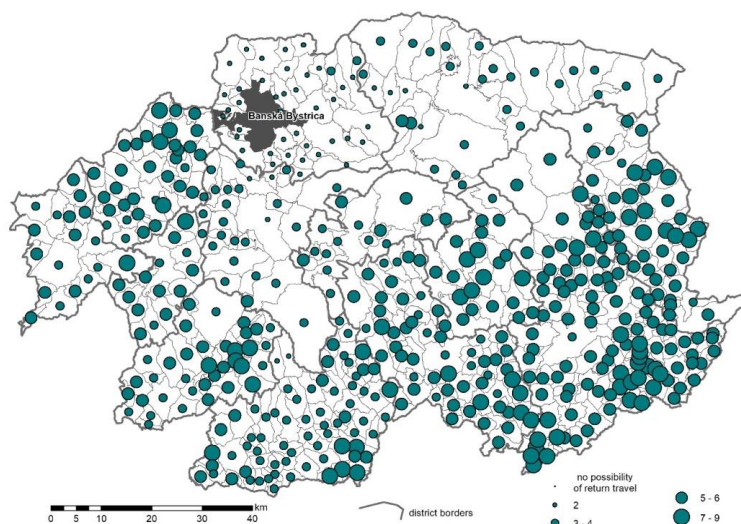


Figure 3. Daily accessibility of regional centre of Banská Bystrica at Wednesday: number of used public transport lines (connections) during the daily return travel

Source: own elaboration based on data obtained from <https://cp.hnonline.sk>.

In a case of almost half (47%) of the region's municipalities, which are places of residence to approximately 26% of the population, efforts to maximize the time spent in the regional centre are associated with a further increase of one or two transfers (changes of transport mode or line: one-way or two-way) when using public transport. The number of used transport connections is 5 or 6. The inhabitants of smaller peripheral municipalities, for whom the first connection only brings them closer to the main transport lines or a larger municipality, wherefrom they transfer to the connection to the centre of the district to reach the centre of the region by a direct connection, have to transfer twice (during one-way journey).

Such traveling is more difficult, because at the first transfer (change of transport mode or line) there is a risk that the seats will already be occupied. Rural areas, from which it is necessary to transfer twice during the journey to Banská Bystrica, include most municipalities of the districts of Krupina, Veľký Krtíš, Lučenec, Poltár, as well as more remote parts of the districts of Žarnovica, Žiar nad Hronom, Banská Štiavnica and Detva, as well as some parts of the outermost districts of Rimavská Sobota and Revúca.

If we assume that passengers to the regional centre are focused on maximizing the length of their stay in the destination town, then the most difficult and the least comfortable travelling by public transport will be for about 27 thousand inhabitants (4% of inhabitants of the region), living in 69 municipalities (13% of all municipalities of the region). While travelling from these small rural villages (the average size of the municipality from this group is only 391 inhabitants), it is necessary to transfer (to change the transport mode or line) three times on the way to Banská Bystrica or/and back and use 7-8 transport connections during return travel. In the worst cases, which are represented by 5 municipalities from the districts of Revúca and Rimavská Sobota, the number of transfers on the return journey will increase by one and the inhabitants of these disadvantaged municipalities must use up to 9 transport connections when traveling to the regional centre and back.

It is obvious that such a way of traveling would be extremely demanding even for people without health restrictions and would require considerable physical and mental condition. Therefore, if it is necessary to travel to the regional centre, the inhabitants make a great effort to use alternative modes of transport, at least on shorter sections of the trip, in order to get closer to a larger municipality or a more hierarchically important road (or railway).

During Sunday, as a day off work, the mobility of the inhabitants naturally decreases. It is, therefore, reasonable to assume that transport operators, in an effort to make their activities economically efficient, will respond by reducing the number of connections and shortening the transport routes by not serving places with a lower concentration of inhabitants. In particular, the inhabitants of small, peripherally located rural municipalities thus represent the riskiest group during Sunday, which may have a problem benefiting from the cultural and social life in the regional centre, if the only possible way of their travelling is public transport.

A detailed analysis of timetables shows that 37 thousand inhabitants (5.6% of the total population of the region) from more than a quarter of municipalities in the region (134 municipalities with an average size of 237 inhabitants/municipality) does not even have the theoretical opportunity to travel within one day to the regional centre and back on Sunday (Tab. 2). There is either no connection from their municipality towards the regional centre, or the first connection arrives to Banská Bystrica as late as the last possible connection, which they would have to use if they wanted to be home on the same day before midnight at the latest, has left. If it is necessary to reach the regional centre during Sunday from these transport disadvantaged areas (Fig. 3) only by using public transport, a frequent solution is to pass at least 2 km to the nearest railway station or bus stop located in a neighbouring municipality or at an intersection with a more hierarchically important road. However, this distance is insurmountable, especially for the elderly and disabled people, without the help of their relatives or friends.

Table 2. Sunday: Municipalities and population influenced by organization of public transport during the daily return travel to the regional centre of Banská Bystrica from all municipalities of the region (principle of maximizing the time of stay in the centre of the region)

	Sunday			
	Number of		% share of	
	municipalities	population	municipalities	population
Regional centre of Banská Bystrica	1	80 003	0.19	12.11
No connection	134	37 002	25.97	5.60
2 connections	50	126 163	9.69	19.10
3 connections	13	40 808	2.52	6.18
4 connections	107	211 277	20.74	31.98
5 connections	96	64 802	18.60	9.81
6 connections	77	84 057	14.92	12.73
7 connections	36	14 310	6.98	2.17
8 connections	2	2 141	0.39	0.32
9 connections	0	0	0.00	0.00

Source: own elaboration based on data obtained from Census 2011, Statistical Office of the Slovak Republic, and data obtained from <https://cp.hnonline.sk>.

