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The change of commuting behaviour with planned high-speed railways in Czechia

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Abstract: This paper is focused on high-speed railway planning and its general aim is to assess potential commuting behaviour change on the example of planned high-speed railway in Czechia. We used standard geographical methods based on census data from 2011 in relevant ten regional centres and two important railway junctions that will be connected to high-speed railway according to planned network. The rest of three regional centres not planned to be connected to high-speed railway are disregarded. We assessed the attractiveness of relevant centre for commuter mobility change. The results document the strategic position of Prague as the main commuting centre, which relevant indicators significantly exceed all other labour mobility centres (the second most crucial centre Brno is about half the important one). This fact was confirmed by analyzing gradient labour areas and evaluating commuting relations among relevant centres. The assessment of potential impacts of HSR on labour markets is then carried out using the model of the marginal rate of labour mobility, where it is possible to count on positive impacts except for Prague on two other commuter centres, Brno and Pilsen. In the case of other analyzed centres, we can count on increasing the potential of a trip for work to the centres mentioned above.

Keywords: high-speed railway, commuting, labour mobility.

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Introduction

In the twentieth century, new technologies brought new possibilities for travelling. Speed and flexibility (McBride, 1996), individual car mobility (Hall, 1998), and later

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planes for long distances (Cwerner et al., 2009), were the main advantages that started the dominance of these transport modes over railways within the transportation market in the second half of the 20th century. Hanson (2000) wrote about 'people's fascination with speed and flexibility but also underscored the increasing importance of environmental sustainability (e.g. land use burden, see Niu et al., 2021). High-speed rail (HSR) combines the abovementioned aspects, primarily speed and operational sustainability. However, as Givoni (2006, p. 594) emphasized, there is no single definition for the high speed in the context of railway services In the context of the European HSR system, the commonly used definition in the EU, given in Council Directive 96/48/EC (European Commission, 1996a), is an operational speed of 250 km/h for dedicated new lines and 200 km/h for upgraded lines. The first HSR system, Shinkansen, was opened in the 1960s in Japan (Jiao et al., 2013) and then in several European countries (France, Germany, Spain, and Italy) during the 1980s and 1990s (Albalate and Bel, 2012). The gradual development of HSR has been one of the leading transportation priorities since the 1970s and 1980s in the context of EU national railway reforms (European Commission, 1996b). HSR is considered today as the future of the public transportation market (Kamga, 2015). This opinion has supported significant development in Asian countries such as China, South Korea, and Taiwan since 2000 (Jin et al., 2017; Martí-Henneberg, 2015; Wang and Duan, 2018) and also in Europe (Vickerman, 1997; Givoni, 2006). The length of the global HSR network in commercial operation increased between 2000 and 2020 from nearly six thousand to almost sixty thousand kilometres (from which only twelve thousand lie in Europe; UIC, 2021). The reasons for HSR construction have differed. Campos and de Rus (2009) emphasized more than one way for launching HSR. It depends on several factors, most importantly geographical conditions (Hall, 2009) and historical development (Zhu, 2021), which influence the national policies (Chechenova et al. 2019) for HSR implementation (Tapiador et al., 2009; Martí-Henneberg, 2013). Albalate and Bel (2012) reviewed several reasons for introducing new HSR infrastructure. The first was the need to reduce the travel time between major metropolises (Givoni, 2006; Román et al., 2014). The second was the need to overcome a high level of congestion on the main rail links in France (Barbosa, 2018). In the third scenario, HSR provided an opportunity to reform a railway and reshape the network after reunification in 1990 in Germany (Rothengatter, 1994; Völker and Flap, 2001). The fourth involved reasons to improve the accessibility of underdeveloped and remote regions (Monzón et al., 2013) and increase their cohesion and economic development in Spain (Ortega et al., 2012). The fifth was the effort to change the modal split in Italy from car and air transport (Bergantino and Madio, 2020). Even though the shift from cars seems to have been a planned idea in Italy, it is not a confirmed experience in the long term (Borsati and Albalate, 2020) but different impacts occur with emphasis on accessibility increasing by more than 30% (Cascetta et al., 2020)

