HEALTHY LIFE YEARS IN THE CZECH REPUBLIC: DIFFERENT DATA SOURCES, DIFFERENT FIGURES

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ABSTRACT

Healthy Life Years (HLY) may be an important indicator of the potential demand for health and long-term care services, especially for the elder generations of the population. This indicator, unlike the concept of life expectancy, puts emphasis not only on the whole length of life but also on its quality, expressed as the period of life in good health. The European Union's Survey on Income and Living Conditions (EU-SILC) and the European Health Interview Survey (EHIS) could be used as the basic set of indicators for an overall assessment of the state of health. In this article, we compare data on the prevalence of activity limitation in both surveys. The questions used to assess this and their wording are almost the same in both surveys. However, significant differences can be observed in the results of the two surveys. The most important explanation of the difference is probably the overall context of the survey. The EU-SILC is an extensive survey focusing on living conditions and health issues are marginal. The EHIS survey focuses exclusively on health, and there are a number of questions that further inquire about the respondent's health, specific chronic illnesses, visits to the doctor, etc. The second part of the article investigates how these differences in the prevalence of activity limitation are reflected in the HLY indicator.

INTRODUCTION

For many years now, much attention has been paid to aggregate health indicators because they can quantify health, which is important not only for health statistics. Indicators of this type contain information about mortality and morbidity.

The ageing of the population in Europe will have far-reaching economic and social consequences and will require changes in the allocation of resources within social and health systems. Health expectancy indicators are constructed from citizens' subjective assessment of their own health and are based on a wide range of health aspects and people's perceptions about their quality of life. That is why health expectancies can be important indicators of the potential demand for health and long-term care services, especially among the older generations of the population. These indicators, unlike the concept of life expectancy, puts

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emphasis not only on the whole length of life but also on its quality, expressed in health.

In 2010, the Czech Demographic Society approved the uniform terminology of aggregate health indicators that is recommended for use in the Czech Republic in order to prevent any ambiguities in translations from the English language (*Hrkal*, 2010: 1). The English terms for aggregate health indicators according to the *Czech Demographic Society* (2010) are used and described below.

Life expectancy indicators based on health make it possible to compare health conditions between subpopulations of a single country and between populations of different countries in terms of the overall cost-effectiveness of the health system or in terms of long-term health trends.

Aggregate health indicators can be divided into three basic groups (*Hrkal – Daňková*, 2005):

- **Life Expectancy (LE);**
- **Health Expectancies (HE);**
- **Health Gaps (HG).**

The types of aggregate health indicators are shown in Figure 1. This paper will not deal with life expectancy and health gaps in more detail due to spatial constraints.

1. HEALTH EXPECTANCIES

'An indicator showing the average number of years that an individual at a certain age is expected to live in a selected state of health' (*Czech Demographic Society*, 2010).

The idea to create a measure of 'health expectancy'[4] came from a report published in 1969 by the US Department of Health, Education, and Welfare. Consideration of such a measure began because good health and a long life are the basic goals of society. An increase in life expectancy caused worries about the population's future health, and therefore it was necessary to somehow measure these facts (Healthy Life Years: Introduction, [n.y.]).

Health expectancies are an effective tool of interaction between good health, bad health, and death. This term is also often used to monitor

Figure 1 **Aggregate health indicators**
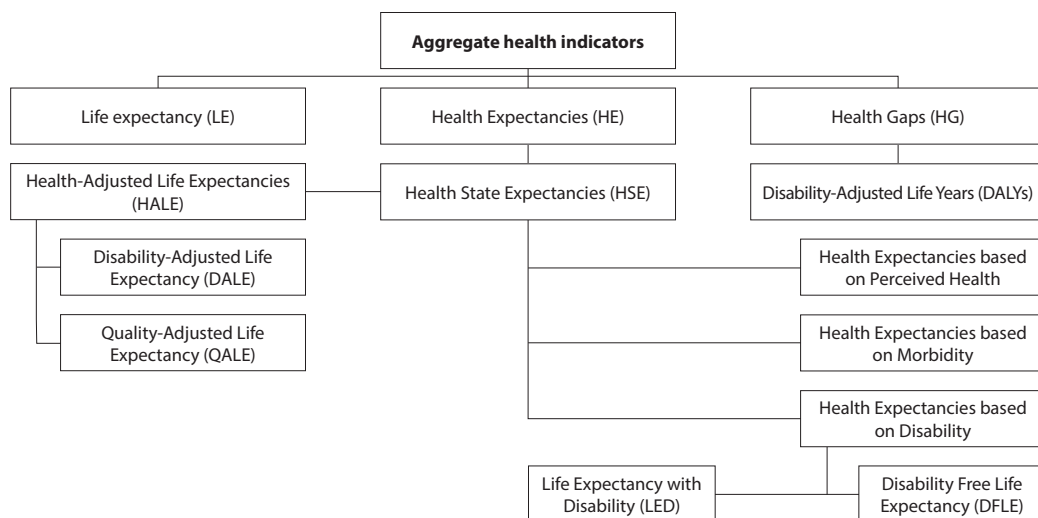
Source: Czech Demographic Society (2010): English and Czech terms for summary indicators of population health: Basic overview.

4) The division of life expectancy into healthy and non-healthy years of life (disability).

the population's health in relation to increasing longevity (*EHEMU*, 2007).

Health expectancies were first developed to address whether or not longer life is being accompanied by an increase in the time lived in good health (the compression of morbidity scenario) or in bad health (the expansion of morbidity). So, health expectancies divide life expectancy into life spent in different states of health, from, say, good to bad health. In this way, they add a dimension of quality to the quantity of life lived (*EHEMU*, 2014).

Health expectancies based on health can be further divided into:
- Health State Expectancies (HSE);
- Health-Adjusted Life Expectancy (HALE).

Health State Expectancies

'*An indicator showing the average number of years that an individual at a certain age is expected to live in a certain state of health*' *(Czech Demographic Society,* 2010).

It is based on the premise that life expectancy (LE) can be broken down into individual time periods in certain states of health. To put it simply, it indicates different states of health that, when added up, equal life expectancy. The equation looks like this (*Hrkal – Daňková*, 2005):

where: $LE = HSE_0 + HSE_1 + HSE_2 + ... + HSE_s$
HSE_0 is considered a state of full health
$HSE_1 - HSE_s$ are considered states worse than full health and are scaled from 1 to s.
Health state expectancies can be further classified as follows (depending on what health characteristics they are based on):
- Health Expectancies based on Perceived Health;
- Health Expectancies based on Morbidity;
- Health Expectancies based on Disability
  - Disability Free Life Expectancy (DFLE);
  - Life Expectancy with Disability (LED).

2. HEALTHY LIFE YEARS AS AN OFFICIAL INDICATOR

Just as there are many ways of assessing health, there are also many healthy life year lifespans. According to the EHEMU reports in 2007, one of the characte-

ristics of healthy life may be healthy life expectancy (HLE). This indicator is constructed on the basis of respondents' answers regarding the evaluation of their own health. The overall health state can be evaluated in several ways that subjectively reflect the actual health of the individual. One of the most commonly used indicators of an individual's health assessment is the General Activity Limitation Indicator (GALI), and the length of life indicator based on this health feature is called Healthy Life Years (HLY).

