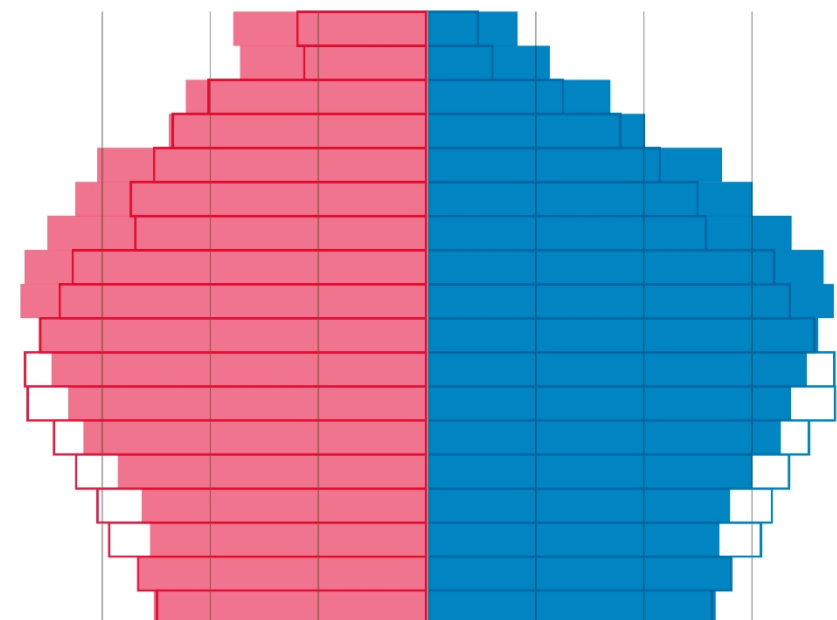

Demographic outlook for the European Union



IN-DEPTH ANALYSIS

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Lead author: David Eatock
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This paper, produced in cooperation between the Members' Research Service of the European Parliamentary Research Service (EPRS) and Globalstat, attached to the European University Institute (EUI), is the first in an annual series, intended to highlight and explain major demographic trends as they affect the European Union.

The paper has been compiled under the lead authorship of David Eatock. The other contributors were Caterina Francesca Guidi, Veronika Kunz, Vasileios Margaras, Nicole Scholz, Gaby Umbach and Ionel Zamfir. The graphics have been produced by Samy Chahri.

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eprs@ep.europa.eu

<http://www.eprs.ep.parl.union.eu> (intranet)

<http://www.europarl.europa.eu/thinktank> (internet)

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EXECUTIVE SUMMARY

Demography matters. The economy, labour market, healthcare, pensions, the environment, intergenerational fairness and election results – they are all driven by demography. The European Union (EU) has seen its population grow substantially – by around a quarter in the five and a half decades since 1960 – and it currently stands at over 500 million people. But the world population has grown faster, more than doubling over the same timeframe and reaching around 7.3 billion today. And whilst the EU population is now growing only slowly and is even expected to decline in the longer term, the world population continues to grow strongly. Indeed, it is projected to pass 10 billion in 2055. And despite world population growth being expected to slow, nonetheless it is forecast to reach 11 billion people in 2100. So, the EU represents an ever-shrinking proportion of the world population, at just 6.9 % today (down from 13.5 % in 1960), and is projected to fall further to just 4.1 % by the end of this century.

In common with many other developed (and developing) parts of the world, the EU population is also ageing, as life expectancy increases and fertility rates are lower than in the past. At the EU level, both men and women have seen their average life expectancy increase by over 10 years between the early 1960s and today, although women continue to live longer than men on average. Meanwhile, the numbers of children being born has fallen from an average in the EU-28 of around 2.5 children per woman in 1960 to a little under 1.6 today. This is far below the 2.1 births per woman considered necessary in developed countries to maintain the population in the long term in the absence of migration. Indeed migration has become increasingly important to expanding or maintaining the EU population. In both 2015 and 2016, the natural population change (live births minus deaths) was slightly negative, and net inward migration was therefore key to the population growth seen in those years.

