

# Changes in the Demographic Structure of the Central City in the Light of the Suburbanization Process (The Study of Poznań)

Maria Trojanek, Justyna Tanaś, and Radosław Trojanek<sup>(✉)</sup>

Poznań University of Economics, Al. Niepodległości 10, Poznań, Poland  
{m.trojanek, justna.tanas, r.trojanek}@ue.poznan.pl

**Abstract.** The aim of the paper is to identify changes in the age structure of the inhabitants of the Downtown of Poznań and in the housing stock and number of residents in a single flat, taking into consideration the type of construction (in 2008 and 2013).

In the first part of the paper, we presented processes occurring in contemporary Polish cities as well as their causes. We discussed the process of sub-urbanization – its aspects and implications. In the empirical part, on the basis of data from the resident register of the Ministry of Internal Affairs, we conducted the analysis of the demographic structure of the inhabitants of Poznań and of the structure of buildings located in the Downtown of Poznań.

On the basis of the conducted analysis of changes occurring in the area of the Downtown of Poznań, we may observe that the number of residents in the area of Poznań Downtown decreased by about 20 % in the period under study. The age structure of the inhabitants of the center of the city also changed. The calculated indicators show that the population of the Downtown of Poznań began to be subject to gradual processes of ageing, which should be perceived as a negative phenomenon. In turn, the analysis of housing stock shows that housing conditions in Poznań Downtown improved. This is reflected in the drop in the number of people living in one apartment in this part of the city.

**Keywords:** Suburbanization · Shrinking city · Demographic structure of the city centre

## 1 Introduction

The demographic changes we observe in most European Union countries, such as the ageing of societies, the development of suburban zones, and functional and spatial transformation, pose new challenges of an unprecedented scale for local governments. In the period between the two last censuses (2002 and 2011), the balance of migration between urban and rural areas swayed in favor of the latter (for the first time in 50 years). The need arises for the integration of the central city with its neighboring communes. A common policy regarding the provision of public services must be pursued and the coordination of the spatial development of the central city and its surrounding communes is necessary [1].

Civilization processes have brought about changes in the functions of city centers. City dwellers began to move to suburbs and areas beyond city borders in order to improve their living standard. This tendency has considerably influenced the process of the depopulation of the city center, which used to play a significant role in the past, e.g. it was a place of living, entertainment and trade. A decrease in the number of inhabitants was determined by various factors (of an endogenous and systemic character) and has a number of multi-criteria implications. It may be analyzed in the macro scale and from the local angle. The ongoing processes of social and spatial transformations in the conditions of a decrease in the size of population (referred to as shrink smart) do not always bear negative consequences. They may also create opportunities for positive changes, such as the improvement of the living standard, owing to, for example, reduced population density per unit of residential area, lower burden for the environment or better transport links. Having in mind the aim of this paper, we shall focus on a single selected aspect of the ongoing socio-economic transformations in the center of Poznań, namely, we will discuss changes in the number and age structure of the inhabitants of Poznań (in 2008 and 2013) as well as changes in the housing stock and number of residents in a single flat, taking into consideration the type of construction.

## **2 The Concept of Suburbanization and the Indications of This Process**

Urbanisation is a process which in a significant way shapes spatial and functional structures of particular areas. In the literature we can most often meet with four basic stages of the process: urbanisation (primary), suburbanisation, de-urbanisation and re-urbanisation. Highly developed countries with advanced urbanisation processes have already experienced all four stages of urbanisation.

With the growth of market economy in Poland, some markets which played a marginal role in the pre-transition economic system have grown in importance. A number of Polish researchers have attempted to seek for relationships between different markets of goods and the economy, effectiveness of investments in different segments of property market [2–6] or identification of suburbanization processes [7].

Beginning from the system transformation in Poland, we may observe de-urbanisation of the population, both from the central areas of the biggest cities and large panel housing estates located in peripheral city districts – to suburban area where new estates of detached houses are built. More wealthy groups migrate from deteriorating central districts to suburbs which, by their distant location from the centre allow for everyday commuting to work in the centre, offering at the same time much better living conditions than in the previous place of living. Density of population in city centres is decreasing while it is increasing in the suburbs, and the balance of migration of the whole urban agglomeration is positive. Intensification of building development in peripheral parts of the city and suburbs results in disappearance of the border between the city and its external area. Agricultural land is converted into industrial, warehousing and storage, trading, residential and sports areas.

