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## **AGEING OF RURAL POPULATION IN MAZOVIAN PROVINCE**

### *STAROŚĆ DEMOGRAFICZNA OBSZARÓW WIEJSKICH WOJEWÓDZTWA MAZOWIECKIEGO*

**Key words: demographic ageing, rural areas, LAU 2, Mazowieckie province**

*Słowa kluczowe: starzenie, obszary wiejskie, LAU 2, województwo mazowieckie*

*JEL codes: J14*

**Abstract.** The paper presents statistical and spatial analysis of ageing of rural population in Mazovian Voivodship. The analysis using population statistics from the Central Statistical Office of Poland, carried out on a local LAU 2 level, where rural areas were defined according to DEGURBA classification, and using classical measures of ageing proves that all rural LAU 2s in the region are old by UNO criteria, however those adjacent to cities and Ostrołęka town are relatively younger. Population of Warsaw is older than population of adjacent rural communes. In case of rural LAU2s there is a strong correlation between the share of the old and Sauvy's index, while there is no linkage between the share of old and double ageing index.

### **Introduction**

The ageing of EU population is already one of the most advanced in the world and it still accelerates [EC 2015]. It causes major economic and social consequences [Bloom et al. 2011, Rakowska 2016, EC 2008] posing challenges for many policy areas. These challenges may need to be tackled in a different way in urban and rural areas as there are numerous studies proving that ageing of rural areas in EU influences rural societies more negatively than those in urban areas - rural elders are poorer than urban ones [Hash et al. 2015], live in less adequate housing, and have far fewer health and service options available to them than their urban counterparts [e.g. Connors et al. 2013], thus rural elders are more vulnerable to social exclusion [Wenger 2001, Walsh, Ward 2013]. That is why demographic ageing of rural areas and its implications have become a concern of both EU and national policy makers and economists whose task now it is to develop strategies and measures preventing from the increase in negative population trends and equally negative social and economic effects. To effectively implement such policies on both national and local level it is necessary to look into the on-going population ageing process in rural areas, preferably on LAU 2 level, providing most detailed information on the phenomenon.

Therefore the aim of this paper is to identify the recent level and spatial differentiation of ageing of the rural population in Mazovian Voivodship, Poland, as well as refer it to the ageing level of urban population, and especially to the population of Warsaw, which is the biggest labour market and academic centre in Poland, attracting both the youth and working age people from other parts of the country. The study was also carried out to answer the question whether the spill over of the population of the biggest cities in the region onto the adjacent rural communes makes the latter younger than the rural communes not influenced by the neighbourhood of such cities.

### **Material and methods**

The study used population statistics for 2015 from the Local Data Bank of the Central Statistical Office of Poland, the category specified as 'population data according to the place of residence', and DEGURBA classification of Polish communes [Rakowska 2013] to specify rural LAU 2s. Rural areas of Mazovian Voivodship were selected as the research sample, because Mazovia is

the largest NTS 2 region in Poland considering both its area and population. It also includes all types of communes (LAU 2) referring to the functional classification [Śleszyński 2012], and the differentiation of the level of social and economic development [Stanny 2013] etc.

The time range of the study was determined by the availability of the latest data i.e. as of December 31, 2015. The spatial range of the study included 314 LAU2s, i.e. all communes existing in Mazovian Voivodship in 2015, of which 4 LAU 2s classified by DEGURBA as cities (Warszawa, Radom, Plock, Siedlce) and 59 as towns constitute urban areas and the remaining 250 LAU2s constitute rural areas. To achieve the aims of the study the following classical measures were applied:

