



Healthy Life Years in Poland in 2009–2019



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Preface

We would like to present the publication entitled "Health life years in Poland in 2009–2019". The study aims to illustrate the changes in the health status of the Polish population in recent years. Due to the predicted significant intensification of the population ageing process, analyzes of this type are becoming increasingly important.

This study uses data from life tables published annually by the Statistics Poland and the results of the European Population Living Conditions Survey (EU-SILC). The classical Sullivan method, commonly used by research and statistical centers (including Eurostat), was used to calculate the healthy life expectancy. Much emphasis was placed on modeling the incidence rates of disability, which allowed to reduce the periodic fluctuations and to obtain results at lower administrative levels.

For the purpose of this publication, healthy life years were calculated for the first time at the voivodeship level. Therefore, it is possible to analyze the differences in health between particular regions. The publication also include the comparison of Poland with selected European countries.

The study consists of an analytical part and attached tables. The text in the analytical part was enriched with charts and choropleth maps. The tabular part includes data for the country and individual voivodships, including retrospective data.

Presenting you with this study, we kindly ask you to send your comments and suggestions, which will be a valuable hint in the development of this research area and will contribute to the improvement of both the content and the form of subsequent editions.

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Warsaw, October 2020

Contents

Preface	3
Contents	4
List of tables	5
List of charts	6
List of maps	7
Main abbreviations	8
1. Introduction	9
2. Executive summary	11
3. Analysis	12
3.1. Measures of healthy life expectancy	12
3.2. The aging process of Polish residents	13
3.3. Data source analysis	17
3.4. The results of the healthy life expectancy for Poland in 2009–2019	19
3.5. Regional differences in healthy life expectancy in 2009–2019	22
3.6. Comparison of the results computed by Statistics Poland with the results of Eurostat	32
3.7. Healthy life expectancy in Poland compared to other European countries	33
4. Methodological notes	34
5. Bibliography	37
6. Appendices	39

List of tables

Table 1.	Median age and age dependency ratio in Poland in selected years	14
Table 2.	Age dependency ratio in 2010–2050 by voivodships	15
Table 3.	Life expectancy (e_0) and healthy life years (HLY ₀) at birth in Poland	20
Table 4.	Healthy life years (HLY ₀) for males at birth in 2019 by voivodships	24
Table 5.	Healthy life years (HLY ₀) for females at birth in 2019 by voivodships	25
Table 6.	Healthy life years (HLY ₆₅) for males at age 65 by voivodships	25
Table 7.	Healthy life years (HLY ₆₅) for females at age 65 by voivodships	26
Table 8.	Healthy life years (HLY ₀) at birth in Poland according to Statistics Poland and Eurostat	32
Table A.	Healthy life expectancy table 2019	39
Table B.	Healthy life years in Poland in 2009–2019	42
Table C.	Healthy life years by voivodships in 2009–2019	43

List of charts

Chart 1.	The frequency of answers given to the question about having a limited ability to perform everyday activities, lasting at least the last 6 months	18
Chart 2.	Modeled disability prevalence $h(x)$ in Poland based on the EU-SILC survey from 2019 (logarithmic scale)	19
Chart 3.	Life expectancy (e_0) and healthy life years (HLY_0) at birth in Poland	20
Chart 4.	Life expectancy (e_{65}) and healthy life years (HLY_{65}) at age 65 in Poland	21
Chart 5.	Healthy life years (HLY_0) for males at birth in Poland by type of areas (urban/rural)	22
Chart 6.	Healthy life years (HLY_0) for females at birth in Poland by type of areas (urban/rural)	22
Chart 7.	Life expectancy and healthy life expectancy by voivodships in relation to the national level. The chart is for men at birth in 2019	30
Chart 8.	Life expectancy and healthy life expectancy by voivodships in relation to the national level. The chart is for women at birth in 2019	31
Chart 9.	Healthy life years (HLY_0) at birth in Poland according to Statistics Poland and Eurostat	32
Chart 10.	Healthy life expectancy (HLY_0), life expectancy (e_0) at birth in selected European countries	33

List of maps

Map 1. Regional differences of the age dependency ratio (ADR) in selected years	16
Map 2. Healthy life years (HLY ₀) for males at birth in 2019 by voivodships	23
Map 3. Healthy life years (HLY ₀) for females at birth in 2019 by voivodships	23
Map 4. The difference in healthy life expectancy between women and men at birth (HLY ₀) in 2019	27
Map 5. The difference in healthy life expectancy between women and men at age 65 (HLY ₆₅) in 2019	27
Map 6. Healthy life years at birth (HLY ₀) as a percentage of the life expectancy (e ₀) for males in 2019	28
Map 7. Healthy life years at birth (HLY ₀) as a percentage of the life expectancy (e ₀) for females in 2019	28

Abbreviations

Abbreviation	Meaning
DALE _x	Disability-Adjusted Life Expectancy
DFLE _x	Disability-Free Life Expectancy
h _x	disability prevalence obtained directly from the EU-SILC survey
h(x)	modeled disability prevalence
HALE _x	Health-Adjusted Life Expectancy
HLY _x	Healthy Life Years
e _x	life expectancy
EHIS	European Health Interview Survey
Eurostat	Statistical Office of the European Union
EU-SILC	EU Statistics on Income and Living Conditions Survey
GALI	Global Activity Limitation Instrument
MEHM	Minimum European Health Modul
OECD	Organisation for Economic Cooperation and Development
WHO	World Health Organization

1. Introduction

In the years 1990–2019 in Poland, the average life expectancy (e_0)¹ for women increased by 6.5 years and for men by 7.8 years. Demographic forecasts² predict the continuation of this process, estimating the e_0 of women in 2030 at approximately 84.0 years, and men at 77.3 years. However, a long life does not necessarily mean a healthy life. On the contrary, as this value increases, the percentage of life years with chronic diseases and disability may increase. The analysis of life expectancy and standardized death rates is insufficient to properly assess health and quality of life.

Increasing healthy life expectancy is one of the main goals of health policy in many countries. If healthy life expectancy increases faster than life expectancy, it means that people experience good health for an increasing part of their lives. Conducting analyzes of this issue allows for more precise estimation of measures of health condition, and thus more effective implementation of changes in the health system. The potential increase in the prevalence of chronic diseases and disabilities forces the necessity for modifying public health programs.

Regulation No 282/2014 of the European Parliament and Council emphasized the need to achieve a high level of protection of human health: "Keeping people healthy and active longer and empowering them to take an active role in managing their health, will have positive overall effects on health, including a reduction of health inequalities, and a positive impact on quality of life, on productivity and competitiveness, while reducing pressures on national budgets." One of the thematic priorities of this regulation is to „contribute to evidence-based decision-making by fostering a health information and knowledge system(...), and tools for monitoring health, collection and analysis of health data".

Healthy Life Years (HLY) is among the most frequently used indicators of the expected life in health. It is one of the "European Structural Indicators" and it deals with health as a factor related to development and well-being. It is a measure of the state of health defined as "functional" – the state of full effectiveness of activities and productivity (Gromulska et al. 2008).

Healthy Life Years, HLY (Disability Free Life Expectancy, DFLE) is a coefficient showing the health situation of the population, calculated on the basis of life tables and subjectively perceived disability.

HLY (calculated by Eurostat) is also used in Poland as an indicator of evaluation and assessment of the implementation of the National Health Program (NHP), the strategic goal of which "is to extend healthy life, improve health and quality of life and to reduce social inequalities in health" (Journal of Laws of 2016, item 1492).

The HLY_x value is interpreted as the predicted average number of years a person aged x will live without a disability, provided that the current conditions of mortality and loss of health of the population will remain at the current level.

Since 1995 this indicator has been published by Eurostat. Initially, only seven countries were monitored, but the methodology has since been modified and many more countries have been included in a survey. In many countries, the European Union Statistics on Income and Living Conditions Survey (EU-SILC) was conducted for the first time in 2005, based on Eurostat guidelines. One of the questions of this survey concerns subjectively perceived disability and aims, inter alia, to obtain data for the calculation of HLY coefficients.

Healthy life years for Poland is estimated by Eurostat since 2005, but only at the national level. Additionally, the results are available only for people aged 0, 50 and 65.

1 Life expectancy tables 1990–2019, <https://stat.gov.pl/en/topics/population/life-expectancy/life-expectancy-in-poland,1,3.html> (access 12.08.2020)

2 Population projection 2014–2050, <https://stat.gov.pl/en/topics/population/population-projection/population-projection-for-poland-20082035,1,1.html> (access 11.05.2020)

The aim of this publication is to present healthy life expectancy for the Polish population in as many crosssections as possible. Compared to the data presented by Eurostat, considerably more age groups were taken into account, as well as the division into urban and rural areas and lower administrative units (voivodships).

The study consists of an introduction, synthesis, analytical and methodological part and an annex in the form of tables. In the first subchapter of the analytical part, selected measures used to estimate the duration of healthy life are discussed. In the next one the progressive ageing process of the population in Poland, both at the national level and at the level of voivodships was presented. In the third section, the variables from the EU-SILC study regarding subjectively perceived health are presented. In the next two chapters the results of the analyses of healthy life in 2009–2019 on a national level (broken down into urban and rural areas) and at the level of voivodships (all divided by sex) are discussed. The proportion of the HLY index in relation to the average life expectancy (e_x) is also analyzed. In the next subchapter the healthy life expectancy of women and men in Poland, estimated by the Statistics Poland and Eurostat is compared. An explanation of the differences is also provided. In the last subsection the results for Poland in terms of life expectancy and healthy life indicators are presented against the background of selected European countries. The subsection was developed on the basis of data from the Eurostat database.

Due to the lack of previous studies of the Statistics Poland, the chapter "Methodological notes" contains an extended version of the methodological part, which presents a detailed description of the procedures applied. The appendices contain tables of healthy life expectancy in 2019 (separately for men and women) by age group, at the country level. Data for the years 2009–2019, at the national level (also in the division of urban / rural areas) and for voivodships are presented for selected years (0, 15, 30, 45, 60).

2. Executive summary

Since 2009, there has been a systematic increase in healthy life expectancy for both sexes in Poland. The estimated life expectancy without disability for man born in 2019 (HLY₀) is 59.8 years, and for woman – 63.3 years, provided that the current conditions of mortality and loss of health of the population will remain at the current level.

It is worth noting that for people aged 65 since 2009, not only the value of the expected healthy life (HLY₆₅) has increased, but also its share in the average life expectancy, which means that health has improved for people at this age.

The difference between the expected healthy life of rural and urban residents has clearly decreased over the analyzed period. While in 2009, city residents lived in health for about 1.5 years more compared to rural residents, in 2019 the difference was only about half a year.

In Poland, there is a large spatial differentiation of the HLY coefficients. People living in the Wielkopolskie voivodeship have the longest duration of healthy life, where for men (at birth) this value is estimated at 61.4 years, and for women – 64.5 years. These results significantly exceed the corresponding results at the national level. The shortest healthy life expectancy for males is observed in the Łódzkie voivodeship (58.7 years), while for females in the Śląskie voivodeship, where it is only 62.4 years. Inhabitants of the voivodships of western Poland live bigger part of their lives without disabilities (i.e. the proportion of healthy life expectancy at birth to the average life expectancy is higher there) compared to voivodships in the east of the country.

3. Analysis

3.1. Measures of healthy life expectancy

One of the basic indicators used in the population health assessment is life expectancy (e_x) measured on the basis of mortality statistics in a given year for a given population. Life expectancy is the average number of years a person of a given age will live, assuming the current mortality conditions are maintained. The life expectancy at birth (e_0) is the most commonly used.

This measure is a widely used indicator, synthetically describing the mortality of a given population. To some extent, it reflects the living conditions (in particular the health conditions) of a given community, but does not allow for the in-depth analysis (Burzyńska et al. 2010). Global and comprehensive assessment of the health status of the population (taking into account the contribution of individual diseases to its health burden) requires the creation of indicators that take into account both deaths and other health consequences of diseases. Many years of work on health measures have led to the development of many such indicators. These are called summary measures of population health. These indicators can be divided into two main groups (Ojrzyńska 2013):

- measures of expected health,
- measures of lack of health.

The first group includes measures defining the expected number of years of life lived both in full health and with disabilities and other dysfunctions (Wróblewska 2008). These include:

- Disability Free Life Expectancy (DFLE)/Healthy Life Years (HLY),
- Quality-Adjusted Life Expectancy (QALE),
- Active Life Expectancy (ALE),
- Morbidity-Free Life Expectancy (MFLE),
- Disability-Adjusted Life Expectancy (DALE)/Health-Adjusted Life Expectancy (HALE).

The second group of cumulative measures of health condition allows to estimate the average number of healthy life years lost due to disability or chronic disease. Examples of these measures include:

- Disability Adjusted Life Years lost (DALY),
- Years of Life Lost (YLL),
- Quality Adjusted Life Years lost (QALY).

Out of the above-mentioned indicators, the two most frequently used are described in detail below: DFLE and DALE/HALE.

Disability Free Life Expectancy (DFLE) has been used since 1993 by the Organization for Economic Cooperation and Development (OECD) as one of the health indicators calculated for its member countries. Since 1995, this indicator has also been published by Eurostat under the name of "Healthy Life Years" (HLY) for the European Union countries (Wróblewska 2008). Healthy Life Years combines two characteristics of a population – life expectancy and quality of life. This reflects the fact that not all years of life are lived in full health. The fact that a given population has a high life expectancy does not necessarily mean that the population is healthy. The DFLE/HLY indicator is calculated using the Sullivan method (EHEMU 2007). This measure is computed according to the formula:

$$HLY_x = \frac{\sum_x^{\omega} L_x \cdot (1 - h_x)}{l_x}$$

where:

L_x – stationary population at age x ,

h_x – incidence of disability at age x ,

l_x – number of people reaching the age of x completed years.

The method is therefore based on two types of data: the prevalence of disability in a population at a certain age and mortality. The main advantages of this method are simplicity and ease of interpretation. HLY is calculated on the basis of mortality tables and individually perceived disability (Burzyńska et al. 2008).

The measure used by the World Health Organization (WHO) is Disability Adjusted Life Expectancy (DALE). In order to calculate DALE, weights are imposed on each degree of health limitations caused by diseases and injuries (Ojrzyńska 2013):

$$DALE_x = \frac{\sum_{i=x}^{\omega} YLH_i}{l_x},$$

$$YLH_x = L_x \cdot \sum_i^s w_s \cdot D_{si} = L_x \cdot \sum_i^s (1 - dw_s \cdot D_{si}),$$

where:

YLH_x – the number of healthy years lived at age x ,

l_x – number of people reaching the age of x completed years,

L_x – the number of life years lived at age x based on the life expectancy tables,

D_s – incidence of disability s , where $\sum_s D_s = 1$,

s – disability level, where $s=0$ means no disability,

w_s – weight of health status assigned to disability s ($w_s = 1 - dw_s$), where good health is denoted by $w_s = 1$ or $dw_s = 0$.

