

## MINING MUNICIPALITIES AND DISTRICTS IN A PHASE OF DEMOGRAPHIC CHANGE IN AN EQUITABLE PERSPECTIVE OF TRANSFORMATION

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**Purpose:** the main purpose of this article is to stimulate discussion on the following thesis presented in the article. Anticipating the process of just transition without taking into account demographic changes will incompletely reveal the social and economic effects caused by it.

**Design/methodology/approach:** the research used the method of descriptive and comparative statistics, as well as literature review, critical analysis of literature, document research and comparative analysis.

**Findings:** on the basis of the analyses and research carried out in this article, it can be concluded that in the examined areas of mining municipalities – in the part relating to the stream of labour supply – a dynamic process of ageing of labour resources is clearly noticeable. On the basis of the above conclusion, it seems that the need to subordinate the policies implemented in the city to the indicated process is justified.

**Originality/value:** the entirety of the outlined changes, processes and forecasts indicates that in order to reduce the stratification in the examined areas, which is the main source of structural mismatches, it is necessary to undertake actions aimed at building future-oriented municipal policies – especially with regard to old age. Failure to take such measures in the perspective of social and economic transformation may delay preparation for the seemingly inevitable changes in the age structure of the population living in the studied areas of mining municipalities.

**Keywords:** man, work, economy.

**Category of the paper:** research paper.

### 1. Introduction

As Ewa Frątczak observes, the political and social transformation in the countries of Central and Eastern Europe, including Poland, transformed the region into a kind of "demographic laboratory" in which population processes undergo significant, possibly irreversible changes of a new quality and dimension (Frątczak, 2008, pp. 77-150). In this light, it is reasonable to claim

that further transformation processes – including those related to the domestic mining sector – will determine, among others in the area of the Silesian Voivodeship, significant transformations of labour markets and the related – significantly emphasized in the just transition process – the quality of life. As it is noted in the just transformation process, special attention will be paid to the availability of health care, participation in culture, public transport, schools and universities with attractive educational offer, flats for rent, senior citizen services, sports facilities and recreational areas (What is just..., 2020). It seems, therefore, that anticipating the fair transformation process without taking into account demographic changes will incompletely reveal the social and economic effects caused in the transformed areas. Especially that Poland has entered a period of another demographic crisis (GUS on the situation..., 2020).

As a result of the ongoing changes and long-term forecasts, according to experts' assessments, demographic changes will have a significant impact on the future shape of relations between the economically active and inactive populations. On the background of this thesis it is worth noting that the dynamically growing population of seniors constitutes the least active social group in Poland. The prevalence of negative consequences of the ageing process makes it necessary to search for effective ways of mitigating them. Taking into account the growing potential of this group of consumers and the increase in their number, it seems reasonable that for this population: social policy should be addressed which would favour their activity:

- create differentiated products taking into account heterogeneous preferences,
- organise activity on the basis of global trends and changes in the process of demographic modernisation towards individualisation, self-realisation and human independence,
- properly prepare personnel that would make it possible to break down barriers to the participation of seniors in social and economic life (Januszewska ,2017, pp. 257-264).

In the coming decades, demographic trends will determine the shape of the economic model of the world and individual economies. Ageing populations, the still significant (though decreasing) number of "young" societies and countries; migration and spontaneous urbanisation force appropriate adjustments to economic policies. Countries with ageing societies – in the perspective of the next few decades – are determined to make efforts to maintain the living standards of their citizens, develop new types of services, as well as ensure the continuity of social security systems and sustainability of public finances. Limited supply of economically active people and changes in demand for workers (skilled and unskilled) may result in increased global migration. Urbanisation, while creating incentives for economic development, will at the same time increase pressure on food and water resources and, if uncontrolled, may cause excessive economic and social costs (Strategy..., 2017, p. 20). In conclusion, demographic change is an important challenge for numerous public policies, such as family, health care, labour market, social security, education and active leisure. The challenges identified and the areas of their impact are part of a broader spectrum of reflection that should focus on a holistic

approach to active policies, which are a key determinant of human capital – in which, as forecasts indicate, by 2050 people aged over sixty-five may constitute 20% of the total population of Europe. Irrespective of the social changes brought about by the transformations described above, demographic change will put enormous pressure on the pension and social security systems of the EU countries. If these processes are disregarded – as numerous studies indicate – the EU is threatened with a reduction of potential employment growth rates to an extremely low level of around 1% per annum (Krysiak, 2007, p. 82). This prognosis clearly shapes the need to develop scenarios of demographic developments. This statement is determined, *inter alia*, by the fact that societies of developed countries are entering a phase in which the ratio of economically active to inactive people is shifting towards the latter group. On the basis of these determinants the demographic situation of Poland – including mining municipalities – definitely places it also in the area of dynamically ageing societies.

In light of the principles, regularities and trends outlined above – quoting K. Zamorska (Zamorska, 2014, pp. 19-33) – it is impossible to ignore the causal relationship between work, pay and family maintenance. Ignoring this calls into question the traditional values of social policy, which become mere empty platitudes. A new social context has emerged, in which, under the influence of information technology, the problems of rationalising the sphere of work are translated into new and increasingly complex social conflicts and contradictions. This is a new kind of conflict between the sponsors of social benefits and their recipients (Sloterdijk). On the one hand, the nature of work itself is changing, while on the other, thinking remains with the understanding of work that was generated during the period of large-scale industrial social development. A challenge to the social policies shaped in the 19th century and developed in the 20th century are the processes of globalisation, which ignore social problems. Economic globalisation has overtaken political and social globalisation. The latter have remained at the level of national social policies.

In line with the assumptions adopted in the research, the analyses of demographic conditions in this chapter focus on selected 28 mining municipalities from the Dolnośląskie, Lubelskie, Śląskie and Małopolskie voivodeships (Table 1)<sup>1</sup>. The analyses made use of statistical data from three sources: the statistical portal Poland in Figures, the Central Statistical Office in Warsaw and the European Statistical Office EUROSTAT. Descriptive and comparative statistical methods as well as literature review, critical analysis of literature, document studies and comparative analyses were applied in the study.

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<sup>1</sup> The article is the result of a research work entitled Mining communes and counties in Poland in the perspective of a just transformation commissioned by the Central Mining Institute by the Association of Mining Communities in Poland. More: R. Marszowski, Mining communes and counties in Poland in the perspective of just transformation, Katowice 2020.

**Table 1.**

*Breakdown of the analytical area by administrative units based on EUROSTAT and Central Statistical Office statistics and NUTS<sup>2</sup>*

Lp.	Administrative unit	Administrative division	Analytical area	Area Powiat
1	Babice	gmina wiejska	Babice	chrzanowski
2	Bestwina	gmina wiejska	Bestwina	bielski
3	Bieruń	gmina miejska	Bieruń	bieruńsko-lendziński
4	Chełm Śląski	gmina wiejska	Chełm Śląski	bieruńsko-lendziński
5	Cyców <sup>3</sup>	gmina wiejska	Gmina Cyców	łęczyński
6	Czerwionka-Leszczyny	gmina miejska	Czerwionka-Leszczyny	rybnicki
7	Gierałtowiec	gmina wiejska	Gierałtowiec	Gliwicki
8	Grębocice	gmina wiejska	Grębocice	Polkowicki
9	Jastrzębie-Zdrój	gmina miejska	Jastrzębie-Zdrój	Jastrzębie-Zdrój
10	Knurów	gmina miejska	Knurów	Gliwicki
11	Lędziny	gmina miejska	Lędziny	bieruńsko-lendziński
12	Libiąż	gmina miejska	Libiąż	Chrzanowski
13	Ludwin	gmina wiejska	Ludwin	Łęczyński
14	Marklowice	gmina wiejska	Marklowice	Wodzisławski
15	Miedźna	gmina wiejska	Miedźna	Pszczynski
16	Mszana	gmina wiejska	Mszana	Wodzisławski
17	Pawłowice	gmina wiejska	Pawłowice	Pszczynski
18	Pilchowice	gmina wiejska	Pilchowice	Gliwicki
19	Polkowice	gmina miejska	Polkowice	Polkowicki
20	Pszów	gmina miejska	Pszów	Wodzisławski
21	Puchaczów	gmina wiejska	Puchaczów	Łęczyński
22	Radlin	gmina miejska	Radlin	Wodzisławski
23	Rybnik	gmina miejska	Rybnik	Rybnik
24	Rydułtowy	gmina miejska	Rydułtowy	Wodzisławski
25	Siemianowice Śląskie	gmina miejska	Siemianowice Śląskie	Siemianowice Śląskie
26	Suszec	gmina wiejska	Suszec	Pszczynski
27	Świerklany	gmina wiejska	Świerklany	Rybnicki
28	Żory	gmina miejska	Żory	Żory