The Healthy Life Years indicator is currently the one used most frequently from the group of health expectancies across the EU. This indicator is one of the core indicators used to monitor European-wide and national strategies on health. In 2004 it was included among the set of 'structural indicators' introduced for use in the evaluation and monitoring process in relation to the Lisbon strategy in the area of public health (adopted in 2000 by the European Council; *ÚZIS ČR*, 2016).

Monitoring healthy life years helps Member States to assess the health of their population and to find out whether longer life is being lived in good health (morbidity compression) or in bad health (morbidity expansion). Healthy life years are used to highlight health inequalities in individual Member States and to focus on health supporting resources, and are being used more and more to obtain information necessary for the long-term planning of a health, social, and fiscal policy. For instance, the Turner Pensions Commission in Great Britain proposed increasing the retirement age to reflect longer life expectancy, but some professionals point out that healthy life years would be a better indicator because it is health rather than age that determines an individual's ability to work (*EHEMU Reports*, 2007).

The percentage of bad health in a population is often measured by the prevalence of disability, i.e. the percentage of people with a disability. Since our population is ageing more and more and older people are more likely to have a disability, the overall occurrence of disability in the total population can go up without individuals actually being at a higher risk of disability than before. Healthy life years take into account both changes in the length of life lived with a disability and changes in the mortality rate, which are responsible for higher life expectancy. This is why

an improvement in the health of the ageing population at any age increases life expectancy without disability, even though the overall disability prevalence is higher due to an ever-increasing number of people at risk. Healthy life years are thus an effective tool for identifying the interaction between health, disease, and mortality (*EHEMU Reports*, 2007).

From a methodological perspective, the indicator falls in the category of Health State Expectancies and specifically Disability Free Life Expectancy (DFLE). The health parameter, which is used to calculate the HLY indicator, is based on a question referred to as the GALI (General Activity Limitation Indicator). This question asks respondents whether or not they were limited in their regular activities for health reasons during the preceding six months.[5]

To calculate healthy life years, the Sullivan Method is largely used. Since life expectancy is not dependent on the size of the population or the age structure, it is possible to compare European countries. To compute health expectancies with the Sullivan Methods, it is possible to use the calculation guide prepared by experts (*Jagger – Van Oyen – Robine*, 2014).

Years spent with a given health condition can be calculated according the Sullivan Method:

$$DFLE_x = \frac{\sum_{i=x}^{\omega-1} {_nL_i} * prev_i^0}{l_x}$$

where:

$_nL_x$ is the number of years lived by a population between exact ages x and $x + n$ years;

$prev_i^0$ is the prevalence of the health condition at the age of x;

l_x is the number of survivors up to exact age x;

ω is the age when no one in the population survives.

The advantage of the Sullivan method is the good availability of data (coming mostly from population surveys on health status) and its low computational complexity. The disadvantage of this method is the use of prevalence rates coming from transversal data sources, which reflect, rather than current health risks, past conditions influencing the health of the population (*Hrkal*, 2010).

Eurostat compute HLY indicators for the purpose of formulating and evaluating political strategies. Data on HLY are reported annually in the Eurostat database http://ec.europa.eu/eurostat/data/database. Eurostat annually collects data on morbidity and mortality from Member States and performs the computation of HLY itself.

With the inclusion of HLY among the set of structural indicators, the GALI question was introduced in the Survey on Income and Living Conditions (SILC). This survey is conducted by individual Member States in compliance with the EU's uniform instructions and methodology since 2005. In addition to the GALI question, the survey includes another two health questions, all three questions are referred to as the Minimum European Health Module (MEHM) and are also recommended for surveys other than those that are health-oriented.

Although the MEHM was introduced as a European module with harmonized methodology in all countries, the comparability was not optimal before 2008, as it took time to harmonize all aspects of the instrument used in the national questionnaires. Therefore, we can observe breaks in the series of data before 2008, and only data since 2008 are considered comparable. In the Czech Republic, the GALI question was changed significantly[6] in 2007 and 2008 in order

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5) The exact wording of the question and the category of responses recommended by Eurostat to be used in social surveys in 2017 and earlier are:

For at least the past 6 months, to what extent have you been limited because of a health problem in activities people usually do? Would you say you have been …

1) severely limited, 2) limited but not severely or 3) not limited at all?

6) 2006 wording: *Have you been limited during the last 6 months due to health problems in your activities?*

1) Yes, very limited, 2) Yes, limited, 3) No, not limited

2007 wording: *Have you been long-term limited during the last 6 months due to health problems in your activities?*

1) Yes, very limited, 2) Yes, limited, 3) No, not limited

2008 wording: *Have you been limited due to health problems for previous at least 6 months in activities people usually do?*

1) Yes, very limited, 2) Yes, limited, 3) No, not limited

to be comparable with the recommended standardised concept used in the European Health Interview Survey. Thus we can observe a break in data in these years.

However, the concept behind the GALI question is very complicated as it covers 4 dimensions:

- Presence of a limitation
- Presence of a limitation during the past 6 months
- Severity of the limitation
- Health reasons for this limitation

The exact wording of the question is not mentioned in legislation relating to the SILC survey directly, there is just a list of variables that countries are obliged to provide to Eurostat. Implementing the specific tool into the national questionnaire, its exact wording, and the question(s) used to obtain data for this variable depend on each country. In this situation, it is not easy to compare data across the EU as the question(s) and modes of data collection used in some countries may differ from others. It has been found that the number of questions that respondents are asked in order to collect the data on GALI, the context in which they are asked, and the modes of interviewing are relevant issues that can have an impact on the final results (Cambois, Inserm 2017). Moreover, discussion has begun at the EU level on introducing an 'easier' tool to measure this aspect in the population and the recommended 'GALI question' will probably be changed in the coming year.

Within several European projects the European Health Expectancy Monitoring Unit was set up and the European Health and Life Expectancy Information System (EHLEIS) was developed during 2004–2014. Since 2014 EHLEIS has been a part of the BRIDGE Health project that is working to prepare the transition towards a sustainable and integrated EU health information system within the third EU Health Programme, 2014–2020.

EurOhex (www.eurohex.eu) is a website that provides access to research on health expectancies in Europe. It includes a database on health indicators comprising life expectancies and Healthy Life Years (HLY) for 28 European countries. The method of computation slightly differs from the method used by Eurostat, but the data are almost the same. On the EurOhex webpage one can compute the HLY indicator for different morbidity variables (subjectively perceived health, prevalence of chronic disease, activity limitation) and from different sources (SILC, SHARE – Survey on Health, Ageing and Retirement in Europe). Since 2005 within this information system annual Country Reports are prepared and published on the EHEMU website. Country Reports contain a description of the main purpose of health expectancies and the HLY values for the given country in comparison with an average for the 28 Member States of the European Union(EU28). The HLY values based on the SILC question on long-term activity limitation are presented here, together with health expectancies based on two additional dimensions of health (chronic morbidity and self-perceived health) for the given country.

