

CRITERIA-SPECIFIC ANALYSIS OF THE ACTIVE AGEING INDEX (AAI) AT NATIONAL LEVEL IN POLAND

September 2017

REPORT



Note

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The graphical presentation of the Active Ageing Index, including the icons for the overall index and its domains has been used from the page: "Active Ageing Index project.

<https://statswiki.unece.org/display/AAI/Active+Ageing+Index+Home>"

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Executive summary

The main aim of the study “**CRITERIA-SPECIFIC ANALYSIS OF THE ACTIVE AGEING INDEX (AAI) AT NATIONAL LEVEL IN POLAND**” financed by the United Nations Economic Commission for Europe (UNECE) and the European Commission’s DG Employment, Social Affairs and Inclusion was to examine AAI values for specific subgroups of population (by sex, place of living, education and income) in Poland and how they have changed over time. Existing surveys available for secondary analysis were used.

Key lessons learned from this analysis:

- **The AAI in Poland has been increasing over the recent years** – and it is in accordance with the analysis of the AAI performed by Zaidi et al, 2013, UNECE/EC, 2015 and UNECE/EC, 2016. However, this increase is small and the AAI for Poland in 2015 was still below 30.0.
- **The rise of the employment rate of older population**, which could be a result of more effective labour market policies for 50+ workers, is the key factor behind the increase of the AAI values. This Employment domain is responsible for 35 per cent of the overall AAI value, that’s why the changes in this domain has significantly affected the overall value (Employment change: from 18.4 points in 2007 to 26.7 points in 2015 and with a bigger change for women than for men).
- There is also **an increase in the Participation in Society** domain, however it is not significant (from 10.7 to 12.9 points from 2007 to 2015); moreover, the overall index has grown due to an **increase in Capacity for active ageing** domain, while there was no impact of the **Independent living** domain as its score has remained stable over the years 2007-2015.
- These results for **the first time present the overview of changes for specific subgroups of the Polish population** within the period of almost 10 years, which will allow policymakers to verify implemented policies, e.g. the change in employment was a result of undertaken labour market policies. It also shows which areas may be covered by ineffective public policies, as the indicators’ values in some domains have not changed over years, as in the Independent living domain.
- The use of the AAI helped to identify **which subgroups of the Polish population are in a better position** (tertiary education, high income) **and which groups** (low income, primary and below education, living at rural areas) **require more support and measures to follow active ageing ideas**.
- These analyses allowed to confirm discrepancies and **assess the magnitude of these differences** (e.g. the average AAI value for individuals with high income and tertiary educational attainment in 2015 was twice as high as the corresponding value for people with low income and primary educational attainment). These differences for some groups contribute to disadvantaged life-course outcomes and they require an intervention.
- The **place of living** significantly influences the aspect of how much of the potential of older persons is used in Poland. In the overall evaluation of the AAI values there was virtually no change observed for rural areas over time, while there was an increase for urban areas. Therefore, the place of living disparity is not only significant, but it tends to grow over time.

- **The education level** could also be a reason for considerable differences in ageing experiences and active ageing outcomes. There is a big difference between the results of subgroups with tertiary and primary education in 2007, as well as in 2015. In fact, people with primary education showed none or a very small improvement in active ageing experience. And what is more alarming, that trend is consistent across all four domains.
- People with **low income and primary and lower educational attainment have the lowest AAI values**: domain scores as well as almost all individual indicators. On the contrary, the highly educated, high-income group has the best scores in all the domains. The most striking differences among these groups could be observed in the physical activity and the use of ICT indicators.
- **Additional relevant policy reforms are required to mobilize the potential of those older persons** in the country that **are in more disadvantaged positions**, as compared to other older persons.
- There is a need for **wide and open (via various ways) dissemination of these results with stakeholders and groups of interest** (older persons). We hope that the presented analysis will initiate a discussion about required programmes, actions and measures to decrease differences in domains across relevant subpopulations, which are shown in this analysis.

1 Introduction

During the European Year for Active Ageing and Solidarity between Generations (EY 2012), the Active Ageing Index (AAI) managed to operationalise the multidimensional concept of active ageing for the first time. Until then it had been considered only theoretically (see ActivAge Consortium, 2008; WHO, 2002; United Nations, 2002; Walker, 2002; Walker and Maltby, 2012). The overall aim of the AAI is to: 'measure the untapped potential of older people for active and healthy ageing across countries'. The AAI 'measures the level to which older people live independent lives, participate in paid employment and social activities as well as their capacity to actively age' (UNECE/European Commission, 2015, p. 13).

In all the editions of the Active Ageing Index (Zaidi et al., 2013, UNECE/EC, 2016), Poland achieved one of the lowest scores (in 2012, the last position). This result provided an incentive to see what the value of the AAI at the regional (subnational) level was and whether the differences among the regions were significant. The idea behind a subnational application of the AAI for Poland was to identify those regions where active ageing is insufficiently supported, so that regional and local authorities can be encouraged to intervene and possibly make changes to the policy. The Polish regional extension of the AAI (first in 2013, and then at the end of 2014 – Perek-Białas and Mysińska, 2013; Perek-Białas and Zwierzchowski, 2014) intended to present the main differences between AAI scores not only at the national level, but also (or mainly) at the regional. However, already with dissemination of this subnational application of the AAI the relevant questions were asked on the level of potential of older people for active and healthy ageing not only across various regions of the country but also across population groups with different educational level, socio-economic status and their place of living in rural/urban areas (discussions at the official meetings – when the subnational application of the AAI was presented – of the Council of the Senior Policy at the Ministry of Labour and Social Policy). As a result of this work, a Peer Review on the Active Ageing Index and its extension to the regional level was organised in Cracow in October 2014 (Breza, Perek-Białas, 2014).¹ The results of this meeting and other documents are available in Karpińska and Dykstra, 2014. In 2015, the need to identify differences not only at the subnational and local level but also for particular groups, like urban/rural, was also indicated.

2 Context of active ageing in Poland

2.1 Demographic context²

Currently, Poland is facing significant challenges due to the demographic situation in the country. One is related to low fertility and the second to population ageing. The Total Fertility Rate (TFR) in Poland has been systematically decreasing since 1997 (fertility below 1.5), and since 2001 it has reached the value of 1.3. Demographic projections indicate a sharp increase of the share of persons aged 60 years and over – in 2035 this figure will amount to 30 per cent, with a higher value in urban (31 per cent), as compared to rural areas (28.6 per cent). At the end of 2015, the Polish population was 38.4 million, with more than 8.8 million people aged 60 years and over (about 23 per cent). In the period 1989-2015 the number of persons in old age increased by 3.2 million, with the highest increase in the age group of 60-64 year olds (about 0.9 million). The share of persons aged 60 and more in the total population increased by 8.2 percentage points, from 14.7 per cent in 1989 to 22.9

¹ <http://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=2099&furtherNews=yes>

² Based on data from Central Statistical Office and from the first comprehensive report on the Situation of Older People in Poland, in 2015, published in October 2016 in Poland [in Polish]

per cent in 2015 (in the meantime the share of people aged 15 and below decreased by 13 percentage points).

The majority of the older population (60+) is aged between 65 and 80 years. One-third of this population is 60-64, while the oldest group (80 years and over) constitutes almost 18 per cent of the older people population. Demographic projections forecast a dynamic increase of the number of persons aged 80 years and over after 2026 (those who were born after the Second World War). Between 2025 and 2040 the number of the oldest persons (80 years and more) will most likely double from 1,7 million to 3,4 million.

A prevalence of women due to lower life expectancy for men is a very important aspect of the old age in Poland. In the age group of 60-64 year olds, the share of women amounts to 53 per cent, and the ratio of women to men in this age group is 125 per 100 men, while among persons aged 85 and more, the share of women is 73 per cent, which means, that there are 267 women per 100 men (260 in cities and 279 in rural areas).

2.2 Labour market for ageing population/retirement context³

Poland has a low employment rate of older people (66 per cent for 50-59 and 28 per cent for 60-64) (Eurostat database, 2016) and a relatively shorter duration of working life in relation to the European Union (EU) average (32 years). In the literature it is considered to be one of the countries of *early exit culture* (Anxo, Ericson, and Jolivet, 2012) or low employment – short career country (Ruzik-Sierdzińska et al, 2013).

Changes in the labour market in the first half of the 1990s resulted in high unemployment. In response, subsequent governments have implemented labour market policies, which enabled older people to retire early or to reduce their activity, by granting an easy access to disability pensions and implementing early retirement schemes for certain occupational classes. The employment rate for those above the eligible retirement age (60 for women, 65 for men) has been dropping systematically since the early 2000s, and in 2010 it reached about half the 1997 level for both men and women (at 7.5 per cent and 3.1 per cent, respectively, Ruzik et al, 2013). This was mostly due to the old-age pension formula, which until the end of 2008 made retirement very attractive, but which also served as a 'push factor' used by employers to reduce the number of older workers.

In 2008, the abolition of early retirement was implemented with an aim to maintain the involvement of older persons in the labour market. An increase in employment and participation rates of older population started only in 2009. Later, after the elections in 2011, the new regulations on changing the pension age were adopted by the Parliament and endorsed by the President in 2012. The eligible retirement age was supposed to be increased for both genders gradually to reach 67 years in 2020 for men and in 2040 for women. However, after the last elections in November 2016 a new law related to pensions and disability pensions from the Social Insurance Fund⁴ was adopted. And as it was before 2012, again the eligible retirement age will be 60 years for women and 65 years for men starting from 1 October 2017. In this regard, it will be interesting to see differences in employment rates which are affected by changes to this pension policy.

³ See for more Ruzik et al., 2013

⁴ The Polish legal act, in [Dz.U. 2017 poz. 38], in Polish [Ustawa z dnia 16 listopada 2015 r. o zmianie ustawy o emeryturach i rentach z Funduszu Ubezpieczeń Społecznych oraz niektórych innych ustaw]

2.3 The situation of older generations in Poland

Social participation

The level of social contacts of older persons is lower than among younger cohorts. This conclusion is based on values of the social isolation indicator⁵ (10.6 per cent) and the indicator of participation in non-religious organizations (6.3 per cent) (Social Cohesion Survey, 2014). The participation of older persons in religious groups or organizations is at the same level as for total population (9.1 per cent).

Close to 10 per cent of persons aged 65 years and over completed tertiary education (Census data, 2011), however, due to the fact that younger cohorts are better educated, this share will increase in the coming years. However, low educational activity continues to be another important characteristic of older people (Turek, Worek, 2016). In Poland, we observe the highest differences in the EU in terms of participation in education between adolescents (15-19 years old) and older persons (55-74). While the educational activity of young adults is one of the highest in the EU (95.2 per cent participated in education and training over the last 4 weeks before the survey), the same indicator for older age group is one of the lowest in the EU (0.6 per cent) (Labour Force Survey (LFS), 2015).

Care context

The rapid population ageing in Poland and the sharp increase in the share of people aged 85+ creates a serious challenge in terms of care for the older persons, especially in the context of migration of the young generations from Poland. This is best illustrated by considering the potential support ratio (population of 15-64/population 65+), which reached 5.1 in 2011 and will drop to 2.7 by 2030. Moreover, the care potential ratio (population 50-64/population 85+) was 14.8 in 2011, while in 2030 it will be 9.8 (Perek-Białas, Słany, 2016).

Health

In Poland in 2014, the life expectancy at age 60 was 19.2 years for men and 24.3 for women, which means the increase within 4-5 years, as compared to 1991, for both sexes. In 2014, the life expectancy for men living in urban areas was 74.2 – 1.1 year longer than for men living in rural areas. Women living in a city may expect 0.2 shorter life than those living in rural areas (CSO, 2015). Eurostat data on healthy life years indicate that 65-year old men are expecting to live 7.5 years in good health, while women – 8 years.

One in five older persons (60 years and over) living in Poland assesses his/her health as good or very good (EU Statistics of Income and Living Conditions (EU-SILC), 2015). Men have better self-rated health more often than women (respectively, 23.5 per cent and 19.2 per cent). One-third of older people evaluate their health as bad or very bad. The share of those with bad or very bad self-rated health is slightly higher among women (33.0 per cent) than among men (31.0 per cent).

People living in urban areas evaluate their health on average better than rural areas inhabitants. Close to one-fourth (23.5 per cent) of older people living in cities rate their health as good or very good, as compared to only 16.5 per cent living in rural areas. The

⁵ Social isolation is a composite index based on 9 questions concerning frequency of contacts with friends, family etc., as well as participation in religious and other formal organizations. See more: <http://stat.gov.pl/obszary-tematyczne/warunki-zycia/dochody-wydatki-i-warunki-zycia-ludnosci/jakosc-zycia-kapital-spoeczny-ubostwo-i-wykluczenie-spoeczne-w-polsce,1,1.html>, pp. 54-57

share of people with bad or very bad self-rated health in rural areas is equal to 34.0 per cent, and to 31.1 per cent among those living in urban areas.

Physical activity

Persons aged 60 years and over relatively rarely participate in sport and physical activity. Only one in four persons (24.6 per cent) reports practising such activity (CSO, 2016). In more details, 11 per cent of older people participate regularly in physical activity and 13 per cent – from time to time. Men are more physically active than women – the difference is 5.3 percentage points.

Financial situation

In 2015, the average monthly disposable income per capita in households consisting of older people only (60 years and over) amounted to 1791.91 PLN (about 440 euro). It was 30 per cent higher than income in households with members aged below 60 years only (Household Budget Surveys). Majority of households with members aged 60 years and over only consisted of 1 or 2 persons. For such households, mainly pensions represented the main source of income.

Households with older people only – as compared to households without older persons – less often assess their financial situation as good or very good, and more often as average or bad/very bad. It is particularly visible for single households of older persons living in villages: almost 33 per cent of such households report bad or very bad self-assessed financial situation.

2.4 Active ageing policy context

Only recently active ageing has raised a significant interest in Poland, as before 2012 it was not a priority of the governmental policy (Ruzik et al, 2013). This interest had manifested itself mainly at the national level. However, at the regional level, there are also some activities undertaken (see for example, Wyzwania Małopolski, 2010). Moreover, even some of the largest cities in Poland implement their own local policies aimed at senior citizens (e.g. Gdańsk, Gdynia, Kraków, Poznań, Warszawa, Wrocław).

The first real initiative in active ageing was a governmental pilot Programme 50+ (2004-2005) directed at increasing the employment of people over 50. It provided a foundation for the 'Solidarity across generations' programme, which was initiated in 2008. In 2011, the Ministry of Labour and Social Policy published a report on the effects of the 'Solidarity across generations' programme during the years 2008-10 (MPiPS 2011). As a result, a follow up Programme called 'Solidarity between Generations: Measures to Increase the Activity of People Aged 50+ (2013)' was developed.

In 2012, the Department of Senior Policy was established at the Ministry of Family, Labour and Social Policy, as was the Senior Policy Council with a large and inclusive representation of various groups interested in this topic (seniors, academics, experts, NGOs, policymakers). At the end of 2013, the Government adopted three main programmes (prepared also with support of this Council) including active ageing concepts, such as:

- Government Programme for the Social Participation of Senior Citizens (ASOS for 2014-2020), earlier version (ASOS 2012-2014);
- Solidarity between Generations: Measures to Increase the Activity of People Aged 50+ (2013);
- The Long-Term Senior Policy in Poland for the Years 2014-2020.

Next the Senior-WIGOR multiannual programme for the years 2015-2020 was introduced to address the problem of insufficient infrastructure for daily care for older persons in Poland.

From the AAI perspective, the implemented policies are mainly focused on the *employment* and *social participation* domains, for example by introducing policies to limit early-retirement or establishing special funds for projects aimed at supporting learning activities and increasing social and voluntary participation among citizens aged 60+.

At the national level, government programmes use the idea of active ageing to tackle issues related to demographic change and ageing population. At the regional level, in the 16 Polish regions, there are not only strategic documents, but also various initiatives and programmes that include the concept of active ageing; however, the situation differs from region to region. Meanwhile, at the local level, each municipality is responsible for local policy for seniors. Here, the idea of active ageing is not fully utilised because of the low level of awareness among decision makers; nevertheless, the increasing role of local seniors' councils could be very important in this process.

In 2015, the Law on Older Persons was adopted: it obligates the Council of Ministers to monitor the situation of the ageing population in Poland. This was the first time that the expression 'older people' was used in a separate legal framework, although provisions covering them did exist in other laws. On the issue of monitoring, the law supporters in the Polish Parliament pointed out that other countries, such as Germany, undertake regular surveys and that Poland also needs regular reporting on the situation. The knowledge about other countries' practices could be helpful in this respect. Finally, in 2016 for the first time, a comprehensive and detailed presentation concerning the situation of older people in Poland was prepared.⁶

3 Active Ageing Index at subnational level in Poland

The presentations of the Active Ageing Index in time of the EY 2012 drew a lot of attention in the country, as Poland was at the last place in the AAI EU countries ranking. In this way, the AAI was used as an important argument in designing policies directly related to the labour market and to social participation of older persons (see the previous section). Moreover, the AAI has become one of the core indicators in the strategic document of the current Government (Morawiecki Plan, 2016). This confirms that the AAI is taken into account and applied as an important indicator for the general policy in the country.

Furthermore, research and studies focused on the AAI were carried out at the subnational level (NUTS-2). They were financed by the Ministry of Labour and Social Policy and currently, the Ministry of Family, Labour and Social Policy (see the Regional Active Ageing Index in Poland, 2013 and 2014, 2015, Figure 1). Awareness about the AAI and the idea of active ageing at the national level provides some directions; however it was important to see changes not only at the national, but also at the regional level, especially given that programmes like ASOS provide an opportunity for funding projects at the regional and local levels.

The idea behind calculating the AAI at the subnational level was to help the regional policymakers to decide in which domains a significant improvement in AAI values was possible, as a result of implementing policies at the local level. This should eventually lead to

⁶ [in Polish] Raport o sytuacji osób starszych w 2015 r Ministerstwo Rodziny, Pracy i Polityki Społecznej, Warszawa, 2016 [The report about the situation of old people in 2015, The Ministry of Family, Labour and Social Policy, Warsaw, 2016].

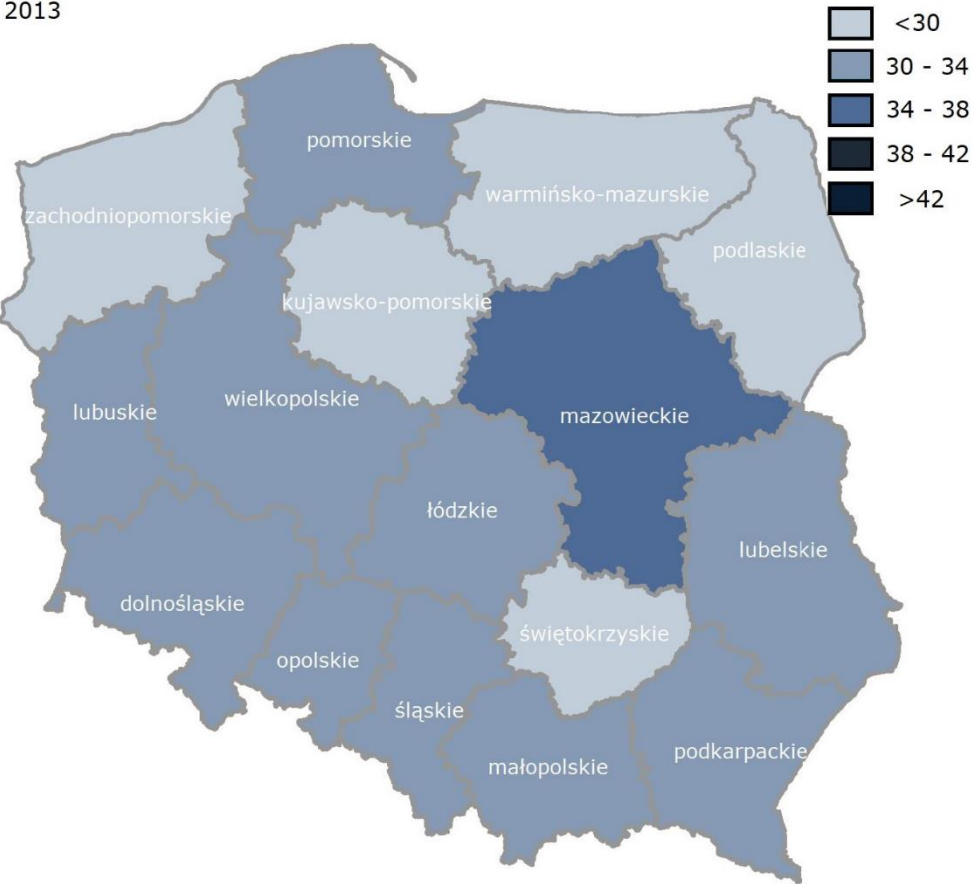
an increase in the overall AAI value at the national level. The subnational approach was highlighted at many meetings with various groups (including representatives of seniors). The recent (2015) subnational AAI for Poland was presented to all 16 Presidents of all Polish regions (voivodships) at the Special Session of the Regional Convent hold in Cracow (April 2017).

Maps 1-4 present the AAI calculated values for 2013 and 2015 for Polish regions in the four domains. The overall score of the Active Ageing Index for Polish regions in 2013 was between 27.6 and 33.6, while in 2015 it was from 29.3 to 35.7, see Maps 1-2. The regional differences could be easily noticed. For instance, Śląskie had the lowest employment rate of older persons (34.6 per cent) as coal mining industry, with earlier pensions possibilities, used to be a major employer in the area. On the other hand, Mazowieckie (with Warsaw – capital) had the highest rate of employment (46.4 per cent). In the *Social participation* domain a significant change between 2013 and 2015 can be observed. However, the absolute value of the Polish national social participation domain score is still low (23.4 per cent). In the *Independent, healthy and secure living* domain all regions reported the increase mostly due to financial indicators. Finally, in the last domain, i.e. *Capacity for active ageing*, the change was mostly due to the increase in the ICT use. However, the overall change in this domain is not particularly visible on the maps.

To discuss the subnational level analysis of the AAI, the Peer Review on the Regional Application of the AAI was organized in 2014 (Breza, Perek-Białas, 2014, Karpińska, Dykstra, 2015). Representatives of other European countries and regions took part in the discussion and have found Polish experience in this area beneficial and inspiring (e.g. Italy, Biscay Province (Spain)). Recently the local-level application of the AAI was performed in Germany (UNECE/EC, 2016, Perek-Białas, 2016).

Map 1. The Active Ageing Index overall score in Poland in 2013 and 2015

2013

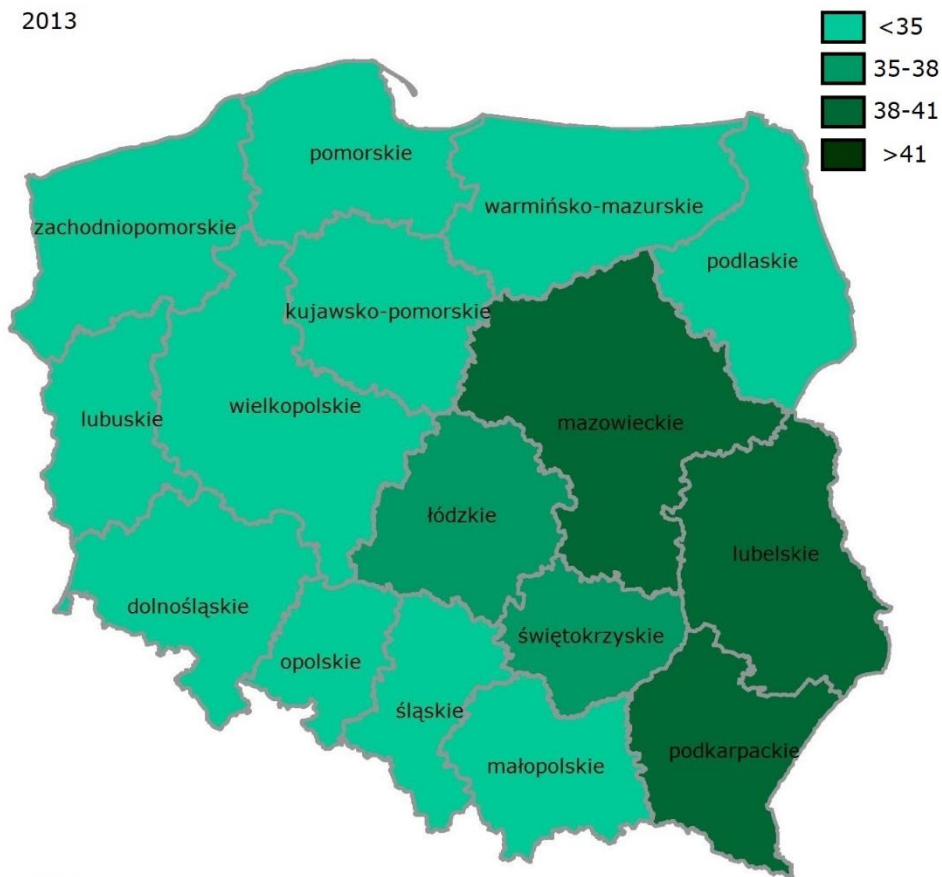


2015



Map 2. Employment domain score for Polish regions – 2013 and 2015.

