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Dilemmas of measuring social inequality | An isochron method in connection with rural employment tendencies

Abstract

In this paper I seek to show a method designed to depict a segment of inequality related to geographical and social mobility, and not least, employment. Linking these inequalities in terms of access times is important because the distribution of jobs in some of the NUTS 'phasing-in' and 'phasing-out' areas are developed with a complex program. Work as a duty plays a cardinal role in an individual's life if we think of social norms and values, so in connection with inequalities it is influential to discuss it in the context of rural spheres. At the same time, work can also be interpreted as a mean of self-expression that presumably largely determines a person's carrier. In addition, to the deficiencies of infrastructural endowments, I examine the reasons of the factors that describe the cooperation between employees and employers. These include travel subsidies, company bus services and other supports, which can be characterized by key expressions of care, activation and investment. Considering the specificity, limits and possibilities of isochron maps, we can get closer to the peculiarities of the transport network of an area with the help of the background data which are to illustrate the access times through the approach of social inequalities, including employment opportunities.

Key words: isochron circles, labor market, access time, geographical inequality, social inequality

Introduction

The issue of social inequality is important at all times and places if we think of the organization of society, and not least, the career chances of the individual. The regularities of network-building structures are not self-evident — the diversity of social network systems and the implicit differences in statuses warn of attention to individual patterns (Blau, 1997). When examining the differences between people, it should be taken into account that not all phenomena can be considered inequalities, and not all inequalities can be seen from a human

and social point of view, as stated by Kolosi (1987). Thus social inequalities may raise additional questions (Farkas, 2018). In this paper I explain the differences of the social indicator in a theoretical overview, focusing on access times to clarify the concepts used when discussing the specifics of the measuring instrument.

Work as a duty often should play a cardinal role in an individual's life in the context of social norms and values. However, to state this principle from a social science approach would be far from free of value judgments. From the perspective of inequalities, the achievement of work can be examined not only by analyzing social ladders, but also by taking into account geographical factors, for which access times provide a good measure tool. The phenomenon of territorial differences and unequal development is considered an axiom in the spatial sciences. The existence of difference can be linked not only to social, but also to physical and economic inequalities (Faragó, 2016). The self-sustaining role and decisive nature of work, and thus its function, also supports its negotiation with inequality relations as a possible differentiating force in society. At the same time, work can also be perceived as a means of self-expression, which greatly determines the individual and influences the life of people and their surroundings (Török, 2015). In the following, I will present this connection with the human ecological model (Welch, 1987).

In this work, I undertake to present and analyze the characteristics of transport networks with the help of the background data of the isochron maps, illustrating the access times through the approach of social inequalities, including employment opportunities and their deficits. In the socio-geographical approach my aim is to list the methodological features that can have an effect on the outputs which are measuring access times. Last but not least, I draw up proposals that can form the basis of the development of a more adaptable measurement of the above mentioned system.

Employment inequalities

Work in the light of social inequalities

To address infrastructural inequalities, the European Union's cohesion policy reforms are responding to the social problems, too, by creating a redistributive system that can be seen as an investment. The amounts to be redistributed by the projects can be applied for considering different criterias. Europe is divided into several groups of regions according to NUTS. The regions were separated into different types compared to the percentage of national income per capita contrasted to the EU average. Accordingly, the most developed countries receive less support, while “phasing-in” and “phasing-out” (transition regions) and convergence regions are

in need of development. Hungary can also get support by meeting the criteria, and within this, a complex program allows for the wide availability of support for those who are attached. At the same time, in practice, the achievement of individual subsidies is tied to the population, which is limited to 10,000 people. If we take into account districts, and these centers, it can be seen that these populations are in most cases more than 10,000 people, thus these are excluded from these subsidies, benefiting those living on the periphery.

As a factor influencing decision-makers' preferences, Esping-Andersen (et al. 2001) writes that change cannot be approached by well-accustomed methods due to unknown circumstances. In today's society there are no longer any conditions that would in any case be a stable family background in the field of family socialization (Csákó-Murányi-Sik-Szabó, 2010), industry is no longer an exclusive employer (Dusek, 1999), further more people are major contributors in individualization. It appears even more unpredictable due to their prevalence (Beck, 1986). At the same time, the need for micro-level needs analyzing is well supported by the fact that qualitative indicators often influence the need for support in some situations (Czibere-Kovách, 2013; Förster-Szivós-Tóth, 1998).