## 3. ACTIVITY LIMITATION (THE MORBIDITY DIMENSION OF HEALTHY LIFE YEARS) IN THE CZECH REPUBLIC

Besides SILC, there is one more detailed source of survey data on health in European countries, which is EHIS. The European Health Interview Survey is a survey that supplements routine health statistics. In 2008 the first wave of this health interview survey took place in the Czech Republic using the harmonised materials for conducting this survey, such as questionnaire, methodological guidelines etc. In 2013 an implementing regulation on the EHIS came into force (Implementing Regulation No. 141/2013 of 19 February 2013 implementing Regulation No. 1338/2008 of the European Parliament and of the Council (EC) on Community statistics on public health and health and safety at work, as regards statistics based on the European Health Interview Survey (EHIS)) and the survey became obligatory in all EU countries. In 2014 the second wave of the survey was conducted in the Czech Republic. The next survey will take place in the Czech Republic in 2019. The relevant legislative framework is currently under preparation.

Both surveys, SILC and EHIS, include MEHM, which can be used as the basic set of indicators for assessing the overall state of health. The questions and the wording of them used in both surveys are almost the same. Significant differences, however, can be observed in the results produced by the two surveys.

The prevalence of limitation in activities according to SILC and EHIS – an overview

From Figures 2 and 3 it is clear that the two above-mentioned sources differ in their GALI figures.

Figure 2 The prevalence of limitation in usual activities due to health reasons (%), males aged 16+, Czech Republic, 2008, 2014

——— Males SILC 2008   ——— Males SILC 2014   ------ Males EHIS 2008   - - - - Males EHIS 2014
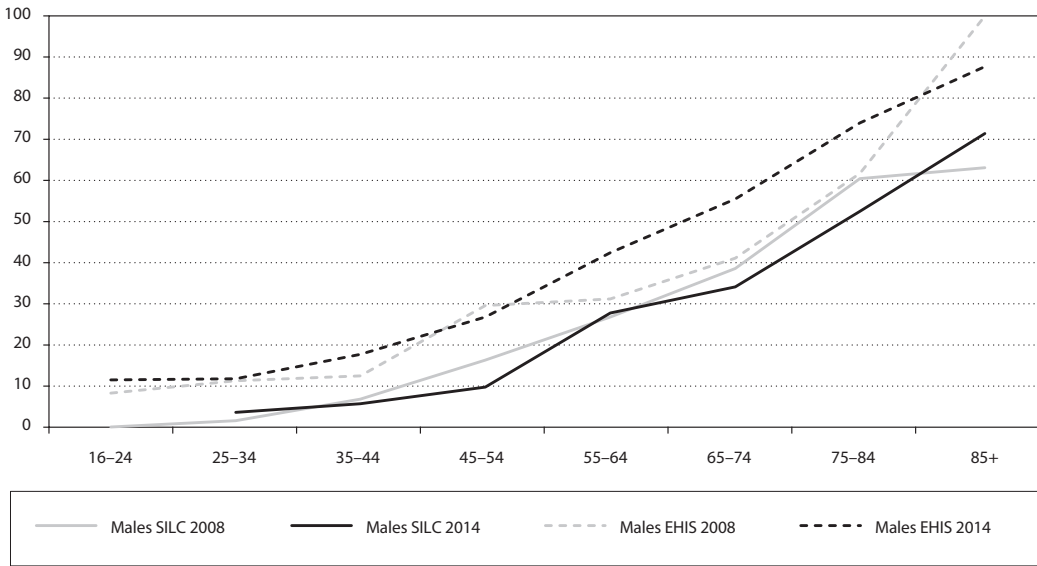
Source: EHIS 2008, EHIS 2014, SILC 2008, SILC 2014.

Figure 3 The prevalence of limitation in usual activities due to health reasons (%), females aged 16+, Czech Republic, 2008, 2014

——— Females SILC 2008   ——— Females SILC 2014   ------ Females EHIS 2008   - - - - Females EHIS 2014
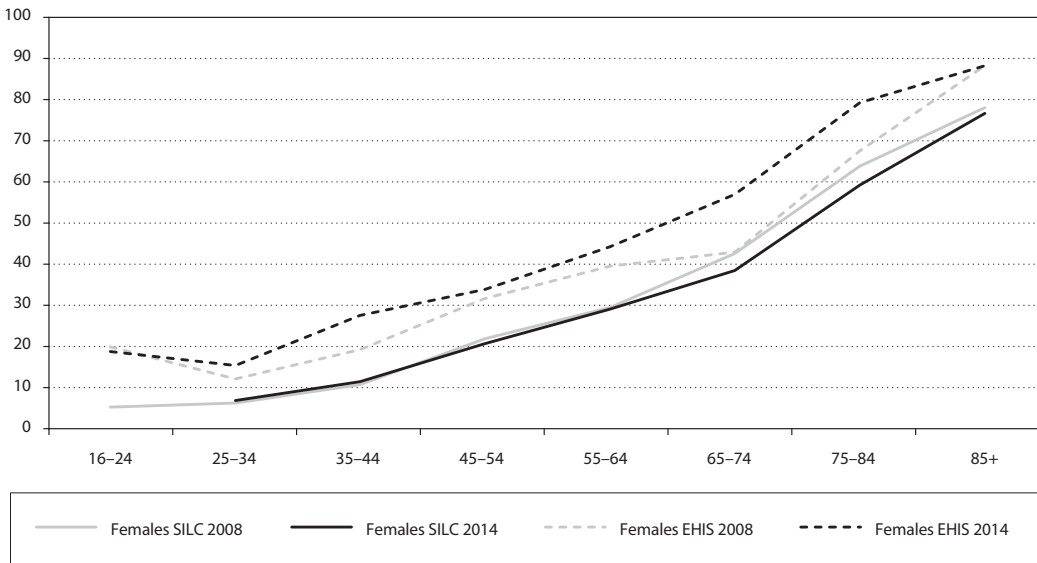
Source: EHIS 2008, EHIS 2014, SILC 2008, SILC 2014.

In both surveys, the prevalence of activity limitation increases with age. However, in SILC we can observe lower prevalence of activity limitation across all age groups compared to EHIS and a less rapid increase in the highest age groups. This difference can be observed in both years – 2008 and 2014 – and in both men and women.

Given that the SILC survey monitors only population aged 16 and over, for the purposes of comparison the data for EHIS were re-calculated for this age group. So for a comparison of both data sources, data

on population aged 16 and over are presented. When presenting only results of the EHIS survey, data on population aged 15 and over are used.