In 2017, the Ministry of Transport in Czechia completed and then the Government approved the Programme for the Development of Fast Connections in Czechia (MD, 2017). Among the main objectives of its implementation, in addition to improving the general accessibility of the main centres of population, especially Prague as an established metropolis of European importance, and the Czech second level metropolises of Brno and Ostrava (Körner, 2013; Viturka, Pařil, Tonev, Šašinka, Kunc, 2017), positive impacts on labour mobility are also listed. Of course, accurate data cannot support these potential impacts due to the lack of domestic experience with HSR. However, there are also no comprehensive or multi-criteria analyses that would enable a credible assessment of programme effectiveness. Two criteria points of view are considered: using knowledge from the EU member states with the most experience with HSR operation and setting appropriate construction priorities. As mentioned above, it is necessary to emphasize that the programme is preferably focused on the so-called fast connections with a design speed of 160 to 200 km/h. This speed can be considered a qualitatively lower level of HSR defined by a minimum design speed of 200 km/h. In Czechia, the highest speed of 160 km/h is achieved on less than 200 km of modernized transit railway corridors.

Regarding potential high-speed connections in the Czech Republic, it is necessary to consider the relatively small geographical area with the maximum distance between two stations or terminals on linkage from one to three hundred kilometres. Short distances imply the potential radical change in interregional commuting behaviour. Heuermann and Schmieder show that a reduction in travel time by 1% raises the number of commuters between regions by 0.25%. This effect is mainly driven by workers changing jobs to smaller cities while keeping their place of residence in larger ones (Heuermann, Schmieder, 2019). This result is an inspiring example of how the smaller town can benefit from connection to the HSR network and change the work mobility needs direction from large to smaller cities. On the other hand, it can motivate them to change their residential address (but with consideration of prices determined by house market in the larger city). Moyano (2016) emphasized that both the feasibility and the characteristics of the HSR trip, in terms of the ticket cost and time spent on the travel, become essential factors when considering HSR commuting links. Our paper aims at potential changes in inter-regional commuting determined by the high-speed rail introduction in the Czech Republic.

Methods

The paper analyses the potential effects of HSR construction in Czechia on labour mobility (Vendemmia, Beria, 2022). Research emphasizes systemically interrelated issues: data availability, spatial labour mobility, and marginal labour mobility rate. It is worth noting that labour mobility is divided into two basic types, i.e. occupational (Dong et al., 2020) and spatial mobility, the former involving a change in the field of work and the latter a change in the location (municipality) of the workplace. The paper deals only with spatial labour mobility change (Hu et al., 2020) concerning the interconnectedness of both types of mobility by causal links. See, for example, the historical relationships between the processes of industrialization and urbanization or, recently, the relationships between the quality of the business environment and the concentration of the knowledge economy (Viturka, Šlegr, 2018). In terms of international comparison of the achieved level of mobility, Czechia belongs to the countries with a below-average position within the EU, which corresponds with the strongly delayed development of modern transport infrastructure (the development of HSR is an illustrative example). In terms of the potential accessibility of settlement centres relevant to the planned construction of high-speed railway corridors, map documents from the Railway Infrastructure Manager (SŽDC, 2018) were used, which also serve as a basis for the feasibility studies (these were provided based on an official request). The main focus is on the interconnectivity of centres of higher importance, which is crucial for the construction of HSR (Beria, 2017).

