

Active Ageing Index in the European Union

Methodological report

July 2019



Note

This report is prepared within the framework of the joint project by the United Nations Economic Commission for Europe (UNECE) and the European Commission's Directorate General for Employment, Social Affairs and Inclusion (DG EMPL).

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Introduction: what you will find in the report

The following report, “Active Ageing Index in the European Union: A methodological report”, provides the methodological explanation of the calculation of the indicators of the Active Ageing Index (AAI).

This document is composed of two blocks, divided each into four parts corresponding to each domain of the AAI. In the first part, each indicator is defined and the data sources and the variables that are used for its calculation are described. In the second part, the comparability of the indicators over time and the imputation criteria in cases of missing data are explained.

The AAI is composed of 4 domains and 22 indicators. As shown in Table 1, six different data sources are used for the calculation of the different indicators: Labour Force Survey (LFS), European Quality of Life Survey (EQLS), European Union Statistics on Income and Living Conditions (EU-SILC), European Social Survey (ESS), Information and Communications Technologies usage by Households and Individuals (ICT Survey), Mortality and Population registers from Eurostat. The indicators and domains that make up the AAI with their corresponding weights are presented in Table 1.

Table 1. Domains, indicators, source and weight

| Domain | Indicator | Data source | Weight within domain | Weight within index |
|---|---|-------------|----------------------|---------------------|
| 1. Employment | 1.1. Employment rate for the age group 55–59 | LFS | 25 | 35 |
| | 1.2. Employment rate for the age group 60–64 | LFS | 25 | |
| | 1.3. Employment rate for the age group 65–69 | LFS | 25 | |
| | 1.4. Employment rate for the age group 70–74 | LFS | 25 | |
| 2. Social participation | 2.1. Percentage of population aged 55 and over engaging in unpaid voluntary activity through organisations at least once a week | EQLS | 25 | 35 |
| | 2.2. Percentage of population aged 55 and over providing care to and educating their children, grandchildren at least once a week | EQLS | 25 | |
| | 2.3. Percentage of population aged 55 and over providing care to infirm or disabled family members, neighbours or friends at least once a week | EQLS | 30 | |
| | 2.4. Percentage of population aged 55 and over taking part in activities of a trade union, a political party or political action group | EQLS | 20 | |
| 3. Independent, healthy and secure living | 3.1. Percentage of population aged 55 and over undertaking physical exercise or sport almost every day | EQLS | 10 | 10 |
| | 3.2. Percentage of population aged 55 and over who report no unmet need for medical and dental examination or treatment during the 12 months preceding the survey | EU-SILC | 20 | |

| Domain | Indicator | Data source | Weight within domain | Weight within index |
|--|---|---|----------------------|---------------------|
| | 3.3. Percentage of population aged 75 and over who live in a single-person household or who live as a couple | EU-SILC | 20 | |
| | 3.4. Ratio of the median equivalised disposable income of people aged 65 and over to the median equivalised disposable income of those aged below 65 | EU-SILC | 10 | |
| | 3.5. Percentage of population aged 65 and over who are not at risk of poverty | EU-SILC | 10 | |
| | 3.6. Percentage of population aged 65 and over who are not severely materially deprived | EU-SILC | 10 | |
| | 3.7. Percentage of population aged 55 and over who are feeling very safe or safe to walk after dark in their local area | ESS | 10 | |
| | 3.8. Percentage of population aged 55–74 who received education or training in the four weeks preceding the survey | LFS | 10 | |
| 4. Capacity and enabling environment for active ageing | 4.1. Remaining life expectancy (RLE) at age 55 divided by 50 to calculate the proportion of life expectancy achievement in the target of 105 years of life expectancy | Mortality and population registers (Eurostat) | 33.3 | 20 |
| | 4.2. Healthy Life Years (HLY) at age 55 measures the remaining number of years free of activity limitations caused by health problems | Mortality and population registers (Eurostat) and EU-SILC | 23.3 | |
| | 4.3. Percentage of population aged 55 and over reporting good mental well-being | EQLS | 16.7 | |
| | 4.4. Percentage of population aged 55–74 using the Internet at least once a week | ICT Survey | 6.7 | |
| | 4.5. Percentage of population aged 55 and over that meet socially with friends, relatives or colleagues at least once a week | ESS | 13.3 | |
| | 4.6. Percentage of population aged 55–74 with upper secondary or tertiary educational attainment | LFS | 6.7 | |

