

Demographic changes in the area of Śląskie voivodeship – retrospective analysis and projection until 2050

Elżbieta Sojka^{CDFMR}

University of Economics in Katowice, Department of Statistical-Mathematical Methods in Economics, Bogucicka 14, 40-226 Katowice, Poland; phone: +322 577 565, e-mail: elzbieta.sojka@ue.katowice.pl

How to cite:

Sojka E., 2016: Demographic changes in the area of Śląskie voivodeship – retrospective analysis and projection until 2050. In: Szymańska, D. and Rogatka, K. editors, *Bulletin of Geography. Socio-economic Series*, No. 31, Toruń: Nicolaus Copernicus University, pp. 113–128. DOI: <http://dx.doi.org/10.1515/bog-2016-0008>

Abstract. The purpose of the paper is to present already observed as well as expected changes in the condition and age structure of the population of Śląskie voivodeship. The analysis concerns the years between 1990 and 2050. The paper presents changes in population in the years from 1990 to 2013 and the projection of the population situation in 2050. Special attention is focussed on the process of changes in population functional age groups, also the dynamics and the level of ageing advancement of population in total as well as of particular age groups which are significant from the point of view of labour market and future births are presented.

Article details:

Received: 29 July 2014

Revised: 19 February 2015

Accepted: 14 November 2015

Key words:

population condition,
population structure,
projection,
demographic senility,
Śląskie voivodeship.

© 2016 Nicolaus Copernicus University. All rights reserved.

Contents:

1. Introduction	114
2. Source material	114
3. Population changes between 1990 and 2050	114
4. Changes in population demographic structures	117
4.1. Age pyramid	117
4.2. Changes in population structure by functional age groups	119
5. Population ageing	122
6. Changes in the number of people by educational age groups	124
7. Final conclusions	126
Notes	127
References	127

1. Introduction

Since the beginning of the 1990s significant changes have been observed in the way demographic processes have been advancing in Śląskie voivodeship. Decline in fertility rate and the fall of the number of children born per woman have been one of the most important elements having a negative impact on the process of population reproduction. This was associated with changes in the process of establishment and development of family as manifested in the fall of willingness to contract marriages, delay in contracting marriages or postponement of the decision to have a baby. On the other hand, the 1990s have brought favourable changes in the sphere of mortality rate, which, consequently, brought the extension of Śląskie voivodeship inhabitants' life expectancy. Significant changes were also observed in intensity of migration abroad, its character, and forms.

Changes in trends occurring in population processes bring changes in population structure by age. If existing marriage and procreation behaviours of the population of Śląskie voivodeship is maintained, the next generations of children will be less numerous than the generations of their parents. Therefore the process of unfavourable changes in inter-generational relations has been increasing. These changes bring population ageing and with time, the burden of non-working and post-working population on occupationally active population is predicted to be absolutely high. This should be considered unfavourable for economy, and consequently, it will be necessary to take these changes into consideration in regional economic policy.

The purpose of the paper is to present already observed as well as expected changes in the condition and age structure of the population in the area of Śląskie voivodeship. The analysis concerns the years from 1990 to 2050. The answer to the following essential research questions were searched for:

- a) What changes occurred in the number of people between 1990 and 2013, and what changes ought to be expected in the prospect up to 2050?
- b) How has the process of changes in population functional age groups been proceeding from the point of view of demands of labour market?

- c) What is the dynamics and the level of advancement of the ageing process of the population of Śląskie voivodeship between 1990 and 2050?

2. Source material

Śląskie voivodeship was established on 1st January 1999 out of majority of municipalities of Katowice and Częstochowa voivodeships and over half of municipalities of Bielsko voivodeship, as a result of introduction of fundamental three-tier territorial division of the country.

Data calculated for the new voivodeship for the years 1990 and 1995 are taken from the paper (Voivodeships in the years 1995 – 1999, 2001). Additionally, estimates and results of population projections for Poland for the years 2014–2050 prepared by GUS (*Central Statistical Office*) are the reference basis for prospective analyses (1).

All statistical data for this paper are taken from GUS (*Central Statistical Office*) database and WUS (*Voivodeship Statistical Office*) database in Katowice, unless stated otherwise.

3. Population changes between 1990 and 2050

Population decline has been observed in Śląskie voivodeship since 1990 (Table 1). Over the period of 24 years, that is between 1990 and 2013, the population in the voivodeship declined by 357.8 thousand people. This represents the decrease by 7.2% as compared with 1990, and mean annual rate of its loss at the time was 0.3%. Depopulation processes significantly influenced big cities including Katowice, Ruda Śląska, and Chorzów (decline by 16 – 17%), as well as Mysłowice and Sosnowiec (decrease by 20%). Considering this, Bytom is the record holder as it observed decline of population of as much as 27%. Migrations, mostly to suburban areas, are the major factor which causes the decrease in the number of people in large cities. They are the symptoms of suburbanisation process. More affluent inhabitants of large cities settle down in areas surrounding the cities while looking for more beneficial living conditions (2).

Table 1. Changes in the situation of Śląskie voivodeship population between 1990 and 2013 and projection until 2050

Year	A	B	C
1990	4,957.2	*	100.0
1995	4,907.9	-49.2	99.0
2000	4,847.6	-60.3	97.8
2005	4,685.8	-161.8	94.5
2010	4,634.9	-50.9	93.5
2013	4,599.4	-35.5	92.8
Projection			
2015	4,569.0	-30.4	92.2
2020	4,477.7	-91.3	90.3
2025	4,369.7	-108.0	88.1
2030	4,245.2	-124.5	85.6
2035	4,107.9	-137.3	82.9
2040	3,964.6	-143.3	80.0
2045	3,821.5	-143.1	77.1
2050	3,680.6	-140.9	74.2

Explanation: A – population in total in thousand, situation as of 31st December; B – changes in the situation of population in thousand; C – changes compared to 1990 (1990=100)

Source: Own case study on the basis of the Central Statistical Office (Główny Urząd Statystyczny), (DoA: 26 February 2015)

In the same period of time, similar, unfavourable changes in population were also observed in seven voivodeships in Poland. The largest decline, by over 7%, was reported in Opolskie and Łódzkie voivodeships (Fig. 1). In as many as nine voivodeships population grew in 2013 in comparison with 1990. The largest growth was reported in Pomorskie (8.3%), Małopolskie (7.8%), Wielkopolskie (6.0%), and Mazowieckie (5.9%) voivodeships.

According to the latest population projection by GUS declining tendency will persist in Śląskie voivodeship. It is estimated that in 2035, 4,107.9 thousand people will live there, that is 10.7% less compared to 2013, and mean annual decline in population will increase to the level of 0.5%. This means that the process of population decline will be accelerating.

According to Fig. 1 in the middle of the 21st century, Śląskie as well as Łódzkie and Świętokrzyskie voivodeships will be inhabited by over one fifth less people than in 2013.

On the other hand, according to the projection, Opolskie voivodeship will be in the first place with respect to the largest decline in population (by over 25%).