In 2001, WHO replaced DALE with the Health-Adjusted Life Expectancy (HALE). This measure determines the number of years that a person from a given population is expected to live healthy. The HALE describes survival in various health states, not only in full health. Various statistical methods are used to compute HALE, and the estimation of individual components of this measure and the error correction are quite complex. Compared to HLY, this method also requires much more data.

WHO publishes HALE for women and men aged 0 and 65. Calculations are made on the basis of mortality data – life expectancy by age and statistics of deaths by cause and epidemiological data on the incidence of various diseases (Wróblewska 2008). This data is disseminated as part of the Global Burden of Disease project³.

3.2. The aging process of Polish residents

In 2019, the share of people aged 65 and over in Poland was 18%. For comparison in 1990, this percentage was only slightly over 10%. The continuing aging of the population, resulting from the elongation of life expectancy, is additionally exacerbated by the low fertility rate (Stańczak and Szaftys 2017) and the insufficient share of women aged 15–49 in the population.

Such changes in the demographic structure lead to an increase in the prevalence of chronic diseases and disabilities, observed especially among the elderly, and "become the reason for an increase in the demand for medical services, which leads to a significant increase in expenditures, aimed at satisfying the health needs" (Burzyńska et al. 2010).

The median age of the population is one of the basic measures used to describe the advancement of the aging process over the years. Its value marks the age level which half of the people in a given community have already exceeded, and the other half have not yet reached. In Poland, the median age has increased by 9 years since 1990 (32 years in 1990, 41 years in 2019⁴). Demographic projections⁵ predict its further increase (Table 1), estimating that in 2050 it will reach 53 years.

Another parameter used to assess the aging of the population is the old age dependency ratio (ADR). Defined as the proportion of people aged over 65 to the number of people aged 15–64.

³ WHO, Global Burden of Disease: <http://www.healthdata.org/gbd> (access 12.08.2020)

⁴ Statistics Poland, Local Data Bank: <https://bdl.stat.gov.pl/BDL/start> (access 13.08.2020)

⁵ Population projection 2014–2050: <https://stat.gov.pl/en/topics/population/population-projection/population-projection-2014-2050,2,5.html> (access 13.08.2020)

The value of the age dependency ratio in Poland has increased by 43% compared to 2010 (Table 1). In the following years, an intensification of the upward trend is projected and it is expected that by 2050 the indicator will double its value from 2019.

Table 1. Median age and age dependency ratio in Poland in selected years

Year		Median age	Age dependency ratio
2010	Actual data	38.0	18.9
2015		39.8	22.8
2019		41.3	27.2
2020	Projections	41.9	28.5
2025		44.1	33.7
2030		46.4	36.5
2035		48.6	38.7
2040		50.4	43.0
2045		51.7	50.0
2050		52.5	59.2

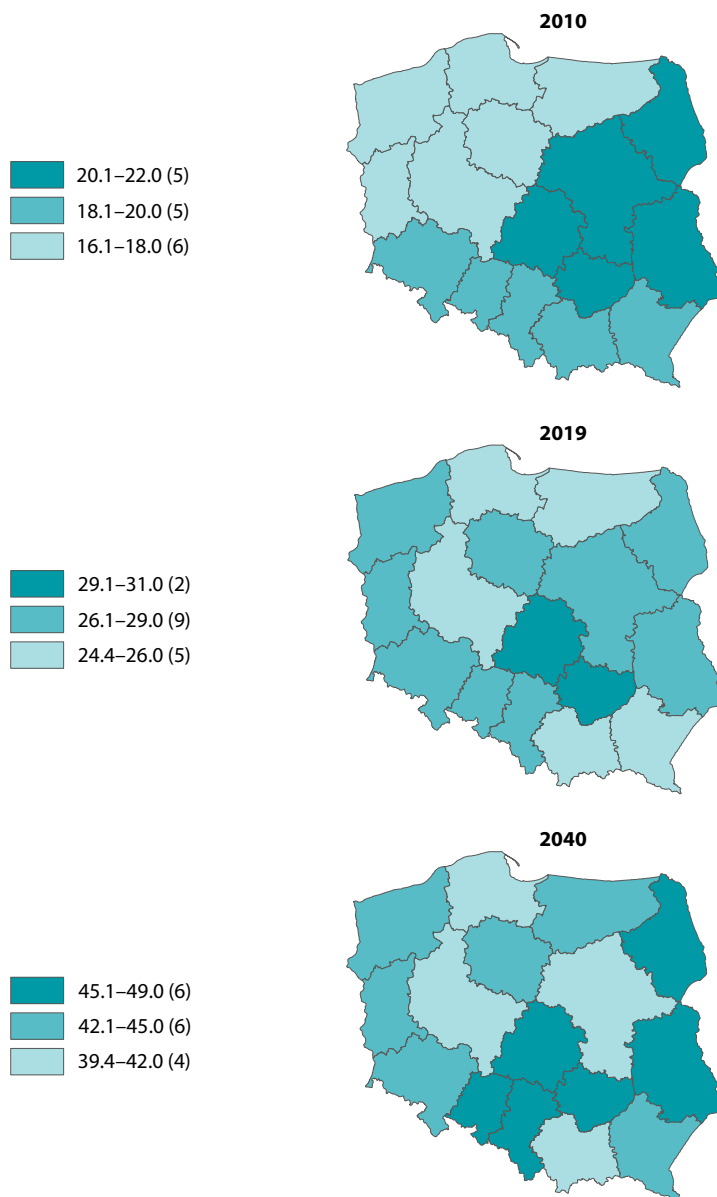
Large regional differences of the age dependency ratio are observed (Table 2, Map 1). In 2010, the voivodeships of eastern and central Poland were characterized by the highest values. The following years brought a change in this tendency and an increase in the dependency rate also for border voivodeships in the west of the country.

In 2019, the lowest ratio was recorded in the following voivodeships: Warmińsko-Mazurskie, Podkarpackie, Wielkopolskie, Pomorskie and Małopolskie – the value of the age dependency ratio was below 26. The highest values were recorded in the following voivodeships: Łódzkie, Świętokrzyskie and Śląskie – at least 29. Demographic projections predict a further increase in the share of people aged 65 and over among the population of Poland. In 2040, the highest values of the ratio will be observed in the Opolskie (48.9) and Śląskie (48.3) voivodeships. By 2050 in all voivodeships the ratio will be over two times higher than in 2019.

Table 2. Age dependency ratio in 2010–2050 by voivodships

Voivodship	Actual data			Projection						
	2010	2015	2019	2020	2025	2030	2035	2040	2045	2050
Dolnośląskie	18.4	23.2	28.7	30.2	36.1	38.4	39.7	43.7	51.0	61.2
Kujawsko-pomorskie	17.5	22.0	26.4	27.7	33.3	36.5	38.9	43.3	50.1	59.3
Lubelskie	20.5	23.7	27.9	29.1	34.4	37.9	41.0	45.9	53.4	63.8
Lubuskie	16.1	21.1	26.2	27.7	33.9	36.8	38.5	42.7	50.0	59.7
Łódzkie	21.0	25.8	30.7	32.0	37.5	39.8	41.8	46.2	53.5	63.1
Małopolskie	19.3	22.1	25.5	26.4	30.6	33.5	36.1	40.2	46.7	55.3
Mazowieckie	20.6	23.9	27.7	29.1	33.1	34.7	36.1	40.2	47.3	56.2
Opolskie	19.6	23.4	27.8	28.9	34.8	39.7	43.7	48.9	56.5	67.1
Podkarpackie	18.5	21.3	24.9	26.0	31.0	34.9	38.4	43.5	50.9	60.6
Podlaskie	20.8	23.1	26.3	27.6	33.4	38.0	42.0	47.2	54.4	64.8
Pomorskie	17.0	21.3	25.5	26.8	31.5	33.9	35.6	39.4	45.3	53.2
Śląskie	19.8	24.1	29.0	30.3	36.2	39.5	41.9	46.0	53.1	62.7
Świętokrzyskie	21.0	24.9	29.6	30.9	37.0	40.5	43.3	48.3	56.3	67.2
Warmińsko-mazurskie	16.2	19.9	24.4	25.7	32.0	36.1	38.9	43.3	50.2	59.6
Wielkopolskie	16.5	21.1	25.2	26.4	31.2	33.7	35.6	39.6	46.3	55.0
Zachodniopomorskie	16.8	21.9	27.5	29.0	35.4	38.2	40.1	44.4	51.6	61.2

Map 1. Regional differences of the age dependency ratio (ADR) in selected years



In the future, a large increase in the share of elderly people in the total population of Poland is expected. Due to this fact, constant monitoring of population health in Poland and the development of methodology for more accurate estimations becomes necessary. Ageing is a physiological process, occurring over time, that cannot be cured, but premature ageing and the accompanying disability should be prevented (Burzyńska et al. 2010).

The ageing of the population is inherently related to the increasing percentage of disabled people. One can become disabled at any age, but during the course of life, as a result of injuries, congenital defects and chronic diseases, health often deteriorates, preventing normal functioning to a varying degree. The prevalence of disability allows to assess the health condition of the population (Przybyłka 2017).

The results obtained from the European Health Interview Survey⁶ (EHIS) show that the incidence of disability increases rapidly after the age of 50. In 2014, among 40-year-olds, every eleventh person was disabled, and among fifty-year-olds – nearly every fifth, in the group of seventy-year-olds more than every third, and in the oldest group – every second (Piekarczyńska et al. 2016). Chronic diseases cumulate with age and are a factor that seriously hinders self-satisfaction and increases the demand for health services (Przybyłka 2017).

3.3. Data sources analysis

In this study, the HLY_x indicator was used to estimate the expected healthy life for the Polish population. It was calculated in accordance with the methodology proposed by D.F. Sullivan in 1971, taking into account mortality (life tables) and the incidence of disability in a given population, at a given age x (h_x coefficients).

Life expectancy tables are published annually by the Statistics Poland⁷, while disability is estimated on the basis of variables obtained from the EU-Statistics on Income and Living Conditions Survey (EU-SILC), which has been carried out by Eurostat annually since 2005.

This study includes the Minimum European Health Module⁸ (MEHM), which consists of three questions relating to self-assessment of health.

The first question concerns the general assessment of health, without taking into account temporary health problems, e.g. cold, flu ("How is your health in general? Very good/Good/Fair/Bad/Very bad")

Another is related to having health problems for a minimum of 6 months ("Do you suffer from any long-lasting (chronic) illness or condition (health problem) that has lasted (or you expect it to last) for 6 months or more? Yes/No").

The third question is related to the Global Activity Limitation Instrument (GALI). Its structure is partly based on the recommendations of the Washington Group on Disability Statistics (Antczak et al. 2018). Out of the three questions, it is the one that is most often used to estimate healthy life expectancy.

In the EU-SILC study carried out in Poland in 2019, it was formulated: "For at least the last six months have you been limited in activities people usually do, because of a health problem?"⁹

Respondent had three answers to choose:

- 1 – Yes, strongly limited,
- 2 – Yes, limited,
- 3 – Not limited.

It is worth mentioning that estimation of the healthy life expectancy is possible on the basis of all three questions. In addition, it is possible to compute the average life expectancy at age x (e_x) according to possible variants of the answer, e.g. life expectancy with very good, good, fair, bad or very bad self-rated health¹⁰ (Robine and Cambois 2013).

6 Health and health behavior of Polish residents according to the EHIS 2014 study, <https://stat.gov.pl/obszary-tematyczne/zdrowie/zdrowie-i-zachowania-zdrowotne-mieszkancow-polski-w-swietle-badania-ehis-2014,10,1.html> (in Polish) (access 1.09.2020)

7 Life expectancy tables of Poland: <https://stat.gov.pl/en/topics/population/life-expectancy/life-expectancy-in-poland,1,3.html> (access 12.08.2020)

8 EHLEIS Country Reports, http://www.eurohex.eu/pdf/CountryReports_Issue9_translated/Polsce.pdf (in Polish) (access 12.08.2020)

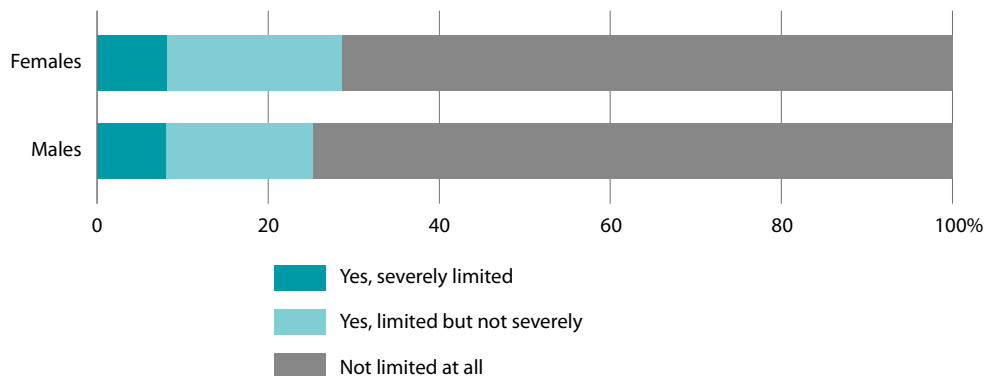
9 Eurostat EU-Statistics on Income and Living Conditions Survey. Individual questionnaire (EU-SILC-I) <http://form.stat.gov.pl/BadaniaAnkietowe/2019/harmonogram.htm> (in Polish) (access 12.08.2020)

10 EHLEIS Country Reports, http://www.eurohex.eu/pdf/CountryReports_Issue9_translated/Polsce.pdf (in Polish) (access 12.08.2020)

Only in 2017, a study containing MEHM which included children (i.e. people aged 0–15) was carried out.

In 2019, the European Population Living Conditions Survey covered almost 36.5 thousand persons, of which 56% were women. When asked about having a limited ability to perform daily activities for at least the last 6 months, a similar percentage of respondents of both sexes answered "Yes, completely limited". Another answer option ("Yes, severely limited") was selected by more women – 20.2%, compared to 17.6% of men (Chart 1). This means that women more often than men report experiencing health problems.