1. Calculation of indicators: definition, source and variables used

Domain 1. Employment

1.1 Employment rate for the age group 55–59

Definition: Employment rate for age group 55–59

Source: European Union (EU) Labour Force Survey (EU-LFS)

Survey question/variable:

Labour status during the reference week (Wstator)

Categories:¹

- 1. Did any work for pay or profit during the reference week — one hour or more (including family workers but excluding conscripts on compulsory military or community service)**
- 2. Was not working but had a job or business from which he/she was absent during the reference week (including family workers but excluding conscripts on compulsory military or community service)**
3. Was not working because on lay-off
4. Was a conscript on compulsory military or community service
5. Other (15 years or more) who neither worked nor had a job or business during the reference week
9. Not applicable (child less than 15 years old)

Variable weight: coeff

Eurostat web variable:

Employment rates by sex, age and citizenship (%) [Ifsa_organ]

1.2 Employment rate for the age group 60–64

Definition: Employment rate for age group 60–64

Source, Survey variable, Categories, Variable weight, Eurostat web variable: same as for the indicator 1.1.

1.3 Employment rate for the age group 65–69

Definition: Employment rate for age group 65–69

Source, Survey variable, Categories, Variable weight, Eurostat web variable: same as for the indicator 1.1.

¹ Here and after — in bold are the categories selected for the calculation of a given indicator.

1.4 Employment rate for the age group 70–74

Definition: Employment rate for age group 70–74

Source, Survey variable, Categories, Variable weight, Eurostat web variable: same as for the indicator 1.1.

Domain 2. Participation in Society

2.1 Voluntary activities

Definition: Percentage of population aged 55 and over engaging in unpaid voluntary activity through the organisations (at least once a week)

Source: European Quality of Life Survey (EQLS)

Survey Question/Variable:

Please look carefully at the list of organisations and tell us, how often did you do unpaid voluntary work through the following organisations in the last 12 months?

- a. **Community and social services (e.g. organisations helping the elderly, young people, disabled or other people in need) (Y16_Q29a);**
- b. **Educational, cultural, sports or professional associations (Y16_Q29b);**
- c. **Social movements (for example environmental, human rights) or charities (for example fundraising, campaigning) (Y16_Q29c);**
- d. Political parties, trade unions (Y16_Q29d);
- e. **Other voluntary organisations (Y16_Q29e).**

The answer category d. is not included to avoid overlapping with the question on political participation.

Categories:

1. **Every week**
2. Every month
3. Less often/occasionally
4. Not at all

Variable weight: WCalib

Caveats: Not full comparability throughout time due to a change in the original question of the EQLS. See a more detailed explanation in section 2 of this document.

2.2 Care to children, grandchildren

Definition: Percentage of population aged 55 and over providing care to and educating their children, grandchildren (at least once a week)

Source: European Quality of Life Survey (EQLS)

Survey Question/Variable :

In general, how often are you involved in any of the following activities outside of paid work?

- a. Caring for and/or educating your children (Y16_Q42a)
- b. Caring for and/or educating your grandchildren (Y16_Q42b)

Categories:

1. Every day
2. Several days a week
3. Once or twice a week
4. Less often
5. Never

Variable weight: WCalib

Caveats: Not full comparability throughout time due to a change in the original questions of the EQLS and a filter used to restrict the respondents of a part of the question. See a more detailed explanation in section 2 of this document.

2.3 Care to infirm and disabled

Definition: Percentage of population aged 55 and over providing care to infirm or disabled family members, neighbours or friends (at least once a week)

Source: European Quality of Life Survey (EQLS)

Survey Question/Variable :

In general, how often are you involved in any of the following activities outside of paid work?

- d. Caring for disabled or infirm family members, neighbours or friends under 75 years old (Y16_Q42d)
- e. Caring for disabled or infirm family members, neighbours or friends aged 75 or over (Y16_Q42e)

Categories:

1. Every day
2. Several days a week
3. Once or twice a week
4. Less often
5. Never

Variable weight: WCalib

Caveats: Not full comparability throughout time due to a change in the original questions of the EQLS. See a more detailed explanation in section 2 of this document.

2.4 Political participation

Definition: Percentage of population aged 55 and over taking part in activities of a trade union, a political party or a political action group

Source: European Quality of Life Survey (EQLS)

Survey Question/Variable:

Over the last 12 months, have you done any of the following activities?

