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Demographic changes in Functional Urban Areas in Poland

At the turn of the 21st century, Poland experienced major demographic transformations, unparalleled in its post-war history. They mainly included a slowdown in demographic dynamics resulting from a sharp drop in fertility, and a loss of population associated with foreign emigration after Poland's accession to the European Union, which is difficult to estimate. An increase in average life expectancy and a reduction in the fertility rate well below the replacement threshold were also observed. As a consequence of the above changes, the demographic age increased and the dynamics of population aging accelerated. The aim of the paper is to investigate the spatial patterns and trends in demographic processes in Functional Urban Areas (FUAs) in Poland in the context of second demographic transition and suburbanisation. In particular, population growth, fertility, migration and age composition were studied in the years 1990-2016. The trends of population change in FUAs by size types were differentiated when seen in terms of division into the core and the commuting zone.

The subject of the analysis are Functional Urban Areas, which according to the Act on Planning and Spatial Management and the Concept of National Spatial Planning 2030, which constitute compact spatial arrangement consisting of functionally related areas, characterised by common conditions and homogeneous predicted development goals. Being spatially continuous settlement systems, Functional Urban Areas are composed of separate administrative units, covering a compact urban area and a functionally associated urbanised zone. In FUAs an important role is played by the strength of internal links between the core city and its functional area, including mainly commuting

In Poland 151 Functional Urban Areas were identified of which 134 were individual towns or cities and 17 were aggregates (either urban agglomerations or conurbations). The Polish FUAs covered an area of 81,700 km² (including 11,300 km² of cores, i.e. 13.8%) and had a population of 25.1 million (including 18.3 million or 73.0% in the cores) in 2016.

The travel-to-work area concept is useful for making comparisons between urban regions as it allows us to define local, national and international structures of development quite

well. In demography, these areas are interesting from the aspect of population change including total population growth as well as natural increase and internal migration. Functional Urban Areas are in different stage of urban development (suburbanisation, post-suburbanisation, re-urbanisation) and they may experience various demographic processes depending on their size, location and attractiveness. For example, suburban areas may be distinguished as territories with fertility higher than in city cores resulted from in-migration of young families. In particular, a crucial role was played by the processes of socio-economic transformation and adaptation of cities to the reality of the free market economy, the growing attractiveness of cities, and changes in the labour, educational, and real estate markets, leading to a spatial redistribution of population.

Internal redistribution of population within Functional Urban Areas resulted in changes in age composition and intensification of population ageing process. The advancement of population ageing depends greatly on the size of FUAs as well on its division into the core and commuting zones. In the latter, usually, the pace and level of ageing was lower compared to the centres of the FUAs.

Changes associated with second demographic transition were also observed in reference to Functional Urban Areas. Declining fertility, postponing of births, increasing variety of households, reduction in the number of marriages and increase of divorces and extra marital births are the processes spreading from the centres of largest urban areas reaching smaller towns and peripheral zones.

Spatial patterns of demographic changes in the areas under study showed an increase in the concentration of people in FUAs and migration within the internal structure of FUAs during the period analysed. In the early years of the socio-economic transformation, the greatest population dynamics was recorded by the smallest centres (from 20,000 to 30,000 inhabitants). After initial period of transition of 1990s, the improvement of the socio-economic situation associated with joining the European Union, led to an increase in the population of larger urban areas, including the capital city - Warsaw. Former industrial centres saw a decline in population. As regards the core-fringe relationships, FUAs recorded clear processes of suburbanisation (initially in the largest centres). Over time, suburbanisation developed in medium-sized and small FUAs. Apart from Warsaw and Kraków, where signs of reurbanisation processes were seen, larger centres were characterised by a population decline in their cores.