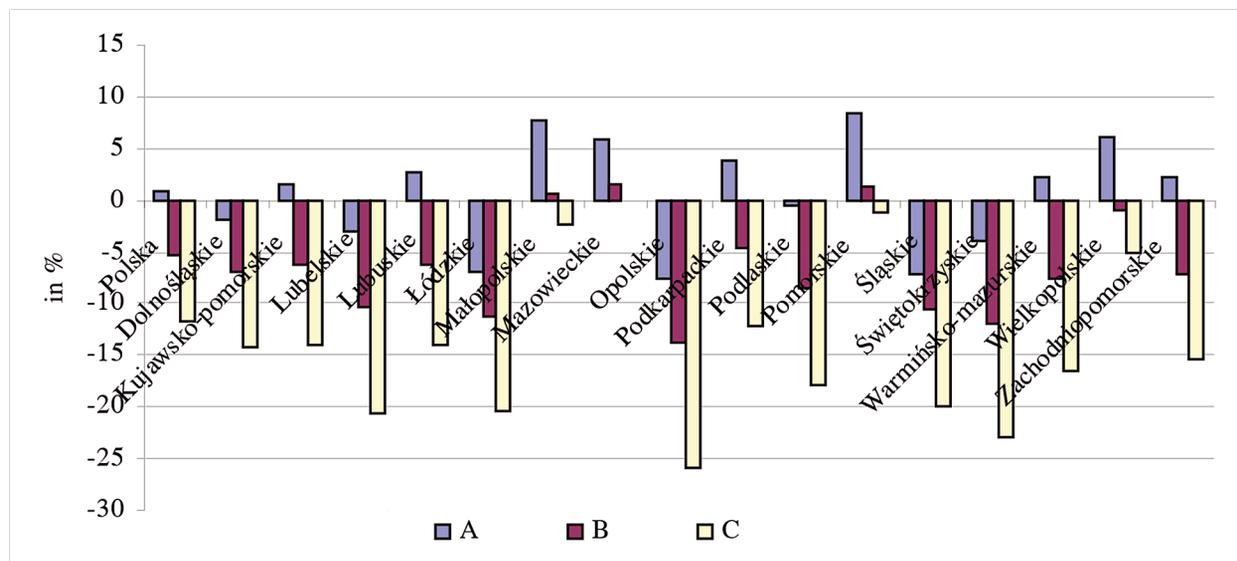


Fig. 1. Population changes in voivodeships in Poland between 1990 and 2050 (in %)

Explanation: A – 1990-2013; B – 2013-2035; C – 2013-2050

Source: Own study

It ought to be mentioned that population decline in Śląskie voivodeship in 2050 compared to 2013 will reach the level of 492 thousand people. This seems as if two big cities, Katowice and Gliwice, disappeared from the area of the voivodeship. Mazowieckie voivodeship in which a slight growth in population (by 0.04%) can be expected will be the only voivodeship that will resist these unfavourable tendencies. It must also be stated that over the period of a few analysed decades the share of population of Śląskie voivodeship in total population of Poland has been, and will still be declining from 12.8% in 1990 to 11.9% in 2013, and 10.8% in 2050.

A regular growth of the rate of population decline will progress at simultaneous strengthening of negative determinants of this phenomenon such as changes in population structure and declining shares of women of reproductive age, decrease in

the number of births as well as natural and migration population loss related to them.

The results of the projection show the perpetuation of the negative population growth throughout the whole period (Fig. 2). What is more, the surplus of deaths over births will be growing and in the decade of 2040 and 2050 it will reach the level of 24 thousand against 6 thousand in 2013. Despite assumed growth in fertility, the values of child-bearing rates will be gradually decreasing throughout the whole period included in the projection. Until 2050 crude birth rate will decrease against 2013 by around 2 per mil points, reaching the level of 7.3 ‰. This gives the decline in birth rate by even 5 per mil points in comparison with 1990.

Natural population loss together with negative balance of total migration will contribute to real loss of population in Śląskie voivodeship in the whole period of projection.

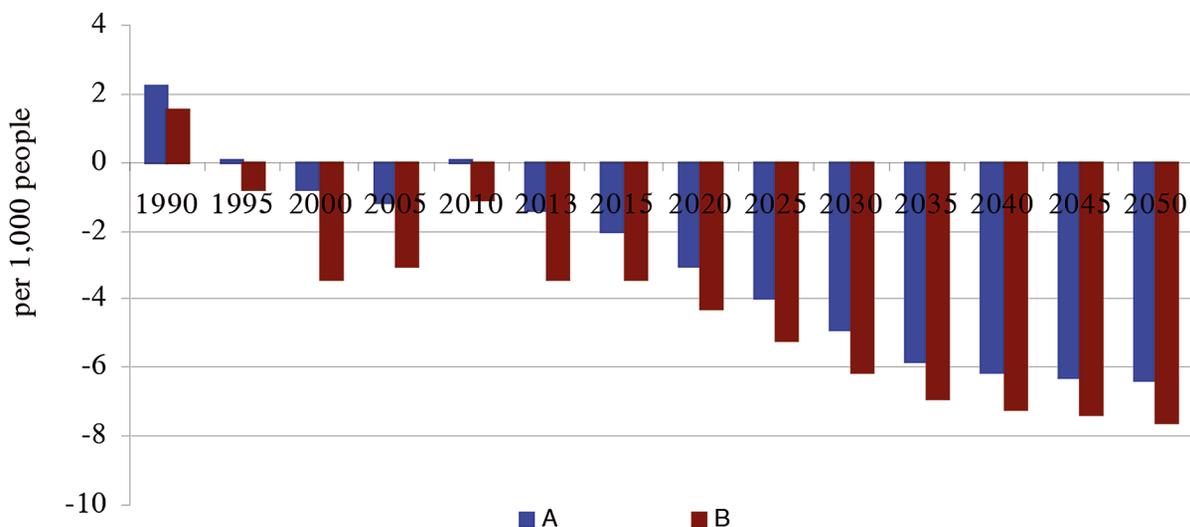


Fig. 2. Natural and real growth in population of Śląskie voivodeship between 1990 and 2013 and projection for 2014 to 2050.

Explanation: A – natural population growth; B – real population growth

Source: Own study

Projected changes in the number of urban and rural subpopulations resulting both from the course of processes of population dying out, size of forecasted births, and the scale of city-village migration will result in the change in the balance between urban and rural populations. The level of urbanisa-

tion measured with the share of urban population in total population will be a continuation of trends observed before. In Śląskie voivodeship further decline in the rate of population in cities is predicted, (in 1990 – 81.0%, 2013 – 74.5%, 2035 – 74.5%, 2050 – 72.6%).

4. Changes in population demographic structures

4.1. Age pyramid

The so-called age pyramid is a graphic image of the condition and structure of population in a particu-

lar area and at the same time the basis and measure of synthetic assessment of these values (Figs. 3 – 5).

