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Household projection for the years 2016-2050

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CHANGES IN THE NUMBER AND STRUCTURE OF HOUSEHOLDS ON THE BASIS OF POPULATION AND HOUSING CENSUSES

The Central Statistical Office presents the household projection 2016-2050 for Poland and voivodships, in a breakdown by rural and urban areas.

The household projection is based on data concerning households gathered during national population and housing censuses in 2002 and 2011. Assumptions related to the number and structure of population in the years 2016-2050 are derived from *The Population Projection 2014-2050*.¹ The presented results stem from predictions about the future shape of demographic, social and economic processes in Poland. The pro-family and pro-marriage behaviour of young people who participate in the formation of families and the creation of new households is especially influential.

Population censuses are the only source of complete information on households. The results of censuses in the years 1970-2011 reflect changes which have taken place over decades in their number and structure.

The analysis of the census data shows that in the 1970s there was a significant increase in the population number (especially in urban areas) combined with changes in the structure of households (which is evidenced by a considerable decrease in the average number of people per household in that period). As a result, the number of households grew by almost 17% between 1970 and 1978.

In the 1980s the trend leading to the decrease of the size of households became significantly weaker. In the years 1978-1988 the number of households increased to 1.1 mln but this resulted mainly from the increase in the population number. The average number of people per household did not change significantly and amounted to approx. 3.1.

The first years of the political transformation characterised by a slight drop in the average number of persons per household. This tendency accelerated in the second half of the 20th century. Between 1995 (microcensus) and 2002 the average number of people per household decreased from 3.06 to 2.84. The drop was very clear both in urban and rural areas.

¹ <http://stat.gov.pl/obszarv-tematvczne/ludnosc/prognoza-ludnosci/prognoza-ludnosci-na-lata-2014-2050-opracowana-2014-r-,1,5.html>

However, the trend decelerated substantially in the period between the latest two censuses (especially in rural areas).

Table 1. The number of households, population number and the average number of persons per household in the years 1970 – 2011

	1970	1978	1988	1995	2002	2011
TOTAL						
households (in mln)	9.4	10.9	12.0	12.5	13.3	13.6
absolute increases between censuses (in mln)		+ 1.6	+ 1.0	+ 0.5	+ 0.8	+ 0.2
population in households (in mln)	31.8	34.1	37.1	38.2	37.8	38.3
absolute increases between censuses (in mln)		+ 2.3	+ 3.0	+ 1.1	- 0.4	+ 0.5
average number of persons per household	3.39	3.11	3.10	3.06	2.84	2.82
URBAN AREAS						
households (in mln)	5.4	6.8	7.9	8.4	9.0	9.1
absolute increases between censuses (in mln)		+ 1.4	+ 1.1	+ 0.5	+ 0.6	+ 0.2
population in households (in mln)	16.3	19.3	22.5	23.4	23.3	23.2
absolute increases between censuses (in mln)		+ 3.0	+ 3.2	+ 0.9	- 0.2	- 0.0
average number of persons per household	3.03	2.85	2.86	2.80	2.60	2.54
RURAL AREAS						
households (in mln)	4.0	4.2	4.1	4.1	4.4	4.4
absolute increases between censuses (in mln)		+ 0.2	- 0.1	0.0	+ 0.3	0.0
population in households (in mln)	15.4	14.8	14.6	14.8	14.5	15.1
absolute increases between censuses (in mln)		- 0.7	- 0.2	+ 0.2	- 0.2	+ 0.5
average number of persons per household	3.87	3.55	3.55	3.59	3.33	3.40

THE STATUS AND STRUCTURE OF HOUSEHOLDS IN THE YEARS 2002-2011

In accordance with the data obtained in the population and housing census in 2011 in Poland, there were 13.6 mln households, in which almost 38.3 mln people lived. In comparison with 2002 a rise was observed of both the number of households (of 231 thous.) and the number of people living in them (of approx. 500 thous.).

In 2011, 9.1 mln households (67%) were located in urban areas and their number was by approx. 180 thous. higher than in 2002. In rural areas (in which areas adjacent to the largest cities being formally a part of rural communes are included) there were approx. 4.4 mln (33%) households. In comparison with 2002, the number of households in rural areas increased by almost 50 thous.

Table 2. The average number of persons per household in 2002 and 2011

	2002	2011	Change
TOTAL			
Poland	2.84	2.82	-0.01
Urban areas	2.60	2.54	-0.06
Rural areas	3.33	3.40	+0.08
Adults			
Poland	2.18	2.28	+0.11
Urban areas	2.05	2.10	+0.05
Rural areas	2.44	2.67	+0.22
Children			
Poland	0.66	0.54	-0.12
Urban areas	0.55	0.44	-0.11
Rural areas	0.88	0.74	-0.15

Within nine years dividing the last two censuses, the average number of persons per household dropped by only 0.01. Furthermore, in rural areas it rose by 0.08.

Between 2002 and 2011 the average number of children (persons at the age of 0-17, regardless of the relationship to the remaining household members) in households decreased considerably, which results from the number of births dropping systematically for many years.

In 2002 the average number of children per household amounted to 0.66, whereas nine years later it reached the value of 0.54 (see Table 2). The number and percentage of households without minors grew significantly. On the other hand, analysing only households with children, the rise of the number of those households in which there was only one child is substantial (by nearly 5 percentage points). It should be taken into account that the percentage of third and further births among the total number of births has been dropping for many years, which translates into a considerable fall of the share of households with at least three children (see Table 3).

Table 3. Households by number of children in 2002 and 2011

Number of children	In thous.		In %		% among households with children	
	2002	2011	2002	2011	2002	2011
0	8 236.4	9 017.0	61.8	66.5		
1	2 558.3	2 500.8	19.2	18.4	50.2	55.0
2	1 761.3	1 556.8	13.2	11.5	34.5	34.2
3	551.3	364.5	4.1	2.7	10.8	8.0
4	153.5	88.0	1.2	0.6	3.0	1.9
5 or more	76.1	40.9	0.6	0.3	1.5	0.9
Total	13 337.0	13 568.0	100.0	100.0		

In the inter-census period the average number of adults per household increased (from 2.25 to 2.38). In the years dividing both censuses both the number and the percentage of households with at least three adults grew. The increase in households where five or more adults lived was especially high. On the other hand the percentage of households with one or two adults decreased (see Table 4).

Table 4. Households by number of adults in 2002 and 2011

Number of adults	In thous.		In %	
	2002	2011	2002	2011
1	3 786.2	3 673.6	28.4	27.1
2	5 579.4	5 354.2	41.8	39.5
3	2 371.6	2 445.7	17.8	18.0
4	1 161.8	1 334.8	8.7	9.8
5 or more	438.0	719.3	3.3	5.3
Total	13 337.0	13 568.0	100.0	100.0

It seems that the rise of the average number of adult persons per household is determined by two key tendencies.

First of all, the data from censuses from 2002 and 2011 shows that the percentage of "young adults" (for the purposes of this publication it was assumed that these are people at the age of 18-34) living in households the representative² of which was a person at the age of 40-64 did not change. In both censuses this percentage amounted to 51.4% in 2002 and 51.6% in 2011. It can be assumed that the majority of such households consist of adult children living with at least one parent.

Analysing the group of people at the age of 18-34 in more detail, it can be observed that the percentage of "young adults" living in households with a representative at the age of 40-64, decreased sharply among younger age groups (18-24 years old), whereas it rose among the older ones (25-34 years old) (see Table 5).

Table 5. Percentage of persons living per household with a representative at the age of 40-64 in 2002 and 2011

Age group	2002	2011
18-19	86.5	78.1
20-24	73.2	71.5
25-29	39.4	48.5
30-34	19.5	28.5

It can be assumed that the vast majority of people at the age of 25-34 wish to leave their family home and the percentage of people who willingly decide to live with their parents is more or less steady. This state of affairs is mostly determined by demographic and economic reasons, which translate into the situation on the housing market. The years between censuses were the period when very numerous age groups born at the turn of the 1980s reached the age of 25-34. Hence, with such a significant increase in the number of this age group (in 2002 it consisted of 5.3 mln people, in 2011 - 6.4 mln people) it turned out that the purchase or rental of a dwelling was more difficult for young people than nine years

²The definition of the household representative can be found in the publication: "Households and families. Demographic characteristics. NSP 2011" pp. 19 - 20. <http://stat.gov.pl/spisy-powszechne/nsp-2011/nsp-2011-wvniki/gospodarstwa-domowe-i-rodzinv-charaktervstvka-demograficzna-nsp-2011,5,1.html>

before.

It should be also taken into consideration that the 2011 census was carried out shortly after the economic downturn in 2009. Due to this fact the difficult situation of many young people additionally hindered their leaving of family home. However, one should also bear in mind that in spite of the fact that the economic situation of young people in 2011 was worse than in 2008, it was clearly better than that in 2002. Regardless of this, greater difficulties on the labour market - after the period of a systematic improvement in the years 2003-2008 - could have contributed to deeper pessimism and uncertainty of the future among the "young adults" and a greater tendency to stay in their family home.

It is also worth noticing that comparing the first quarter of 2008 and 2010, the average cost of a square metre of usable floor space of a completed residential building increased from PLN 2 970 to PLN 4 372 (see Table 6). Although this indicator shows only outlays incurred by investors for the construction of multi-dwelling buildings, it is certainly strictly connected with prices on the housing market. Even taking into consideration a relatively high inflation in that period, it was definitely the highest growth of prices in over a dozen years. Since 2011 this indicator has stabilised.

Table 6. The price of 1 square metre of usable floor space of a completed residential building in the years 1999-2015

Year	1st quarter	2nd quarter	3rd quarter	4th quarter
2015	3 926	4 066	3 961	3 925
2014	4 129	4 141	3 880	3 984
2013	4 019	3 879	3 975	4 228
2012	4 130	4 103	3 915	3 837
2011	3 797	3 819	3 988	3 829
2010	4 372	4 433	4 657	3 979
2009	3 895	3 924	3 783	3 964
2008	2 970	3 186	3 478	3 631
2007	2 683	2 650	3 041	2 890
2006	2 560	2 445	2 557	2 619
2005	2 505	2 336	2 528	2 388
2004	2 412	2 562	2 386	2 195
2003	2 071	2 332	2 117	2 432
2002	2 400	2 400	2 484	2 330
2001	2 350	2 490	2 700	2 500
2000	2 245	2 280	2 300	2 300
1999	1 960	2 150	2 200	2 220

Therefore, it seems that the combination of a difficult economic situation, the increase in real estate prices and the quantitative increase of people at the age of 25-34 led to a difficult housing situation of people at that age at the beginning of the current decade. The problem was particularly visible in less wealthy rural areas. In urban areas the percentage of people at the age of 25-34 (in spite of a significant increase in the size of this group) living with people at the age of 40-64 dropped in the inter-census period from 54% to 50.1%. At the same time in rural areas it increased from 58.8% to 63.6%. Supposedly, this difference explains the substantially lower increase of the average number of adults per household in urban areas (Table 9).

Another clear trend was a substantial growth in the percentage of the oldest people (aged 80 years or more) living in households with a representative at the age of 35-64. In 2002 one fourth of the oldest people lived in such households, in 2011 it was already almost one third. It can be assumed that elderly parents living with adult children constituted the majority of these people.

