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## COMMUTING IN SOUTHERN POLAND IN THE PERIOD OF SYSTEM TRANSFORMATIONS

**ABSTRACT.** This article aims to present changes in commuting in Poland during systemic transformation on the example of urban regions of Kraków, Bielsko-Biała and Nowy Sącz. The study involved over 3,000 companies in the towns mentioned. On the basis of source materials received, changes in commuting dynamics in the 1990s were studied, as well as sex and branch structures and branch structure of the commuters. The research also deals with transformations in commuting in the period of centrally controlled economy. During systemic transformation the number of commuters decreased in towns, such as Bielsko-Biała and Nowy Sącz. In Kraków, the level of daily migrations in the 1990s did not change, as compared to the 1980s. However, numerous transformations of the spatial structure of commuting zone of this city were observed.

**KEY WORDS:** commuting, urban region, Kraków, Southern Poland.

### INTRODUCTION

During the period of real socialism in Poland, the daily commuting was a result of an unequal balance of jobs and apartments. This lack of balance was caused by structural incompatibility of resources and jobs offered. Such incompatibility has been a consequence of many barriers to changing accommodation. In Western societies, mass commuting, however, is related to the preferred lifestyle and suburbanisation processes, thus many inhabitants of cities move from city centres to suburbs and urban – rural fringe. This factor gradually becomes to increase shaping intensity and scope of commuting in Poland, too.

The problems of commuting have been broadly described in literature, both in Polish and foreign one. An overview of this literature has been presented in the works of Lijewski (1967), Dzieciuchowicz (1979), Namysłowski (1980), Potrykowska (1983), and Runge (1991). In most studies on commuting, model approaches were adopted, also including urban regions. These works were based on the statistics available, hence a commune or town formed the basic spatial unit.

Socio-economic and political transformations occurring since 1989 had a significant impact on the change of the scope and intensity of commuting. As can be expected, these changes have been considerable in the commuter zones situated in the urban regions.

The aim of this study is to present the scale of transformations in commuting on the example of urban regions of Kraków, Bielsko-Biała and Nowy Sącz.

## RESEARCH METHODS

The so-far practice of research in commuting was dominated by studies based on employee censuses, which were made in Poland from 1958 to 1983. Due to the lack of appropriate data, the last publications on those migrations, covering broad spatial scales (national, voivodeship), were published over ten years ago (Gocal, Rakowski, 1991; Runge, 1991). The lack of current data made impossible broader studies on this subject. Despite these difficulties related to the lack of source materials, in the 1990s an attempt was made in the Kraków geographical centre to research on changes in commuting in the period of systemic transformation (Długosz, Zborowski, 1995; Jelonek, Zborowski, 1997; Soja, Zborowski, 1998; Rossmannith, 2000). They were related to organise a large technical and scientific team, which task was to prepare the proper methodology and the methods for acquiring data on commuting in particular companies and institutions. Access to the data on commuting in companies was the greatest challenge, due to the existing difficulties and limitations in acquiring them, both from state-owned companies, and (especially) from the private ones. In the institutions under research, the following data was gathered: employees' number, address by locality, and the sex. In the companies based in Kraków, also, information on part-time employees was collected. Only in few of the institutions selected for research the reliable data, were not obtained e.g. in Kraków, out of 1,700 companies studied, 1628 questionnaires were granted a positive verification. The research covered in Kraków, Bielsko-Biała and Nowy Sącz, over 3,000 institutions, including the majority of large companies employing over 500 people each. Selection of companies was performed considering the structure of national economy in the towns under study, size structure of companies, as well as their location in the area of the urban regions studied.

This method of collecting data allowed for performing appropriate juxtapositions and for comparison of intensity and scope of commuting, and the branch structure of commuters, too. Owing to rich source material gathered, it was also possible to analyse changes in the dynamics of commuting in the 1990s.