As Table 1 shows, limitations related to health were observed in 20% of men and 24% of women in the SILC survey in 2008, compared with 26% of males and 30% of females with limitations in EHIS 2008. This means that the overall figures in EHIS are 6 percentage points higher compared to SILC. The same pattern can be observed in 2014: according to SILC data the prevalence of persons with limitations

Table 1 Share of persons limited in usual activities due to health reasons (%), males and females aged 16+, Czech Republic, 2008, 2014

Age group	Males		Females		Males		Females	
	SILC 2008	SILC 2014	SILC 2008	SILC 2014	EHIS 2008	EHIS 2014	EHIS 2008	EHIS 2014
16-24	4.4	NA	5.6	NA	12.3	15.3	20.3	19.1
25-34	5.9	7.8	6.6	7.2	15.2	15.7	12.5	15.7
35-44	10.9	9.8	11.1	11.8	16.3	21.3	19.6	27.9
45-54	20.0	13.7	22.3	21.1	32.7	30.0	32.1	34.3
55-64	30.0	30.9	29.9	29.5	34.2	44.9	40.0	44.7
65-74	41.3	37.0	43.1	38.9	43.7	57.4	43.4	57.5
75-84	62.2	54.6	64.4	59.8	63.4	75.1	68.1	79.9
85+	64.7	72.7	78.7	77.3	100.0	88.2	88.9	88.9
Total	20.4	21.8	23.8	25.1	25.8	32.9	30.6	38.4

Source: EHIS 2008, EHIS 2014, SILC 2008, SILC 2014.

Figure 4 The prevalence of limitation in usual activities by severity (%), males and females aged 16+, Czech Republic, 2008, 2014
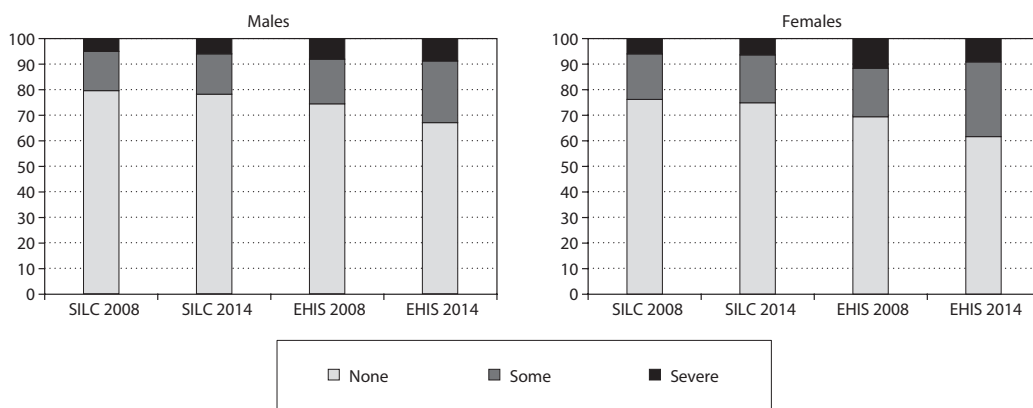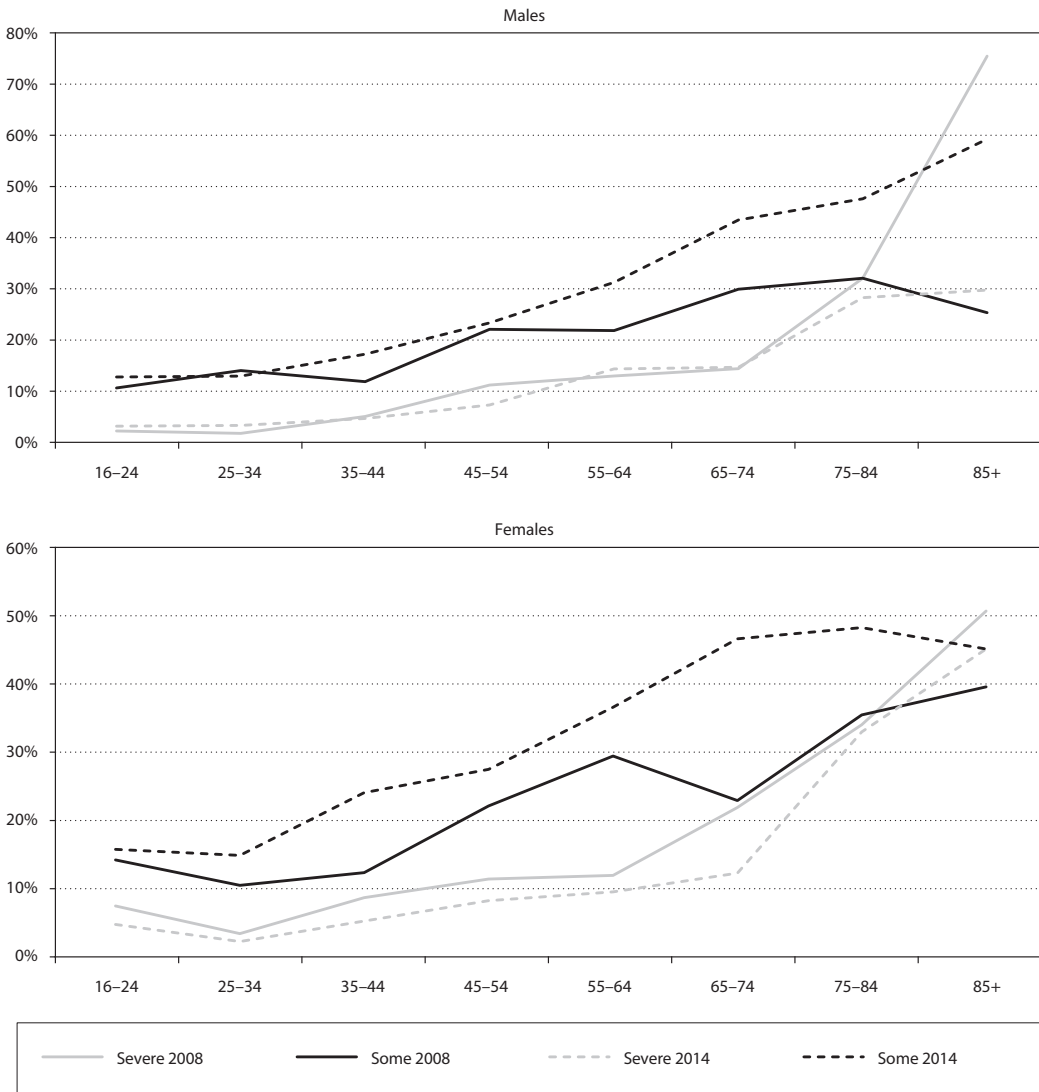

Source: EHIS 2008, EHIS 2014, SILC 2008, SILC 2014.

was 22% for males and 25% for females, according to EHIS data the figures were 33% for males and 38% for females, which means that the difference between the two sources increased during the 6 years. According to both data sources, the prevalence of limitations increased, but the increase was greater in EHIS data than in SILC data.