Data from the 2011 Census of Population, Houses and Dwellings (CSO, SLDB, 2012) was used as the primary data source on commuting outside the municipality of residence. In this respect, there are about 1.1 million commuters, which is 0.6 million fewer than in the previous census of 2001. However, the main reason for the difference is incomplete data on the place of work identified by the census commissioners and, to a lesser extent, methodological changes compared to the previous census (concerning, for example, persons without a permanent place of work). These facts make objective comparisons over time impossible; however, the gradual concentration of commuting to fewer centres has been confirmed. The corresponding share of rail transport was then 6%, rising to twice that when combined transport is included (CZSO, 2012). In this context, it is necessary to mention that the SLDB represents the only source of comprehensive data for the entire territory of Czechia. The data, which could replace the regular census in the future, are essential of a dual nature. The first of these may be optimized residual data from mobile operators on the movement of SIM cards and their users. However, this data has various pitfalls (e.g., people with two SIM cards), but primarily localization is based on regular signalling logging within the range of the selected transmitter. These distances are not identical to the administrative districts of the territorial subdivision and therefore need to be optimized. Periodic signalling of telephones takes place at approximately half-hourly intervals, which is sufficient for commuting purposes. However, it should be noted that although signalling data is a paid product, it has been used in several studies (Kvizda et al., 2017; Derendyaev & Gitis, 2013). A second potential data source is the Android operating system data on most mobile phones (except for iPhones), but this is only freely available in the form of instantaneous load on specific road sections and is, therefore, more suitable for data comparison with, for example, traffic counts. Field surveys need to be mentioned among other sources, whose fundamental shortcoming is their methodological inconsistency and spatial and temporal limitations, which limit their comparability with other data sources. In order to identify the inputs of the marginal labour mobility model, data on wages from the public database (CZSO, 2019) and on fares from Czech Railways Company (ČD, 2022) are used.

Labour mobility

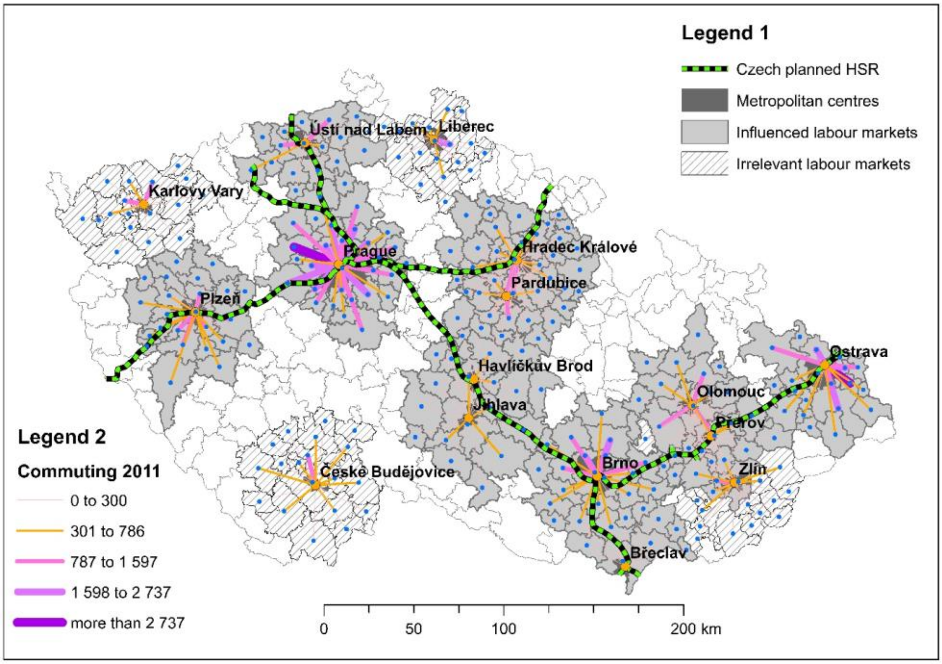
Spatial labour mobility is logically linked to occupational mobility, which in practice is usually considered to include average turnover, which is strongly dependent on the economic cycle (e.g. an increase in recruitment allowances during a boom). According to a recent STEM/MARK survey in 2018, the following ranking of the main reasons for leaving employment was found:

- specific personal reasons - 30%;
- more interesting job offer and career progression - 24%;
- unsuitable manager or work team - 16%;
- change of job field - 16%;
- higher salary - 14%.

