

THE COMMUTING INTENSITY OF CZECHOSLOVAK TOWNS

Dojížďka do práce v československých městech. — Zjištění, že téměř polovina mužů a téměř třetina žen má pracoviště mimo obec stálého bydliště, svědčí o velkém společenském i ekonomickém významu dojížďky do zaměstnání v Československu. Autor usiloval o maximální využití údajů z celostátních výsledků sčítání lidu z r. 1961, neboť je to u nás poprvé, kdy census skýtá i údaje tohoto druhu. Mají mimořádný význam hlavně proto, že jsou jednotné a srovnatelné pro celé státní území. Na rozdíl od běžných způsobů kartografického znázornění vyjadřuje přiložená mapa hodnoty nejen v rozlišení pro muže a pro ženy, ale navíc kromě dojížďky znázorňuje i vyjížďku. Při daném měřítku mapky nebylo již možno uplatnit na ni i ukazatel daleké dojížďky, jehož hodnotu (0—9) však uvádí tabelární seznam měst. (První dvě čísla tam značí celkovou hodnotu dojížďky a vyjížďky.) Tabulka v textu dokládá korelaci mezi hlavními ukazateli a velikostí centra jako cíle dojížďky.

In Czechoslovakia, similarly as in other highly industrialised countries, the commuting of workers is of great importance. In 1961, for example, nearly half of the men (49,7 %) and a third of the women workers (31,5 %) were employed outside the community of their permanent residence, which represents 42,8 % of all the working population.

Our paper is based on the results of *the last census* of March, 1961 which were for the first time compiled regarding the relation between the place of residence and work. The data on commuting based only on districts would not have been sufficient for geographical investigation and therefore we had to take the data of the towns as our basis. In accordance with these data the commuting is understood in the general sense of the word i.e. weekly and monthly journey inclusively. The daily commuting represents in Czechoslovakia almost 70 %. Our special interest lay in the study of *the women commuting* since the planned increase of labour force in Czechoslovakia will greatly depend on the number of women.

We have chosen towns as the geographic unit not according to the limits fixed by the number of inhabitants but according to *a complex classification of communities* which was carried out two years ago by a staff of geographers, urbanists, sociologists and particularly of demographers. This classification is based on a special investigation carried out in all communities having more than 1000 inhabitants, and concerning many attributes which are specific

for the urban character of the community. According to this classification there are in Czechoslovakia 221 towns in the true sense of the word and 335 of transitory type even though still having a predominant urban character. The census elaboration took into consideration only selected communities, which represents 94 % of the proper towns and 34 % of other communities of urban type. This fact as well as the limited space were the reasons why we have concentrated our attention on the towns only. Thus our paper concerns 207 towns, which provide roughly 61 % of active population.

The census compilation gives the following data (both sexes separately): the total number of working inhabitants, number of commuters into the towns and the number of working inhabitants living permanently or temporarily in the locality of their work. We have combined these data from the viewpoint of geography and compiled some indices; the results are summarized in the table and in the map. There are difficulties in determining the proportion of *the long-range commuting*. In view of the fact that the data on the permanent residence of the commuters are classified only according to the districts it was possible to determine this rate only on the basis of general maps; this is why it was not worth while constructing a two-hourly isochron of the individual towns for this purpose. We only determined the percentage of workers commuting outside a radius of 50 km by aerial distance with corrections for districts and regions through which the imaginable circle pass on one hand and on the other for those territories where the rail and road arteries make great detours. Moreover in the case of employed women in consequence of their small number, in the middle-sized and particularly in small towns, we had to limit ourselves to the larger production centres. We could not make use of the long-range commuting index in the cartographic representation because of the scale of the map. It is therefore given — as one degree of a ten-degree classification (0—9) — at least in the list appended to the map besides the indices of “commuting-mobility” — i.e. commuting both to and from the town — separately for men and women.

A brief characteristics to explain the connections shown in the table I.

The commuting-mobility, i.e. the number of commuters per 100 active population, is combined with 5 groups of the size of the town measured by the number of active population.