2013

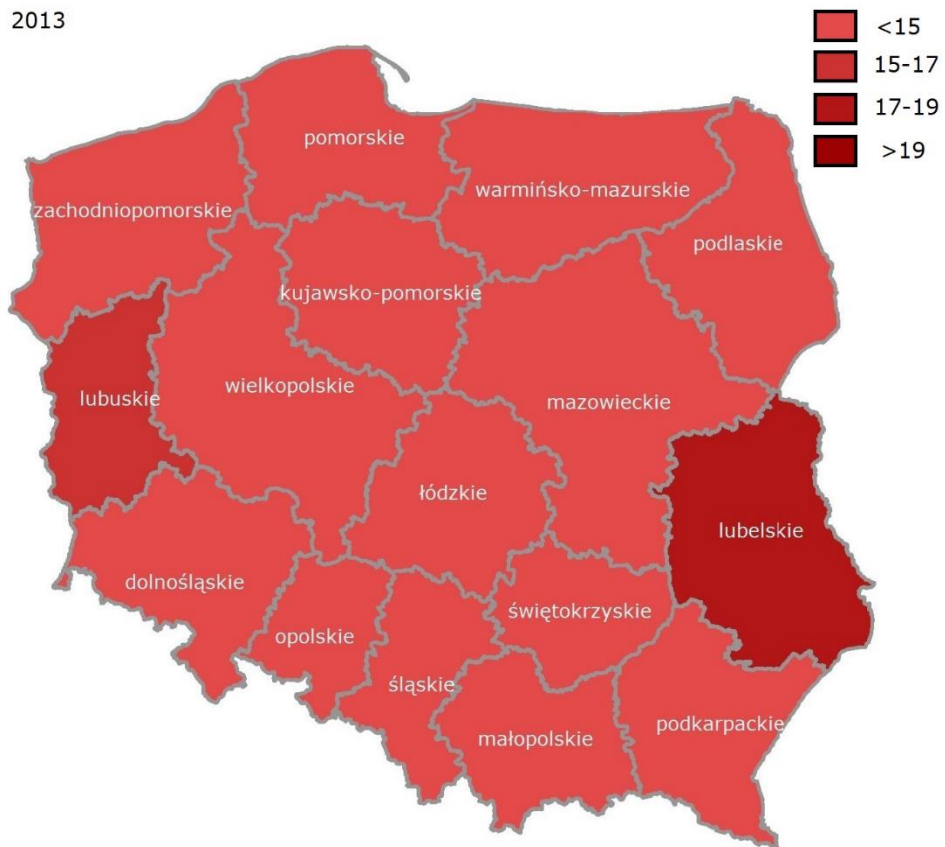


2015



Map 3. Social participation domain score for Polish regions – 2013 and 2015

2013

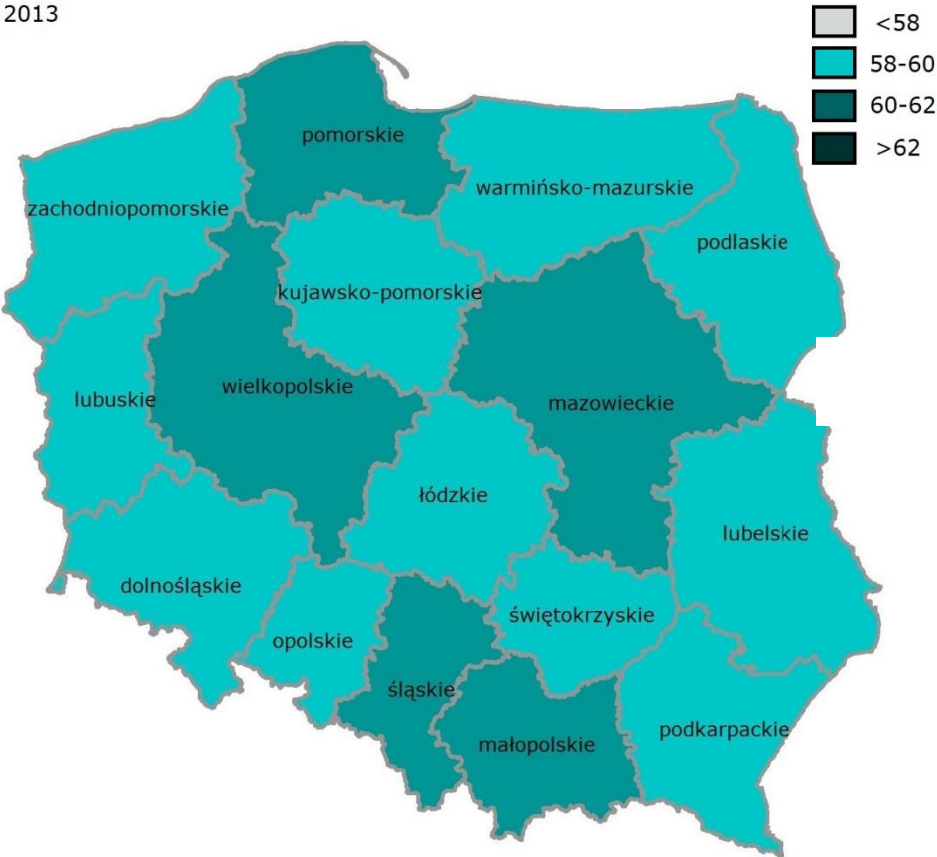


2015



Map 4. Independent, healthy and secure living domain score for Polish regions – 2013 and 2015

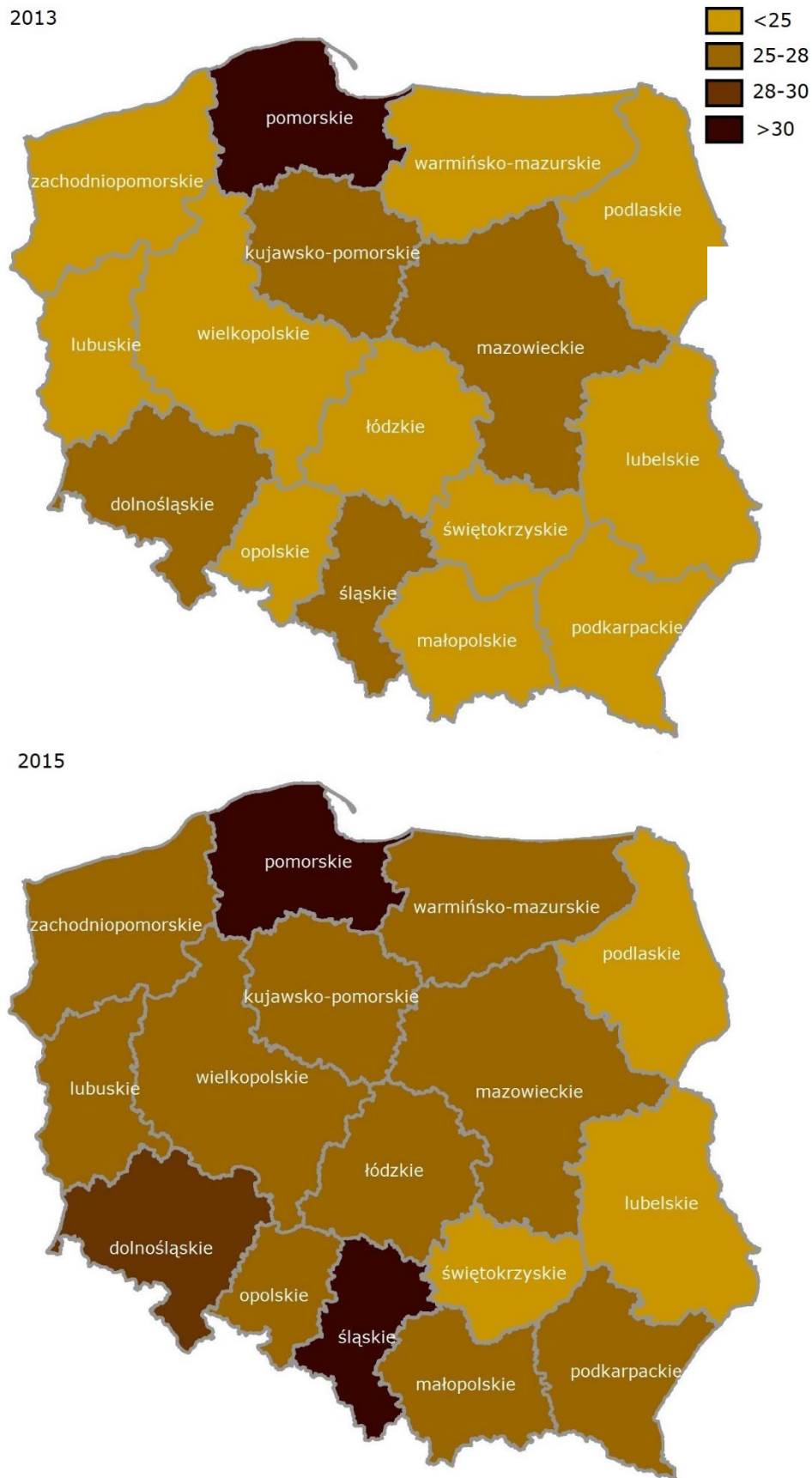
2013



2015



Map 5. Capacity for active ageing domain score for Polish regions – 2013 and 2015



Source: Perek-Białas, Zwierzchowski, 2015, 2016

4 Methodology applied in this research study

4.1 Aim of the project

The main objective of the study is to examine the AAI results for at least three points in time (depending on the data availability) for different population groups (distinguished by: sex, educational attainment level, socio-economic status, place of living), considering the national context (Poland). It is worth reminding that other analyses for Western Europe (Ilinca et al, 2016, p. 6) showed that there are “uncovered significant and widespread socio-economic and gender inequalities in active ageing and in the several forms of capital needed to actively age (e.g. health, education). Consequently, not all population groups will enjoy equal opportunities for active and healthy ageing nor will they have equally satisfying ageing experiences”. The analysis presented in this report will also contribute to these findings.

4.2 Selection of data sources by years

In the first step of this analysis we checked all possibilities and limitations to disaggregate data used for calculation of the 22 AAI indicators by education level / socio-economic status / living in rural or urban areas and using various sources of data available for calculating the AAI for Poland since 2007⁷, such as:

- **European Union Labour Force Survey (LFS)**⁸ (conducted every year);
- **European Union Statistics on Income and Living Conditions**⁹ (conducted every year);
- **Household Budget Surveys**¹⁰ (conducted every year);
- **Social Diagnosis**¹¹ (conducted every two years; a representative source of data, as it was used in subnational application of AAI in 2013, 2014 and in 2015 – data available in this source concern the following years: 2007, 2009, 2011, 2013 and 2015, and these five periods have been recommended for this study);
- **Time Use Survey**¹² (conducted twice – in 2003 and 2013);
- Data from other sources (data of the **Central Statistical Office**);
- Other surveys such as the **European Social Survey (ESS)**¹³, **Survey of Health, Ageing and Retirement in Europe (SHARE)**¹⁴, etc.

Table 1 presents data sources selected for the study.

⁷ In case of Polish application of the AAI for various groups, the data from various sources were checked in the best way to apply the original approach of the AAI, here including Social Diagnosis survey was crucial, which were conducted in 2007, 2009, 2011, 2013 and 2015. These years were used for the purpose of this analysis, also because data for these years were used for subnational application of the AAI in Poland.

⁸ <http://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey> [Access June 2017]

⁹ <http://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions>

¹⁰ <http://stat.gov.pl/obszary-tematyczne/warunki-zycia/dochody-wydatki-i-warunki-zycia-ludnosci/budzety-gospodarstw-domowych-w-2015-r-,9,10.html> [Access June 2017]

¹¹ <http://www.diagnoza.com/> [Access June 2017]

¹² <http://stat.gov.pl/obszary-tematyczne/warunki-zycia/dochody-wydatki-i-warunki-zycia-ludnosci/badanie-budzetu-czasu-ludnosci-w-2013-r-,18,1.html> [Access June 2017]

¹³ <http://www.europeansocialsurvey.org/> [Access June 2017]

¹⁴ <http://www.share50plus.pl/> [Access June 2017]

Table 1. Data sources by available year

Data sources	Years
EU-LFS (BAEL)	Yearly From 2007 to 2015
EU-SILC	Yearly From 2007 to 2015
Social Diagnosis (SD)	2000, 2003, 2005, 2007, 2009, 2011, 2013, 2015
Time Use Survey (TUS)	2003, 2013

Short description of data used in the analysis:

EU-LFS (BAEL) – the European Union Labour Force Survey (EU LFS)/Badanie Aktywności Ekonomicznej Ludności in Poland – is conducted in 28 Member States of the European Union, two candidate countries and three countries of the European Free Trade Association (EFTA) in accordance with the Council Regulation (EEC) No. 577/98 of 9 March 1998. The EU-LFS is a large household sample survey which provides quarterly results on labour participation of people aged 15 and over as well as on persons outside the labour force. All definitions apply to persons aged 15 years and over living in private households. Persons carrying out obligatory military or community service are not included in the target group of the survey. The same rule is used for persons in institutions/collective households.

EU-SILC – the European Union Statistics on Income and Living Conditions (EU-SILC) – is an instrument which aims at collecting timely and comparable cross-sectional and longitudinal multidimensional microdata on income, poverty, social exclusion and living conditions.

Social Diagnosis (SD)¹⁵

The Social Diagnosis is a project of collecting detailed data on households and attitudes, mindsets and behaviour of their members. It is a diagnosis of the conditions and quality of life of Poles as they report it. The data are collected for households and their occupants aged 16 and above. The project takes into account all the significant aspects of life of individual households and their members, from both the economic (income, material wealth, savings and financing) and not strictly economic perspective (education, medical care, problem-solving, stress, psychological well-being, lifestyle, pathologies, engagement in arts and cultural events, use of new communication technologies, etc.). In this sense, the project is interdisciplinary in nature, and uses results of the work of the main authors of the Social Monitoring Council (*Rada Monitoringu Społecznego*) and a team appointed by a council of experts consisting of economists, a demographer, a psychologist, sociologists, an insurance specialist, a health economics expert and statisticians. As intended, the Social Diagnosis is based on panel research; the same households are being surveyed every few years, with the first sample selected in 2000. Next surveys were held three years later, and were subsequently repeated every two years. The reading is always conducted in March to aid the elimination of the seasonal effect. Since 2009, the survey measurement time was moved to the first half of April due to the size of the sample. The results of the Social Diagnosis reveal not only the current state of Polish society, but also how it has changed over the last ten years.

¹⁵ SOCIAL DIAGNOSIS, reports; Czapinski J., Panek T. (Ed.) ([2007,2009, 2011, 2013, 2015]). Integrated database www.diagnoza.com [15.01.2017].

Time Use Survey (TUS)

The Time Use Survey was carried out in Poland in 2003 and in 2013. The survey is conducted on the basis of the methodology recommended by the European Statistical Office (Eurostat). The results of the Time Use Survey provide information on organization of time by households as well as by their members, and they constitute an important basis for drawing conclusions about many aspects of the population's life quality by observing changes in time management.

4.3 Selection of subgroups

Table 2 demonstrates dynamics of the Polish population structure. The data are shown for subpopulations defined by age, place of living and educational attainment for 2011, 2013 and 2015. In addition, the analysis addresses differences among gender and socio-economic status subpopulations.

Table 2. Structure of socio-economic characteristics of individuals based on Social Diagnosis in per cent¹⁶

Demographic and social characteristics	Women			Men			Total		
	2011	2013	2015	2011	2013	2015	2011	2013	2015
Age									
Under 24 y.o.	27.7	26.0	25.1	30.8	29.1	28.1	29.2	27.5	26.6
25-34 y.o.	15.6	16.0	16.0	17.4	17.3	17.6	16.5	16.6	16.8
35-44 y.o.	12.5	13.5	13.8	13.8	14.8	15.2	13.1	14.2	14.5
45-59 y.o.	21.9	20.6	19.3	22.2	21.2	19.8	22.0	20.9	19.5
60-64 y.o.	5.9	6.9	7.2	5.3	6.3	6.6	5.6	6.6	6.9
65 y.o. and above	16.4	17.1	18.6	10.5	11.3	12.8	13.5	14.3	15.8
Place of living									
Towns of more than 500k	12.6	12.4	11.7	11.2	11.4	10.4	11.9	11.9	11.1
Towns of 200k-500k	9.9	9.6	9.5	9.3	9.1	9.0	9.6	9.4	9.3
Towns of 100k-200k	7.9	8.2	7.8	7.6	7.6	7.2	7.7	7.9	7.5
Towns of 20k-100k	19.8	19.6	19.0	19.4	19.0	19.2	19.6	19.3	19.1
Towns of fewer than 20k	12.5	11.6	11.8	12.9	11.9	11.8	12.7	11.7	11.8
Rural areas	37.4	38.7	40.1	39.5	41.0	42.4	38.4	39.8	41.2
Educational attainment									
Primary and lower education	22.1	20.3	19.5	17.6	16.0	15.3	20.0	18.3	17.5
Basic vocational/lower secondary school	22.9	23.3	23.1	37.9	37.8	37.2	30.0	30.2	29.8
General secondary	31.1	30.4	29.8	27.3	28.3	27.8	29.3	29.4	28.9
Higher and post-secondary	24.0	25.9	27.6	17.2	17.9	19.7	20.7	22.1	23.8
Total number of respondents	2011	19 244		17 534		36 778			
	2013	19 268		17 475		36 753			
	2015	18 974		17 596		36 670			

Source: *Metoda badania (Social Diagnosis), original article pp. 25-35 | First published in 31 December 2015 | DOI:10.5709/ce.1897-9254.178 Tomasz Panek, Janusz Czapiński, Irena E. Kotowska. See also www.diagnoza.com/pliki/raporty/Diagnoza_raport_2015.pdf*

Table 3 shows the classification of the selected criteria in the surveys considered for the analysis.

¹⁶ The Table 2 presents weighted values, with the exception of the non-weighted value "Total N" row; the distribution by educational level only concerns persons aged 12 and above.

Table 3. Overview of disaggregation by education, income and place of living in selected survey data for Poland

	EU-SILC¹⁷	Labour Force Survey (LFS/BAEL)	Household Budget Survey	Social Diagnosis (SD)¹⁸
Education level	No formal education			
	Completed primary			Primary, no education
	Lower secondary	Lower secondary, primary, no formal education	Lower secondary, primary, no formal education	
	Vocational	Vocational	Vocational	Vocational, lower secondary
		Upper secondary general		
	Secondary	Post-secondary, upper secondary vocational	Post-secondary, upper secondary vocational and upper secondary general	Secondary
	Tertiary	Tertiary	Tertiary	Tertiary, post-secondary
Place of living	Rural	Rural	Rural	Rural
		Town less than 10 000 inhabitants		
	Towns less than 20 000 inhabitants	Towns 10 000-19 000	Towns less than 20 000 inhabitants	Towns less than 20 000 inhabitants
		Towns 20 000-49 000		
	Towns 20 000-99 000	Towns 50 000-99 000	Towns 20 000-99 000	Towns 20 000-99 000
	Towns 100 000-199 000		Towns 100 000-199 000	Towns 100 000-199 000
	Cities 200 000-499 000	Cities 100 000-499 000	Cities 200 000-499 000	Cities 200 000-499 000
Cities 500 000 and more	Cities 500 000 and more	Cities 500 000 and more	Cities 500 000 and more	
Income¹⁹	Yearly per capita net disposable income	Last month net <i>salary</i> in main job	Monthly per capita net available income	Last month / average monthly household income

Source: own preparation.

We considered using three or four equal **income** groups (each containing 33 per cent or 25 per cent of the population) with the division based on the total household disposable equivalent income).

¹⁷ For example, in case of EU-SILC for education it was possible to use the following variables: PE020: ISCED level currently attended; PE030: year when highest level of education was attained; PE040: highest ISCED level attained

¹⁸ In the Social Diagnosis survey, the other possible data source, education is coded in this way: 10 higher education with at least a PhD degree; 11 higher education with at least an MA degree or an equivalent degree; 12 higher education with an Engineer or Bachelor degree; 20 post-secondary education; 30 secondary vocational; 40 secondary general; 50 basic vocational; 51 lower secondary; 60 primary completed; 70 no education (primary not completed, no school education).

¹⁹ In case of income, from EU-SILC: *HX090: EQUIVALISED DISPOSABLE INCOME*

Having these categories checked we decided to introduce subpopulations of distinct socio-economic status, defined by a mix of **income and educational attainment** categories, see Table 4. The proper division into socio-economic status groups require utilizing the information on professions. Unfortunately, our databases did not contain such information for older persons. It was assumed that the subpopulations defined by a mix of income and educational attainment were appropriate proxies for socio-economic status groups. However, for the final analysis we used six categories (as indicated below) instead of nine due to a too small sample size in three of them.

Table 4. Example of creating additional subgroups for analysis of AAI for Poland with use of three categories of income and education

Education/Income	I education group (no/primary)	II educational group (vocational/secondary)	III education group (tertiary)
I income group (low)	x	x	x
II income group (medium)	x	x	x
III income group (high)	x	x	x

The sample size of selected subgroups of population 55+ in surveys used in this study is presented in the Tables 5 to 11.

Table 5. Sample size of population 55+ disaggregated by sex

Sex	Sample size			
	LFS	EU-SILC	SD	TUS
Men	15 024	5 080	5 263	10 370
Women	19 748	6 876	6 960	13 815
Total	34 772	11 956	12 223	24 185

Table 6. Sample size of population 55+ disaggregated by place of living – LFS

Place of living	Sample size
Cities above 100,000	9 053
Cities 50,000-100,000	2 963
Towns 20,000-50,000	4 016
Towns 10,000-20,000	2 555
Towns below 10,000	1 947
Rural areas	14 238
Total	34 772

Table 7. Sample size of population 55+ disaggregated by place of living – EU-SILC, Social Diagnosis and Time Use Survey

Place of living	Sample size		
	EU-SILC	SD	TUS
Cities above 500,000	961	915	2 251
Cities 200,000-500,000	1 013	1 047	2 519
Cities 100,000-200,000	854	846	2 016
Cities 20,000-100,000	2 479	2 450	5 164
Towns below 20,000	1 629	1 611	3 488
Rural areas	5 020	5 353	8 747
Total	11 956	12 222	24 185

Based on the place of living distribution (Tables 6 and 7) and considering comparability among data sources we decided to limit the final subgroups of place of living to three categories:

- Cities of 100,000 and above
- Cities up to 100,000
- Rural areas.

In order to ensure consistency in defining the educational attainment groups across all major data sources (LFS, EU-SILC, SD and TUS) we checked the sample sizes and educational attainment definitions in the relevant surveys (see Table 8). Similarly, we checked the sample sizes for distinct income groups (see Table 9).