If we observe separately the severity of limitations (see Figure 4), we can see in 2008 a huge difference in the share of women and the share of men who answered that they are limited severely in usual activities. These figures are much higher in EHIS than in SILC, while the share of people who have some limitations

Figure 5 **The prevalence of limitation in activities by severity according to age (%), males and females aged 16+, Czech Republic, 2008, 2014**

is more or less the same in both surveys. If we assess 2014 data, we can see an enormous increase in the prevalence of persons with 'some' activity limitation in the EHIS data, which resulted in the large difference between both sources.

The huge increase in the prevalence of some limitations observed in EHIS data has a different age pattern for men and women (see Figure 5). While in men this increase was lower, it was not accompanied by a decrease in the prevalence of severe limitations and was observed especially among older people, in women the increase of prevalence of some limitations was observed in almost all age groups and it was accompanied by a decrease in the prevalence of severe limitations in several age groups.

The prevalence of activity limitation in SILC and EHIS – the causes and consequences of the differences

What are the reasons for this difference between SILC and EHIS data?

We could start by comparing the question's wording, but we can see that it is almost the same in both data sources. Only a very minor difference can be found in the question itself: in SILC[7] the reference period for the duration of the health limitations is defined as 'the previous 6 months' while in EHIS[8] it is defined as 'the last 6 months'.

More significant differences can be found in response categories. SILC uses the following response categories: 1) Yes, very limited, 2) Yes, limited, 3) No, not limited, while in EHIS the exact wording slightly differs (1) Yes, severely limited, 2) Yes, limited, but not severely, 3) No, not limited). Unfortunately, no cognitive testing has been performed that could explain any difference the wording of the response categories might cause.

More important and problematic issues could be found in other methodological aspects related to the question. In the interviewer's manual for the SILC questionnaire there is just a short note explaining

that any limitation has to have lasted at least 6 months in order for the respondent to answer 'yes'. In the EHIS manual for interviewers, there is about half a page of instructions explaining the concept behind the question and it describes in details all four parts of the question. For instance, it explains the reference period (any limitation has to be present at the time of the interview and has to have lasted at least 6 months) and interviewers are provided with a detailed description of what 'activities people usually do'.

However, the most important difference is probably the overall context of the survey (*Daňková*, 2010). The points above refer to some methodological differences between the two surveys.

Although the maximum degree of harmonisation was achieved and the questionnaire used is the same, the contexts of the two surveys are nonetheless significantly different. EU SILC is an extensive survey focusing on living conditions (material, financial, working conditions, etc.), while health issues are dealt with only marginally. The EHIS survey, by contrast, focuses exclusively on health, and MEHM is followed by a number of questions that question respondents further on their health, specific chronic illnesses, visits to the doctor, etc. This can be expected to have a psychological effect on respondents, as they will concentrate more on the state and aspects of their health (*Šprocha*, 2016). The process of going through a questionnaire that investigates the respondents health in detail could also create a situation where respondents modify their original response during the interview.

There may also be other factors that are not easy to describe now and will probably surface in the next survey periods, factors such as the structure of interviewers, modes of interviewing, hidden proxy answers etc.

The implications of identifying these different population structures according to health in the EHIS and SILC surveys are crucial. 'Healthy life years' is a very important indicator of the health of the population and has great significance. Benchmarking based

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7) *Have you been limited due to health problems for previous at least 6 months in activities people usually do?*
   *1) Yes, very limited, 2) Yes, limited, 3) No, not limited*

8) *Have you been limited due to health problems for previous at least 6 months in activities people usually do?*
   1) Yes, severely limited, 2) Yes, limited, but not severely, 3) No, not limited

on this indicator is often used to assess the situation in a given country for various policy purposes and strategies. It is often used to formulate strategies, with the main goal specified as extending the share of life experienced in a state of health (i.e. share of HLY to LE) or for comparing countries with the highest HLY.

For this reason, it is necessary to address not only the number of 'healthy years', but also the development of the indicator. Equally important is the methodical background (the wording of the question, the context, the manner of questioning), which vary between countries and can vary over time, etc.

Figure 6 Life expectancies at birth (LE_0) and Healthy Life Years (HLY_0), males and females, Czech Republic and EU (27 or 28 countries of EU), 2005–2015
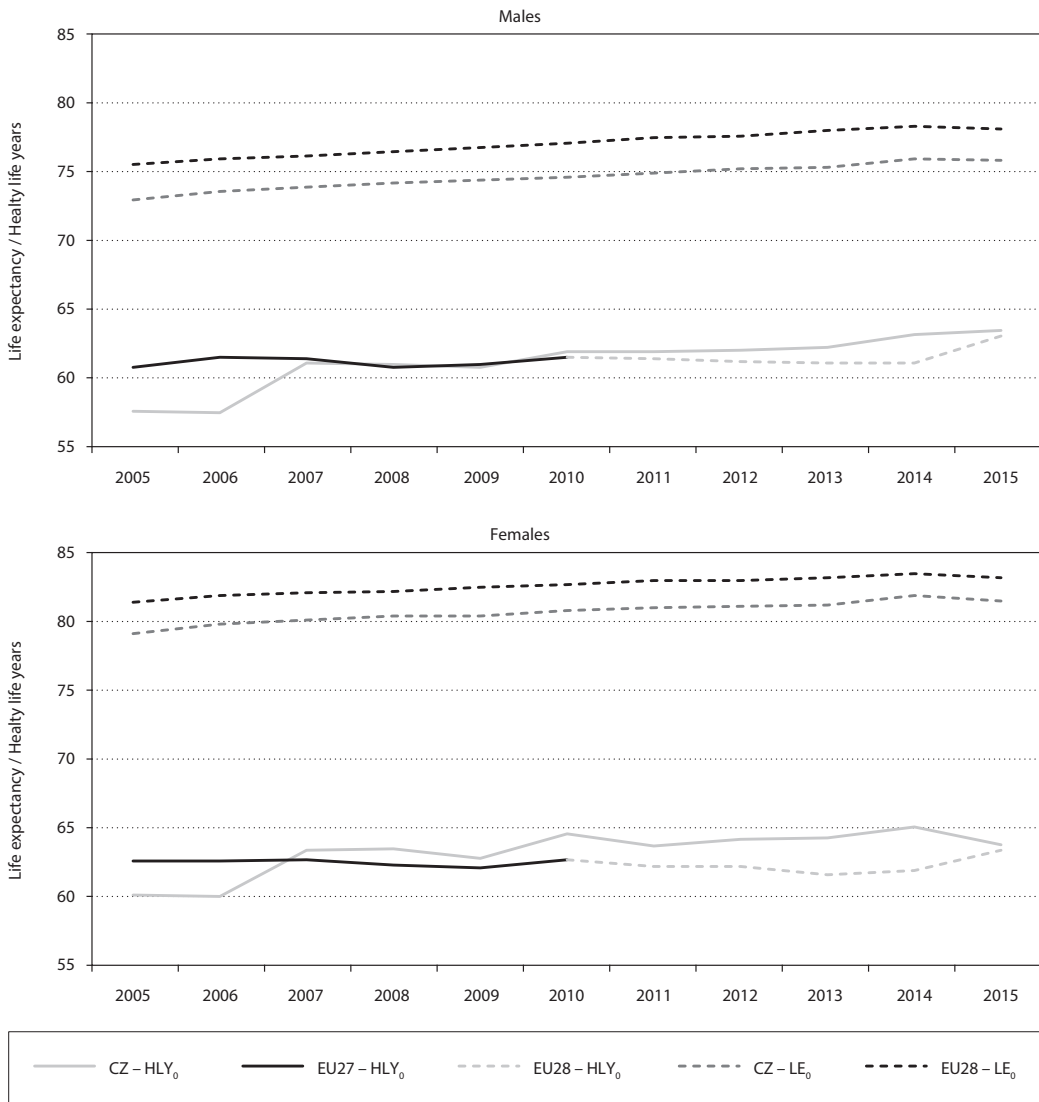
Source: Eurostat database.