Chart 1. The frequency of answers given to the question about having a limited ability to perform everyday activities, lasting at least the last 6 months

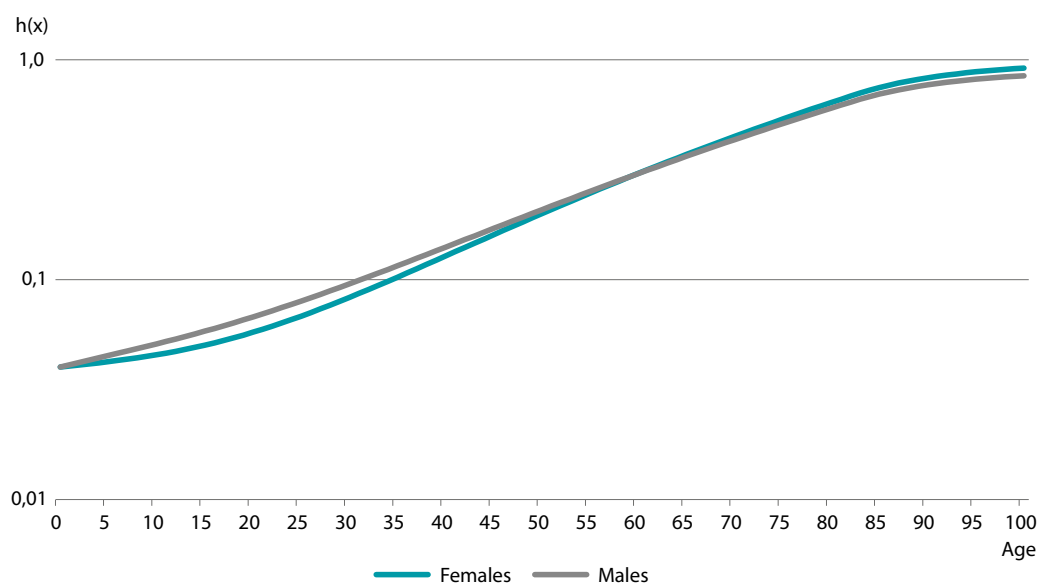


3.4. The results of the healthy life expectancy for Poland in 2009–2019

The estimations of healthy life years (HLY) in Poland in 2009–2019 presented in this subchapter were prepared by Statistics Poland. They are the result of the inclusion of the disability prevalence coefficients (h_x) in the scheme of building life tables. The main emphasis was placed on the modeling of these coefficients and the result is the development of the methodology presented in Chapter 4.

An example of the result of modeling disability prevalence coefficients based on data from the 2019 European Population Living Conditions Survey is presented below. It is clearly visible that men up to 45 years of age report problems with performing daily activities more often than women of the same age. The opposite situation can be observed among people aged 75+ (Chart 2)

Chart 2. Modeled disability prevalence $h(x)$ in Poland based on the EU-SILC survey from 2019 (logarithmic scale)



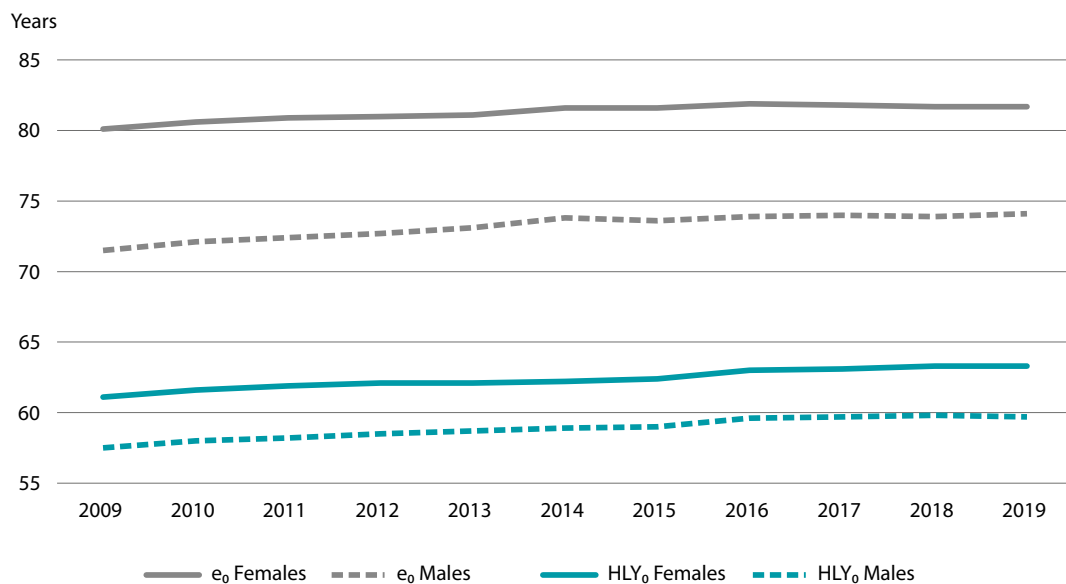
From 2009 to 2018, a slow increase in healthy life expectancy at birth (HLY_0) for both sexes was observed. It was only in 2019 that the first, slight decrease of this value was recorded, and HLY_0 in Poland amounted to 59.8 years for men and 63.3 years for women. It is worth noting that the drop in e_0 for Poland observed in 2018 was not reflected in HLY_0 .

In the analyzed period, the HLY_0 level changed proportionally to the average life expectancy (e_0). For men it was approximately 80% of e_0 (Table 3, Chart 3) and for women approximately 77%. This means that although men are expected to live shorter, they will survive bigger part of their lives without a disability.

The difference in HLY_0 between the sexes in 2019 was 3.6 years in favor of women. This value decreases with the years survived. For people aged 50, it was 1.9 years, and for people aged 65 years it was only 0.7 years. For comparison, the difference in life expectancy at birth in the same year was 7.6 years.

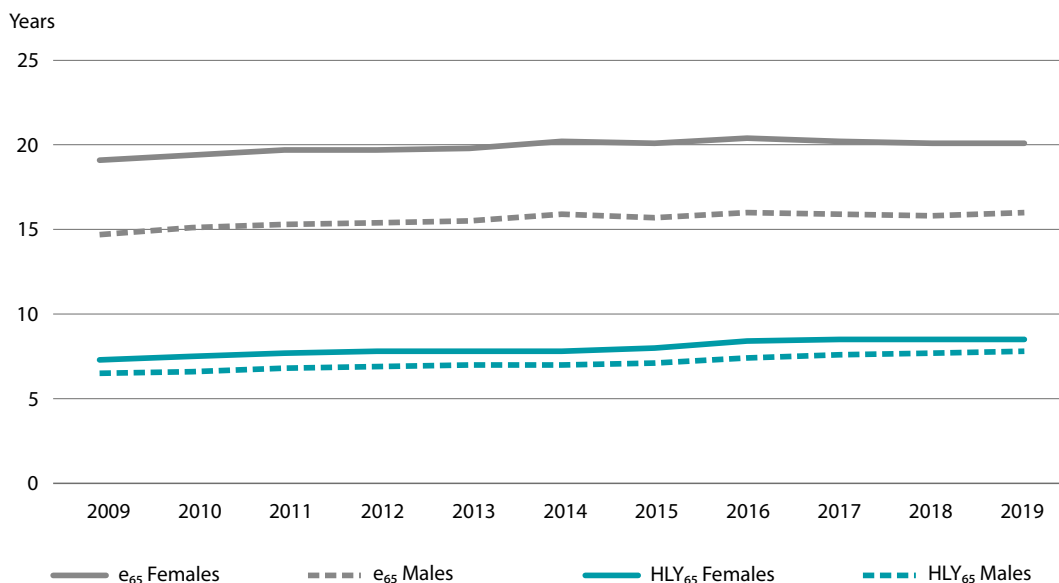
Table 3. Life expectancy (e_0) and healthy life years (HLY₀) at birth in Poland

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Life expectancy	Males	71.5	72.1	72.4	72.7	73.1	73.8	73.6	73.9	74.0	73.9	74.1
Healthy life years		57.5	58.0	58.2	58.5	58.7	58.9	59.0	59.6	59.7	59.8	59.7
Life expectancy	Females	80.1	80.6	80.9	81.0	81.1	81.6	81.6	81.9	81.8	81.7	81.8
Healthy life years		61.1	61.6	61.9	62.1	62.1	62.2	62.4	63.0	63.1	63.3	63.3

Chart 3. Life expectancy (e_0) and healthy life years (HLY₀) at birth in Poland

It is expected that men at the age of 65 will survive on average another 7.8 years in health, and women 8.5 years. It is worth noting, that for people of this age, not only the HLY value has increased since 2009, but also its share in life expectancy has increased from 44% to 49% for men and from 38% to 42% for women. This means that health of people aged 65 and over has improved (Chart 4).

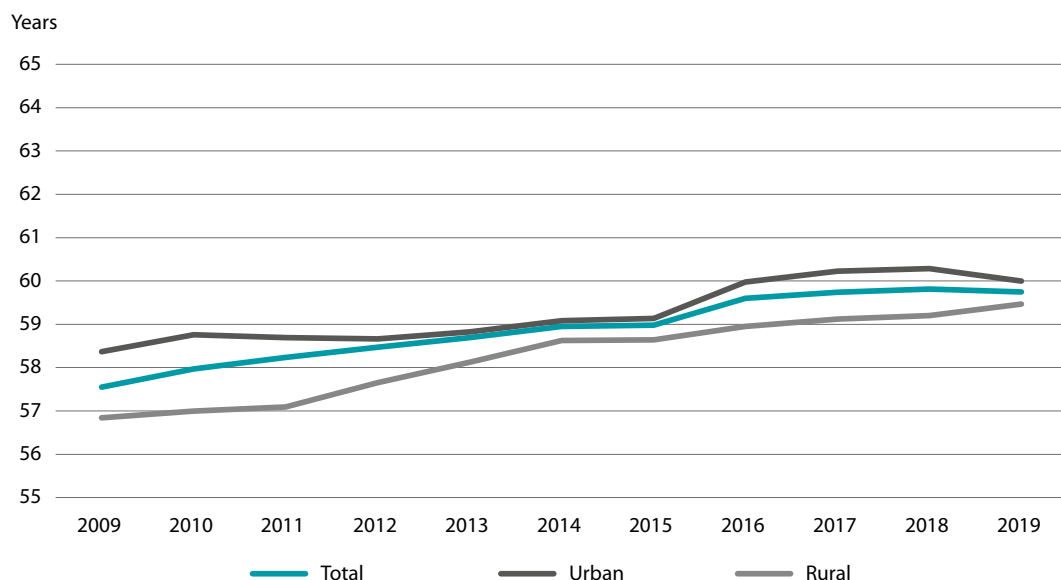
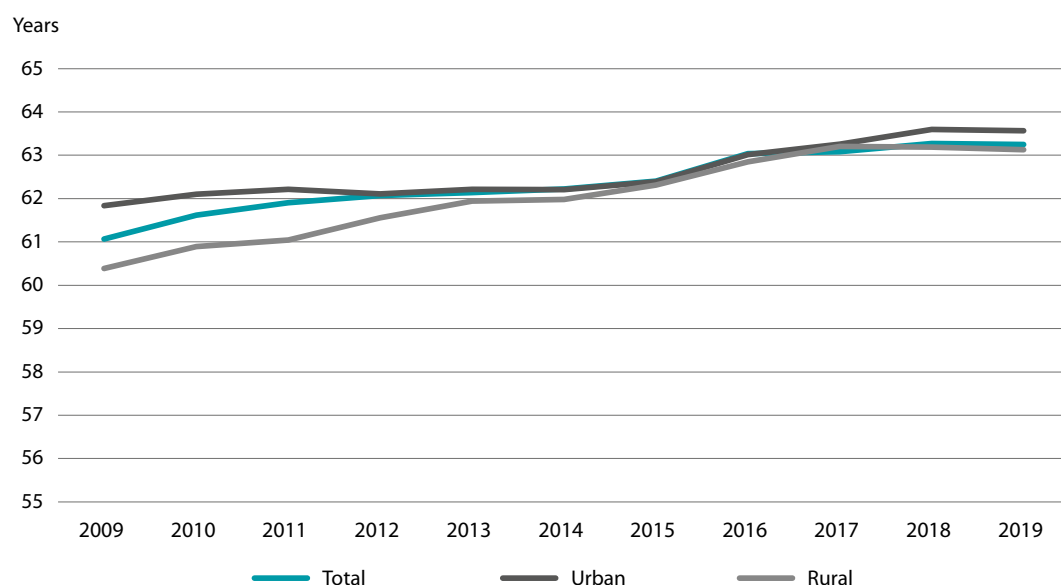
Chart 4. Life expectancy (e_{65}) and healthy life years (HLY₆₅) at age 65 in Poland



Throughout the analyzed period, city dwellers lived longer in health compared to rural areas dwellers. In 2019, the HLY₀ coefficient for men in cities was 60 years and 59.5 years in rural areas, for women 63.6 years and 63.1 years respectively.

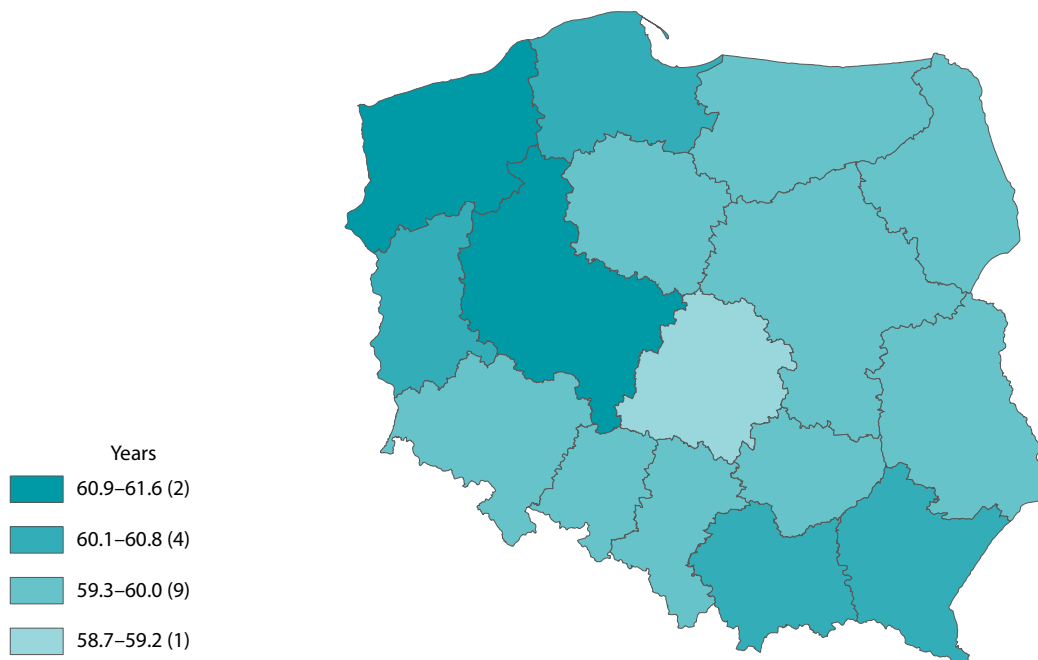
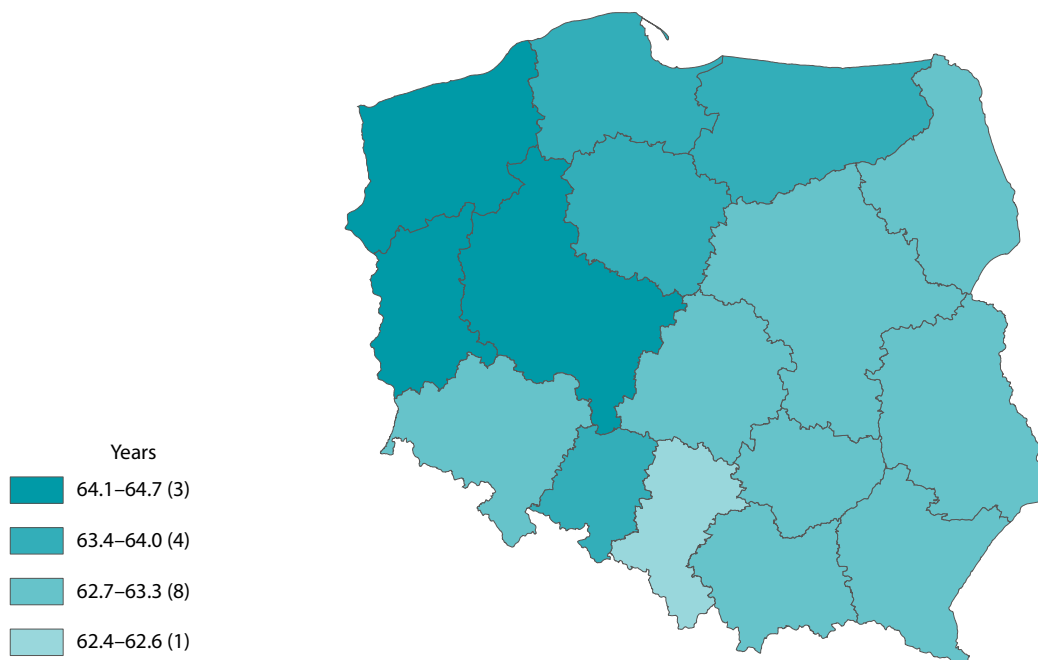
It is worth noting that the difference between HLY of urban and rural inhabitants has been changing over the last 10 years. It was the largest in the first three analyzed years, then it decreased rapidly (in 2011–2015). Later in the case of women, it stabilized (Chart 6) and in the case of men, it increased and decreased again (Chart 5).