The results of the survey show that highly individualized social and behavioural factors have a dominant influence on job changes. In contrast, the economic factor 'higher salary' ranks only fifth, with 27% of employees not finding the higher salary offer relevant. These results are consistent with HSR's long-standing experience that employees need to do work that they enjoy and find rewarding). The incentive function of salary is then naturally proportional to the relative increase in its level compared to the current salary. In this respect, employees' potential increase of at least 20% is of interest. Generally, the lower the wage is, the greater the willingness to change jobs. This willingness decreases with age (people under 30 are approximately five times more likely to change jobs than people over 60). From a systemic perspective, the external factor of wages can be considered more stable than the other factors mentioned above. Therefore, it is the initial component of predicting potential demand for transport services provided by high-speed rail transport. In line with the above, it can be hypothesized that the contribution of labour mobility to creating this demand will be of somewhat secondary importance. Most of the remaining components of demand are primarily episodic, and their development trends cannot be reliably predicted (except commuting to primary and secondary schools, mainly shopping and service trips, tourism, and recreation trips, as well as visits and business trips). From the point of view of spatial mobility of labour, it is then necessary to respect the solid regional closedness of labour markets at the micro-regional level, represented mainly by administrative districts of municipalities with extended competence (ORP) and administrative districts of municipal authorities (POU) or districts. The facts mentioned above have long determined the basic spatial framework for commuting outside the home municipality, in which approximately 1/3 of the economically active population in Czechia has long participated. However, the interregional level is crucial for the functioning of HSR. Other territorial units are the so-called cohesion regions used to implement EU policies. Within this framework, commuting between regional centres is the most critical agglomeration with the highest corresponding demand.

In the following section, a fundamental analysis of the position of metropolises and selected regional cities affected by the planned HSR construction is carried out (see Figure 1 and Table 1). In this context, the regional cities of Karlovy Vary, České Budějovice and Zlín have been excluded from further analysis (Pardubice remains in the analysis due to the alignment of the current Prague-Brno transit rail corridor). On the other hand, other settlement centres are included to cover all the considered variants: the pair of Liberec and Jablonec nad Nisou (alternative routing Prague - Wroclaw), Jihlava and Havlíčkův Brod (alternative routing Brno-Prague). The last step was the inclusion of the railway junction Přerov, a potential regional terminal to ensure a quality connection of Olomouc in the direction of Brno. Figure 1 shows the critical position of Prague with the corresponding significant potential increase in accessibility to most of the relevant centres generated by the construction of high-speed lines. Plzeň, Ústí nad Labem (up to 100 km), the pair of centres Liberec - Jablonec nad Nisou and Pardubice - Hradec Králové and Jihlava - Havlíčkův Brod show accessibility within 200 km from Prague. For this distance, it is possible to consider a time availability of up to 1 hour, even with a minimal shortening and to assume a significant acceleration of the relevant sections of the HSR. The intermediate distance of up to 250 km is Brno, where significantly higher speed parameters meeting usual HSR standards would have to be achieved to achieve a commuting time of up to 1 hour.