Source: Poland in numbers 2019, Local Data Bank, Central Statistical Office, Statistical Office of the European Union EUROSTAT.

On the basis of the above theses and megatrends in the analyses and research presented in the article, the author focused – in accordance with the guidelines for research with the above-mentioned title "Mining municipalities and districts in Poland in the perspective of "Just transformation" – on the following key variables:

1. Total population.
2. The feminization coefficient.
3. Population by biological age groups.
4. Population by economic age groups.

<sup>2</sup> In the NUTS classification (Classification of Territorial Units for Statistics) three levels are distinguished: the first one – covering 6 regions grouping voivodships, the second one – 16 voivodships and the third one – 72 subregions grouping poviats. These three levels also correspond to the three regional levels in the national NTS nomenclature (Nomenclature of Territorial Units for Statistics). The NTS classification also includes two local levels: the fourth – counties and the fifth – municipalities. More information on the territorial units classifications applied by the CSO is available at: [www.stat.gov.pl/statystyka-regionalna/jednostkiterytorialne/](http://www.stat.gov.pl/statystyka-regionalna/jednostkiterytorialne/).

<sup>3</sup> The availability of demographic data is very limited for statistical towns – including the village of Cycowa. There are many more indicators available at the commune level, e.g. age and marital status of inhabitants, number of marriages and divorces, birth rate, population migration and forecast population. Hence, the analyzes in the case of the village of Cyców are carried out at the commune level.

5. Median age.
6. Live births.
7. Total deaths.
8. Natural increase.
9. Migration balance.
10. Net migration ratio.
11. Demographic dependency ratio.
12. Demographic dynamics coefficient.
13. Generation replacement rate (fertility rate).
14. Gross reproduction rate.

## **2. Implementation of research – discussion**

Taking into account the division of the analytical area according to administrative units on the basis of EUROSTAT and Central Statistical Office statistics, analyses, studies and forecasts for the SGGP were carried out in the area of 28 municipalities presented in the first table. In the years 2009-2019 the population living in the studied municipalities followed two trends: a) systematically decreased and b) remained unchanged. Examples of decreasing population are e.g. Siemianowice Śląskie and Jastrzębie-Zdrój (Table 2).

The feminisation coefficient in all the municipalities under study was very seriously skewed. In the municipalities under study, it ranged from 102 (Bieruń) to 110 women (Siemianowice Śląskie) per 100 men in the period under study – year 2019. This resulted in a very low masculinisation rate of between 90 and 98 men per 100 women. It is worth noting that the divergence of the feminisation coefficient in most mining municipalities has been persistent since 2009 (Table 3).

**Table 2.***Basic demographic characteristics of mining municipalities in 2009-2019 – year 2009 = 100%*

Years	Municipalitie																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	Total population																											
2009	8915	10812	19 534	5859	7605	28199	10 795	5309	92988	39207	16282	17391	5087	5190	15670	7157	17894	10590	22216	14045	5086	17739	141372	21897	70712	11356	11475	62022
2019	9097	11909	19 507	6358	7912	28134	12 183	5402	88743	38112	16798	17003	5641	5405	16590	7690	18172	12013	22486	13844	5693	17759	138098	21514	66841	12347	12486	62472
%	102,04	110,15	99,86	108,52	104,04	99,77	112,86	101,01	95,43	97,21	103,17	97,77	110,9	104,14	105,87	107,45	101,81	113,44	101,22	98,57	111,93	100,11	97,68	98,25	94,53	109,69	108,81	100,73
	Live births																											
2009	105	–	233	62	97	332	97	69	984	455	194	173	60	42	204	91	231	108	268	160	58	215	1643	244	731	161	112	767
2019	76	53	171	65	92	308	123	47	706	324	179	145	79	58	221	89	188	112	222	112	61	164	1260	219	594	145	131	567
%	72,38	–	73,39	104,84	94,85	92,77	126,80	68,11	71,75	71,21	92,27	83,82	131,67	138,10	108,33	97,80	81,39	103,70	82,84	70,0	105,17	76,28	76,69	89,75	81,26	90,06	116,96	73,92
	Total deaths																											
2009	84	–	149	50	90	276	131	59	727	375	132	151	54	46	84	66	117	111	145	142	66	164	1218	238	908	61	94	409
2019	100	99	173	54	70	336	109	55	920	360	166	180	53	67	122	70	152	101	185	164	56	188	1485	213	835	112	105	520
%	119,05	–	116,11	108	77,78	121,74	83,21	93,22	126,5	96,0	123,48	119,21	98,15	145,65	145,24	106,06	101,81	90,99	127,6	115,49	84,85	114,63	121,92	89,50	91,96	183,61	111,70	127,14
	Natural increase																											
2009	21	25	–	–	–	–	–	–	256	80	–	–	6	–	120	25	114	-3	123	18	-8	–	425	–	-177	100	18	358
2019	-24	10	-2	11	22	-28	14	-8	-214	-36	-1	-35	26	-9	99	19	36	11	37	-52	5	-24	-225	6	-241	33	12	47
%	-114,3	250,0	–	–	–	–	–	–	-124,3	-222,2	–	–	433,33	–	12,2	76,0	316,6	366,7	332,4	-288,9	160,0	–	-188,9	–	136,16	303,0	144,44	761,7
	Migration balance																											
2009	17	111	-78	49	-11	-64	72	-8	-724	-224	-8	-81	24	-12	-79	58	-55	120	-154	-11	59	-36	-183	-4	-235	111	83	-431
2019	-15	65	-98	45	-34	-174	123	36	-295	-157	-46	-66	27	10	-28	-3	-61	162	-77	-74	12	1	-452	-80	-62	45	31	-49
%	-88,24	58,56	125,64	91,84	309,09	271,86	170,83	450,0	-40,74	64,34	575	83,95	112,50	-83,33	35,44	-5,17	110,91	135,0	50,0	672,73	20,34	-2,78	246,99	2000,0	26,38	40,54	37,35	11,37
	Net migrationrate																											
2009	1,9	10,3	-4	8,4	-1,5	-2,3	6,7	-1,5	-7,7	-6,2	-0,5	-4,7	4,8	-2,3	-5,1	8,2	-3,1	11,4	-7	-0,8	11,6	-2,0	-1,3	-0,2	-3,3	9,9	7,3	-7,0
2019	-1,6	5,5	-5	7,1	-4,3	-6,2	10,2	6,7	-3,3	-4,1	-2,7	-4,0	4,8	1,9	-1,7	-0,4	-3,4	13,6	-3,4	-5,3	2,1	0,1	-3,3	-3,7	-0,9	3,6	2,5	-0,8
%	-0,84	0,53	1,25	0,85	2,87	2,70	1,52	-4,47	0,43	0,66	5,40	0,85	1,00	-0,83	0,33	-0,05	1,10	1,19	0,49	6,63	0,18	-0,05	2,54	18,50	0,27	0,36	0,34	0,11

Legend: 1. Babice, 2. Bestwina, 3. Bieruń, 4. Chełm Śląski, 5. Cyców, 6. Czerwionka-Leszczyny, 7. Gierałtowiec, 8. Grębocice, 9. Jastrzębie-Zdrój, 10. Knurów, 11. Łędziny, 12. Libiąż, 13. Ludwin, 14. Markłowice, 15. Miedźna, 16. Mszana, 17. Pawłowice, 18. Pilchowice, 19. Polkowice, 20. Pszów, 21. Puchaczów, 22. Radlin, 23. Rybnik, 24. Rydułtowy, 25. Siemianowice Śląskie, 26. Suszec, 27. Świerklany, 28. Żory.