Over all healthy life expectancy rates for urban and rural residents show a tendency towards convergence.

Chart 5. Healthy life years (HLY₀) for males at birth in Poland by type of areas (urban/rural)Chart 6. Healthy life years (HLY₀) for females at birth in Poland by type of areas (urban/rural)

3.5. Regional differences in healthy life expectancy in 2009–2019

The longest healthy life at birth in 2019 (Map 2, Table 4) was observed for men in the Wielkopolskie (61.4), Zachodniopomorskie (60.9) and Lubuskie (60.6) voivodships. On the other hand, the shortest ones was recorded in Łódzkie (58.7) and Dolnośląskie (59.3). For women, the highest values (over 64) were recorded in Wielkopolskie, Zachodniopomorskie and Lubuskie, and the lowest in Śląskie (62.4) Łódzkie (62.7) and Świętokrzyskie (62.9) (Map 3, Table 5).

Map 2. Healthy life years (HLY₀) for males at birth in 2019 by voivodshipsMap 3. Healthy life years (HLY₀) for females at birth in 2019 by voivodships

It is worth to notice the voivodships where the life expectancy has increased significantly. For men in Zachodniopomorskie, Wielkopolskie and Lubuskie, HLY₀ has increased since 2009 by at least 3.5 years (Table 4). However, Łódzkie voivodship is particularly interesting. Although it had the shortest e₀ in 2019 (Potyra et al. 2020), HLY₀ has increased in it by as much as 2.9 years over the last 10 years and the difference compared to the other voivodships has been significantly reduced.

The voivodeships where the greatest improvement in the health condition of women was recorded (Table 5) are: Zachodniopomorskie, Lubuskie and Wielkopolskie (increase by 4.3 years in each). It should be noted, however, that in some voivodeships HLY₀ has decreased compared to the initial value. It has happened in the following voivodeships: Lubelskie, Podlaskie and Świętokrzyskie. From 2009 till 2015, a fairly large decrease was recorded for them, ranging from 1.5 years (Lubuskie) to over 2 years (Podlaskie and Świętokrzyskie). Although a gradual increase in HLY₀ has been observed in the following years, the value in 2019 did not exceed that of 2009.

It is estimated that men aged 65 (Table 6) will live healthily for the longest time in the following voivodeships: Podkarpackie (8.3), Wielkopolskie, Zachodniopomorskie and Podlaskie (8.2 each). The shortest HLY₆₅ was in the Śląskie (7.3) and Warmińsko-Mazurskie (7.5). In the analyzed period, the highest increase was recorded in the Lubuskie, Zachodniopomorskie and Wielkopolskie voivodeships (an increase by over 2 years).

For women aged 65 (Table 7) living in the following voivodeships: Lubuskie, Wielkopolskie and Zachodniopomorskie, the longest life without disability (on average over 9 years) is expected. The shortest HLY₆₅ is observed in Mazowieckie, Śląskie (8.2 each) and Łódzkie (8.0). The highest increase was recorded for the Zachodniopomorskie, Lubuskie and Wielkopolskie voivodeships (by 2.6 years).

Table 4. Healthy life years (HLY₀) for males at birth in 2019 by voivodships

Voivodship	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Poland	57.6	58.0	58.2	58.5	58.7	59.0	59.0	59.6	59.7	59.8	59.8
Dolnośląskie	56.5	57.0	57.4	58.0	58.2	58.6	58.7	58.9	59.0	58.9	59.3
Kujawsko-pomorskie	57.1	57.2	57.9	58.4	58.7	58.9	59.0	59.6	60.0	59.8	59.8
Lubelskie	58.2	58.2	57.9	57.7	57.7	57.6	57.9	58.5	59.4	59.5	59.4
Lubuskie	57.1	57.5	57.4	57.8	58.1	58.6	58.5	59.3	60.0	60.5	60.6
Łódzkie	55.8	56.5	56.6	56.8	57.0	58.4	58.5	59.5	58.7	58.6	58.7
Małopolskie	59.4	59.5	59.4	59.6	60.1	60.4	60.5	61.0	60.8	60.6	60.1
Mazowieckie	57.0	57.6	57.6	57.9	58.3	59.6	59.9	60.6	59.8	59.7	59.6
Opolskie	57.5	57.8	58.1	58.6	58.8	59.4	59.1	59.4	59.4	59.7	59.9
Podkarpackie	59.5	59.7	59.2	58.7	58.8	58.5	58.7	59.5	60.5	60.6	60.2
Podlaskie	58.7	58.9	58.7	58.0	58.0	57.9	58.1	58.7	59.7	59.8	59.6
Pomorskie	57.7	58.0	58.6	58.6	59.3	59.5	59.4	60.1	60.5	60.4	60.3
Śląskie	58.3	58.4	58.3	58.4	58.8	59.3	59.3	59.9	59.8	59.6	59.3
Świętokrzyskie	58.7	58.5	58.0	57.9	57.8	57.9	57.8	58.5	59.5	59.5	59.4
Warmińsko-mazurskie	56.8	57.1	57.6	57.8	58.1	58.7	58.6	59.1	59.5	59.3	59.3
Wielkopolskie	57.7	58.2	58.2	58.3	58.8	59.0	59.0	60.0	60.4	61.2	61.4
Zachodniopomorskie	57.2	57.6	57.5	57.9	58.4	58.8	58.9	59.6	60.2	60.9	60.9

Table 5. Healthy life years (HLY₀) for females at birth in 2019 by voivodships

Voivodship	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Poland	61.1	61.6	61.9	62.1	62.1	62.2	62.4	63.0	63.1	63.3	63.3
Dolnośląskie	60.0	60.7	61.1	61.7	62.2	62.2	62.3	62.7	62.9	63.3	63.1
Kujawsko-pomorskie	60.7	61.5	62.0	61.9	62.0	62.3	62.9	63.3	63.5	63.8	63.5
Lubelskie	63.0	63.2	62.8	62.4	61.7	61.5	61.3	62.3	62.6	62.8	62.9
Lubuskie	59.9	60.1	60.2	60.5	61.1	61.2	61.5	62.2	62.9	63.8	64.2
Łódzkie	60.7	61.0	60.9	60.9	61.3	62.5	62.9	63.8	62.9	62.7	62.7
Małopolskie	62.8	62.8	62.6	62.8	63.3	63.1	63.2	63.5	63.4	63.5	63.3
Mazowieckie	61.3	61.6	61.7	61.5	61.9	62.9	63.6	64.5	63.5	63.2	63.1
Opolskie	60.4	60.9	61.5	62.0	62.3	62.4	62.4	63.0	63.2	63.6	63.5
Podkarpackie	63.3	63.5	63.1	62.7	62.1	61.7	61.3	62.4	63.0	63.1	63.3
Podlaskie	63.4	63.5	62.9	62.7	62.0	61.7	61.3	62.3	62.8	62.9	63.2
Pomorskie	60.9	61.9	62.4	62.3	62.4	62.5	62.8	63.5	63.8	64.1	63.9
Śląskie	61.9	62.1	61.8	62.0	62.4	62.1	62.2	62.6	62.7	62.6	62.4
Świętokrzyskie	63.2	63.0	62.8	62.5	61.7	61.5	61.2	62.0	62.6	62.7	62.9
Warmińsko-mazurskie	60.8	61.7	62.2	62.2	62.2	62.4	62.7	63.2	63.7	64.0	63.6
Wielkopolskie	60.2	60.3	60.6	60.8	61.4	61.4	61.6	62.4	63.1	64.1	64.5
Zachodniopomorskie	59.9	60.1	60.4	60.6	61.3	61.1	61.6	62.4	62.9	63.9	64.2

Table 6. Healthy life years (HLY₆₅) for males at age 65 by voivodships

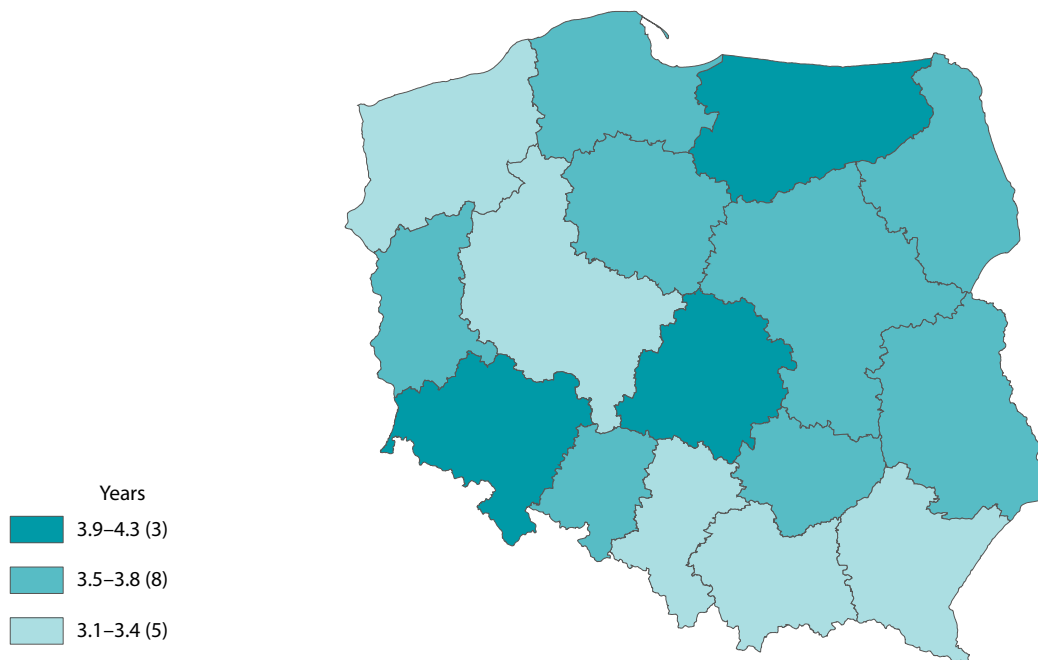
Voivodship	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Poland	6.5	6.7	6.9	6.9	7.0	7.0	7.1	7.4	7.6	7.8	7.8
Dolnośląskie	5.9	6.2	6.5	6.8	6.6	6.8	6.7	6.9	7.1	7.4	7.6
Kujawsko-pomorskie	6.5	6.5	7.0	6.9	7.1	7.3	7.4	7.7	7.7	7.7	7.6
Lubelskie	7.5	7.4	7.2	7.2	7.3	7.1	7.1	7.4	8.1	8.1	8.1
Lubuskie	5.8	6.1	6.2	6.5	6.5	6.6	6.7	7.1	7.7	7.9	7.9
Łódzkie	6.2	6.2	6.3	6.4	6.4	6.9	6.8	7.5	7.3	7.4	7.5
Małopolskie	6.9	7.0	7.2	7.3	7.5	7.5	7.5	8.0	8.0	7.8	7.6
Mazowieckie	6.5	6.6	6.6	6.7	6.8	7.2	7.2	7.8	7.7	7.7	7.9
Opolskie	6.0	6.2	6.5	6.7	6.6	6.8	6.7	7.0	7.1	7.5	7.7
Podkarpackie	7.9	7.7	7.6	7.4	7.7	7.3	7.3	7.7	8.4	8.5	8.3
Podlaskie	7.8	7.7	7.5	7.3	7.5	7.2	7.2	7.6	8.3	8.3	8.2
Pomorskie	6.7	6.8	7.1	7.0	7.4	7.5	7.6	7.7	7.9	7.9	7.8
Śląskie	6.6	6.8	6.9	7.0	7.2	7.2	7.2	7.7	7.6	7.6	7.3
Świętokrzyskie	7.7	7.5	7.3	7.2	7.3	7.2	7.0	7.5	8.1	8.2	8.0
Warmińsko-mazurskie	6.4	6.6	6.8	6.8	7.0	7.2	7.3	7.4	7.5	7.5	7.5
Wielkopolskie	6.0	6.1	6.3	6.5	6.7	6.7	6.9	7.2	7.8	8.0	8.2
Zachodniopomorskie	5.8	6.0	6.3	6.5	6.6	6.5	6.8	7.2	7.6	8.0	8.2