Above mentioned features are characteristic for the complex process of suburbanisation. Etymologically, the notion comes from “suburbium”, which means

peripheral in relation to city or adjacent to its administration borders (closely located) area with residential functions. As R. Fishman writes [8], for the first time the word “suburb” was used in the 14th century by G. Chaucer in a story collection entitled *The Canterbury Tales*, to define forgotten places around 14th century cities. These were the places where various types of outcasts gathered. The places were despised, therefore “sub” to stress domination of the city (urbia).

In the literature suburbanisation is perceived in three basic spatial contexts:

- (a) inside administrative borders of the central city (so called internal suburbanisation, in the vacant for investment areas of the central city),
- (b) outside central city borders in the area of so called closer suburban zone – defined as external suburbanisation (urban fringe, suburban zone) characterised by relative spatial continuity of investment;
- (c) outside closer suburban zone, in the area of further suburban zone (urban region, urban-rural fringe), with the domination of extensive forms of using the land and similar in landscape to the countryside; in the United States it is defined as ex-urbanisation and in France – as peri-urbanisation [9].

The existing body of literature provides numerous definitions of suburbanization [10–14]. In spatial dimension suburbanisation means dynamic development and increase of intensity of the use of peripheral areas of the cities and their suburban zones where the example is so called urban sprawl.

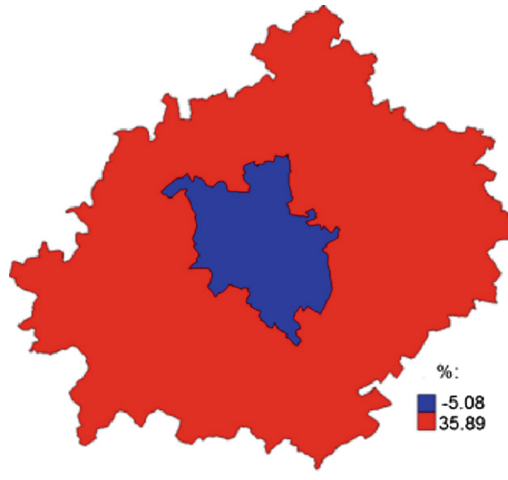
Suburbanisation process is connected with a number of consequences, both for communes in the suburban zone and for the central city. The consequences may be analysed in three areas: spatial, economic and social. From the point of view of social phenomena, suburbanisation is not a favourable phenomenon. In many aspects it is, however, favourable both for some people (inhabitants of suburban zone), and for businesses (investors).

The process of suburbanization and demographic changes are some of the causes of the shrinkage of cities. The phenomenon of shrinking cities manifests itself in many forms and structures, both in the spatial and time approach [15]. The shrinkage of cities is the process of depopulation, which results in a decrease of the attractiveness of a city as a place for life and development, and in the lack of jobs. We observe a negative birth rate and migration in pursuit for better earnings and improved living conditions. The shrinkage of cities is not only a Polish phenomenon, but it is well known in the whole world [16]. The term “shrinking city” was first used by scholars in 1987. Sociologists Hartmut Häußermann and Walter Siebel first applied the expression “shrinking city” (*schrumpfende Stadt*) in their book titled “*NeueUrbanität*”. Since then, a lot of definitions of the term – which describe the characteristic features, causes and effects of this phenomenon - have appeared in literature.

This phenomenon we can observe in Poznań agglomeration. The number of inhabitants of the agglomeration of Poznań, the area of which coincides with the administrative area of the Poznański district, is constantly increasing. Between 1995 and 2010, the population growth was 6.92 %. As early as at the beginning of 1990s, we observed a systematic decrease in the number of the inhabitants of Poznań (from 581.2 thousand in 1995 to 551.2 thousand in 2010, which means a drop of 5 % in the size of the population of the city). This decrease is accompanied by a significant increase in the

number of people inhabiting the communes of the Poznański district. The population of this district has gone up by nearly 36 % in the past fifteen years. The highest growth is observed in the communes directly neighboring the city of Poznań. In some of these communes, the population has doubled. The positive balance of migration was the main factor responsible for the growth of population size.