Unlike Wednesday, we have not registered the need to use 9 transport connections (lines) for any of the municipalities to make the return journey to the regional centre. Along with this, the number of municipalities from which inhabitants have to use 7-8 transport connections decreased to 38 (7.4%), compared to a working day: some municipalities simply moved to the group of municipalities from which it is not possible to make a return journey to regional centre on Sunday (until midnight) using only the public transport.

The visual comparison of Fig. 3 and Fig. 4 clearly indicates that the principle of the public transport organization during the working day and the non-working day is essentially the same. Therefore, the most significant change in the accessibility of Banská Bystrica as a regional centre on a Sunday is the substantial expansion of remote and sparsely populated transport-disadvantaged areas, especially in the south-eastern part of the region.

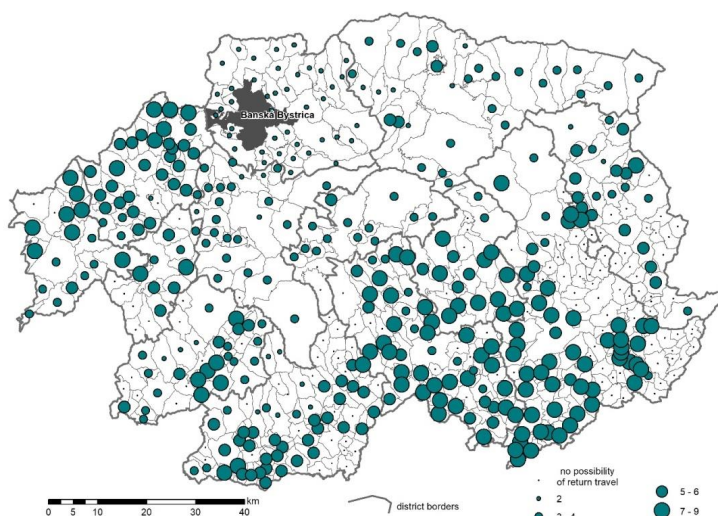


Figure 4. Daily accessibility of regional centre of Banská Bystrica at Sunday: number of used public transport lines (connections) during the daily return travel

Source: own elaboration based on data obtained from <https://cp.hnonline.sk>.

Conclusion

The accessibility of the regional centre by public transport from all municipalities in the region is a very specific problem, where the theoretical requirements of the inhabitants of individual municipalities meet with the possibilities of their financial provision not only from the perspective of transport operators but also from the perspective of the self-governing region and self-governing municipalities. The inhabitants of the region are aware that public transport is provided to the centres of the districts, which to a large extent saturate their normal demands for services.

A significant part of the region's inhabitants does not visit Banská Bystrica regularly, but rather exceptionally, especially those who live at a considerable distance from this regional centre. These inhabitants are discouraged from travelling to Banská Bystrica more frequently because of the need of investing considerable time, money and inconvenience in the journey, and the return on this investment in terms of economic rationality and/or emotional satisfaction may be questionable for them. The absence of a car and the need to use public transport further emphasize this mootness of passenger's long-distance travel efficiency.

The results of the research aim to point out the difficulties faced by passengers, for whom the only criterion when choosing transport connections to the regional centre is the effort to maximize time to stay at the destination of their trip. The chosen criterion is justified in many cases, as the achievement

of the planned objectives is a priority for passengers. On the other hand, the adoption of the chosen criterion is the reason why the presented results point to a large number of transfers (changes of transport mode or line) and used transport connections. If we waived this criterion and chose a different priority, when traveling by public transport, travel from several rural communities would be less complicated and shorter in time, but the time available to passengers to stay in the regional centre would be shorter and not necessarily sufficient to meet the objectives of their visit.

Transferring from one transport mode (line) to another is usually associated with shorter or longer time of waiting, which can be frustrating for many passengers. In addition to the disproportionate increase in travel time, frustration could be also caused by potential delays in follow-up connections, threatening the fulfilment of the objectives of the visit to the regional centre, or dissatisfaction with the level of equipment of train stations and bus stops, or waiting rooms (Watts and Urry, 2008). Difficulties, especially for the elderly, passengers with small children and/or heavier luggage, or people with certain disabilities, are also caused by the longer way between two points: the bus stop (station) and the train station.

The need to take into account the limited length of time available in the destination, together with numerous transfers (changes of transport mode or line) and the use of more transport connections when traveling to the regional centre, disadvantage mainly the inhabitants of small, remote and peripherally located rural municipalities. Unfavourable geographical location and low concentration of inhabitants predispose these areas to reduced serviceability by public transport, which results in direct negative impacts on their inhabitants in terms of access to the labour market, better education, services or participation in important cultural and social meetings. Thus, the inhabitants of public transport-disadvantaged areas, whose identification and delimitation differ depending on the organization of public transport in individual states (cf. McDonagh, 2006), get into the position of potential transport-related social exclusion (e.g. Lucas, 2012, 2019; Jaroš, 2017). However, the perception and acceptance of the state with a markedly negative connotation is a highly individual and its existence in the Banská Bystrica self-governing region could be confirmed (refuted) only by further qualitative research of the opinions and behaviour of the inhabitants from (not only) identified public transport-disadvantaged areas.

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