Figure 1. Planned HSR and commuting regions



Source: SŽDC, 2018; ArcDATA (2019); own elaboration

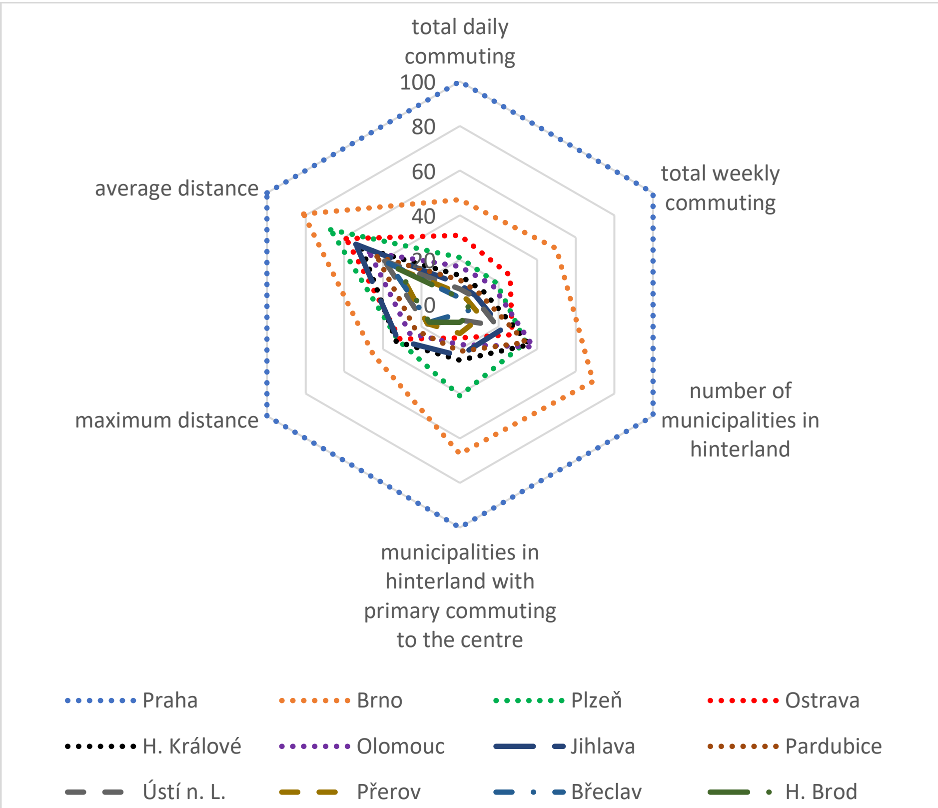
Table 1. Selected intercounty links and their potential for HSR (thousands of persons / year)

Regional center	Prague	Jihlava	Brno	Olomouc	Ostrava	Plzeň	Ústí/L.
Prague	x	273	1 040	1 095	1 113	783	858
Jihlava	297	x	488	13	14	10	9
Brno	1 085	526	x	399	414	20	22
Olomouc	1 137	14	415	x	680	17	12
Ostrava	1 160	15	424	689	x	20	10
Plzeň	833	10	21	17	21	x	20
Ústí/L.	935	9	25	12	11	22	x

Source: Transport Yearbook (Ministerstvo Dopravy, 2019); own elaboration.

In terms of the significance of nodal centres for the normal spatial mobility of the population, the following criteria were established for the above regional and other centres: the number of commuting villages; the number of villages for which the centre is the most critical commuting centre; the average and maximum distance of the most critical commuting centre; the total daily and weekly commuting distance; and the total daily and weekly commuting distance for which the centre is the most crucial commuting destination. The first four criteria practically define the size of the hinterland area of the respective centre in terms of the number of municipalities and their geographical distance. The following four criteria express the fundamental importance of the respective commuting flows. The values obtained, reflecting the significance status of the centres, were recalculated according to the highest value achieved within the criterion and the values were comparatively assessed (see Figure 2).

Figure 2. Relative significance of commuting centre



Source: Census (2011), own elaboration.

The highest values across all criteria are achieved by the capital city of Prague, confirming its both absolute and relative importance. Brno (almost 60%) appears as the second most important centre, with a significant distance from Prague and all the other assessed centres, followed by Plzeň and Ostrava in the band above 30% and Olomouc, Hradec Králové, Jihlava and Pardubice in the group achieving more than 20%. Ústí nad Labem, Přerov, Havlíčkův Brod and Břeclav are in the least significant category with values below 20%. From a future perspective, it can be assumed that Prague will continue to play a dominant role, followed by Brno, as far as the assessed national component of the transformation of potential transport flows induced by the planned construction of the high-speed railway is concerned.