'-' indicates that the information is missing because of: a change in the presentation level, changes made to the list of territorial units or modifications.

Source: Local Data Bank of CSO. Data aggregated in pre-defined public tables. Population status and natural movement.

**Table 3.**

*Basic demographic characteristics of mining municipalities in 2009-2019 – year 2009 = 100% (continued – tab. 2)*

Years	Municipalities																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Feminisationratio																												
2009	104	105	103	110	106	104	108	98	104	106	102	104	97	104	98	100	103	105	105	105	106	107	104	108	109	103	104	103
2019	105	103	102	109	104	104	107	100	105	106	101	106	102	104	100	101	103	104	104	103	105	107	105	106	110	102	103	105
Feminizationrate in the maritalagegroup (25-29)																												
2009	95	99	102	109	86	94	106	97	98	95	99	90	84	92	88	95	99	101	94	89	100	100	96	102	101	103	99	97
2019	89	97	88	108	91	88	100	92	94	98	99	86	81	86	96	93	102	101	103	84	100	102	95	98	95	93	87	101
Age dependency ratio																												
2009	57,1	54,3	46,2	56,8	60,7	52,7	56,6	57,3	54,6	50,0	50,3	47,1	62,1	63,9	40,9	55,5	46,3	53,4	51,5	55,5	62,5	55,8	51,1	53,8	52,5	54,4	55,2	42,4
2019	66	64,5	60,3	65,8	63,9	62,2	68,7	61,5	67,8	66,6	58,9	65,4	62,9	68,1	49,9	63,4	57,1	63,4	64,3	60,1	63,6	65,4	66,8	67,9	69,8	59,0	64,4	70,1
Demographic dynamics rate																												
2009	1,25	1,27	1,56	1,24	1,08	1,2	1,3	1,2	1,35	1,21	1,45	1,14	1,11	0,91	2,43	1,34	1,97	0,98	1,85	1,13	0,88	1,31	1,35	1,02	0,8	2,64	1,19	1,87
2019	0,76	1,19	0,99	1,23	1,31	0,92	0,86	0,85	0,77	0,9	1,10	0,8	1,49	0,87	1,81	1,27	1,24	1,11	1,2	0,68	1,08	0,87	0,85	1,03	0,71	1,29	1,25	1,09

Legend: 1. Babice, 2. Bestwina, 3. Bieruń, 4. Chełm Śląski, 5. Cyców, 6. Czerwionka-Leszczyny, 7. Gierałtówice, 8. Grębocice, 9. Jastrzębie-Zdrój, 10. Knurów, 11. Łędziny, 12. Libiąż, 13. Ludwin, 14. Markłowice, 15. Miedzna, 16. Mszana, 17. Pawłowice, 18. Pilchowice, 19. Polkowice, 20. Pszów, 21. Puchaczów, 22. Radlin, 23. Rybnik, 24. Rydułtowy, 25. Siemianowice Śląskie, 26. Suszec, 27. Świerklany, 28. Żory

Source: Local Data Bank of CSO. Data aggregated in predefined tables available to the public. Population status and natural movement.

When searching for the sources of this state of affairs, it should be noted that the phenomena of gender imbalance in the population should be considered at two levels: geographical – including the urban-rural dimension, and age – particular age groups. In the first case, migration is the main factor of the gender imbalance. Their directions and structure lead to a situation of overrepresentation of women in cities and a general gender balance in rural areas. In 2016, there were 101 women per 100 men living in rural areas, and 111 women in the case of cities, reflecting the share of women in the urban population at 52.7%, and 50.2% in rural areas (Rural areas in Poland, 2017, p. 35). However, the key issue for determining the demographic consequences of the disturbed gender balance is the analysis of the feminisation rate (number of women/100 men) in particular age groups. This is because it is one of the important indicators informing about the reproductive capacity of the population in a given area (Bański, 2002). In this light it is worth emphasising that in the youngest age groups there is a natural phenomenon of male over-representation, since every year male babies predominate among the newborns. The share of boys in the number of births is approximately 0.51-0.52 (Holzer, 199). On the other hand, since women live longer than men on average, there is a natural predominance of women in the oldest age groups. Of particular importance for the current and future demographic situation of a given area is the value of the feminisation index in the age group characterised by the highest fertility rates (25-29) (Celińska-Janowicz, 2010, p. 21). Analyses of the indicated population structure in mining municipalities clearly showed that in the age range 25-29 the feminisation coefficient in 2019 showed a serious shortage of women. In this age group, the coefficient ranged from 81 (Świerklany) to 108 women (Chełm Śląski) per 100 men (Bank Danych..., 2019), with the feminisation coefficient for the total population in mining municipalities – as already highlighted – ranging from 102 to 110 women per 100 men in the corresponding period (Table 3).

The result of the indicated shortage of women in these groups is a decrease in the number of marriages and the number of births, which consequently leads to increasing population ageing processes. It is worth noting that over the last decade in Poland the highest fertility rate (number of live births per 1000 women) was recorded in the 25-29 age group. In recent years, there has been a phenomenon of shifting high fertility rates towards older age groups. While in 2000, nationwide, the highest values of the number of births per 1,000 women were characterised by the 25-29 and 20-24 age groups, already in 2005, the analysed indicator took on similar values in the 20-24 and 30-34 age groups – and between 1990 and 2018, the share of mothers aged 30 and over doubled and they account for 52 percent of women who gave birth in 2018. This phenomenon affects both urban and rural areas, although in the latter case it occurs with some delay and on a national scale it occurred for the first time only in 2009 (Celińska-Janowicz, 2010, p. 21).

The median age of the inhabitants of mining municipalities in 2019 is in the range from 37.3 (Suszec) to 43.7 years (Siemianowice Śląskie) and was in most municipalities significantly higher than the median age for the country (41.9) (Table 4). Mining municipalities in 2019



were areas where the population of demographic youth predominated. However, this state of affairs should be considered temporary. As a result of the further development of demographic changes, the phenomenon of demographic old age of the population living in the mining municipalities should be expected. As the forecasts indicate, the described population in the perspective of the next two decades may – eyes written below – reach the age of 50 in 50%.

This process has been accompanied by two permanent trends of decline and a slight increase in the dynamics of live births, which in the years 2009-2019 in the studied mining municipalities. The downward trend ranged from 68.11% (Grębocice) to 97.80% (Mszana). The total number of deaths was similar, ranging from 77.78% (Cyców) to 98.15% (Ludwin) and from 101.81% (Pawłowice) to 183.61% (Suszec) (Table 2).