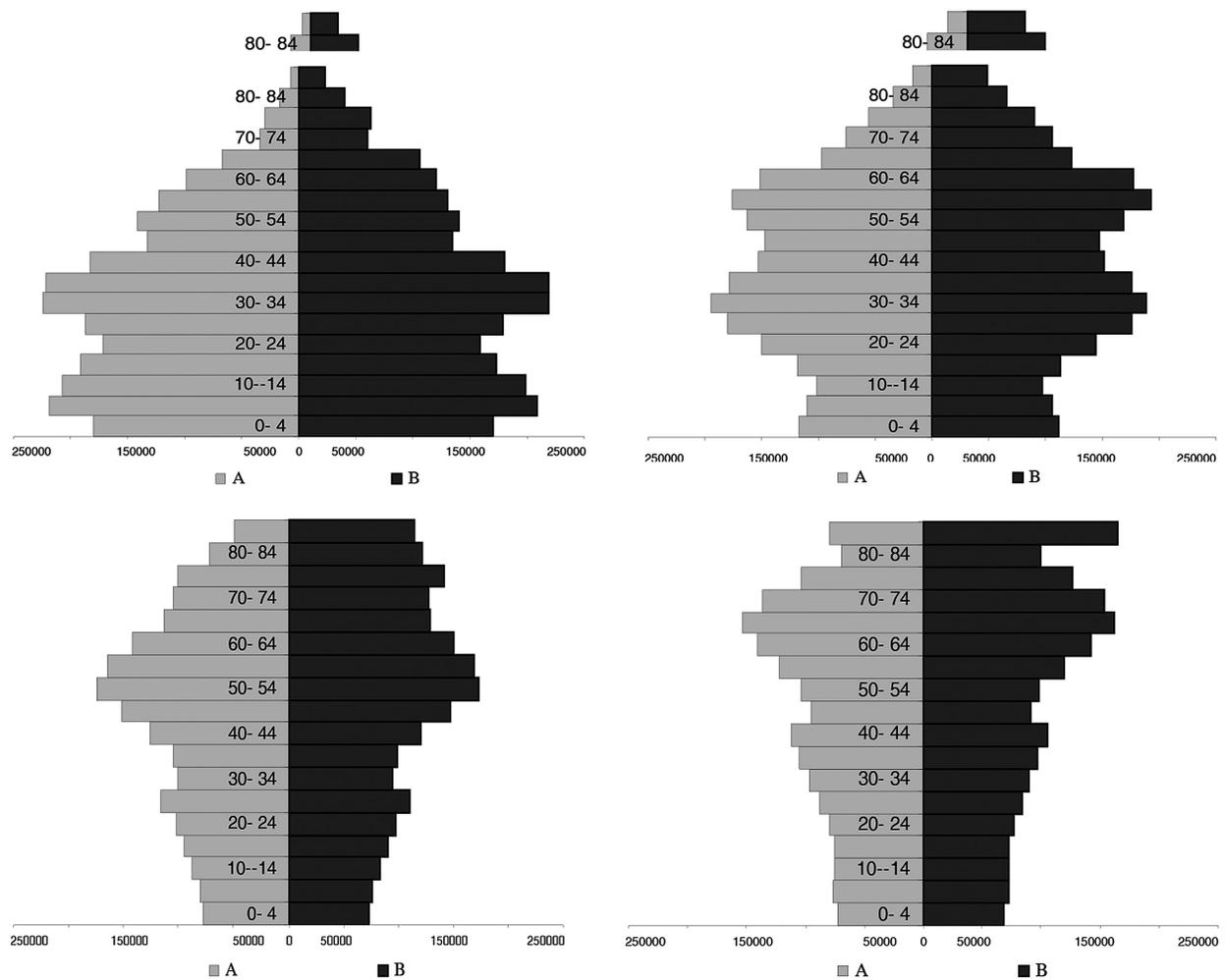


Fig. 3. Population by sex and age in Śląskie voivodeship in 1990, 2013, 2035 and 2050 – in total, as of 31st December.

Explanation: A – men; B – women

Source: Own case study on the basis of data from GUS (Central Statistical Office)

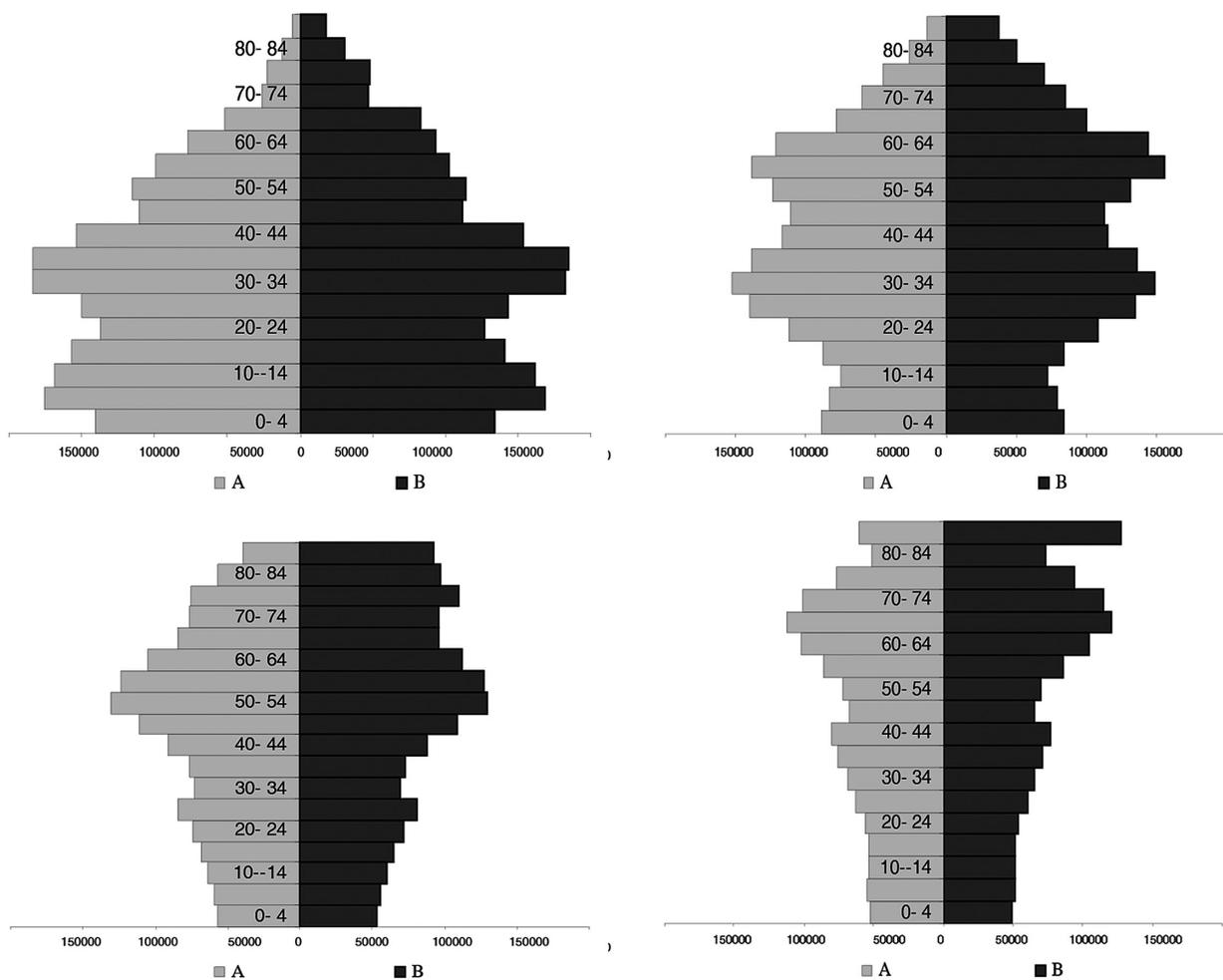


Fig. 4. Population by sex and age in Śląskie voivodeship in 1990, 2013, 2035, 2050 – City, the state as of 31st December
Explanation: A – men; B – women

Source: Own case study on the basis of data from GUS (Central Statistical Office)

In the age pyramid of the population of Śląskie voivodeship, two baby booms are clearly distinguished. The first is the baby boom of post-war period, the representatives of which started to reach the post-working age, and the other one is an echo of post-war boom. These are people born at the end of the 1970s and 1980s. The most evident gap in the pyramid in 1990 concerns the 20-24 age group. The population born during the first post war population decline that occurred between 1966 and 1970. The age pyramid in 2013 has a narrow base that is a result of birth depression in the last decade of the 20th century, although the increase in the number of people in 0-4 and 5-9 age groups can also be observed. This can be explained by postponed births of boom generations of 1976-1984 which contribut-

ed to the increase in the number of children born per woman between 2003 and 2009.