Marginal rate of labour mobility

The model of the marginal rate of labour mobility links economic and spatial or geographical analysis in conditions of imperfect competition generated by the uneven distribution of essential production factors. In this way, it seeks to integrate space and time into economic theory. According to behavioural models, the long-term assumption of deepening spatial mobility of labour as an essential locational factor is a significantly higher net income from commuting compared to the related costs (Taylor, 1993). In our case, it is the comparison associated with relocations among metropolitan centres (i.e. Prague and Brno with Ostrava and other relevant centres in Czechia). It is used to identify the most significant potential impacts of planned HSR on regional labour markets as an essential factor in their spatial integration. The corresponding calculations or perceptions of the model relationships between the costs taking into account the total, i.e. market and non-market (value of time lost by commuting) costs of an employee using rail transport and the income from commuting in the form of cost-benefit matrices are presented in the following Tables 2a, 2b, 2c and 2d. From a system perspective, the calculations performed are based on the marginal labour mobility rate model (Viturka & Pařil, 2013; Pařil et al., 2015). The marginal rate of labour mobility determining the commuting distance is then determined by a relationship that can be written as follows:

$$Mm = \frac{Ir}{Ic}, \qquad (1)$$

where Mm = marginal labour mobility rate, Ir = income change, Ic = cost change. The Ic component is calculated in four variants. The basic variant represents Ic equal to the current cost of an annual ticket of ČD amounting to CZK 19 990 (ČD, 2022). This variant de facto assumes zero cost of lost time and does not sufficiently consider the distance between centres. From a broader perspective, the marginal mobility rate analyses also include the so-called cost of time lost by commuting. However, the determination of their ratio to direct costs is highly debatable (e.g., the consideration of the negative impacts of relevant social and psychological factors; Batarce et al., 2016). For this reason, three further options are presented that consider these costs, considering time values of 15%, 30% and 100% of the average wage. Time is calculated for an operating speed of 160 km/h. The Ir component equals the wage differential between commuting and non-commuting centres/communities. We used the average regional wage relevant to the centre to calculate the wage differential. Only in the case of Břeclav and Přerov the median regional wages taken into account, as otherwise the results would be significantly distorted by the assumption of wage equality between Brno and Břeclav, or Přerov and Olomouc, which of course does not correspond to reality). The value of the marginal rate of labour mobility can also take negative values in the case when there is a decrease in income for a given session. These negative values are not shown in the corresponding sessions, as commuters lose the economic incentive to commute in a given situation (there is no increase in income when commuting). In order to achieve sufficient economic motivation, a value of Mm > 1 is needed, where the income gain is higher than the commuting cost gain. The results of the analyzed relationships for the selected commuting centres are presented in Tables 2a, b, c, and d according to the distance and in detail for each centre in Table 3. Tables 2a, b, c and d show variants of marginal labour mobility rate for different speeds determined by technical conditions of the infrastructure. The speed of 160 km per hour reflects zero variant for high-speed, and it rather corresponds with the upgraded conventional railway. The speeds of 200 km/h show a variant of the originally conventional railway upgraded to the high-speed one. The last variants of 250 and 300 km/h represent the new high-speed infrastructure. In all cases, these speeds reflect the technical maximum. The last Table 3 shows the results for relevant cities and demonstrates the potential for new high-speed infrastructure where the highest speed would be about 300 km/h. However, the actual operating speed would achieve an average of 200 km/h. It is necessary to consider at least ten to twenty kilometres section for acceleration reaching the speed of 300 km/h and, on the other hand, about five kilometres for braking before the stop in the HSR terminal.

In the tables below, relations with zero or negative values are not shown. Relations in bold italic where Mm takes values between 0.85 and 1.15 can be considered a certain borderline (in these cases, other economic or non-economic factors may also play a role). Values above 1.15 are highlighted in bold and represent relations with positive motivation for labour mobility. The results show that as the value of time increases, the potential commuter is less motivated to work mobility over longer distances. Of the four main centres of work commuting studied, Prague is the best positioned, where the income gain exceeds the cost gain several times in most variants. Relatively positive results in selected cases are also found in Brno and Plzeň. Their fundamental handicap, however, is the effect of a specific "shadowing" by the most important centre of Prague (since the route from other centres to Plzeň on the planned network of express lines always passes through Prague). On the other hand, Ostrava does not show positive results on any of the considered routes due to its average wage. The results document a strong inertia of the relationship between potential income gains and the temporal distance of the place of work compared to the place of residence. The calculations of the marginal mobility rate can thus be considered an essential basis for assessing the future demand for passenger transport on the planned HSR routes. The results showing not very significant inter-regional commuting roles of Pilsen and Ostrava are crucial facts motivating to consider other factors. These factors lie in the position and volume of international demand in such a small country, which is very important even if this part of the demand would struggle with the border effect. On the other hand, the accessibility change achieved by high-speed connections can motivate new induced demand (from city centres) and even the broader hinterland areas for choosing high-speed trains to fulfil their cross-border mobility needs.