Figure 1 shows changes in the size of population in the Poznań agglomeration in the years 1995–2010.



**Fig. 1.** Changes in the size of population in the Poznań agglomeration in the years 1995–2010. Source: author's own research on the basis of the data from the Central Statistical Office (GUS). (Color figure online)

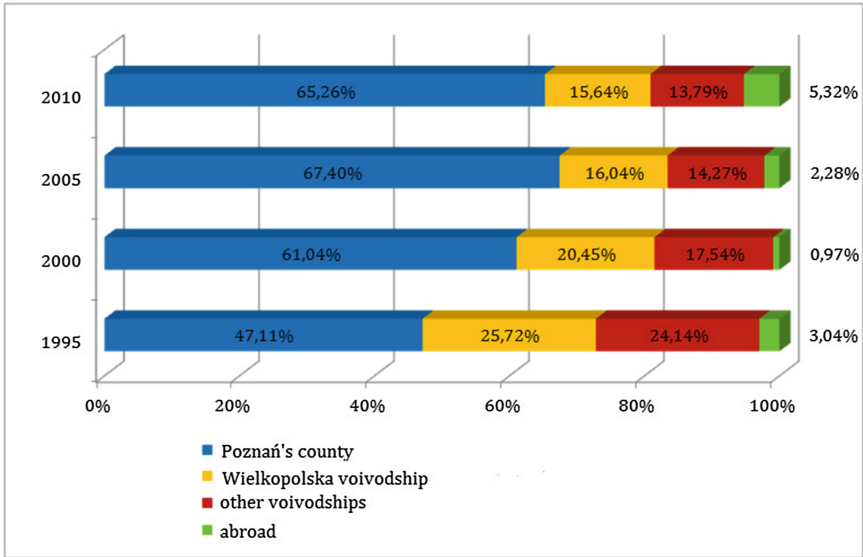
In the years under study, dwellers of the central city usually migrated to the communes of the Poznański district. The percentage of migrants to these areas grew from 1995 to over 67 % in 2005. In 2010, the influx was a bit slower and the figure was 65 % of the total number of migrants. The percentage of people migrating to the other communes of the Wielkopolskie province and to other provinces was much lower. Not many people emigrated abroad.

Figure 2 shows the directions of migration of the dwellers of Poznań in the years 1995–2010.

### 3 The Scope of the Study

#### 3.1 The Spatial Scope of the Study

A Downtown is the most densely populated part of a city, offering the widest choice of facilities. It provides a variety of public services and has a mixture of residential and public utility buildings. The most characteristic part of a Downtown is the city center, which constitutes the core of its spatial structure.



**Fig. 2.** The directions of migration of the dwellers of Poznań in the years 1995–2010. Source: author’s own research on the basis of the data from the Statistical Office in Olsztyn. (Color figure online)

The Downtown of Poznań (Downtown) is the area basically marked by the streets of the so-called 2<sup>nd</sup> transport frame, consisting of:

- in the west – S. Żeromskiego street, St. Przybyszewskiego street,
- in the south – Hetmańska street,
- in the east – the Warta river, Jana Pawła II street, Podwale street, A. Hłonda street,
- in the north – Szelągowska street, Winogrody street, Pułaskiego street and the Poznań-Szczecin railway (Fig. 3).

Since 2011, there have been seven Estate Councils in the area of Downtown. They are Auxiliary Units of the City of Poznań and they have different share in the area and population of Downtown. As Fig. 4 below shows, the marked area of Downtown is about 1,700 ha in size.

### 3.2 The Time Scope of the Study

The analysis of changes concerning the population of Downtown, including the age of its inhabitants and changes in the housing stock and number of residents in a single flat, taking into consideration the type of construction, covered the years 2008 and 2013.