## COMMUTING DURING CENTRALLY CONTROLLED ECONOMY

Full assessment of the present transformations of commuting is impossible without accounting for information about the character of this phenomenon during the centrally controlled economy period. In that period, commuting became an important element of shaping the spatial structure of Poland, and the employment policy. It was also an important social problem, because of the large number of commuters.

The transformations were analysed on the example of commuting in Kraków. First data on commuting to Kraków date back to 1948, i.e. from the period before the construction of steelworks in Nowa Huta. It is estimated that such commuting referred to about 10,000 people (Bromek, 1948a and b). With the construction of the plant and the beginning of intense industrialisation in this city, commuting to Kraków increased significantly. In the first half of the 1950s, when the steelworks and the related industrial plants, were under construction, large numbers of commuters headed not for industry, but for construction enterprises. In that period, in the construction business, over 20,000 people commuted to work, being transported from very remote localities (Sulimski, 1976). Commuting increased fast, thus the number of commuters to work in Kraków exceeded in 1958 – 28,000, in 1968 it already achieved 48,000, while in the early 1970s – 57,000. In the 1980s, the number of commuters was stabilised at the level from the 1970s, as it was a time of slowing down the rate of investing, especially in the industry, in the branch generating the largest number of commuters.

An important element of the analysis was the possibility to review the shaping of spatial scope and intensity of commuting to Kraków. First data refer to 1958, when commuting focused along the main transport axes, particularly railway lines (fig. 1). In the 1950s, and in the early 1960s, commuting showed a star – like pattern. This pattern of commuting zone in the 1960s changed with the improvement of roads and the growing importance of road transport. The increasing need for new jobs in industry, and the delays of urban construction business in relation to housing needs of the developing city move longer the commuter tracks. The distance from the place they lived to work increased even more in the first half of the 1970s (fig. 2), when large new industrial plants were opened. Until the beginning of the 1970s, increase in the intensity of those migrations was also observed in the places already affected with the mass commu-

ting. In the period described, the wave of commuting also reached 'commuter niches', i.e. areas located between the main transport routes. In relation to these changes, the star-shaped commuter zone became relatively regular, concentric circles. On the western side, in the direction of the Upper Silesia, this zone was relatively weaker developed, because its development was also limited by large job centres situated in the western Małopolska (e.g. Oświęcim, Chrzanów, Trzebinia, Jaworzno, Olkusz).