Table 8. Sample size of population 55+ disaggregated by education level

Education level	Sample size			
	LFS	EU-SILC	SD	TUS
Tertiary	3 754	1 302	1 273	2 802
Post-secondary	1 056	365	321	-
Secondary*	9 148	5 912	3 125	7548
Vocational	9 051		3 316	6687
Primary	10 701	3 492	3 690	6881
Below primary or no formal education	1 061	339	385	262
Total	34 771	11 410	12 110	24 180

** for EU-SILC includes vocational*

Table 9. Sample size of population 55+ disaggregated by income in two versions (for three and four income groups)

Income groups (version A)*	Sample size			
	LFS	EU-SILC	SD	TUS
low	n.a. ***	4 146	3 911	6 172
middle		3 990	3 830	6 289
high		3 820	4 482	7 132
Total		11 956	12 223	19 593

Income groups (version B)**					
	low	n.a. ***	3 078	2 966	4 488
	mid-low		3 071	2 816	4 700
	mid-high		2 966	2 859	4 908
	high		2 841	3 582	5 497
Total			11 956	12 223	19 593

* Version A – divided into three equal income groups of 55+

** Version B – divided into four equal income groups of 55+

*** LFS collects only data on monthly earnings in the main job. Since the population 55+ consists mostly of economically inactive persons, there is more than 90 per cent of missing data on earnings. Therefore, we decided not to use income data from LFS

The decision on defining the socio-economic status groups was based on cross-tabulation of the income groups and educational attainment groups and comparison of sample sizes (see Tables 10-11).

Table 10. Sample size of population 55+ – cross-tabulation of income groups and education in EU-SILC

Income groups (version A)	Education level		
	primary/below/ no education	secondary*	tertiary/post- secondary
Low	1 988	1 801	176
Middle	1 290	2 124	401
High	553	1 987	1 090
Total	3 831	5 912	1 667
Income groups (version B)			
Low	1 534	1 285	120
Mid-low	1 215	1 536	191
Mid-high	726	1 706	396
High	356	1 385	960
Total	3 831	5 912	1 667

* includes vocational education

Table 11. Sample size of population 55+ – cross-tabulation of income groups and education in Social Diagnosis

Income groups (version A)	Education level			
	primary/ below	vocational	secondary	tertiary
Low	1 910	1 187	645	112
Middle	1 305	1 106	1 041	357
High	860	1 023	1 439	1 125
Total	4 075	3 316	3 125	1 594
Income groups (version B)				
Low	1 461	920	455	81
Mid-low	1 142	799	680	176
Mid-high	836	833	822	353
High	636	764	1 168	984
Total	4 075	3 316	3 125	1 594

4.4 Selection of variables

In the next step, as shown in Tables 12-15, the variables corresponding to the original indicators of the Active Ageing Index were identified in the available data sources.

Legend:

	Same as the original AAI indicator
	Variable or/and data source different from the original

Table 12. Domain 1 – Employment

	Original indicator	Original source	Possible sources for analysis for Poland	Additional information	Available years
1.1.	Employment rate for the age group 55-59	EU-LFS	BAEL	As original	From 2007 (each year) till 2015
1.2.	Employment rate for the age group 60-64	EU-LFS	BAEL	As original	From 2007 (each year) till 2015
1.3.	Employment rate for the age group 65-69	EU-LFS	BAEL	As original	From 2007 (each year) till 2015
1.4.	Employment rate for the age group 70-74	EU-LFS	BAEL	As original	From 2007 (each year) till 2015

Table 13. Domain 2 – Participation in society

	Original indicator	Original source	Possible sources for analysis for Poland	Additional information/ Question	Available years
2.1.	Voluntary activities (55+, through the organisations, at least once a week, last 12 months)	EQLS	Social Diagnosis (SD)	Various questions as: Q59. Unpaid work for people outside family or non-governmental organization Q48. Being a member of organization, council, party etc. Q46. Participation in local activities	From 2003 every two years
2.2.	Care to children, grandchildren (55+, at least once a week)	EQLS	Time Use Survey	Activities related to care will be counted, possibility to break	Time Use Survey for 2013 and 2003,

	Original indicator	Original source	Possible sources for analysis for Poland	Additional information/ Question	Available years
				by age, education, income and place of living	estimation was done for other years
2.3.	Care to older adults (55+, at least once a week)	EQLS	Time Use Survey	Activities related to care will be counted, possibility to break by age, education, income and place of living	Time Use Survey for 2013 and 2003, estimation was done for other years
2.4	Political participation (55+, over last 12 months)	EQLS	Social Diagnosis	Q51. Being a member of political party or trade union Q55. Participation in any public meeting last 12 months	From 2003 every two years

Table 14. Domain 3 – Independent, Healthy and Secure Living

	Original indicator	Original source	Possible sources for analysis for Poland	Additional information / changed questions	Available years
3.1.	Physical exercise (55+, every day or almost every day)	EQLS	Social Diagnosis	Q106. Undertaking physical exercise in general (YES/NO)	From 2003 every two years
3.2	Access to health and dental care (55+, no unmet need for medical or dental examination or treatment, last 12 months)	EU-SILC	EU-SILC	As original	From 2007 (each year) till 2015
3.3.	Independent living arrangements (75+ living in a single household alone or in a couple household)	EU-SILC	EU-SILC	As original	From 2007 (each year) till 2015
3.4.	Relative median income (65+)	EU-SILC	EU-SILC	As original	From 2007 (each year) till 2015
3.5.	No poverty risk (65+)	EU-SILC	EU-SILC	As original	From 2007 (each year) till 2015

	Original indicator	Original source	Possible sources for analysis for Poland	Additional information / changed questions	Available years
3.6.	No severe material deprivation (65+)	EU-SILC	EU-SILC	As original	From 2007 (each year) till 2015
3.7.	Physical safety (55+)	ESS (different rounds)	Social Diagnosis	Q63.16. Satisfied with safety in the place where you live	From 2003 every two years
3.8.	Lifelong learning (55-74)	EU-LFS	Social Diagnosis	Close to the original	From 2007 (each year) till 2015 From 2003 every two years

Table 15. Domain 4 – Capacity and Enabling Environment for Active Ageing

	Original indicator	Original source	Possible sources for analysis for Poland	Additional information	Available years
4.1.	Remaining life expectancy achievement of 50 years at age 55	EHLEIS	Official data for urban/rural (ONLY)	own estimation based on EU-SILC, Social Diagnosis, the methodology is described in Annex	From 2007 (each year) till 2015
4.2.	Share of healthy life years in the remaining life expectancy at age 55	EHLEIS	EU-SILC Social Diagnosis	own estimation based on EU-SILC, Social Diagnosis, the methodology is described in Annex	From 2007 (each year) till 2015
4.3.	Mental well-being (55+)	EQLS	Social Diagnosis	Used similar questions/ statements, more details in Annex	From 2003 every two years
4.4.	Use of ICT (55-74)	Eurostat, ICT Survey	Social Diagnosis	Various questions, see detailed description in the Annex, such as questions about using the Internet and a number of hours using the Internet last week	From 2003 every two years From 2007 (each year) till 2015

	Original indicator	Original source	Possible sources for analysis for Poland	Additional information	Available years
4.5.	Social connectedness (55+)	ESS (different rounds)	Social Diagnosis	Q39. How many persons would you count as your friends? Q71_3. How often in the last month have you been on any informal social meeting? Q. 68_1, 68_2, 68_3. With how many persons have you had an informal social contact?	From 2003 every two years
4.6.	Educational attainment of older persons (55-74)	EU-LFS	Social Diagnosis	As original (checked as well from other surveys like EU-LFS, EU-SILC)	From 2007 (each year) till 2015

For more details, see Annex. A summary of the 22 indicators by sources used and by analysed years is presented in Table 16.

Table 16. List of indicators by years and sources (survey or estimation)

Indicator	2007	2009	2011	2013	2015
1.1	LFS	LFS	LFS	LFS	LFS
1.2	LFS	LFS	LFS	LFS	LFS
1.3	LFS	LFS	LFS	LFS	LFS
1.4	LFS	LFS	LFS	LFS	LFS
2.1	<i>Estimation</i>	<i>Estimation</i>	Social Diagnosis	Social Diagnosis	Social Diagnosis
2.2	<i>Estimation</i>	<i>Estimation</i>	<i>Estimation</i>	TUS	<i>Estimation</i>
2.3	<i>Estimation</i>	<i>Estimation</i>	<i>Estimation</i>	TUS	<i>Estimation</i>
2.4	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis
3.1	Estimation	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis
3.2	EU-SILC	EU-SILC	EU-SILC	EU-SILC	EU-SILC
3.3	EU-SILC	EU-SILC	EU-SILC	EU-SILC	EU-SILC
3.4	EU-SILC	EU-SILC	EU-SILC	EU-SILC	EU-SILC
3.5	EU-SILC	EU-SILC	EU-SILC	EU-SILC	EU-SILC
3.6	EU-SILC	EU-SILC	EU-SILC	EU-SILC	EU-SILC

Indicator	2007	2009	2011	2013	2015
3.7	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis
3.8	LFS	LFS	LFS	LFS	LFS
4.1	<i>Estimation</i>	<i>Estimation</i>	<i>Estimation</i>	<i>Estimation</i>	<i>Estimation</i>
4.2	<i>Estimation</i>	<i>Estimation</i>	<i>Estimation</i>	<i>Estimation</i>	<i>Estimation</i>
4.3	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis
4.4	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis
4.5	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis
4.6	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis	Social Diagnosis

5 Results

5.1 Comparison of the original AAI and the Polish (national) AAI-PL

The results for national version of AAI were calculated biennially for odd years (2007/2009 etc.). The original Active Ageing Index was calculated for even years (2010, 2012, 2014), however, it is using data from surveys carried out 2 years before the reference year of the index, i.e. 2010 index is based on 2008 survey results. Therefore, we cannot directly compare the results, yet we may see some clearly visible trends and robustness of the results.





First, the original Active Ageing Index (AAI) has slightly higher values than this Active Ageing Index for Poland (AAI-PL) version. In 2008²⁰, the original AAI amounted to 27.0, and the AAI-PL for 2007 was 24.8 and for 2009 – 25.6. The AAI-PL for 2013 was 0.3 lower than original AAI for 2012 and only in 2015 the AAI-PL exceeded the value of the original Active Ageing Index for 2012.

Secondly, time trend is the same, that is both values are rising. The original AAI increased by 4.4 percentage points between 2008 and 2012, while the AAI-PL increased by 9.7 percentage points between 2007 and 2011 and by 8.7 percentage points between 2009 and 2013.

Thirdly, as seen from Table 17, the gap between the overall AAI-PL and the original AAI value is narrowing. The national index in 2007 was 8 percentage points lower than the original AAI for 2008. This difference for years 2011 (national) and 2012 (original) dropped to only 3 percentage points.

²⁰ Every year in this description relates to the year of the survey. It means that in "national index for 2009" 2009 refers to the year of the survey. In "the original index for 2010" 2010 refers to the year of the survey (and not the year of launching the results).

Table 17. Comparison of results for Poland in the original AAI and the AAI – PL in this analysis

		AAI-PL	Original AAI	AAI-PL	Original AAI	AAI-PL	Original AAI	AAI-PL	AAI-PL
		2007	2008	2009	2010	2011	2012	2013	2015
 Employment	AAI Poland	24.8	27.0	25.6	27.1	27.3	28.2	27.9	29.1
	Employment total	18.4	18.3	19.8	19.9	22.9	22.4	24.6	26.7
	1.1 Employment rate 55-59	39.6	40.2	45.3	45.9	52.4	52.6	57.4	61.3
	1.2 Employment rate 60-64	19.5	18.9	19.2	19.1	23.3	22.6	26.2	31.0
	1.3 Employment rate 65-69	9.2	9.2	9.9	9.4	10.3	9.5	9.9	10.4
1.4 Employment rate 70-74	5.4	4.8	4.9	5.0	5.6	4.7	4.8	4.2	
	Participation in society total	10.7	13.3	11.3	12.1	12.5	12.1	12.4	12.9
 Social Participation	2.1 Voluntary activities	7.7	4.1	11.6	2.7	15.3	2.7	20.0	23.1
	2.2 Care to children, grandchildren	15.1	21.9	14.3	22.5	13.4	22.5	12.6	11.7
	2.3 Care to older adults	3.7	14.0	3.6	13.3	3.4	13.3	3.2	3.0
	2.4 Political participation	19.2	12.8	18.6	9.3	21.4	9.3	16.7	16.4
	Independent living total	67.9	65.9	67.0	64.9	66.3	64.9	65.8	68.3
 Independent Living	3.1 Physical exercise	19.9	7.0	20.8	7.0	21.4	7.0	22.8	24.3
	3.2 No unmet needs of health and dental care	85.0	81.6	82.5	77.0	81.1	77.0	74.7	85.2
	3.3 Independent living arrangements	67.2	72.8	66.8	69.0	60.2	68.8	57.9	56.7
	3.4 Relative median income	100.8	96.6	89.6	92.9	91.8	94.9	96.0	96.3
	3.5 No poverty risk	96.0	94.8	92.9	93.2	93.2	93.5	94.5	94.4
	3.6 No material deprivation	76.4	79.2	82.5	83.5	84.8	85.2	88.7	91.9
	3.7 Physical safety	79.0	71.7	82.4	79.9	86.3	76.7	87.2	89.3
	3.8 Lifelong learning	2.7	0.7	2.6	0.8	3.1	0.6	3.1	3.1
	Capacity for active ageing total	39.3	46.9	40.3	47.3	41.2	47.9	41.7	42.2
 Capacity for active ageing	4.1 RLE achievement of 50 years at age 55	48.4	49.7	42.7	50.7	50.1	51.0	50.4	51.0
	4.2 Share of healthy life years in the RLE at age 55	65.8	51.8	77.5	50.0	67.8	52.0	69.1	67.7
	4.3 Mental well-being	15.0	54.3	15.8	51.8	17.2	51.8	17.9	18.8
	4.4 Use of ICT	14.0	14.0	19.6	18.0	29.0	24.0	32.8	38.1
	4.5 Social connectedness	10.7	28.2	9.2	30.8	7.0	27.1	4.5	4.6
	4.6 Educational attainment	44.1	67.3	42.8	71.5	44.7	74.3	44.8	46.4

Source: own preparation based on original values of AAI (Zaidi et al, 2013, UNECE/EC, 2016) and results of the AAI-PL analysis.

The comparison between this overall AAI-PL and the original version of the Active Ageing Index showed different evolution of the index value by sex. The AAI-PL for women is lower than the original AAI for every period by around 5-8 per cent. In 2007/2008, the AAI-PL for men was 10 per cent lower than the original AAI score for 2008, but both indices achieved the same value for 2011/2012. More details on the reasons will follow when comparing domain-specific results in the next parts of this report.

The smallest differences between this AAI-PL and the original index were observed for the *Employment* domain. Here, the AAI-PL domain score is mainly higher than the original one, but only up to 3 per cent, i.e. not more than 1 point. It applies to both men and women. Only minor differences between two versions of the indicator in this domain are related to the fact that the same data source were used – *Labour Force Survey* – for all indicators within this domain.

In the *Social Participation* domain, the AAI-PL and the original AAI are using different data sources in case of all four indicators. Moreover, the original AAI is using the same value for two periods (EQLS 2012 for AAI 2012 and 2014). In spite of that, the differences between two versions of the index turned insignificant, as the differences between the values of indicators tend to level-out at the domain level. The difference for 2011 (AAI-PL) and 2012 (original AAI) was almost 3 per cent (0.4 points). In 2011, the national AAI-PL for men was 19 per cent higher than the original, and for women – 0.6 per cent lower than the original.

Nevertheless, the differences between certain indicators are significant. For instance, voluntary activities and political participation values are higher for the national AAI-PL, whereas care to children and adults are higher for the original AAI. This results from using different data sources and a slightly different definitions of certain activities related to care and voluntary work.

The results for the *Independent, Healthy and Secure Living* domain differs slightly for two versions of the AAI (~3 per cent), with the national AAI-PL being higher in every period. It applies to both men and women and for every analysed period. The results are significantly higher for the national AAI-PL in case of physical exercise and lifelong learning, which is again a result of different data source used (national index – Social Diagnosis) and wording of used questions.

Capacity for active ageing is the domain with the largest overall differences between the national AAI-PL and the original AAI. The national AAI-PL value is ~15 per cent lower than the original version value. The lower results are consistent across both sexes and across periods. Lower score of the national AAI-PL index is a result of a significantly lower score for mental well-being and slightly lower life expectancy result, despite better results for healthy life years indicator. We believe that all the differences are due to using different data sources.

5.2 Overall Active Ageing Index for Poland between 2007 and 2015 by subgroups

Apart from the results of this AAI for Poland it is important to see how the AAI differs between various subgroups of the society (see Figure 1).

For both sexes the values of AAI increased between 2007 and 2015, however, the change was more significant for women (4.5 per cent). Still, for a period of 8 years, it should not be considered as an important improvement. The rise in employment rates was greater for older women than for men. We believe that it could already be an effect of the recent changes in the labour market (no earlier retirement options since 2009) and retirement

policy (increasing the retirement age). Older women in Poland showed more activity in the social sphere, but again, the difference is not large, as compared to men. Similarly, a higher increase in the domain of capacity for active ageing was found for women, as compared to men. Finally, the men saw a decrease in the independent living domain indicator values.

From the perspective of the place of living, there was a decrease in AAI values in Independent living domain for rural areas residents. It was mostly caused by the change of the indicator of independent living arrangements. As all people aged over 74 years living in single households were marked as living independently, significantly fewer such people were found in rural areas in 2015 than in 2007 (38.2 per cent and 58.3 per cent respectively). These results need to be analysed in the perspective of changes in the rural population structure, i.e. depopulation of rural areas. Moreover, the multigenerational families living together (still more common in rural areas than in urban) can offer care and support for those in need. As the decrease has been found to be systematic over these years we believe that it requires an additional analysis. Possibly, the observed results may be linked to the decreasing health status of older residents of rural areas and therefore, with their increasing need for care. Similarly, the physical activity indicator values turned out to be low for rural areas, as compared to cities.

In cities, both small and large, the employment rates changed positively over time. Also a higher level of participation in society in larger cities was observed. In large cities, seniors can have more options and could become more involved in various social participation activities (also including care duties). Interestingly, the increase in domain of capacity for active ageing is higher for urban areas below 100,000 than for the cities above 100,000, and again rural areas are marked with a decrease (-1.3 percentage points).

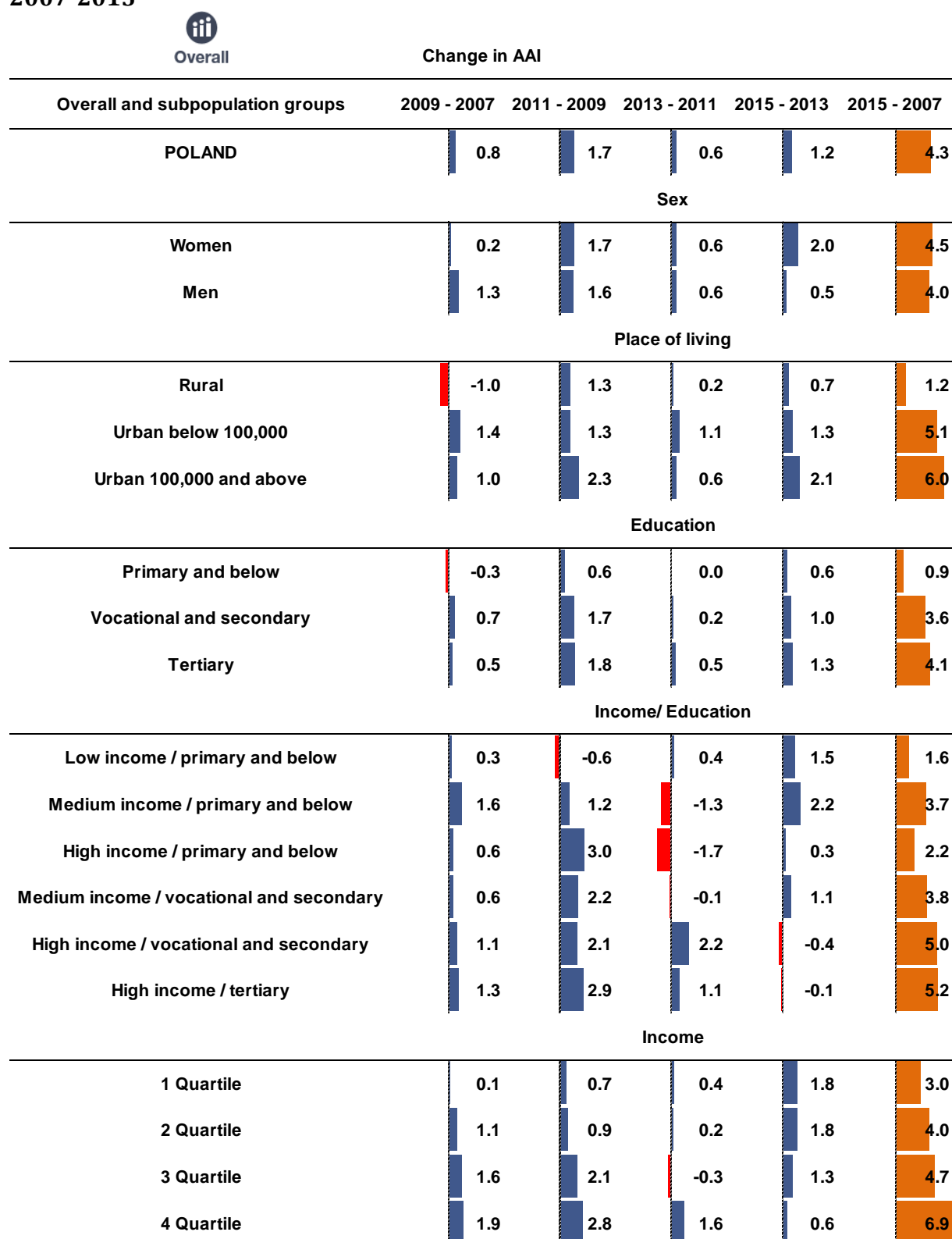
From the perspective of educational attainment, the situation of the ageing groups with the lowest educational level did not significantly change during the analysed time frame: the AAI values have increased from 20.2 per cent in 2007 to 21.1 per cent in 2015. Persons with vocational, secondary and tertiary education gained in the AAI scores but not much. Just as expected, the values of AAI for the lowest educational attainment group, equal to 21.1 in 2015, is below the country average while the corresponding values for the group with tertiary education and above, equal to 41.7 in 2015, are above the country average; however, the difference in the values is surprisingly high.

The differences in the AAI values in the income subpopulations are even more visible. In 2007, AAI was equal to 20.1 in the 1st Income Quartile, and to 32.1 for the 4th Income Quartile. The values of AAI increased for both groups over time, but more steeply for the 4th Income Quartile, where it reached 39.0 in 2015). This can be linked to a higher engagement in the labour market, which leads to higher incomes; therefore, the causal relationship here can be reversed i.e. the higher the AAI score (specifically in the labour market domain) the higher the incomes. Based on the joint analysis by income and education levels the previous interpretation fits as well. However, in 2015 the differences between defined groups are even more striking, e.g. the AAI values for the low income/primary education and high income/tertiary education groups were equal to 21 and 43.7 points respectively.