In the pyramid for 2035 regularities discussed before, but moved upwards by 24 years can be observed. In connection with observed decline in the value of the rate of the number of children born per woman between 2010 and 2013, it was assumed in the projection that the reversal of the decreasing trend will not occur immediately and for a few first years of the forecast (contractually assumed until 2017), the value of this rate will be close to the value observed in 2013. At the same time, it is assumed that the reversion to the growing trend of total fertility rate will take place only after 2025, although the growth will gradually be slowed down.

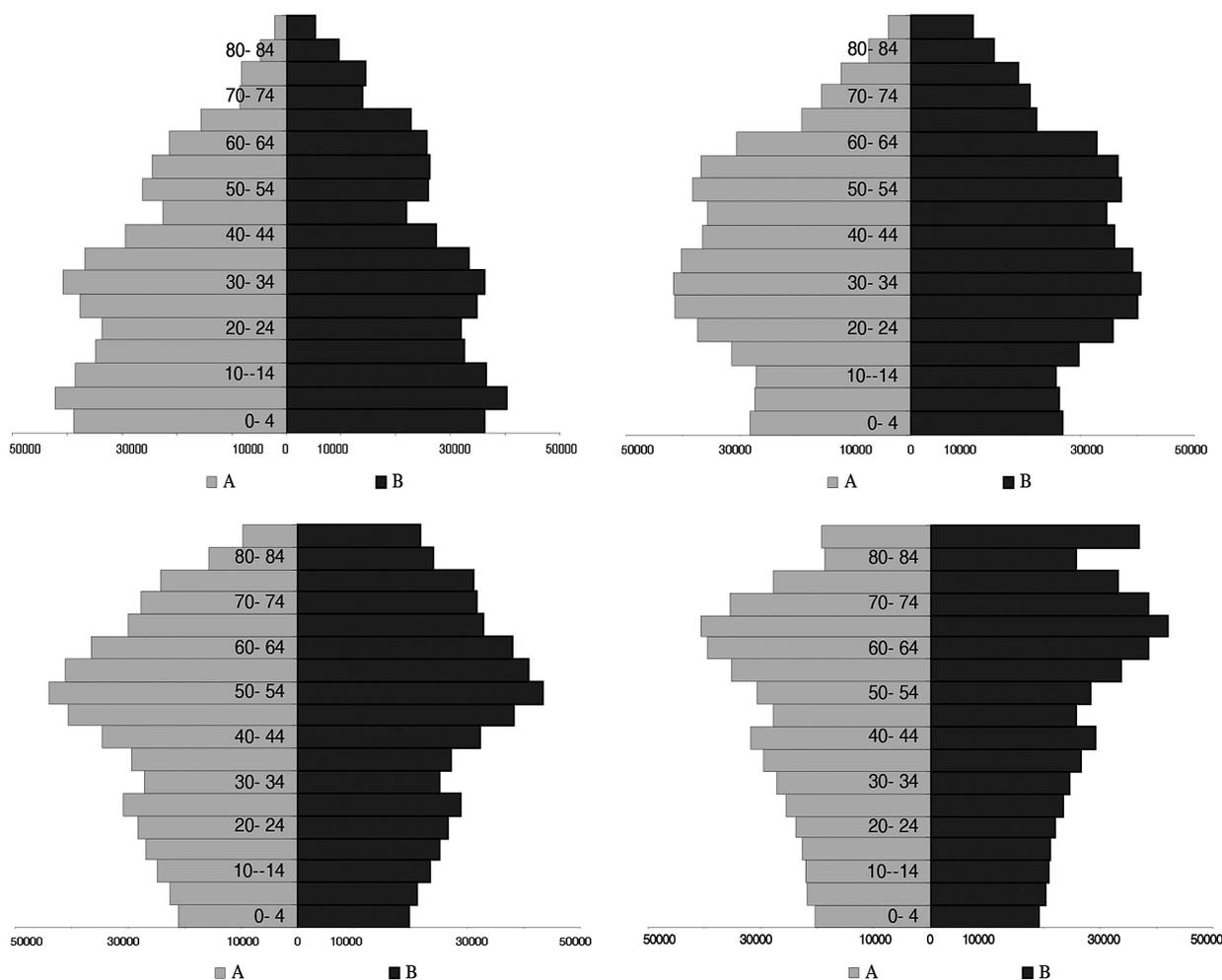


Fig. 5. Population by sex and age in Śląskie voivodeship in 1990, 2013, 2035, 2050 – Village, the state as of 31st December

Explanation: A – men; B – women

Source: Own case study on the basis of data from GUS (Central Statistical Office)

Without any doubts with time the population structure both in cities and in villages of Śląskie voivodeship will be more and more similar to regressive pyramid that is typical of population of definitely higher annual number of deaths than the annual number of births. Such a type of age pyramid is typical of the so-called old societies in which unfavourable relations between the working-age population and pre and post-working age populations occur at high values of average life expectancy. Retaining superiority of the number of deaths over the number of births will strengthen of the phenomenon of depopulation.

Finally, attention ought to be paid to the total population structure by sex, which is measured by the feminisation coefficient. It should be stated that

this structure will not change significantly in the period covered by the projection. Until 2045 there will be 107-108 women per 100 men, which proves disturbed gender balance. In the last five years of the projection horizon, the values of the rate will decrease only by 1%. This slight improvement in number proportions between sexes results from the decline in the feminisation rate in cities, whereas in rural areas this rate will stabilise on the value of around 103.

4.2. Changes in population structure by functional age groups

From the point of view of analysis of the labour market, research into the changes in the structure by

groups of pre-working, working and post-working age referred to as functional groups (3) – Table 2.

Analysis of data in Tab. 2 allows for formulation of the following observations:

- in the period between 1990 and 2050 population in Śląskie voivodeship region will decline by 25.8% (in absolute count by 1276.6 thousand people) whereas in the period included in the projection by 20%. The decline in population will concern two functional age groups: populations of people of pre-working and working age. On the other hand the number of people of post-working age will significantly increase;

a twofold increase in 2050 compared to 1990 and by 29% compared to 2013. For comparison if we assume the levels of working and post-working age applied until 2013 the increase in the number of seniors would be even higher and respective rates of dynamics would reach: 1990-2050 – 345%; 2013-250 – 157%. However regardless of adopted principles of determination of retirement age already in the starting year of projection the post working age population was higher than the number of people aged 0-17 and such a trend will be sustained in the whole period of the projection horizon.