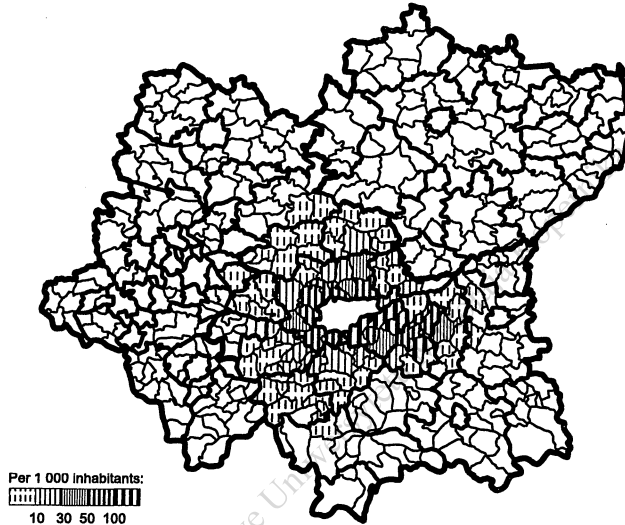


Fig. 1. Commuting to Cracow in 1958

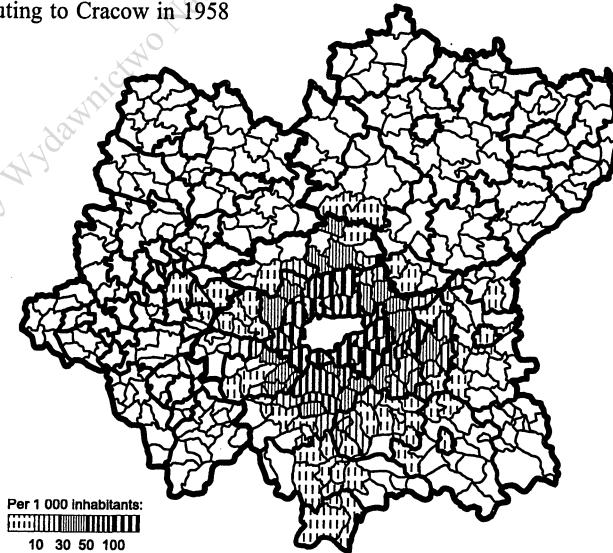


Fig. 2. Commuting to Cracow in 1973

## COMMUTING IN THE PERIOD OF SYSTEMIC TRANSFORMATION

In the 1990s, in relation to the launched process of socio-economic transformation of Poland, and particularly to the privatisation of national economy, one could expect a significant limitation in the number of commuters, both due to the reduction of the commuting spatial scope and intensity. In fact, the towns under research recorded limitation in commuting. It was, however, relatively higher in towns, such as Bielsko-Biała and Nowy Sącz. The number of commuters in Bielsko-Biała decreased from 28.8,000 to 20.2,000 in 1993, and in Nowy Sącz from 16.6,000 in 1983 to 14.5,000 respectively.

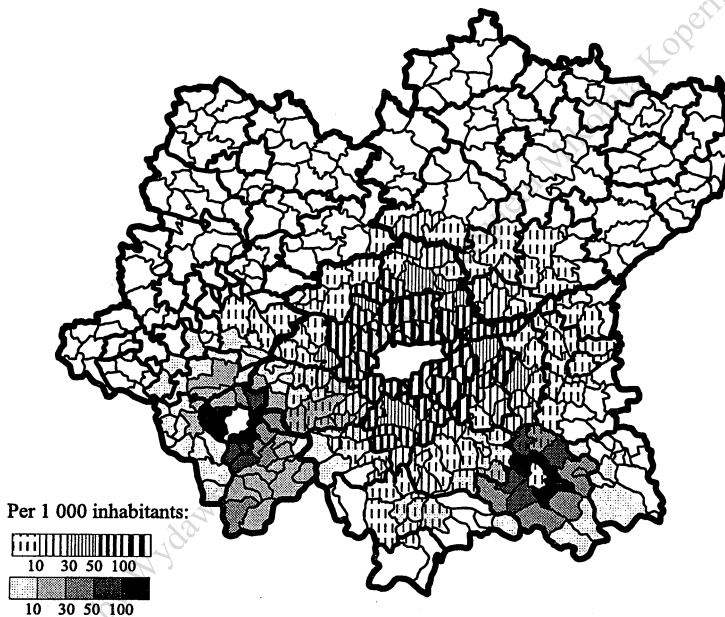


Fig. 3. Commuting to Cracow, Bielsko-Biała and Nowy Sącz in 1996

The study made in Kraków in 1996 showed 62.4,000 commuters. This value was slightly different from that recorded in 1988 (65,000), but it was by several thousand higher than the number of those migrants according to the employee census in 1983 (56.4,000). The comparison of the estimated commuting level in 1996 with previous data may apparently raise doubts, as intuitively. According to general tendencies to decrease employment and commuting in Poland, in Kraków (Rzezawa communes), and Kielce (the Koszyce commune). The external zone with a spatially inconsistent shape was formed by remaining municipalities of the former Kraków voivodeship (those of Sułoszowa, Alwer-

nia, Drwinia, Radziemice). The peripheral zone, with the weakest links with Kraków, did not show such the ring structure, being rather related to the availability of transport to Kraków of the given commune. In the south-western part, it was the same phenomenon in the peripheral zone of commuting to Bielsko-Biała (fig. 3). In the vicinity of Nowy Targ, commuting routes to Kraków crossed with those to Nowy Sącz.