The described distribution of the number of live births and total deaths influenced the natural increase in the studied mining municipalities in the years 2009- 2019, which in the analysed period was characterised by two tendencies of decreasing or increasing dynamics. In the analysed period the decrease in natural increase ranged from -114.3% (Babice) to 761.7% (Żory) and an increase from 336.7 (Pilchowice) to 433% (Ludwin) (Table 2).

As a result of the described regularities in the mining municipalities in 2019, the fertility rate, which is crucial for the reproduction of the population, was at a level from 1.22 (Babice) to 1.58 (Miedźna, Suszec) and was, in the majority of municipalities, clearly above the provincial rate, which reached a level of 1.36 in the analyzed period, and the national rate of 1.42 (Table 4). It should be noted that if the fertility rate is between 2.10 and 2.15 number of births per one woman of reproductive age (15-49 years), then there is full replacement of generations (Women's Health, 2012, p. 22). Similarly to the fertility rate, the gross reproduction rate was similar, which in the same period in the mining municipalities ranged from 0.60 (Jastrzębie-Zdrój, Libiąż) to 0.78 (Miedźna, Pawłowice, Suszec) and was in the majority of the studied mining municipalities lower than the voivodeship coefficient by 0.06 and lower than the national one by 0.09 as well (Table 4). It is worth noting that a coefficient with a value of 1 is a guarantee of simple reproduction of the population, while when it takes a value above 1, a process of population expansion occurs (Aktywność ekonomiczna..., 2014, p. 192). The demographic dynamics coefficient (the ratio of the number of live births to the number of deaths) was shaped similarly in mining municipalities, ranging from 0.68 (Pszów) to 1.81 (Miedźna) and was, in most mining municipalities, higher than the coefficient for the province (0.78) and the coefficient for the country (0.92). The demographic dependency ratio in the analysed period ranged between 49.9 (Miedźna) and 70.1 (Żory) persons in the post-working age bracket per 100 persons in the working age bracket (Table 3).

It may increase dynamically in subsequent years. In the case of the mining municipalities of Miedźna (data for the Pszczyzna powiat) to 51 people in 2035 and 78 in 2050, and the Żory commune to 53 and 83 respectively (Table 5).

**Table 5.**

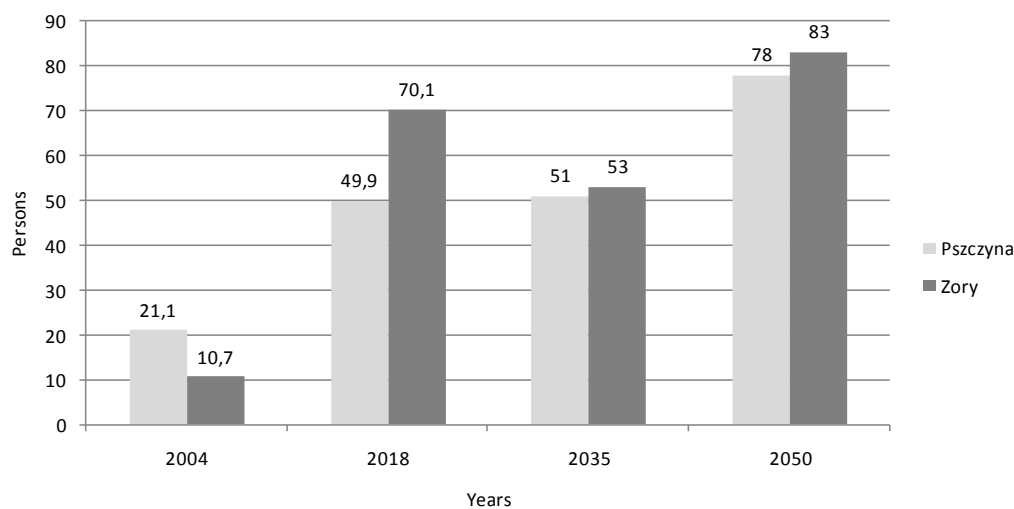
*Changes in the demographic burden ratio for mining municipalities according to the CSO forecast until 2050<sup>4</sup>*

Yeras	Poviats												
	chrzanowski	bielski	bieruńsko-lendziński	łęczyński	rybnicki	gliwicki	Polkowicki	Jastrzębie-Zdrój	wodzisławski	pszczyński	Rybnik	Siemianowice Śląskie	Żory
2018	45	35	33	20	36	39	35	42	40	19	41	48	43
2035	63	53	44	51	36	55	52	64	57	51	56	67	53
2050	98	75	67	80	76	80	77	91	86	78	87	103	83

Source: own calculations based on Prognoza ludności na lata 2014-2050. CSO, Warsaw 2014.

<sup>4</sup> The population forecast for 2014-2050 was developed in accordance with the Classification of Territorial Units for Statistical Purposes. The forecast distinguishes here levels: the first – covering 6 regions grouping voivodeships in Poland, the second – 16 voivodeships and the third – 72 subregions grouping powiats. Hence, forecasts for the level of a commune unit are made only at the poviat level.

It is worth noting that the indicator has been increasing dynamically over the past years. In 2004, in the pszczyński powiat this indicator was at the level of 21.1 and in Żory 10.7 people in the post-working age per 100 people in the working age (Fig. 1).



**Figure 1.** Changes in the dependency ratio for the Pszczyna district and the Żory municipality according to the CSO forecast until 2050 and in the years 2004, 2018. Source: Population forecast for 2014-2050. CSO, Warsaw 2014, CSO Local Data Bank.

In the analysed period in the mining municipalities, a permanent negative balance of internal and foreign migration for permanent residence is observed – with a decreasing trend. In the analysed period 2009-2019 the migration dynamics ranged from -88.24% (Babice) to 2000% (Rydułtowy). The net migration was also characterised by a permanent negative trend, which in the analysed period ranged from -4.47 (Grębocice) to 18.50 (Rydułtowy) (Table 2).

The phenomena described above have for years permanently shaped the condition and structure of the population of the studied mining municipalities. In the context of EU social policy, meeting demographic challenges requires action in many areas, among which the key ones are:

- equal opportunities and access to the labour market, including skills development and lifelong learning, and active employment support to increase employability, ease transitions and improve individuals' employability,
- fair working conditions, with an adequate and reliable balance of rights and obligations between workers and employers, as well as between flexibility and security to facilitate job creation, take-up of jobs on offer and companies' adaptability, and the promotion of social dialogue,
- adequate and sustainable social protection and access to high quality essential services, including childcare, health care and long-term care, in order to ensure a decent life and protection from risks and to enable citizens to function fully in the labour market and more generally in society (Towards a European Pillar..., 2016).

They also manifest themselves intensively in the area of mining municipalities and provinces, as well as the country (Marszowski, 2017, pp. 229-244). The changes in the population structure that took place in 1988-2008 and 2009-2019 are even remarkable. Looking for their sources, one can point to several reasons as follows. It seems that the breakthrough factors were of a cultural nature, which include (Kaa, 1999):

- the spread of premarital sexual relations,
- the delaying of the age of marriage,
- diversification and dissemination of alternative forms of partnerships,
- increase in the phenomenon of permanent celibacy (staying out of civil partnerships),
- increase in the number of divorces,
- prevalence of single-parent families,
- multiplicity and diversity of partnerships during the individual's life,
- reduction in the proportion of people in formal marriages,
- decrease in the average number of children in a family,
- the disappearance of multiple births,
- increase in voluntary childlessness,
- the spread of contraceptives,
- delay in the age of procreation.