The increase in this percentage was very clear both in urban and rural areas. In urban areas it grew from 18.4% in 2002 to 23.9% in 2011, in rural areas from 34.3% to 45.6%.

Between 2002 and 2011 the average lifespan in Poland increased by approx. two years. In 2011 it amounted to 72.4 years for males and 80.9 years for women. As a consequence, the population of people at an advanced elderly age (especially of women) who were not able to live on their own anymore and moved to their adult children was growing systematically. It is worth noticing that in Poland, in comparison to the western countries, due to cultural and economic reasons, elderly people are very seldom placed in specialised care centres. Hence, the increase of the lifespan is especially strongly correlated with the growth of the number of households in which adult children live with parents at an advanced elderly age.

It is worth mentioning that in the years 2002-2011 one trend leading to the drop of the average number of adults in households was also observed. In the inter-census period among households with children up to 24 years old the percentage of single parents increased - mothers (from 16.8% to 21%) and fathers (from 1.7% to 2.6%). The increase in the number of single fathers and mothers has been observed since the end of the 1970s. The above-mentioned data seem to indicate a general trend of the increase in frequency of the

dissolution of relationships, both formal and informal. However, in the period between the last two censuses the significance of this trend in shaping the structure of households, in comparison with the phenomena described previously, was slight.

Summing up, the most important factors influencing the changes in number and structure of households between 2002 and 2011 are the following:

- the increase in the number of people at the age of 25-34 and the percentage of these people living in households with a representative at the age of 40-64;
- the increase in number of people at the age of 80 or more and the percentage of these people living in households with a representative at the age of 35 -64;
- fall of the number of children.

Changes in the number and structure of households in a breakdown by voivodship

In the years 2002-2011 the number of households increased in eleven out of sixteen voivodship. Significant drops were observed in three voivodships: the Śląskie Voivodship (of slightly over 50 thous.), the Łódzkie Voivodship (of 40 thous.) and the Opolskie Voivodship (of 16 thous.) (see Table 7).

Table 7. The number of households by voivodships in 2002 and 2011 (in thous.)

	TOTAL			URBAN AREAS			RURAL AREAS		
	2002	2011	Change	2002	2011	Change	2002	2011	Change
Poland	13 337.0	13 568.0	230.9	8 964.5	9 146.9	182.4	4 372.6	4 421.1	48.5
Dolnośląskie	1 066.9	1 099.5	32.6	804.0	824.2	20.2	262.8	275.3	12.5
Kujawsko-pomorskie	706.7	729.2	22.5	477.0	490.3	13.3	229.7	238.9	9.2
Lubelskie	742.2	741.6	-0.5	372.0	385.4	13.4	370.2	356.2	-14.0
Lubuskie	345.7	364.8	19.0	235.9	250.0	14.0	109.8	114.8	5.0
Łódzkie	983.7	943.8	-39.9	689.0	662.0	-27.0	294.7	281.8	-12.9
Małopolskie	1 040.8	1 080.1	39.3	602.1	626.7	24.6	438.7	453.5	14.8
Mazowieckie	1 919.0	1 943.2	24.2	1 344.9	1 385.9	41.1	574.1	557.3	-16.8
Opolskie	369.8	353.7	-16.1	210.0	207.0	-3.0	159.8	146.6	-13.1
Podkarpackie	615.9	648.7	32.8	285.0	313.2	28.2	330.9	335.5	4.6
Podlaskie	407.4	417.0	9.7	257.7	271.9	14.2	149.6	145.1	-4.5
Pomorskie	755.2	806.2	51.0	557.3	582.6	25.3	197.9	223.5	25.7
Śląskie	1 778.0	1 727.6	-50.5	1 457.4	1 412.8	-44.6	320.6	314.8	-5.8
Świętokrzyskie	434.1	428.5	-5.6	220.5	220.2	-0.3	213.6	208.3	-5.3
Warmińsko- mazurskie	483.8	515.9	32.1	311.6	334.2	22.6	172.2	181.7	9.5
Wielkopolskie	1 079.7	1 129.0	49.3	691.3	710.7	19.4	388.4	418.3	29.9
Zachodniopomorskie	608.1	639.2	31.1	448.6	469.7	21.1	159.5	169.5	10.0

In the urban parts of voivodships the largest fall in the number of households was observed in the Śląskie Voivodship (of 44.6 thous.) and the Łódzkie Voivodship (of 27 thous.). In the rural part of voivodships the decrease of the number of households took place in seven voivodships and the highest (of 17 thous.) was recorded in the Mazowieckie Voivodship.

Both in 2002 and 2011 on average the most people lived in households in the Podkarpackie Voivodship (3.38 and 3.26, respectively) (see Table 8). As far as the year 2002 is concerned, the least people per household on average were observed in the Łódzkie Voivodship (2.63), whereas in 2011 in the Dolnośląskie Voivodship (2.64).

In the urban part of voivodships both in 2002 and in 2011 the least people per household were recorded in the Mazowieckie Voivodship (2.43 and 2.42, respectively) and the łódzkie Voivodship (2.44 and 2.44). In the inter-census period a significant decrease of this number was also observed in the urban parts of the Dolnośląskie Voivodship (from 2.55 to 2.46). In the urban part of voivodships the largest number of people per household was observed in the Podkarpackie Voivodship (2.94 in 2002 and 2.79 in 2011).

In 2002 in the rural area of voivodships there were the least people per household in the Śląskie Voivodship (3.08) and in 2011 in the Zachodniopomorskie Voivodship (3.14). The most people per household were in 2002 in the Podkarpackie Voivodship (3.77), while in 2011 in the Małopolskie Voivodship (3.73) but the difference in comparison with the Podkarpackie Voivodship was slight (0.03).

Table 8. The average number of persons per household by voivodships in 2002 and 2011

	TOTAL			URBAN AREAS			RURAL AREAS		
	2002	2011	Change	2002	2011	Change	2002	2011	Change
Poland	2.84	2.82	-0.01	2.60	2.54	-0.06	3.33	3.40	+0.08
Dolnośląskie	2.69	2.64	-0.06	2.55	2.46	-0.09	3.14	3.17	+0.03
Kujawsko-pomorskie	2.90	2.86	-0.04	2.67	2.57	-0.09	3.38	3.45	+0.07
Lubelskie	2.93	2.92	-0.01	2.70	2.60	-0.10	3.15	3.26	+0.10
Lubuskie	2.88	2.79	-0.10	2.72	2.58	-0.14	3.23	3.24	0.00
łódzkie	2.63	2.68	+0.04	2.44	2.44	0.00	3.09	3.24	+0.15
Małopolskie	3.06	3.07	+0.01	2.64	2.59	-0.05	3.65	3.73	+0.08
Mazowieckie	2.64	2.69	+0.06	2.43	2.42	0.00	3.14	3.37	+0.23
Opolskie	2.85	2.86	+0.01	2.63	2.55	-0.07	3.14	3.29	+0.15
Podkarpackie	3.38	3.26	-0.12	2.94	2.79	-0.15	3.77	3.70	-0.06
Podlaskie	2.94	2.87	-0.07	2.73	2.65	-0.08	3.31	3.28	-0.02
Pomorskie	2.86	2.81	-0.05	2.63	2.56	-0.07	3.50	3.47	-0.03
Śląskie	2.65	2.67	+0.02	2.55	2.54	-0.02	3.08	3.26	+0.18
Świętokrzyskie	2.96	2.97	+0.01	2.66	2.60	-0.06	3.27	3.36	+0.09
Warmińsko-mazurskie	2.92	2.80	-0.12	2.71	2.56	-0.15	3.29	3.23	-0.06
Wielkopolskie	3.08	3.04	-0.04	2.76	2.69	-0.07	3.63	3.62	-0.01
Zachodniopomorskie	2.76	2.68	-0.08	2.59	2.51	-0.08	3.22	3.14	-0.08

Between 2002 and 2011 the average number of people per household decreased in ten voivodships, while in six it grew. The largest decreases were observed in the Warmińsko-Mazurskie Voivodship, the Podkarpackie Voivodship (-0.12) and the Lubuskie Voivodship (-0.10) and the highest increase was in the Mazowieckie Voivodship (0.06) and the łódzkie Voivodship

(0.04).

It is worth noticing that the drop in the average number of persons per household was recorded in the urban part of all voivodships, except for the Łódzkie Voivodship and the Mazowieckie Voivodship. In eleven voivodships it was higher than or equal to -0.07. As far as the rural part of voivodships is concerned, in as much as ten voivodships an increase in this number was observed. This growth was particularly strong in the Mazowieckie Voivodship (0.23), the Śląskie Voivodship (0.18) as well as in the Opolskie Voivodship and the Łódzkie Voivodship (0.15).

Table 9. The average number of adult persons per household by voivodships in 2002 and 2011

	TOTAL			URBAN AREAS			RURAL AREAS		
	2002	2011	Change	2002	2011	Change	2002	2011	Change
Poland	2.18	2.28	+0.10	2.05	2.10	+0.05	2.44	2.67	+0.22
Dolnośląskie	2.12	2.17	+0.05	2.04	2.06	+0.02	2.34	2.52	+0.18
Kujawsko-pomorskie	2.21	2.30	+0.09	2.09	2.12	+0.03	2.45	2.68	+0.22
Lubelskie	2.22	2.35	+0.13	2.08	2.14	+0.05	2.35	2.57	+0.22
Lubuskie	2.19	2.24	+0.05	2.11	2.11	0.00	2.37	2.54	+0.17
Łódzkie	2.08	2.20	+0.12	1.97	2.04	+0.07	2.35	2.58	+0.24
Małopolskie	2.31	2.46	+0.15	2.08	2.14	+0.06	2.63	2.89	+0.26
Mazowieckie	2.06	2.18	+0.12	1.95	2.00	+0.05	2.32	2.63	+0.32
Opolskie	2.20	2.36	+0.16	2.06	2.13	+0.07	2.39	2.69	+0.30
Podkarpackie	2.50	2.60	+0.10	2.23	2.28	+0.05	2.72	2.89	+0.16
Podlaskie	2.21	2.32	+0.11	2.06	2.16	+0.10	2.47	2.61	+0.14
Pomorskie	2.16	2.23	+0.07	2.07	2.09	+0.03	2.44	2.60	+0.17
Śląskie	2.08	2.20	+0.12	2.02	2.11	+0.08	2.33	2.61	+0.28
Świętokrzyskie	2.27	2.42	+0.15	2.10	2.17	+0.07	2.46	2.69	+0.23
Warmińsko-mazurskie	2.17	2.23	+0.06	2.08	2.09	+0.01	2.34	2.49	+0.15
Wielkopolskie	2.33	2.43	+0.10	2.16	2.21	+0.05	2.64	2.80	+0.17
Zachodniopomorskie	2.12	2.17	+0.05	2.04	2.08	+0.03	2.33	2.45	+0.11

The decrease of the number of births considerably influences changes in the average number of persons in households. In order to estimate how strong the impact of the drop of births in particular voivodships was, and how influential the increase in the number of people at the age of 25-34 as well as people aged 80 years or more were, it is worth analysing the data concerning the average number of people in a breakdown by children and adults.