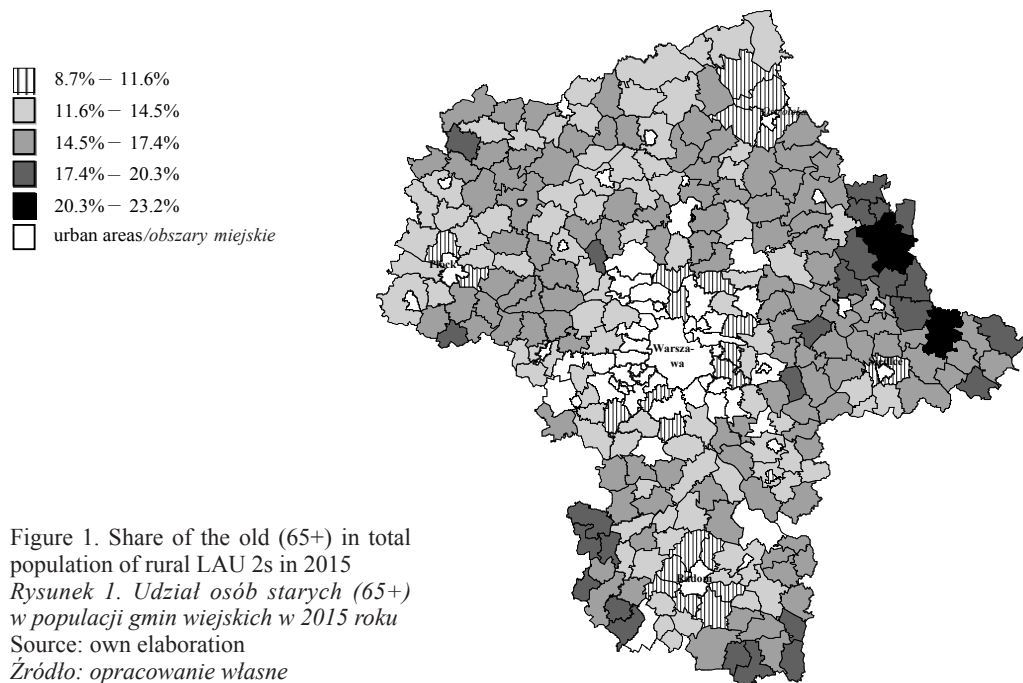
- the share of the old in the total population [ULS]:  $U_{Lst^l} = \frac{L_{st^l}}{L_{t^l}} * 100\%$
- double ageing index ( $W_{PS}$ ):  $W_{PS} = \frac{L_{SS}}{L_S} * 100\%$
- ageing index by A. Sauvy (meant as the number of the old per 100 young):  $W_{SDt^l} = \frac{L_{St^l}}{L_{Mt^l}} * 100\%$

where:  $L$  – the total population, – the young, i.e. between 0 and 19 years of age, – the old (i.e. 65+),  $t^l$  – as of December 31, 2015.

The thresholds for the young (0-19 years), the old (65+) and the very old (85+) were adopted based on the methodology presented in The Cambridge handbook of age and ageing [Johnson et al. 2005].

## Research results

The share of the old in the population of Mazovian Voivodship total, as well as in its rural areas and urban areas separately equalled 15%. However in individual urban communes this value ranged from 9 to 20% and in rural ones from 9 to 23%. According to UNO criteria all analysed communes, no matter whether urban or rural are very old.



Warsaw was the oldest among the Mazovian DEGURBA cities as it had 18% of population of 65 and older. Two out of four Rural communes adjacent to Warsaw belong to the group of the youngest LAU 2s (Fig. 1), similarly to the rural commune surrounding Siedlce, 7 out of 8 rural communes adjacent to Radom and 2 out of 7 rural communes adjacent to Płock. The youngest rural LAU2s falling in the range between 8.7 and 11.6% of the old in total population are mostly situated near the cities of Mazovian Voivodship.

The only exception is the cluster of the youngest rural communes around Ostrołęka, which is classified by DEGURBA as a town. Rural LAU2s of very high (from 17.4 to 20.3%) share of the old are mostly found on the borders of the region, while those of the highest (from 20.3 to 23.2%) share of the old only on the eastern border of the region and both these categories are located away from the cities. In general the eastern part of the rural areas of the voivodship is the oldest.

The share of the very old (85+) in rural LAU 2s in 2015 in Mazovian Voivodship equalled 13%, while in its rural areas 14%. Warsaw is again the oldest among the cities as its double ageing index amounts 13%, while Płock 8%, and Siedlce and Radom 10% each. Double ageing index for rural LAU2s ranges from 8 to 20%, while for urban areas from 7 to 15%. The location of rural LAU 2s representing the lowest values of this index is rather random and does not create any clusters around the cities. The eastern part of the Mazovian rural areas is characterised by very high and the highest share of the very old population (85+), which proves that the old of these rural communes are very advanced in age. There is rather weak correlation between the share of the old and double ageing index in rural areas of this region as Pearson's coefficient equals 0.45, and  $R^2= 0.2$ .