Table 7. Healthy life years (HLY₆₅) for females at age 65 by voivodships

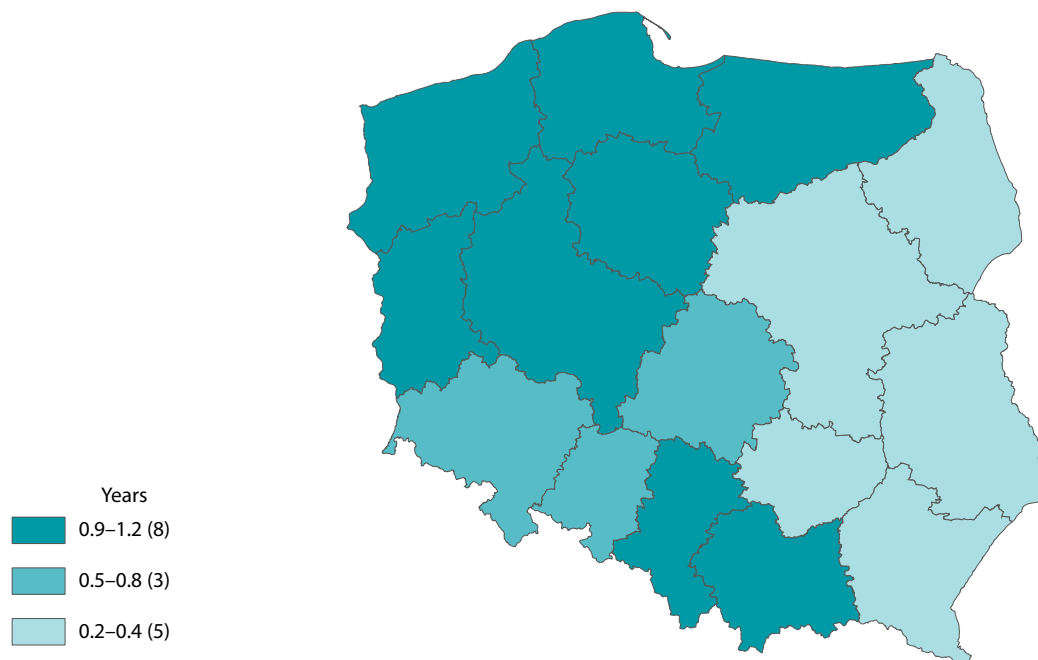
Voivodship	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Poland	7.3	7.5	7.7	7.8	7.8	7.8	8.0	8.4	8.5	8.5	8.5
Dolnośląskie	6.8	7.1	7.4	7.5	7.6	7.5	7.6	8.0	8.2	8.5	8.4
Kujawsko-pomorskie	7.2	7.7	7.9	7.7	7.9	8.1	8.6	8.8	8.8	8.8	8.7
Lubelskie	8.0	8.1	8.0	7.9	7.5	7.5	7.6	8.2	8.5	8.4	8.4
Lubuskie	6.5	6.7	6.9	7.2	7.2	7.2	7.3	7.9	8.3	8.7	9.1
Łódzkie	7.3	7.4	7.4	7.4	7.4	8.1	8.3	8.8	8.2	8.0	8.0
Małopolskie	8.0	7.9	8.1	8.4	8.6	8.5	8.5	8.8	8.8	8.7	8.5
Mazowieckie	7.5	7.6	7.6	7.6	7.7	8.3	8.5	9.0	8.4	8.2	8.2
Opolskie	7.0	7.1	7.4	7.6	7.6	7.5	7.6	8.0	8.2	8.5	8.4
Podkarpackie	8.1	8.2	8.1	8.0	7.6	7.5	7.7	8.3	8.6	8.5	8.5
Podlaskie	8.2	8.3	8.1	8.1	7.6	7.6	7.7	8.3	8.7	8.5	8.5
Pomorskie	7.3	7.8	8.0	7.8	8.0	8.2	8.6	8.8	8.9	8.9	8.8
Śląskie	7.7	7.7	7.9	8.1	8.3	8.2	8.2	8.4	8.5	8.3	8.2
Świętokrzyskie	8.1	8.1	8.1	7.9	7.5	7.5	7.6	8.1	8.5	8.4	8.3
Warmińsko-mazurskie	7.3	7.8	8.0	7.8	7.9	8.2	8.6	8.8	8.9	8.9	8.7
Wielkopolskie	6.5	6.7	7.0	7.2	7.2	7.2	7.3	7.9	8.3	8.8	9.1
Zachodniopomorskie	6.5	6.7	7.0	7.2	7.3	7.2	7.3	7.9	8.3	8.8	9.1

There is a significant variability between voivodships in difference in HLY₀ by sex (Map 4 and 5). In 2019, the largest differences were recorded in the Warmińsko-Mazurskie (4.3 years for newborns and 1.2 years for people aged 65), and the smallest in Wielkopolskie (3.1 years for newborns) and Podkarpackie (0.2 years for people age 65).

Map 4. The difference in healthy life expectancy between women and men at birth (HLY_0) in 2019



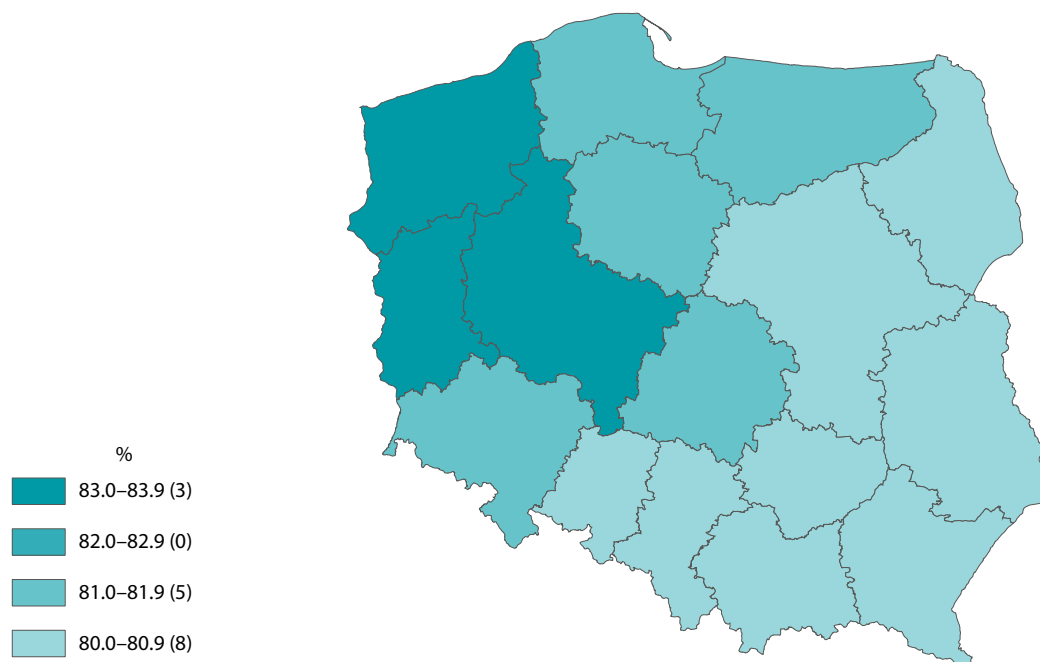
Map 5. The difference in healthy life expectancy between women and men at age 65 (HLY_{65}) in 2019



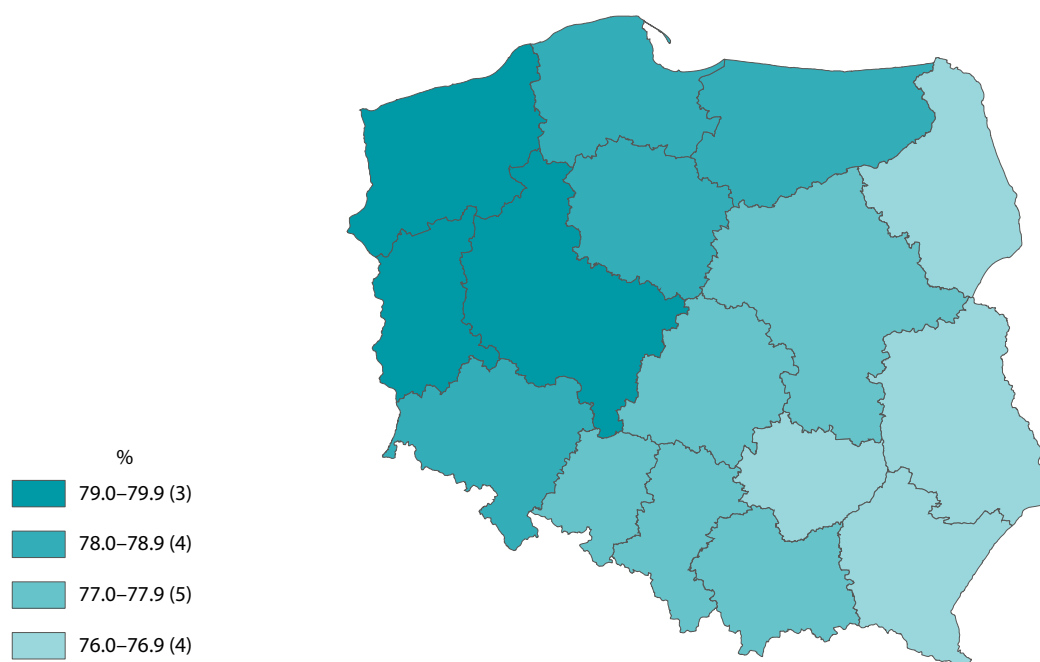
In the analysis of healthy life expectancy (HLY_0), it is also necessary to take into account the average life expectancy (e_0), i.e. to determine how big part of life is free from disability.

Regional differences in healthy life expectancy at birth (HLY_0) expressed as a percentage of the average life expectancy are presented on maps 6 and 7. In voivodships of western Poland this proportion is higher compared to those in the east of the country. Living longer does not necessarily mean a healthier life. It is known that women live longer. However, the proportions of HLY_0 to e_0 (also at the voivodeship level) are lower for them than for men – men live bigger part of their lives without disabilities.

Map 6. Healthy life years at birth (HLY_0) as a percentage of the life expectancy (e_0) for males in 2019



Map 7. Healthy life years at birth (HLY_0) as a percentage of the life expectancy (e_0) for females in 2019



In 2019, the average life expectancy (e_0) in Poland for men was 74.1 years and for women 81.8 years (Potyra et al. 2020), while the life expectancy in good health (HLY_0) was 59.7 years and 63.3 years respectively. Relationships of these indicators at the voivodeship level to the national level:

$$\Delta e_0 = e_0^{Voivodeship} - e_0^{Poland},$$

$$\Delta HLY_0 = HLY_0^{Voivodeship} - HLY_0^{Poland},$$

is presented in Charts 7 and 8.

A large spatial variability of the indicators of life expectancy and healthy life expectancy in Poland is observed, especially in the case of women.

In the case of men (Chart 7), Podlaskie and Mazowieckie are closest to the national level. In turn, the following voivodeships: Łódzkie, Dolnośląskie, Śląskie and Warmińsko-Mazurskie are characterized by a low level of both life expectancy and healthy life years. The opposite is true for Małopolskie and Podkarpackie. Lubelskie and Zachodniopomorskie are particularly interesting, because despite the low life expectancy, relatively long healthy life is predicted for their inhabitants.

In the case of women in six voivodeships, healthy life expectancy exceeds the country level, despite the fact that life expectancy (e_0) is lower than the national one (Chart 8). The lowest levels of both parameters are observed in Śląskie and Łódzkie. On the other hand, the following voivodeships: Podlaskie, Podkarpackie and Małopolskie are characterized by a high life expectancy in health and life expectancy at the level similar to the national one. It is worth noting that the voivodeships with the longest HLY_0 (Lubuskie, Zachodniopomorskie and Wielkopolskie) are characterized by a relatively short life expectancy.

Chart 7. Life expectancy and healthy life expectancy by voivodships in relation to the national level. The chart is for men at birth in 2019.

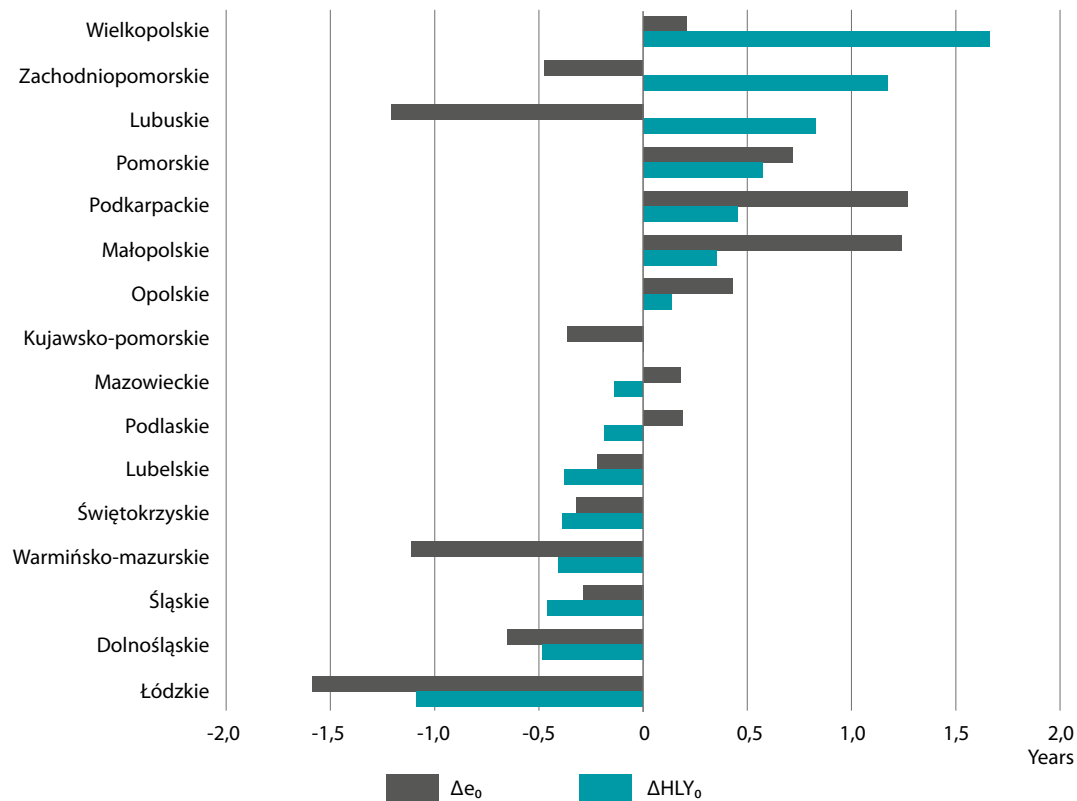
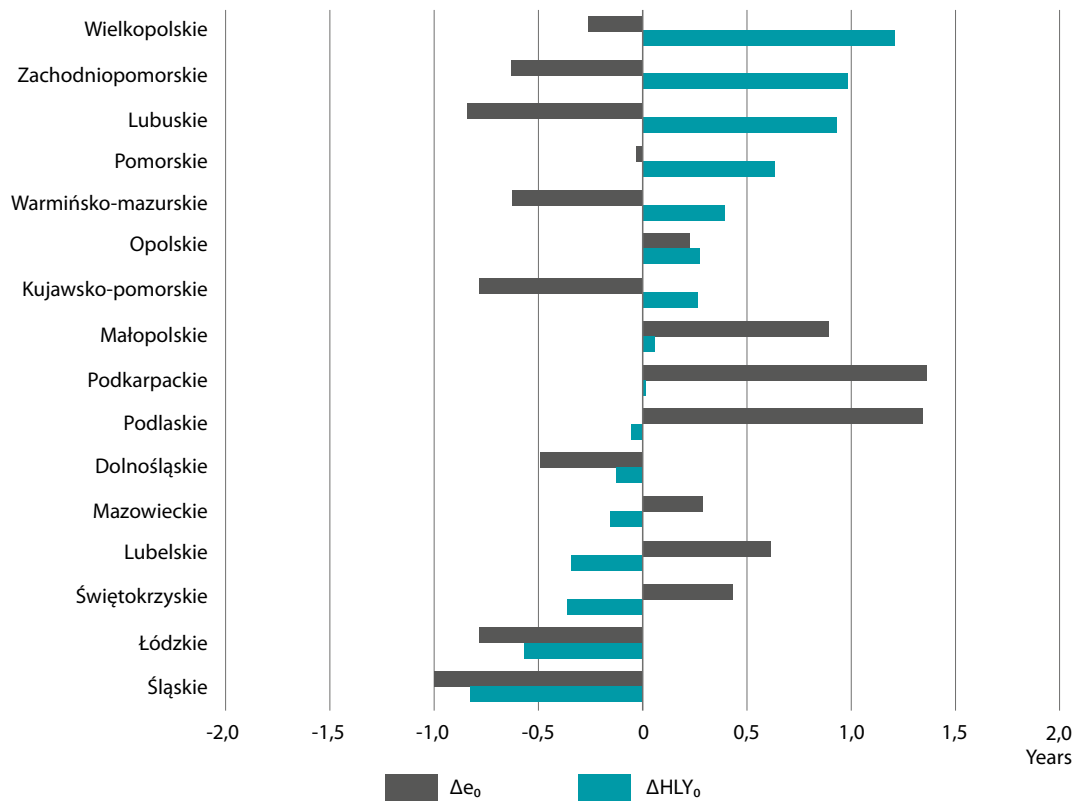


Chart 8. Life expectancy and healthy life expectancy by voivodships in relation to the national level. The chart is for women at birth in 2019.