- a. **Attended a meeting of a trade union, a political party or political action group (Y16_Q30a)**
- b. **Attended a protest or demonstration (Y16_Q30b)**
- c. **Signed a petition, including an e-mail or on-line petition (Y16_Q30c)**
- d. **Contacted a politician or public official (other than routine contact arising from use of public services) (Y16_Q30d)**
- e. Commented on a political or social issue online (Y16_Q30e)
- f. Boycotted certain products (Y16_Q30f)

Categories:

1. **Yes**
2. No

Variable weight: WCalib

Domain 3. Independent, healthy and secure living

3.1 Physical exercise

Definition: Percentage of population aged 55 and over undertaking physical exercise or sport almost every day

Source: European Quality of Life Survey (EQLS)

Survey Question/Variable:

How frequently do you do each of the following?

- c. Take part in sports or physical exercise (Y16_Q27c).

Categories:

1. **Every day or almost every day**
2. At least once a week
3. One to three times a month
4. Less often
5. Never

Variable weight: WCalib

3.2 Access to health and dental care

Definition: Percentage of population aged 55 and over who report no unmet need for medical and dental examination or treatment during the 12 months preceding the survey

Source: European Union Statistics on Income and Living Conditions (EU-SILC)

Survey Question/Variable:

1. Unmet need for medical examination or treatment [Unmet need for medical examination or treatment during the last 12 months] (PH040)
2. Unmet need for dental examination or treatment [Unmet need for dental examination or treatment during the last 12 months] (PH060)

Categories:

1. Yes, there was at least one occasion when the person really needed examination or treatment but did not receive it
2. **No, there was no occasion when the person really needed examination or treatment but did not receive it**

Variable weight: pb040

3.3 Independent living arrangements

Definition: Percentage of population aged 75 and over who live in a single-person household or who live as a couple (two adults with no dependent children)

Source: European Union Statistics on Income and Living Conditions (EU-SILC)

Survey Question/Variable:

Household type (HX060)

Categories:

5. **One-person household**
6. 2 adults, no dependent children, both adults under 65 years
7. **2 adults, no dependent children, at least one adult 65 years or more**
8. Other households without dependent children
9. Single parent household, one or more dependent children
10. 2 adults, one dependent child
11. 2 adults, two dependent children
12. 2 adults, three or more dependent children
13. Other households with dependent children
16. Other (these household are excluded from Laeken indicators calculation)

Variable weight: rb050

Caveats: It is analysed for all members of the household. See detailed information on calculation of the indicator in the section 2.

3.4 Relative median income

Definition: The relative median income ratio is defined as the ratio of the median equivalised disposable income of people aged 65 and over to the median equivalised disposable income of those aged below 65

Source: European Union Statistics on Income and Living Conditions (EU-SILC)

Survey Question/Variable:

Household disposable income is established by summing up all monetary incomes received from any source by each member of the household (including income from work, investment and social benefits) – plus income received at the household level – and deducting taxes and social contributions paid. In order to reflect differences in household size and composition, this total is divided by the number of ‘equivalent adults’ using a standard (equivalence) scale, the so-called ‘modified OECD’ scale, which attributes a weight of 1 to the first adult in the household, a weight of 0.5 to each subsequent member of the household aged 14 and over, and a weight of 0.3 to household members aged below 14. The resulting figure is called equivalised disposable income and is attributed to each member of the household. (HX090: “Equivalised disposable income”)

Variable weight: rb050

Eurostat Web Variable: Mean and median income by age and sex — EU-SILC survey [ilc_di03]

Eurostat Web Categories:

1. Mean equivalised net income
2. **Median equivalised net income**

Caveats: It is recommended to calculate this indicator through the Eurostat website, where there is exact information. Meanwhile, since it is sensitive information, these data go through an anonymizing process that changes and restricts the information provided in microdata.