There were on average 65.5 of the old per 100 young in the voivodship, 64.4 in urban areas and 65.8 in rural areas. The Sauvy's index places Warsaw among the oldest LAU2s, as it equalled 104.5 of the old per 100 young. As the index for individual urban communes in the voivodship ranged from 31.6 to 104.5 it can be concluded that Warsaw is the oldest among cities and towns. Sauvy's index for rural communes ranges from 31.6 to 129.4 of the old per 100 young. Most rural LAU 2s adjacent to cities and all adjacent to Ostrołęka town are characterised by the lowest values of Sauvy's index, from 23.2 to 36.3 of the old per 100 young, proving that these communes are younger than the cities. There is nearly perfect correlation between the share of the old and Sauvy's index in rural areas of this region as Pearson's coefficient equals 0.96, and  $R^2= 0.93$ .

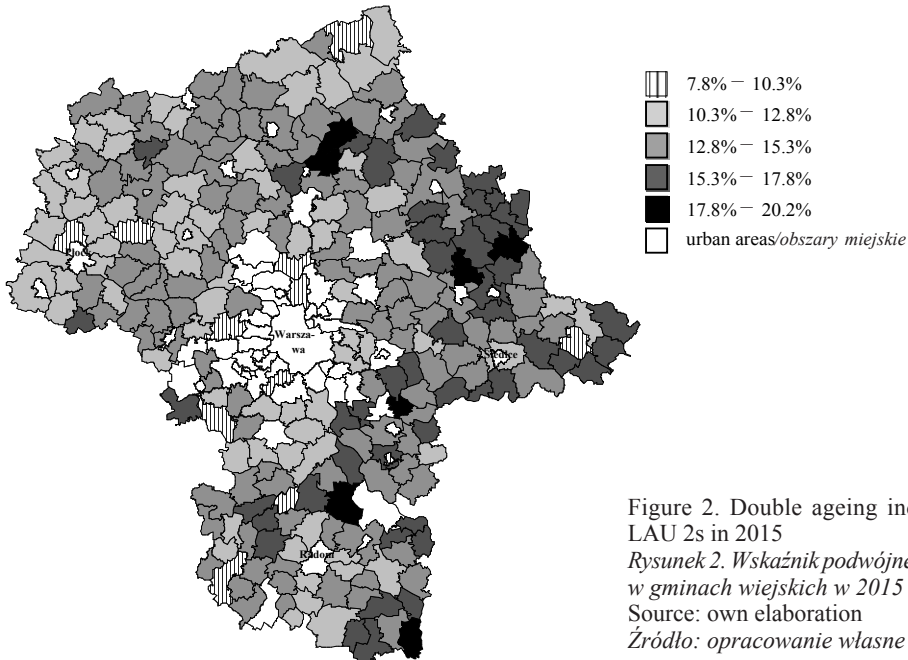


Figure 2. Double ageing index in rural LAU 2s in 2015

*Rysunek 2. Wskaźnik podwójnego starzenia w gminach wiejskich w 2015 roku*

Source: own elaboration

*Źródło: opracowanie własne*

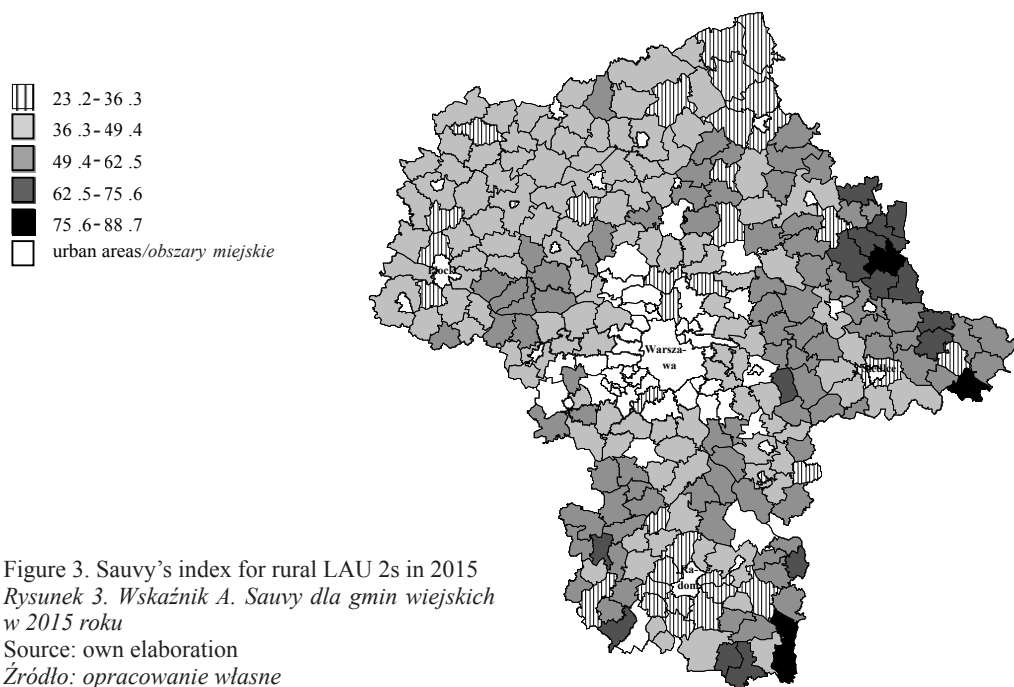


Figure 3. Sauvy's index for rural LAU 2s in 2015  
 Rysunek 3. Wskaźnik A. Sauvy dla gmin wiejskich w 2015 roku

Source: own elaboration

Źródło: opracowanie własne

### Summary and conclusions

The share of the old in individual urban communes ranged from 9 to 20% and in rural ones from 9 to 23%. The double ageing index ranged from 7 to 15% in urban LAU 2s, and from 8 to 20% in rural ones. Sauvy's index for rural communes ranged from 31.6 to 129.4 of the old per 100 young, and for the urban ones from 31.6 to 104.5.

Findings prove that all rural LAU 2s in the region are old by UNO criteria, however those adjacent to cities and Ostrołęka town are relatively younger, when considering the share of the old (65+) and the value of Sauvy's index. Based on the same measures population of Warsaw and other cities of the region is older than population of majority of adjacent rural communes. In case of rural LAU2s there is a strong correlation between the share of the old and Sauvy's index, while there is no linkage between the share of old and double ageing index calculated for the rural areas.