Figure 1. The Active Ageing Index in 2007, 2009, 2011, 2013, 2015

Overall	AAI				
	2007	2009	2011	2013	2015
Overall and subpopulation groups					
POLAND	24.8	25.6	27.3	27.9	29.1
	Sex				
Women	23.2	23.4	25.1	25.7	27.7
Men	27.1	28.4	30.0	30.6	31.1
	Place of living				
Rural	25.7	24.7	26.0	26.2	26.9
Urban below 100,000	23.5	24.9	26.2	27.3	28.6
Urban 100,000 and above	26.6	27.6	29.9	30.5	32.6
	Education				
Primary and below	20.2	19.9	20.5	20.5	21.1
Vocational and secondary	26.3	27.0	28.7	28.9	29.9
Tertiary	37.6	38.1	39.9	40.4	41.7
	Income/ Education				
Low income / primary and below	19.4	19.7	19.1	19.5	21.0
Medium income / primary and below	18.9	20.5	21.7	20.4	22.6
High income / primary and below	20.5	21.1	24.1	22.4	22.7
Medium income / vocational and secondary	25.2	25.8	28.0	27.9	29.0
High income / vocational and secondary	29.0	30.1	32.2	34.4	34.0
High income / tertiary	38.5	39.8	42.7	43.8	43.7
	Income				
1 Quartile	20.1	20.2	20.9	21.3	23.1
2 Quartile	22.5	23.6	24.5	24.7	26.5
3 Quartile	24.9	26.5	28.6	28.3	29.6
4 Quartile	32.1	34.0	36.8	38.4	39.0

Figure 2. Changes in the Active Ageing Index by subpopulation groups in Poland in 2007-2015



Note: In the graph a 'change' is a difference between for example 2009 and 2007 (25.6 – 24.8=0.8), in the same way all similar results in other Tables of the report need to be understood.

Figure 3. The Active Ageing Index and its domain-specific scores, 2007, 2009, 2011, 2013 and 2015.

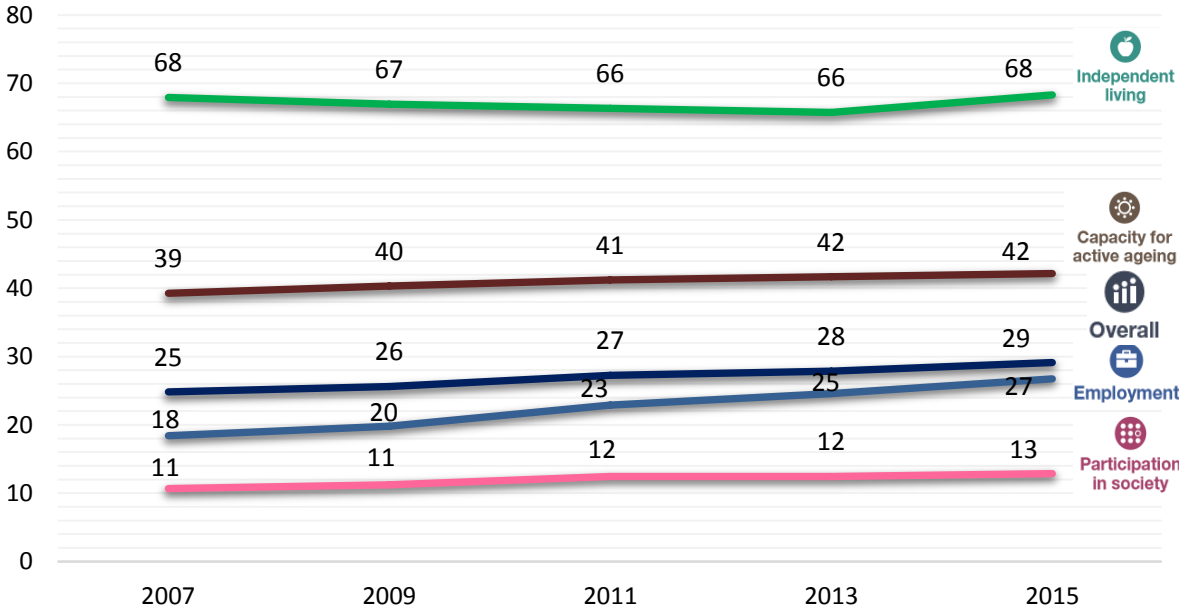


Figure 4. The Active Ageing Index and its domain-specific scores in 2007, 2009, 2011, 2013, 2015

AAI and its domain-specific scores					
Overall and domains	2007	2009	2011	2013	2015
Overall	24.8	25.6	27.3	27.9	29.1
Employment	18.4	19.8	22.9	24.6	26.7
Participation in society	10.7	11.3	12.5	12.4	12.9
Independent living	67.9	67.0	66.3	65.8	68.3
Capacity for active ageing	39.3	40.3	41.2	41.7	42.2

Figure 5. Changes in the Active Ageing Index and its domain-specific scores in Poland in 2007-2015, points

Change in AAI and its domain-specific scores









Overall and domains	2009 - 2007	2011 - 2009	2013 - 2011	2015 - 2013	2015 - 2007		
					 2015 - 2007	 2015 - 2007	 2015 - 2007
 Overall	0.8	1.7	0.6	1.2	4.3	4.0	4.5
 Employment	1.4	3.1	1.7	2.1	8.3	7.6	8.8
 Participation in society	0.6	1.2	-0.1	0.5	2.2	2.6	1.7
 Independent living	-0.9	-0.7	-0.5	2.5	0.4	-0.5	1.0
 Capacity for active ageing	1.0	0.9	0.5	0.5	2.9	2.3	3.4

Figure 6. Changes in the Active Ageing Index and its domain-specific scores by subpopulation groups in Poland in 2007-2015



Figure 7. The Active Ageing Index and its domain-specific scores for men and women, 2007, 2009, 2011, 2013, 2015

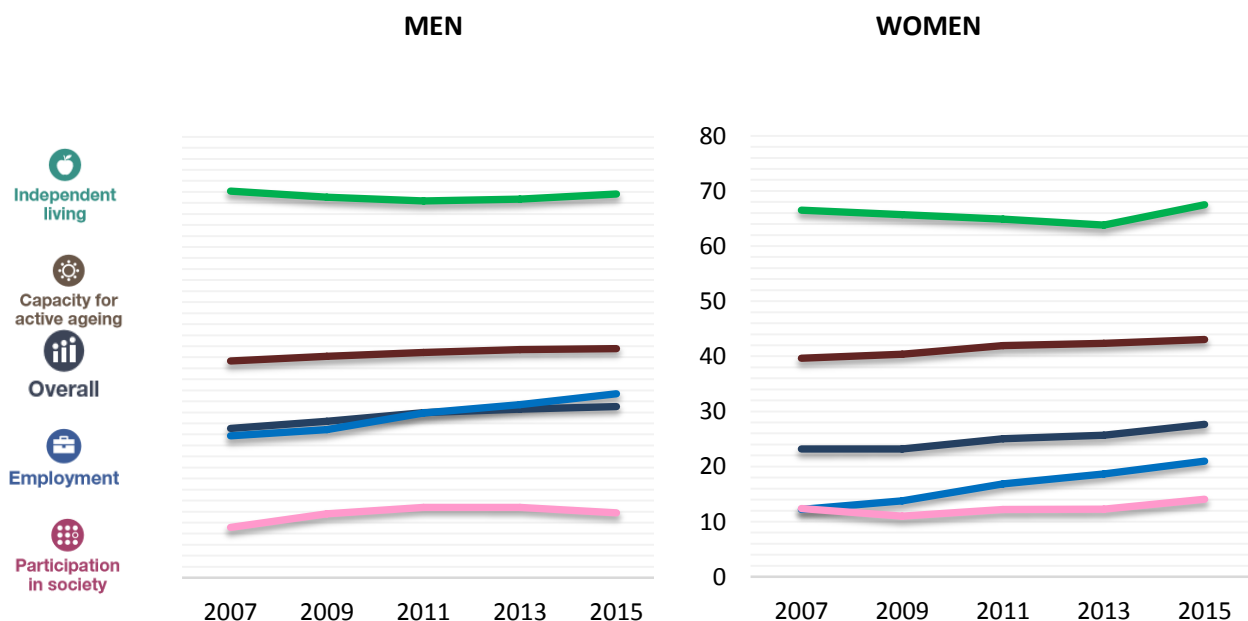


Figure 8. Differences in the Active Ageing Index and its domain-specific scores between women and men in Poland in 2007, 2009, 2011, 2013, 2015, points

Overall and domains	2007	2009	2011	2013	2015
Overall	3.9	5.0	4.8	4.9	3.4
Employment	13.5	13.0	13.0	12.7	12.4
Participation in society	3.27	0.6	0.5	0.4	2.33
Independent living	3.6	3.3	3.4	4.9	2.1
Capacity for active ageing	0.35	0.27	1.12	1.00	1.51

Figure 9. Differences in the Active Ageing Index and its domain-specific scores between “Urban 100,000 and above” and “Rural” subgroups in Poland in 2007, 2009, 2011, 2013, 2015, points











Overall and domains	2007	2009	2011	2013	2015
 Overall	0.9	3.0	3.9	4.4	5.7
 Employment	-2.4	-0.1	2.8	3.2	5.6
 Participation in society	0.7	2.2	1.6	2.1	3.5
 Independent living	4.3	6.2	6.8	9.2	9.0
 Capacity for active ageing	5.3	8.1	8.8	8.0	8.0

Figure 10. Differences in the Active Ageing Index and its domain-specific scores between “High income / tertiary” and “Low income / primary and below” subgroups in Poland in 2007, 2009, 2011, 2013, 2015, points

Overall and domains	2007	2009	2011	2013	2015
 Overall	19.1	20.1	23.6	24.3	22.8
 Employment	22.6	25.0	35.0	34.9	31.4
 Participation in society	14.8	15.7	15.0	14.2	16.1
 Independent living	14.8	15.4	14.7	21.9	16.2
 Capacity for active ageing	22.7	21.6	23.2	24.6	22.7

5.3 Results for Poland by domain between 2007 and 2015 by subgroups

Employment domain

The highest increase within the analysed period was observed for the *Employment* domain (45 per cent rise, from 18.4 to 28.7 points). For comparison, the *Social participation* score increased by 21 per cent, the *Capacity* domain score – by 7 per cent and the *Independent Living* – by 1 per cent. As a result of the changes in the domains scores, in 2015 *Employment* had the most significant contribution to the global AAI score (32 per cent).

Hence, the improvement in the area of employment had the biggest influence on the increase of the Active Ageing Index in Poland during the last years. Between 2007 and 2015, a significant increase in employment rate was observed for the youngest age groups among older persons: 11.5 per cent for the 55-59 year olds, and 12.3 per cent for the 60-64 year olds. In the age group of 65-69 year olds the increase was much smaller (3.1 per cent) and in the oldest age group the employment rate even dropped by 6.1 per cent (from 5.4 to 4.2). Therefore, despite the decrease of economic activity in the oldest age group, in total, the domain score has increased significantly.

There is a strong variation between income groups in the total employment domain score. This is well expected, as employment in general leads to higher earnings and can be attributed to the higher income group membership. A similar pattern can be observed for the educational attainment groups. In 2015, people with the highest income (4th quartile) had 67 per cent higher score than the average for Poland, and persons with tertiary education – 63 per cent higher than the average for Poland. The differences are smaller for the gender and place of living groups. In general, people living in big cities had higher scores than the rest of the population, and men higher than women. The lowest AAI Employment score was observed among persons with primary education.

There is a clear pattern in the relationship between particular groups of respondents and four indicators from the Employment domain. The older the age group, the higher the differences between subcategories are, i.e. differences are much smaller for employment rate among people aged 55-59, and grow with age. In 2015, people with the highest income had 29 per cent better than the average employment rate in the 55-59 age group, and 239 per cent better than the average employment rate in the 70-74 age group.

The same trend is observed among people with tertiary education: the distance from the average is growing alongside the increasing age. It applies also to a place of living: only a small difference within the employment rate for the 55-59 age group can be observed, however, for the oldest group the difference equals 40 per cent for people living in big cities as compared to the average. The distance between employment rate of men and women widens with age, and for all age groups but the 55-59 group, the rate for men is more than twice as high as the rate for women.

Changes by groups:

Sex: the index for women increased more than for men

Place of living: the highest increase occurred for urban areas below 100,000, which still has the lowest score

Education: diversity increases with the highest increase for vocational and secondary, and lowest increase for primary, which has been the lowest among education groups.

Income: discrepancy increases as the bottom income group saw the lowest increase.

Hence, socio-economic groups with a better social capital and better skills tend to be economically active longer and, therefore, the distance in employment rates between low income/education and high income/education is widening as people get older. A much higher increase of the AAI Employment domain was observed for high income and tertiary education group (about 11 points) than for the group with the low income and low education level from 2007 to 2015 (only about 2 points of increase).

Between 2007 and 2015, the Active Ageing Index score for the Employment domain increased in all groups of older people, though the growth rate was diverse. The highest growth was observed among people living in small urban areas (+77 per cent between 2007 and 2015, which means 7 per cent annual increase on average). A high growth was also noted for women (+72 per cent) and persons with mid-high income, i.e. 4th quartile (+62 per cent). The smallest increase was observed for people with primary education and below (+9 per cent) and inhabitants of rural areas (+16 per cent).

The most striking changes between 2007 and 2015	
Employment rate 55-59	Employment rate 60-64
Indicator change: +55 per cent	Indicator change: +59 per cent
Highest increase: women (+103 per cent), 2 nd quartile (+85 per cent), urban below 100,000 (+76 per cent)	Highest increase: urban below 100,000 (+94 per cent), vocational and secondary (+78 per cent), 3 rd quartile (+76 per cent),
Lowest increase: primary and below (+27 per cent), men (+28 per cent), tertiary education (+30 per cent)	Lowest increase: primary and below (+21 per cent), tertiary education (+25 per cent), rural areas (+25 per cent)
Employment rate 65-69	Employment rate 70-74
Indicator change: +13 per cent	Indicator change: -22 per cent
Highest increase: 3 rd quartile (+76 per cent), 4 th quartile (+67 per cent), urban 100,000+ (+52 per cent)	Increase: urban below 100,000 (+50 per cent), urban above 100,000 (+43 per cent), 4 th quartile (+31 per cent)
Biggest decrease: 2 nd quartile (-46 per cent), primary and below (-42 per cent), 1 st quartile (-30 per cent)	Biggest decrease: primary and below (-58 per cent), rural areas (-58 per cent), 1 st quartile (-46 per cent)

Figure 11. Employment domain scores by subpopulation groups in 2007, 2009, 2011, 2013, 2015


 Employment		Employment domain scores				
Overall and subpopulation groups	2007	2009	2011	2013	2015	
POLAND	18.4	19.8	22.9	24.6	26.7	
Sex						
Women	12.3	13.9	16.9	18.7	21.1	
Men	25.8	26.9	29.9	31.4	33.4	
Place of living						
Rural	21.8	21.6	23.2	24.5	25.3	
Urban below 100,000	13.9	16.3	19.8	21.9	24.6	
Urban 100,000 and above	19.4	21.5	26.0	27.7	30.9	
Education						
Primary and below	15.0	14.9	15.5	16.1	16.3	
Vocational and secondary	16.4	18.2	21.9	23.3	25.7	
Tertiary	35.3	36.8	40.0	41.5	43.6	
Income/ Education						
Low income / primary and below	15.5	15.8	13.0	14.1	17.1	
Medium income / primary and below	10.9	15.3	17.9	15.6	19.9	
High income / primary and below	17.2	19.1	25.7	20.4	19.6	
Medium income / vocational and secondary	14.5	14.8	19.9	20.2	23.5	
High income / vocational and secondary	22.9	25.2	29.8	35.0	34.8	
High income / tertiary	38.0	40.7	48.1	49.0	48.6	
Income						
1 Quartile	13.9	14.4	14.6	16.9	19.4	
2 Quartile	14.9	16.1	17.6	18.6	22.4	
3 Quartile	16.0	19.8	24.1	23.6	25.9	
4 Quartile	29.7	34.4	40.4	42.4	44.6	

Figure 12. Changes in Employment scores by subpopulation groups in Poland in 2007-2015, points



Change in Employment domain scores

Overall and subpopulation groups	2009 - 2007	2011 - 2009	2013 - 2011	2015 - 2013	2015 - 2007
POLAND	1.4	3.1	1.7	2.1	8.3
Sex					
Women	1.6	3.0	1.8	2.4	8.8
Men	1.1	3.0	1.5	2.0	7.6
Place of living					
Rural	-0.2	1.6	1.3	0.8	3.5
Urban below 100,000	2.4	3.5	2.1	2.7	10.7
Urban 100,000 and above	2.1	4.5	1.7	3.2	11.5
Education					
Primary and below	-0.1	0.6	0.6	0.2	1.3
Vocational and secondary	1.8	3.7	1.4	2.4	9.3
Tertiary	1.5	3.2	1.5	2.1	8.3
Income/ Education					
Low income / primary and below	0.3	-2.8	1.1	3.0	1.6
Medium income / primary and below	4.4	2.6	-2.3	4.3	9.0
High income / primary and below	1.9	6.6	-5.3	-0.8	2.4
Medium income / vocational and secondary	0.3	5.1	0.3	3.3	9.0
High income / vocational and secondary	2.3	4.6	5.2	-0.2	11.9
High income / tertiary	2.7	7.4	0.9	-0.4	10.6
Income					
1 Quartile	0.5	0.2	2.3	2.5	5.5
2 Quartile	1.2	1.5	1.0	3.8	7.5
3 Quartile	3.8	4.3	-0.5	2.3	9.9
4 Quartile	4.7	6.0	2.0	2.2	14.9

Figure 13. Employment domain scores for the total population and men and women separately in Poland in 2007-2015



Figure 14. Employment domain scores by place of living in Poland in 2007-2015

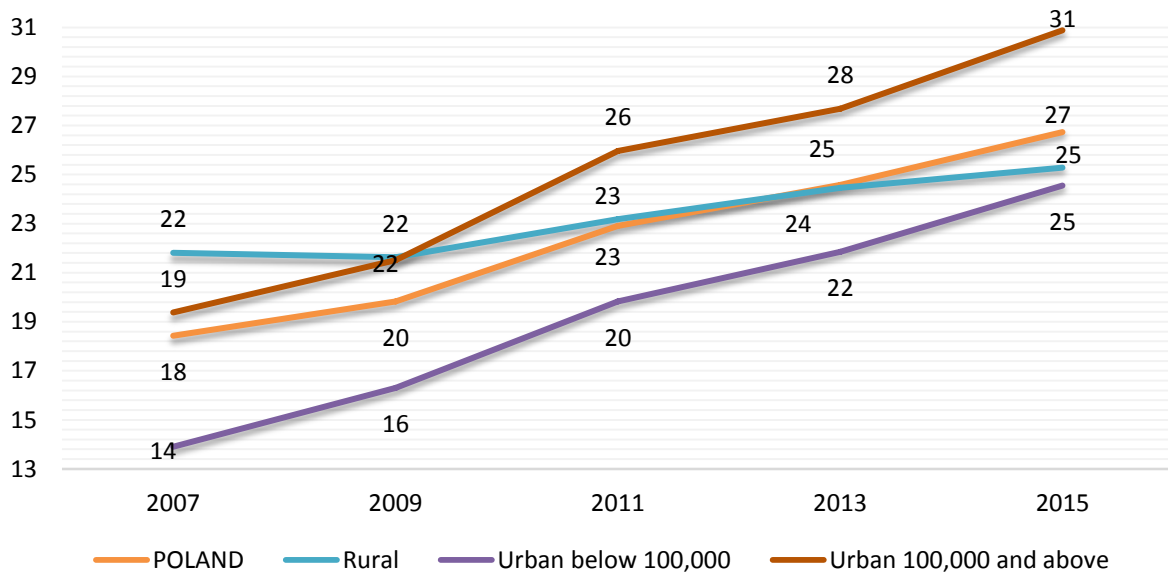


Figure 15. Employment domain scores by education in Poland in 2007-2015

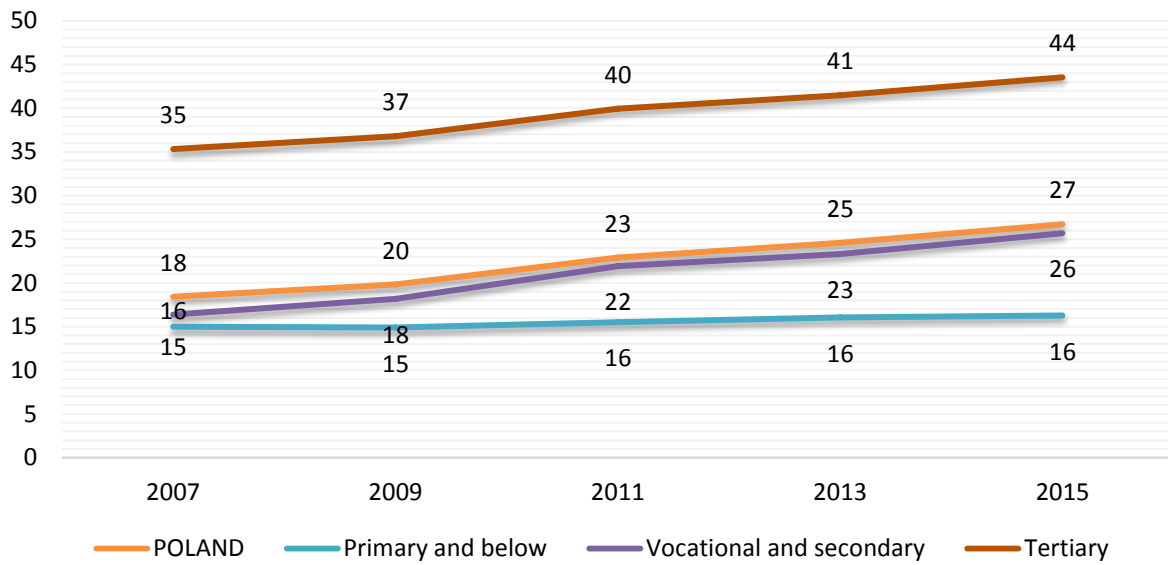


Figure 16. Employment domain scores by income/education in Poland in 2007-2015

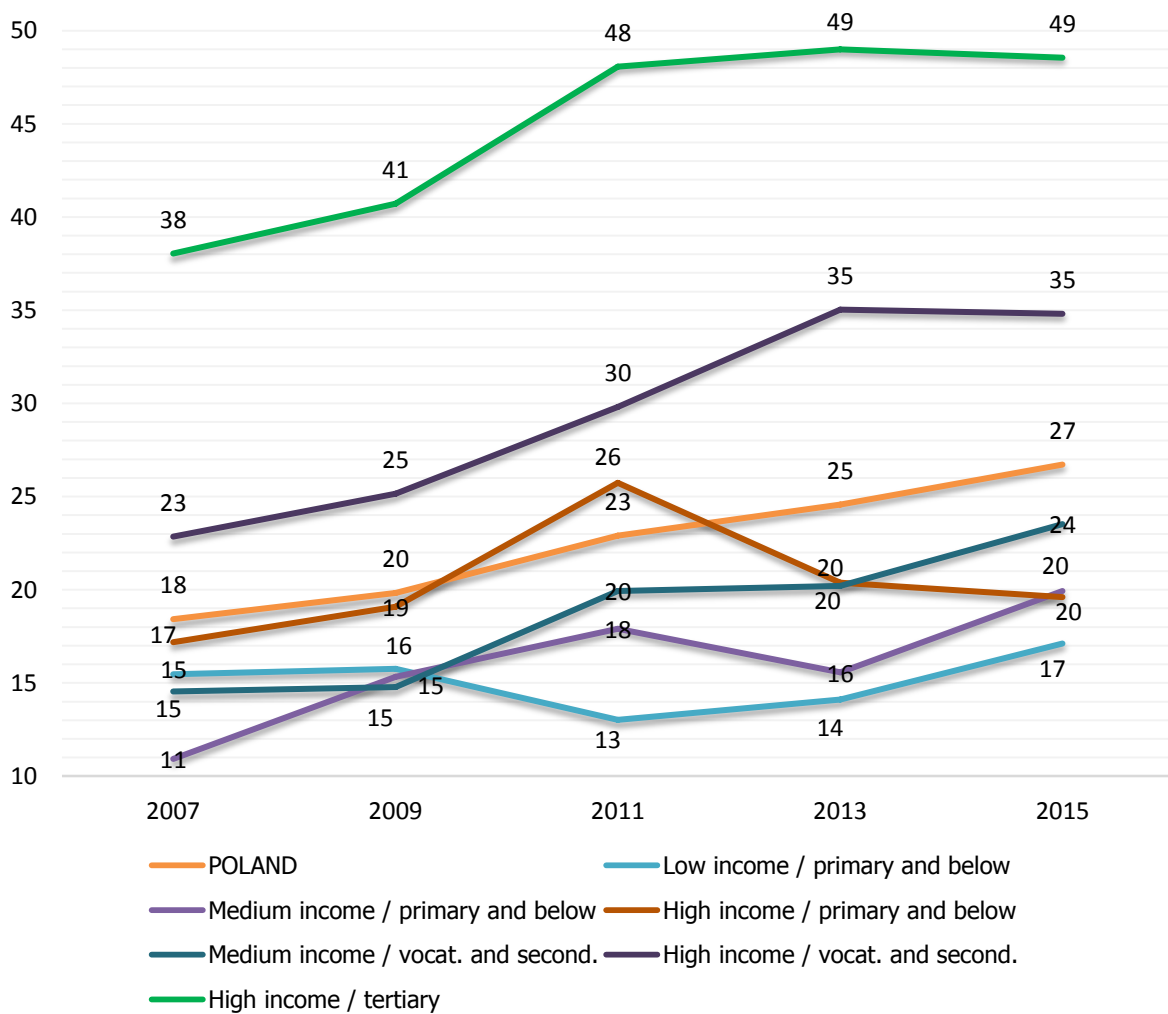


Figure 17. Employment domain scores by income (by quartiles) in Poland in 2007-2015