The indicated regularities dynamically shape the demographic structure of the population of mining municipalities, including the occurrence of major changes in economic age groups. As of 2019, the population by economic age groups was shaped by two key trends, a downward trend and a slight increase. The downward trend in the population of the pre-working age group ranged from 92% (Babice) to 99.98% (Knurów). The Cyców and Gieraltowic emunicipalities, among others, were under the influence of a slight increase trend, which ranged from 100.56% to 136.06%. The population in the working age was, respectively, from 84.19% (Siemianowice Śląskie) to 97.84% (Grębocice) and from 100.47 (Mszana) to 110.71% (Puchaczów). On the other hand, the population of the population in the post-working age in all the studied mining municipalities was subject to dynamic growth in the range from 118.12% (Marklowice) to 203.56% (Żory) (Table 6).

**Table 6.***Population of mining districts by economic age groups in 2009-2019 – year 2009 = 100%*

Years	Municipalities																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Pre-workingagepopulation																												
2009	1362	1704	3012	916	1428	4266	1564	963	14276	5975	2586	2533	956	880	2514	1177	3105	1517	3808	2115	965	2738	20868	3125	9243	2096	1947	9781
2019	1253	2013	3167	1030	1436	4638	2128	896	12755	5965	2815	2481	1016	866	2973	1390	3281	2031	3687	2000	1035	2798	21685	3300	9436	2441	2296	10320
%	92,0	118,13	105,15	112,45	100,56	108,72	136,06	93,04	89,35	99,98	108,86	97,95	106,28	98,41	118,26	118,10	105,67	133,88	96,82	94,56	107,25	102,19	103,91	105,60	102,09	116,46	117,93	105,51
Workingagepopulation																												
2009	6035	7446	14181	3953	5085	19563	7266	3619	63856	27549	11517	12430	3360	3355	11911	4891	12943	7245	15667	9544	3308	12076	98577	14989	48612	7836	7875	45005
2019	5895	7596	12695	4014	5077	18064	7554	3541	55371	23859	11034	10723	3646	3411	11491	4914	12097	7699	14333	8937	3671	11211	86444	13345	40925	8141	7981	38440
%	97,68	102,01	89,52	101,54	99,84	92,34	103,96	97,84	86,71	86,61	95,81	86,27	108,51	101,67	96,47	100,47	93,46	106,27	91,49	93,64	110,97	92,84	87,69	89,03	84,19	103,89	101,35	84,47
Post-workingagepopulation																												
2009	1518	1662	2341	990	1092	4370	1965	727	14856	5701	2179	2428	771	955	1245	1089	1801	1828	2741	2386	813	2925	21927	3783	12857	1324	1653	6736
2019	1949	2300	3645	1314	1399	5432	2501	965	20617	8297	2949	3799	979	1128	2126	1386	2794	2283	4466	2907	987	3750	29969	4869	16480	17865	2209	13712
%	128,39	138,39	155,70	132,73	128,11	124,30	127,28	132,74	128,78	145,54	135,34	156,47	126,98	118,12	170,76	127,27	155,14	124,89	162,93	121,84	121,40	128,21	136,68	128,71	128,18	133,31	133,64	203,56

Legend: 1. Babice, 2. Bestwina, 3. Bieruń, 4. Chełm Śląski, 5. Cyców, 6. Czerwionka-Leszczyny, 7. Gierałtowiec, 8. Grębocice, 9. Jastrzębie-Zdrój, 10. Knurów, 11. Łędziny, 12. Libiąż, 13. Ludwin, 14. Markłowice, 15. Miedźna, 16. Mszana, 17. Pawłowice, 18. Pilchowice, 19. Polkowice, 20. Pszów, 21. Puchaczów, 22. Radlin, 23. Rybnik, 24. Rydułtowy, 25. Siemianowice Śląskie, 26. Suszec, 27. Świerklany, 28. Żory.

'-' indicates that the information is missing because of: a change in the level of presentation, changes made to the list of territorial units or modifications.

Source: Local Data Bank of the Central Statistical Office. Data aggregated in public predefined tables. Population status and natural movement.

According to the forecasts, further significant unfavourable changes in the population by economic age groups in the mining municipalities should be expected, which may be characterised by the following processes: a high decrease in the population in two age groups, the population in the pre-working age and the working age, and a high increase in the population in the post-working age. This regularity is confirmed by the following forecasts. In 2018, the population in the pre-productive age constituted a percentage in the range from 13.54% (Poviat of Chrzanów) to 20.20% (Poviat of Pszczyna), in the productive age from 59.53% (Poviat of Chrzanów) to 64.78% (Poviat of Pszczyna) and in the post-productive age from 12.83% (Poviat of Bieruńsko-Lendzinski) to 27.80% (Poviat of Gliwice). According to forecasts, this distribution in 2035 may be as follows: 11.09% (decrease by 2.45%) to 17.16% (decrease by 3.03%), from 53.83% (decrease by 5.7) to 61.47 (decrease by 3.31%) and from 21.28% (increase by 8.45%) to 22.52% (increase by 5.28%). The analysed population distribution of mining municipalities by economic age groups in 2050 may change further, according to the following projected figures: from 10.94% (decrease by 0.96%) to 16.38% (decrease by 0.78%), from 45.08% (decrease by 8.3%) to 56.61% (decrease by 4.86%) and from 25.90% (increase by 4.62%) to 27.80% (increase by 5.38%) (Table 7).

**Table 7.**

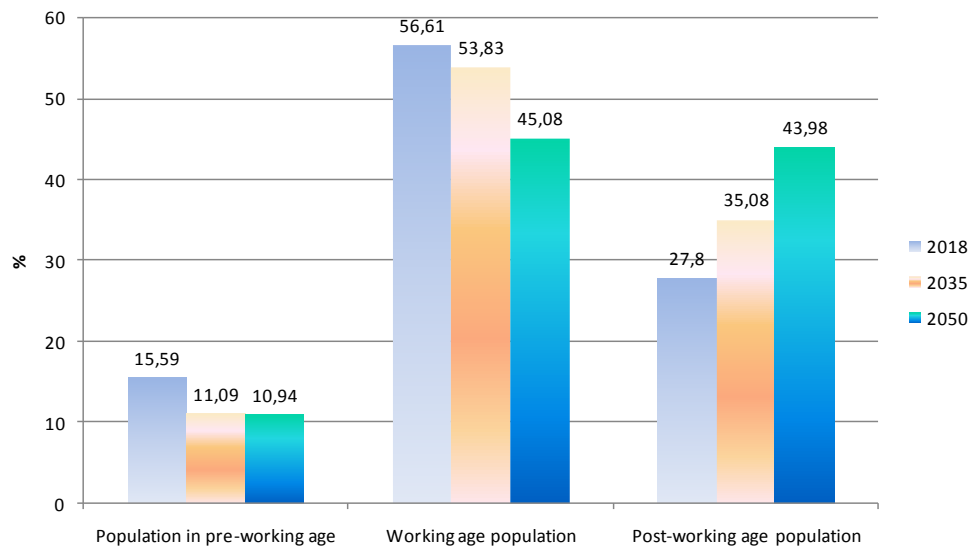
*Changes in the population according to economic age groups for mining districts as projected by the Central Statistical Office until 2050*

Population	Poviats												
	chrzanowski	bielski	bieruńsko-lendziński	łęczyński	rybnicki	gliwicki	polkowicki	Jastrzębie-Zdrój	wodzisławski	pszczyński	Rybnik	Siemianowice Śląskie	Żory
2018													
1	13,54	19,02	19,14	19,09	19,23	15,59	19,30	17,15	17,74	20,20	17,93	15,27	19,33
2	59,53	63,70	65,15	65,51	63,84	56,61	64,18	61,56	63,00	64,78	63,18	62,43	61,94
3	26,93	17,28	12,83	15,40	16,94	27,80	16,52	21,28	19,26	15,02	18,89	22,30	18,73
2035													
1	11,09	16,28	16,66	16,00	16,68	15,82	17,01	14,82	15,16	17,16	15,58	12,47	16,57
2	53,83	62,99	62,06	62,14	62,20	61,66	61,94	60,84	61,47	61,47	60,95	60,21	61,39
3	35,08	20,74	21,28	21,86	21,12	22,52	21,05	24,34	23,37	21,37	23,47	27,32	22,04
2050													
1	10,94	15,70	16,04	14,79	16,22	15,59	16,11	14,00	14,76	16,38	15,37	12,04	17,58
2	45,08	57,69	56,56	57,46	57,21	56,61	56,70	54,24	55,72	56,65	55,07	53,94	53,52
3	43,98	26,61	25,90	27,76	26,57	27,80	27,28	31,76	29,52	26,97	29,56	34,02	28,90

Legend: 1. Population in pre-working age, 2. Population in working age, 3. Population in post-working age.