Tab. 2a. Marginal labour mobility rate (by time zone for speed 160 km/hod)

Variant of time loss	**0% wage**				**15 % wage**				**30 % wage**				**100 % wage**			
Commuting centre / Time zone	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha
30	**2,25**				**1,79**				**1,49**				0,83			
40	**2,46**	**1,06**		**7,07**	**1,78**	0,79		**4,47**	**1,40**	0,63		**3,27**	0,70	0,33		**1,45**
50	***1,05***			**6,34**	0,69			**3,89**	0,52			**2,80**	0,24			**1,22**
60	**1,16**			**6,73**	0,70			**3,84**	0,51			**2,69**	0,22			**1,12**
90	**1,39**		**1,43**	**6,73**	0,82		0,73	**3,54**	0,58		0,49	**2,40**	0,25		0,19	***0,96***
90+			**1,75**	**7,40**			0,69	**2,85**			0,43	**1,77**			0,16	0,64

Source: ČD, 2022; ČSÚ, 2019; own elaboration.

Tab. 2b. Marginal labour mobility rate (by time zone for speed 200 km/hod)

Variant of time loss	**0% wage**				**15 % wage**				**30 % wage**				**100 % wage**			
Commuting centre / Time zone	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha
30	**2,73**	**1,82**			**2,09**	**1,37**			**1,70**	**1,10**			0,90	0,57		
40	**1,37**	0,30		**6,52**	0,93	0,22		**4,03**	0,71	0,17		**2,92**	0,33	0,08		**1,28**
50	**1,22**			**6,73**	0,73			**3,69**	0,52			**2,55**	0,23			***1,04***
60		0,86				0,50				0,35				0,15		
90			**1,37**	**7,32**			0,69	**3,00**			0,46	**1,88**			0,18	0,69
90+	0,47		**1,94**	**7,51**	0,20		0,71	**2,64**	0,13		0,44	**1,60**	0,05		0,16	0,56

Source: ČD, 2022; ČSÚ, 2019; own elaboration.

Tab. 2c. Marginal labour mobility rate (by time zone for speed 250 km/hod)

Variant of time loss	**0% wage**				**15 % wage**				**30 % wage**				**100 % wage**			
Commuting centre / Time zone	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha
30	**2,05**	**1,06**		**6,52**	**1,51**	0,79		**4,03**	**1,20**	0,63		**2,92**	0,62	0,33		**1,28**
40	**1,22**			**6,73**	0,73			**3,69**	0,52			**2,55**	0,23			***1,04***
50		0,86				0,50				0,35				0,15		
60			**1,39**	**7,38**			0,70	**3,09**			0,47	**1,95**			0,19	0,72
90			**1,15**	**7,40**			0,49	**2,79**			0,31	**1,72**			0,11	0,62
90+			**2,52**				0,91				0,55				0,20	

Source: ČD, 2022; ČSÚ, 2019; own elaboration.

Tab. 2d. Marginal labour mobility rate (by time zone for speed 300 km/hod)

Variant of time loss	**0% wage**				**15 % wage**				**30 % wage**				**100 % wage**			
Commuting centre / Time zone	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha
30	**1,77**	**1,06**		**6,57**	**1,26**	0,79		**4,00**	***0,98***	0,63		**2,87**	0,49	0,33		**1,24**
40	**1,22**			**6,73**	0,72			**3,54**	0,51			**2,40**	0,22			***0,96***
50			**1,39**	**7,38**			0,70	**3,09**			0,47	**1,95**			0,19	0,72
60			**1,28**	**7,29**			0,61	**2,95**			0,40	**1,85**			0,15	0,67
90	0,47		**2,02**	**7,51**	0,20		0,76	**2,64**	0,13		0,47	**1,60**	0,05		0,17	0,56
90+			**1,63**				0,54				0,33				0,11	

Source: ČD, 2022; ČSÚ, 2019; own elaboration.