The average number of adults per household grew substantially in all voivodships

(see Table 9). It increased the least in the Zachodniopomorskie Voivodship, the Dolnośląskie Voivodship and the Lubuskie Voivodship (0.05), and the most in the Opolskie Voivodship (0.16) as well as in the Małopolskie Voivodship and the Świętokrzyskie Voivodship (0.18). The rise took place both in urban and rural areas of all voivodships (the one exception is the urban part of the Lubuskie Voivodship, in which the average number of adults remained unchanged). It is worth noticing that in urban areas the increase was visibly lower (by 0.05) than in rural areas (by 0.22).

Table 10. The average number of children per household by voivodships in 2002 and 2011

	TOTAL			URBAN AREAS			RURAL AREAS		
	2002	2011	Zmiana	2002	2011	Change	2002	2011	Change
Poland	0.66	0.54	-0.12	0.55	0.44	-0.11	0.88	0.74	-0.15
Dolnośląskie	0.58	0.46	-0.12	0.51	0.40	-0.11	0.80	0.65	-0.14
Kujawsko-pomorskie	0.69	0.56	-0.13	0.58	0.46	-0.12	0.93	0.78	-0.15
Lubelskie	0.71	0.57	-0.14	0.62	0.46	-0.15	0.81	0.69	-0.12
Lubuskie	0.69	0.54	-0.15	0.61	0.47	-0.14	0.87	0.70	-0.16
Łódzkie	0.55	0.47	-0.08	0.47	0.40	-0.07	0.75	0.66	-0.09
Małopolskie	0.75	0.61	-0.14	0.55	0.44	-0.11	1.02	0.85	-0.17
Mazowieckie	0.58	0.51	-0.07	0.47	0.42	-0.05	0.82	0.74	-0.08
Opolskie	0.65	0.50	-0.15	0.57	0.42	-0.14	0.75	0.60	-0.15
Podkarpackie	0.89	0.66	-0.23	0.71	0.51	-0.20	1.04	0.81	-0.23
Podlaskie	0.73	0.55	-0.18	0.66	0.49	-0.17	0.83	0.67	-0.16
Pomorskie	0.69	0.57	-0.12	0.56	0.46	-0.10	1.06	0.86	-0.20
Śląskie	0.57	0.47	-0.10	0.53	0.43	-0.10	0.75	0.64	-0.11
Świętokrzyskie	0.69	0.55	-0.14	0.56	0.43	-0.13	0.82	0.68	-0.14
Warmińsko-mazurskie	0.75	0.57	-0.18	0.63	0.47	-0.16	0.95	0.74	-0.20
Wielkopolskie	0.75	0.61	-0.14	0.61	0.48	-0.12	1.00	0.82	-0.18
Zachodniopomorskie	0.64	0.50	-0.14	0.55	0.43	-0.11	0.89	0.70	-0.19

In all voivodships (both in urban and rural areas) between 2002 and 2011 a drop in the average number of children per household was observed (see Table 10). The largest falls were recorded in the Podkarpackie Voivodship (0.23) as well as the Warmińsko-Mazurskie Voivodship and the Podlaskie Voivodship (0.18), whereas the lowest in the Mazowieckie Voivodship (0.07) and the Łódzkie Voivodship (0.08)

CHANGES IN THE SIZE OF HOUSEHOLDS IN THE YEARS 2011-2016 AND THE ASSUMPTIONS OF THE PROJECTION UNTIL 2050

It can be claimed that during the years which have passed since the last census the reversal of the trend towards an increase in the number of adult persons per household took place. Data from the sample *Survey of Household Budgets* shows that between 2011 and 2014 the average number of persons per household dropped from 2.87 to 2.73³. Taking into account a relatively steady fall of the number of children in households (the number of persons at the age of 0-17 has been decreasing systematically for over a dozen years), it should be assumed that the number of adults also dropped. The reversal of trend is primarily indicated by changes in the age structure of the Polish population which took place in recent years.

In 2012, for the first time after the year 2002, the number of people at the age of 25-34 dropped. In 2014 the size of this age group decreased by almost 100 thous. According to the population projection until 2050 the fall of people at that age will be the strongest at the end of the current decade and will amount to 200 thous. in annual terms. In 2019 the number of people at the age of 25-34 will be similar to the one from 2002. This process will be faster in urban areas where the number of the analysed population will reach the level similar to the one observed in 2002 already in 2017. In rural areas it will take place in 2024.

How the decrease in the population of people aged 25-34 will translate into changes in the structure of households depends on the situation on the housing market. In recent years we observe a relative stability of dwelling prices. Furthermore, the implementation of governmental programmes facilitating the purchase or rental of a dwelling is projected. It seems that there are no reasons to assume a significant deterioration of the situation on the housing market. Hence, it should be expected that the described demographic changes will have a substantial impact on the decrease of the percentage of adult children living with their parents.

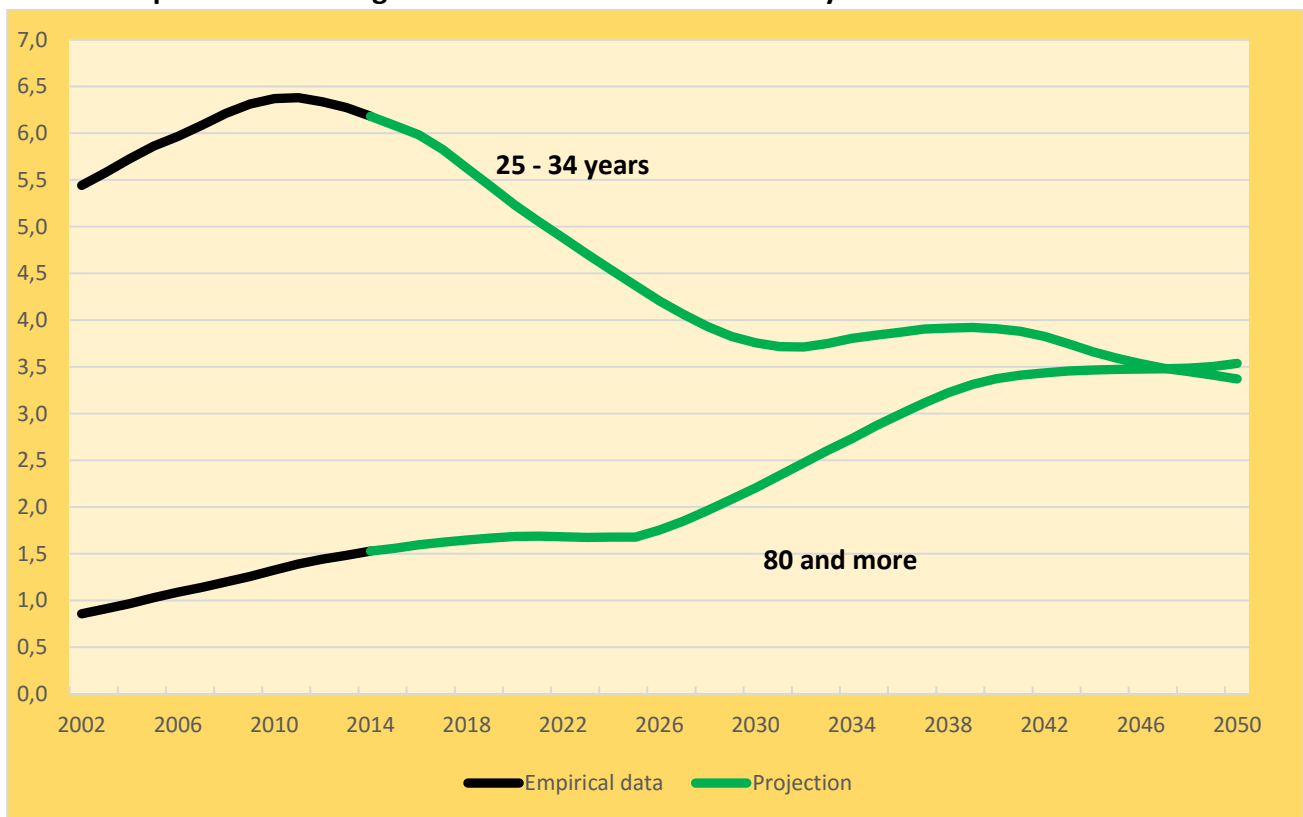
Since 2013 a significant deceleration of the increase of the number of people at an advanced elderly age (80 years old or more) has been observed. In the years 2002-2011 the number of people at that age grew year-on-year from 53 thous. to almost 70 thous. In 2013 it increased by 39 thous. and in 2014 by 46 thous. According to the results of the population projection this growth will systematically decrease in the forthcoming years. In 2022 and 2023

³ <http://stat.gov.pl/obszarv-tematvczne/warunki-zvcia/dochodv-wvdatki-i-warunki-zvcia-ludnosci/budzetv-gospodarstw-domowych-w-2014-r-,9,9.html>

even a small fall in the size of the group is projected (by 8 and 5 thous., respectively).

Starting from 2026, the rapid increase of the number of people at the age of 80 or more will begin. It is connected with entering into an advanced elderly age by very numerous age groups born between the end of World War II and the beginning of the 1960s. In the years 2028-2038 the size of this age group will be increasing by over 100 thous. each year. In total, between 2025 and 2040 the number of persons at the age of 80 or more will increase from 1.7 mln to 3.4 mln, which will constitute a twofold growth (see Chart 1).

Chart 1. Population at the age of 25-34 and 80 or more in the years 2002-2050



A question arises to what extent such a rapid growth of the number of people at the age of 80 or more will contribute to an increase in the percentage of households in which parents at an advanced elderly age live with their children (or other middle-aged relatives). It can be stated with a high level of certainty that such a growth will lead to significant changes in the organisation of care for the elderly. One may assume that nursing homes will be more accessible, the quality of care will improve and placing the elderly in nursing homes will become more culturally acceptable. Regardless of this fact, a lot of elderly unable to live on their own will

probably move to their adult children (relatives). Therefore, it should be expected that the dynamic growth of the population of the elderly will slow down, and in the further perspective the process of the decrease in the average number of adult persons per household will be reversed.

It is worth noticing that also between 2030 and 2042 the number of people at the age of 25-34 will remain on a relatively steady level. Their number in that period will be within a range between 3.7 and 3.9 mln and it will be very low in comparison to the present values. Assuming the lack of a significant deterioration of economic conditions, it can be expected that already around 2030 the phenomenon of staying in the family home by people at that age will be much less common than nowadays. Hence, further variations of the size of this group will have a relatively low impact on the structure of households.

It should be assumed that the expected improvement of the housing situation (connected with the decrease of the population number, especially the number of young people) will cause that marriage or civil partnership dissolutions will lead to the creation of a new household much more often than nowadays. It may be assumed that at the end of the projection timeframe there will be more households inhabited only by one middle-aged person.

It seems that in the final period of the projection this trend may facilitate the increase in the percentage of households with a lower number of adults and be a counterbalance for the growth of the average number of adults caused by a rapid increase in the number of people at an advanced elderly age.

Owing to the fact that during the whole period of the projection the decrease of the number of births is projected, a systematic drop of the average number of children in households and a growth of the number and percentage of households without children should be expected.