Table 2. Population by functional age groups in Śląskie voivodeship between 1990 and 2050

Years	A	Age			
		B	C	D	E
1990	4 957.2	1 407.2	2 981.8	568.2	1 201.5
1995	4 907.9	1 291.6	2 999.7	616.6	1 238.7
2000	4 758.9	1 086.3	3 007.4	665.2	1 346.6
2005	4 685.8	885.2	3 063.0	737.6	1 528.0
2013	4 599.4	776.4	2 949.9	873.1	1 738.9
2015	4 569.0	765.3	2 909.5	894.2	1 762.0
2020	4 477.7	749.8	2 783.6	944.3	1 797.4
2025	4 369.7	719.0	2 647.7	1 003.1	1 853.9
2030	4 245.2	646.2	2 581.0	1 017.9	1 944.3
2035	4 107.9	597.2	2 508.7	1 002.0	2 034.6
2040	3 964.6	560.8	2 415.0	988.8	2 065.8
2045	3 821.5	539.7	2 237.8	1 044.0	2 040.6
2050	3 680.6	525.4	2 032.1	1 123.1	1 976.0
a	-7.2	-44.8	-1.1	53.7	44.7
b	-10.7	-23.1	-15.0	14.8	17.0
c	-10.4	-12.0	-19.0	12.1	-2.9
d	-20.0	-32.3	-31.1	28.6	13.6

Explanation: a – change 2013-1990 in %; b – change 2035-2013 in %; c – change 2050-2035 in %; d – change 2050-2013 in %;

A – Total population; B – pre-working; C – working; D – post-working; E – 50 years and older (in thousands)

Source: Own study on the basis of the Central Statistical Office (DoA: 26 February 2015)

- the number of people aged 50 and older is constantly increasing. In the period 1990-2013 the number increased by 45% and according to the forecast in 2050 compared with 2013 it is expected to increase by almost a quarter. While in the early years of the 1990s every fourth inhabitant of the voivodeship belonged to the generation 50+; from 2035 it will be every second.
- the share of people at post-working age in the total number of people is also subject to regular changes: from 11.5% in 1990 to 19% in 2013 and over 30% in 2050 (4). These observations as well as a more detailed analysis of changes in the age structure of the population in the years 1990-2013 indicate the progressive population ageing which is clearly more intense for the sub-

population of women. The period between 1990 and 2013 was characterized by strong changes in both the top of the age pyramid as well as at the base. The share of people aged 0-17 was declining faster (on annual average by 2.6%) than was increasing the share of older people (on annual average by 1.6%). The ageing of Silesia population will continue in the future. The increase in the intensity of ageing from 2015 is particularly clear due to the fact that post-war baby boom population will join the group of elderly people. It will be characterized by changes at the base and at the top of the age pyramid and just like in the period between 1990 and 2013 it was considerably higher in the pre-working age group. Changes in the number of people at retirement age are most significantly 'burdened' by fluctuations resulting from the occurrence of periods of high birth rate and then its decline in the second half of the last century.

- the share of post-working age population in the total number of people was growing from 60% in 1990 to 64% in 2013 whereas from 2015 a consistent decline of this share to 55% in 2050 ought to be expected (decline by 9%). According to the working age range operating until 2013 that is 18 – 60/64 in the last year of the projection the share of working age population would be less than half (48%) of total population.
- if we assumed existing limits of working age effective before 1st January 2013 then as it results from data in Tab. 3 unfavourable changes in time in the number of working people and the number of seniors would be significantly higher than those presented in Tab. 2. Considering these assumptions in 2050 there would be over half more post-working age people than in the starting year of the projection and 2.5 times more than in 1990.

Table 3. Changes in population by functional age groups in Śląskie voivodeship between 1990 and 2050 (according to retirement age limits effective until 2013)

Years	A	Age			
		B	C	D	E
Change 2013-1990 in %	-7.2	-44.8	-1.6	56.5	44.7
Change 2035-2013 in %	-10.7	-23.1	-21.7	36.6	17.0
Change 2050-2035 in %	-10.4	-12.0	-23.2	14.7	-2.9
Change 2050 - 2013 in %	-20.0	-32.3	-39.9	56.6	13.6

Explanation: A – total population; B – aged 0-17; C – aged 18-59/64; D – 60+/65+; E – aged 50 and more

Source: Own study on the basis of the Central Statistical Office (DoA: 26 February 2015)

Potential labour force resources essential from the point of view of labour market analyses are defined as the number of working age people (5). In the light of the forecast by GUS (Central Statistical Office) they are to decrease in total in 2050 by over 30% compared to 2013 while the loss will mostly concern the mobile age population (Fig. 6, Table 4). The number of people aged 18-44 will decline from 1790 thousand to 993 thousand that is by even 44.5%. Consequently the structure of la-

bour resources will change which means that after 2030 a larger share of people at non-mobile age ought to be expected. This undoubtedly will be influenced by the increase of the retirement age to 67 years. In 2040 the share of people at non-mobile age may even exceed 55% of labour force resources in total. While applying the old classification (that is aged 45-59/64) there would be fewer people at working non-mobile age than those at mobile age (Fig. 6).

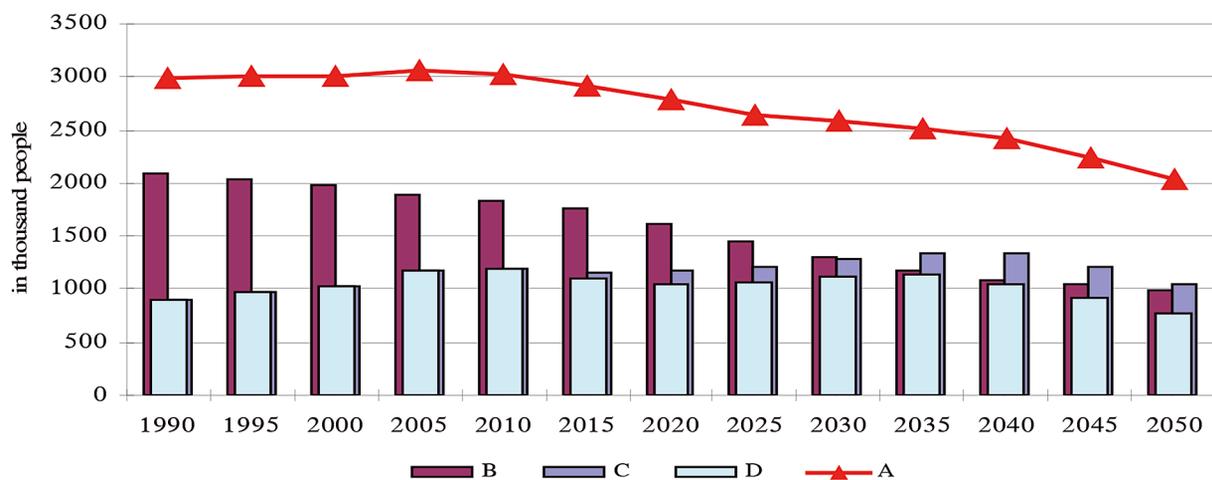


Fig. 6. Potential labour force resources in Śląskie voivodeship between 1990 and 2050 (in thousand people)

Explanation: A – working age; B – mobile age (18-44); C – non-mobile age (45 age – to the level of retirement age) D – non-mobile age – aged 45 – 59/64

Source: Own study

Table 4. Predicted changes in potential labour force resources in Śląskie voivodeship Between 2013 and 2050 (in people)

Years	Increase (loss) in people		
	A	B	C
2013-2015	-40 431	-36 242	-4 189
2016-2020	-102 246	-115 661	13 415
2021-2025	-103 474	-136 080	32 606
2026-2030	-50 835	-122 905	72 070
2031-2035	-57 858	-98 426	40 568
2036-2040	-77 615	-61 457	-16 158
2041-2045	-145 427	-37 524	-107 903
2046-2050	-165 650	-34 390	-131 260

Explanation: A – working age; B – mobile age; C – non-mobile age (aged 45 – to the level of retirement age)

Source: Own calculations on the basis of the Central Statistical Office (DoA: 26 February 2015)

From the analysis of data in Tab. 4 it can be concluded that demographic resources of labour market in Śląskie voivodeship region will be constantly declining while the largest loss of labour force will probably occur in the first and the last decade of the forecast horizon. In the coming years the decrease in labour force resources will be mainly influenced by considerable decrease in mobile age resources which can be explained by birth decline of the 1990s whereas in the final period of projec-

tion a significant fall in the number of people at non-mobile age will be observed.