The comparison of changes in the scope of the selected zones of commuting in the years 1985–1996 (fig. 4) indicates limitation of spatial development of the central zone. The internal zone was partly moved; it lost some western areas, while it gained some the northern ones. The successive zone – the external one – suffered severe spatial losses in its western part (communes of the former Bielsko-Biała Voivodeship) and at the east (communes of the former Tarnów Voivodeship); however, it developed northward (communes of the former Kielce Voivodeship). The peripheral zone also moved, developing north-eastward and partly the southward, while have lost some areas in the east. To conclude, the author states significant changes in the scope of Kraków's influence on the surroundings. The east-west structure of commuting, distinctly observed in the late 1980s, nowadays takes the farm meridian – like shape (significant increase in Kraków's influence toward the Kielce region).

Not only did the directions of Kraków's influence on surroundings change, but also its intensity. The most spectacular form of the latter changes occurred in the central zone. The decrease of the links of this zone with Kraków resulted from functional transformations of the functional urban region of this city and the development of the so-called allochthonous functions (Maik, 1985). Those functions also the number of commuters should be lower. Which factors decided un continuation of large commuting to Kraków? Among many reasons, one may enumerate: relatively low rate of restructuring of Kraków's economy in the first half of the 1990s, and the job market dominated by industry and construction. Simultaneously, it must be stressed that in the 1990s Kraków, which was one of the largest job centres in Poland, due to its multifunctional character, did not record considerable economic recession. In this city, high increase in the number of jobs took place in the sector of market and nonmarket services (Soja, Zborowski, 1999). The slight decrease in oscillatory migrations in the Kraków urban region was also caused by the deepening process of ageing of town's population, and the related retirement of numerous inhabitants. The large number of economically inactive persons was enlarged by those retiring and obtaining earlier pensions.

In 1996, commuters to work in Kraków formed 19.7% total employees number in this city, while in Nowy Sącz this share exceeded 40% and remained at the same level since the 1980s. Among the commuters, there were more women, e.g. in Kraków the share increased by 2.8 percentage points as compared to 1983, and in Bielsko-Biała – by 5.3 points. This increase was, on the one hand,

related to the development of typical 'feminine' services (trade, hotels and restaurants, health care, social care), on the other hand, was a result of the transformations in commuting. They were related to limitation of commuting from the most distant communities, previously served by the factory transport. As this type of commuting referred mostly to the men employed in the industry, and in this branch the job reductions were the greatest, therefore the total number of commuters fell, especially that of men.

But still among the commuters prevailed the ones working in industry (sections C, D, E). Those commuters in Kraków formed 35.0% of the total number of people surveyed. Another large group was formed by construction workers (14.0%), employees in trade (12.7%) and by those working in transport and communication enterprises (14.6%).

The transition to the market economy caused not only the structural changes in commuting, but also influenced significantly the intensity and spatial scope of Kraków's influence. As a measure of intensity of those relations, the author adopted an index of the commuters number per 1,000 inhabitants of a given administration unit, i.e. rural community or rural-and-urban one.