The percentage of commuters represents a basic general information. There are 9 towns in which not even one third of the local inhabitants can find a job there, out of which 6 are situated in West Slovakia. There are 75 towns (36 %) of the 207 studied in which only less than 50 % of the local inhabitants can find employment in their home town. The nearer the state frontiers the smaller is the sphere of influence of the towns and the commuting is smaller unless it is a case of an important economic centre, particularly mining. Therefore the two towns where the commuting is the lowest (less than 25 %) are situated

Table I

Size of the town (number of active population)	Commuters per 100 active population					Proportion of active women
	total of			women		
	in-com- muters	out-com- muters	long-range com- muting	in-com- muting	out-com- muting	
up to 4,999	44,1	29,7	10,7	22,1	19,5	42,1
5,000—9,999	48,5	23,7	10,4	38,7	15,7	38,6
10,000—19,999	48,7	18,3	12,0	37,7	12,4	36,8
20,000—39,999	45,6	17,4	13,1	34,1	11,2	36,6
over 40,000	38,4	12,9	18,4	24,1	5,6	37,3
Towns total	46,5	23,0	13,2	33,2	15,1	38,9

in the promontories of the state frontiers (Aš, Varnsdorf). In Czechoslovakia more than half of the working inhabitants travel daily to work not only from the rural districts but also from the towns. There are 7 such towns and, apart from the new satellite-town for miners (Havířov), these are generally towns where the production is specialised (there are 2 such towns in both of our most extensive coal basins, Litvínov and Jirkov, Český Těšín and Hlučín), or small towns which come under influence of the large centres (Zbraslav near Prague and Kojetín in Central Moravia). The lowest out-commuting can be seen, as may be expected, in the six large towns (10 %), then in the metropolis of South Bohemia, České Budějovice, but also in other 10 towns mostly small ones. Planners will, no doubt, concentrate their interest on those places mainly where both the out- and incommuting is high. Three of our towns have both these values over 50 % (Litvínov 56 % and 66 % resp., Bohumín 51 % and 53 % resp., Hlučín 50 % and 71 % resp.) and twelve others have one of the values over 50 % and the other over 40 %.

The percentage of long-range commuting is even more dependent on the peripheral position than the factor of total commuting, particularly in areas where the production is specialised; this is mostly reflected in the mining centres and spas in the north-western Bohemia. The long-range effect is most marked in the black coal basin of Ostrava.

The index of the number of women employed is significant for the comparison with either of the following indices. The former shows the striking differences which are greater in the number of women who only work in the towns than in that of the female permanent residents economically active. In 8 towns in Czechoslovakia the job-opportunities are more favourable for women than men, we find in only one, however, more resident working women. This fact

can be explained by the character of industry which, in this case, is light industry mainly. The other extreme is represented in towns where only 25 % of job-opportunities are suitable for women — most of the seven towns of such type are the mining and metalurgical centres (three are situated in the Ostrava coal basin, others are Jáchymov, Žiar n. Hr. as well as Dobruška and Poprad). If we study the percentage of employed women out of the resident inhabitants we find only one town having this index under 25 % (Handlová in Slovakia, the centre of brown-coal mining).

The percentage of in-coming women in relation to all the working women is greater than 50 % in 26 towns. This is certainly a fact to be kept in mind in planning since in the majority of these towns the out-commuting of women is higher than 10 % and in six of them it amounts to more than 20 %.

The percentage of out-commuting women in the town is the highest in the small centres situated in the proximity of large cities (Zbraslav and Říčany near Prague with 60 % and 46 % resp., Bohumín and Hlučín near Ostrava with 48 % and 49 % resp., etc.). Apart these, only in Litvínov and naturally in the new residential satellite Havířov their respective ration exceeds 50 %, and in Kojetín 40 %.

Table II

Greatest Czechoslovak cities	Number of		In-	out-
	in-	out-	commuters per 100 working population*)	
	commuters (in thousands)			
Praha	77	40	13,9	7,7
Brno	50	12	26,4	19,8
Bratislava	47	5	30,8	4,9
Ostrava	94	5	48,1	4,3
Plzeň	32	5	34,8	7,8

*) Total working population (for in-commuting) or resident working population (for out-commuting)

The long-range commuting of women has been dealt with only for the 29 largest centres on account of the reasons already mentioned. Among our four largest cities — and in the category of towns with a population of over 40 000 inhabitants in general — Bratislava holds the first place with a rather large difference (21 %), followed by Ostrava (16 %) and Olomouc (15 %). A lower percentage than Prague (10 %) can also be seen in Brno (10 %), České Budějovice (7 %) and Kladno (5 %). The foremost place in the above mentioned 29 towns is held by Karlovy Vary (29 %) and Liberec (22 %), the last of them being Třinec (2 %) and Trnava (2 %).