Source: own calculations based on Prognoza ludności na lata 2014-2050. CSO, Warsaw 2014.

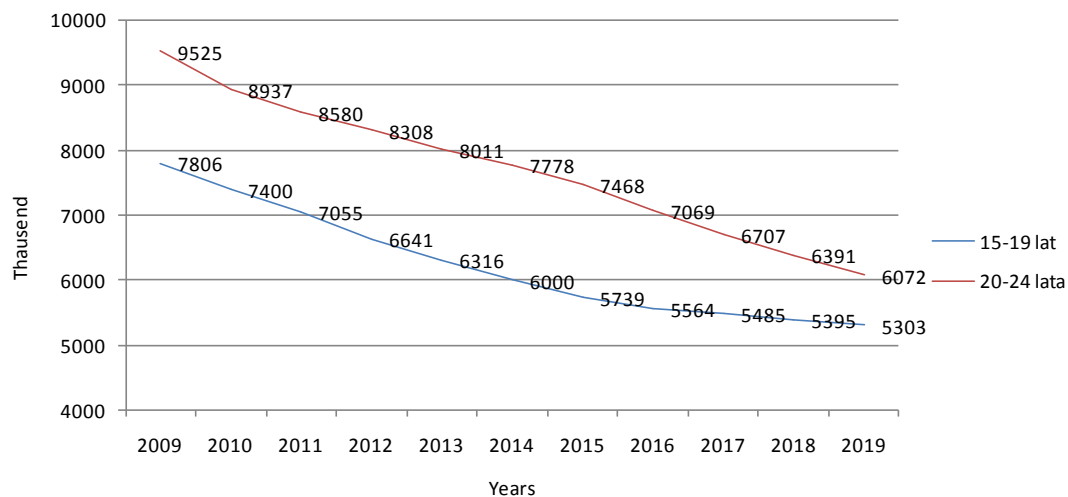
An illustration of the outlined projections is presented on the example of the Chrzanów powiat, which, according to the projections, may experience the highest increase in the post-working age population among the studied powiats with mining municipalities (Fig. 2).



**Figure 2.** Changes in population in economic age groups on the example of Chrzanów powiat according to the state in 2018 and CSO forecast for 2014-2050. Source: Population forecast for the years 2014-2050. CSO, Warsaw 2014.

The occurring and forecasted demographic changes clearly indicate that in the studied structure of mining municipalities the most numerous are and will be four age groups: 50-54, 55-59, 60-64 and 65-69. The example most representative of the indicated regularity among the studied mining municipalities is once again the district of Chrzanów. Due to its population in 2019 (over 28% of the total population), it can be assumed that these are the four age groups that will determine the future quantitative and qualitative structure of the population of the mining municipalities under study. Due to their age cross-section, they will most dynamically shape the processes occurring in the labour market. In particular those related to dynamic ageing, their professional activity and inactivity, spatial mobility (migrations) and educational mobility, quality and level of social security. In relation to the indicated regularity, an important factor is the age bracket in the case of which a clear decrease in the population of mining municipalities' inhabitants is observed. This bracket is made up of those aged 75 to 85 and over. In this context, it should be noted that shifts of particular cohorts in the demographic structure of mining municipalities may cause a clear and dynamic increase in the population age cohorts entering retirement age – with a simultaneous decline in the population in the age cohorts characterised by demographic youth and the highest labour force participation and mobility. In this context, it is worth noting that the population aged 25-49 will, due to its size, undergo a systematic decline in the labour market of mining municipalities as a result of its lack of simple replacement by the numerically significantly smaller population of the youngest people – in the age brackets 0-4, 0-5, 10-14, 15-19 and 20-24 (22.9% of the total population). We illustrate this process – again – with the example of Chrzanów Powiat (Fig. 3).





**Figure 3.** Population of Chrzanów Poviát by age groups 15-19 and 24-25. Observations for the years 2009-2019. Source: Local Data Bank of CSO. Data aggregated in pre-defined public tables. Population status and natural movement.

It should be noted that the indicated distribution of the number of inhabitants of mining municipalities by age groups will determine processes in the labour market which are a resultant of two phenomena: a decline in the population at the age of demographic youth and high educational, occupational and migration mobility with a simultaneous clear and dynamic increase in the population in older age groups. In terms of the term "older age groups", it is worth reflecting on the definition of ageing or old age. As noted in the Report on the Situation of Older Persons in Poland, the concepts of ageing and ageing can be considered in two ways – from the individual aspect and as phenomena concerning the collective of these individuals, i.e. the society of a given region, country, part of the world (Report..., 2012, pp. 15-18). In the individual aspect, ageing is a biological phenomenon constituting a human life cycle (Zych, 2004). According to another approach, ageing is perceived as a process of progressive impairment of vital body functions and loss of adaptive capacity to environmental changes, along with an increasing probability of death (Kirkwood, 1996). In general, the inevitable stage of the ageing process is a state referred to as old age. In turn, ageing, according to the definition accepted in psychogerontological literature, means a certain process and has a dynamic character, while old age as a state has a static character (Porzych, 2004). According to the life cycle theory of D.J. Levinson (Levinson, 1896), old age is one of the phases, which, however, is not homogenous and can be divided into successive periods.

The life cycle theory describes changes in the psyche and behaviour occurring at successive – progressive with age – stages of an individual's life. The first phase of life is the phase of learning, acquiring experiences (it includes childhood and youth). The next phase includes adulthood, which is the period of implementation of the knowledge possessed. The last phase – old age – is the phase of regression. The various phases may occur in different individuals at different times and it is not possible to give rigid limits to the age at which the various phases

of the life cycle begin or end. However, the psychological concept of the life cycle – created by E. Erikson (Erikson, 2002) – divides the life of an individual into eight stages.

The last stage is late adulthood and begins between the ages of 60 and 65. It should be noted that the division of the last stage of human life is subject to change along with the lengthening of life and improvement of its quality among older people. It should be noted that the division of the last stage of human life is changing with the lengthening of life and improvement of its quality in the community of elderly people. It is worth noting that over the next twenty-five years Poland will face population ageing. In this light, based on analyses of the population of the analysed mining municipalities, this time in the cross-section of biological age groups, equally unfavourable changes will take place in the 2050s, which may be characterised by the following processes: a high decrease in the population in two age groups, the population aged 0-14 and 15-59, and a high increase in the population aged 60 and over. This regularity is confirmed by the following forecasts.