3.5 No poverty risk

Definition: Percentage of population aged 65 and over who are not at risk of poverty (people at risk of poverty are defined as those with an equivalised disposable income after social transfers below the at-risk-of-poverty threshold, which is set at 50 per cent of the national median equivalised disposable income after social transfers)

Source: European Union Statistics on Income and Living Conditions (EU-SILC)

Survey Question/Variable:

(HX090) (see 3.4)

Variable weight: rb050

Eurostat Web Variable: At-risk-of-poverty rate by poverty threshold, age and sex — EU-SILC survey [ilc_li02]

Eurostat Web Categories:

1. At risk of poverty rate (cut-off point: 40% of median equivalised income)
- 2. At risk of poverty rate (cut-off point: 50% of median equivalised income)**
3. At risk of poverty rate (cut-off point: 60% of median equivalised income after social transfers)
4. At risk of poverty rate (cut-off point: 70% of median equivalised income)
5. At risk of poverty rate (cut-off point: 40% of mean equivalised income)
6. At risk of poverty rate (cut-off point: 50% of mean equivalised income)
7. At risk of poverty rate (cut-off point: 60% of mean equivalised income)

Caveats: It is recommended to calculate this indicator through the Eurostat website, where there is exact information. Meanwhile, since it is sensitive information, these data go through an anonymizing process that changes and restricts the information provided in microdata.

3.6 No severe material deprivation

Definition: Percentage of population aged 65 and over who are not severely materially deprived. Severe material deprivation refers to a state of economic and durable strain, defined as the enforced inability (rather than the choice not to do so) to afford at least four out of the following nine items:

1. to pay their rent, mortgage or utility bills;
2. to keep their home adequately warm;
3. to face unexpected expenses;
4. to eat meat or proteins regularly;
5. to go on holiday;
6. a television set;
7. a washing machine;
8. a car;
9. a telephone.

Source: European Union Statistics on Income and Living Conditions (EU-SILC)

Survey Question/Variable:

1. Arrears on mortgage or rental payments. [Whether the household has been in arrears on mortgage or rental payments in the past 12 months]. (HS011)
2. Arrears on utility bills [whether the household has been in arrears on utility bills in past 12 months] (HS021)
3. Arrears on hire purchase instalments or other loan payments [whether the household has been in arrears on hire purchase instalments or other loan payments (non-housing-related debts) in past 12 months] (HS031)
4. Capacity to afford paying for one-week annual holiday away from home (HS040)
5. Capacity to afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day (HS050)
6. Capacity to face unexpected financial expenses (HS060)
7. Do you have a telephone (including mobile phone)? (HS070)

8. Do you have a colour TV? (HS080)
9. Do you have a washing machine? (HS100)
10. Do you have a car? (HS110)

Categories for items 1, 2 and 3:

1. **Yes, once**
2. **Yes, twice or more**
3. No

Categories for items 4, 5 and 6:

1. Yes
2. No

Categories for items 7, 8, 9 and 10:

1. Yes
2. **No – cannot afford**
3. No – other reason

Variable weight: rb050

Eurostat Web Variable: Severe material deprivation rate by age and sex [ilc_mddd11]

Caveats: It is recommended to calculate this indicator through the Eurostat website, where there is exact information. Meanwhile, since it is sensitive information, these data go through an anonymizing process that changes and restricts the information provided in microdata.

3.7. Physical safety

Definition: Percentage of population aged 55 and over who are feeling very safe or safe to walk alone after dark in their local area

Source: European Social Survey (ESS)

Survey Question/Variable :

How safe do you – or would you – feel walking alone in this area (Respondent's local area or neighbourhood) after dark? Do – or would – you feel (aesfdrk)

Categories:

1. **Very safe**
2. **Safe**
3. Unsafe
4. Very unsafe

Variable weight: pspwght

3.8 Lifelong learning

Definition: Percentage of population aged 55–74 who stated that they received education or training in the four weeks preceding the survey

Source: EU Labour Force Survey (EU-LFS)

Survey Question/Variable:

Education or training received during previous four weeks (EDUCA4WN)

Categories:

1. Received no education or training
2. **Received some education or training**

Variable weight: coeff

Eurostat Web Variable: Population by sex, age and participation in education and training (last 4 weeks) [lfsa_pgaied]

Eurostat Web Categories:

1. Total
2. **Formal and non-formal education and training**
3. Neither formal nor non-formal education and training
4. No answer

Domain 4. Capacity and enabling environment for active ageing

4.1. Remaining life expectancy achievement of 50 years at age 55

Definition: Remaining life expectancy (RLE) at 55 divided by 50 to calculate the proportion of life expectancy achievement in the target of 105 years of life expectancy

Source: Eurostat web

Eurostat Web Variable:

Population: Population on 1 January in each year by age and sex [demo_pjan]

Mortality: Deaths in each year by age and sex [demo_magec]

Note: The life tables are calculated for each country, year and sex, which results in the life expectancy at each age. Sullivan method is applied.