3.6. Comparison of the results computed by Statistics Poland with the results of Eurostat

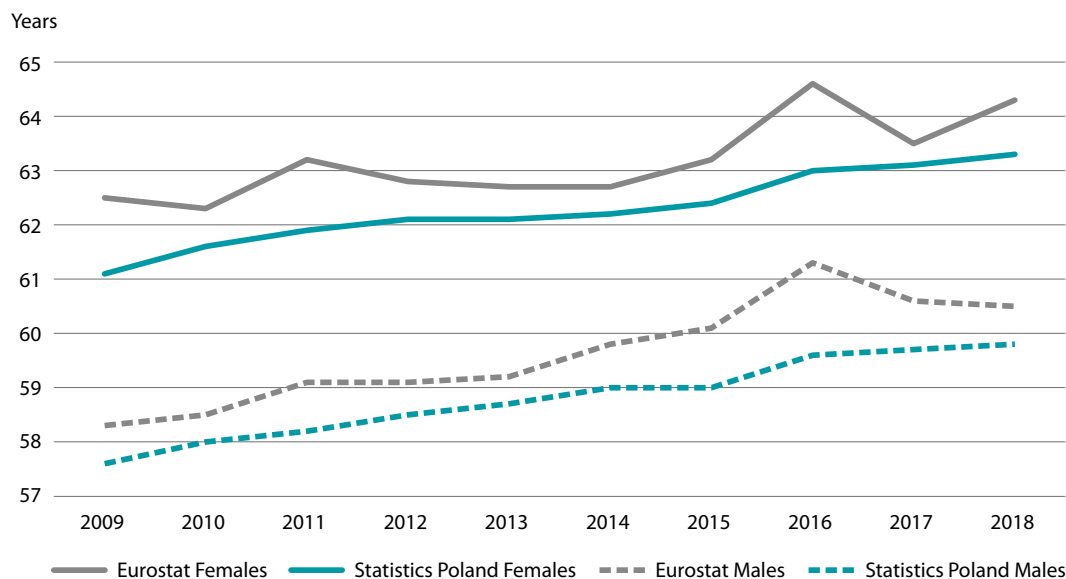
Both the results of the Statistics Poland and Eurostat indicate an upward trend in the expected healthy life. Between 2009 and 2018, HLY increased by approximately 2 years for both men and women. The healthy life expectancy estimated by the Statistics Poland is shorter by about a year in each of the analyzed years.

Both institutions use the Sullivan method and the results of the European Population Living Conditions Survey (EU-SILC), but they differ in terms of methodological assumptions. The method described in Chapter 4 of this publication provides a greater smoothing across time and therefore smaller periodic fluctuations of the coefficient (Table 8, Chart 9) are observed compared to the method used by Eurostat¹¹.

Table 8. Healthy life years (HLY₀) at birth in Poland according to Statistics Poland and Eurostat

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Males	Statistics Poland	57.6	58.0	58.2	58.5	58.7	59.0	59.0	59.6	59.7	59.8
	Eurostat	58.3	58.5	59.1	59.1	59.2	59.8	60.1	61.3	60.6	60.5
Females	Statistics Poland	61.1	61.6	61.9	62.1	62.1	62.2	62.4	63.0	63.1	63.3
	Eurostat	62.5	62.3	63.2	62.8	62.7	62.7	63.2	64.6	63.5	64.3

Chart 9. Healthy life years (HLY₀) at birth in Poland according to Statistics Poland and Eurostat



11 Description of Eurostat's methodology, Annex 1: https://ec.europa.eu/eurostat/cache/metadata/Annexes/hlth_hlye_esms_an1.pdf (access 9.07.2020)

3.7. Healthy life expectancy in Poland compared to other European countries

Eurostat calculates healthy life expectancy for majority of European countries. Unfortunately, not all of them carry out the EU-SILC survey in the same way i.e. according to Eurostat guidelines¹². Only those that have the same EU-SILC questions in relation to the self-assessment of health¹³ have been selected for this overview.

Both the life expectancy and healthy life expectancy at birth in Poland are below the European average¹⁴. In 2018, the average HLY for the indicated countries was 64.4 years for men and 65 for women. The healthy life expectancy of men is shorter only in Finland and Estonia in comparison to Poland. In the case of women, it is additionally shorter in Belgium, the Czech Republic and Denmark. Sweden and Malta have the longest healthy life expectancy. In Sweden, the life expectancy in health for male is nearly 14 years longer than in Poland. For women, this difference is smaller and compared to the European leader (Malta) it is less than 10 years.

Higher life expectancy does not necessarily mean a longer healthy life. This is illustrated by the ratio of one indicator to another i.e. what percentage of life is lived healthy. In Poland, men live on average 82.1% of life healthy, which corresponds to the European average (82.2%). Women, on the other hand, live healthy 78.7% of life (above the European average of 77.7%). It is worth noting that in some countries, despite the long life expectancy, healthy life expectancy is relatively short. An example of this is Finland, for which the life expectancy is higher than the European average, and the life expectancy in health is significantly lower (Chart 10).

Chart 10. Healthy life expectancy (HLY₀), life expectancy (e₀) at birth in selected European countries



Source: Eurostat

¹² Description of Eurostat's methodology, Annex 1: https://ec.europa.eu/eurostat/cache/metadata/Annexes/hlth_hlye_esms_an2.pdf (access 9.07.2020)

¹³ BE – (Belgium), BG – (Bulgaria), CZ – (Czech Republic), DK – (Denmark), EE – (Estonia), EL – (Greece), ES – (Spain), FI – (Finland), FR – (France), IE – (Ireland), IT – (Italy), MT – (Malta), PL – (Poland), SE – (Sweden)

¹⁴ Unweighted arithmetic mean, calculated only for the analyzed countries.

4. Methodological notes

To estimate the h_x parameter, the question "Have you had a limited ability due to health problems to perform activities that people usually do, which lasted for at least the last 6 months?" were used. In the EU-SILC study, this question is classified as a variable: PH030 – Limitation in activities because of health problems (for people aged 16 and over), and in the case of people aged 0–15 as the variable RC020T – Limitation in activities because of health problems (child). For each sex and age x , joint frequency of "Yes, totally limited" and "Yes, severely limited" responses was calculated.

To apply the Sullivan method, h_x coefficients for individual ages are needed. However, the available data (derived from the EU-SILC study) have two major drawbacks:

- the study of children aged 0–15 (variable RC020T) was conducted only in 2017,
- taking into account in the analysis the sex and place of residence (macroregion) of the respondent caused, especially for older ages (i.e. 85 and older) that the size of some groups was very small, and in extreme cases there were even missing values for particular ages.

Due to the first of these restrictions, it was assumed that the state of health of children would be the same in all the analyzed years and would correspond to the results of the 2017 study. The decision to aggregate data into 5-year age groups was also made. This resulted in an increase in the number of observations in individual groups and, as a consequence, eliminated the second limitation.

For this transformed set, preliminary h_x coefficients were calculated as a percentage of people with total and serious health limitation, taking into account age groups and sexes. The h_x coefficients for 5-year age groups formed the basis for estimating model coefficients for individual ages.

This estimation was made by matching the appropriate function to 5-year coefficients (separately for women and men) with the assumption that it is impossible for a sick person to recover (assuming the disease lasts till death), hence the values of the h_x coefficient increase for subsequent age groups.

For each five-year age group its middle age (x_{Mean}) was determined as the arithmetic mean of the beginning and end of a given interval. Previously calculated initial h_x corresponding to the given group was assigned to the middle age of each group and the decision to use a third order polynomial was made:

$$f(x) = b_3x^3 + b_2x^2 + b_1x + b_0,$$

where:

b_3, b_2, b_1, b_0 – function coefficients,

x – age.

The function was additionally supplemented with weights corresponding to the number of observations in individual five-year age groups (N_i). It was assumed that when there are more observations in the group, the more they influence the polynomial coefficients.

Function matching comes down to minimizing the sum S :

$$S = \min_b \left(\sum_i N_i (x_{\text{Mean}_i}^3 b_3 + x_{\text{Mean}_i}^2 b_2 + x_{\text{Mean}_i} b_1 + b_0 - h(x_{\text{Mean}_i}))^2 \right),$$

where:

$b > 0$.

As a result, the coefficients $b = (b_0, b_1, b_2, b_3)$ are obtained. Due to the previously adopted assumption regarding the increase in h_x , it was established that the function must be increasing ($b > 0$).

In the next step, the $h(x)$ coefficients were calculated for the range from 0 to 100 years using the formula:

$$h(x) = b_3x^3 + b_2x^2 + b_1x + b_0,$$

where:

b_3, b_2, b_1, b_0 – estimated model coefficients,
 x – age.

Due to the fact that the value of $h(x)$ cannot exceed 1 (which corresponds to 100% of people with disabilities at a given age), it was decided to slow down the growing trend for the oldest ages.

Due to significant fluctuations in responses to questions about disability in individual editions of the EU-SILC study, it was decided to additionally smooth the results obtained using a three-period moving average. It was done by replacing the previously calculated $h(x)$ for a given year t and age x with the arithmetic mean of the values from that year and two previous years:

$$h(x, t) = \frac{h(x, t) + h(x, t - 1) + h(x, t - 2)}{3},$$

where:

x – age,
 t – year of the survey.

The $h(x)$ coefficients obtained in this way were used to calculate healthy life years (HLY) according to the formula proposed by Sullivan:

$$HLY_x = \frac{\sum_x^{100} L_x \cdot (1 - h_x)}{l_x}$$

where:

L_x – stationary population at age x ,
 h_x – frequency of disability at age x ,
 l_x – number of survivors at age x .

L_x and l_x are parameters available in life expectancy tables published annually by the Statistics Poland¹⁵.

The analysis for urban and rural areas (on national level) was carried out in an analogous manner to the one described above. Life expectancy tables calculated in accordance with this division were used for it, as well as separate h_x coefficients for urban and rural areas.

¹⁵ Life expectancy tables 1990–2019, <https://stat.gov.pl/en/topics/population/life-expectancy/life-expectancy-in-poland,1,3.html> (access 12.08.2020)

Healthy life expectancy at the voivodship level

Due to the small number of sampled individuals by sex and age, the assumption was made that the h_x values for a given voivodship will be the same as for the macroregion to which it belongs.

It should be mentioned, that from January 1, 2018, there is a new division of NUTS 1 in Poland, i.e. macroregions grouping voivodships, as a result of which a new unit was created, corresponding entirely to the Mazowieckie voivodship. Furthermore, the central macroregion is currently made up of the Łódzkie voivodeship located previously within it and the Świętokrzyskie voivodeship which split from the eastern macroregion.

For the purposes of analysis, due to the use of three-period average data for smoothing, it was necessary to use the earlier NUTS 1 division. The analysis using the current division will be possible for the first time when data from 2018–2020 are available.

Life expectancy tables calculated for individual voivodships were used in the analysis. Further calculations were made in the same way as at the national level.

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6. Appendices

Table A. Healthy life expectancy table 2019

Age	Males				Females			
	Modeled disability prevalence [%]	Healthy life expectancy	Life expectancy	Healthy life proportion [%]	Modeled disability prevalence [%]	Healthy life expectancy	Life expectancy	Healthy life proportion [%]
x	h(x)	HLY _x	e _x	–	h(x)	HLY _x	e _x	–
0	4.0	59.7	74.1	80.6	4.0	63.3	81.7	77.5
1	4.1	59.0	73.4	80.4	4.0	62.5	81.8	77.2
2	4.2	58.1	72.4	80.2	4.0	61.6	80.1	76.9
3	4.3	57.1	71.4	80.0	4.1	60.6	79.1	76.6
4	4.4	56.2	70.4	79.8	4.1	59.7	78.1	76.4
5	4.6	55.2	69.4	79.5	4.1	58.7	77.1	76.1
6	4.7	54.3	68.4	79.4	4.2	57.8	76.1	76.0
7	4.8	53.3	67.4	79.1	4.2	56.8	75.1	75.6
8	4.9	52.4	66.4	78.9	4.3	55.9	74.1	75.4
9	5.0	51.4	65.4	78.6	4.3	54.9	73.1	75.1
10	5.2	50.5	64.4	78.4	4.4	54.0	72.1	74.9
11	5.3	49.6	63.4	78.2	4.5	53.0	71.1	74.5
12	5.5	48.6	62.4	77.9	4.5	52.0	70.1	74.2
13	5.6	47.7	61.5	77.6	4.6	51.1	69.1	74.0
14	5.8	46.7	60.5	77.2	4.7	50.2	68.1	73.7
15	5.9	45.8	59.5	77.0	4.9	49.2	67.2	73.2
16	6.1	44.9	58.5	76.8	5.0	48.3	66.2	73.0
17	6.3	43.9	57.5	76.3	5.1	47.3	65.2	72.5
18	6.5	43.0	56.5	76.1	5.3	46.4	64.2	72.3
19	6.7	42.1	55.6	75.7	5.5	45.4	63.2	71.8
20	6.9	41.2	54.6	75.5	5.6	44.5	62.2	71.5
21	7.1	40.3	53.6	75.2	5.8	43.6	61.2	71.2
22	7.4	39.4	52.7	74.8	6.0	42.6	60.2	70.8
23	7.6	38.5	51.7	74.5	6.3	41.7	59.3	70.3
24	7.9	37.6	50.8	74.0	6.5	40.8	58.3	70.0
25	8.1	36.8	49.8	73.9	6.8	39.9	57.3	69.6
26	8.4	35.9	48.9	73.4	7.0	38.9	56.3	69.1
27	8.7	35.0	47.9	73.1	7.3	38.0	55.3	68.7
28	9.1	34.1	47.0	72.6	7.7	37.1	54.3	68.3
29	9.4	33.2	46.0	72.2	8.0	36.2	53.3	67.9
30	9.7	32.4	45.1	71.8	8.3	35.3	52.4	67.4
31	10.1	31.5	44.1	71.4	8.7	34.4	51.4	66.9

Table A. Healthy life expectancy table 2019 (cont.)