In order to see the semiotics in the following I show the development of the Hungarian guidelines through two documents. One is the National Reform Program of Hungary and the other is the Convergence Program of Hungary 2018-2022. Both of the programs describe the trends and prospects of macroeconomic developments, as well as employment and public finance measures. Regarding the general goals, on the one hand, the creation of the strategic system is based on a review, and on the other hand, both programs try to fit into the EU and domestic requirements in the light of the predictable data. At the domestic level, the general objectives are mainly based on the economy and are accompanied by the objectives set by the EU. The reflection of the European Recommendations on Social Rights seems unique when we look at the directions. The achievement of the economic targets has been set in the convergence program in terms of sustainable growth, macroeconomic balance and improved competitiveness.

Macro-stabilization depends on the success of cooperation between the member states, the stability of their relations and in the internal market. With the development of the investment environment, viable investments have been made, which are related to the growth of new jobs, the SME sector and technology imports at the domestic level. Developments funded by EU funds in the sample area were assumed to meet macro-level needs. The attempt to stabilize labor market conditions is not highly reflected in the duality of investments promoting centralization (for instance construction of workers' hostels, new housing estates). While EU

funding targeted people living in the geographical periphery, local decision-makers supported investments that could be linked to centralization. The development of a district can be examined as a whole and in its structure. As if a district center is developed, it provides opportunities for those living in the district center. At the same time, the relocation of the workforce has a number of influencing factors (economic, cultural, social).

Among the efforts of the National Competitiveness Council, increasing employment has played a prominent role, based mainly on quantitative - rather than qualitative - bases. This may be because the lower educational attainment of those living in the periphery implies the assumption that it is worthwhile to create jobs in these areas that adapt to these statistics. This attitude could also be seen as a criterion for short-term planning. To improve educational attainment, both access to education and other training-related factors could be improved - which would suggest long-term planning and encourage decision-makers to think about creating jobs requiring higher education.

Referring to macroeconomic developments and predictions, the compilers of the program expected a positive outlook in 2019, compared to the 2020 report. The current situation does not know yet how much of a barrier it will place in the implementation of improvements in the future. From the point of view of the external environment, the idea has emerged that it has entered the cyclical peak of the world economy, which is singularly related to the theory of Kondratyev cycles (Kondratieff, 1935). These cycles are also known as K-waves stated by Bernstein (1940). This formulation reflects on a clarification of the metaphor between the cycle and the wave formulation, as the cycle can be characterized by precise start and end points, while the wave describes a continuous trend whose boundaries are less definable by the need for precision. In terms of demand and supply trends in labor market processes, the term wave is much more advantageous in my opinion.

The analysis of the two documents showed that global processes have an effect on Hungary as well, so the situation of both the EU and the USA and China also affects Hungarian relations. The automotive industry plays a major role in the economy alongside the estate sector. In contrast to the increase in labor income, the performance measured in the industry shows an unexpected decline, which will certainly have an impact on labor income within a certain period of time. Growth therefore requires a buffer which makes it improve, capacity-building developments and government measures under the convergence program. The appearance of multinational companies in Hungary raises several questions from the point of view of the economy and society, including employees. For instance, the Samsung plant in Göd and the BMW site in Debrecen promise economic recovery. Considering employment, these

opportunities offer a good chance of increasing participation in the open labor market. And by reducing public employment, they are steering employees in a direction that also requires similar employee strategies. During this period, Schumpeter's theory of the innovation cluster may be significant, while the recession cycles had a number of innovations which were developed to solve the problems that can also be promising in the peripheral areas (Muraközy, 2010).

Inflationary processes also affect the quality of life and well-being of workers. Expected higher price indices could push up fuel and food prices, and at the same time inflationary pressures could make technical items, such as vehicles, more expensive, while wages and product prices change inversely. The availability of car usage among lower-income earners may thus face even greater barriers, increasing inequality in access. Lack of resources can ultimately not only result in a lack of geographical mobility, but can also have an impact on social and career mobility in an individual's life.