5. Population ageing

According to UNO (United Nations Organisation) criterion population is considered old if the share of population aged 65 and older is higher than 7%. The rate over 10% represents the stage of advanced old age. The rates of demographic old age, age median and demographic dependency ratio were applied to assess the advancement of population ageing process.

The share of seniors aged 65 and more increased between 1990 and 2013 by 6.4% reaching the level of 15.5% of the total population (Fig.7). In the future acceleration of population ageing process should be expected. In 2050 every third voivodeship inhabitant will be aged 65+. Population ageing has a dual nature which means that within the population of elderly people the number of the oldest people is increasing the fastest. If we separate people aged 80 and more from the group of seniors it occurs that this group will increase truly fast (Fig. 8). As a result in 2050 every 10th inhabitant of the voivodeship will be in the group of people that make the so-called 'fourth age' group.

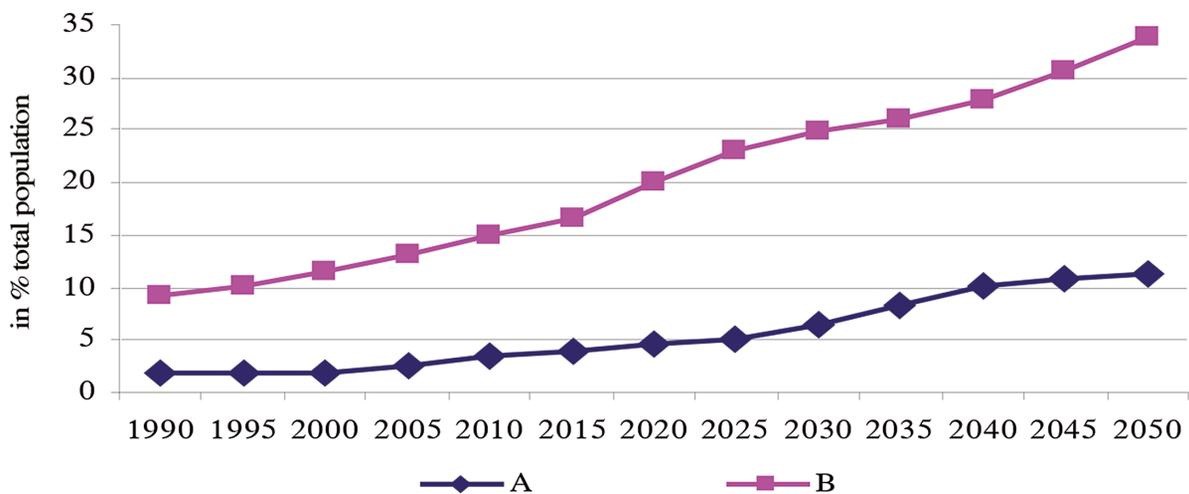


Fig. 7. Demographic dependency ratio in Śląskie voivodeship between 1990 and 2050

Explanation: A – aged 80 and more B – aged 65 and more

Source: Own study

It is predicted that in 2050 middle age will increase to 50.8 for men and to 56 for women which in the scale of the voivodeship means the increase respectively by 12 and 13.4 years when compared to 2013. Half of voivodeship inhabitants will be older than 53.4 in 2050 which according to the old age scale based on the median represents a demographically very old age population (median 35 years and

more). As it is shown by the median values for the whole country the process of ageing will be much faster and we will become one of the oldest populations in Europe (Sojka, 2013: 72).

Analysing expected changes in the process of population ageing changes in the values of demographic dependency ratio that present relations between economic age groups in a summary way ought to be examined (Fig. 8).

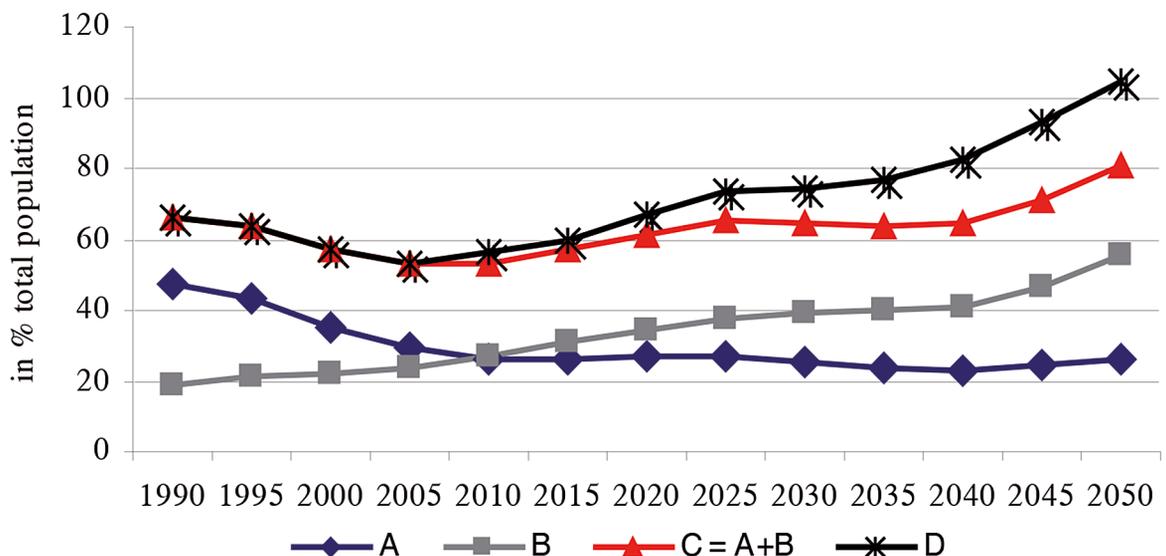


Fig. 8. Demographic dependency ratios in Śląskie voivodeship between 1990 and 2050.

Explanation: A – pre-working population dependency ratio;

B – post-working dependency ratio; C – total demographic dependency ratio D – total dependency ratio calculated by means of traditional age groups

Source: Own study

Between 1990 and 2005 there occurred a decline in the overall total dependency ratio from 66 to 53 for people aged 0-17 and 60/65 per 100 people at working age. This decline was mainly caused by lowering of the value of pre-working age dependency ratio. Urban and rural population had a similar direction of changes while in the case of the latter the decline was significantly higher (from 75 in 1990 to 55 in 2005). Also in this period working age population load with elderly people was higher in villages than in cities. In 2005 there was one person aged 60/65+ per 4 people at working age. Starting from 2010 there occurred an increase in the value of total demographic dependency ratio which over the years will be progressing and will be mainly caused by the increase in the dependency ratio of post-working people. From 2020 there will be at least 60 people at non-working age per 100 people at working age and in the last decade of the projection horizon the value of total demographic dependency ratio will be higher than 70. It ought to be stated that the change in the number of people at working and post-working age resulting from change in retirement regulations significantly influence the value of presented ratios. With former regulations the retirement dependency ratio in 2050 would reach 79 people per 100 working people and the total demographic dependency rate would exceed 100.

In fact actual elderly dependency will be even larger because the group of people at working age also includes those who cannot work due to other reasons. There are not only economic changes behind the process of ageing but also challenges of health and social nature (change in consumption structure increase in demand on services in the sphere of health protection and social welfare growth in expenditures on maintenance of increasing post-working age group). This will force implementation of a lot of activities by the state in the sphere of adjustment of infrastructure and financial expenses to various areas of social and economic life.