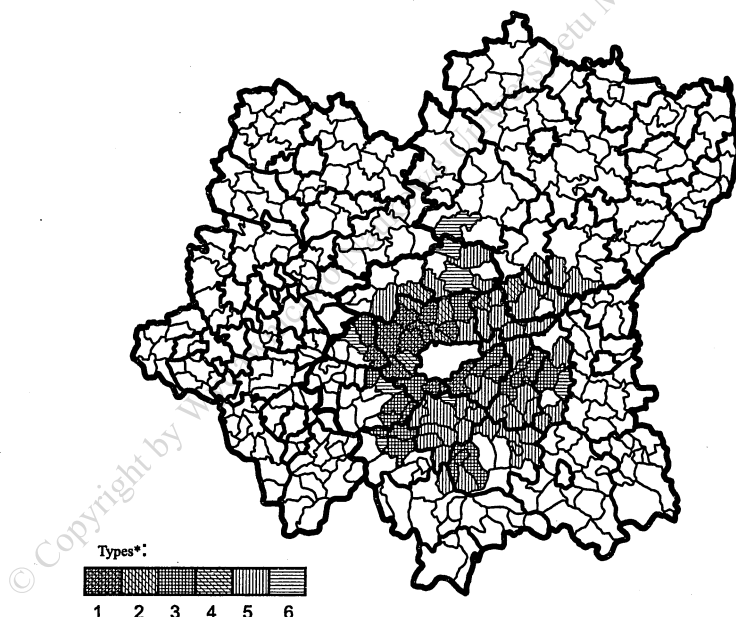


Fig. 4. Types of commuting to Cracow by national economy sectors in 1996

\* explanation of types – see in text

Considerable diversification of intensity of commuting in Kraków allowed to distinguish a few commuting zones within the functional urban region (FUR) of Kraków:

- 1) central zone with relation index exceeding 100 commuters per 1,000 inhabitants
- 2) internal zone – 50–99 commuters per 1,000 inhabitants;
- 3) external zone – 20–49 commuters per 1,000 inhabitants;
- 4) peripheral zone – below 20 commuters per 1,000 inhabitants.

The intensity of commuting in Kraków in 1996 was spatially strongly varied (fig. 3). The central zone formed an incomplete ring of communes around Kraków. This ring was surrounded by the communes of the internal zone, which covered almost the entire territory of the former Kraków voivodeship (that before 1999 reform), with some parts of the former voivodeships of Tarnów (the Bochnia and are an effect of centrifugal forces generating the deconcentration of the economic activity out of the central city, which in turn, caused the new jobs creation in the central zone. The fall of the intensity of commuting in the central zone also occurred in Bielsko-Biała and Nowy Sącz.

Apart from knowing about the transformations of the central city influence scope and the commuting intensity, another important problem is the basic structures of commuters. The author focused on the analysis of this structure according to the NACE sections (fig. 5).

The industry and services sectors were considered. The latter sector was divided into market and nonmarket services. A synthetic image of Kraków's links with the surroundings as concerns commuting analysed by the national economy sectors is shown on the map of commuting types, considering three distinguished sectors (fig. 5).

Type 1 – refers to communes where the total number of commuters is divided equally into three sectors: industry, the market services and the nonmarket ones;

Type 2 – refers to areas where prevail commuters working in industry and nonmarket services;

Type 3 – is characterised with the prevalence of commuters working in industry and market services;

Type 4 – occurs in the areas featuring the dominance of commuters working in market and nonmarket services;

Type 5 – signifies communes with prevalence of commuters working in industry;

Type 6 – represents communes with prevalence of commuters working in market services.

The presented typology shows high structural differentiation of Kraków commuting zones. The north-western part is consisted of communes with prevalence of types 1 and 2, thus with similar numbers of commuters active in each of the three discussed sectors of national economy. The linear pattern was characteristic for commuting to industry and nonmarket services (Type 3). This type was shaped by the course of main transport routes going from Kraków south –



and eastward. Communes with prevalence of commuters to industry and construction (Type 5) covered large areas of the Kraków commuting zone and were mostly situated in its north-western and south-eastern parts. Type 6, that of the domination of commuting to market services was most frequent in the northern regions of the discussed commuting zone and featured a high number of commuters working in transport enterprises.