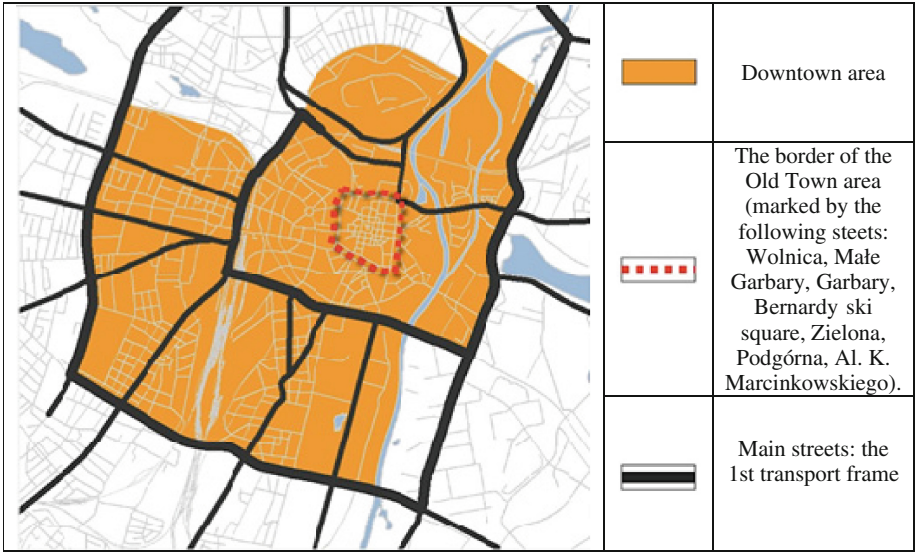


Fig. 3. Poznań Downtown (Downtown) area. (Color figure online)

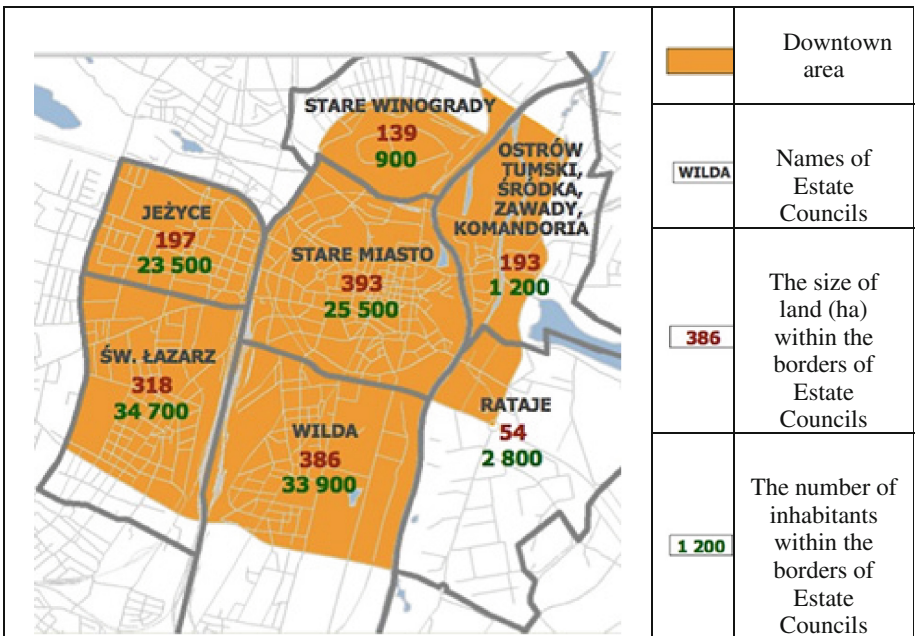


Fig. 4. Borders of Estate Councils in the district of Poznań-Downtown in 2012. (Color figure online)

### 3.3 The Objective Scope of the Study

The data on which we based our deliberations come from the PESEL (Universal Electronic System for Registration of the Population) base. They have been prepared on the basis of data from the registration base of the Ministry of Internal Affairs. They include address points (buildings), in which inhabitants were registered in 2008 and 2013. The data were brought to comparability. Records concerning the number of households occurring only either in 2008 or in 2013 were removed from the data base. This means that, compared to the input base, the number of households in Downtown decreased by about 7,000, which accounted for approximately 14 % of the overall number of households in Downtown as compared with 2008. Thus, the study encompassed 49,101 households in 2008 and 42,396 in 2013.