The process of ageing also includes the population of potential mothers which has a remarkable influence on shaping the future births because they depend not only on fertility but also on the number of women at reproductive age and the age structure of this group. Until 2035 the rate of women

aged 30-34 and 35-39 will dramatically fall (from 33.3% to 25.6%) and at the same time the share of the oldest women aged 40-49 will increase (from 27.3% to 35.1%) (Fig. 9). In successive years we will observe a reverse tendency – growth in the share of women aged 25-34 that intensively give birth to children and the fall of the rate of the oldest women even though the mean childbearing age will grow. In 2050 almost a third of women will be 40-49 years old and this rate will be by 4 % higher than the rate of women aged 25-34.

In absolute numbers the population of women of reproductive age will be falling in projected period – from 1096 thousand in 2013 to 759 thousand in 2035 and 615 thousand in 2050 which represents the decrease by 44% for the whole projection period. In 1990 the group of potential mothers constituted a half of female population after 24 years the rate declined by almost 4% and after the next 23 years in 2035 as it is predicted it will decline to 36%. As it is concluded from the research in 2050 only every third woman in Śląskie voivodeship will be at reproductive age.

6. Changes in the number of people by educational age groups

Unfavourable changes in the number of potential mothers and their structures of population by age described before will be the reason for a regular fall in the number of births in Śląskie voivodeship in the nearest forty years. This undoubtedly will find its reflection in the decline in the number of children and young people and in the structure of this subpopulation by educational age groups. These age groups need special care from the state and society and include the so-called pre-school age and kindergarten age children (aged 0-6) children of primary school age (aged 7-12) junior high school children (aged 13-15) and secondary school children (aged 16-18) as well as people at university education age (aged 19-24).

The number of children at nursery school and kindergarten age determines the size of specific needs and tasks for institutions of health protection resulting from this fact. This concerns the services in the sphere of paediatrics efforts aiming at

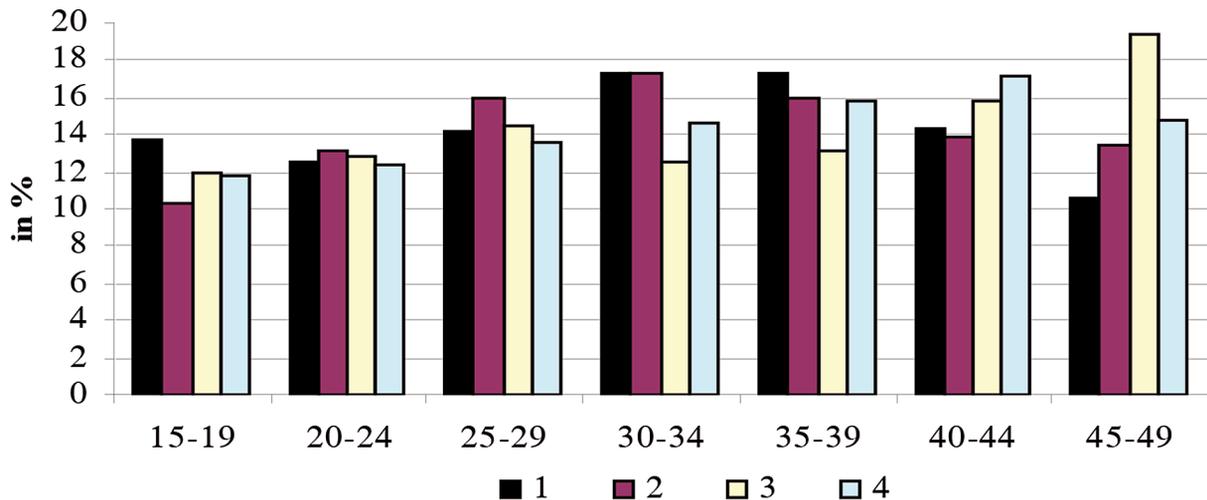


Fig. 9. Structure of women at reproductive age in Śląskie voivodeship in 1990 , 2013, 2035, 2050

Explanation: 1 – 1990; 2 – 2013; 3 – 2035; 4 – 2050

Source: Own study

further reduction of infant mortality places in pre-school institutions and kindergartens for children of women professionally occupied as well as also those on maternity and childcare leaves.

In the whole period of the forecast horizon the number of children aged 0-6 will be constantly falling and in 2050 it will account for 63% of the size of the starting year of the projection while the largest loss in absolute numbers ought to be expected until 2030 in the case of the youngest age group and until 2035 in the case of 3-6 age group. Definitely a lower number of children aged 3 – 6 in the future will offer the possibility of providing kindergarten education to a significantly higher rate of children at that age than before.

Between 2013 to 2050 the population of people of potential learning age that is aged 3-24 will decline by 37% while the largest loss (by 46%) will occur in the age group 19-24 the age when university education takes place (Fig. 10). However as it results from data in 2030 compared to 2025 the in-

crease in the number of potential university candidates by over 33 thousand people can be expected.

Projected changes in the number of people in particular age groups will make the structure of population aged 0-24 similar in extreme years of the projection horizon but it will be different in such a way that in 2050 the share of people aged 7-12 when education on primary level takes place will be higher and the rate of potential university candidates will fall. The declining number of children and young people bring specific consequences for educational policy and other spheres of social and educational life. After graduating from the secondary school and university the less numerous population will start working which means that they will largely shape the situation in the labour market of Śląskie voivodeship particularly in the sphere of highly-qualified workers. The facts presented above ought to be taken into consideration in prospective population policy particularly in family and migration policy.

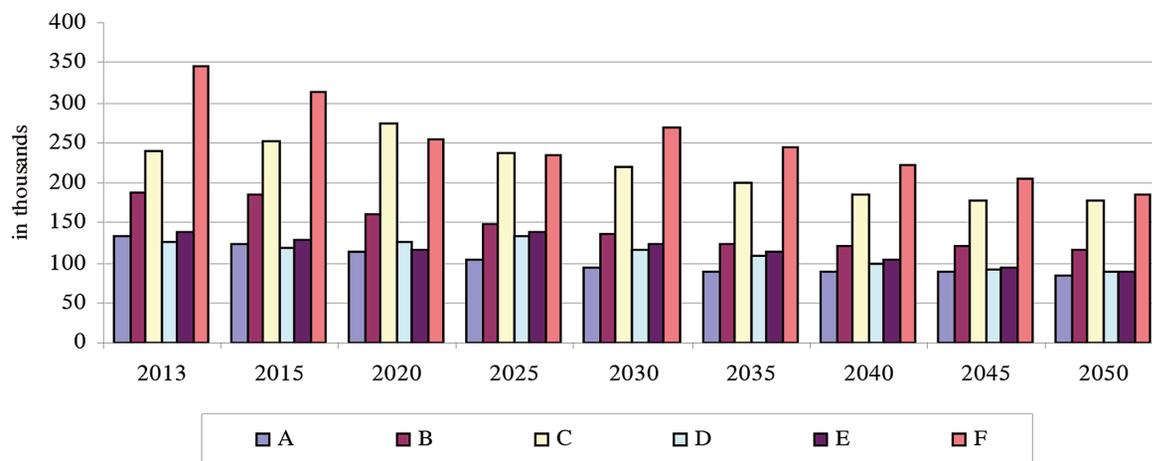


Fig. 10. Population by educational age groups in Śląskie voivodeship in 2013, 2035, 2050 A – 0-2; B – 3-6; C – 7-12; D – 13-15; E – 16-18; F – 19-24

Explanation: A – 2013; B – 2035; C – 2050; D – change 2013 – 2050 (in %)

Source: Own study

7. Final conclusions

Performed analyses allow for the formulation of a few fundamental conclusions. Demographic changes in Śląskie voivodeship after 1989 just like in the whole country were characterised by a rapid decline in demographic dynamics which resulted mainly from the fall in the number of births. This reflects a fast decrease in women's fertility and the number of children born per woman. At the same time a significant improvement in mortality rate characteristics was observed which caused a clear extension of lifespan. These changes influenced the population structure by age and as a result relations between the three economic groups. The share of people at pre-working age fell and the share of elderly people in total number of people increased. This caused an increase in the process of population ageing.