Government measures are preventive in nature and seek solutions to the above mentioned existing problems. Programs such as the Program for a More Competitive Hungary, which is responsible for competitiveness and increasing productivity, as well as the Family Protection Action Plan (CSOK, Baby-waiting Loan, no need to pay PIT for women who have given birth to at least four children). Language teaching for high school students is also responsible for macroeconomic development. The expansion of the Hungarian Village Program also belongs to these governmental provisions. Efforts to develop the peripheral areas can also be found in these programs, as these settlements with less than 10,000 inhabitants have a much more nuanced range of support. These measures are activating in practice, but the idea of investment and care can also be found in them (Csoba, 2017).

The law defined the main guideline of monetary and exchange rate policy, thus it was enacted, which can be linked to the Central Bank of Hungary. It has set price stability as its main goal. Closely related to this, it is the nature of interventions in the financial sector that counts the Central Bank's Market Loan Program as to achieve price stability through credit incentives. The creditworthiness of businesses and households depends on the standard of living, which is determined, among other things, by income, and thus by earning activity. Due to the nature of the loan, it assumes a certain amount of capital, for which the existence of gainful activity is essential. Social inequalities can also be seen in this area, as the spatial structure of employment in the periphery has come under pressure in the downturn cycles, as evidenced by the economic crisis caused by the pandemic. This trend is not new. Differences after the change of regime

have also been reported in several literature (Fazekas, 1993; Laki, 1997; Szabó-Katonáné, 2009; Pakurár et al., 2010).

Manifestations of territorial and social inequalities in terms of access times

In the analysis I focus on context dependence and subjectivity, taking into account Faragó's (2016) two systems of criteria. Although isochron maps are based on figures that suggest a higher degree of objectivity, their interpretation may be subjective. I have tried to avoid this approach as much as possible in order to have a mostly scientific but also a practical view.

As I have mentioned in connection with the dilemmas of isochron maps, the difference in time and resources between means of transport largely determines the possibility of access to single points (in this case the district center). I considered the district center itself to be the center, so I marked it with zero. I took the shortest time into account when calculating all three modes of transport. Due to the size limitations of this paper, there is no way to differentiate between the distances within the settlement. Accordingly, the data below do not include the approximate time that takes into account the distance from the settlement boundary or from the stops within the settlement when reaching any job.

I took into consideration the 'periphery' definition of Erdős (2000) when determining the time constraints. The maximum distance of three hours required to cover the distance between the agglomerations. According to Tóth (2006), in Hungary the two hours are the "watershed". To illustrate the negative quality of the periphery itself, I examined additions in the analysis that show the actual time required taking into account the waiting and intermediate times.

Calculations according to work schedules

Reaching the location of each place of work included the schedules by defining the time of possible shifts and the distance from the stop to the place of work as additional time. The example taken from practice is necessary because the development of timetables for corporate bus services in and around Nyírbátor is organized on the basis of the results of a research carried out in 2019 (Balcsók, Szarvák, Tóth, 2019). Adopting the method is relevant to the employee because it takes extra time in addition to travel time to get the job done accurately in order to be able to complete all other tasks. In terms of time before and after the start of work, I calculated a value of plus 30 minutes or close to it. When considering schedules, deviations of up to five minutes were also sampled for flexibility.

An important factor in examining the schedules of public transport was the category of time of day, working day and non-working day, as well as other categories of the practical dilemmas that may make changes to its schedule. In this analysis, I place the emphasis on examining the given conditions on an ordinary working day (which means the day of January 8, 2021). I tied the analysis dimensions to the work schedules. Due to the scope of the paper, I have listed two work schedules, which are *one shift* work (from 8 am to 4 pm) and *three shift* work. I chose these two work schedules because of the fact that in the public sector, the former and, in the case of multinational companies, were defined for most employees. And in the district, these two spheres employ the most workers. There are exceptions, of course, but I wanted to focus on the problem of the major society.

Consideration of the schedule is influenced by a number of factors. In my research, I sought to approach the achievement of jobs from the employee's perspective using data from one of the available public transport schedules. Accordingly, I made a distinction between the three shifts and the working hours between 8 and 16 hours on the basis of the data obtained during the preliminary situation analysis.