From the table follows the positive correlation with *the economic weight of the town*, i.e. the total number of workers, is striking only as to long-range commuting. In the other indices the dependence is indirect or the dependence changes direction. Thus the total commuting increases at first parallelly with the growing size of the town, but the percentage is decreasing in the middle-sized towns till it rapidly falls in large towns, so that in Brno it represents only 26,4 % and in Prague only 13,9 %. Such a change takes place much sooner in the case of women commuting. We may presume that in the long-range commuting of women the relation of indirect dependence is reflected.

In the *appended map*, too, the distribution of towns showing an intensive commuting (more than 60 % of activ population) can be easily followed. They are either the individual centres, these are smaller in Central Bohemia (Hořovice, Mnichovo Hradiště, Přebouč) and larger in Moravia — particularly so in the southern part (Uherské Hradiště, Uherský Brod, Břeclav, Rožnov p. R.) — or towns, which are clearly of the “production satellite” type (Lovosice near the historical North Bohemian metropolis of Litoměřice, Blansko lying in the sphere of influence of Brno, Kopřivnice on the boundary line of Ostrava) and finally the old mining base Jáchymov, which has again been revived. True grouping of such centres forming areas of long-range commuting can be found, however, in the western part of Slovakia, mainly to the west, and south-west of Banská Bystrica, the administrative centre of Central Slovakia. These groupings are the results of the recent industrialization of Slovakia, which is going on a such a rapid space, that the building of settlements in the proximity of the plants cannot keep abreast.

Similarly, the map also gives a survey of the towns according to the *maximal values* of the other three indices as, for instance, the concentration of towns with a high percentage of out-commuting women (over 33 % - in three cases even over 50 %), and that mainly in North Moravia, the main factor here being the lack of job-opportunities for women in the centres of mining, steel production and heavy engineering as well as in North Bohemia, which is dominated by the traditional bases of textile-industry. In some of the areas we can see a typical combination of the individual indices. Here again the two most extensive mining areas, the black-coal Ostrava basin (having the highest share in the long-range commuting but a low percentage of job-opportunities for women and therefore the relative number of out-and in-commuting women-workers is below the average) and the lignite basin of Most (with a markedly lower total commuting and the number of out- and in-commuting women is slightly above the average). Using the cartographic representation of the individual indices we can further delimit other characteristic commuting areas.

Numbers and names of the towns and their indices of commuting mobility (1 : men, 2 : women)
and of the long-range commuting (3 : total). *)