We must keep in mind that this indicator is based on a subjective evaluation of health, which is assessed by respondents themselves and may be influenced not only by their real health state, but also by other determinants (political situation, cultural differences etc.).

4. HEALTHY LIFE YEARS IN THE CZECH REPUBLIC

European context

Figure 6 shows the development of life expectancy at birth (LE_0) and Healthy Life Years (HLY_0) for the Czech Republic and the European Union for both genders in 2005–2015. From these results, it is clear that in terms of life expectancy the Czech Republic is in all years below the EU level (data from 28 countries). The difference between the Czech Republic and the EU is around 2 years for women and 2.5 years for men.

Table 2 presents the concrete values of life expectancy and healthy life years at birth for each gender in the Czech Republic as well as the percentage of life that an individual born in a certain year is to live in good health. Some may say that while life expectancy is a quantitative parameter that uses exact values

Table 2 Life expectancies at birth (LE_0), Healthy Life Years at birth (HLY_0) and the percentage of life spent in good health, males and females, Czech Republic, 2008–2015

		2008	2009	2010	2011	2012	2013	2014	2015
Females	HLY_0	63.4	62.7	64.5	63.6	64.1	64.2	65.0	63.7
	LE_0	80.5	80.5	80.9	81.1	81.2	81.3	82.0	81.6
	HLY_0 / LE_0 (%)	78.8%	77.8%	79.7%	78.5%	78.9%	79.0%	79.2%	78.1%
Males	HLY_0	61.3	61.1	62.2	62.2	62.3	62.5	63.4	62.4
	LE_0	74.1	74.3	74.5	74.8	75.1	75.2	75.8	75.7
	HLY_0 / LE_0 (%)	82.7%	82.3%	83.5%	83.1%	83.0%	83.1%	83.6%	82.4%

Source: Eurostat database.

Figure 7 Difference in healthy life years between females and males, Czech Republic and EU, 2005–2015
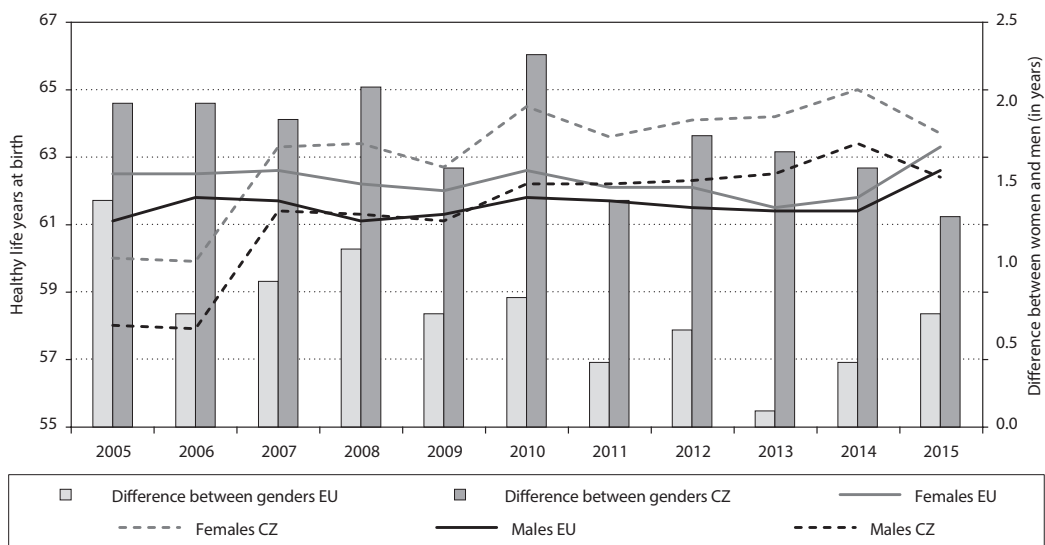
Source: Eurostat database.

concerning the entire population based on life tables, healthy life years are a qualitative parameter that reflects the results from sample surveys. Unfortunately, for now we do not have any other health parameter that would be better for such a comparison. If we disregard the 'disadvantages' of each parameter, the data clearly show that during the entire monitored period, men are expected to live a bigger part of life in relatively good health than women (the difference is approximately 4 percentage points).

In the Czech Republic the share of healthy life years out of life expectancy is relatively large. In 2015 the share of healthy life years was 78.0% for females and 82.4% for males, while in the EU28 it is about 2 percentage points lower. In the long term it has a rather stable trend, in 2015 the percentage decreased slightly year-on-year in both sexes.

Figure 7 shows the development of the differences in HLY between females and males over the period 2005–2015. The figure shows that the gender gap in the Czech Republic is bigger than in the EU. The difference in HLY at birth between females and males was 1.3 years, which is 0.6 years more than in the EU on average. The Czech Republic ranks among the countries in the EU with above-average figures. From 2007 the HLY

indicator had a rising trend (an increase between 2007 and 2014 of 2 years for males and 1.7 years for females), and only declined in 2015. However, there was a reduction in the gender gap, which was the smallest in 2015.

Healthy life years in the Czech Republic – two different sources of health data

As shown above, two important sources of data in the Czech Republic indicate significantly different results for the prevalence of activity limitation for health reasons. In order to show the effect of the different results on health expectancy, we computed values of HLY using data from these two data sources. The computation was done using Sullivan's Method, and life tables downloaded from the EHEMU database (Eurostat method of computation) were used.

Unfortunately, for 2008 the EHIS sample size was relatively small (1,955 respondents) and the prevalence of activity limitation varies considerably across the 5-year age groups that should be used in the computation in order to obtain valid results. Thus, the HLY indicator was computed only for 2014, and only for ages 16+, as we do not have data on the prevalence of activity limitation in younger age groups.