THE RESULTS OF THE PROJECTION

In accordance with the results of the population projection 2014-2050 the structure of people by age will be subject to dynamic changes as a consequence of the demographic cycle, which means interchangeable periods of population booms and drops of the birth rate. The lowering number of births and the rapid ageing of the Polish population are reflected in the household projection.

It is projected that the number of households in Poland will have increased by 2030 (to the level of approx. 15.4 mln – 1.8 mln more than 2011), then it will have decreased by the end of the projection timeframe (see Table 11). In 2050 the total number of households will be at a level similar to the results of the 2011 population and housing census (i.e. it will reach the value of approx. 13.5 mln). This data results from both the projected changes in processes of forming households and a rapid drop in the population number at the end of the projection timeframe.

Chart 2. The number of households in Poland in the years 2016-2050 (in mln)

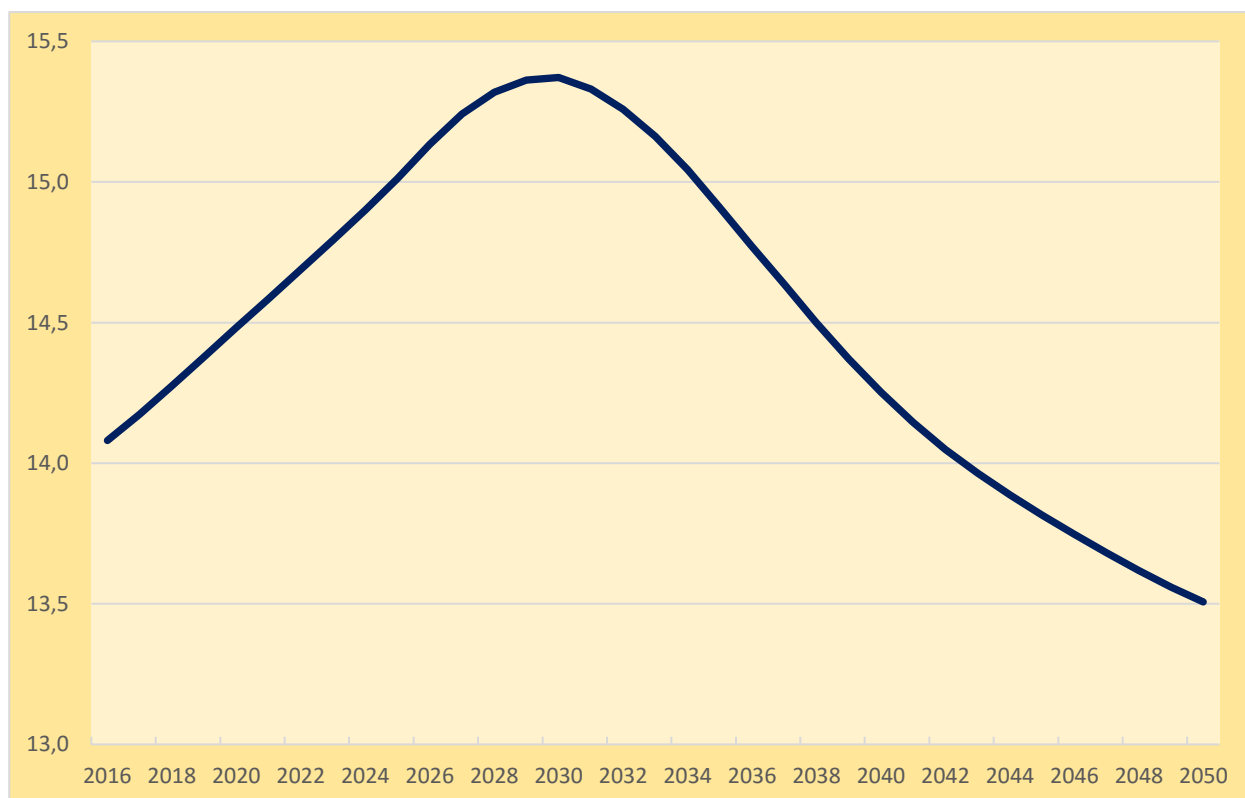


Table 11. The number of households in Poland in the years 2011-2050 (in mln)

	2011	2016	2020	2025	2030	2035	2040	2045	2050
Total	13.6	14.1	14.5	15.0	15.4	14.9	14.3	13.8	13.5
Urban areas	9.1	9.4	9.6	9.8	9.9	9.5	9.0	8.6	8.3
Rural areas	4.4	4.7	4.9	5.2	5.5	5.4	5.3	5.2	5.2

The average number of persons per household

The average number of people per household will also have systematically dropped by the early 2030s. This drop will be quite significant - from 2.71 in 2016 to 2.40 in 2030. It will be followed by an increase in this number and then in the last decade the average size of a household will stabilise at a level of approx. 2.50 (see Table 12).

Chart 3. The average number of persons per household in the years 2016-2050

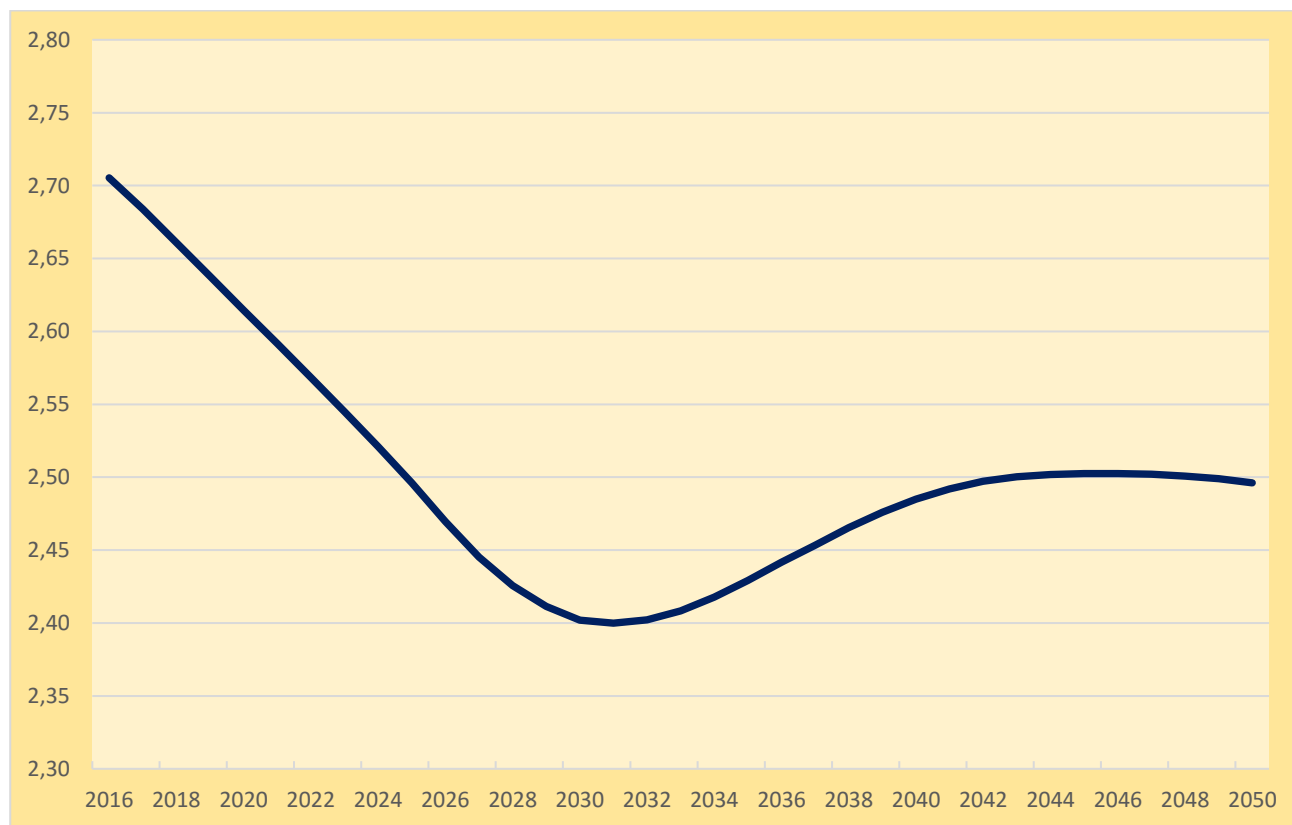


Table 12. The average number of persons per household in the years 2011-2050

	2011	2016	2020	2025	2030	2035	2040	2045	2050
Total	2.82	2.71	2.61	2.50	2.40	2.43	2.48	2.50	2.50
Urban areas	2.54	2.43	2.34	2.24	2.17	2.18	2.23	2.25	2.24
Rural areas	3.40	3.26	3.16	2.98	2.81	2.86	2.91	2.91	2.92

Changes in the average household size result from variations of the average number of adults and the constant drop in the average number of children in households (see Table 13 and 14).

Chart 4. The average number of adult persons per household in the years 2016-2050

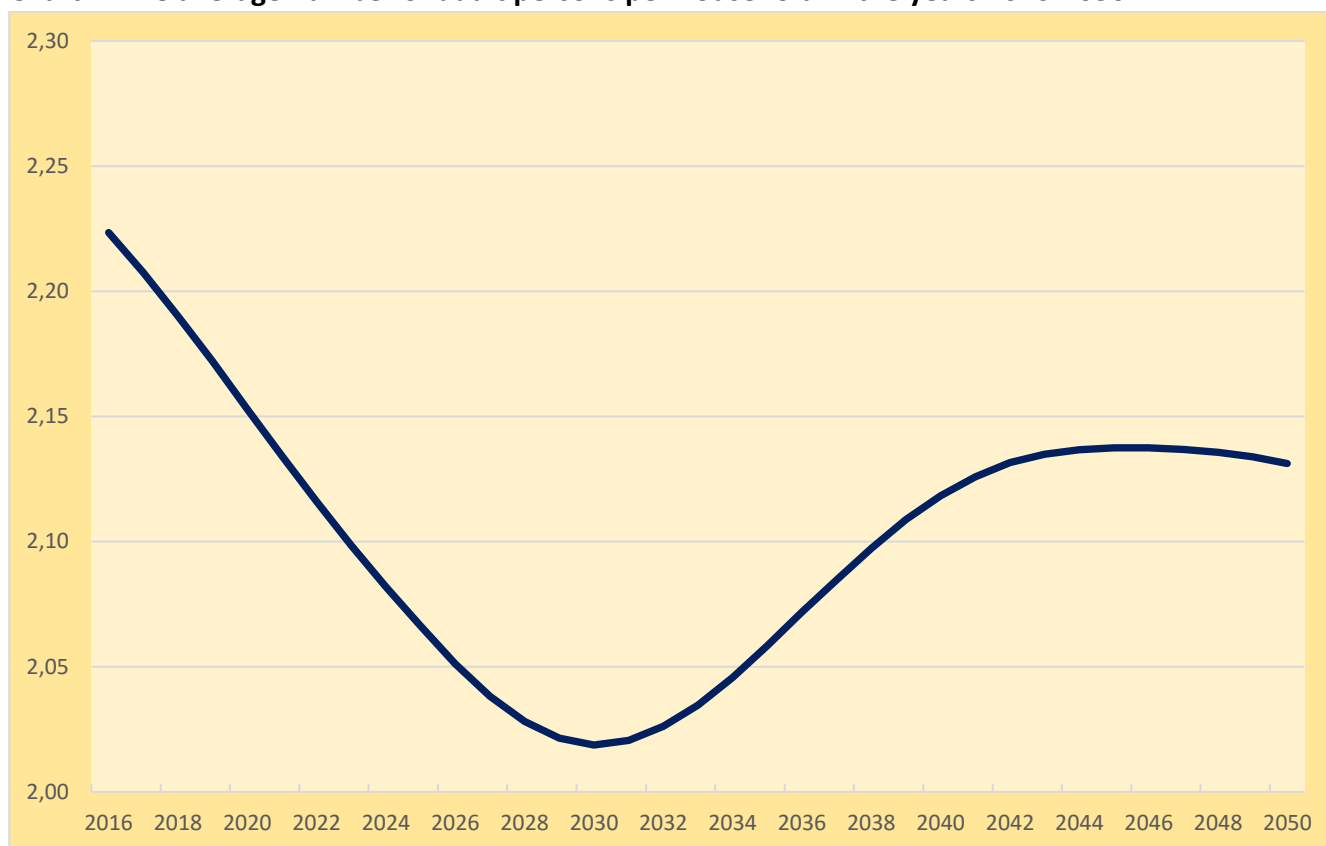


Table 13. The average number of adult persons per household in the years 2011-2050