4.2. Share of healthy life years in the remaining life expectancy at age 55

Definition: Healthy Life Years (HLY) measures the remaining number of years free of activity limitations caused by health problems. It combines information on quality and quantity of life.

Source: Population and mortality registers (Eurostat) and European Union Statistics on Income and Living Conditions (EU-SILC)

Survey Question/Variable :

Global Activity Limitation (GALI) (ph030).

Variable weight: pb040 (For GALI)

Eurostat Web Variable :

Population: Population on 1 January by age and sex [demo_pjan]

Mortality: Deaths by age and sex [demo_magec]

Note: The life tables are calculated for each country, year and sex, which results in the life expectancy at each age. Sullivan method is applied. Life expectancy in good health is obtained by adding the proportion of persons aged 55 and older who have not been limited at all in their activities because of health problems during at least six months preceding the survey (https://ec.europa.eu/eurostat/cache/metadata/en/hlth_hlye_esms.htm). The variable used is that of limitations in daily life (GALI).

4.3. Mental well-being

Definition: Percentage of population aged 55 or over reporting good mental well-being

Source: European Quality of Life Survey (EQLS)

Survey Question/Variable :

Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks.

- a. I have felt cheerful and in good spirits (Y16_Q51a)
- b. I have felt calm and relaxed (Y16_Q51b)
- c. I have felt active and vigorous (Y16_Q51c)
- d. I woke up feeling fresh and rested (Y16_Q51d)
- e. My daily life has been filled with things that interest me (Y16_Q51e)

Categories:

1. All of the time
2. Most of the time
3. More than half of the time
4. Less than half of the time
5. Some of the time
6. At no time

Variable weight: WCalib

Note: The raw score is calculated by reversing the value order of the variable, and then totalling the figures of the five answers. The raw score converted so as to range from 0 to 25, 0 representing worst possible and 25 representing best possible mental well-being. According to WHO, a raw score below 13 indicates poor well-being and is an indication for testing for depression under the Major Depression (ICD-10) Inventory (see <http://www.who-5.org/> for more details).

EQLS dataset includes a variable (Y16_WHO5_MWIndex) with a punctuation from 0 to 100 created by means of the previous items (Y16_Q51a-e). This variable can be used as an equivalent for the calculation of the indicator using as cutting point of 52 points, i.e. the variable will be the share of people aged 55 and over with scores from 52 to 100 points.

4.4 Use of ICT

Definition: Percentage of population aged 55–74 years using the Internet at least once a week

Source: ICT Survey

Survey Question/Variable:

How often on average have you used Internet in the last 3 months?

Eurostat Web Variable: Individuals – frequency of Internet use [isoc_ci_ifp_fu]

Categories:

Unit:

1. Percentage of individuals
2. Percentage of individuals who used Internet in the last 3 months

Frequency:

1. Frequency of internet access: once a week (including every day)
2. Frequency of internet access: daily
3. Frequency of internet access: at least once a week (but not every day)
4. Frequency of internet access: at least once a month
5. Frequency of internet access: less than once a month
6. Frequency of internet access: less than once a week

Note: The indicator measures the share of those aged 55–74 that have used the Internet at least once a week in the previous 3 months.

4.5 Social connectedness

Definition: Percentage of population aged 55 or over that meet socially with friends, relatives or colleagues at least once a week. “Meet socially” implies meet by choice, rather than for reasons of either work or pure duty. The indicator measures contacts outside the household.

Source: European Social Survey (ESS)

Survey Question/Variable:

How often socially meet with friends, relatives or colleagues? (sclmeet)

Categories:

1. Never
2. Less than once a month
3. Once a month
4. Several times a month

5. **Once a week**
6. **Several times a week**
7. **Every day**

Variable weight: pspwght

4.6 Educational attainment

Definition: Percentage of population aged 55–74 with upper secondary or tertiary educational attainment

Source: EU Labour Force Survey (EU-LFS)

Survey Question/Variable:

Highest ISCED level attained? (hat97le, hat11lev)

(Until 2014 AAI — ISCED 97 was used, from 2016 AAI — ISCED 2011)

Categories:

1. Pre-primary
2. Primary
3. Lower secondary
4. **(Upper) secondary**
5. **Post-secondary non-tertiary**
6. **Tertiary**

Variable weight: coeff

Eurostat Web Variable: Population by educational attainment level, sex and age (%)
[edat_lfs_9903]

2. Comparability, criteria used with missing data and other methodological issues

Domain 1. Employment

Comparability

The four indicators are fully comparable throughout time.