Considering the background of other voivodeships in Poland Śląskie was in the second position in absolute numbers between 1990 and 2013 (after Opole voivodeship) with respect to the largest population loss – the fall by 7.2%. In the perspective of several decades the process of decrease in the number of people will accelerate. The decline in the population of Śląskie voivodeship in 2050 compared to 2013 will be on the level of 492 000 people. This

is as if two big cities of Katowice and Gliwice disappeared from the voivodeship. Mazowieckie voivodeship where we can expect a slight population increase will be the only voivodeship which will resist unfavourable trends.

Declining number of people falling number of people at working age and growing number of those at post-working age reduce human potential. The decline in the number of people is not as alarming as the proportions between generations. An increasingly smaller number of children and young people at an increasingly larger number of elderly people is consequently bringing and will be bringing burden on working people to provide for the needs of the ageing population.

While focussing on the issue of shrinking labour resources it seems obvious that occupational activity of elderly people which not only supports incomes and limits expenditures from the state budget but also offers the possibility to provide current incomes to households and raising the amount of future pension is the solution.

The consequences of changes in demographic structures and the process of ageing of Śląskie voivodeship population in the context of labour market should include a decrease in the shares of people at post-working age which will result in a decline of potential labour resources. Apart from economic consequences observed in labour mar-

ket and having repercussions in the functioning of the system of social benefits consequences of health medical and family nature also need to be expected. And so as a result of the increase in the rate of people aged 80 and more we can expect that in the near future the number of aged people with various disabilities will grow. It is and it will be necessary in the future to provide everyday support in functioning of the people from the so-called fourth age group who form one-person households. Expectation of help can be addressed by elderly people of various levels of disability both at family members and also at various institutions organising extra-family assistance.

Demographic changes constitute and will pose in the next years an important challenge not only to Śląskie voivodeship but also to Poland and the whole European Union (Sojka, 2013; Sojka, Balcerowicz-Szkutnik, Szkutnik, 2014). Depopulation and ageing of inhabitants of the EU member states are becoming major development challenges which influence the current and future growth of these areas (Sojka, 2014: 223; Kowaleski, Gajdzińska, 2012: 57).

Notes

(1) Population by sex age and voivodeships as of 31st December 2013 was the basis for calculations. The forecast was developed separately for individual voivodeships and the results were summed up for the whole country. The increase in the value of fertility rate according to trends observed between 2003 and 2009 was assumed and on the level of Śląskie voivodeship these values are to increase from 1.22 to 1.51 in cities and to 1.53 in villages. The increase in mean life expectancy from 72.4 to 81.8 with reference to men and from 80.1 to 86.9 for women is assumed. The forecast of internal migrations of Śląskie voivodeship takes into consideration the current distribution of the influx and outflow of people. Finally the forecast assumes migration loss in cities and the migration growth in villages. In the case of permanent foreign migrations negative migration balance declining over the time is assumed. Compare Population Projection for 2014–2050 in [file:///C:/Users/Ela/Downloads/prognoza_ludnosci_na_lata_2014_2050%20\(2\).pdf](file:///C:/Users/Ela/Downloads/prognoza_ludnosci_na_lata_2014_2050%20(2).pdf) (DoA: 26.02.2015).

- (2) More information about population changes in Polish cities in the perspective until 2050 can be found in the paper (Szukalski 2014).
- (3) For the period 1990–2010 the following traditional age ranges are adopted: 0-17 – pre-working age 18-59/64 – working age 60+/65+ post-working age. For the years 2013-2050 the following age ranges are adopted: pre-working age 0-17 working age – from 18 to the range of retirement age; post-working age – over the range of retirement age. From 1st January 2013 under the Act on amended Act on pension and disability insurance from Fundusz Ubezpieczeń Społecznych (*Social Insurance Fund*) and some other laws (DZ. U. 2012 poz. 637 (*Official Journal of Law 2012 section 637*) implementing a gradual increase in retirement age to 67 years of age the target retirement age will be reached in 2040 for women and it will be effective already for men from 2020. Compare <http://stat.gov.pl/obszary-tematyczne/ludnosc/prognoza-ludnosci/prognoza-ludnosci-na-lata-2014-2050-opracowana-2014-r-.1.5.html> (DoA: 26.02.2015).
- (4) Adopting existing ranges of working and post-working age effective until 2013 respective structure rates were observed on the following levels: 1990 – 11.5% 2013 – 19.3%; 2050 – 37.8%.
- (5) For the years 2013–2050 within working age ranges mobile age that is 18-44 years and non-mobile age from 45 years to the limit of retirement age are distinguished. For the period of 1990–2010 traditional ranges of non-mobile age that is 45-59/64 were adopted.

References

- Główny Urząd Statystyczny (GUS 2001) (*Central Statistical Office*): Województwa w latach 1995-1999. Wybrane dane (Voivodeships between 1995 and 1999. Selected data) Warszawa.
- Kowaleski J.T. and Gajdzińska A., 2012: Starzenie się populacji krajów Unii Europejskiej – nieodległa prze-

- szłość i prognoza (Ageing of Populations of European Union Member States – recent past and projection). In: *Studia Demograficzne* No 1(161) p. 57.
- Prognoza ludności na lata 2010-2050 (Population projection for 2010 – 2050) <http://stat.gov.pl/obszary-tematyczne/ludnosc/prognoza-ludnosci/prognoza-ludnosci-na-lata-2014-2050-opracowana-2014-r-15.html> DoA: 26.02.2015.
- Sojka, E.**, 2013: Sex-Age Structure of the Population in the European Union and Economic Growth. In: Rodionowa I.A. editor *Rynek truda i zaniatost naseleeniya w naczale XXI w.: Evropa Polska Rosija Moskwa* Rosyjskij Universitet Družby Narodow pp. 72-86.
- Sojka, E.**, 2014: Analiza porównawcza powiatowych rynków pracy województwa śląskiego (Comparative analysis of poviat labour markets in Śląskie voivodeship – in Polish). In: Szkutnik W. editor *Zarządzanie ryzykiem kapitałowym i ubezpieczeniowym oraz społecznymi uwarunkowaniami ryzyka rynku pracy* *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach* No. 181 Katowice pp. 101-113.
- Sojka E., Balcerowicz-Szkutnik, M., and Szkutnik, W.**, 2014: Spatial Diversity of Population Potential in the Countries of Central and Eastern Europe – Tendencies in Changes and an Attempt at Classification. In: Bykow H. and Dirin D. editors *Transformacja socjalno-ekonomiczskowo prostranstwa w Evrazji w postsowietskoje wriemja*, Vol. 1 Barnaul Ałtajskij Gosudarstvennyj Universitet pp. 222-234.
- Szukalski, P.**, 2014: Przyszłość miast wojewódzkich w świetle prognozy GUS z 2014 r. (The future of voivodeship cities in the light of forecast of GUS from 2014) *Biuletyn Informacyjny - Demografia i Gerontologia Społeczna* No 11 pp 1-4 <http://repozytorium.uni.lodz.pl:8080/xmlui/bitstream/handle/11089/6008/2014-11%20Przysz%C5%82o%C5%9Bc%20miast%20wojew-%C3%B3dzkich.pdf?sequence=1&isAllowed=y> DoA: 15.03.2015.