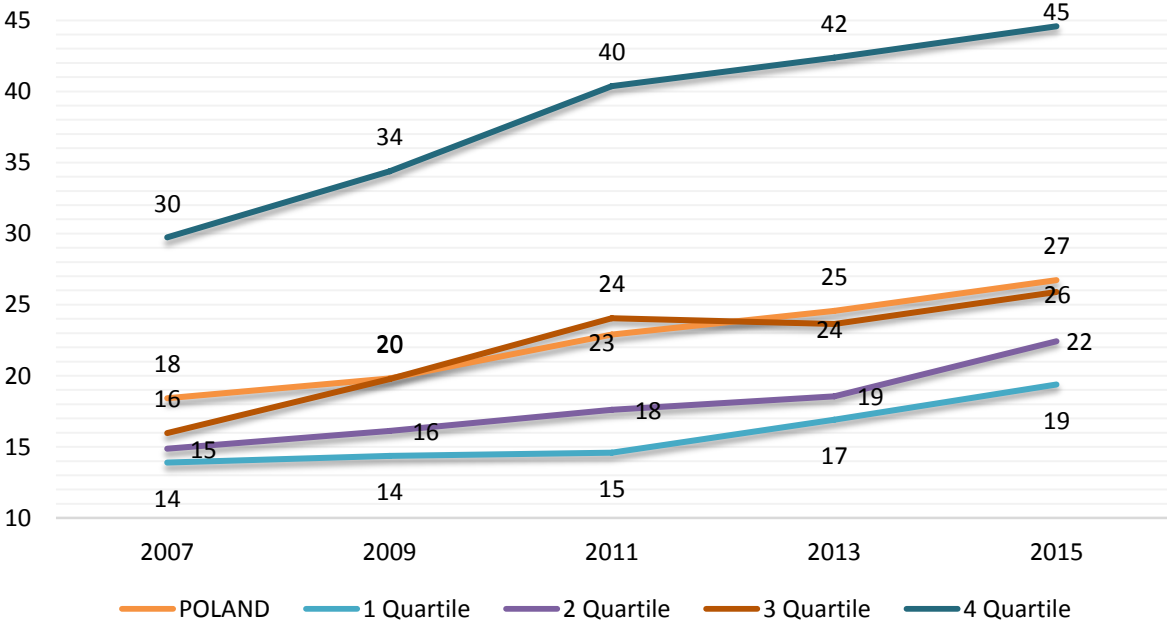


Figure 18. Employment rates by age group in Poland in 2007-2015

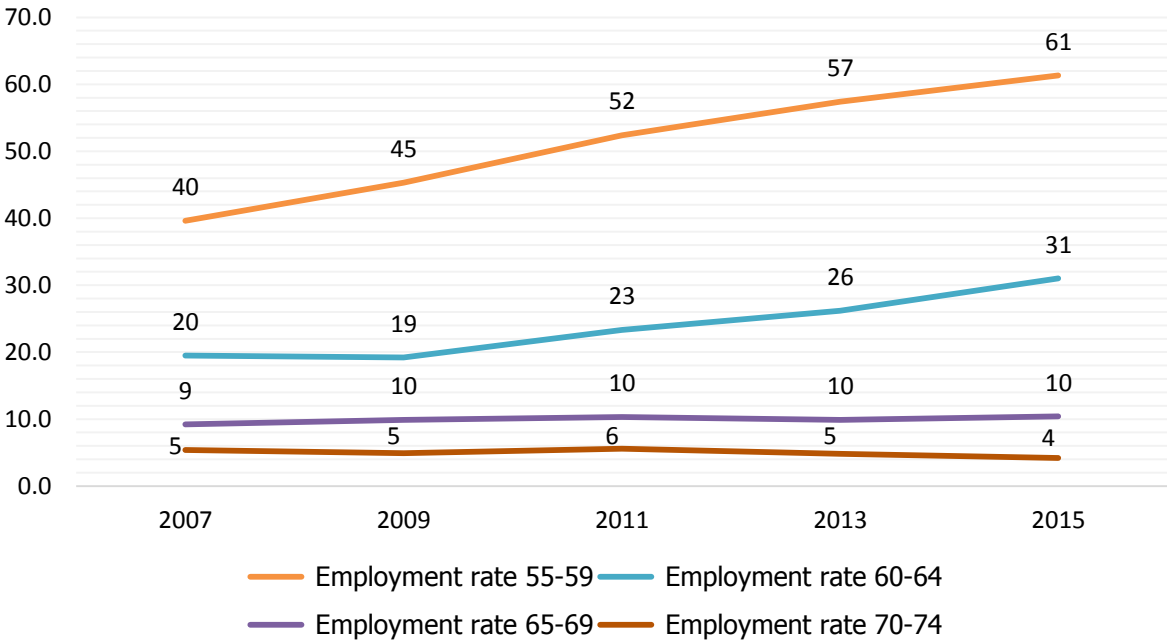


Figure 19 Changes in subgroup-specific Employment rates by age group in Poland in 2007-2015, points



Overall and subpopulation groups	Employment rate 55-59	Employment rate 60-64	Employment rate 65-69	Employment rate 70-74
POLAND	21.7	11.5	1.2	-1.2
Sex				
Women	27.7	8.5	-0.2	-0.9
Men	14.9	14.7	2.8	-1.9
Place of living				
Rural	8.7	3.0	-3.3	-3.2
Urban below 100,000	23.0	13.0	1.8	-0.6
Urban 100,000 and above	19.0	10.9	3.3	-0.3
Education				
Primary and below	17.1	5.7	-3.5	-5.4
Vocational and secondary	23.3	16.3	4.7	1.7
Tertiary	25.7	13.2	2.7	1.0
Income/ Education				
Low income / primary and below	9.8	6.1	-6.3	-3.1
Medium income / primary and below	34.9	2.7	-2.6	1.0
High income / primary and below	15.4	7.5	-9.6	-3.6
Medium income / vocational and secondary	24.1	9.8	3.8	-1.6
High income / vocational and secondary	22.5	17.1	7.1	1.0
High income / tertiary	16.4	18.1	8.8	-1.2
Income				
1 Quartile	17.6	9.6	-2.4	-2.8
2 Quartile	27.7	9.0	-4.0	-2.4
3 Quartile	24.2	11.8	4.1	-0.4
4 Quartile	21.7	22.5	11.6	3.6

Figure 20. Employment rates for men and women by age group, 2007-2015

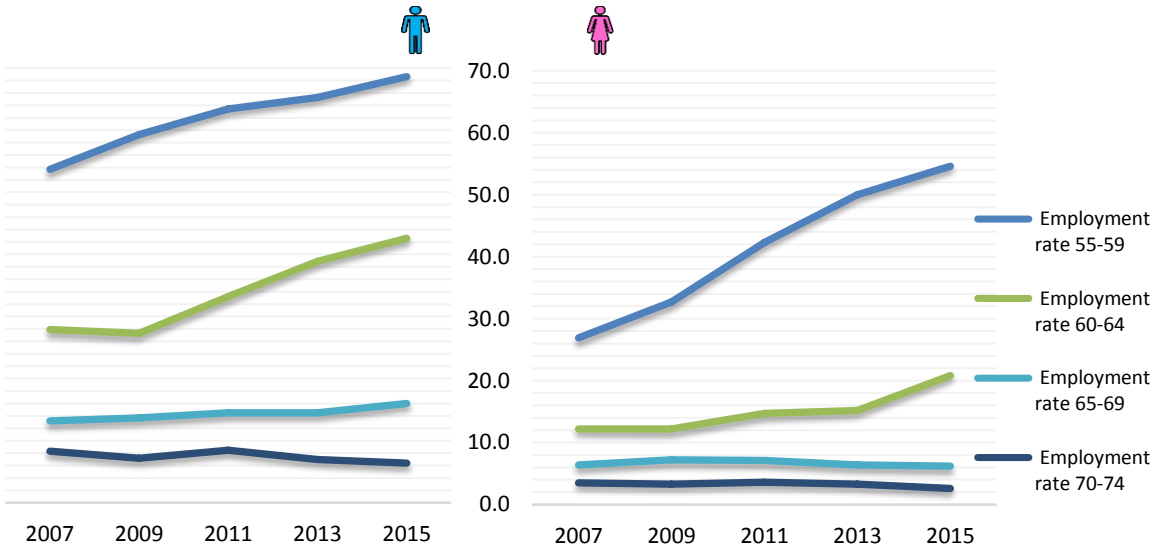


Figure 21. Differences in Employment rates for women and men by age group in 2007, 2009, 2011, 2013, 2015, points

Employment	2007	2009	2011	2013	2015
Employment rate 55-59	26.8	26.6	21.1	15.3	14.0
Employment rate 60-64	15.6	15.1	18.5	23.7	21.8
Employment rate 65-69	6.8	6.5	7.4	8.1	9.8
Employment rate 70-74	4.8	3.9	4.9	3.7	3.8

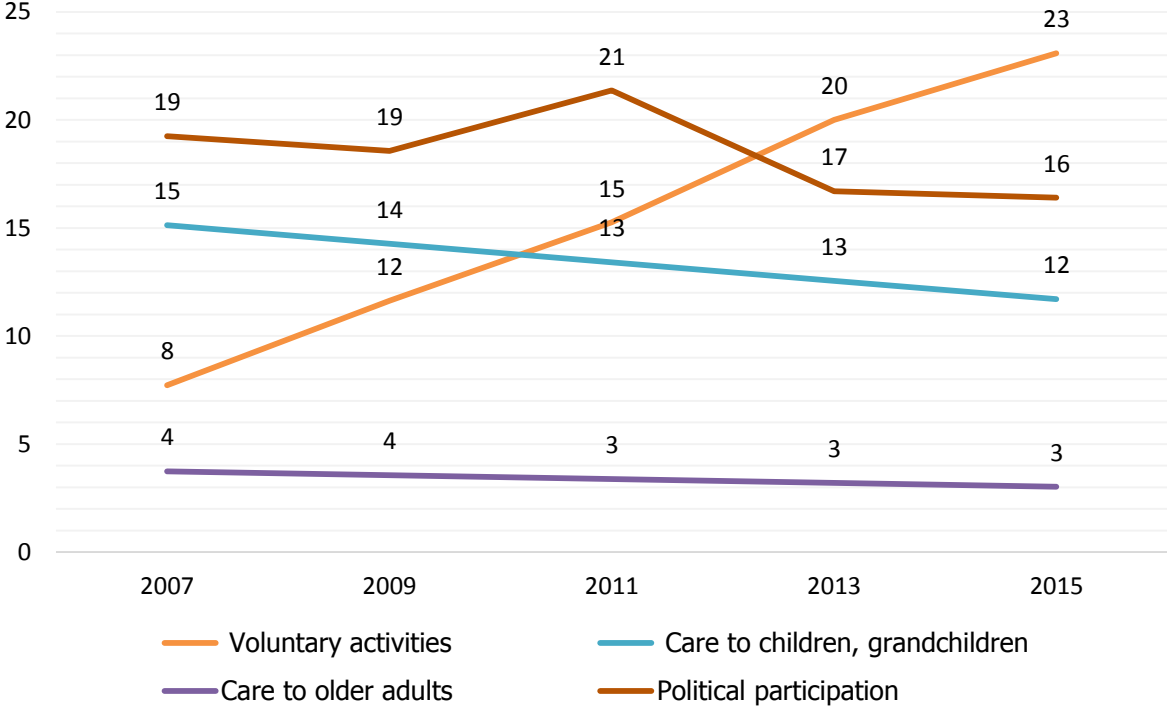
Social participation domain

This domain obtained relatively low scores and, as it amounts to 35 per cent of AAI, it substantially affected the overall results. Moreover, as compared to the previously mentioned *Employment* domain, the increase in *Social participation* turned out to be rather small over time (2.2 points).

The values of three out of four indicators of this domain (care to children, care to adults and political participation) actually decreased over time. It was a high increase in the voluntary activities rate that led to an increase in the overall domain score (see Figure 23).


In general, people in cities of 100,000 and above have higher scores of social participation, but the differences are not as significant as for the education groups. Like in the case of *Employment*, the highest differences were observed among income and educational attainment subpopulations, but again, the differences were not as significant as in the case of the *Employment* domain.

Figure 22. Participation in the society indicators for Poland, 2007-2015



The aforementioned steep increase in voluntary activities can be associated with national programmes aimed at boosting the social participation of older persons in Poland (see the section on the context above). The older generations spend less time giving care to children and grandchildren which could be an effect of their higher activity on the labour market (the conflict between economic and social activity). On the other hand, the social infrastructure related to childcare has developed significantly in the recent years. The decrease in the provision of care to children indicator can result from an increased availability of childcare infrastructure of a higher quality and should not only be seen negatively. The development of such infrastructure was one of the public policy priority goals lately, which could bring such results (see Perek-Białas et al, 2017). However, it is interesting to see that there was a more moderate but still a decrease in the time spent on caring for older adults, given the context of population ageing and lack of public institutions offering care to older persons. And it is quite interesting to notice that political participation of people 55+ is decreasing over time. This result requires further investigation and additional research.

Figure 23. Participation in the society domain scores by subgroup in 2007, 2009, 2011, 2013, 2015


Participation in society domain scores

Overall and subpopulation groups	2007	2009	2011	2013	2015
POLAND	10.7	11.3	12.5	12.4	12.9
Sex					
Women	12.4	11.1	12.3	12.3	14.1
Men	9.2	11.6	12.8	12.8	11.8
Place of living					
Rural	10.2	10.1	11.8	11.6	11.6
Urban below 100,000	11.0	11.8	12.5	12.5	12.4
Urban 100,000 and above	10.9	12.2	13.4	13.6	15.2
Education					
Primary and below	6.9	5.9	6.9	7.0	7.0
Vocational and secondary	13.3	13.5	14.3	13.8	13.8
Tertiary	20.7	20.6	21.4	20.3	22.4
Income/ Education					
Low income / primary and below	5.5	5.2	6.2	7.2	6.6
Medium income / primary and below	6.6	6.2	7.4	6.6	7.4
High income / primary and below	5.7	5.4	6.6	6.8	7.8
Medium income / vocational and secondary	12.9	13.6	14.5	14.0	13.5
High income / vocational and secondary	13.9	14.4	14.8	15.8	15.2
High income / tertiary	20.2	20.9	21.2	21.4	22.7
Income					
1 Quartile	7.8	8.3	9.3	9.8	9.7
2 Quartile	9.3	10.1	11.5	10.5	11.3
3 Quartile	11.6	12.1	13.6	12.8	13.8
4 Quartile	14.7	15.2	16.0	17.3	17.3

Figure 24. Changes in subgroup-specific Participation in the society domain scores in Poland in 2007-2015, points



Change in Participation in society domain scores

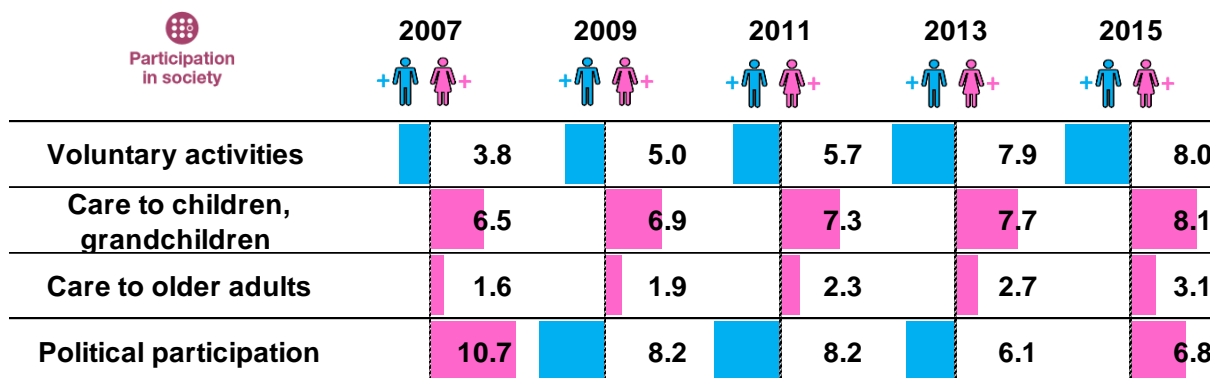
Overall and subpopulation groups	2009 - 2007	2011 - 2009	2013 - 2011	2015 - 2013	2015 - 2007
POLAND	0.6	1.2	-0.1	0.5	2.2
Sex					
Women	-1.3	1.2	0.0	1.8	1.7
Men	2.4	1.2	0.0	-1.0	2.6
Place of living					
Rural	-0.1	1.7	-0.2	0.0	1.4
Urban below 100,000	0.8	0.7	0.0	-0.1	1.4
Urban 100,000 and above	1.3	1.2	0.2	1.6	4.3
Education					
Primary and below	-1.0	1.0	0.1	0.0	0.1
Vocational and secondary	0.2	0.8	-0.5	0.0	0.5
Tertiary	-0.1	0.8	-1.1	2.1	1.7
Income/ Education					
Low income / primary and below	-0.3	1.0	1.0	-0.6	1.1
Medium income / primary and below	-0.4	1.2	-0.8	0.8	0.8
High income / primary and below	-0.3	1.2	0.2	1.0	2.1
Medium income / vocational and secondary	0.7	0.9	-0.5	-0.5	0.6
High income / vocational and secondary	0.5	0.4	1.0	-0.6	1.3
High income / tertiary	0.7	0.3	0.2	1.3	2.5
Income					
1 Quartile	0.5	1.0	0.5	-0.1	1.9
2 Quartile	0.8	1.4	-1.0	0.8	2.0
3 Quartile	0.5	1.5	-0.8	1.0	2.2
4 Quartile	0.5	0.8	1.3	0.0	2.6

Figure 25. Changes in Participation in the society domain scores, by subpopulation groups in Poland in 2007-2015, points


Change in Participation domain scores

Overall and subpopulation groups	Voluntary activities	Care to children, grandchildren	Care to older adults	Political participation
POLAND	15.4	-3.4	-0.7	-2.8
Sex				
Women	13.6	-2.7	0.0	-5.0
Men	17.8	-4.3	-1.6	-1.2
Place of living				
Rural	12.4	-2.9	-0.6	-3.9
Urban below 100,000	21.5	-3.7	-0.8	0.2
Urban 100,000 and above	13.9	-3.8	-0.8	-4.2
Education				
Primary and below	8.7	-2.1	-0.4	-7.3
Vocational and secondary	12.1	-4.0	-0.8	-6.5
Tertiary	19.1	-4.6	-0.9	-8.3
Income/ Education				
Low income / primary and below	11.6	-2.0	-0.3	-5.9
Medium income / primary and below	9.9	-2.5	-0.6	-4.5
High income / primary and below	11.1	-2.3	-0.4	0.1
Medium income / vocational and secondary	10.4	-3.9	-1.1	-3.3
High income / vocational and secondary	15.7	-5.0	-0.7	-5.6
High income / tertiary	20.8	-5.1	-1.0	-6.1
Income				
1 Quartile	14.5	-2.6	-0.5	-4.4
2 Quartile	13.1	-3.1	-0.8	-1.4
3 Quartile	16.1	-4.1	-1.0	-2.6
4 Quartile	17.7	-4.6	-0.8	-2.8

Figure 26. Differences in Participation in the society indicators for women and men in Poland in 2007, 2009, 2011, 2013, 2015, points



Independent, healthy and secure living domain

The results for this domain are the most constant over time. If we consider the underlying indicators, we can see a steady, slow increase for six of them. The only exceptions being the independent living arrangements, which dropped from 67.2 in 2007 to 56.7 in 2015 and the health-care needs indicator that was not met, and stayed at the same level from 2007 to 2015, although it experienced a significant decrease in the meantime (see Figure 29).

The highest increase was observed for the “no material deprivation” and the “physical activity” indicators. The change in the latter can be partially attributed to the fact of promoting the healthy ageing in Poland.

Comparing the results across distinguished subpopulations, the differences are not as high as in the case of the two first domains. In general, the highly educated citizens of large cities with high incomes have higher values of the domain score as compared to low educated citizens of rural areas with low income. The domain scores and indicators of this domain are also significantly higher for men as compared to women.

Figure 27. Indicators of the Independent, healthy and secure living domain, 2007-2015

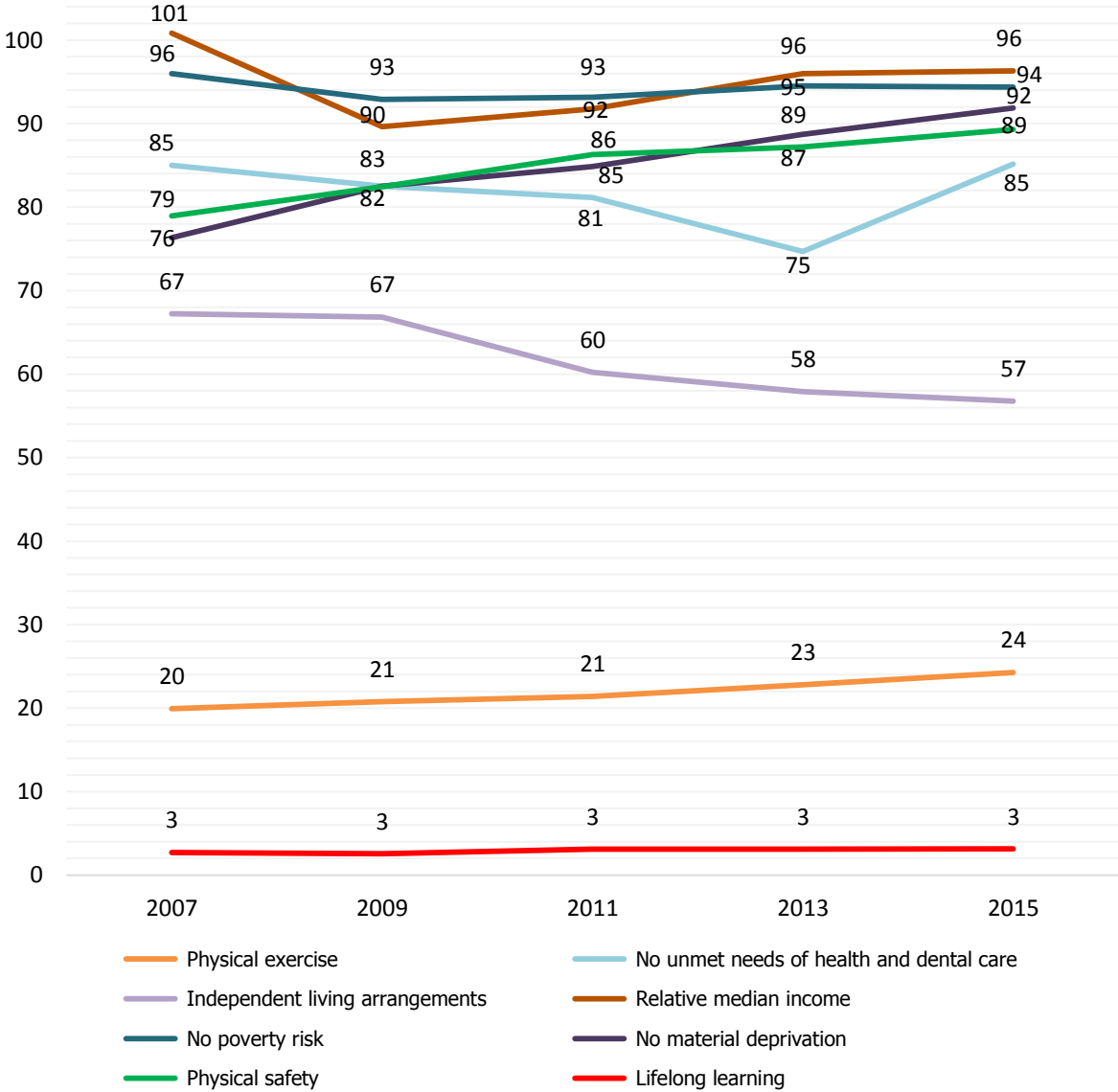


Figure 28. Independent, healthy and secure living domain scores by subpopulation groups in Poland in 2007, 2009, 2011, 2013, 2015.



