

8.2 COMMUTING TO SELECTED CENTERS IN CZECHIA

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Commuting to work is one of the forms of spatial mobility which is substantial for the assessment of the relation between the place of residence and workplace. Commuting is also one of the factors forming functional spatial relationships within the settlement structure (Řehák 1988) and a crucial phenomenon exploited for example in socio-geographical regionalization (Hampl, Gardavský, Kühnl 1987). Czechoslovak statistics has been providing population census data on commuting to work since 1961. The map sheet shows a comparison between 1961 and 2011, i.e. the years when statistical surveys of commuting to work took place. Commuting data from other censuses were processed in multiple publications which also included maps (e.g. Vystoupil 1984; Čermák, Ouředníček 2009; Novák, Ouředníček 2011; etc.).

The possibility of data processing in the form of inter-municipal commuting matrices was limited in the past, especially before the common use of computer technology. Surveys in the two population censuses concerned (1961 and 2011) therefore show significant methodological differences. In 1961, only 216 predetermined commuting centers were surveyed and commuting data were not of good quality. In the next census in 1970, already 1,576 work centers were surveyed and for the first time the census made distinction between daily and non-daily commuting. Since the 1991 census, commuting data for all municipalities have been collected. The 2011 commuting data were for the first time available for small scale “basic settlement” units allowing for analyses of internal structure inside cities. Unlike previous censuses, 2011 data refer to the place of usual residence. Datasets on commuting from the last census were largely affected by the lower quality of survey data. As reported by Čtrnáct, “it was caused by census enumerators who failed to explain the content of the questions on commuting to respondents” (Čtrnáct 2014, p. 1). This can be demonstrated for example by comparing the numbers from the last two censuses. While in 2001, 4,166,778¹ persons from the total number of 5,253,400 economically active individuals commuted to work (and the number of undetected commuting flows accounted for 539,458 persons), only 2,062,124 people out of the total number of 5,080,573 economically active individuals commuted to work in 2011 (and the number of undetected commuters was 1,526,938). This significant deficit must be taken into consideration when comparing regional differences because the spatial differentiation of undetected commuting flows is not uniform on the Czech territory. For more details on the methodology of commuting data collection in different censuses see other papers (eg. Tonev 2013; Svoboda, Přidalová, Ouředníček 2014; etc.).

¹ This means commuting in total, i.e. commuting within the municipality is also included.

Census year	Number of municipalities	Number of employed individuals	Number of commuters
1961	8 726	4 007 215	1 588 606
1970	7 511	4 983 800	1 769 100
1980	4 778	5 363 945	1 689 659
1991	5 768	5 298 288	1 756 501
2001	6 258	4 734 758	1 726 877
2011	6 251	4 501 462	1 099 928

Table 8.2.1: *The evolution of commuting by population census years*

Source: ČSÚ 2001 - *Dojížd'ka a vyjížd'ka 2001, Čtrnáct 2014*

Table 8.2.1. clearly shows that commuting intensity is very difficult to compare. In the 1961 census data on commuting were collected for 8,726 municipalities, in 1980, as a result of the integration of municipalities, this number fell to 4,778 municipalities. Nevertheless, a significant increase in commuting from municipalities occurred during this period caused certainly by an increased number of employed persons. These basic criteria must therefore be taken into account when assessing the intensity of local networks during this period. Hampl, Gardavský, Kühnl (1987, p. 112) tried to apply the same administrative municipal boundaries to the numbers of commuters in Czechoslovakia and the resulting numbers are: 1,388 thousand in 1961, 1,534 thousand in 1970 and 1,690 thousand in 1980. The decline in the number of commuters in the last two censuses (2001 and 2011) is also influenced by the lower quality of data on directional commuting. Therefore, the possibility of completing census data on commuting with alternative data sources, for instance data from mobile phone operators, is being discussed. For the first tentative carried out by our department see other publications (Novák 2010; Novák, Novobilský 2013).