Alternative means of transport

It was important to consider alternative means of transport (cycling, walking) because of the preliminary situation revealed that within a certain distance, alternatives are brought to the fore not only by disadvantaged people, but also by workers who approach them with the intention of sport – daily or intermittent commuting to work. The two different attitudes show that while in one case the lack of opportunities gives rise to the use of alternatives, in the other case the use of leisure and resources is not decided by financial need.

Table 1 shows the dependencies, as I have listed data that shows the access times without influencing the schedule. My hypothesis did not contain either the own car, nor the bicycle or the walking distance were tied to a timeline that would greatly determine the start of the departure time. I highlighted this because of the difference in time between the start of working time and the leaving time (i.e. the journey time) largely determined the attitudes of potential employees regarding their employment, as well as their chances, based on data from a survey conducted in 2019 in the district (Balcsók, Szarvák, Tóth, 2019).

Settlement	Car	Bicycle	On foot
Nyírbogát	8	30	123
Kisléta	14	49	195
Máriapócs	13	45	184
Nyírgyulaj	7	29	170
Nyírcsászári	6	21	154
Nyírderzs	11	33	150
Nyírvasvári	7	23	150
Terem	16	55	217
Nyírpilis	13	31	121
Bátorliget	19	63	251
Piricse	11	37	145
Encsencs	16	55	199
Nyírbéltek	20	70	274
Önböly	27	95	373
Penészlek	29	101	396
Nyírlugos	25	98	395
Nyírgelse	16	65	285
Nyírmihálydi	17	71	305
Pócspetri	17	57	265

Table 1: Access time toward the district center by car, bicycle and on foot (minutes)

Source: Edited based on data from an online distance calculator database for 2021

Isochron maps and dilemmas

Peculiarities of isochron maps

The relationship between distances and time can be a central category in socio-geographical research, which has been reflected by several authors (Horváth, 1980; Illés, 1986; Nemes Nagy 1998; Lengyel-Rechnitzer, 2004). Measuring the distance between two geographical points is possible with a transport network approach provided by isochron maps. By providing a certain framework for measuring the distance between two points in time, it is possible to determine the amount of resources needed to make the distance between two points using the mentioned special cartogram (Dusek, Szalkai 2007).

When editing isochron maps, the specifics of different spaces must be taken into account, which can be geographical, time or cost spaces. The homogeneity, or heterogeneity of these

spaces greatly affects the complexity of the map. Homogeneous networks usually consider the elements of road and rail transport (Dusek, Szalkai, 2006). Approaching access times from center-periphery relations can be a good measurement tool to examine territorial-social inequalities (Balogh, 2002). The practical approach requires certain correlations to be accounted for on the basis of previously substantiated assumptions (Nemes-Nagy, Németh, 2005). Thus, the relationship between income and territorial inequalities (Sik, 1994) is also cardinal.

Faragó (2016) highlights two systems of criteria that can play an important role in analysis and interpretation. Two of them are the concept of subjectivity and context dependence. According to this, judging the value content of inequalities is rather subjective, which does not recommend judgements from a certain - in this case social - point of view. The other term used is relativity. This means that socio-territorial inequalities are relative. Compared to the previous pair of concepts, the criterion of desired objectivity cannot be met solely because of the existence of a constructed basis of comparison. The object of comparison may be a certain target group, including a social group. Its position can be shaped by various influencing factors; the external conditions can be said to be infrastructural conditions. However, it is not advisable to consider a dimension exclusively, as the complexity of the topic lies in the context. The reference base can also be approached geographically, so that the relativity of the interpretation of the data recorded with the measuring device (access times along different networks) can be fulfilled.

It is also important for the interpretation to take into account the axioms related to geographical, time and cost spaces, which were formulated by Tamás Dusek and Gábor Szalkai (2006: 50) as follows:

1. If two points coincide, their distance is zero.
2. If two points are different, their distance is more than zero.
3. The distance of point "A" from "B" is equal to the distance of point "B" from "A" (symmetry axiom).
4. The distance between two points must not be more than their distance from a third point (axiom of triangular inequality).

Limitations of isochron maps

The role of topographic maps basically helps to determine the location (Dusek, Szalkai, 2006). The determination of distances could also be measured in an overhead line due to the planar representation of the geoid surface, however, the result obtained in the majority of cases would differ greatly from the data obtained by measuring the road networks used in practice. As an occurrence of the projection on the spatial approach, I do not consider the planar representation of the geoid surface for the representation of Hungary or smaller units in accordance with the recommendations of the literature (Dusek, Szalkai, 2007). By surveying inter-territorial interactions, we can get a complex picture of the infrastructural network of an area. In addition to the time taken, the cost dimension can also play an important role.