1. Praha	005	45. Rokycany	632	89. Rychnov n. Kn.	632
2. Benešov	623	46. Sokolov	538	90. Dobruška	421
3. Vlašim	311	47. Kraslice	219	91. Kostelec n. O.	522
4. Beroun	733	48. Tachov	307	92. Semily	324
5. Hořovice	532	49. Česká Lípa	312	93. Turnov	424
6. Kladno	421	50. Mimoň	415	94. Svitavy	312
7. Slaný	422	51. Nový Bor	422	95. Litomyšl	533
8. Kolín	432	52. Děčín	205	96. Moravská Třebová	412
9. Český Brod	832	53. Rumburk	314	97. Polička	520
10. Kutná Hora	312	54. Varnsdorf	109	98. Trutnov	314
11. Čáslav	533	55. Chomutov	318	99. Dvůr Králové n. L.	312
12. Mělník	524	56. Jirkov	949	100. Úpice	326
13. Kralupy n. Vlt.	635	57. Kadaň	529	101. Vrchlabí	313
14. Mladá Boleslav	321	58. Jablonec n. N.	313	102. Ústí n. O.	423
15. Mnichovo Hradiště	640	59. Železný Brod	533	103. Česká Třebová	315
16. Nymburk	531	60. Liberec	206	104. Choceň	524
17. Poděbrady	623	61. Litoměřice	623	105. Lanškroun	421
18. Brandýs-St. Boleslav	422	62. Lovosice	732	106. Vysoké Mýto	413
19. Říčany	950	63. Roudnice n. L.	520	107. Blansko	741
20. Zbraslav	962	64. Louny	522	108. Boskovice	530
21. Příbram	529	65. Žatec	315	109. Brno	204
22. Rakovník	422	66. Most	637	110. Tišnov	731
23. České Budějovice	202	67. Litvínov	967	111. Břeclav	535
24. Český Krumlov	525	68. Teplice	533	112. Mikulov	314
25. Jindřich. Hradec	412	69. Bílina	637	113. Gottwaldov	323
26. Pelhřimov	412	70. Duchcov	742	114. Hodonín	522
27. Humpolec	422	71. Ústí n. L.	219	115. Kyjov	742
28. Písek	313	72. Havlíčkův Brod	423	116. Jihlava	203
29. Prachatice	324	73. Chotěboř	521	117. Kroměříž	411
30. Strakonice	410	74. Hradec Králové	424	118. Holešov	520
31. Vodňany	411	75. Nový Bydžov	524	119. Prostějov	431
32. Tábor	422	76. Chrudim	522	120. Třebíč	211
33. Soběslav	521	77. Hlinsko	320	121. Uherské Hradiště	742
34. Domažlice	422	78. Jičín	422	122. Uherský Brod	630
35. Cheb	209	79. Hořice	511	123. Vyškov	521
36. Aš	219	80. Nová Paka	423	124. Znojmo	412
37. Mariánské Lázně	419	81. Náchod	225	125. Žďár n. S.	422
38. Karlovy Vary	419	82. Broumov	414	126. Velké Meziříčí	421
39. Jáchymov	746	83. Červený Kostelec	312	127. Bruntál	315
40. Nejde	209	84. Hronov	316	128. Krnov	115
41. Ostrov	729	85. Jaroměř	323	129. Rýmařov	425
42. Klatovy	422	86. Nové Město n. Met.	322	130. Frýdek-Místek	524
43. Sušice	422	87. Pardubice	525	131. Třinec	535
44. Plzeň	206	88. Přelouč	633	132. Karviná	529

*) Scale of the index of long-range commuting: (0) 0–2,9 (1) 3,0–5,9 (2) 6,0–8,9 (3) 9,0–11,9 (4) 12,0–14,9 (5) 15,0–17,9 (6) 18,0–20,9 (7) 21,0–23,9 (8) 24,0–26,9 (9) 27,0 . . .

133. Český Těšín	743	158. Malacky	623	183. Ružomberok	432
134. Havířov	739	159. Pezinok	622	184. Lučenec	431
135. Bohumín	869	160. Dunajská Streda	531	185. Martin	327
136. Orlová	649	161. Galanta	631	186. Považská Bystrica	540
137. Nový Jičín	423	162. Komárno	214	187. Dubnica n. V.	544
138. Frenštát p. R.	543	163. Levice	421	188. Púchov	542
139. Kopřivnice	533	164. Nitra	312	189. Prievidza	822
140. Olomouc	413	165. Zlaté Moravce	760	190. Handlová	314
141. Litovel	631	166. Nové Zámky	321	191. Rimavská Sobota	322
142. Šternberk	412	167. Senica	421	192. Zvolen	423
143. Uničov	515	168. Myjava	541	193. Žiar n. Hr.	537
144. Opava	412	169. Skalica	423	194. Banská Štiavnica	422
145. Hlučín	952	170. Topolčany	631	195. Kremnica	324
146. Ostrava	309	171. Bánovce n. B.	641	196. Žilina	433
147. Přerov	423	172. Partizánské	542	197. Bardejov	441
148. Hranice	422	173. Trenčín	532	198. Humenné	531
149. Kojetín	732	174. Nové Mesto n. V.	521	199. Košice	305
150. Lipník n. B.	522	175. Trnava	521	200. Michalovce	521
151. Šumperk	422	176. Hlohovec	521	201. Poprad	534
152. Jeseník	315	177. Piešťany	422	202. Kežmarok	531
153. Zábřeh	524	178. Banská Bystrica	537	203. Prešov	522
154. Vsetín	322	179. Brezno n. Hr.	524	204. Rožnava	323
155. Rožnov p. R.	541	180. Čadca	831	205. Spišská Nová Ves	412
156. Valašské Meziříčí	532	181. Dolný Kubín	532	206. Levoča	312
157. Bratislava	209	182. Liptovský Mikuláš	432	207. Trebišov	531