The study covered 137,208 inhabitants of Downtown in 2008 and 109,423 residents of this part of Poznań in 2013 (the study referred to households from the same buildings in Downtown).

## 4 The Identification and Evaluation of the Processes of Social Changes in Downtown

When carrying out a comparative analysis of demographic changes occurring in Downtown, we may observe that the number of inhabitants registered in this part of Poznań in the selected years (2008 and 2013) dropped by about 20 %. The biggest decrease of population occurred in the districts of Stare Miasto (24 %) and Jeżyce (21 %). In the district of Grunwald, the number of inhabitants in 2013 was 20 % lower than in 2008. In the period under study, the population of the district of Wilda decreased by 17 %, while the number of residents registered in the apartments of the district of Nowe Miasto dropped by 15 % (Fig. 5).

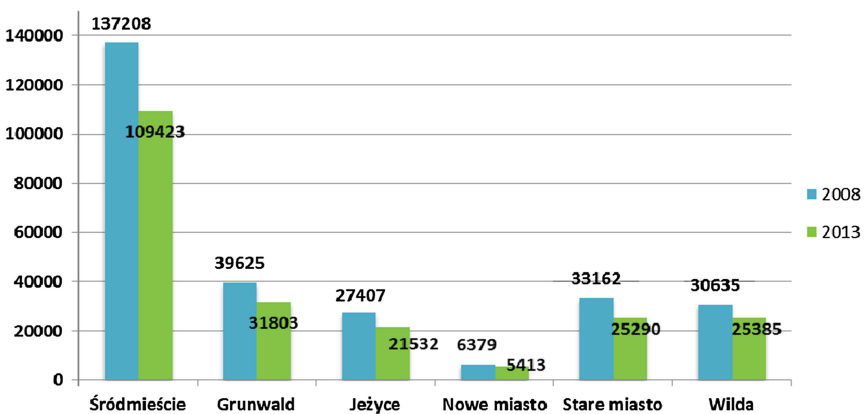
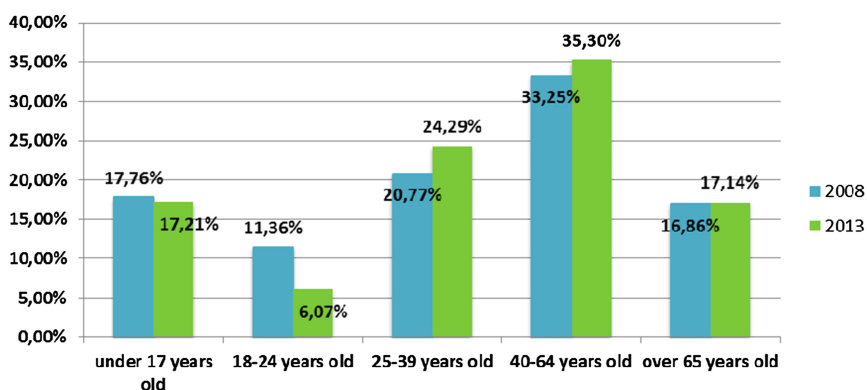
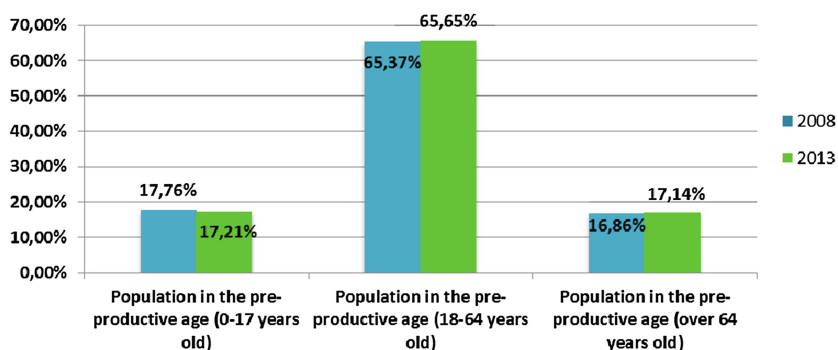


Fig. 5. Changes in the size of the population of Downtown across districts in the years 2008–2013. Source: compiled by the author. (Color figure online)