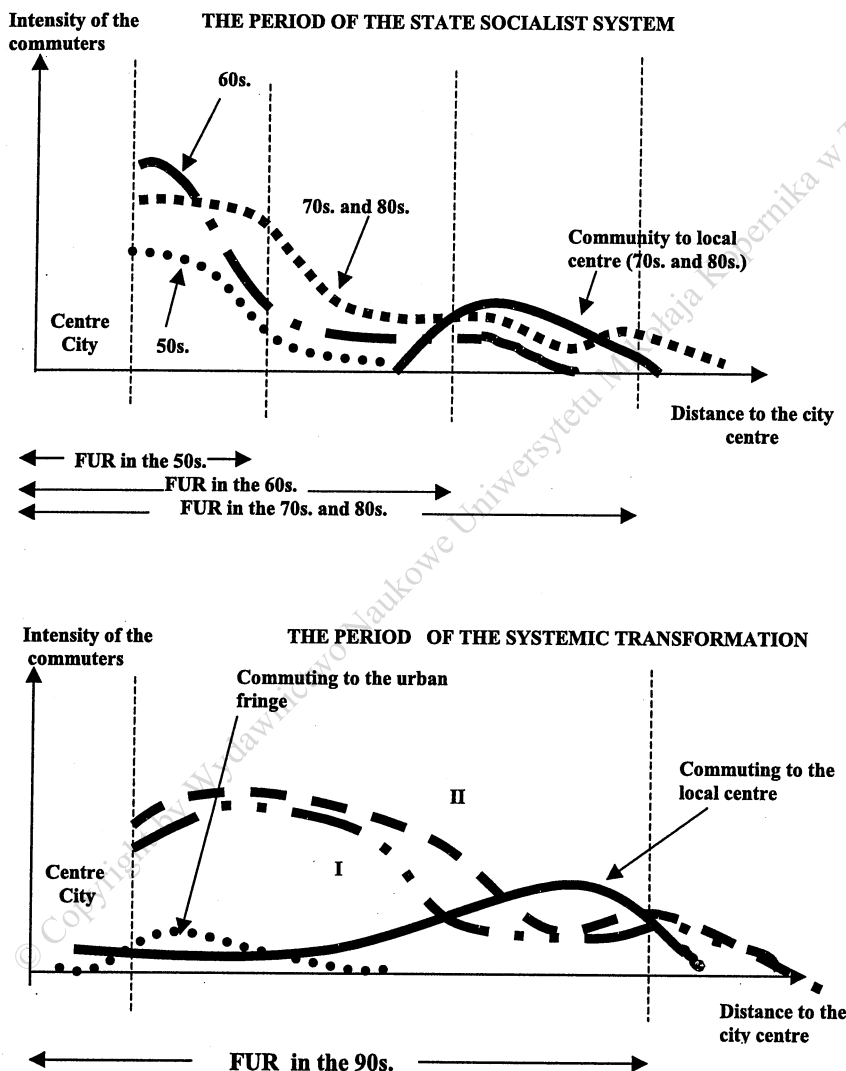


Fig. 5. Changes of the central city influence zone, on the example of the commuting in the 2<sup>nd</sup> half of the 20<sup>th</sup> century

I – the recession stage (the first half of the 90s.); II – the suburbanization stage (the second half of the 90s.); FRM – Functional Urban Region.

## TRANSFORMATIONS OF COMMUTING IN THE MODEL APPROACH

On the basis of the above presented analysis of spatial development of the commuting zone and changes of the commuting intensity, and according to the paper by M. Soja and A. Zborowski (1998), the author proposes a model approach to this phenomenon. This model can be divided into two parts, reflecting two periods:

- 1) this of centrally controlled economy,
- 2) that of systemic transformation (fig. 5).