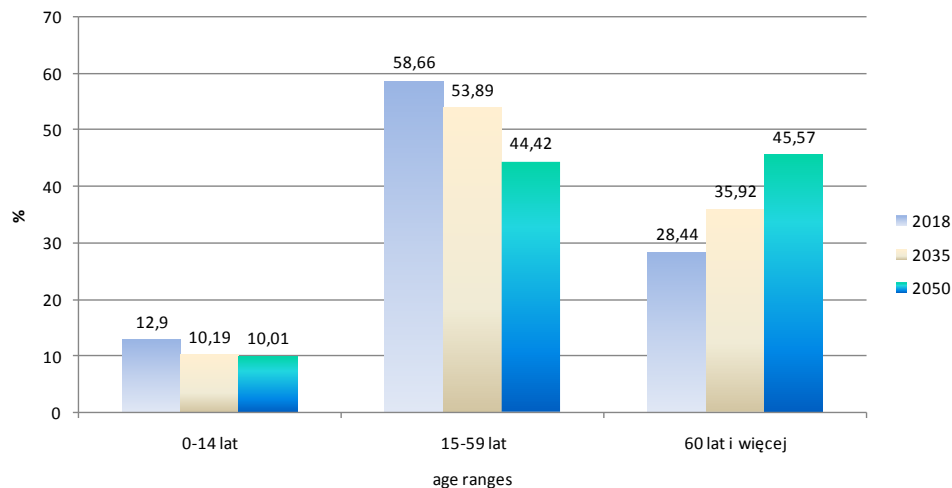
In 2018, the population aged 0-14 accounted for a percentage ranging from 12.99% (Siemianowice Śląskie district) to 17.90% (Pszczyna district), aged 15-59 from 58.51% (Żory district) to 65.05% (Bieruńsko-Lendzinski district) and aged 60 and over from 18.92% (Bieruńsko-Lendzinski district) to 24.94% (Żory district). According to forecasts, this distribution in 2035 may be as follows: 10.19% (decrease by 2.8%) to 13.96% (decrease by 3.94%), to 56.36% (decrease by 2.15%) to 57.32 (decrease by 7.73%) and from 29.15% (increase by 10.23%) to 30.0% (increase by 5.06%). The analysed population distribution of mining municipalities by biological age groups in 2050 may change further, according to the following projected figures: from 10.01% (decrease by 0.18%) to 13.63% (decrease by 4.27%), from 46.60% (decrease by 9.76%) to 49.20% (decrease by 8.12%) and from 37.43% (increase by 8.28%) to 38.62% (increase by 8.62%) (Table 8).

An illustration of these forecasts is presented on the example of Siemianowice Śląskie district, which, according to the forecast, may experience the highest increase in the population aged 60 and above among the surveyed districts with mining municipalities (Fig. 4).

**Table 8.***Changes in population in biological age groups for mining municipalities according to CSO forecast until 2050*

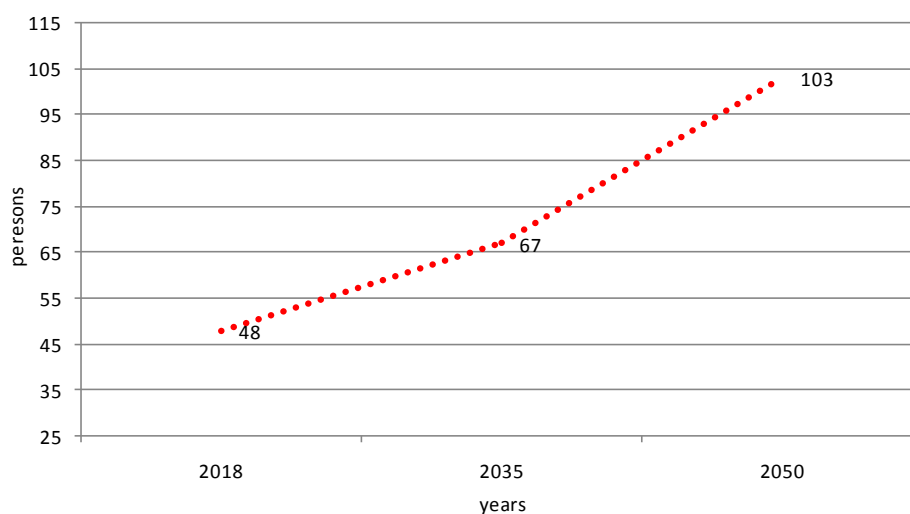
Age groups	Poviats/Years												
	chrzanowski	bielski	bieruńsko-lendziński	łęczyński	Rybnicki	gliwicki	polkowicki	Jastrzębie-Zdrój	wodzisławski	pszczyński	Rybnik	Siemianowice Śląskie	Żory
2018													
0-14	13,54	15,93	16,03	15,99	16,38	15,08	16,27	14,36	14,99	17,19	15,28	12,90	16,55
15-59	59,53	62,32	65,05	63,11	61,53	61,02	61,68	60,11	60,72	62,67	60,20	58,66	58,51
60 and more	26,93	21,75	18,92	20,90	22,09	23,90	21,87	25,54	24,30	20,14	24,52	28,44	24,94
2035													
0-14	59,53	13,27	13,53	13,01	13,54	12,84	13,86	12,10	12,32	13,96	12,67	10,19	13,63
15-59	54,36	57,85	57,32	57,43	57,37	56,36	56,57	53,55	55,79	57,03	55,85	53,89	56,36
60 and more	45,08	28,89	29,15	29,55	29,09	30,80	29,57	34,35	31,89	29,01	31,48	35,92	30,00
2050													
0-14	26,93	13,3	13,37	12,18	13,49	12,99	13,33	11,54	12,24	13,63	12,80	10,01	14,78
15-59	34,45	49,57	49,20	48,76	49,09	48,32	49,01	46,33	47,10	48,49	46,64	44,42	46,60
60 and more	43,98	37,40	37,43	39,0	37,42	38,69	37,66	42,13	40,66	37,88	40,56	45,57	38,62

Source: own calculations based on Prognoza ludności na lata 2014-2050. CSO, Warsaw 2014.



**Figure 4.** Changes in the population in biological age groups on the example of the district of Siemianowice Śląskie as at 2018 and the CSO forecast for 2014-2050. Source: Population forecast for 2014-2050. CSO, Warsaw 2014.

Another important variable – describing the population structure – is the dependency ratio. As at the end of 2018, there were from 19 (Pszczyna powiat) to 49 (Siemianowice Śląskie powiat) people of non-productive age per 100 people of productive age in mining municipalities there were from 19 (Pszczyna powiat) to 49 people (Siemianowice Śląskie powiat) in non-working age. The forecast clearly indicates that in the perspective of 2050, the burden of economically inactive people of working age in mining districts may increase from 36 (Rybnik district) to 66 (Siemianowice Śląskie district) in 2035 and from 67 (Bieruńsko-Lędziński district) to 103 (Siemianowice Śląskie district) in 2050. An illustration of these forecasts is presented on the example of the district of Siemianowice Śląskie, which, in accordance with the forecast, may experience the highest increase in the old-age dependency ratio among the studied districts with mining municipalities (Fig. 5).



**Figure 5.** Changes in the dependency ratio for the district of Siemianowice Śląskie according to the forecast of the Central Statistical Office until 2050. Source: own calculations based on the population forecast for 2014-2050. CSO, Warsaw 2014.

The indicated growth is determined in the forecast primarily by a very high projected increase in the old-age dependency ratio. It should be noted that according to the forecast until 2050 a clear domination of the burden of working-age population on the economically inactive population can be expected in cities (Population..., 2014).