	2011	2016	2020	2025	2030	2035	2040	2045	2050
Total	2.28	2.22	2.15	2.07	2.02	2.06	2.12	2.14	2.13
Urban areas	2.10	2.03	1.95	1.88	1.85	1.87	1.92	1.94	1.92
Rural areas	2.67	2.61	2.55	2.42	2.32	2.39	2.45	2.46	2.47

Chart 5. The average number of children per household in the years 2016-2050

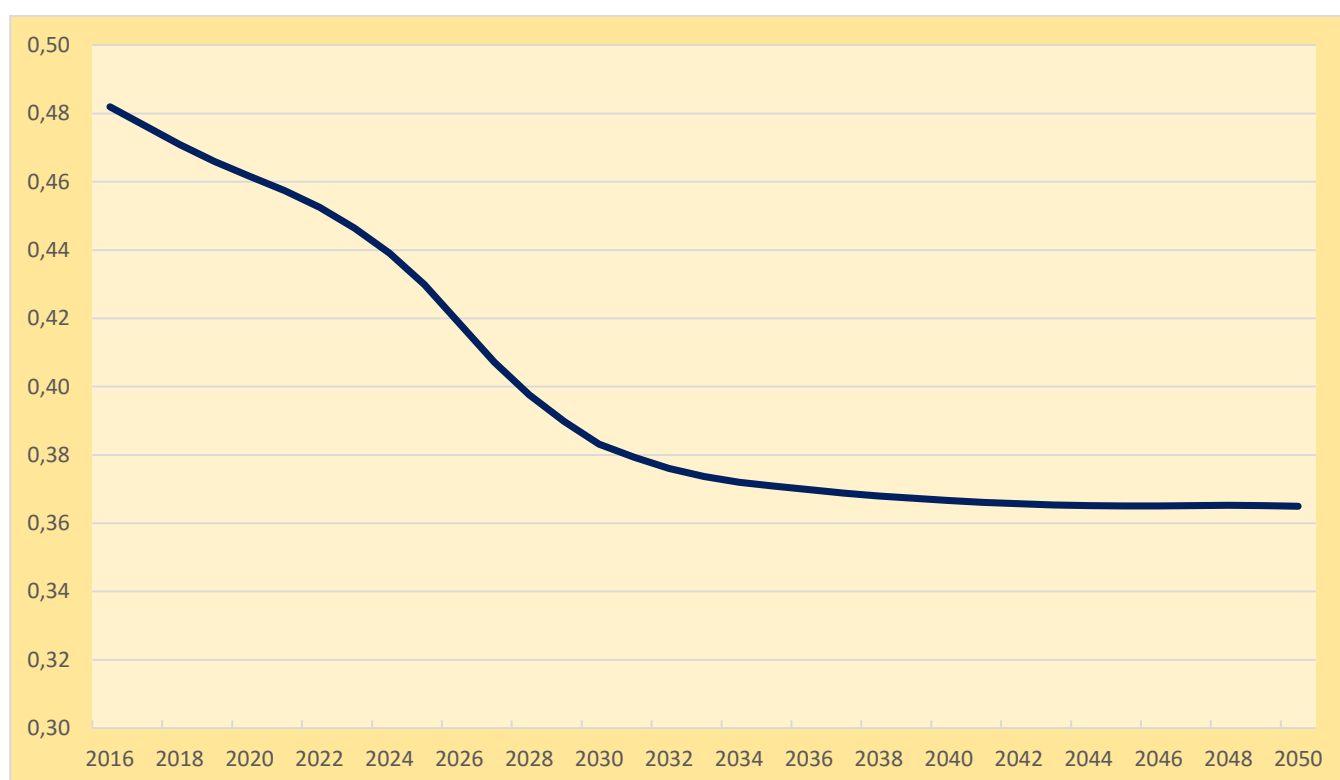


Table 14. The average number of children per household in the years 2011-2050

	2011	2016	2020	2025	2030	2035	2040	2045	2050
Total	0.54	0.48	0.46	0.43	0.38	0.37	0.37	0.37	0.36
Urban	0.44	0.40	0.39	0.36	0.32	0.31	0.31	0.31	0.31
Rural	0.74	0.64	0.61	0.56	0.49	0.47	0.46	0.45	0.45

At the end of the projection timeframe a significant slowdown of the drop in the average number of children per household is projected. The reason is the slower rate of the decrease of number of births

which, according to the population projection, will take place at the turn of the 2040s.

Households by number of children and adults

The drop in the average number of adult persons per household in the initial period of the projection (until around 2030) will be connected with the lowering percentage of households inhabited by three or more adults as well as the increase in the percentage of one-person households (see Table 15). In the 2030s the process will be reversed and the percentage of households with a higher number of adults will rise. It is worth pointing out that during the whole period of the projection the percentage of two-person households will not change significantly.

Table 15. Households by number of adult persons in the years 2016-2050

The number of adults	2016	2020	2030	2040	2050
In thous.					
Total	14 081	14 482	15 372	14 253	13 507
0	41	41	38	33	31
1	4 096	4 527	5 477	4 693	4 407
2	5 543	5 741	6 111	5 534	5 225
3	2 459	2 415	2 348	2 347	2 239
4	1 281	1 174	960	1 111	1 075
5 or more	661	586	439	535	528
In %					
0	0.3	0.3	0.2	0.2	0.2
1	29.1	31.3	35.6	32.9	32.6
2	39.4	39.6	39.8	38.8	38.7
3	17.5	16.7	15.3	16.5	16.6
4	9.1	8.1	6.2	7.8	8.0
5 or more	4.7	4.0	2.9	3.8	3.9

During the whole period of the projection the increase in the percentage of households in which there are no children will be observed (see Table 16). At the end of the projection timeframe it will account for approx. 75% households. As far as households with children are

concerned, the percentage of those with only one child (in 2016 – approx. 59%, in 2050 – slightly over 62%) will increase.

Table 16. Households by number of children in the years 2016-2050

The number of children	2016	2020	2030	2040	2050
In thous.					
Total	14 081	14 482	15 372	14 253	13 507
0	9 657	10 072	11 430	10 726	10 159
1	2 595	2 631	2 400	2 173	2 079
2	1 439	1 414	1 242	1 099	1 035
3	293	275	228	195	179
4	67	62	50	42	38
5 or more	30	27	21	18	16
In %					
0	68.6	69.5	74.4	75.3	75.2
1	18.4	18.2	15.6	15.2	15.4
2	10.2	9.8	8.1	7.7	7.7
3	2.1	1.9	1.5	1.4	1.3
4	0.5	0.4	0.3	0.3	0.3
5 or more	0.2	0.2	0.1	0.1	0.1
In % (among households with children)					
1	58.7	59.7	60.9	61.6	62.1
2	32.5	32.1	31.5	31.2	30.9
3	6.6	6.2	5.8	5.5	5.4
4	1.5	1.4	1.3	1.2	1.1
5 or more	0.7	0.6	0.5	0.5	0.5

The projection results in a breakdown by voivodship

In the years 2016-2050 the number of households will drop in twelve out of sixteen voivodships. The largest drops will be observed in the Śląskie Voivodship and the Łódzkie Voivodship. As far as the number of households in 2016 is concerned, the number of households in these two voivodships as well as in the Świętokrzyskie Voivodeship and the Opolskie Voivodship will decrease by more than 10%. In the same period in the Mazowieckie Voivodship and the Małopolskie Voivodship a 7% and 6% increase, respectively, in the number of

households will be observed (see Table 17). By 2030 the number of households will have increased significantly in all voivodships (a drop in the size of the group at the age of 25-34 will be visible in this period in each of them). In the subsequent years of the projection, due to a growth of the number of people at an advanced elderly age (80 years or more) as well as the drop of the population number, the number of households will decrease in all voivodships.

Table 17. The number of households in voivodships in the years 2016-2050

	2016	2020	2030	2040	2050	Change 2016-2050
Poland	14 081.0	14 482.4	15 371.7	14 252.8	13 506.6	-574.4
Dolnośląskie	1 133.1	1 157.4	1 205.5	1 110.7	1 044.0	-89.1
Kujawsko-pomorskie	760.0	784.5	836.2	761.9	715.5	-44.5
Lubelskie	766.3	786.1	829.7	745.8	686.9	-79.3
Lubuskie	379.6	391.1	416.5	382.0	359.2	-20.4
Łódzkie	957.7	969.1	995.3	895.5	825.8	-131.9
Małopolskie	1 140.2	1 191.8	1 300.2	1 243.0	1 211.4	+71.2
Mazowieckie	2 024.5	2 074.6	2 240.7	2 194.5	2 156.5	+132.0
Opolskie	363.7	373.6	392.9	339.3	303.9	-59.8
Podkarpackie	684.3	713.0	770.9	712.9	674.6	-9.8
Podlaskie	435.2	449.0	471.9	432.5	404.1	-31.2
Pomorskie	842.5	866.7	929.0	897.7	877.9	+35.4
Śląskie	1 772.1	1 817.8	1 893.4	1 686.3	1 555.4	-216.7
Świętokrzyskie	443.1	454.8	479.3	421.1	382.9	-60.2
Warmińsko-mazurskie	531.8	540.4	560.4	520.6	486.0	-45.8
Wielkopolskie	1 182.7	1 229.9	1 337.6	1 255.0	1 209.4	+26.7
Zachodniopomorskie	664.2	682.4	712.2	653.9	613.2	-51.1

In all voivodships, during the period covered by the projection, the average number of people per household will drop. This will result from both a drop in the average number of children (in the projected period the number of births will be systematically decreasing in all voivodships) and the average number of adults. In spite of a substantial growth of the latter in the 2040s, it will still be lower than in the initial period of the projection. The lowest average numbers of persons per household will be observed in particular voivodships around 2030.

In 2050, similarly to 2016, the Podkarpackie Voivodship will be the voivodship with the highest average number of persons per household but the difference between this voivodship

and the second in the ranking - the Wielkopolskie Voivodship - will be reduced (3.08 against 2.92 in 2016 and respectively 2.76 against 2.70 in 2050). In the two above-mentioned voivodships and in the Małopolskie Voivodship (2.68) the average number of people per household will be much higher than in the remaining part of the country.