During the period of centrally controlled economy, that from the early 1950s, through the 1960s and until the 1970s, the permanent spatial development of the commuting zone was observed, together with the expansion of the central city influence zone. In the next decade, the spatial development of the commuting zone and thus the development of the functional urban region was halted. Slowing down of this development was caused mainly by: the deepening crisis of the socialist economy and the lack of great industrial investments, thus the employment hardly increased. However, the number of commuters did not fall, because in the 1980s, significant was the process of ageing of the central city inhabitants, and earlier retirement of numerous employees. Until the early 1970s, the intensity of commuting also increased. These migrations became mass in the urban – rural fringe. Yet already in the 1970s, the number of those commuters began to fall. This fall was caused both by the population ageing and the increase economically active persons outflow from the urban – rural fringe to the intensely developed multifamilial housing estates (this was a sort of the substitution of oscillatory migrations by the permanent ones). In the 1980s, the permanent inflow to the great city was halted due to economic crisis and the lower number completed dwelling; the latter cause enhanced the commuting intensity, but only in the rural fringe. In the commuting zone, appeared also commuters working in small, local job centres, in which the employment increased because of the State policy of industry deglomeration, prosecuted in the 1970s. In the commuting zone, in some communes, appeared the crossed commuting routes, directed both to the central city and to the local centre. Later it was the local centre that often dominated commuting on a small area of 1–2 communes. In its influence field appeared the areas, where one could observe Stouffer's rule (Stouffer, 1940).

In the period of systemic transformation of Poland, the number of commuters decreased, but it did not mean the radical limitation of the influence zone of the central city. One can distinguish two types of transformation of the urban region. The first one contains the region with a well-developed, varied profile of jobs, these are the multi-functional centers. In such the centres 'shrinking' of

commuting zone was not observed, therefore the spatial scope of the central city influence zone did not change. To the contrary, increase of their influence on rural areas was recorded, also to those loosely linked with the core. The rural areas having no significant job centre (i.e. the southern part of the Kielce Voivodeship) were rather quickly incorporated into the peripheral commuting zone. In relation to the ongoing processes of industrial suburbanisation, and due to structural changes of economy in the central city (restructuring and desuburbanisation), occurred the considerable changes in the level of relations between the centre and the influence zone. The process of further decrease of the commuters number coming from the urban fringe was deepened.

Grew the significance of local centres in which the demand for new jobs was accompanied with the increase in the commuters number. In relation to the structural changes in economy, the structure of commuters working in the main sectors of national economy changed radically. The migrations to work in industry and construction were replaced by those to the market and nonmarket services. These changes were one of the basic factors causing the growing share of women among the commuters.

Another type of changes of the urban region in the transformation period concerned typical industrial centres, i.e. that of Bielsko-Biała. Due to the considerable fall of the commuters number, occurred the significant decrease of the spatial scope of the central city. The Bielsko-Biała urban region was limited to the ring of communes surrounding the town in the radius of up to 20 km from the centre, while in the 1980s it reached even frontier with the Czech Republic (Długosz, Zborowski, 1995). Such the territorial losses were accompanied by fall of the commuting intensity, especially in the urban – rural fringe. The increase of the links in the peripheral zone was much smaller than that observed in Kraków case. Commuting to sector II, i.e. that of industry and construction played the role smaller than in the 1980s, yet they were still important.

To conclude, the main features of transformations discussed are the following:

1. Diversification of changes in commuting during the period of systemic transformation realized to functions realized by the central city.
2. Limitation of spatial scope of the internal commuting zone (above 100 commuters per 1,000 inhabitants).
3. Large decrease in commuting intensity in the internal zone, especially in communes bordering with the centre, which may be related to functional changes in the urban – rural fringe.
4. Relocation of commuting in the peripheral zone (below 20 commuters per 1,000 (inhabitants); increase of the scope of influence.
5. Increase of the women share among commuters, related to the fall of the most distant commuting, dominated formerly by men, and with the dynamic development tertiary sector in which prevails the female employment.

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## DOJAZDY DO PRACY W POŁUDNIOWEJ POLSCE W OKRESIE PRZEMIAN SYSTEMOWYCH

### STRESZCZENIE

Celem niniejszego opracowania jest przedstawienie skali przemian dojazdów do pracy na przykładzie regionów miejskich: Krakowa, Bielska-Białej oraz Nowego Sącza. Badaniem objęto łącznie, tj. w Krakowie, Bielsku-Białej oraz Nowym Sączu, ponad 3000 instytucji, w tym większość dużych firm, zatrudniających ponad 500 osób. Wyboru firm dokonywano uwzględniając strukturę gospodarki narodowej badanych ośrodków miejskich, strukturę wielkościową firm, a także ich lokalizację w przestrzeni badanych regionów miejskich. Pełna ocena współczesnych przemian w dojazdach do pracy nie jest możliwa bez uwzględnienia informacji o kształtowaniu się tego zjawiska w okresie gospodarki centralnie sterowanej.