There are a number of dilemmas for depicting phenomena that are unequally distributed in space. In the present case, the design of the representation is influenced by the logic of the researcher's inclusion of the distribution ratios on the color-filled thematic map. Although the size differences of the area units can be seen on the maps shown in the paper, I do not attach much importance to this data due to the focus of the access times. I place the center-periphery relationship in the forefront, as spatial distribution and concentration are two of the main topics of my work. I determined the class intervals according to the orders of magnitude, and I also took into account the preliminary classifications.

Opportunities of isochron maps

When discussing inequalities, isochron maps may show real values that indirectly refer to presumably existing needs arising from income disparities (such as the introduction of a new bus schedule or the emergence of corporate services). According to Atkinson (2015), Stiglitz (2012), and Piketty (2015), solutions are needed to reduce inequalities that also examine income or wealth differences. The availability of different means of transport is the main topic of this work. At the same time, other influencing factors are present that may raise ticket and season ticket prices as well as fuel costs.

Separating inequalities into factors is not a new idea. In this writing, I also considered the correlation of some factors of geographical and social inequalities based on some of Shorrocks' (1980) ideas. The MLD-index is an additive decomposable mark that can be used to measure inequalities. Characteristics of network design (in this case the presence of corporate bus services) may be important due to later developments (Hardi, 2000). On the inequalities of employment opportunities, Pettinger (2019) – who does not describe the problems of

Hungarian society in her work – can still project many perspectives on our society, which she believes to be discovered in the relationship between neoliberalism and capitalism.

Infrastructural opportunities and inequalities of the district of Nyírbátor

It can be said that the district of Nyírbátor is disadvantaged in terms of the geographical location and the classification because it is marked as to be developed with a complex program. It is located to the eastern periphery of the country, and with its distance from the capital, greatly contributes to the permanence of its disadvantage. The lifestyle and employment opportunities of people living in the area are influenced by their peripheral location and cumulatively disadvantaged socio-economic conditions. The small village settlement structure weighs on the resident population with other disadvantages (Balcsók, Szarvák, Tóth, 2019).

Characteristics of the sample area

By linking demographic indicators to employment, I consider a fundamental issue that breaks the antagonistic stereotype between unemployment and employment. Homogenization of the two groups is a misconception that Judit Csoba (2009) also pointed out.

Links between demographic indicators and employment

The sample area is located in the northern corner of the Hungarian-Romanian border. It is surrounded by the districts of Mátészalka, Nagykálló, Baktalórántháza and Nyíradony. The correlations between peripheral location and employment can be found both in the (eastern) border, in the socio-economic conceptions, and in the settlement structure of small villages. To explore the actual connections, I focused on the availability relationships in this work. Thus, in examining the characteristics of the peripheral location itself, the number and sectoral classification of jobs in each settlement (from which work schedules and probable incomes can be deduced), I explore the geographical inequalities hidden in the locality by analyzing the road network of the small village system. These inequalities also affect social inequalities, as due to the average population of the settlements, the determination of the labor supply of the industrial park formed in the district center was certainly taken into account by the owners during the situation analysis. Its income and territorial correlations thus also appear at the local level (Sik, 1994). In addition, taking into account other employment-related factors, it is likely that the high unemployment rate in the district (as well as in the region) and the data that can be filtered from the graduate indicators (the skilled labor force is low compared to the national average) required fit the data of the major society mentioned above. The fact that work is

income-generating and subsistence-producing (Kaufmann, 1956; Flynn, 1986) it interacts with the incomes of the jobs created and the workers. The Nyírbátor district is constantly losing population, and there is a trend covering the whole of Hungary. The process is caused by the loss of migration and the natural decline of the population, among others (Balcsók, Szarvák, Tóth, 2019).