Especially low average number of people, similarly as in 2016, will be observed in 2050 in the Dolnośląskie Voivodship, the Śląskie Voivodship and the Zachodniopomorskie Voivodship (see Table 18). The total variation of this value at the end of the projection timeframe will be lower than currently, i.e. in 2016.

Table 18. The average number of persons per household in voivodships in the years 2016-2050

	2016	2020	2030	2040	2050	Change 2016-2050
Poland	2.71	2.61	2.40	2.48	2.50	-0.21
Dolnośląskie	2.53	2.46	2.28	2.36	2.37	-0.16
Kujawsko-pomorskie	2.72	2.62	2.38	2.49	2.50	-0.22
Lubelskie	2.76	2.65	2.39	2.48	2.47	-0.29
Lubuskie	2.66	2.56	2.33	2.42	2.43	-0.23
Łódzkie	2.57	2.50	2.30	2.39	2.41	-0.17
Małopolskie	2.94	2.82	2.59	2.68	2.68	-0.25
Mazowieckie	2.62	2.58	2.40	2.43	2.45	-0.18
Opolskie	2.70	2.57	2.28	2.42	2.43	-0.27
Podkarpackie	3.08	2.95	2.66	2.76	2.76	-0.33
Podlaskie	2.70	2.59	2.36	2.43	2.42	-0.29
Pomorskie	2.72	2.66	2.50	2.55	2.56	-0.16
Śląskie	2.55	2.45	2.23	2.34	2.35	-0.20
Świętokrzyskie	2.80	2.68	2.40	2.53	2.54	-0.27
Warmińsko-mazurskie	2.68	2.61	2.43	2.47	2.47	-0.21
Wielkopolskie	2.92	2.82	2.58	2.68	2.70	-0.22
Zachodniopomorskie	2.55	2.46	2.28	2.35	2.35	-0.20

The detailed results of the projection for voivodships, as well as for Poland in total, are presented in the tabular annex.

SUMMARY. MAIN ASSUMPTIONS AND THE RESULTS OF THE PROJECTION

- 1) According to the results of the population projection until 2050, we will observe the following demographic changes:
 - o By 2030 a drop in the group of people at the age of 25-34;
 - o Between 2025 and the beginning of the 2040s a very significant increase in the group of people at the age of 80 or more;
 - o A systematic fall of the number of children in the whole period of the projection;
 - o A general drop of the population number, especially fast at the end of the projection timeframe.

As a result of these processes the changes in the number and structure of households will take place,

in particular:

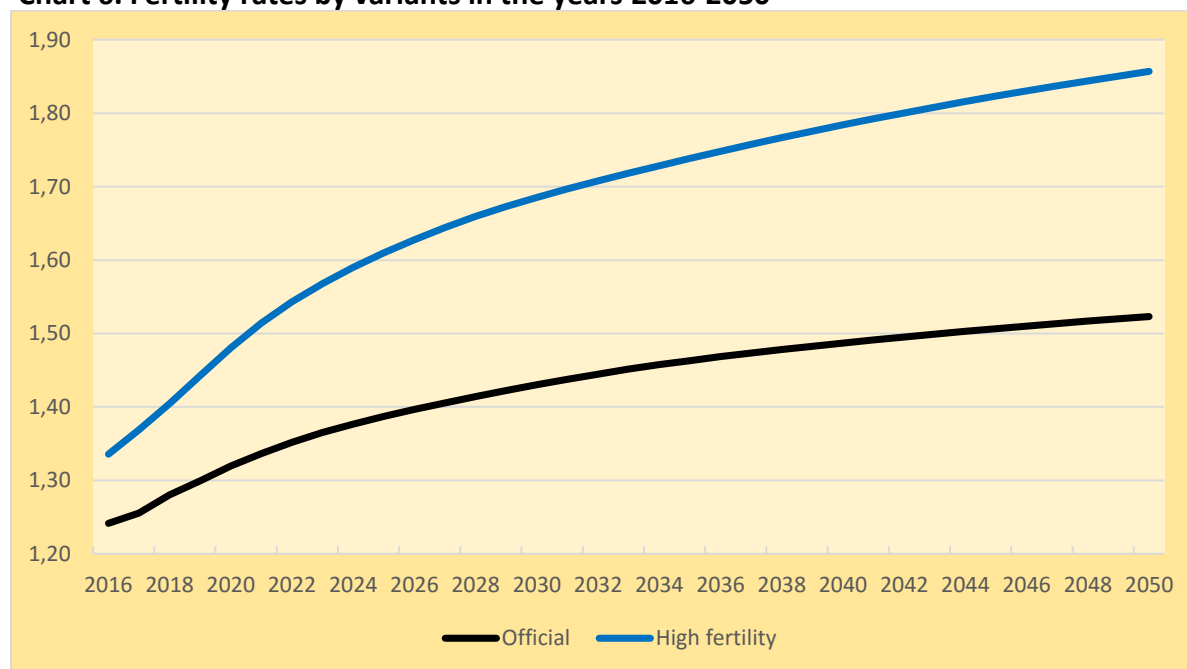
- o By 2030 an increase in the number of households with a lower number of adults caused by a more frequent creation of their own households by people at the age of 25-34. This will take place with the assumption of the lack of a significant deterioration in the economic situation (in particular the situation on the housing market);
 - o After 2030 the slowdown and the reversal of this growth in connection with a rapid increase in the number of people at the age of 80 or more. A significant number of these people unable to live on their own will move to their adult relatives. The scale of this phenomenon will depend on the level of development of the institutional care over the elderly and the degree of social acceptance for the use of such type of services;
 - o A systematic decrease of the average number of children in households. In 2011 this indicator amounted to 0.54, in 2050 it will reach the value of 0.36. In 2011 households without children constituted 66.5% and in 2050 they will constitute 75.2% of all households.
- 2) The number of households, which in 2011 in Poland amounted to 13.6 mln, will have increased by 2030 to reach the value of 15.4 mln. In the subsequent years the number of households will decrease - to 13.5 mln in 2050.
 - 3) The average number of persons per household in 2011 amounted to 2.82. Until 2030 the value of this indicator will drop to the level of 2.40, while in the final years of the projection it will rise to the value of 2.50 in 2050.

ALTERNATIVE VARIANT. THE HOUSEHOLD PROJECTION TAKING INTO CONSIDERATION CHANGES IN THE FAMILY POLICY

Since publication of the *Population projection 2014-2050* the significant changes took place in the family policy in Poland. The most important of them is introducing the *Family 500+* programme. Therefore, the Central Statistical Office prepared a demographic projection which is a simulation of the results of the programme. The projection results were presented for the first time in April 2016 during the conference of the Governmental Population Council on the demographic prospects of Poland with a special emphasis on the effects for the society and economy of the country⁴.

The simulation based on the high birth rate variant differs from the official projection only in terms of the assumptions on fertility. The assumptions concerning migration and mortality remained unchanged. In contrast to the official projection, a systematic growth of the fertility rate for the whole period of the projection to the level of 1.85 in 2050 was assumed (in comparison to 1.52 in the official variant) (see Chart 6).

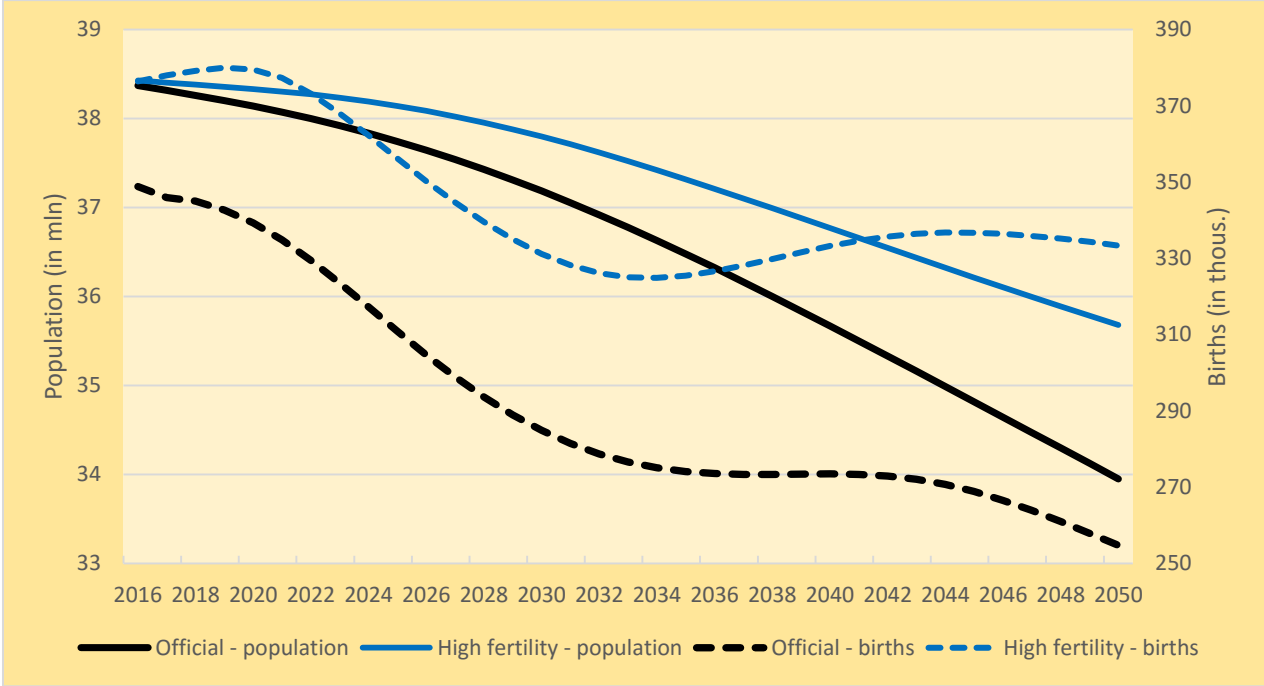
Chart 6. Fertility rates by variants in the years 2016-2050



⁴ <http://bip.stat.gov.pl/organizacja-statystyki-publicznej/rzadowa-rada-ludnoscowa/konferencja-rzadowei-radv-ludnoscowej-26-kwietnia-2016-r/#>

The change of the projection assumptions will translate in the significant way into the projected number of births and, as a consequence, also into the number and structure of the population (see Chart 7). In particular, the group of people at the age of 0-17 will be substantially larger and in 2050 will consist of approx. 6 mln people, i.e. it will be larger by over a million people than projected in the official variant.

Chart 7. Population and births by variants in the years 2016-2050



Changes in the assumptions of the population projection will also translate into changes in the projected number and structure of households. In particular, they will concern the number of children in households. The percentage of households without children in the alternative variant will amount to 71.4% in 2050 and it will be by almost four percentage points lower than in the official variant of the projection. The percentage of households in which there are three or more children, unlike in the official variant, will remain at a similar level. By 2050 it will have dropped by only 0.25 percentage points and will amount to 2.5% (in comparison with 1.7% in the official variant). Furthermore, the percentages of households with one or two children will be higher than those projected in the official variant (see Table 19).