Przemiany te prześledzono na przykładzie dojazdów do pracy do Krakowa. Pierwsze informacje o dojazdach do pracy do Krakowa pochodzą z roku 1948, a więc z okresu przed budową kombinatu metalurgicznego w Nowej Hucie. Szacuje się, że dojeżdżało około 10 tys. osób (Bromek, 1948). Dojazdy do pracy szybko rosły, i tak w 1958 roku liczba dojeżdżających do pracy w Krakowie przekroczyła 28 tys., w 1968 sięgała już 48 tys., by z początkiem lat 70. osiągnąć wartość 57 tys. osób. W latach 80. liczba dojeżdżających do pracy ustabilizowała się na poziomie z lat 70. Dojazdy do pracy przyjmowały w latach 50., a także z początkiem lat 60. formę przestrzenną typu gwiazdy. Dystans z miejsca zamieszkania do miejsca pracy powiększył się jeszcze bardziej w pierwszej połowie lat 70. (rys. 2), kiedy to odnotowano duże nowe inwestycje przemysłowe.

W latach dziewięćdziesiątych w badanych miastach nastąpiło ograniczenie dojazdów do pracy. Było ono jednak relatywnie większe w mniejszych ośrodkach miejskich, takich jak Bielsko-Biała i Nowy Sącz. Liczba dojeżdżających do pracy zmniejszyła się w Bielsku-Białej z 28,8 tys. w 1983 r. do 20,2 tys. w 1993 r., a w Nowym Sączu z 16,6 tys. w 1983 r. do 14,5 tys. w 1999 r. Badanie przeprowadzone w Krakowie w 1996 r. wykazało 62,4 tys. osób dojeżdżających do pracy. Nadal wśród dojeżdżających przewagę mieli pracujący w przemyśle. Przejście do gospodarki rynkowej zadecydowało nie tylko o przemianach strukturalnych dojazdów, lecz także w istotny sposób zaważyło na zmianie natężenia i przestrzennych zasięgów oddziaływań Krakowa. Natężenie dojazdów do pracy do Krakowa w 1996 r. było dość silnie zróżnicowane przestrzennie (rys. 3). Porównanie zmian zasięgów wyróżnionych stref dojazdów do pracy w latach 1988–1996 wskazuje na ograniczenie rozwoju przestrzennego strefy centralnej. Obok poznania przemian, w zasięgu oddziaływania miasta centralnego i natężenia dojazdów, istotną kwestią było ustalenie podstawowych cech strukturalnych dojazdów do pracy. Skupiono się tu na analizie struktury dojeżdżających według sekcji EKD (rys. 4). Na podstawie przeprowadzonej analizy rozwoju przestrzennego strefy dojazdów do pracy i zmian natężenia

dojazdów oraz pracy M. Soji i A. Zborowskiego (1998) zaproponowano ujęcie modelowe tego zjawiska. Model ten można podzielić na dwie części odzwierciedlające: 1) okres gospodarki centralnie sterowanej i 2) okres transformacji systemowej (rys. 5). Do głównych cech omawianych przemian zaliczyć można: 1) zróżnicowanie przemian w dojazdach do pracy w okresie transformacji systemowej związane z funkcjami pełnionymi przez miasto centralne, 2) ograniczenie przestrzennego zasięgu wewnętrznej strefy dojazdów oraz spadek natężenia dojazdów w tej strefie, 3) relokacja dojazdów w strefie peryferyjnej, 4) wzrost udziału kobiet w dojazdach do pracy.