These trends can be analyzed from several perspectives. On the one hand, employment preferences also matter, which are adapted to the individual's possibilities (Török, 2015). On the other hand, what is included in the human ecological model depicts the individual in a complex system with priorities and needs (Welch, 1987). Life situations, rights, opportunities, rewards, and privileges are likely to influence these priorities (Grabb, 1984). If we think of the level of the individual, economic and other phenomena can also have a significant impact on the mechanisms associated with the reproduction of society (in this case, unemployment or jobs are significantly more disadvantaged indicators) (Hadjimichalis, Hudson, 2014). Atkinson's (2015), Stihlitz's (2012). Piketty's (2015) view that in order to reduce inequalities would also require an examination of income and wealth relationships underpins my proposition that describes the relationship between access times and resources and the productive nature of inequality. Considering the process nature of the phenomenon, Hradil's (2010) statement becomes valid. Linking the socially constructed nature of inequalities to the nature of lasting actions leads to the conclusion that the persistence of cycles / waves can also result in the persistence of inequalities.

Given the factors mentioned above, primary labor market supply has begun to take on greater proportions in the last decade and with the emergence of multinational firms in the district. After joining the EU, gates were opened and it promised workers a higher rate of eliminating unemployment. The development of the unemployment rate may have been shaped by the factors mentioned above. Although I do not have data on the current situation, I think it is important to acknowledge that the economic changes that took place in 2020 and 2021 and the measures that reflect them (redundancies, mass job losses) suggest that the trend of increasing the number of unemployed has continued. Given the nature of the process of the period, it may be interesting in the future what innovations the current situation will bring to the Schumpeterian sense of the word (Muraközy, 2010).

The presence of the working age population to the total population in the Nyírbátor district has shown a declining trend in the last decade. The minimal increase can also be observed from 2017 onwards. Percentages above both the national and regional and county averages support the district's disadvantage. Employment and working age highlights a

variable (age) that is one of the cornerstones of this activity. In the future, it would be worthwhile to include, in addition to age, variables that made it possible to construct the MLD index (Shorrocks, 1980). Such variables could be gender, age of the head of the household, type of settlement of the place of residence, level of education of the head of the household, and, among other things, employment status.

Connections between accessibility and mobility

One of the most important factors determining the functioning of the labor market is the availability conditions: it does not matter how long it takes for (potential) workers to get from their place of residence to their place of work, or whether they can get there at all. The question is based on Kolosi's (1987) view of inequalities (from a human and social point of view), which is similarly relevant in the case of school-based and other training and retraining aimed at improving employment opportunities. Retaining the existing workforce is also a difficult task due to emigration and out-of-district commuting. If it is successful, the district center will clearly be a target for workers (as well as employees), supported by the 2011 census data. The number of people employed in Nyírbátor in 2011 was 2371, which is not relevant today due to the increase in the number of employees.

According to the time center optimization of the district center, a “watershed” of thirty-minute isochron lines shows access to the airline. Compared to the facilities of the surrounding districts, the district of Nyírbátor is in a good position, especially compared to the district of Fehérgyarmat. However, this data do not represent actual access times due to the exclusion of vehicle heterogeneity. The number of cars per thousand inhabitants in the district is significantly different from the national average (373). The availability of public transport is not always possible, as the railway network does not pass through some settlements. In addition to these physical limitations, there is also a limitation of possibilities, which is manifested in the schedules. Compared to Sebők's (2016) theory of labor market mobility, according to which mobility itself is created as an interaction between the employer and the employee, it basically assumes that either on its own (using a car or alternative means of transport) or the opportunities offered by the company (company buses) to the place of work. The assumption itself encounters practical obstacles, as the car is not necessarily available to the individual as an asset, nor is the company's investor attitude fundamental. Public transport appears among some of the employee's options. Their design is not formulated at the level of employees, but it can be seen at the macro level as a complex mapping (Velkey, 2019).

Reaching the workplace with one shift (8 a.m. – 4 p.m.)

I considered it important to indicate the time to reach the car approach for comparability. Among the various means of transport, the bicycle is considered in my analysis to be a means of lending mobility, which helps the employee to cover the distance between work and residence without having to wait and take a break. Flexibility is thus also relevant in this case (as the reader has already seen in the text of the “use” of alternative means of transport).

The waiting time shows how much time an employee has to get to work in the morning. This time should be a minimum of thirty minutes according to the selection criteria of the distance. The railway network of the Nyírbátor district is very deficient if the individual wants to reach the district center on an ordinary working day in the time zone between 6:00 and 7:30 - there are no services that would meet the criteria. The reason for this in most cases is that the railway network does not cross the border of the settlement, as in the case of Máriapócs - there is not an easily accessible station.