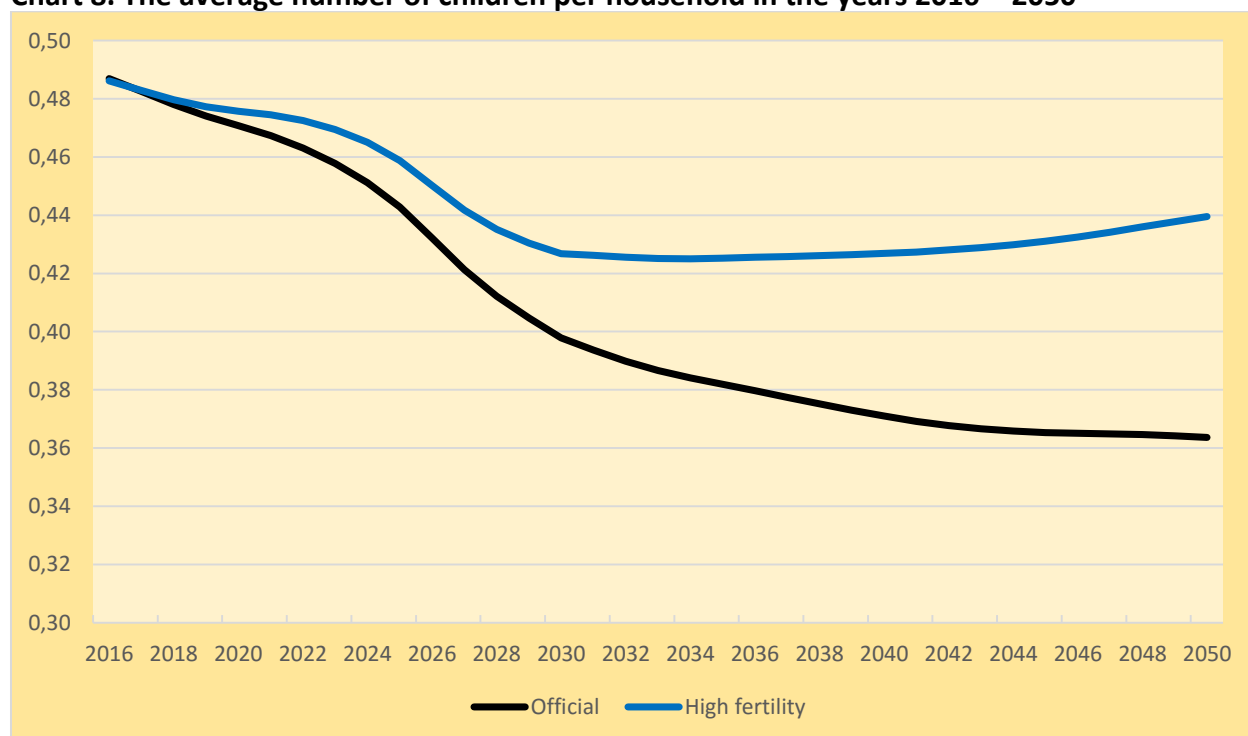
As a consequence, through the whole projected period the average number of children per household will be higher than in the official variant. In 2050 it will amount to 0.44

and will be higher by 0.08 than in the official variant of the projection (see Chart 5)

Table 19. Households by number of children in the years 2016-2050 (high fertility variant)

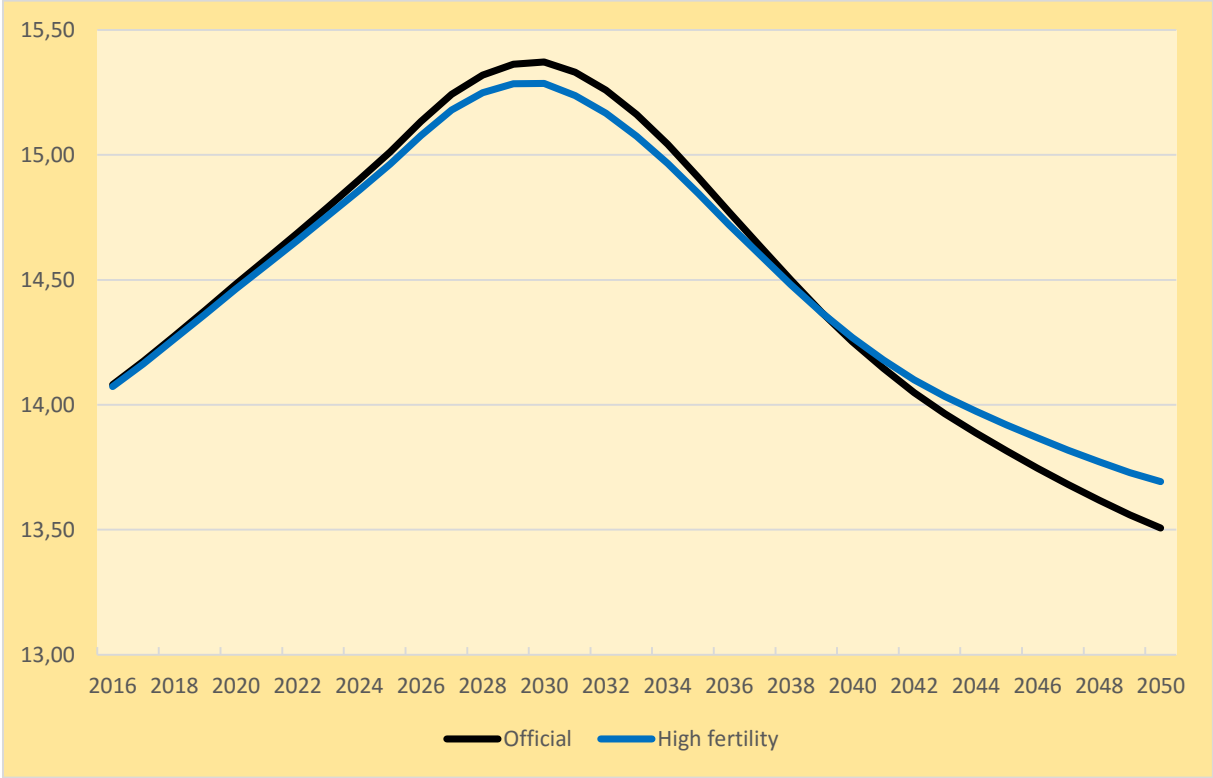
The number of children	2016	2020	2030	2040	2050
In thous.					
Total	14 073	14 463	15 287	14 269	13 693
0	9 612	9 974	11 035	10 304	9 776
1	2 617	2 636	2 494	2 322	2 293
2	1 451	1 459	1 383	1 291	1 276
3	295	296	282	264	261
4	67	68	65	61	60
5 or more	30	30	29	27	27
In %					
0	68.3	69.0	72.2	72.2	71.4
1	18.6	18.2	16.3	16.3	16.7
2	10.3	10.1	9.0	9.0	9.3
3	2.1	2.0	1.8	1.8	1.9
4	0.5	0.5	0.4	0.4	0.4
5 or more	0.2	0.2	0.2	0.2	0.2
In % (among households with children)					
1	58.7	58.7	58.6	58.6	58.5
2	32.5	32.5	32.5	32.6	32.6
3	6.6	6.6	6.6	6.7	6.7
4	1.5	1.5	1.5	1.5	1.5
5 or more	0.7	0.7	0.7	0.7	0.7

Chart 8. The average number of children per household in the years 2016 – 2050



However, the changes in assumptions in the high fertility variant have an insignificant impact on the projected total number of households. People born in the forthcoming years will reach the adult age and start their own families no sooner than at the end of the projection timeframe. Then the number of households will amount to approx. 13.7 mln and will be by almost 200 thous. higher than in the official variant (see Chart 9.). However, until 2039 the number of households projected in the high fertility variant will be insignificantly lower than in the official one. This results from the fact that on average in households with higher number of children there are also more adults. The higher number of numerous households will translate into the insignificantly higher average number of adult persons per household and, by extension, the smaller number of households.

Chart 9. The number of households in Poland in the years 2016-2050 (in mln)



The detailed results of the household projection based on the high fertility variant are presented in the tabular annex.

ANNEX 1

THE PROJECTION METHODOLOGY

For the purposes of the projection four coefficients described below were developed. The coefficients were calculated on the basis of the census data for the years 2002 and 2011, for all voivodships in a breakdown by urban and rural areas. Their values for the subsequent years of the projection were calculated in such a way so that they are compatible with the projected changes in the structure of households.

Abbreviations in formulas:

H_{ak} - The number of households with the number of adults a and the number of children k

P - The total population of a given unit

Fraction coefficient:

$$C_{fraction} = \sum_{a=0}^{max\ a} \sum_{k=0}^{max\ k} (a + k) / P$$

i.e. the population in households divided by the total number of the population.

It is a value with an insignificant variation. It aims at excluding from the total population number people living in collective accommodation establishments, such as dormitories, student dormitories, employee hostels, orphanages, social welfare homes for people with chronic conditions or the disabled, convents, religious houses, etc.

Sibling coefficients:

$$\forall k; C_{sibl.} = k \times H_k / \sum_{k=1}^{max k} (k \times H_k)$$

i.e. the number of children living in households with a given number of children divided by the total number of children (people at the age of 0-17 years).

Coefficients show changes in the number of children in households with children. They are strictly connected with changes in the number and percentage of births of particular orders. However, they are not directly connected with the average number of children per household, which depends most of all on the population number of people at the age of 0-17.

Cohabitation coefficients:

$$\forall a; C_{coh.} = a \times H_{ak} / \sum_{a=1}^{max a} (d \times H_{ak}), \text{ for } k = 0$$

i.e. the number of adults in households with a given number of adults divided by the total number of adults (calculated for adults in households without children).

Coefficients reflect the correlations and the tendency to create common households between adults living without children; strictly connected with the average number of adults per household.

Care coefficients:

$$\forall a; \forall k > 0; C_{care} = H_{ak} / H_k$$

i.e. the number of households with a given number of children and adults divided by the number of households with a given number of children (calculated for households with children).

Coefficients reflect the same phenomena as the cohabitation coefficient but they concern households with children. Coefficients were distinguished separately due to technical reasons; they are strictly connected with the average number of adults per household. Changes of care and cohabitation coefficients are projected jointly.

Coefficients for the forthcoming years of the projection:

The fraction coefficient. A constant value of the coefficient was adopted for the whole period of the projection. This coefficient is characterised by a slight variation. Its value for voivodships in a breakdown by urban and rural areas was within a range from 98.4% to 99.5%.

Values of coefficients were calculated by means of the weight of 0.3 for fraction coefficients from 2002 and 0.7 for coefficients from 2011. It was assumed that the coefficient from 2011 is closer to the present values but a certain historical variation was also taken into consideration. Due to the fact that the values of fraction coefficients for particular units are close to 100%, the assumptions adopted are of marginal importance for the projection.

Siblings coefficients. In accordance with the assumptions, it was assumed that the percentage of children living in households with three or more children will decrease systematically. This will translate into a systematic drop in the average number of children among households with children.

Coefficients for certain years were established by carrying out a logarithmic interpolation between sibling coefficients from 2011 and the model for 2050. The final model was created for the average number of children in households with children projected for every voivodship (by urban and rural areas). This value was established by carrying out a logarithmic extrapolation of the indicator on the basis of its value in 2002 and 2011.