We may also observe changes in the age structure of the inhabitants of Downtown over the period under study. As Fig. 6 shows, between 2008 and 2013, the number of people in the age groups of 25–39 and 40–64 dropped by, respectively, 3.52 % and 2.05 %. What is worrying is the fact that the number of inhabitants between 18 and 24 fell by 5 % and the population of young people under 17 also decreased, though not as much (by 0.55 %). As it is seen, the number of people over 65 years of age increased by 0.27 % in the period under discussion. The growing number of residents in the age group of 25–64 and a simultaneous decrease in the number of inhabitants under 24 indicate that the population of Downtown is undergoing the gradual process of ageing. This situation is confirmed by Fig. 7, which shows that the percentage of people in the productive and post-productive age in the years under study increased by, respectively, 0.28 % and 0.27 %, with a simultaneous decrease of the percentage of residents in the pre-productive age (0.55 %).



**Fig. 6.** Changes in the age structure of the inhabitants of Downtown in the years 2008–2013. Source: compiled by the author (Color figure online)



**Fig. 7.** Changes in the share of particular age groups of the inhabitants of Downtown in the years 2008–2013. Source: compiled by the author. (Color figure online)



It should also be pointed out that in 2008 the number of inhabitants registered in the residential units based in Downtown accounted for 25 % of all residents of Poznań. As the population of Downtown gradually decreased, this figure stood at the level of 20 % in 2013, which may reflect the migration of people from Downtown to other parts of the city and to peripheral areas (Table 1).

**Table 1.** The number of inhabitants of Downtown compared with the total number of residents of Poznań in 2008 and 2013.

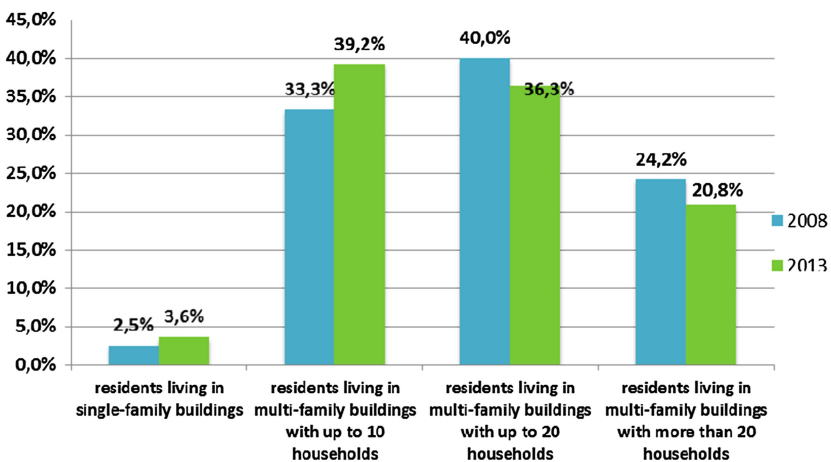
	2008	2013
The population of Downtown	137,208	109,423
The population of Poznań (Statistical Yearbook – data for 2010)	556,722	552,393
The share of the inhabitants of Downtown in the total population of Poznań	25 %	20 %

Source: compiled by the author

In the period under study, the age structure of people inhabiting particular types of buildings located in Downtown also changed.

As Fig. 8 shows, in 2013, the percentage of the inhabitants of Downtown registered in single-family houses was 1.1 % higher than in 2008. The number of residents registered in multi-family buildings with up to 10 households rose even more – by 6 % from 2008 to 2013. In turn, the percentage of people inhabiting multi-family buildings with up to 20 units and those with more than 20 households decreased by, respectively, 3.7 % and 3.4 %.