Criteria used when missing data

In some countries for the 65–69 and 70–74 age groups (indicator 1.3 and 1.4, respectively) data from the original dataset (LFS) are missing. To obtain the value of these indicators two different kinds of imputation were applied:

- 1) When data were missing for the whole population (total), the data of the following year were taken. Specifically, the 2008 missing data for 2010 AAI were substituted by 2009 data, and the 2016 missing data for 2018 AAI — by 2017 data.
- 2) When data were missing for men or women, the value has been calculated taking into account the distance of men or/and women from the total value in the previous age group, that is, if data were missing for men's employment rate in the 65–69 age group, the difference between men's employment rate and the whole population's rate in the 60–64 age group was applied.

Domain 2. Participation in society

Comparability

Indicator 2.1 Voluntary activities

For 2012 AAI, 2014 AAI, 2016 AAI and 2018 AAI, the indicator is fully comparable, as data coming from the European Quality Life Survey (EQLS) 2012 and 2016 are comparable.

However, 2010 AAI uses the data from EQLS 2007 in which information on voluntary activities was collected based on a response to a single category question instead of a list of organisations, without a specific period of time instead of “in the last 12 months”, and with a different frequency scale.

Question in EQLS 2007:

How often are you involved in any of the following activities outside of paid work?

d. Voluntary and charitable activities

- 1) **Every day**
- 2) **Several days a week**
- 3) **Once or twice a week**
- 4) Less often
- 5) Never

Indicator 2.2 Care to children and grandchildren

Indicator is not fully comparable in any of the editions of AAI. As original question from EQLS has seen changes with every wave, incorporating new types of care provision, to different population and asking about it separately or jointly in a single question depending on the EQLS wave.

The original **question in EQLS 2007** (used for 2010 AAI):

How often are you involved in any of the following activities outside of paid work?

a. Caring for and educating children

- 1. Every day**
- 2. Several days a week**
- 3. Once or twice a week**
4. Less often
5. Never

Therefore, in 2010 AAI care provision includes caring for and also educating but only for children, and not grandchildren.

Then, in EQLS 2012 the care provision to grandchildren was added but restricted to “caring”, excluding “educating”, and the word “paid” was removed from the question (outside of work).

The EQLS 2012 question:

In general, how often are you involved in any of the following activities outside of work?

a. Caring for your children, grandchildren

- 1. Every day**
- 2. Several days a week**
- 3. Once or twice a week**
4. Less often
5. Never

Thus, in 2012 AAI and 2014 AAI (based on EQLS 2012) this indicator includes caring for children and grandchildren.

Finally, in EQLS 2016 some important changes were made to this question:

1. First, the question was split into two items, one for children and another one for grandchildren.
2. Second, the word “educating” was reintroduced as in EQLS 2007.
3. Third, the word “paid” was also reintroduced as in EQLS 2007.
4. Fourth, a new category of response was included for those to whom asking about grandchildren was not applicable (because they don’t have grandchildren).
5. And fifth and the most important change, a filter was used to select the population who should answer the question. The two items, one related to children and the other one to grandchildren, were asked to different subpopulations within the sample, and many people were not asked either question, resulting in system-missing values for those who were not

asked. In EQLS 2007 and EQLS 2012 the question was asked to all respondents, but in EQLS 2016 these two items (children and grandchildren) were limited to those who reported there were children in their household or they had own children, that is:

- Item a. Caring for and/or educating your children: asked to all who have children under 18, either living in their household or not
- Item b. Caring for and/or educating your grandchildren: asked all who have children over 18, either living in their household or not, and all who have grandchildren living in the household

Therefore the **question in EQLS 2016** was:

In general, how often are you involved in any of the following activities outside of paid work?

- a. Caring for and/or educating your children
- b. Caring for and/or educating your grandchildren

Categories:

1. **Every day**
2. **Several days a week**
3. **Once or twice a week**
4. Less often
5. Never
6. Not applicable-no grandchildren (only item b)

Thus, in 2016 AAI and 2018 AAI this indicator includes care provision for and educating of children and grandchildren, but only asked to selected respondents.