Figure 8 **The prevalence of activity limitation by age and sex, Czech Republic, 2014**
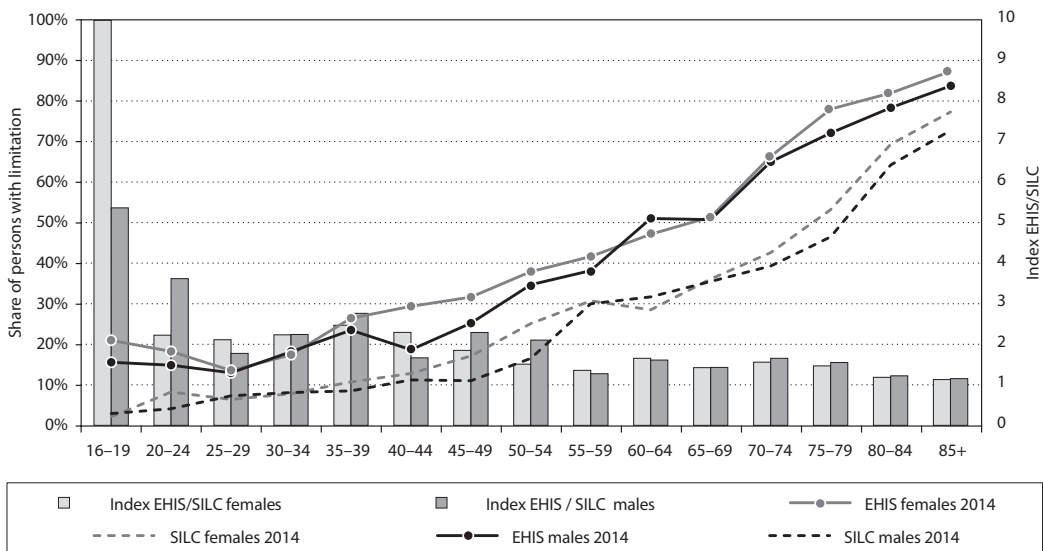
Source: EHIS 2014, SILC 2014.

Figure 8 presents a comparison of the prevalence of activity limitation by 5-year age groups in the SILC and EHIS 2014 surveys for men and women. We can see that EHIS indicates a much higher prevalence of limitation across all age groups, but extreme differences can be observed in younger age groups 16–19 and 20–24. The prevalence of limitation is 10 times higher in EHIS than in SILC for females aged 16–19 years, and more than 5 times higher for males of the same age. At the age of 85+ the EHIS prevalence of activity limitation is just 12–15% higher if compared to SILC, which, however, is then a difference of 10–11 percentage points in the prevalence of activity limitation. While 87% of women have activity limitation according to EHIS, in SILC it is only 77%, and for men it is 84% according to EHIS and 73% according to SILC data.

The HLY indicators computed with data from SILC, which are used as the official European figures, are 48.4 years for men and 49.5 years for women at age 16 years. If we use data from EHIS, the figures are much lower, at 40.1 for men and 39.8 for women.

At age 65 the HLY indicator according to SILC data is 9 years for males, while only 5.7 if data from EHIS are used. Similarly, for females, the figure is 9.3 for SILC and 5.8 for EHIS data.

It is clear that the relative difference in the HLY indicators between both surveys increases with age and the maximum difference was observed at the age of 75, when the HLY figures based on SILC data were almost twice as high as the figures based on EHIS data.

The difference in HLY between males and females is 1.1 years if data from SILC are used and 0.3 if data from EHIS are used at the age of 16. According to EHIS data, the HLY indicator at age 16 was 0.3 years higher for males than females, while SILC data show a higher figure for females than males and the difference is 1.1 years. The HLY indicators based on EHIS data show only a small difference between both males and females across all age groups. A slightly bigger difference can be observed at age 45–60, where women have higher HLY indicators than men, and in the oldest age groups, when, on the contrary, men's HLY indicators are higher. However, a similar profile can be observed in the SILC data, and the difference between both sexes is greater than the difference observed using EHIS data for people under the age of 65 and relatively lower for persons aged 70+.

Table 3 Healthy Life Years computed using GALI data from both data sources – SILC and EHIS, Czech Republic, 2014

| Age	HLY Males		HLY Females		Sex difference (absolute) HLY females – HLY males		Females / males ratio	
	EHIS	SILC	EHIS	SILC	EHIS	SILC	EHIS	SILC
16	40.1	48.4	39.8	49.5	-0.28	1.01	0.993	1.021
20	36.8	44.6	36.6	45.6	-0.11	0.92	0.997	1.021
25	32.6	40.0	32.6	41.0	-0.02	1.03	0.999	1.026
30	28.4	35.5	28.3	36.4	-0.07	0.89	0.998	1.025
35	24.4	31.0	24.2	31.8	-0.16	0.80	0.993	1.026
40	20.7	26.6	20.6	27.4	-0.09	0.83	0.996	1.031
45	16.8	22.4	17.2	23.2	0.35	0.78	1.021	1.035
50	13.3	18.3	13.9	19.2	0.56	0.93	1.042	1.051
55	10.3	14.5	10.9	15.7	0.56	1.15	1.054	1.079
60	7.6	11.6	8.2	12.5	0.53	0.89	1.069	1.077
65	5.7	9.0	5.8	9.3	0.05	0.30	1.009	1.033
70	3.8	6.8	3.6	6.5	-0.25	-0.21	0.935	0.968
75	2.7	4.8	2.2	4.2	-0.52	-0.62	0.806	0.871
80	1.9	3.2	1.3	2.3	-0.59	-0.89	0.693	0.724
85+	1.7	2.8	0.8	1.4	-0.93	-1.47	0.450	0.480

Source: EHIS 2014, SILC 2014, EHEMU database; authors' calculations.

Figure 9 Healthy Life Years (life expectancy without disability based on GALI) computed from EHIS and SILC data, Czech Republic, 2014
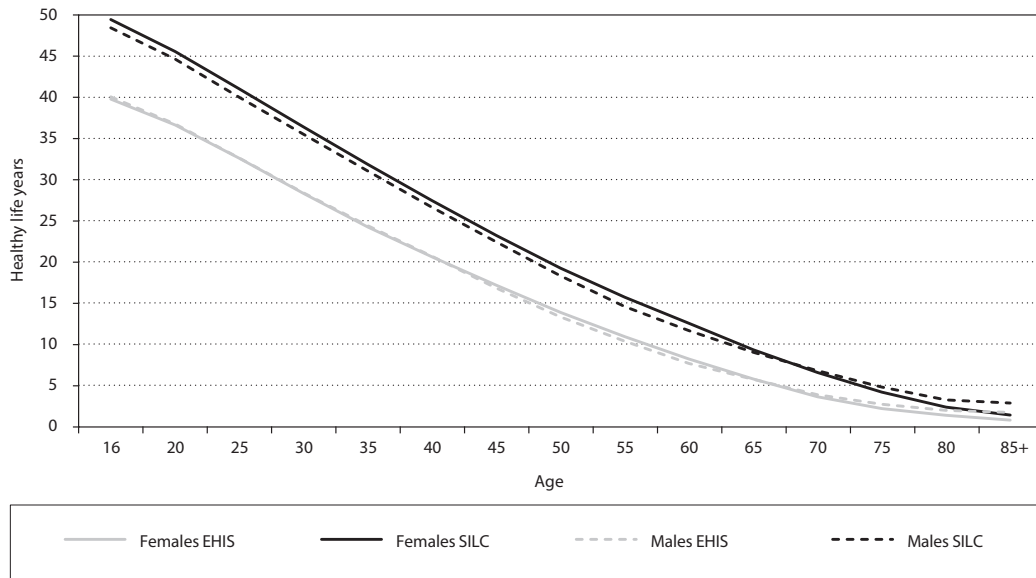
Source: EHEMU, SILC 2014, EHIS 2014; authors' calculations.