Independent living domain scores

Overall and subpopulation groups	2007	2009	2011	2013	2015
POLAND	67.9	67.0	66.3	65.8	68.3
Sex					
Women	66.5	65.7	65.0	63.9	67.6
Men	70.2	69.0	68.4	68.7	69.7
Place of living					
Rural	65.7	63.6	63.1	60.3	63.1
Urban below 100,000	68.2	68.5	65.8	68.3	70.2
Urban 100,000 and above	70.0	69.7	69.9	69.4	72.1
Education					
Primary and below	66.3	64.3	63.7	61.7	65.1
Vocational and secondary	72.9	72.0	72.1	71.3	72.9
Tertiary	76.9	75.9	76.7	78.0	78.4
Income/ Education					
Low income / primary and below	62.0	61.3	62.2	58.2	62.9
Medium income / primary and below	68.5	67.5	66.3	64.1	66.8
High income / primary and below	66.0	63.3	62.3	64.4	63.1
Medium income / vocational and secondary	72.3	73.5	72.1	71.4	73.3
High income / vocational and secondary	73.3	71.9	72.6	73.4	72.4
High income / tertiary	76.7	76.8	77.0	80.1	79.1
Income					
1 Quartile	62.2	60.7	61.5	56.1	62.5
2 Quartile	68.2	68.4	67.3	66.4	68.8
3 Quartile	70.5	68.9	67.6	68.5	70.1
4 Quartile	70.8	69.6	68.9	72.1	71.0

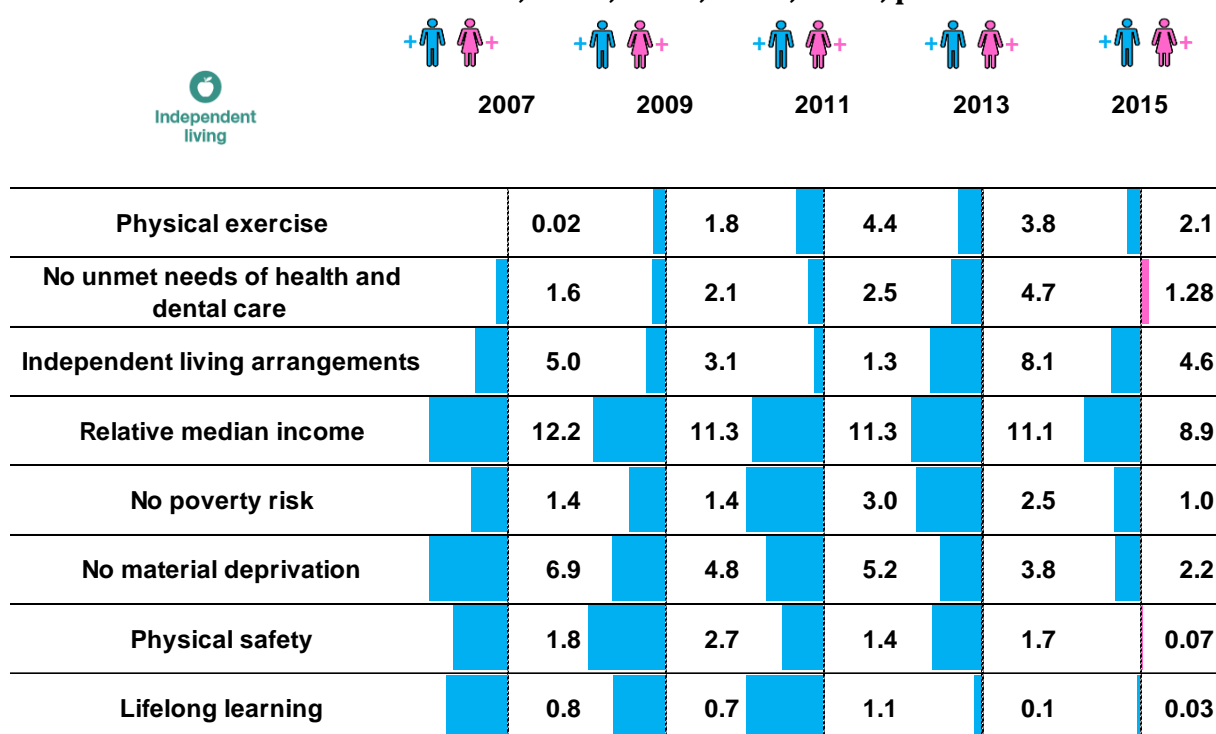
Figure 29. Changes in Independent, healthy and secure living domain scores by subpopulation groups in Poland in 2007-2015, points



Change in Independent living domain scores

Overall and subpopulation groups	2009 - 2007	2011 - 2009	2013 - 2011	2015 - 2013	2015 - 2007
POLAND	-0.9	-0.7	-0.5	2.5	0.4
Sex					
Women	-0.8	-0.7	-1.1	3.7	1.1
Men	-1.2	-0.6	0.3	1.0	-0.5
Place of living					
Rural	-2.1	-0.5	-2.8	2.8	-2.6
Urban below 100,000	0.3	-2.7	2.5	1.9	2.0
Urban 100,000 and above	-0.3	0.2	-0.5	2.7	2.1
Education					
Primary and below	-2.0	-0.6	-2.0	3.4	-1.2
Vocational and secondary	-0.9	0.1	-0.8	1.6	0.0
Tertiary	-1.0	0.8	1.3	0.4	1.5
Income/ Education					
Low income / primary and below	-0.7	0.9	-4.0	4.7	0.9
Medium income / primary and below	-1.0	-1.2	-2.2	2.7	-1.7
High income / primary and below	-2.7	-1.0	2.1	-1.3	-2.9
Medium income / vocational and secondary	1.2	-1.4	-0.7	1.9	1.0
High income / vocational and secondary	-1.4	0.7	0.8	-1.0	-0.9
High income / tertiary	0.1	0.2	3.1	-1.0	2.4
Income					
1 Quartile	-1.5	0.8	-5.4	6.4	0.3
2 Quartile	0.2	-1.1	-0.9	2.4	0.6
3 Quartile	-1.6	-1.3	0.9	1.6	-0.4
4 Quartile	-1.2	-0.7	3.2	-1.1	0.2

Figure 30. Differences in Independent, healthy and secure living domain for women and men in Poland in 2007, 2009, 2011, 2013, 2015, points



Capacity for active ageing domain

This domain values increased by about 2.9 points between 2007 and 2015. The increase was higher for women than for men, for small cities and towns than for rural areas, for high-income than low-income subgroups and for primary and below than for tertiary and above educational attainment subgroups.

The overall change in the *Capacity for active ageing* domain was mainly a result of a significant change in the use of the Internet. In 2007, only 14 per cent of older persons used ICT, as compared to over 38 per cent in 2015. The values of all the other indicators in this domain have also increased, however, at a much lower rate.

Large differences in the domain score can be observed among the subpopulations. For instance, the score for the highest educational level group was equal to 54 points, as compared to just 32.2 for the lowest education group in 2015. Similarly, for the highest income group the domain score was equal to 51.1 points, while for the lowest income group to just 33.1 in 2015. Contrary to the other domains, women have had, on average, higher scores than men for all analysed years.

Figure 31. Indicators of the Capacity for active ageing domain, 2007-2015

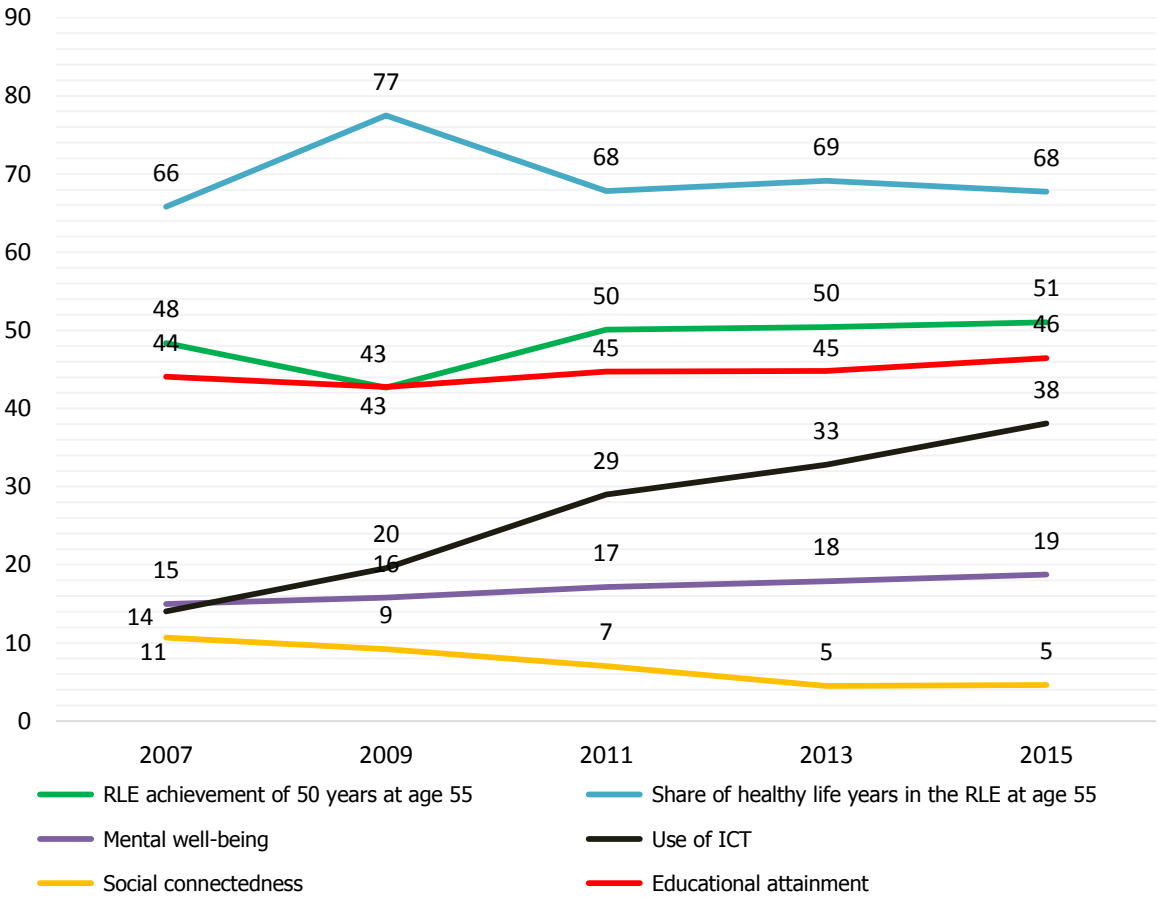


Figure 32. Capacity for active ageing domain scores by subpopulation groups in Poland in 2007, 2009, 2011, 2013, 2015



Capacity for active ageing domain scores

Overall and subpopulation groups	2007	2009	2011	2013	2015
POLAND	39.3	40.3	41.2	41.7	42.2
Sex					
Women	39.7	40.4	42.0	42.4	43.1
Men	39.3	40.2	40.9	41.4	41.6
Place of living					
Rural	39.6	36.1	37.0	37.6	38.3
Urban below 100,000	39.8	40.9	41.8	42.4	43.3
Urban 100,000 and above	44.9	44.2	45.8	45.5	46.4
Education					
Primary and below	29.6	31.0	31.2	31.4	32.2
Vocational and secondary	43.1	43.3	44.1	44.0	44.0
Tertiary	51.4	52.4	53.8	54.7	54.0
Income/ Education					
Low income / primary and below	29.3	31.0	30.9	31.1	31.8
Medium income / primary and below	29.7	31.0	31.1	31.3	31.9
High income / primary and below	29.5	31.1	32.6	32.5	34.0
Medium income / vocational and secondary	41.8	42.5	43.6	43.6	43.5
High income / vocational and secondary	43.8	45.3	46.5	46.3	46.1
High income / tertiary	52.0	52.5	54.1	55.6	54.6
Income					
1 Quartile	31.4	31.2	31.9	31.7	33.1
2 Quartile	36.0	37.8	38.0	39.3	39.2
3 Quartile	41.1	42.0	43.1	43.3	43.5
4 Quartile	47.2	48.6	50.7	51.4	51.1

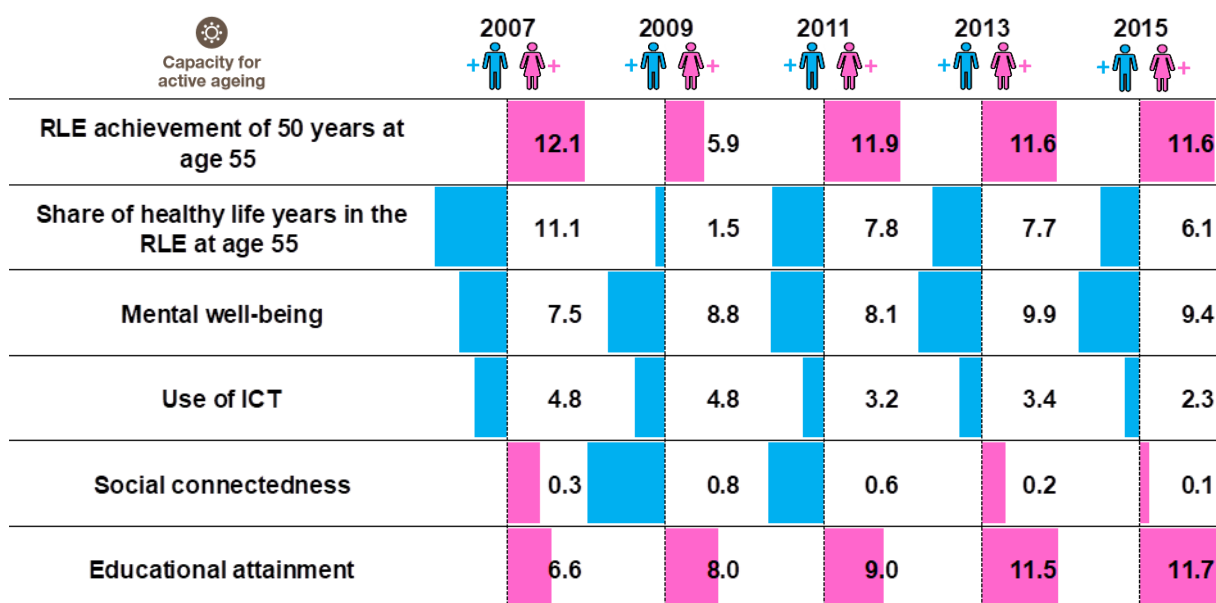
Figure 33. Changes in Capacity for active ageing domain scores by subpopulation groups in Poland in 2007-2015, points



Change in Capacity for active ageing domain scores

Overall and subpopulation groups	2009 - 2007	2011 - 2009	2013 - 2011	2015 - 2013	2015 - 2007
POLAND	1.0	0.9	0.5	0.5	2.9
Sex					
Women	0.7	1.6	0.4	0.7	3.4
Men	0.9	0.7	0.5	0.2	2.3
Place of living					
Rural	-3.5	0.9	0.6	0.7	-1.3
Urban below 100,000	1.1	0.9	0.6	0.9	3.5
Urban 100,000 and above	-0.7	1.6	-0.3	0.9	1.5
Education					
Primary and below	1.4	0.2	0.2	0.8	2.6
Vocational and secondary	0.2	0.8	-0.1	0.0	0.9
Tertiary	1.0	1.4	0.9	-0.7	2.6
Income/ Education					
Low income / primary and below	1.7	-0.1	0.2	0.7	2.5
Medium income / primary and below	1.3	0.1	0.2	0.6	2.2
High income / primary and below	1.6	1.5	-0.1	1.5	4.5
Medium income / vocational and secondary	0.7	1.1	0.0	-0.1	1.7
High income / vocational and secondary	1.5	1.2	-0.2	-0.2	2.3
High income / tertiary	0.5	1.6	1.5	-1.0	2.6
Income					
1 Quartile	-0.2	0.7	-0.2	1.4	1.7
2 Quartile	1.8	0.2	1.3	-0.1	3.2
3 Quartile	0.9	1.1	0.2	0.2	2.4
4 Quartile	1.4	2.1	0.7	-0.3	3.9

Figure 34. Differences in Capacity for active ageing domain for women and men in Poland in 2007, 2009, 2011, 2013, 2015, points



5.4 Active Ageing Index in Poland – a closer look at 2015

The results for 2015 clearly indicate that on the whole women fared worse than men. This is mostly due to their lower employment rates. The difference can be attributed to the labour market policies applied in the past (till 2012 the retirement age was 60 years for women and 65 for men in Poland). In 2012, a change was introduced, and its purpose was to level-out retirement age for men and women. However, the change could not significantly impact the labour market due to its gradual nature – the retirement age was to be levelled-out over years. We believe that the reinstating of the previous distinct retirement ages for men and women in 2015 will preserve the differences in employment rates or even augment them.

In other domains, the differences in the AAI for men and women are smaller. In the ‘Social participation’ and ‘Capacity for active ageing’ women fared better than men in 2015. A better outcome for older Polish women in ‘Social participation’ is due to the fact that they were more active in voluntary activities, while in the ‘Capacity’ domain older women score higher than men in almost all individual indicators, but noticeably in the remaining life expectancy. Furthermore, women on average were much better educated.

Figure 35. The Active Ageing Index overall and by domains score by subpopulation groups in Poland in 2015

Overall and domain-specific scores






Overall and subpopulation groups					
	Overall	Employment	Participation in society	Independent living	Capacity for active ageing
POLAND	29.1	26.7	12.9	68.3	42.2
Sex					
Women	27.7	21.1	14.1	67.6	43.1
Men	31.1	33.4	11.8	69.7	41.6
Place of living					
Rural	26.9	25.3	11.6	63.1	38.3
Urban below 100,000	28.6	24.6	12.4	70.2	43.3
Urban 100,000 and above	32.6	30.9	15.2	72.1	46.4
Education					
Primary and below	21.1	16.3	7.0	65.1	32.2
Vocational and secondary	29.9	25.7	13.8	72.9	44.0
Tertiary	41.7	43.6	22.4	78.4	54.0
Income/ Education					
Low income / primary and below	21.0	17.1	6.6	62.9	31.8
Medium income / primary and below	22.6	19.9	7.4	66.8	31.9
High income / primary and below	22.7	19.6	7.8	63.1	34.0
Medium income / vocational and secondary	29.0	23.5	13.5	73.3	43.5
High income / vocational and secondary	34.0	34.8	15.2	72.4	46.1
High income / tertiary	43.7	48.6	22.7	79.1	54.6
Income					
1 Quartile	23.1	19.4	9.7	62.5	33.1
2 Quartile	26.5	22.4	11.3	68.8	39.2
3 Quartile	29.6	25.9	13.8	70.1	43.5
4 Quartile	39.0	44.6	17.3	71.0	51.1
Weights		35%	35%	10%	20%

Figure 36. Domain-specific scores for men and women for Poland in 2015

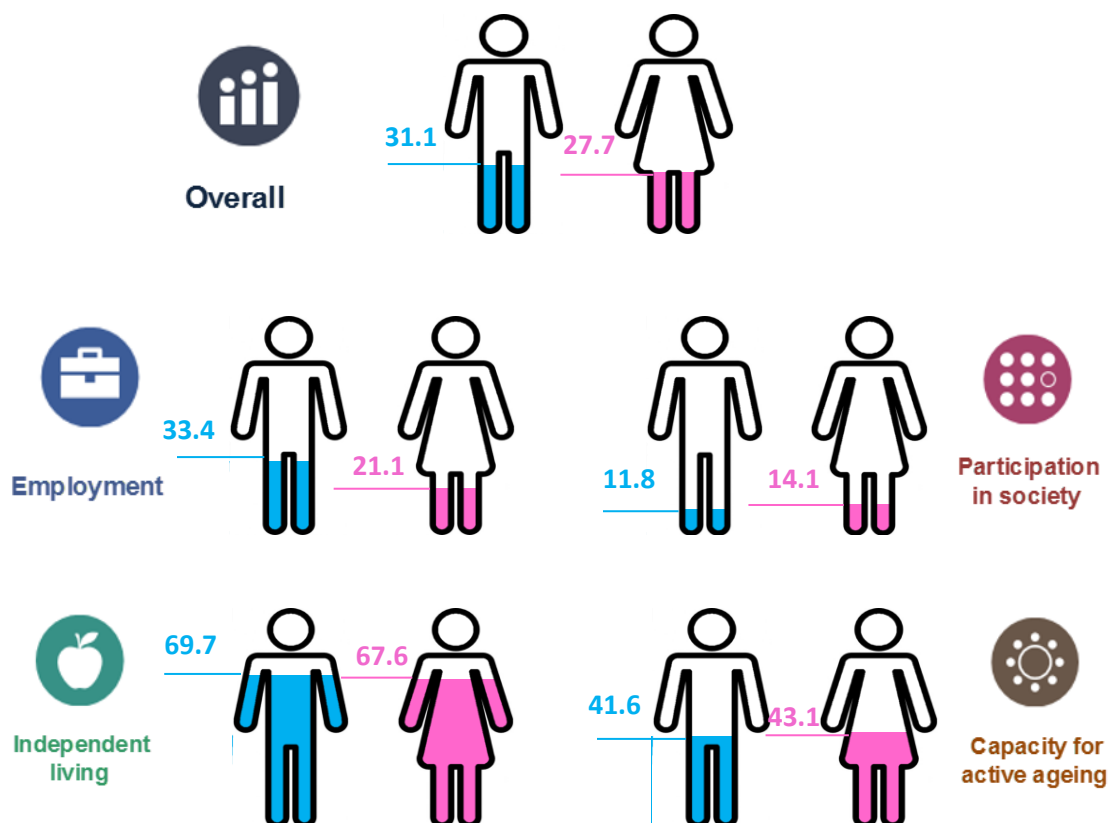


Figure 37. Subgroup-specific Employment rates by age group in Poland in 2015

Employment domain-specific scores				
Overall and subpopulation groups	Employment rate 55-59	Employment rate 60-64	Employment rate 65-69	Employment rate 70-74
POLAND	61.3	31.0	10.4	4.2
Women	54.6	20.8	6.2	2.6
Men	68.6	42.6	16.0	6.4
Rural	40.7	17.5	4.6	2.3
Urban below 100,000	60.7	29.7	9.0	3.3
Urban 100,000 and above	82.1	54.8	25.6	11.7
Primary and below	59.6	28.5	9.1	3.9
Vocational and secondary	66.1	38.0	13.7	5.7
Tertiary	59.4	27.3	8.5	3.0

Low income / primary and below	38.1	23.0	3.7	3.6
Medium income / primary and below	57.5	17.1	2.4	2.7
High income / primary and below	54.7	19.4	4.3	–
Medium income / vocational and secondary	61.3	24.3	7.5	1.0
High income / vocational and secondary	71.4	40.0	18.9	8.9
High income / tertiary	86.2	64.0	29.4	14.7

1 Quartile	43.7	24.9	5.8	3.2
2 Quartile	60.3	22.8	4.8	2.0
3 Quartile	64.6	27.3	9.5	2.2
4 Quartile	78.8	55.5	29.0	15.1

Figure 38. Participation in the society indicators by subpopulation groups in 2015

Participation in the society domain-specific scores

Overall and subpopulation groups	Voluntary activities	Care to children, grandchildren	Care to older adults	Political participation
POLAND	23.1	11.7	3.0	16.4
Sex				
Women	19.7	15.2	4.4	20.4
Men	27.7	7.1	1.3	13.6
Place of living				
Rural	19.5	9.9	2.4	17.9
Urban below 100,000	28.7	12.8	3.5	18.7
Urban 100,000 and above	22.2	13.0	3.5	12.9
Education				
Primary and below	11.4	7.3	1.8	8.9
Vocational and secondary	24.0	13.5	3.6	16.7
Tertiary	44.0	15.6	4.0	31.3
Income/ Education				
Low income / primary and below	11.6	6.8	1.5	7.7
Medium income / primary and below	11.0	8.7	2.6	8.4
High income / primary and below	12.4	7.7	1.8	11.4
Medium income / vocational and secondary	22.6	13.2	4.6	15.8
High income / vocational and secondary	25.7	17.2	3.1	17.7
High income / tertiary	42.8	17.3	4.2	31.8

	Income			
1 Quartile	17.7	8.9	2.0	12.4
2 Quartile	19.4	10.7	3.5	13.7
3 Quartile	23.3	13.9	4.1	16.3
4 Quartile	31.2	15.5	3.2	23.0

5.5 A summary of the results over time and by subgroups

Situation of persons depending on their place of living

The place of living significantly influences how much of the potential of older persons is used in Poland. In the overall evaluation of the AAI values there was virtually no change observed for rural areas over time, while there was an increase for urban areas. Therefore, the place of living disparity is not only significant, but it tends to grow over time.