To improve comparability and coverage of people who are providing care to children or grandchildren in all the waves (2007, 2012 and 2016), the “Total percentage” was used, instead of “Valid percentage”. This means that the percentage of people providing care is calculated using as a denominator all respondents (valid and missing values), including those who haven’t answered (refusal) or have answered “Don’t know”. This way, the denominator doesn’t change throughout the waves.

These changes may lead to a generalized increase in the score between 2010 AAI and 2012 AAI, as it covers also provision to grandchildren. Between 2014 AAI and 2016 AAI, the changes may lead to a decrease in the score, due to a more restricted population answering these items.

Indicator 2.3 Care to infirm and disabled

For 2010 AAI, 2012 AAI and 2014 AAI, indicator is fully comparable, as data coming from EQLS 2007 and EQLS 2012 were comparable.

However, 2016 AAI and 2018 AAI use the data from EQLS 2016, in which the original question was split into two referring to the age of the person who receives care: under 75 years old and aged 75 or over. Besides, both questions cover also care provided to neighbours and friends, not only family members (“relatives” in EQLS 2007 and 2012), and refer to “infirm or disabled” people instead of “elderly or disabled” as in EQLS 2007 and EQLS 2012.

These changes may lead to a generalized increase in the score, as the modified question covers a wider social network of care providers.

Indicator 2.4 Political participation

Indicator is comparable in all AAI waves. However, the original question from EQLS has seen some changes through waves. First, one of the types of participation in EQLS 2007 (used for 2010 AAI) was split into two categories in EQLS 2012 (used for 2012 AAI and 2014 AAI) and in EQLS 2016 (used for 2016 AAI and 2018 AAI).

The **survey question in EQLS 2007** was:

Over the past year, have you...?

- a. Attended a meeting of a trade union, a political party or political action group
- b. Attended a protest or demonstration, or signed a petition, including an e-mail petition
- c. Contacted a politician or public official (other than routine contact arising from use of public services)

The category b. was split in two separate categories in EQLS 2012 and EQLS 2016 as follows:

- b. Attended a protest or demonstration
- c. Signed a petition, including an e-mail or on-line petition.

In addition, in EQLS 2016 two more types of political participation were included in the answer categories:

- e. Commented a political or social issue online
- f. Boycotted certain products

These answer categories are **not included** in the respective AAI indicator, therefore, its comparability throughout time is not undermined.

Domain 3. Independent, healthy and secure living

Comparability

All indicators were fully comparable as the original sources of data remain the same.

Criteria used when missing data

Indicator 3.1 Physical exercise

As EQLS 2007 didn't include this question, for 2010 AAI data from EQLS 2012 was used. Therefore, results of this indicator for all countries in 2010 AAI, 2012 AAI and 2014 AAI are the same, as the source of data is the same.

Indicator 3.2 No unmet needs of health and dental care

For 2010 AAI, data for Croatia are not available (data of EU-SILC 2008) due to the fact that the EU-SILC wasn't conducted in this country until 2010. Therefore, results for Croatia are

drawn from EU-SILC 2010, and the result of this indicator for 2010 AAI and 2012 AAI is the same.

Indicator 3.3 Independent living arrangements

For 2010 AAI, data for Croatia are not available (data of EU-SILC 2008) due to the fact that the EU-SILC wasn't conducted in this country until 2010. Therefore, results for Croatia are drawn from EU-SILC 2010, and the result of this indicator for 2010 AAI and 2012 AAI is the same.

Explanation about the calculation of the indicator 3.3

EU-SILC has two household files and two personal files. This is the definition of each one according to Eurostat:²

The target variables will be sent to EUROSTAT in 4 different files:

1. Household Register (D)
2. Personal Register (R)
3. Household Data (H)
4. Personal Data (P)

The household register file (D) must contain every selected household, also those where the address could not be contacted or which could not be interviewed.

In the other files records related to a household will only exist if the household has been contacted AND has a completed household interview in the household data file (H) and at least one member has complete data in the personal data file (P). This member must be the selected respondent if this mode of selection is used.

The personal register file (R) must contain a record for every person currently living in the household or temporarily absent. In the longitudinal component it must also contain a record for every person registered in the R-file of the previous year or living at least 3 months in the household during the income reference method.