The study of settlements in the area was relevant for the railway transport (Nyírbogát, Máriapócs, Nyírcsászári, Nyírgelse and Nyírmihálydi). These three neighboring settlements are present as part of the route between nodes that do not specifically prioritize traffic between the given settlements (so the design of the lines does not necessarily adapt to them either). Nyírbogát, Nyírgelse and Nyírmihálydi are located on the Debrecen-Nyíradony-Nyírbátor line, which gives them a significant advantage by connecting the neighboring district center and the neighboring country seat. Máriapócs is located on the Nyíregyháza-Nagykálló-Nyírbátor line, which can also be an advantage. However, the availability of the county seat can give rise to further conclusions in some aspects. The ease of the procedure in economic-cultural and other matters (access to health, education, administrative (etc.) services) gives its positional advantage. Last but not least, Nyírcsászári is located on the Mátészalka railway line, which also serves to connect district centers. When analyzing the arrival times, both the train and bus timetables showed that Nyírcsászári is located the closest to Nyírbátor, and the frequency and accessibility of the line are also the most favorable. However, this correlation is not meaningful, as it is not possible to approach the settlements of Nyírvasvári and Nyírgyulaj with similar values by rail (in the absence of the railway network), and Nyírbogát's data exceeded Nyírcsászári's data along with waiting and intermediate time.

In the case of the mentioned five settlements, it was relevant to achieve the work from 8 a.m. to 4 p.m., in which no line to Máriapócs was started after 4 p.m., which would have met the examination criteria. The already incomplete network and the lack of completeness of the services may in practice mean that the worker will not be able to use a particular means of

public transport in all cases. The support for multiple passes is not preferred by workplaces. In the face of such a technical obstacle, either flexibility and adaptation between the employee and the employer may be considered, or other solutions may be sought. Examples of this are alternative means of transport rather than using a car.

The difference between travel time by car and travel time by rail is not significant. However, the amount of time which takes for an individual to return to their home from leaving their place of residence shows a significant difference between those who use cars, trains, buses, or alternative means of transport.

The time achieved by using a bicycle is the most favorable in many cases, although the use of it is not the most practical (limitations of the weather). In addition to the negligible services of the railway, the bus may be the most suitable for commuters. However, it is noteworthy that with the eight-hour working time, workers living in the catchment areas of Nyírbátor district still have to spend an average of about two hours to cover the distance between their place of residence and their place of work by bus, which is an unreasonably high value. The data may also have been influenced by the fact that when examining bus timetables, I also focused on selecting the line that takes on the value closest to the minimum waiting time without transfer.

Traveling by car from the settlements in the district costs between HUF 3,613.5 and HUF 14,653.5 per month. The 9 and 15 HUF/km subsidy offered by the employer greatly contributes to the reduction of the employee's remaining costs. While the amount determined on the basis of HUF 9/km imposes a burden on the individual between HUF 1,669.5 and HUF 6,085.5, in the case of the subsidy set at HUF 15/km, the employee must always spend HUF 373.5 per month on his/her own job. Train passes would have a much cheaper price than bus passes, however, in the absence of availability, not all workers in the district can take advantage of this advantage.

Reaching the workplace with three shifts

Compared to the values assigned to a one-shift work schedule, the morning is the shift that shows similarity to the former, as there is only a three-minute difference between the average total bus travel time (where the more favorable value can be assigned to 8-16 hours). At the same time, there is a significant difference between the individual settlements, as in the case of Penészlek and Nyírlugos it is not possible to solve the return journey (taking into account the examination criteria). The residents of Nyírbogát also have a significant disadvantage, as in this settlement the district center cannot be reached in the morning by using a line that would suit their workforce. When comparing the approach by car and bus, we can observe that in the

morning work schedule the difference between the two values is significantly smaller, which, however, is still several times the time traveled by car.

Two correlations are likely behind the mentioned more favorable data. One implies that travel times may be reduced in the early hours of the morning, however, in practice this does not represent a significant change when considering all the travel time. The other assumption is that when scheduling, not only the needs of employees are taken into account, but also attempts are made to set a favorable schedule for other target groups. For example, the railway and bus network also serves the access of full-time students to educational institutions.