The aim of this map sheet is to compare, using the same methodology, the span and the structure of inward and outward commuting to work for selected centers in Czechia in 1961 (the first year data on commuting were collected) and 2011 (latest available data). The method of displaying statistical data is based on two maps on commuting created for the Atlas of the Czechoslovak Socialist Republic by Josef Hůrský (Hůrský, 1966). The first part of the map sheet includes a customized reprography of map no. 30.5 from the Atlas, which is one of the first attempts to visualize commuting data in a map. The 2011 map uses the same legend and numerical values of intervals. It is important to note that the definition of the indicator named "occupied jobs" has changed because data on unemployment were not collected during socialism (unemployment even officially did not exist). Number of occupied jobs in 2011 is defined as the difference between the number of economically active individuals, the number of unemployed individuals and inter-municipal inward and outward commuting.

The size of localized diagrams on the first map indicates the number of inward and outward commuters to selected centers. Pie diagrams then indicate the proportion of men and women commuting in and out of the municipality. The map shows the obvious dependence of both indicators on the size of the municipality and its geographical location. Relatively isolated centers and larger cities apparently experience lower commuting intensity, while cities located within agglomerations manifest higher mutual commuting as a result of shared functions between neighboring centers. This is clearly visible when comparing the cities of southern Bohemia with the cities located in the North Bohemian Coal Basin, in the region of Ostrava and in the Hradec Králové-Pardubice agglomeration. Here is a quote from the author's original comments on the reverse side of the map:

"Like in many heavily industrialized countries, even in Czechoslovakia the pace of housing construction have been slower than the pace of development of industrial production, which caused a constant growth of both the number of commuters and the average distance between home and work. The number of 2.3 million people² who have their workplace in a different municipality than their residence does not include all commuters because commuting (including walking more than 30 min.) is quite considerable even within the administrative boundaries of many municipalities. We can therefore assume that more than half of employed men and more than a third of employed women (it is 49.7% and 31.5% respectively when commuting within administrative boundaries is not included) commute to work in Czechoslovakia. As far as absolute figures in the 10 Czechoslovakian regions are concerned, the highest number of commuters is in the South Moravian region, followed by the regions of Central Bohemia, North Moravia and West Slovakia. Commuting takes half of the capacity of public transportation (54% of railway passengers and 44% of bus passengers are commuters). ... In several cities only one third of job positions is occupied by local inhabitants and some cities have more than half of their residents commuting both outward and inward"

(Hůrský, 1966, map 30.5 text).

The second map uses data from the 2011 census. As in 1961, a total of 154 large Czech cities were selected for this map for which, similarly to Hůrský's map, a legend of localized diagrams was created. The map also shows the ratio between the number of jobs and economically active individuals in the municipality in the form of point symbols. It is interesting to note that there are no substantial differences between these two maps with similar dependence of the intensity of commuting networks now as in 1961. High numbers of commuters are mainly concentrated in towns located in the hinterland of large cities (Čelákovice, Kuřim, Modřice, Říčany) and in bigger cities located within

² Slovakia included

residential agglomerations where an intense exchange of manpower between municipalities occurs (Havířov, Český Těšín, Jirkov). The pattern is at first sight less pronounced (the legend remains the same) due to the occurrence of much lower intensities of commuting journeys from selected cities. This is probably caused by several factors. Firstly, the result in both years is affected by the number of municipalities for which the data were collected (see Table 8.2.1), it is also influenced by imperfect commuting statistics in the last census and apparently also by the change in the nature of work during the post-revolutionary period. Many professions today are spatially flexible and such jobs are then difficult to localize in the census. For example, the 2011 census recorded 590,000 people working on their own account and 20,000 helping family members. Although the mobility of such professions (salesmen, businessmen, entrepreneurs, artists, etc.) is high, it can't be fully captured in the data on regular commuting between home and work.

Four categories of municipalities according to the ratio between the number of occupied jobs and economically active persons usually living in the municipality are marked on the map. 362 job centers with this ratio over 1 were identified in the Czech Republic at the census decisive moment, 70 of them having this ratio over 1.5 were mainly municipalities with one dominant employer or suburban centers located in the hinterlands of large and medium-sized cities. However, this category does not include any big city, the highest ranking is Mladá Boleslav with the value of 1.37. For comparison, there were 574 municipalities with a positive commuting balance in 2001. Although the comparison of results from these two censuses is clearly problematic, due to different methodology and data quality, it is clear that the number of working centers has declined.

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