Population ageing results in numerous consequences for national health care system, pension system based on PAYG and the rule of solidarity of generations, social care system in its part referring to the care of the old and especially the very old (85+), etc. However, locally population ageing brings also other effects such as e.g. decrease in purchase power of local population whose bigger and bigger share will live on income from pensions instead of salaries. This can influence negatively local demand for products and services forcing local providers to reduce their supplies. Ageing also affects negatively income level of households, where retiring decreases the household income. Advanced ageing changes the structure of household expenditures where medical treatment and medicine costs in the part not covered by the National Fund of Health take larger and larger share. All these and many other facts connected with ageing of the members of a household result in increasing poverty of rural households of the old. Retiring of older generation also results in vanishing of some old professions and crafts from the market, as they are often not continued by the younger generations. In areas where ageing results both from the natural process but is also increased by emigration of younger generations there is a problem who will run the farms

of the retiring ones or who will run their – usually – small businesses. Disappearing some small businesses, professions and craft from local markets makes the service and product offer much poorer thus decreasing standard of living in ageing rural areas.

Ageing of rural areas adjacent to big cities is not so intensive and advanced than in rural areas away from urban centres, thus consequences of ageing in those two categories of rural areas are and will be different. So they will require taking different measures preventing from the increase in rural poverty, decrease in living conditions, and last but not least the increase in social exclusion of the old and very old.

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### Streszczenie

Przedstawiono statystyczną i przestrzenną analizę poziomu starości ludności obszarów wiejskich województwa mazowieckiego, przeprowadzoną przy wykorzystaniu danych GUS, na poziomie gmin (LAU2), które zostały zdefiniowane jako wiejskie na podstawie klasyfikacji DEGURBA. Wyniki dowodzą, że wszystkie gminy regionu są stare według skali ONZ, jednak wiejskie gminy przyległe do dużych miast województwa oraz do Ostrołeki są relatywnie najmłodsze. Ludność Warszawy jest starsza niż ludność przyległych gmin wiejskich. W gminach wiejskich występuje silna korelacja pomiędzy udziałem osób starych (65+) a wskaźnikiem A. Savvy oraz bardzo słaba korelacja pomiędzy udziałem osób starych i wskaźnikiem podwójnego starzenia.

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