It should also be noted that in 2008, in the buildings under study in Downtown, there were 49,101 residential units. In 2013, the number of apartments with registered

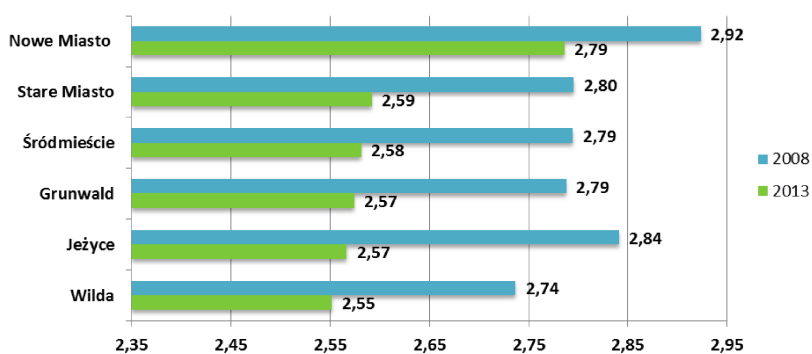


**Fig. 8.** The percentage of population inhabiting particular types of buildings in 2008 and 2013. Source: compiled by the author. (Color figure online)

inhabitants in this part of Poznań fell to 42,396. It means that the number of households in the buildings under study (equal in both years under consideration) decreased by 14 % (6,705 households).

Moreover, between 2008 and 2013, we observed a drop in the number of people per one apartment based in Downtown. In 2008, the average apartment in this part of Poznań was inhabited by 2.79 people. In 2013, this number fell to 2.58 people per apartment. Therefore, as it is seen, in 2013 an apartment in Downtown was inhabited by 0.21 person less than in 2008.

Figure 9 above shows changes in the average number of residents in an apartment in particular districts from 2008 to 2013. We may observe that the highest number of people per apartment was in the district of Nowe Miasto (2.92 and 2.79 respectively). The lowest figure both in 2008 and 2013 was noted in the district of Wilda (2.74 and 2.55 inhabitants per apartment). The biggest improvement in living conditions was observed in Jeżyce, where in 2013 apartments were inhabited on average by 0.27 person less than in 2008. The situation was also better in the districts of Grunwald and Stare Miasto, where the average number of residents per apartment was smaller by, respectively, 0.21 and 0.2 person. Thus, it may be seen that changes in this respect were the least visible in the area of Nowe Miasto, where in 2013 the average apartment was inhabited by 0.14 person less than in 2008.



**Fig. 9.** The average number of people in an apartment in 2008 and 2012 across districts. Source: compiled by the author. (Color figure online)

In order to fully depict changes in the age structure of the inhabitants of Downtown, we should analyze changes in the process under discussion in absolute numbers. In 2013, in comparison to 2008:

- the number of inhabitants in all districts of Downtown decreased, although there were differences in the scale of changes,
- the biggest changes (a decrease) occurred in the districts of Stare Miasto and Grunwald, 7,872 and 7,822 respectively, while the smallest reduction in the number of residents was observed in Nowe Miasto (966),
- the biggest drops were observed in the age groups of 18–24 (a decrease of 8,939) and 40–64 (a decrease of 6,996); these figures reflect highly negative phenomena from the perspective of the functioning of the city,

- if we take into consideration a decrease in the percentage of the population in the pre-productive age (0–17 years of age), a drop in the number of inhabitants in the age group of 0–64 was 23,398 people, which accounts for 85.5 %,
- the number of residents in the post-productive age also decreased (by 4,387 people).

## 5 Conclusion

The aim of the paper is to identify changes in the age structure of the inhabitants of the Downtown (Downtown) of Poznań and in the housing stock and number of residents in a single flat, taking into consideration the type of construction (in 2008 and 2013). In the light of the above data we may conclude that the percentage of the inhabitants of Downtown in the total number of residents of Poznań in the period from 2008 to 2013 decreased by 5.5 %. Moreover, calculated indicators show that the population of the Downtown of Poznań began to be subject to gradual processes of ageing, which should be perceived as a negative phenomenon. In turn, the analysis of housing stock shows that housing conditions in Poznań Downtown improved. This is reflected in the drop in the number of people living in one apartment in this part of the city.

Our study allows us to evaluate the ongoing changes, although, due to the limited scope of data, it should be treated as preliminary research of a general character. In order to provide full assessment of the processes under discussion, further thorough analyses are required.

The above deliberations are part of a discussion on the ongoing changes in the spatial distribution of functions in the city area. The shrinkage of cities is a problem which has determined the existence of a number of urban centres for over 20 years. Demographic forecasts, the economic situation and overall development trends indicate that this phenomenon will continue to affect the position of many cities in future.

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