In the employment domain, the gap remains high between big cities and rural areas. These results show that some labour market policy reforms may be required for mobilizing the potential of older persons living in rural areas, as today a specific nature of jobs performed in rural areas seems to disadvantage older people.

In the second domain '*Social participation*', older persons living in rural areas fared worse than persons living in other places. Despite the similar starting point in 2007 for all subgroups, only people living in rural areas did not report any progress. The increase of participation for older persons in large cities could be an effect of local (at city level) policies aiming to activate this group.

The score of the '*Independent, healthy and secure living domain*' could be considered relatively stable over the years of analysis for urban places of living. At the same time, between 2007 and 2015, there was a decrease for rural areas in the '*Capacity for active ageing*'. And this is mostly due to a low use of ICT which can result from a lower education level among older persons living in the rural areas and from the lack of necessary ICT infrastructure in these areas.

Situation of various education groups

The education level could also be a reason for considerable differences in ageing experiences and active ageing outcomes. There is a large difference between the results of subgroups with tertiary and primary level of education in 2007, as it did not decrease as well as in 2015 it could be found. In fact, people with primary education showed none or a very small improvement in active ageing experience. And what is more alarming, that trend is consistent across all four domains. The other education groups improved their scores in the '*Employment*' domain, but not in the other three domains.

Situation of various income groups

The use of income-disaggregated data showed that for all income subgroups (from the lowest to the highest) there was an increase in the overall AAI values over time. However, the increase was at a higher rate for those in the 4th quartile of income than for the other income groups.

We believe that the causal relationship here can be reversed, i.e. the active ageing can be a cause for a higher income rather than the higher income being a cause for experiencing active ageing, however this can work in both ways. Here, the financial security (represented by three indicators) being part of this domain of the AAI can be a reason and thus also

influence the active ageing scores. For example, people with better health (higher score in the third and fourth domains) will tend to work longer in their lifetime (higher score in the first domain) which will lead to higher incomes.

Situation of various socio-economic groups based on income and education

The mix of income and education attainment was used as a proxy of socio-economic status. And here the same trends were found as in the case where the income and education were analysed separately. People with low income and primary and below educational attainment have the lowest AAI values: domain scores as well as almost all individual indicators. On the other hand, the highly educated, high-income group has the best scores in all the domains. The most striking differences among these groups could be observed in the physical activity and the use of ICT indicators. In 2015, more than half of persons with tertiary education and high income declared regular physical activity and almost 90 per cent of them used the Internet. By comparison, these ratios for the group with low education and low income were equal to 7.7 per cent and 8.6 per cent respectively.

6 The further development of active ageing index approach – methodological recommendations

The design and composition of the AAI could be questioned (de São José et. al., 2017) just as our approach to this calculation of the AAI for Poland. The existing critique has been focused on the concept of active ageing itself and its measurement, as well as on the choice of implemented single indicators and the statistical techniques used for aggregation. We followed the original approach and the methodology of the AAI calculation developed by the Expert Group specialising in the AAI which was consistent with original results²¹. Nevertheless, in the following brief section we present some considerations which could be relevant for our analysis of the AAI calculation for Polish subgroups and useful as recommendations for the future analysis.

In this report, we will not contribute to the more detailed discussion about the construction of the AAI itself as a composite measure with selected indicators, as it is beyond the scope and aim of this report (see more Panek, Zwierzchowski, Perek-Białas, forthcoming). However we would like to include some significant arguments, as they have an impact on understanding and interpretation of the presented results and are relevant from the statistical point of view.

Choice of individual indicators

It is important to check the differences in the AAI results if some indicators are moved to the other domains, as for example indicator 3.2 (the absence of unmet needs for medical and dental examination or treatment) which could be considered as a cause and not a result of active ageing²². This indicator could be transferred to the fourth domain, which contains such variables.

²¹ We did not, however, cut the values to 100 which were over 100 for a few indicators in the 3rd Domain, related to financial situation as it could be noticed in Annex 2. It was only one indicator and this domain covers only 10 per cent of the AAI, therefore it does not have a great impact on the overall value of this domain score and the overall value of the AAI.

²² Even if it is also based on a subjective assessment of whether an individual “really needs” the named assistance, and then on the possibility to get such assistance and thus is dependent on a mindset (mental well-being). One of the main reasons for not getting or not asking for medical help is money-related – thus resulting from financial security.

Indicator 3.5 (no poverty risk) has been defined using the relative poverty line. Therefore, it facilitates a proper assessment of poverty risk only in the case of cross-sectional analysis. We however appreciate that there are three indicators of financial security in the AAI. In case of longitudinal analysis a fixed poverty line should be implemented. If a relative poverty line is used, the potential change in the indicator values can be caused by the change in the distribution income inequality rather than the change in the actual risk of poverty. The headcount ratio of poverty does not fulfil the basic monotonicity axiom, which requires that a diminution of income of a poor person should never lead to decrease in the poverty incidence. In case of relative poverty line this situation is possible. See more in Panek, Zwierchowski, 2014.

Indicator 4.1 (remaining life expectancy achievement of 50 years at age 55) has been constructed in an artificial manner only in order to provide its comparativeness with other indicators (as percentages). And it does not contribute to the comparability of values between indicators. Even though all the indicators are defined as percentages, the differences in variances will lead to alteration of arbitrary chosen weights. The indicators with higher variability will affect final results more heavily (Booyesen, 2002). This indicator should be defined simply as remaining life expectancy at age 55 in years and subjected to normalisation along with all the other variables during the aggregation process as it will be recommended later. The same recommendations apply to indicator 4.2 (healthy life years).

Model creation

The measurement of the active ageing phenomenon should constitute a sequential and consistent modelling process (Maggino and Zumbo, 2012). The model should be rooted in a set of basic indicators, which characterize the distinguished domains of active ageing. The basic indicators are subsequently aggregated into indices describing the distinguished domains and, finally, into a single index measuring the whole active ageing phenomenon. Therefore, the model has got a hierarchical nature, as its every element is defined in the context of the preceding components.

The process of constructing composite indicators is complex and requires answering a few dilemmas along the way. Each step is important, but coherence in the whole process is equally vital. Choices made in one will influence other steps. The model builder does not only have to make the most appropriate methodological choices in each step, but also to identify whether they fit together.

Thus the construction of composite indicator requires:

- The *identification of the theoretical framework and basic indicators*, moreover, one should establish the causal relationships between basic indicators and the aggregated indicators;
- All basic indicators should impact the measured process in the same manner;
- *Normalisation* of basic indicators, which provides comparability among indicators values;
- *Log-transformation* of indicator values, which leads to a decrease in asymmetry of distributions;
- *Multivariate analysis of basic indicators* which provides understanding of their structure and influences the following steps of the indicator construction process;
- *Weighting basic indicators* – the structure of weights defines the relative relevance of the identified indicators;
- *Aggregating basic indicators* – the aggregation leads to a single composite indicator, it transforms a multidimensional set of variables into a composite indicator.

In general, there are two distinguished methods of measuring latent trait on the basis of observable indicators (Edwards, Bagozzi, 2000; Diamantopoulos, Siguaw, 2006; Pearl, 2014): the reflective approach (reflective indicators) and formative (formative indicators).

The formative variables are observables which determine values of the latent traits. Under this approach, the phenomena in question (AAI, domains, etc.) could be described by the latent traits, created from the observed variables. The causal relationship leads from the observable variables to the latent 'active ageing variable'. In practice the formative model is usually implemented using the principal component analysis technique (Maggino and Zumbo, 2012), where we assume that the latent trait is a linear convex combination of observed variables and that there is no error of measurement (Edwards and Bagozzi, 2000).

In the reflective approach the observed variables are believed to be results of the latent trait. From the causal point of view, the latent trait determines values of the observed covariates. Under this approach we believe that the phenomena in question (AAI, domain, etc.), described by the latent variables, are causes of the observed variables (basic indicators). In practice the reflective model is usually implemented using the factor analysis technique (Maggino and Zumbo, 2012), where we assume that the observed variables are a function of common factors and the unique variance of observed variables is considered to result from a measurement error (OECD, 2008; Maggino and Zumbo, 2012).

Transformation of basic indicators

The basic indicators used in the process of calculating the AAI require transformation which would lead to the unification of variability. In case of strongly asymmetric variables it may be preferable to employ a log-transformation which will reduce the asymmetry. The linear aggregation of weighted basic indicators log-transformed will be equal to the standard aggregation, however higher weights are given then to change low values.

In order to properly construct a composite indicator, one must make sure that the values of basic indicators are fully comparable. Usually that leads to the necessity of normalisation of the basic indicators in order to establish common variability. Sometimes it is even preferable to create common ranges of variability using a unification procedure.

All the basic indicators used within the AAI model can be considered as percentages and therefore, their units of measurement do not affect the final results. However, the difference in variability will directly affect the relative importance of the basic indicators. The indicators with higher variance will affect the results more heavily and, as a consequence, the chosen weight structure will not be reflected in the final indicator values (Booyesen, 2002). In the original AAI this finding was taken into consideration, as the indicators with higher variability tend to have lower weights. However, such approach could be seen as artificial and not robust to different datasets.

We may also consider applying one of the three basic normalisation methods: *standardisation, unitisation, and quotient transformation* (Panek i Zwierzchowski, 2013).

The aim of classic *standardisation* is to establish variables with equal means and variance. However, from the point of view of the AAI, the equal means requirement will lead to equal values of the AAI across different time points, as the mean values of all the indicators will artificially remain constant across time. Therefore, it would be preferable to employ a modification of classical standardisation methods, which allow for the change in means in time. As the resulting standardised variables have equal means, the AAI calculated on their basis would not permit for any comparisons between different analyses. If one conducted a separate analysis for different subgroups (or regions, countries), on the basis of distinct

datasets, the values of the AAI for all subgroups (countries) would be equal. The standardisation could allow only for comparisons between units of measurement covered by common datasets (e.g. territorial units within a country) and it should be applied for example for subnational application of the AAI if the subgroups analysis are planned.

The aim of unitisation is to establish variables with a common range of variability, defined as a difference between the maximal and minimal values. Using this formula will lead to variables with minimal values equal to zero and maximal values equal to one. Quotient transformation is based on the comparison of a given value to the maximal value in the dataset.

Multivariate analysis of the active ageing basic indicators structure

The active ageing basic indicators have been chosen on the theoretical basis and it is additionally important to check the correlations between them. Therefore, it would be advisable to conduct an analysis in order to assess which approach should be implemented (reflective vs formative) and identify the number of distinct dimensions within the domains. Moreover, the results of this analysis may facilitate decisions at other steps of constructing the indicator. However, it was neither possible to perform it in the original AAI approach nor in our AAI-PL case due to different datasets used in analysis.

There is a variety of methods which can be used in order to identify the independent dimensions in each domain (OECD, 2008; Rencher, 2002; Hair et al., 2006). In practice, the most commonly used methods are principal components and factor analysis (Panek, Zwierzchowski, 2013; Panek 2016), depending on the approach to the causal relationship between observables and latent traits. In case of the reflective approach the factor analysis method is usually employed, while in case of the formative approach, the principal components analysis is introduced. Within the multivariate data analysis it should also verify if the basic indicators applied within each subdomain measure the same phenomenon, thus verification of the reliability is required.

Weighting system

Weights can have critical impact on the final results of any composite indicator. It is through weights that authors of an indicator are trying to implement the relevance of basic indicators and variables. There are three basic approaches toward weights construction (Panek, 2016). We can provide *no weights*, which is equivalent to assigning equal weights to all indicators. We can assign weights on the basis of *expert knowledge* and preferences toward basic indicators. Finally, we can employ a *statistical tool while constructing weights*.

Equal weights

Equal weights are usually employed when there is no theoretical knowledge on the nature of dependencies between basic indicator and the latent trait. Another case is when a panel of experts is unable to reach a consensus toward a specific weighting system. M.R. Hagerty and K.C. Land (2007) pointed out that a lack of consensus can be usually attributed to a situation in which there is a strong positive correlation between indicators. Equal weights ignore the issue of correlation among indicators, therefore, if some information is included in more than one basic indicator, it will be overrepresented in the final results, as compared to information contained by only one indicator.

Expert weights

Implementation of expert weights is well justified when the aims of the public policy are well identified or when one intends to reflect the interests of different economic agents in the

weighting system. In the present methodology of the AAI the expert weights are implemented as in the original approach, in case of Polish application we can consider finding consensus in terms of weights in this AAI with involvement of not only experts (including experts from the country, as the context could matter) but also representatives of older persons, taking into account the specific national context. Moreover, the implemented Budget Allocation Process (OECD, 2008) should be additionally strengthened by using some basic statistical tools. For instance, one can consider using the *Analytic Hierarchy Process* (AHP), widely used in the practice of multicriteria decision analysis (Saaty, 1980; 1987).

Weights based on multivariate statistical methods depend on the amount of independent information carried by the basic indicators and the structure of correlations between them. For example principal components or factor analysis methods can be used in order to establish weights (Kaufmann, Kraay and Zoido-Lobaton, 1999). Alternatively weights can be based on the partial correlation values (Panek, 2016).

Aggregation

Aggregation of basic indicators into domains and the final composite indicator enables researchers to establish a ranking of territorial units (countries, regions, etc.) or track changes in the indicator values over time. The aggregating formula affects final results (for formulae, see Panek, 2016). Using arithmetic mean lead to unbiased composite indicators if and only if all the basic indicators are preferentially independent. An indicator is preferentially independent from all other indicators when marginal changes in the indicator have the same, constant effect on the composite indicator regardless of the values of all the other indicators (Krantz et al., 1971).

From the operational point of view this assumption means that marginal inputs of every basic indicator can be added independently from the inputs of other indicators. In other words, the marginal effect of any given indicator is constant with respect to the values of other indicators. This assumption is very strong and most likely not met by empirical data. Moreover, the additive model is fully substitutive, meaning that a lower value of any given indicator can be fully compensated by a higher value of a different variable.

Introducing geometric means lead to a severe decrease in substitutability of basic indicators, meaning that a lower value of a given indicator could no longer be compensated by a higher value of other indicator, as compared to arithmetic mean. As a result, values of composite indicator in objects with low values of some of the basic indicators will tend to be lower, as compared with the arithmetic mean. Moreover, the marginal effect of increase in low valued basic indicator will be significantly higher. It is also worth mentioning that the geometric mean does not require the preferential independence assumption to be met.

It would be highly recommended to replace the arithmetic mean with the geometric mean in the AAI calculations. As an example of good practice, it is worth noting that the UNDP have replaced previously used arithmetic means with geometric mean in case of the HDI (Human Development Index) (UNDP, 1997, 2016).

Analysis of robustness of composite indicators

As the composite indicator model is constructed, a number of decisions have to be made. One needs to choose a set of variables and methods of normalisation, aggregation and weighting. All these decisions may have significant effect on the final results. (Saisana, Saltelli and Tarantola, 2005; Sharpe and Salzman, 2004; Nardo and in., 2011), therefore, these decisions should be considered as a source of uncertainty with respect to the indicator values. Measuring robustness of the composite indicator allows for assessing the impact of

each decision on final results (*sensitivity analysis*) and the potential changes in ranking as a result of changing assumptions (*uncertainty analysis*).

Uncertainty analysis

Uncertainty analysis is focused on how changes in the assumptions propagate through the structure of the composite indicator and affect the values of the composite indicator. In order to perform uncertainty analysis a set of different composite indicators models is defined. In each model a different combination of basic indicators, normalisation, aggregation and weighting methods is applied (Panek, 2016).

Uncertainty analysis is usually performed via a number of simulations where the composite indicators values are calculated under different assumptions and the resulting values are analysed (such analysis was done already for regional application of the AAI for Poland in 2015, Zwierzchowski, Perek-Białas, 2017). In each simulation step the assumptions are drawn from the predefined sets of possible assumptions (Saisana, Saltelli and Tarantola, 2005; Panek, 2016).

Sensitivity analysis

Sensitivity analysis studies how much each individual source of uncertainty contributes to the output variance of the composite indicator, usually measured as an overall change in a ranking of objects. The total variance is decomposed into variance associated with different assumptions. The importance of a given assumption can be measured via the so-called sensitivity index, which is defined as the fractional contribution to the model output variance due to the uncertainty in given assumption. As a result, the builder of a model receives feedback on the significance of his/her choices made at subsequent steps while creating the model²³ (Panek, 2016). It would be highly recommended to perform a sensitivity and uncertainty analysis of the calculated AAI-PL using the methods proposed by Sobol (1993) and modified by A. Saltelli (2002).

²³ The presented method should be seen as a global method of sensitivity analysis, as it takes into consideration all possible combination of model's assumptions (Archer, Saltelli i Sobol, 1997; Saltelli i in., 2008).

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Annex

Detailed description of questions used for indicators of AAI for

Poland

Domain 1

In this domain we used the original methodology. The individuals were considered as employed if they have performed work during the reference week, for pay, profit or family gain. In order to capture employment activities of older workers at a late stage of their careers, it was sufficient if they worked even for just one hour a week or were not at work but had a job or business from which they were temporarily absent because of, e.g., illness, holidays, industrial dispute or education and training. The calculations were based on the variable which contained recorded answers to the question: "Did you do any paid work in the 7 days ending Sunday, either as an employee or as self-employed?" And "Even though you were not doing paid work, did you have a job or business that you were away from in the week ending Sunday (and that you expect to return to)?"

Domain 2

2.1. **Voluntary activities** indicator values were estimated using the Social Diagnosis Survey database. The survey contained a question "Have you performed any unpaid works during the last year?". The question was present in the three latest waves of the survey, namely in 2011, 2013 and 2015. There were three possible answers:

1. Yes, frequently.
2. Yes, rarely.
3. No.

Respondents who have selected one of the first two answers²⁴ were marked as volunteers. The fraction of volunteers in the 55+ population was estimated. The obtained estimates constitute the indicator values. For the income, education, our social status and place of living groups the same fractions were estimated in the relative subsamples.

For the 2007 and 2009 years all the values were imputed as predictions obtained from linear regression trend models. The trend models were constructed separately for each subpopulation of older persons and checked by the quality of estimation.

2.2 **Care to children, grandchildren** indicator values were estimated using the Time Use Survey. The TUS was conducted in Poland in 2003 and 2013 years only. Therefore, values for only two years can be directly estimated, of which only 2013 is contained by the report timeframe. The values for all the other years were interpolated using linear regression trend models.

The TUS contains both general questions and so-called time diaries, in which every surveyed person writes down their main current activities in 15-minute intervals. All the activities are coded as numbers. There were eight coded activities which can be described as care to children, namely:

²⁴ "yes, rarely" does not correspond to the "original" AAI indicator, where only "at least once a week" is considered volunteering

- 380 – Care to children,
- 381 – Nursing and looking after children,
- 382 – Teaching children,
- 383 – Reading, playing and conversations with children,
- 384 – Going out with children,
- 389 – Other activities related to children,
- 423 – Care to own children living in another household,
- 424 – Care to others' children.²⁵

If a given respondent had one of those codes written down in their diary for at least one 15-minute interval he/she was marked as a person who performs care to children. A fraction of those who performed care to children was estimated in the relative sample. The main indicator values were estimated for all aged 55+ years and the values for the income, education, social status and place of living groups were estimated in the corresponding subsamples.

2.3 **Care to older adults** indicator values were calculated in the similar manner as the 2.2 indicator values. The TUS survey contains the following coded activities, which can be linked to the care to older adults:

- 390 – Care to adult household members,
- 391 – Care to chronically ill household members,
- 425 – Care to adult members of another household.

If a given respondent had one of those codes written down into their diary for at least one 15-minute interval he/she was marked as a person who performs care to older adults. A fraction of those who performed care to older adults was estimated in the relative sample. The indicator values were estimated for all 55+ year olds and the values for the income, education, social status and place of living groups were estimated in the corresponding subsamples.

2.4 **Political participation** indicator values were estimated using the Social Diagnosis Survey. The survey contained a question "Have you participated in any public meeting during the last year". Respondents who answered yes were considered as active participants of political life. Their share was estimated in the 55+ population and for subpopulations by income, education, social status and place of living.

Domain 3

3.1 **Physical exercise** indicator values were calculated on the basis of the Social Diagnosis Survey. In the 2009 questionnaire there was a general question asking whether respondent regularly undertakes any physical activity. People who responded "yes" were considered as undertaking physical exercise.

In the 2011, 2013 and 2015 questionnaires there was a set of questions related to nine specific sport activities, e.g. aerobic, jogging, football, etc. The tenth question asked about "other" sport activities. People who selected at least one sport activity were considered as undertaking physical exercise in general.

The share of people undertaking physical exercise was estimated in the 55+ population and for subpopulations by income, education, social status and place of living.

²⁵ The original indicator includes only "own children", but it also includes "own grandchildren" who could be seen as "others' children"

In 2007, there were no sport-related questions in the SD survey. Therefore, the indicator values for 2007 were interpolated using linear regression models and the estimated values for 2009, 2011, 2013 and 2015.

3.2 Access to health and dental care indicator values were estimated using two questions of the Social Diagnosis survey:

- Have you refrained from acquiring dental prosthesis due to financial reasons?
- Have you refrained from visiting a doctor due to financial reasons?

Respondents who answered 'no' to both questions were considered as not having problems with access to health and dental care. The relevant share was estimated for the whole 55+ population and respective subpopulations.