Tab. 3. Marginal labour mobility rate (to selected work centres at speed 200 km/hod.)

Value of Time	**0% wage**				**15 % wage**				**30 % wage**				**100 % wage**			
Origin / Destination	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha	Brno	Ostrava	Plzeň	Praha
Brno			0,23	**5,92**			0,10	**2,68**			0,06	**1,73**			0,04	***1,02***
Ostrava	**1,37**		**1,59**	**7,29**	***0,85***		0,59	**2,72**	0,62		0,36	**1,67**	0,40		0,20	***0,94***
Plzeň				**5,69**				**3,70**				**2,74**				**1,81**
Praha																
Jihlava	***0,98***		**1,21**	**6,90**	0,64		0,62	**3,90**	0,48		0,42	**2,72**	0,31		0,25	**1,69**
Havlíčkův Brod	**2,66**	**1,29**	**2,89**	**8,58**	**1,84**	0,66	**1,51**	**5,22**	**1,41**	0,44	***1,02***	**3,75**	***0,96***	0,27	0,62	**2,40**
Olomouc	**1,54**	0,17	**1,77**	**7,46**	***1,12***	0,13	0,76	**3,41**	***0,88***	0,10	0,48	**2,21**	0,61	0,07	0,28	**1,30**
Přerov	**3,23**	**1,87**	**3,46**	**9,15**	**2,49**	**1,45**	**1,43**	**3,99**	**2,03**	**1,19**	**0,90**	**2,55**	**1,48**	***0,87***	0,52	**1,48**
Pardubice	**1,37**	0,00	**1,60**	**7,29**	***0,89***	0,00	***0,89***	**4,87**	0,65	0,00	0,62	**3,66**	0,43	0,00	0,38	**2,44**
Hradec Králové	0,76		***0,99***	**6,68**	0,48		0,54	**4,31**	0,35		0,37	**3,18**	0,23		0,23	**2,09**
Břeclav	**2,35**	***0,98***	**2,58**	**8,27**	**1,93**	0,60	***1,00***	**3,32**	**1,63**	0,44	0,62	**2,07**	**1,25**	0,28	0,35	**1,19**
Ústí nad Labem	***1,10***		**1,33**	**7,02**	0,50		0,73	**4,59**	0,33		0,50	**3,41**	0,19		0,31	**2,25**

Source: ČD, 2022; ČSÚ, 2019; own elaboration.

Conclusion

High-speed railways are undoubtedly a crucial phenomenon of modern transport infrastructure, reflecting the social demand for fast and high-quality connections. In order to make objective decisions on the implementation of individual projects - in our case, the planned construction of HSR in Czechia - it is necessary to have appropriate cost analyses. This paper, the emphasis is on the positive impacts of HSR on labour mobility. The main results show there is the hegemony of Prague capital. Compared to Prague, other cities are in particular situations according to their geographical, demographic and economic conditions. The second most important centre is Brno, with relatively significant potential to motivate workers from other Moravian regional centres. The city of Ostrava seems not to be strong enough to create new commuting potential. Higher potential compared to Ostrava is according to results in Pilsen. Still, this city is geographically in the shadow of Prague because there is no different connection without crossing Prague. That is the reason why the potential of Pilsen is very limited. Due to the considerable complexity and long-term implementation of large infrastructure projects, we consider it necessary to apply the concept of multi-criteria analysis of project effectiveness. Of course, this rational approach to public investment requires taking with a grain of salt populist arguments about the crucial importance of HSR construction, which cannot bring about a regional economic boom (European Court of Auditors, 2019). It is also necessary to assess whether public support for the construction or operation of HSRs does not conflict with the primary objective of EU cohesion policy.

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