With regard to the “afternoon” shift, it can be said that the workplace was available in only one settlement according to the selection criteria. From Nyírbogát by rail, the daily commute takes only more than two hours in this case. This figure is a lot compared to driving an eight-minute car without exaggerating any gender. With the exception of three settlements (Kisléta, Nyírderzs and Ömböly), bus travel is not possible if we consider getting to work in the time before work.

Those who go on a “night” shift suffer a similar disadvantage as those who go on an “afternoon” shift. In this case, too, the district center can only be approached from Nyírbogát, but in this case the total time spent traveling exceeds three and a half hours.

Overall, it can be said that as long as there are relatively accessible lines available for one-shift workers, those taking three shifts, face a number of problems. When using means of transport, it is often not possible to choose a homogeneous means of transport, which in the case of public transport can create dilemmas. However, the use of combined passes would not solve the situation, as the lack of individual lines is much more the source of the problem.

Conclusion

In my writing, I sought to present a method designed to depict a segment of inequality related to geographical, social mobility, and also employment. The peculiarities, methodological limitations, and possibilities of isochron maps have shown that the basic idea is that both the aerial and car approaches show favorable values that can rightly support skepticism about inequalities. Measuring access times using different means of transport is an idea that can provide a more nuanced picture to support the diversity of resources.

Linking geographical and social inequalities in terms of access times is important because the distribution of jobs within the district is rare. Due to the nature of the district center, I assumed that given the receptivity of the factories present in the industrial park, workers would have to make a sacrifice of time to get to work. During the methodological

delimitation, I ignored the traffic within the center, because I focused on exploring the situation of the people living in the agglomeration.

From the point of view of the unskilledness and low income level of the local workforce in addition to public transport (bus and rail). I considered alternative means of transport (cycling and walking) and company buses. Examination of the timetables revealed that the railway network in the district affected five settlements outside Nyírbátor. However, involvement does not mean that it would meet the needs of those working in different shifts - even if they are located on the line connecting the district. The bus services ensure that those working in a one-shift schedule can go to work. However, the sum of the waiting time and the intermediate time in many cases exceeds two hours. Thus, on average, an individual spends two hours more time working and traveling to work than by car or by company bus. It can be said that car travel is within the thirty-minute “watershed” isochron circle, compared to the corporate bus services departing from more distant settlements by more than a quarter of an hour. Nothing shows the usefulness of the presence of company buses better than the difference of more than one hour in the magnitude of time spent by public transport users and those using company buses.

As the travel time of the company bus services did not differ between the shifts (be it one or three shifts), I chose the travel time of the morning shift as the basis for the comparison. The use of the bus as a public transport service has in several cases encountered practical obstacles due to the lack of services. In the evening, traffic is not available for those working in the three shifts in the district from most settlements.

The company bus services did not cover some settlements (Nyírpilis), and due to the shortcomings of the railway and bus services, I considered alternative means of transport, cycling and walking as a suitable way to make the distance. Four of the neighboring settlements of the district center (Nyírbogát, Nyírgyulaj, Nyírcsászári and Nyírvasvári) were in a favorable position in terms of alternative means of transport. This distance can be done by bicycle in 21-30 minutes, so it meets the criteria of a thirty-minute “watershed” isochron circle. At the same time, the value and repair costs of the asset must be taken into account, which can be an additional cost for lagging social classes. The display of the walk is symbolic in this work. I just wanted to show, by indicating the values, the differences between those who use a means of transport, apart from those who use public transport and those who lack these means and services.

Even more to the “cost of time,” I also examined material costs in terms of fuel costs, fuel subsidies, and season ticket prices. Fuel subsidies mainly affected those working in the public

sector, as well as those with jobs that are higher in multinational companies or working in the public sector. The difference between 9 and 15 HUF / km is significant in monthly breakdown, however, its extent is negligible compared to the minimum wage of skilled workers and other expenses of the individual. Support for employers launching company buses is exclusive. In this case, (as opposed to using public transport with already incomplete services), these services are favorable in terms of time and money (free of charge).

The extent of employment opportunities of people living in the district is thus well represented by the inequalities in access times. The meaning of the classification to be developed with a complex program shows deeper connections in this context.

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