3.3 Independent living arrangements indicator values were estimated using the EU-SILC. For every covered household the total number of members was established. Then, all people aged over 75 years living in single households were marked as living independently. Moreover, people aged over 74 years living in a two-person-households were marked as independently living if the second person in the household was reported as their spouse in the relevant variable. On the basis of marked individuals, the relevant percentages were estimated for the whole 74+ population and for the distinguished subpopulations.

3.4 Relative median income indicator values were calculated as a ratio of estimated median equivalised disposable income of people 65+ to that of people aged below 65. For income, education and social status groups both medians were estimated using relevant subsamples. For example, for the first quartile income group the median equivalised disposable income was estimated in both: the first quartile income group of all 65+ year olds and the first quartile income group of all aged below 65 years. The two values were then compared as a ratio.

3.5 No poverty risk (65+) indicator values were calculated using the EU-SILC. The monetary poverty line was estimated for each year using the same survey. For every household, the equivalised disposable income was calculated (see indicator 3.4). The median income was estimated at individual level using data for all individuals in the Survey. All people living in households with disposable equivalised income below 50 per cent of the estimated median were marked as financially poor. The relevant percentages for the whole population 65+ and the subpopulations were estimated on the basis of marked individuals.

3.6 No severe material deprivation (65+) indicator values were calculated on the basis of the EU-SILC using the methodology proposed by the Eurostat. The material deprivation indicator is based on the nine questions from the EU-SILC related to the experience of financial constrains which lead to falling onto arrears or incapability of fulfilling certain needs or possessing basic material goods, namely:

- having arrears on mortgage, rent payments or utilities bills;
- lack of capacity to afford one annual week holiday away of home for all household's members;
- keeping home adequately warm;
- being unable to afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day;
- being unable to face unexpected financial expenses;

- lack of telephone due to financial reasons;
- lack of colour TV due to financial reasons;
- lack of washing machine due to financial reasons;
- lack of car due to financial reasons.

Individuals living in the households with at least four material deprivations syndromes reported were marked as severely materially deprived. The relevant percentages for the whole population 65+ and the subpopulations were estimated on the basis of marked individuals.

3.7 Physical safety (55+) indicator values were calculated on the basis of the Social Diagnosis Survey. The SD contains a question "How satisfied are you with the safety in your place of residence". Respondents have chosen an answer from a list of six ranging from "Very satisfied" to "Not satisfied at all". Individuals who marked "Very satisfied", "Satisfied" or "Quite satisfied" were marked as those who are feeling safe in their neighbourhood²⁶. The relevant percentages for the whole population 65+ and the subpopulations were estimated on the basis of marked individuals.

3.8 Lifelong learning (55-74) indicator values were calculated on the basis of the Social Diagnosis Survey. The SD contains a question "Do you take part in any activity related to improving professional skills?". Respondents who had answered "Yes" were marked as lifelong learners. The relevant percentages for the whole population of 55-74 year olds and the analysed subpopulations were estimated on the basis of the marked subsample.

Domain 4

4.1 Remaining life expectancy achievement of 50 years at age 55 was calculated on the basis of the official life expectancy tables published by the Polish Statistical Office (GUS) and the EU-SILC panel dataset. In Poland, the official life tables are published for men and women separately. Moreover, the Polish Statistical Office publishes life tables for men/women living in urban and in rural areas. From the perspective of the conducted analysis only life expectancy at the age of 55 years was relevant. However, all the missing life tables were constructed in order to calculate the requested values.

The joint sex life tables were constructed by combining death probabilities from the published tables. The death probabilities were weighted with weights proportional to the theoretical fractions of each sex in the whole cohort at any given age. The joint tables were created for the whole population and for the urban and rural subpopulation.

In order to estimate life expectancy at 55 for other subpopulations (education attainment, income, social status, small and large cities) the EU-SILC panel dataset was used. The analysis was conducted using the panel data covering 2007-2013. Only individuals aged 50+ were considered. The relative death odds ratios were estimated using multilevel random-effect logit regression model separately for men and women. The first level was constituted by individuals, while the second by 5-years age groups. In the said model, the dependent variables were a binary marker of death, while the binary indicators of belonging to a certain subpopulation were used as a level-1 predictors. In total, 6 models for men and women were constructed distinguished by income groups, educational attainment groups and large city/small town division among people living in urban areas. In every model the estimate of the intraclass variation turned out to be statistically insignificant, meaning that the ratios of

²⁶ The current original question is about feeling safe while walking alone after dark.

relative death probabilities with respect to the analysed factors are similar in all age groups. Therefore, the multilevel models were replaced by standard logit regression models. The estimated odds ratios can be interpreted as a relative change in the odds of dying during a single year related to the fact of belonging to a different social group.

The estimated odds ratios were used to modify the probabilities of death in the official life tables. As a result, group-specific life tables were obtained, in which death probabilities result from the combination of officially reported statistics and estimated group-specific relative probabilities of dying.

In particular, it turned out that there was no statistically significant difference in the probability of dying between inhabitants of large cities and small towns, therefore, for those groups the official life tables for people living in the urban areas were used. On the other hand, the highest discrepancy in relative death probabilities was observed between income groups, as the men living in the households with disposable equivalent income below the first quartile had their death probability estimated more than ten times higher as compared to men living in the households with disposable equivalent income above the third quartile of the income distribution. However, this large difference may be due to a spurious causal effect, as for example poor health may lead to both lower income and higher death probability.

For the social status groups, due to relatively small samples in the EU-SILC panel, the group-specific life tables were not constructed. The values used in the report were taken from the corresponding educational attainment groups.

The indicators values were calculated as a life expectancy at the age of 55 years divided by 2.

4.2 Share of healthy life years in the remaining life expectancy at the age of 55 years was calculated on the basis of the officially published life tables and the Social Diagnosis Survey. Health-adjusted life expectancy for a population was calculated by combining estimates of the average health of an individual in each of its age groups with the life table for that population (the Sullivan's method).

The percentages of healthy people in one-year age groups were estimated using the Social Diagnosis Survey. The estimates were based on three questions, of which two measure objective health indicators and one measures subjective health self-assessment. These questions were:

- Do you suffer from any chronic disease or health limitations which hinder daily activities?,
- Are you a handicapped person?,
- In general how satisfied are you with your health status?

People were considered healthy if they were not handicapped, did not suffer from any limitations to daily activities **and** were satisfied with their health status. The relevant percentages were estimated in one-year age groups for the whole population and analysed subpopulations. As the one-year samples were very small, and in some cases even empty, the resulting estimated percentages were smoothed across age-groups using locally weighted scatterplot smoothing technique (LOWESS). As a result, the age-specific sample sizes were artificially increased and the result consistency between one-year age groups was assured. The smoothed values were combined with the previously created life tables for each subpopulation separately.

The indicator values were calculated as a proportion of life expectancy at 55 years spent in good health.

4.3 **Mental well-being (55+)** indicator values were estimated using the Social Diagnosis Survey. The Survey contained seven questions, which can be considered as mental well-being indicators. Respondents are asked to share their feelings about their appearance, motivation to work, quality of sleep, constant weariness, appetite, general health and sexual life. Respondents, who are contented with at least five mentioned areas of their life are marked as being in positive mental well-being. The relevant percentages of people in good mental well-being in the population and subpopulations were then estimated.

4.4 **Use of ICT (55-74)** indicator values were estimated using the Social Diagnosis Survey. The indicator was constructed in a different way for various years, as the questions used in Survey related to computer technology were modified:

- In 2007 and 2009, respondents were asked about the year in which they started to use the Internet and about the number of hours spent using the Internet within the last week. Only people who marked the same year for when they started using the Internet and spent at least one hour using the Internet within last month were considered as Internet users.
- In 2011, the two questions were replaced by a battery of 23 questions on various computer-related activities. Respondents who used computers for activities requiring active Internet connection (e.g. browsing websites, writing e-mails, etc.) were marked as Internet users.
- In 2013 and 2015, there was a question directly asking if a respondent was using the Internet.

The relevant percentages of Internet users in the population and subpopulations were then estimated.

4.5 **Social connectedness (55+)** indicator values were calculated using the Social Diagnosis Survey. Respondents were asked about a number of social events in which they took part within the last month. All respondents who stated at least four social meetings were marked as "socially connected". The relevant percentages of "socially connected" people in the population and subpopulations were then obtained.

4.6 **Educational attainment of older persons (55-74)** indicator values were estimated using the Social Diagnosis Survey, which contains a variable describing the highest obtained level of education. All the respondents who have obtained upper secondary or tertiary education were marked as highly educated. The relevant percentages of highly educated people in the population and subpopulations were then estimated.

Table A.1. Detailed description of all indicators used in calculations of AAI. Domain 1

	Original indicator	Proposal of indicator/question
1.1.	Employed persons are those:	As original
1.2.	Who are aged 15 year and over (16 and over in ES, IT, UK and SE); (15-74 years in DK, EE, HU, LV, FI and SE);	
1.3.	who during the reference week performed work, even for just one hour a week, for pay, profit or family gain;	
1.4.	who were not at work but had a job or business from which they were temporarily absent because of, e.g., illness, holidays, industrial dispute or education and training.	
	To capture employment activities of older workers at a late stage of their careers.	
	Did you do any paid work in the 7 days ending Sunday the [date], either as an employee or as self-employed?	
	1 Yes	
	2 No	
	Even though you were not doing paid work, did you have a job or business that you were away from in the week ending Sunday the [date] (and that you expect to return to)?	
	1 Yes	
	2 No	
	3 Waiting to take up a new job/business already obtained	

Table. A.2. Detailed description of all indicators used in calculations of AAI. Domain 2

	Original indicator	Proposal of indicator/question
2.1.	<p>Percentage of older population aged 55+ providing unpaid voluntary work through the organisations (at least once a week) To capture non-market unpaid productive activities of older population offered in the form of organised voluntary activities.</p> <p>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?</p> <ol style="list-style-type: none"> 1. Community and social services (e.g. organisations helping the elderly, young people, disabled or other people in need). 2. Educational, cultural, sports or professional associations 3. Social movements (for example environmental, human rights) or charities (for example fundraising, campaigning) 4. Political parties, trade unions 5. Other voluntary organisations 	<p>A) Percentage of older population aged 55+ providing unpaid work (those who answered “yes” or only “yes, often”)</p> <p>Did you do any unpaid work or services for persons outside your family or for social organization in the last year?</p> <ol style="list-style-type: none"> 1. Yes, often, 2. Yes, rarely, 3. No <p>Yes, often for analysis</p> <p>B) Percentage of older population 55+ participating in organized activity (member of at least one organization)</p> <p>Are you a member of any organization, society, political party, committee, council, religious group or union?</p> <ol style="list-style-type: none"> 1. Yes, one 2. Yes, two 3. Yes, three or more 4. No <p>C) Percentage of older population 55+ involved in local activities in last two years</p>

		<p>Were you involved in any local activities (for a council, place of residence, local community, neighbourhood) in the last two years?</p> <ol style="list-style-type: none"> 1. Yes 2. No
2.2.	<p>Percentage of older population aged 55+ providing care to their children, grandchildren (at least once a week)</p> <p>To capture activity of older populations in the form of care provision to their own children or grandchildren.</p> <p>In general, how often are you involved in any of the following activities outside of work?</p> <p>a. Caring for your children, grandchildren</p> <ol style="list-style-type: none"> 1. Every day; 2. Several days a week 3. Once or twice a week 4. Less often 5. Never 	<p>Percentage of older population 55+ performing at least one of the following activity:</p> <ol style="list-style-type: none"> 1. Childcare, including: care and babysitting, learning with children, reading, playing, conversations and other activities; 2. Care of own children living in another household; 3. Care of children from other household
2.3	<p>Percentage of older population aged 55+ providing care to elderly or disabled relatives (at least once a week)</p> <p>To capture valuable activities of older populations in the form of care provision to older adults.</p> <p>c. Caring for elderly or disabled relatives</p> <ol style="list-style-type: none"> 1. Every day; 2. Several days a week 3. Once or twice a week 4. Less often 5. Never 	<p>Percentage of older population 55+ performing at least one of the following activity:</p> <ol style="list-style-type: none"> 1. Care for adult household member, including: care for long-term sick or disabled adult, other help for long-term sick or disabled person, help for other adult household member; 2. Care for adult person from other household.
2.4.	<p>Percentage of older population aged 55+ taking part in the activities of meeting of a trade union, a political party or political action group</p>	<p>A) Percentage of older population aged 55+actively participating in</p>

	<p>To capture the wider participation of older population in political and trade union activities and thus their abilities to influence decision making of these organisations.</p> <p>Over the last 12 months, have you ...?</p> <ol style="list-style-type: none"> 1. Attended a meeting of a trade union, a political party or political action group; 2. Attended a protest or demonstration; 3. Signed a petition, including an e-mail or on-line petition 4. Contacted a politician or public official (other than routine contact arising from use of public services) <p>1 Yes 2 No</p>	<p>activity of political party or trade union</p> <p>Do you currently participate in activity of the following organizations?</p> <ul style="list-style-type: none"> • political party, • trade union <p>B) Percentage of older population aged 55+ participating in any public meeting in the last 12 months</p> <p>Did you participate in public meeting or assembly in the last year (excluding in the place of work)?</p> <ol style="list-style-type: none"> 1. Yes, 2. No
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Table. A.3. Detailed description of all indicators used in calculations of AAI. Domain 3

	Original indicator	Proposal of indicator/question
3.1.	<p>Percentage of people aged 55 years and older undertaking physical exercise or sport at least 5 times a week.</p> <p>This indicator is part of the domain on independent and autonomous living. While the benefits of moderate physical activity in old-age have been widely recognized by research (see Warburton et al, 2006 for a review and WHO's Global Strategy on Diet, Physical Activity and Health See http://www.who.int/dietphysicalactivity/factsheet_olderadults/en/index.html), performing moderate physical activity can also be seen as an indication of maintaining the necessary balance and mobility to allow people to remain active in their communities and able to function independently.</p> <p>The EQLS 2012 survey contains a question on the frequency of physical activity:</p>	<p>Percentage of people aged 55 years and older undertaking physical activity (indicating at least one)</p> <p>Do you practice one of the followings disciplines?</p> <ul style="list-style-type: none"> • Aerobics, • Running, Nordic walking, • Gym • Cycling • Skiing • Swimming

	<p>Take part in sports or physical exercise / How frequently do you do each of the following?</p> <ol style="list-style-type: none"> 1. Every day or almost every day 2. At least once a week 3. One to three times a month 4. Less often <p>Those replying "Every day or almost every day" to the above question have been considered as being physically active for the purpose of this indicator.</p>	<ul style="list-style-type: none"> • Football or other team games • Yoga • Martial arts
3.2.	<p>Percentage of people aged 55 years and older who report no unmet need for medical and dental examination or treatment during the last 12 months preceding the survey.</p> <p>The indicator aims to capture the importance of enablement through access to health care. For older people to lead an active, healthy and independent life and to be able to actively participate in society it is essential that they can easily access health care services. This is especially important to older age groups as they are more likely to have a need of medical services.</p> <p>The indicator refers to respondents who say that there was no occasion when the person really needed medical or dental examination or treatment but was not able to receive it.</p>	As original
3.3.	<p>Percentage of people aged 75 years and older who live in a single household alone or in a couple household.</p> <p>The indicator aims to capture decisional autonomy regarding one's own life in old age.</p>	As original
3.4.	<p>The relative median income ratio is defined as the ratio of the median equivalised disposable income of people aged 65 and above to the median equivalised disposable income of those aged below 65.</p> <p>Independent and autonomous living also incorporates the concept of financial security which is captured by three indicators. The relative median income ratio is one of these. Comparing the median income of the elderly with the rest of the population the indicator aims to measure the adequacy of retirement incomes for older people to maintain their living standard after retirement and to ensure financial security in old age. The indicator becomes particularly important for estimating relative poverty, because the distribution of economic resources (i.e. pension systems can play an important role in addressing poverty amongst the elderly) may have a direct bearing on the extent and depth of poverty.</p>	As original

	<p>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 less than 14. The resulting figure is called equivalised disposable income and is attributed to each member of the household.</p>	
3.5.	<p>Percentage of people aged 65 years and older 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% of the national median equivalised disposable income after social transfers).</p> <p>The indicator is one of the three indicators that aim to measure financial security. Low income is known to have a significant impact on people's health and well-being for it may limit access to basic goods and services, and the possibility to live independently.</p> <p>Poverty risk using the 50% poverty threshold is assumed to capture the extreme poverty risk for older people. Initially, the 40% poverty threshold was used, but it captured a very small share of population in many countries, and there have also been income mis-measurement issues.</p> <p>See notes for indicator 3.4</p>	As original
3.6.	<p>Percentage of people aged 65 years and older 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:</p> <ol style="list-style-type: none"> 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; 	As original

	<p>9. a telephone.</p> <p>It is one of the three indicators that aim to measure financial security. The indicator shows the proportion of individuals and households who cannot afford certain goods considered by most people to be necessary. It measures exclusion by directly capturing people's actual standard of living in the country where they live. Moreover, whereas indicators based on current income (i.e. at-risk-of-poverty rate) are affected by transitory shocks, indicators on material deprivation can compensate for such limitations because they tend to be more stable over time and reflect the underlying circumstances of individuals and households.</p> <p>Data on the material items mentioned above is collected using a direct question at the household level.</p>	
3.7.	<p>Percentage of people aged 55 years and older who are feeling very safe or safe to walk after dark in their local area.</p> <p>The objective is to assess whether the responding older person feels safe in his/her local area. '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'</p> <p>1 very safe 2 safe 3 unsafe 4 very unsafe</p>	<p>Percentage of people aged 55 years and older satisfied with the safety in the place of living</p> <p>To what degree are you satisfied with safety level in the place of living?</p> <p>1. Very satisfied, 2. Satisfied, 3. Quite satisfied, 4. Quite dissatisfied, 5. Not satisfied, 6. Not satisfied at all.</p>
3.8.	<p>Percentage of people aged 55 to 74 who stated that they received education or training in the four weeks preceding the survey.</p> <p>The indicator measures all education or training, not only those which are work-related. Therefore, it captures the way individuals acquire key competences in the shape of knowledge, skills and attitudes, which are fundamental for each individual in a knowledge-based society. These competences provide added value for the labour market, social cohesion and active citizenship by offering flexibility and adaptability, satisfaction and motivation.</p> <p>Did you attend any courses, seminars, conferences or received private lessons or instructions within or outside the regular education system within the last 4 weeks</p> <p>1 Yes 2 No</p>	<p>As original</p>

Table. A.4. Detailed description of all indicators used in calculations of AAI. Domain 4

	Original indicator	Proposal of indicator/question
4.1.	<p>RLE at 55 divided by 50 to calculate the proportion of life expectancy achievement in the target of 105 years of life expectancy To capture the life expectancy aspect in determining the capacity for active ageing across EU countries.</p>	Estimation
4.2.	<p>Healthy Life Years (HLY) a measure of disability-free life expectancy that combines information on quality and quantity of life. HLY measures the remaining number of years spent free of activity limitation. Capture the proportion of years spent in good health in the remaining life expectancy at 55 as an indicator of the capacity for active ageing.</p>	Estimation
4.3.	<p>To capture mental well-being of older population aged 55+, so to complement the measure of physical health captured via the healthy life expectancy measure, with the help of an index that measures self-reported feelings of positive happy moods and spirits. Q45a: I have felt cheerful and in good spirits Q45b: I have felt calm and relaxed Q45c: I have felt active and vigorous Q45d: I woke up feeling fresh and rested Q45e: My daily life has been filled with things that interest me</p> <p>Response categories are:</p> <ol style="list-style-type: none"> 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 <p>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 quality of life. As recommended by WHO, the Major Depression (ICD-</p>	<p>Share of persons in age 55+ who declared „0“ in at least 5 out of 7 statements</p> <p>Read the four statements in each point carefully and then choose one that describes best your feelings and beliefs during the last month.</p> <p>N. 0. I think that I do not look worse that I used to. 1. I am worried because I think I look old and I am not attractive. 2. I feel that I look worse than I used to. 3. I am sure that I look terrible.</p> <p>O. 0. I have as much energy as ever to work. 1. I have less energy than I used to have. 2. I don't have enough energy to do anything. 3. I don't have enough energy to do anything.</p> <p>P. 0. I have not experienced any change in my sleeping pattern. 1. I do not sleep</p>

	<p>10) Inventory is defined if the raw score is below 13 (see http://www.who-5.org/ for more details).</p>	<p>as well as I used to. 2. In the morning I wake up 1-2 hours earlier and find it difficult to fall asleep again. 3. I wake up several hours too early and I can't get back to sleep.</p> <p>Q: 0. I am no more tired or fatigued than usual. 1. I get tired or fatigued more easily than usual. 2. I am too tired or fatigued to do a lot of things I used to do. 3. I am too tired or fatigued to do most of the things I used to do.</p> <p>R. 0. I have not experienced any change in my appetite. 1. My appetite is somewhat less than usual. 2. My appetite is much less than before. 3. I have no appetite at all.</p> <p>T. 0. I am not worried about my health any more than I used to be. 1. I am worried about such ailments as: stomach pains, upset stomach, or constipation. 3. My health condition is so worrying that I cannot think of anything else.</p>
4.4.	<p>Share of people aged 55-74 using the Internet at least once a week.</p> <p>This indicator aims to measure the degree to which older people's environments enable them to connect with others with the help of information and communication technologies, thus reflecting one aspect of their capacity for active ageing.</p> <p>(Specific response category selected for this indicator in bold)</p> <p>'How often on average have you used Internet in the last 3 months?' (tick one)</p> <ul style="list-style-type: none"> • Every day or almost every day • At least once a week (but not every day) • At least once a month (but not every week) 	<p>Share of people aged 55-75 using the Internet at least one hour a week</p> <p>Do you use Internet?</p> <ol style="list-style-type: none"> 1. Yes, 2. No <p>(For people answering "yes")</p> <p>How many hours a week do you use Internet? Specify number of hours.</p>

	<ul style="list-style-type: none"> • Less than once a month <p>The question refers to Internet use at least once a week (i.e. every day or almost every day or at least once a week but not every day) on average within the last 3 months before the survey. Use includes all locations and methods of access and any purpose (private or work/business related). [Indicator name: <i>i_iuse</i>]</p>	
4.5.	<p>The indicator measures the share of people aged 55 or more that meet socially with friends, relatives or colleagues several times a week or every day. "Meet socially" implies meet by choice, rather than for reasons of either work or pure duty. The indicator measures contacts outside the household.</p> <p>Social contacts are a key element of an active and fulfilling life, and also vital to human health, both mentally and physically. The specific measure focuses on social meetings by choice, thus duty or work related meetings are excluded.</p> <p>(Specific response category selected for this indicator in bold)</p> <p>'How often socially meet with friends, relatives or colleagues?'</p> <p>Answers: 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.</p>	<p>Percentage of population aged 55 years and over participating frequently in social meetings</p> <p>A) How many persons would you count as your friends?</p> <ul style="list-style-type: none"> • number of friends <p>B) How many times did you participate in social event in the last month?</p> <ul style="list-style-type: none"> • number of times <p>C) With how many persons have you had personal and social regular contact (at least few times a month)</p> <ul style="list-style-type: none"> • number of persons from the family • number of friends • number of acquaintances
4.6.	<p>Percentage of older persons aged 55-74 with upper secondary or tertiary educational attainment.</p> <p>The indicator measures relatively high levels of education, but it is not restricted to tertiary education only, given the generally lower prevalence of tertiary education among the older people. Relatively high educational attainment reflects the acquisition of key competences in the shape of knowledge, skills and attitudes. These competences provide added value for social cohesion and active citizenship by offering flexibility and adaptability, satisfaction and motivation.</p> <p>(Specific response category selected for this indicator in bold)</p> <p>Highest ISCED level attained?</p> <p>Answers: 0 pre-primary, 1 primary, 2 lower secondary, 3 (upper) secondary, 4 post-secondary non tertiary, 5 tertiary</p>	<p>As original however for subgroups of education it will be not relevant</p>