Age	Males				Females			
	Modeled disability prevalence [%]	Healthy life expectancy	Life expectancy	Healthy life proportion [%]	Modeled disability prevalence [%]	Healthy life expectancy	Life expectancy	Healthy life proportion [%]
x	h(x)	HLY _x	e _x	–	h(x)	HLY _x	e _x	–
32	10.5	30.7	43.2	71.1	9.1	33.5	50.4	66.5
33	10.9	29.8	42.3	70.4	9.5	32.6	49.4	66.0
34	11.3	29.0	41.3	70.2	10.0	31.7	48.4	65.5
35	11.7	28.1	40.4	69.6	10.4	30.8	47.5	64.8
36	12.2	27.3	39.5	69.1	10.9	29.9	46.5	64.3
37	12.7	26.5	38.6	68.7	11.4	29.0	45.5	63.7
38	13.2	25.6	37.6	68.1	12.0	28.2	44.5	63.4
39	13.7	24.8	36.7	67.6	12.5	27.3	43.6	62.6
40	14.2	24.0	35.8	67.0	13.1	26.5	42.6	62.2
41	14.8	23.2	34.9	66.5	13.7	25.6	41.6	61.5
42	15.4	22.4	34.0	65.9	14.3	24.8	40.7	60.9
43	16.0	21.7	33.1	65.6	15.0	23.9	39.7	60.2
44	16.6	20.9	32.2	64.9	15.7	23.1	38.7	59.7
45	17.2	20.1	31.3	64.2	16.4	22.3	37.8	59.0
46	17.9	19.4	30.4	63.8	17.2	21.5	36.9	58.3
47	18.6	18.6	29.5	63.1	18.0	20.7	35.9	57.7
48	19.4	17.9	28.7	62.4	18.8	19.9	35.0	56.9
49	20.1	17.2	27.8	61.9	19.6	19.1	34.0	56.2
50	20.9	16.5	27.0	61.1	20.5	18.4	33.1	55.6
51	21.7	15.8	26.2	60.3	21.4	17.6	32.2	54.7
52	22.5	15.1	25.3	59.7	22.3	16.9	31.3	54.0
53	23.4	14.5	24.5	59.2	23.3	16.2	30.4	53.3
54	24.3	13.8	23.7	58.2	24.3	15.4	29.5	52.2
55	25.2	13.2	23.0	57.4	25.3	14.7	28.6	51.4
56	26.2	12.6	22.2	56.8	26.4	14.0	27.7	50.5
57	27.2	12.0	21.4	56.1	27.5	13.4	26.8	50.0
58	28.2	11.4	20.7	55.1	28.7	12.7	25.9	49.0
59	29.2	10.8	20.0	54.0	29.9	12.1	25.1	48.2
60	30.3	10.3	19.3	53.4	31.1	11.4	24.2	47.1
61	31.4	9.7	18.6	52.2	32.3	10.8	23.4	46.2
62	32.6	9.2	17.9	51.4	33.6	10.2	22.5	45.3
63	33.8	8.7	17.2	50.6	35.0	9.6	21.7	44.2
64	35.0	8.2	16.6	49.4	36.4	9.1	20.9	43.5
65	36.2	7.8	16.0	48.8	37.8	8.5	20.1	42.3
66	37.5	7.3	15.3	47.7	39.2	8.0	19.3	41.5
67	38.9	6.9	14.7	46.9	40.7	7.5	18.5	40.5

Table A. Healthy life expectancy table 2019 (cont.)

Age	Males				Females			
	Modeled disability prevalence [%]	Healthy life expectancy	Life expectancy	Healthy life proportion [%]	Modeled disability prevalence [%]	Healthy life expectancy	Life expectancy	Healthy life proportion [%]
x	h(x)	HLY _x	e _x	–	h(x)	HLY _x	e _x	–
68	40.2	6.5	14.1	46.1	42.3	7.0	17.8	39.3
69	41.6	6.1	13.6	44.9	43.9	6.5	17.0	38.2
70	43.1	5.7	13.0	43.8	45.5	6.0	16.2	37.0
71	44.5	5.3	12.4	42.7	47.2	5.6	15.5	36.1
72	46.1	4.9	11.9	41.2	48.9	5.1	14.8	34.5
73	47.6	4.5	11.3	39.8	50.6	4.7	14.0	33.6
74	49.2	4.2	10.8	38.9	52.5	4.3	13.3	32.3
75	50.8	3.9	10.2	38.2	54.3	3.9	12.6	31.0
76	52.5	3.6	9.7	37.1	56.2	3.6	11.9	30.3
77	54.2	3.3	9.2	35.9	58.2	3.2	11.3	28.3
78	56.0	3.0	8.7	34.5	60.2	2.9	10.6	27.4
79	57.8	2.7	8.2	32.9	62.2	2.6	10.0	26.0
80	59.7	2.4	7.7	31.2	64.3	2.3	9.3	24.7
81	61.6	2.2	7.2	30.6	66.4	2.1	8.7	24.1
82	63.5	2.0	6.8	29.4	68.6	1.8	8.1	22.2
83	65.5	1.8	6.4	28.1	70.9	1.6	7.6	21.1
84	67.3	1.6	6.0	26.7	73.0	1.4	7.1	19.7
85	69.0	1.5	5.6	26.8	74.9	1.2	6.6	18.2
86	70.6	1.3	5.3	24.5	76.7	1.1	6.2	17.7
87	72.1	1.2	5.0	24.0	78.4	1.0	5.7	17.5
88	73.5	1.1	4.7	23.4	80.0	0.8	5.4	14.8
89	74.7	1.0	4.4	22.7	81.4	0.7	5.0	14.0
90	75.9	0.9	4.1	22.0	82.7	0.6	4.7	12.8
91	77.0	0.8	3.9	20.5	84.0	0.6	4.3	14.0
92	78.0	0.7	3.6	19.4	85.1	0.5	4.0	12.5
93	78.9	0.6	3.4	17.6	86.1	0.4	3.7	10.8
94	79.8	0.6	3.2	18.8	87.1	0.4	3.5	11.4
95	80.6	0.5	3.0	16.7	88.0	0.3	3.2	9.4
96	81.3	0.4	2.8	14.3	88.8	0.3	3.0	10.0
97	81.9	0.4	2.6	15.4	89.5	0.2	2.8	7.1
98	82.5	0.3	2.5	12.0	90.2	0.2	2.6	7.7
99	83.0	0.2	2.3	8.7	90.8	0.1	2.4	4.2
100	83.5	0.1	2.2	4.5	91.3	0.1	2.3	4.3

Table B. Healthy life years in Poland in 2009–2019

Years	Males					Females				
	by age									
	0	15	30	45	60	0	15	30	45	60
Total										
2009	57.5	43.7	30.3	18.1	8.8	61.1	47.1	33.3	20.5	10.1
2010	58.0	44.0	30.6	18.4	9.0	61.6	47.5	33.6	20.7	10.3
2011	58.2	44.2	30.7	18.5	9.2	61.9	47.7	33.7	20.9	10.5
2012	58.5	44.4	30.9	18.7	9.3	62.1	47.9	33.9	21.0	10.6
2013	58.7	44.7	31.2	18.9	9.4	62.1	48.0	34.1	21.2	10.6
2014	58.9	44.9	31.4	19.1	9.5	62.2	48.1	34.1	21.2	10.6
2015	59.0	45.0	31.5	19.2	9.5	62.4	48.3	34.3	21.4	10.8
2016	59.6	45.6	32.1	19.7	9.9	63.0	48.9	34.9	22.0	11.2
2017	59.7	45.8	32.3	20.0	10.1	63.1	49.0	35.1	22.2	11.4
2018	59.8	45.9	32.4	20.1	10.3	63.3	49.2	35.3	22.3	11.4
2019	59.7	45.8	32.4	20.1	10.3	63.3	49.2	35.3	22.3	11.4
Urban areas										
2009	58.4	44.5	31.0	18.7	9.2	61.8	47.8	33.8	20.9	10.4
2010	58.8	44.8	31.3	19.0	9.4	62.1	48.1	34.2	21.3	10.6
2011	58.7	44.8	31.3	19.1	9.5	62.2	48.2	34.3	21.4	10.8
2012	58.7	44.8	31.3	19.1	9.6	62.1	48.1	34.2	21.4	10.8
2013	58.8	44.9	31.4	19.3	9.8	62.2	48.1	34.2	21.3	10.7
2014	59.1	45.1	31.6	19.4	9.8	62.2	48.1	34.2	21.3	10.7
2015	59.1	45.2	31.7	19.5	9.9	62.4	48.3	34.4	21.5	10.9
2016	60.0	46.0	32.5	20.2	10.3	63.0	49.0	35.0	22.1	11.3
2017	60.2	46.3	32.8	20.5	10.6	63.3	49.2	35.3	22.3	11.5
2018	60.3	46.3	32.9	20.6	10.7	63.6	49.5	35.6	22.5	11.6
2019	60.0	46.1	32.7	20.5	10.6	63.6	49.5	35.6	22.6	11.7
Rural areas										
2009	56.8	42.8	29.4	17.4	8.3	60.4	46.4	32.5	19.9	9.7
2010	57.0	43.1	29.7	17.7	8.5	60.9	46.7	32.8	20.1	9.8
2011	57.1	43.2	29.9	17.9	8.7	61.0	46.9	32.9	20.2	10.0
2012	57.7	43.8	30.4	18.3	8.8	61.6	47.4	33.4	20.6	10.2
2013	58.1	44.2	30.8	18.5	8.8	61.9	47.9	33.9	21.0	10.4
2014	58.6	44.7	31.2	18.8	9.0	62.0	48.0	34.1	21.2	10.5
2015	58.6	44.7	31.2	18.8	9.0	62.3	48.2	34.2	21.3	10.7
2016	58.9	45.0	31.5	19.2	9.4	62.8	48.7	34.8	21.8	11.1
2017	59.1	45.2	31.7	19.3	9.5	63.2	49.0	35.0	22.0	11.3
2018	59.2	45.3	31.8	19.5	9.6	63.2	49.0	35.0	22.0	11.2
2019	59.5	45.4	31.9	19.6	9.8	63.1	48.9	34.8	21.8	11.0

Table C. Healthy life years by voivodships in 2009–2019

Years	Males					Females				
	by age									
	0	15	30	45	60	0	15	30	45	60
Dolnośląskie										
2009	56.4	42.7	29.3	17.3	8.1	60.0	46.0	32.1	19.5	9.4
2010	57.0	43.2	29.8	17.7	8.5	60.7	46.8	32.9	20.2	9.9
2011	57.4	43.6	30.2	18.1	8.9	61.1	47.2	33.3	20.6	10.1
2012	58.0	44.2	30.8	18.5	9.1	61.7	47.8	33.9	20.9	10.3
2013	58.2	44.4	30.9	18.6	9.0	62.2	48.2	34.2	21.2	10.4
2014	58.6	44.6	31.2	18.8	9.2	62.2	48.2	34.2	21.1	10.3
2015	58.7	44.8	31.2	18.8	9.1	62.3	48.2	34.2	21.2	10.4
2016	58.9	44.9	31.4	19.0	9.3	62.7	48.7	34.7	21.7	10.9
2017	59.0	45.1	31.5	19.2	9.5	62.9	48.9	34.9	22.0	11.1
2018	58.9	45.0	31.6	19.4	9.8	63.3	49.2	35.2	22.2	11.4
2019	59.3	45.3	31.9	19.7	10.1	63.1	49.0	35.1	22.1	11.3
Kujawsko-pomorskie										
2009	57.1	43.4	30.0	18.0	8.8	60.7	46.8	32.9	20.2	9.9
2010	57.2	43.4	30.1	18.1	8.9	61.5	47.5	33.6	20.9	10.4
2011	57.9	44.0	30.6	18.5	9.3	61.9	48.1	34.2	21.3	10.7
2012	58.4	44.4	30.9	18.7	9.3	61.9	48.0	34.1	21.2	10.6
2013	58.7	44.8	31.3	19.1	9.5	62.0	48.1	34.3	21.3	10.7
2014	58.9	45.1	31.7	19.4	9.8	62.3	48.4	34.5	21.6	10.9
2015	59.0	45.2	31.8	19.6	9.9	62.8	48.8	35.0	22.1	11.4
2016	59.6	45.7	32.2	19.9	10.2	63.3	49.3	35.4	22.5	11.7
2017	60.0	46.1	32.6	20.2	10.2	63.5	49.6	35.6	22.6	11.7
2018	59.8	45.9	32.5	20.1	10.2	63.8	49.7	35.7	22.6	11.7
2019	59.8	45.8	32.4	20.1	10.1	63.5	49.5	35.5	22.4	11.6
Lubelskie										
2009	58.2	44.2	31.0	19.1	9.9	63.0	48.8	34.8	21.7	10.9
2010	58.2	44.3	31.0	19.1	9.8	63.2	49.1	35.0	22.0	11.1
2011	57.9	44.0	30.7	18.8	9.6	62.7	48.7	34.8	21.8	10.9
2012	57.7	43.9	30.7	18.8	9.5	62.4	48.3	34.4	21.5	10.8
2013	57.7	43.8	30.7	18.8	9.6	61.7	47.7	33.7	20.9	10.3
2014	57.6	43.7	30.5	18.6	9.4	61.5	47.3	33.3	20.6	10.3
2015	57.9	44.0	30.7	18.8	9.4	61.3	47.1	33.3	20.7	10.4
2016	58.5	44.7	31.4	19.4	9.8	62.3	48.0	34.2	21.5	11.0
2017	59.3	45.5	32.3	20.2	10.6	62.6	48.6	34.8	22.1	11.4
2018	59.5	45.6	32.3	20.3	10.6	62.8	48.8	34.9	22.0	11.3
2019	59.4	45.5	32.2	20.2	10.6	62.9	48.9	35.0	22.1	11.3

Table C. Healthy life years by voivodships in 2009–2019 (cont)