The personal data file (P) must contain a record for every eligible person for whom the information could be completed from interview and/or registers.

Thus, to calculate the indicator 3.3 we need to work with Personal Register (R) joined with the Household Data (D) and Household Register (H), as we need to take into account the households, but according to the characteristics of the person (age). Besides, it is necessary to have characteristics for all persons in the household and not only those persons selected inside the household.

² Eurostat (2019) Methodological guidelines and description of EU-SILC target variables. 2018 operation (Version July 2019). Available from: https://circabc.europa.eu/webdav/CircaBC/ESTAT/eusilc/Library/guidelines_questionnaire/2018%20Operation%20Guidelines/DOCSILC065%20operation%202018_V5.pdf

Due to restriction of sample, the results of this indicator should be interpreted with caution. EU-SILC interviews people until 80 years old, and this indicator captures independent living arrangements from 75 and over, so sample sizes are small in each wave for each country.

The variable HX060 Household type is used for the analysis. This variable is created by Eurostat as a combination of other variables of EU-SILC. Among the following categories, 5 and 7 are the type of household considered for this indicator:

5. One-person household

6. 2 adults, no dependent children, both adults under 65 years

7. 2 adults, no dependent children, at least one adult ≥ 65 years

8. Other households without dependent children

9. Single parent household, one or more dependent children

10. 2 adults, one dependent child

11. 2 adults, two dependent children

12. 2 adults, three or more dependent children

13. Other households with dependent children

Indicator 3.4 Relative median income

For 2010 AAI, data for Croatia are not available (data of EU-SILC 2008) due to the fact that the EU-SILC survey wasn't conducted in this country until 2010. Therefore, results for Croatia are drawn from EU-SILC 2010, and the result of this indicator for 2010 AAI and 2012 AAI is the same.

Indicator 3.5 No poverty risk

For 2010 AAI, data for Croatia are not available (data of EU-SILC 2008) due to the fact that the EU-SILC survey wasn't conducted in this country until 2010. Therefore, results for Croatia are drawn from EU-SILC 2010, and the result of this indicator for 2010 AAI and 2012 AAI is the same.

Indicator 3.6 No severe material deprivation

For 2010 AAI, data for Croatia are not available (data of EU-SILC 2008) due to the fact that the EU-SILC survey wasn't conducted in this country until 2010. Therefore, results for Croatia are drawn from EU-SILC 2010, and the result of this indicator for 2010 AAI and 2012 AAI is the same.

Indicator 3.7 Physical safety

As the European Social Survey (ESS) data are missing for some years for some EU countries, the data of nearest previous year were used instead. However, some cases are more problematic as data are only available from many years ago (for example, for Luxemburg

only 2004 data are available). In Malta ESS was never carried out. In this last case, the weight of this indicator to calculate the domain score is set to 0.

Indicator 3.8 Lifelong learning

Data in some countries and waves of LFS are missing due to low reliability. To obtain the value of these indicators three different kinds of imputation were applied:

First, when data are missing for all waves, as in the case of Bulgaria, this indicator has no result, and the weight of it for the calculation of the domain score is set to 0.

Second, when data are missing for any of the years, the data of the previous year were taken, or if no previous year data were available, — the data from the closest year.

Third, when data are missing for men and/or women, the total value was assumed for both sexes.

Domain 4. Capacity and enabling environment for active ageing

Comparability

All indicators were fully comparable as the original sources of data remain the same.

Criteria used when missing data

Indicator 4.2 Share of healthy life years in the RLE at age 55

For 2010 AAI, health data for Croatia are not available (data of EU-SILC 2008) due to the fact that the EU-SILC survey wasn't conducted in this country until 2010. Therefore, results for Croatia are calculated using health data from EU-SILC 2010.

Indicator 4.4 Use of ICT

ICT Survey data for Bulgaria in 2008 for the whole population (total) are missing, so data from the same survey in 2009 were used.

Indicator 4.5 Social connectedness

As the European Social Survey (ESS) data are missing for some years for some EU countries, the data of nearest previous year were used instead. However, some cases are more problematic as data are only available from many years ago (for example, for Luxemburg only 2004 data are available). In Malta ESS was never carried out. In this last case, the weight of this indicator to calculate the domain score is set to 0.

Weighting

All the indicators are calculated following the respective weighting methodology of each original dataset (LFS, EQLS, SILC or ESS).