On the background of the projections presented above – to which special attention is drawn – proper relations between the population of pre-working age, working age and post-working age are extremely important for the effectiveness of any pension system. Beginning in the mid-20th century, societies in highly developed countries, especially in Western Europe, began to age intensively, which distorts these proportions. The process of population ageing entails many risks and has a negative impact not only on the financial situation of the pension system, but also on public finances as a whole. The growing number of people entitled to receive pension benefits is reflected in an increase in public expenditure for social purposes. Pensions represent a large and growing share of public expenditure, on average over 10% of GDP across the European Union, and in 2060 could account for up to 12.5% of GDP (White Paper..., 2012, p. 4). The continued upward trend in the number of pensioners will certainly contribute to an increase in the public deficit and debt in the future. As a consequence of the projected changes, it should be noted that statements published by the European Commission (European Commission and Economic..., 2012) concerning the projected changes in the size of the burden resulting from the payment of benefits from both the first (pay-as-you-go) pillar of the pension system, as well as those financed by private mandatory capital plans, show that over the next 50 years in Poland, the total amount of public spending (in relation to GDP) on pension benefits may fall (from 11.8% of GDP to 9.6% of GDP), although it is expected to remain unbalanced over the entire 50-year horizon (European Commission and Economic..., 2012, p. 107). Apart from Latvia, we are an exception in this respect compared to other European countries (European Commission and Economic..., 2012, p. 101) – in fact, most of them are to experience an increase in the relative burden of pension financing relative to GDP (Janicka, 2015, p. 26). In this light, it is worth noting some significant changes that have occurred in Poland over the course of the second half of the 20th century – and, according to the projections, the permanent economic population of Poland has decreased from around 35-37% to 19%, while the oldest has increased from around 7% to 17.5%. The GUS population projection envisages further profound changes in the demographic structure by 2035 – a decrease in the share of population aged 0-17 to 15.8% and an increase in the share of population in the post-working age to 26.7% (Central Statistical Office, 2009, p. 163). The population aged 80 and over is expected to grow even faster. According to Eurostat, it is expected to increase from 1.1 million in 2008 to 3.3 million in 2040 and 4 million in 2060, i.e. from the initial rate of ca. 3% to 13% at the end of the forecast period (Population forecast...).

In the context of these phenomena, it should be noted that from the point of view of social policy one of the most important demographic determinants is the structure of the population by age (Orczyk, 2005, p. 31). As E. Trafiałek notes, modern civilisation guarantees

an increasingly longer life expectancy. This is accompanied by an increase in the number of elderly people and a simultaneous decrease in natural growth. As a result, on a global scale the so-called inverted demographic pyramid model (Strzelecki, 2010) is becoming established. On the other hand, in terms of economic effects, it causes the so-called emptying of labour markets (Trafiałek, 2006, p. 246). Therefore the postulate of L. Frąckiewicz, which states that the economic, social, medical and cultural consequences of demographic ageing include various spheres of behaviours, needs, trends, creating an extensive catalogue of tasks the implementation of which requires launching appropriate social policy entities and instruments, is still valid (Frąckiewicz, 2003). The results of this research are presented in the work of E. Trafiałek entitled: "On new social policy towards old age" (Frąckiewicz, 2003). In response to this postulate is, among others, the work of E. Trafiałek titled "On new social policy towards old age" (Trafiałek, 2002, pp. 179-196). As it was stressed earlier, the author of the text notes the need to build a future shape of social policy, in particular, with regard to old age. This process requires, first of all, the development of a catalogue of priority tasks, which would resolve the main issues caused by the changing demographic structure in global, regional and local dimensions (Trafiałek, 2002, pp. 252-258). One of the first tasks in this area is the international integration of activities in the construction and implementation of a new model of economic functioning and a new model of saving and investing. In this respect, the main objective is to provide old people with adequate income and care.

### **3. Conclusions**

On the basis of the analyses and research carried out, it may be concluded that in the analysed areas of mining municipalities – in the part referring to the stream of labour supply – a dynamic process of ageing of labour resources is clearly visible. In view of the above conclusion, it seems justified to subordinate the policies pursued in the city to the indicated process.

What is clearly unfavourable to the development of the examined areas, indicated in the chapter, is the age structure of the population. As a result of the processes taking place in the age structure in the examined areas, further dynamic stratification of the streams of labour demand and supply should be expected. The stratification will be first of all implied by a significant increase in the population of those entering retirement age (economic inactivity) with a simultaneous decrease in the population of those characterised by demographic youth and the highest economic activity and mobility. The key source of these unfavourable tendencies is – already mentioned above – lack of simple substitution of labour resources at the age of the highest economic activity by numerically significantly smaller population of the youngest people.

As a result of the aforementioned processes, a significant increase in the economically inactive population should be expected in the analysed areas. This is confirmed by the forecasts of the Central Statistical Office, which unambiguously indicate that in the perspective of 2050, the burden of the working-age population on the economically inactive population, e.g. in Siemianowice Śląskie – which we have already written about – may increase from 48 in 2019 to an extremely high number of 103 people in 2050 (Prognoza ludności na lata 2014-2050...). The source shaping the indicated forecasts will primarily be the dynamic growth of the population of non-working age, i.e. people in the 60/65 years and over bracket. This process, in turn, will induce a very high rate of population ageing in the studied areas in the old-old group, i.e. in the oldest categories, aged 75 and over (Population forecast for 2014-2050...). Additionally, it should be noted that the indirectly indicated changes and projected trends are consolidated by the negative migration balance (emptying the labour market in the most active age groups of labour resources (Miłaszewicz, 2016, pp. 109-120).

All the outlined changes, processes and forecasts indicate that in order to reduce stratification in the studied areas, which are the main source of structural mismatches, actions should be taken to build a future-oriented shape of municipal policies – especially towards old age. Lack of such actions in the perspective of social and economic transformation may delay preparation for – as it seems inevitable – changes in the age structure of the population living in the examined areas of mining municipalities. As it has already been noted, these are changes in many aspects, starting from changes in the consumption structure, through changes on the "production" side (labour force, GDP) and the consequences for public finance systems.

As the population ages, the relationship between labour and capital changes, as does the relationship between labour supply and labour demand, which is derived from consumption demand (Börsch-Supan, 2008). The aforementioned need for the studied areas to prepare for the effects of the ageing of the population living in the studied areas will also be determined by further – as already indicated – expected effects, such as: sectoral or occupational mismatches in the labour market (for example, due to increased demand for health and social care workers, associated with an increase in the population aged 65+ and, above all, 80+), which may result from changes in the structure of consumption, labour market consequences for social security systems and the need to fill gaps in labour supply associated with a possible influx of immigrants (Janicka, 2015, p. 26).

Against this background both quantitative and qualitative changes concerning human resources needs are taking place. Unfavourable demographic changes and the related aging of the society reinforced by migrations outside Poland and the perspective of fair transformation additionally weaken the provision of adequate, well-qualified and creative human resources to the national economy. In economics and social policy, the recognition and anticipation of changes on the labour market – as confirmed by numerous sources – is of particular importance. As noted by E. Kryńska and E. Kwiatkowski, nowadays each state implements, on behalf of and for society, a policy regarding the labour market, which consists of influencing supply and

demand for labour in order to maintain or restore balance. This policy takes particular account of the need to achieve the fundamental goal of a high level of employment and low unemployment. Due to the economic and social importance and specific functions of employment, these measures are among the most important undertaken in the field of economic policy. This is because employment fulfils two basic functions – economic and social (Kryńska, 2010, p. 1). As a final reflection, it is worth noting that the conclusions presented in this report concerning the socio-demographic determinants of the development of mining municipalities – particularly in this part of the work – in the demographic perspective do not cover all the problems in the discussed cognitive area, which results from its broad and interdisciplinary scope. The analyses and forecasts presented here may provide a basis for further research on, first of all, the changing conditions shaping the determinants of development of the areas under study – at the stage of global changes, the improvement of the directions and objectives of their development and practical actions to increase the significance of transformation activities on the map of mining municipalities, the country and Europe.

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