Years	Males					Females				
	by age									
	0	15	30	45	60	0	15	30	45	60
Lubuskie										
2009	57.1	43.3	29.7	17.5	8.0	59.9	46.0	32.2	19.4	9.2
2010	57.5	43.7	30.2	17.9	8.5	60.1	46.2	32.3	19.6	9.4
2011	57.4	43.6	30.2	18.1	8.6	60.2	46.1	32.3	19.7	9.5
2012	57.8	44.0	30.6	18.3	8.8	60.5	46.5	32.6	20.0	9.9
2013	58.1	44.2	30.8	18.5	8.9	61.1	47.1	33.1	20.3	10.0
2014	58.6	44.6	31.2	18.7	9.0	61.2	47.1	33.3	20.4	9.9
2015	58.5	44.5	31.2	18.9	9.2	61.5	47.3	33.4	20.6	10.1
2016	59.3	45.5	32.0	19.5	9.6	62.2	48.2	34.2	21.4	10.7
2017	59.9	46.0	32.5	20.0	10.2	62.9	48.8	34.8	21.8	11.2
2018	60.5	46.5	32.9	20.4	10.4	63.8	49.7	35.7	22.6	11.6
2019	60.6	46.6	33.0	20.5	10.5	64.2	50.1	36.2	23.0	12.0
Łódzkie										
2009	55.8	41.9	28.7	17.0	8.4	60.7	46.6	32.8	20.1	10.0
2010	56.5	42.5	29.2	17.3	8.5	61.0	46.8	32.8	20.2	10.1
2011	56.6	42.7	29.3	17.5	8.6	60.9	46.6	32.7	20.1	10.0
2012	56.8	42.9	29.5	17.6	8.6	60.9	46.7	32.8	20.2	10.1
2013	57.0	43.1	29.7	17.8	8.7	61.3	47.2	33.3	20.5	10.2
2014	58.4	44.3	30.7	18.7	9.3	62.5	48.4	34.5	21.6	11.0
2015	58.5	44.5	30.9	18.7	9.2	62.9	48.9	34.9	21.9	11.2
2016	59.5	45.4	31.7	19.5	9.9	63.8	49.7	35.7	22.7	11.7
2017	58.7	44.7	31.3	19.1	9.7	62.9	48.8	34.9	21.9	11.1
2018	58.6	44.6	31.1	19.2	9.8	62.7	48.6	34.6	21.6	10.9
2019	58.7	44.5	31.1	19.2	9.9	62.7	48.6	34.6	21.7	10.9
Małopolskie										
2009	59.4	45.4	31.8	19.2	9.4	62.8	48.8	34.7	21.7	10.9
2010	59.5	45.6	32.0	19.4	9.5	62.8	48.7	34.7	21.7	10.8
2011	59.4	45.4	31.9	19.5	9.7	62.6	48.6	34.7	21.8	11.0
2012	59.6	45.6	32.1	19.6	9.8	62.8	48.8	35.0	22.1	11.3
2013	60.1	46.1	32.6	20.0	10.0	63.3	49.3	35.4	22.4	11.6
2014	60.4	46.4	32.8	20.2	10.1	63.1	48.9	35.0	22.1	11.4
2015	60.5	46.4	32.7	20.1	10.1	63.1	49.0	35.0	22.1	11.4
2016	61.0	47.0	33.3	20.7	10.6	63.5	49.3	35.4	22.5	11.7
2017	60.8	46.8	33.2	20.7	10.6	63.4	49.4	35.4	22.5	11.7
2018	60.6	46.6	33.0	20.5	10.4	63.5	49.2	35.3	22.4	11.6
2019	60.1	46.1	32.6	20.1	10.1	63.3	49.1	35.1	22.2	11.4

Table C. Healthy life years by voivodships in 2009–2019 (cont)

Years	Males					Females				
	by age									
	0	15	30	45	60	0	15	30	45	60
Mazowieckie										
2009	57.0	43.2	29.9	18.0	8.8	61.3	47.2	33.3	20.6	10.2
2010	57.6	43.7	30.3	18.2	9.0	61.6	47.3	33.4	20.6	10.4
2011	57.6	43.7	30.4	18.3	9.0	61.7	47.4	33.4	20.6	10.4
2012	57.9	43.9	30.6	18.4	9.1	61.5	47.3	33.4	20.7	10.3
2013	58.3	44.3	30.9	18.7	9.2	61.9	47.7	33.8	20.9	10.4
2014	59.6	45.5	31.8	19.4	9.7	62.9	48.9	34.9	22.0	11.2
2015	59.9	45.7	32.0	19.5	9.6	63.6	49.5	35.5	22.4	11.4
2016	60.6	46.5	32.8	20.3	10.3	64.5	50.3	36.3	23.1	12.0
2017	59.8	45.8	32.3	19.9	10.2	63.5	49.3	35.3	22.3	11.3
2018	59.7	45.6	32.1	19.8	10.1	63.2	49.1	35.1	22.0	11.1
2019	59.6	45.4	32.0	19.8	10.3	63.1	49.0	35.0	22.0	11.1
Opolskie										
2009	57.5	43.5	30.0	17.7	8.3	60.4	46.4	32.5	19.8	9.6
2010	57.8	43.8	30.4	18.1	8.6	60.9	46.9	33.1	20.2	9.9
2011	58.1	44.2	30.8	18.5	8.9	61.5	47.3	33.5	20.7	10.2
2012	58.6	44.7	31.2	18.8	9.1	62.0	48.0	34.1	21.1	10.4
2013	58.8	44.8	31.3	18.8	9.0	62.3	48.3	34.3	21.2	10.4
2014	59.4	45.4	31.8	19.3	9.3	62.4	48.4	34.4	21.3	10.3
2015	59.1	45.2	31.6	19.1	9.2	62.4	48.4	34.4	21.4	10.5
2016	59.4	45.4	31.9	19.4	9.5	63.0	49.0	35.0	21.9	11.0
2017	59.4	45.4	31.8	19.5	9.6	63.2	49.2	35.2	22.1	11.1
2018	59.7	45.7	32.2	19.9	10.0	63.6	49.5	35.5	22.4	11.5
2019	59.9	45.9	32.5	20.2	10.2	63.5	49.4	35.3	22.3	11.4
Podkarpackie										
2009	59.5	45.6	32.1	20.0	10.4	63.3	49.2	35.1	22.0	11.0
2010	59.7	45.7	32.2	20.0	10.3	63.5	49.4	35.4	22.2	11.2
2011	59.2	45.3	31.9	19.7	10.0	63.1	49.1	35.1	22.1	11.0
2012	58.7	44.9	31.6	19.5	9.9	62.7	48.6	34.7	21.7	10.9
2013	58.8	44.9	31.6	19.6	10.1	62.1	48.0	34.0	21.1	10.5
2014	58.5	44.7	31.3	19.3	9.7	61.7	47.6	33.6	20.9	10.3
2015	58.7	44.8	31.5	19.3	9.8	61.3	47.2	33.4	20.8	10.4
2016	59.5	45.7	32.2	20.0	10.2	62.4	48.3	34.4	21.6	11.1
2017	60.5	46.6	33.2	20.9	11.0	63.0	48.9	35.1	22.3	11.6
2018	60.6	46.7	33.3	21.1	11.1	63.1	49.1	35.3	22.3	11.5
2019	60.2	46.3	32.9	20.8	10.9	63.3	49.2	35.3	22.3	11.4

Table C. Healthy life years by voivodships in 2009–2019 (cont)

Years	Males					Females				
	by age									
	0	15	30	45	60	0	15	30	45	60
Podlaskie										
2009	58.7	44.8	31.5	19.6	10.2	63.4	49.1	35.0	21.9	11.1
2010	58.9	44.9	31.6	19.5	10.1	63.5	49.4	35.3	22.2	11.3
2011	58.7	44.7	31.4	19.3	9.9	62.9	49.0	35.0	22.0	11.1
2012	58.0	44.2	31.0	19.0	9.7	62.7	48.6	34.6	21.7	11.0
2013	58.0	44.1	30.9	19.0	9.8	62.0	47.9	33.9	21.1	10.5
2014	57.9	44.1	30.8	18.9	9.6	61.7	47.5	33.6	20.8	10.3
2015	58.1	44.2	31.0	19.1	9.6	61.3	47.2	33.3	20.7	10.5
2016	58.7	44.9	31.7	19.7	10.1	62.3	48.1	34.2	21.5	11.1
2017	59.7	45.8	32.5	20.5	10.8	62.8	48.9	35.0	22.2	11.5
2018	59.8	46.0	32.6	20.5	10.8	62.9	48.8	35.0	22.1	11.3
2019	59.6	45.7	32.4	20.4	10.7	63.2	49.0	35.1	22.2	11.5
Pomorskie										
2009	57.7	43.8	30.4	18.3	9.1	60.9	47.0	33.1	20.4	10.0
2010	58.0	44.2	30.8	18.6	9.2	61.9	47.9	34.0	21.1	10.6
2011	58.6	44.6	31.1	18.9	9.5	62.4	48.4	34.4	21.5	10.8
2012	58.6	44.7	31.2	19.0	9.5	62.3	48.2	34.3	21.3	10.7
2013	59.3	45.3	31.8	19.4	9.8	62.4	48.3	34.4	21.5	10.8
2014	59.5	45.5	32.1	19.8	10.0	62.5	48.5	34.6	21.7	11.0
2015	59.4	45.5	32.2	19.9	10.1	62.8	48.8	35.0	22.2	11.5
2016	60.1	46.1	32.7	20.2	10.3	63.5	49.5	35.6	22.6	11.7
2017	60.5	46.5	32.9	20.4	10.4	63.8	49.8	35.9	22.8	11.8
2018	60.4	46.5	33.0	20.5	10.5	64.1	50.0	35.9	22.8	11.9
2019	60.3	46.4	32.8	20.4	10.4	63.9	49.7	35.7	22.7	11.7
Śląskie										
2009	58.3	44.5	30.9	18.5	9.0	61.9	47.9	33.9	21.0	10.5
2010	58.4	44.5	30.9	18.6	9.2	62.1	48.0	34.0	21.1	10.5
2011	58.3	44.4	30.9	18.7	9.3	61.8	47.9	34.1	21.2	10.7
2012	58.4	44.6	31.1	18.9	9.4	62.0	48.0	34.2	21.4	10.9
2013	58.8	45.0	31.5	19.2	9.6	62.4	48.4	34.6	21.8	11.1
2014	59.3	45.3	31.8	19.4	9.7	62.1	48.2	34.3	21.5	11.0
2015	59.3	45.3	31.8	19.4	9.7	62.2	48.2	34.3	21.5	11.0
2016	59.9	46.0	32.4	20.0	10.2	62.6	48.5	34.6	21.8	11.3
2017	59.7	45.8	32.2	19.9	10.1	62.7	48.5	34.6	21.9	11.3
2018	59.6	45.6	32.1	19.8	10.0	62.6	48.4	34.5	21.7	11.1
2019	59.3	45.4	31.9	19.6	9.8	62.4	48.3	34.4	21.6	11.0

Table C. Healthy life years by voivodships in 2009–2019 (cont)

Years	Males					Females				
	by age									
	0	15	30	45	60	0	15	30	45	60
Świętokrzyskie										
2009	58.7	44.7	31.3	19.4	10.1	63.2	49.0	34.9	21.8	11.0
2010	58.5	44.6	31.3	19.3	9.9	63.0	49.0	35.0	22.0	11.1
2011	58.0	44.2	30.8	19.0	9.7	62.8	48.8	34.8	21.8	11.0
2012	57.9	43.9	30.7	18.8	9.5	62.5	48.4	34.4	21.5	10.8
2013	57.8	43.9	30.6	18.8	9.6	61.7	47.7	33.7	20.9	10.3
2014	57.9	43.8	30.5	18.7	9.5	61.5	47.2	33.3	20.5	10.2
2015	57.8	43.8	30.5	18.6	9.4	61.1	47.1	33.3	20.7	10.3
2016	58.5	44.7	31.4	19.4	9.9	62.0	47.8	34.0	21.3	10.9
2017	59.5	45.5	32.2	20.2	10.6	62.6	48.5	34.7	22.0	11.4
2018	59.5	45.7	32.3	20.3	10.7	62.7	48.6	34.8	21.9	11.2
2019	59.4	45.4	32.0	20.0	10.5	62.9	48.8	34.9	22.0	11.2
Warmińsko-mazurskie										
2009	56.8	42.9	29.7	17.9	8.6	60.8	46.9	33.1	20.3	10.0
2010	57.1	43.3	30.0	18.1	8.9	61.7	47.8	33.9	21.1	10.6
2011	57.6	43.6	30.3	18.4	9.1	62.2	48.2	34.4	21.5	10.9
2012	57.8	43.9	30.5	18.5	9.1	62.2	48.2	34.3	21.4	10.7
2013	58.1	44.3	30.9	18.7	9.3	62.2	48.3	34.4	21.4	10.7
2014	58.7	44.8	31.5	19.4	9.7	62.4	48.4	34.5	21.7	11.0
2015	58.6	44.6	31.4	19.3	9.7	62.7	48.7	34.9	22.1	11.5
2016	59.1	45.2	31.9	19.6	9.9	63.2	49.2	35.4	22.5	11.7
2017	59.5	45.5	32.1	19.8	10.0	63.7	49.7	35.8	22.8	11.8
2018	59.3	45.4	32.0	19.8	10.0	64.0	49.9	35.9	22.8	11.8
2019	59.3	45.4	32.0	19.8	10.0	63.6	49.5	35.5	22.4	11.6
Wielkopolskie										
2009	57.7	43.8	30.2	17.8	8.4	60.2	46.2	32.3	19.6	9.2
2010	58.2	44.2	30.6	18.2	8.6	60.3	46.3	32.5	19.7	9.4
2011	58.2	44.2	30.7	18.3	8.7	60.6	46.5	32.6	19.9	9.7
2012	58.3	44.4	30.9	18.6	9.0	60.8	46.7	32.8	20.2	9.9
2013	58.8	44.8	31.3	18.9	9.2	61.4	47.3	33.3	20.4	10.0
2014	58.9	45.0	31.5	19.0	9.2	61.4	47.3	33.4	20.5	10.0
2015	59.0	45.2	31.6	19.2	9.3	61.6	47.5	33.6	20.7	10.1
2016	60.0	46.1	32.4	19.8	9.8	62.4	48.2	34.3	21.3	10.7
2017	60.4	46.4	32.9	20.4	10.3	63.1	48.9	35.0	22.0	11.2
2018	61.2	47.2	33.5	20.8	10.6	64.1	49.9	35.9	22.7	11.7
2019	61.4	47.4	33.7	21.1	10.8	64.5	50.4	36.4	23.3	12.2

Table C. Healthy life years by voivodships in 2009–2019 (cont)

Years	Males					Females				
	by age									
	0	15	30	45	60	0	15	30	45	60
Zachodniopomorskie										
2009	57.1	43.4	29.9	17.6	8.2	59.9	46.1	32.2	19.5	9.2
2010	57.6	43.7	30.1	17.8	8.4	60.1	46.1	32.3	19.6	9.3
2011	57.5	43.8	30.4	18.2	8.7	60.4	46.3	32.4	19.8	9.6
2012	57.9	44.0	30.7	18.3	8.9	60.6	46.6	32.7	20.0	9.9
2013	58.4	44.5	31.1	18.7	9.0	61.3	47.2	33.2	20.4	10.0
2014	58.8	44.8	31.3	18.9	9.0	61.1	47.2	33.3	20.5	10.0
2015	58.9	44.9	31.5	19.1	9.3	61.6	47.5	33.5	20.6	10.1
2016	59.6	45.7	32.1	19.6	9.7	62.3	48.2	34.2	21.3	10.7
2017	60.2	46.2	32.6	20.2	10.2	62.9	48.8	34.8	21.9	11.2
2018	60.9	46.9	33.3	20.6	10.5	63.9	49.8	35.8	22.7	11.7
2019	60.9	47.0	33.3	20.8	10.7	64.2	50.2	36.3	23.2	12.1