Figure 10 Indexes related to HLY computed on the basis of EHIS and SILC data, Czech Republic, 2014
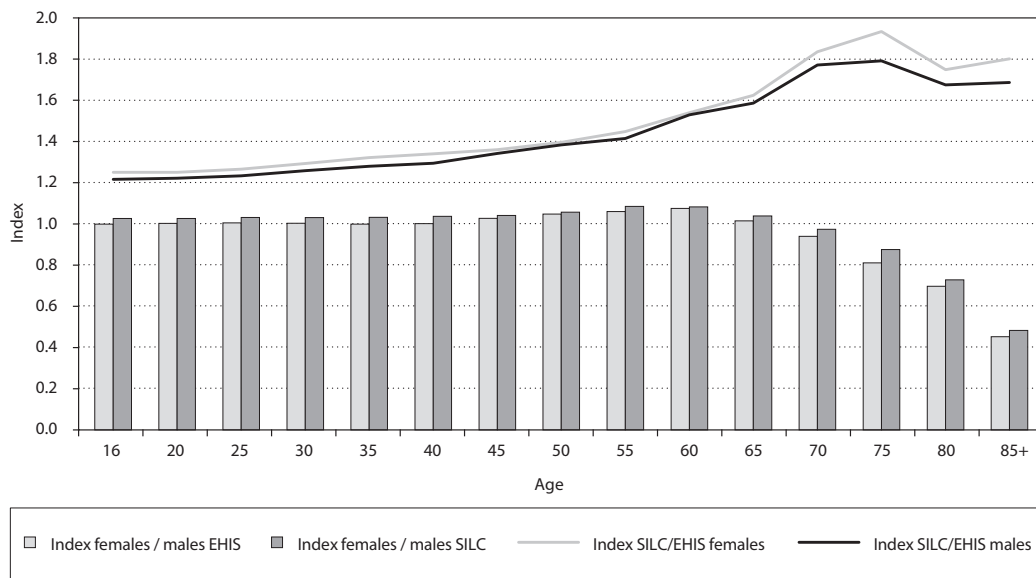
Source: EHEMU, SILC 2014, EHIS 2014; authors' calculations.

5. CONCLUSION

With longer life expectancy, health expectancies are becoming increasingly important, because they are able to quantify, at least approximately, how the years of life will be spent, in what quality of life and in what health. There are several indicators of health expectancies, but the one most commonly used is the HLY indicator.

The HLY indicator is increasingly a part of policy concepts and their evaluations at the national, international, and regional levels. In the Czech Republic, there is no more detailed breakdown available of the data (i.e. on the NUTS 2 or NUTS 3 level), but we believe that in the future it will be possible to publish this indicator regularly for regions.

The methodology for calculating this indicator is relatively simple. The indicator as such has two main components: mortality and morbidity. The calculation, usually performed using the Sullivan Method, is based on including the proportion of people limited in the activities people usually do due to health problems by age into the calculation of life expectancy in the form of life tables. The morbidity characteristic used for this purpose is the General Activity Limitation Indicator (GALI). Information on GALI used by Eurostat to calculate the HLY indicator comes from the EU-SILC sample survey, which is obligatory in all EU countries and provides comparable data on the living conditions of the population since 2008. Although this is a harmonised survey with a uniform methodology, specific aspects connected with the collection of data on GALI may vary across countries. The resulting figures are then dependent not only on the precise wording of the question, but also on the way the interview is conducted.

Another possible source of data on the proportion of people with activity limitation for health reasons is the European Health Interview Survey (EHIS). This survey is conducted according to the European Commission's Legislative Decree; in the Czech Republic, the most recent survey took place in 2014 on a sample of more than 6,500 respondents. This is a survey that focuses mainly on the health of an individual, but also monitors the use of health care and selected aspects of lifestyle that are risky for health.

By comparing the results of the SILC and EHIS surveys in 2008 and 2014, we find that the prevalence of persons reporting restrictions on routine activities for health reasons is underestimated in the SILC survey compared to EHIS, both for males and for females. The underestimation applies to all age groups and is larger in 2014 than in 2008. The reasons for this difference in the results of both surveys could be the methodological aspects of both surveys (wording, questionnaire guidelines, etc.), but in our opinion the most important role is played by the context in which the GALI question is placed in the survey. While in the SILC survey the question is posed at the end of the interview as a supplement to other questions relating, in particular, to income, household equipment, etc., in the EHIS survey it is among the first questions asked and is subsequently supplemented by a number of questions focusing on the particular health problems the respondent is struggling with.

The HLY indicator, calculated and presented by Eurostat based on the GALI question (from SILC), reached 62.4 years in males and 63.7 years in females in 2015. The share of HLY out of life expectancy was approximately 82% for males and 78% for females. Compared to the EU-28 average, life expectancy in the Czech Republic is lower by about 2.5 years for men and 2 years for women, but the length of HLY in the Czech Republic is comparable to the values observed in the EU as a whole and therefore there is also a higher proportion of HLY out of the total life expectancy. Relatively high levels of inequality between the sexes are observed in the Czech Republic. The difference in life expectancy between males and females is around 6 years. If we monitor HLY, there is a difference of less than 1.3 years, but still higher than the EU average.

It is difficult to say which of the GALI figures is closer to the real situation in the Czech population, whether the figure obtained from the EHIS or the SILC survey. In addition, in 2014 the difference between the two surveys in the prevalence of this indicator was significant. To demonstrate the effect of possible distortion, an HLY calculation using EHIS data was performed.

HLY computed with data from SILC, which are used as official European values, is 48.4 years for men and 49.5 years for women at age 16 years. If we use data from EHIS, the figures are much lower – 40.1 for men and 39.8 for women. The difference

is therefore huge. It can thus be concluded that the actual HLY figure in the Czech Republic is probably lower than the calculation performed here on SILC data. And it is clear that the figures for the HLY indicator obtained by the calculation using the EHIS survey data give a more insightful view of the health status of the population. Unfortunately, the trend of the HLY indicator is unlikely to be monitored by EHIS. However, for this purpose it is possible to use the data from the SILC survey, which is comparable since 2008, because the survey is still carried out in the same way.

The last question is to what extent the data presented by Eurostat for the HLY indicator is comparable across the countries. A very important role is played by the way in which the GALI variable is specifically identified in a given country, by methodological factors, and by the circumstances of the survey. Currently, the wording of the GALI question is being changed in some countries, which significantly distorts comparisons. In the future, it can be expected the question recommended by Eurostat for the GALI survey will change, which will certainly be reflected in further inconsistencies between countries.

Acknowledgements

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