Models for particular values of the indicator were created by using average coefficients for three voivodships (by urban and rural area) with the highest average number of children in households with children and in three voivodships - with the lowest number. With the use of the linear interpolation and extrapolation, models for any value of this indicator were created.

Cohabitation and care coefficients. The average number of adult persons per household is a value strictly connected with these coefficients. Therefore, it was assumed that changes in these coefficients will correspond to the projected changes in the average value.

It was assumed that at the end of the current decade the average number of adults will be close to that of 2002. Due to the higher drop in the number of people at the age of 25-34 this process will be faster in urban areas than in rural areas (although in absolute numbers the decrease will be higher in rural areas). Due to this fact the model-based distributions for 2017 for urban areas and 2024 for rural areas were created using the average numbers of adults of 2002. Furthermore, it was assumed that the drop in this value must amount to at least 0.05. Models were created in an analogical way as in the case of sibling coefficients.

Next, an interpolation between models and coefficients of 2011 was carried out. The interpolation was performed in such a way as to obtain a systematically accelerating trend.

Furthermore, a logarithmic extrapolation of this trend until 2030 was performed. This means that its slowdown will take place end of the 2020s, which is the period in which the beginning of the rapid growth of the number of people at an advanced elderly age will take place.

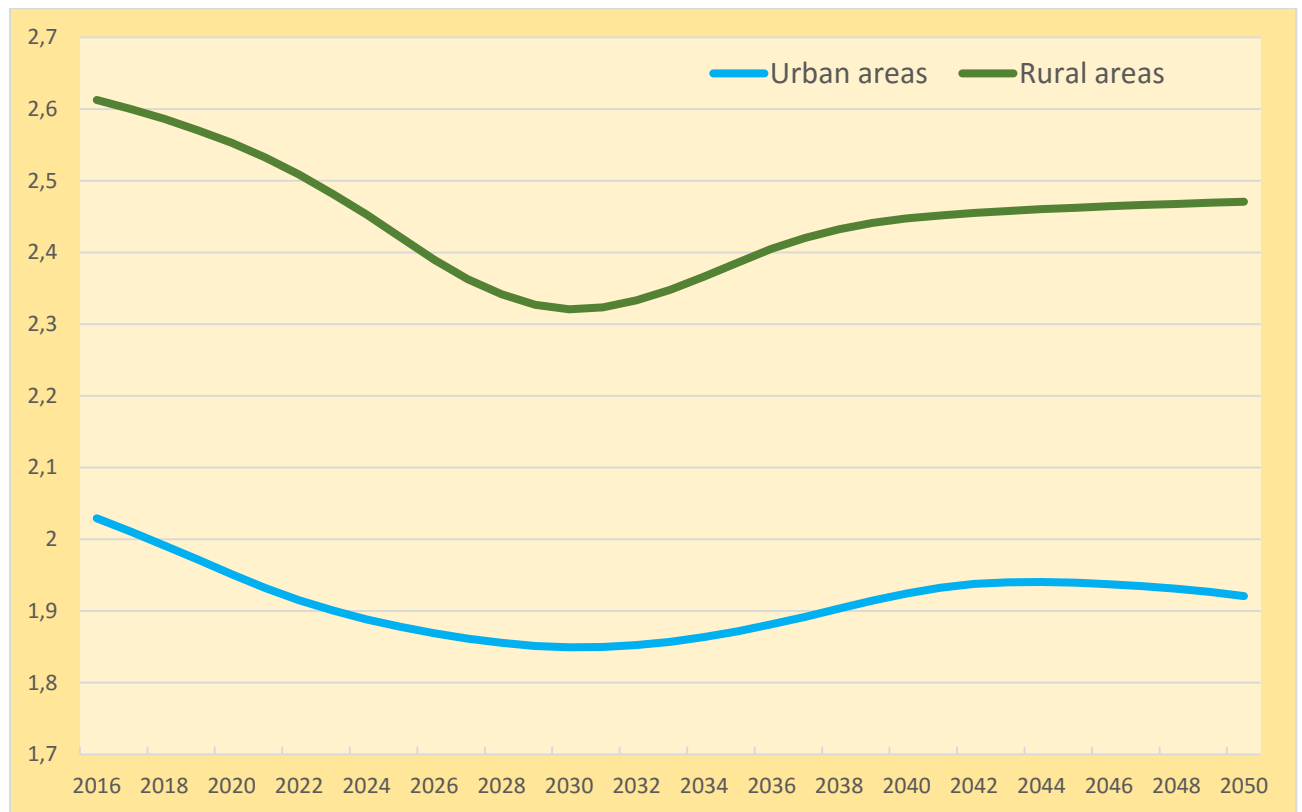
It was assumed that after 2030 the trend will reverse. Therefore, for 2037 coefficients for 2021 in urban areas and for 2024 in rural areas were adopted and the interpolation from 2030 was performed assuming an acceleration of the trend.

In the final period of the projection timeframe the projection of coefficients from urban areas and rural areas was differentiated. In rural areas the extrapolation of this trend (assuming its significant slowdown) until the end of the projection was performed. In urban areas it was assumed that the trend will slow down and in the last years of the projection the values of coefficients will slightly decrease.

In the last stage the whole time series was smoothed by using a five-period centred moving average. The procedure was repeated twice.

Curves used for the projection of these coefficients correspond with the changes in the average number of adults in households in urban areas and in rural areas which are presented in the chart below.

The average number of adult persons per household in rural and urban areas in the years 2016-2050

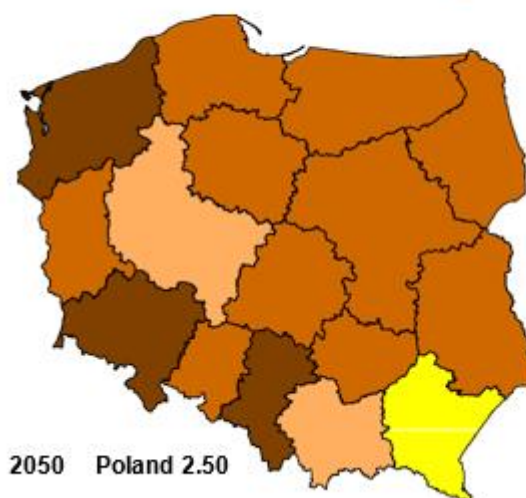
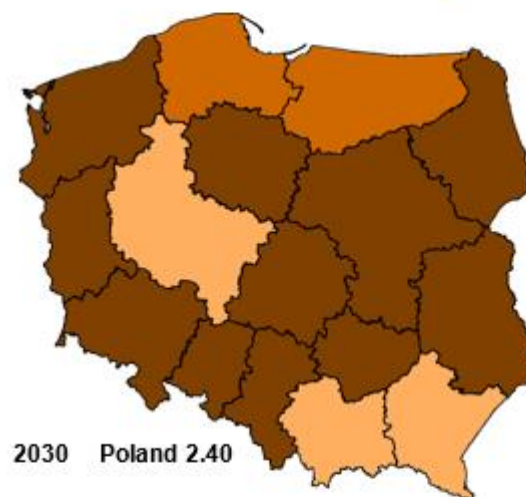
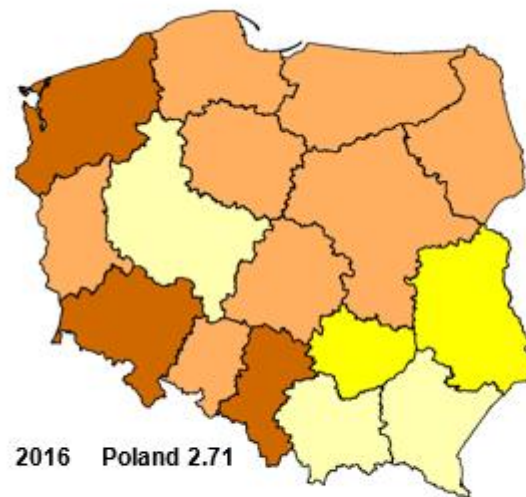


After the calculation, all four coefficients were folded on the numbers of children and adults provided in the *Population Projection 2014-2050*

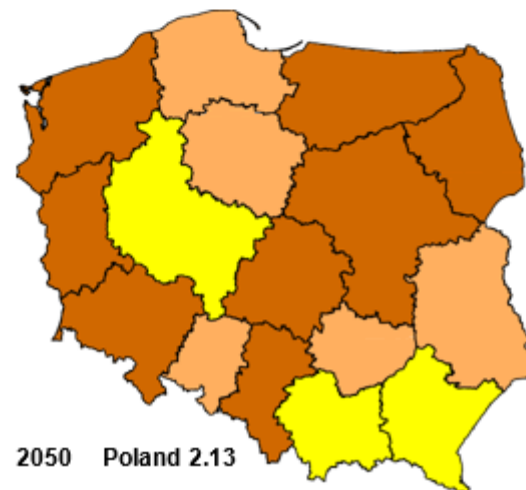
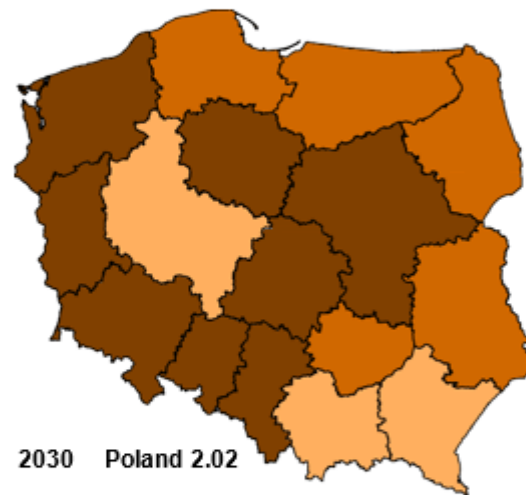
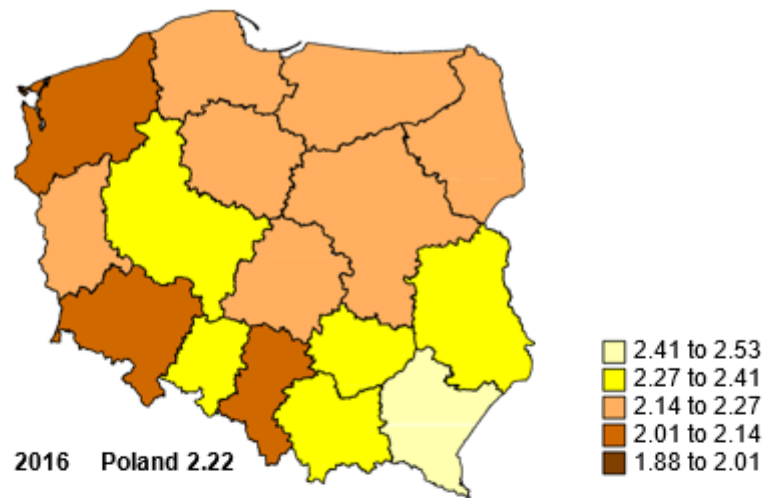
ANNEX 2

CARTOGRAMS OF CHANGES IN THE STRUCTURE OF HOUSEHOLDS

The average number of persons per household



The average number of adult persons per household



The percentage of one-person households