Combined, these trends result in a dramatically ageing EU-28, whose working population (aged 15 to 64) shrank for the first time in 2010 and is expected to decline every year to 2060. In contrast, the proportion of people aged 80 or over in the EU-28 population is expected to more than double by 2050, reaching 11.4 %. In 2006 there were four people of working age (15-64) for each person aged 65 or over – by 2050 this ratio is projected to be just two people. This outlook is essentially set in the shorter term at least, meaning the focus is on smoothing and adapting to older populations.

Whilst the starting point, speed and scale of ageing varies between the Member States, depending on their different fertility rates, life expectancy and migration levels, all will see further ageing in the coming years. Free movement, as well as external migration, will also play a role, in both the population size and age profile of countries, and regions within them. The 'in-focus' section of this analysis looks at health, and notes that the data, whilst inconsistent, suggest that people are not necessarily experiencing extra life years from increasing life expectancy without limitations on their activity.

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Glossary and list of main acronyms used

Demographic dividend: A demographic dividend appears when after a period of demographic growth, the fertility rate substantially declines, thereby ensuring that the number of children is lower than the number of working age adults. This, coupled with a small number of older people, leads to a low dependency rate, which can be particularly beneficial for economic development.

G20: The Group of Twenty (G20) brings together the world's major advanced and emerging economies, comprising the European Union (EU) and 19 country members.

Healthy life years: According to [Eurostat](#), the number of years that a person is expected to continue to live in a healthy condition and free from disability. Also called disability-free life expectancy.

Life expectancy: According to [Eurostat](#), **life expectancy at a certain age** is the mean additional number of years that a person of that age can expect to live, if subjected throughout the rest of his or her life to the current mortality conditions (age-specific probabilities of dying, i.e. the death rates observed for the current period).

Migrants: People arriving or returning from abroad to take up residence in a country for a certain period, having previously been resident elsewhere. The term **EU-citizen** is based on the notion of **citizenship** that is defined as the particular legal bond between an individual and her or his state, acquired by birth or naturalisation, either by declaration, choice, marriage or other means under national legislation. **Third country national** is defined as any person who is not a citizen of the European Union, including stateless persons – see Article 2.1 (i) of the Council Regulation (EC) No 862/2007 ([Eurostat](#)).

Multi-morbidity: the presence of [two or more chronic medical conditions](#) in an individual.

Natural replacement rate: the average number of live births needed per woman to keep the population size constant over the long run in the absence of migration. According to [Eurostat](#) 'a [total fertility rate](#) of around 2.1 live births per woman is considered to be the replacement level in developed countries'.

Prevalence: the [total number of individuals](#) in a population who have a disease or health condition at a specific period of time, usually expressed as a percentage of the population.

Total age-dependency ratio: According to [Eurostat](#), total age-dependency ratio 'relates the number of individuals who are likely to be 'dependent' on the support of others for their daily living – the young and the elderly – to the number of those individuals who are capable of providing this support'. It therefore compares the sum of those aged 0-14 years old and those aged 65 or over on the one hand with the number of those aged 15-64 considered to be of working age. The total age-dependency ratio is the sum of the two ratios, the **young-age-dependency ratio** and the **old-age-dependency ratio** which, respectively, compare (i) the number of those aged 0-14 to the number of those 15-64 and (ii) the number of those aged 65 and over to the number of those aged 15-64.

Total fertility rate: [Eurostat](#) defines the [total fertility rate](#) as the mean number of children who would be born to a woman during her lifetime, if she were to spend her childbearing years conforming to the age-specific fertility rates that have been measured in a given year.

UNDESA: United Nations Department of Economic and Social Affairs.

Youth bulge: is defined by a large share of the population comprised of children and young adults ([World Bank](#)).

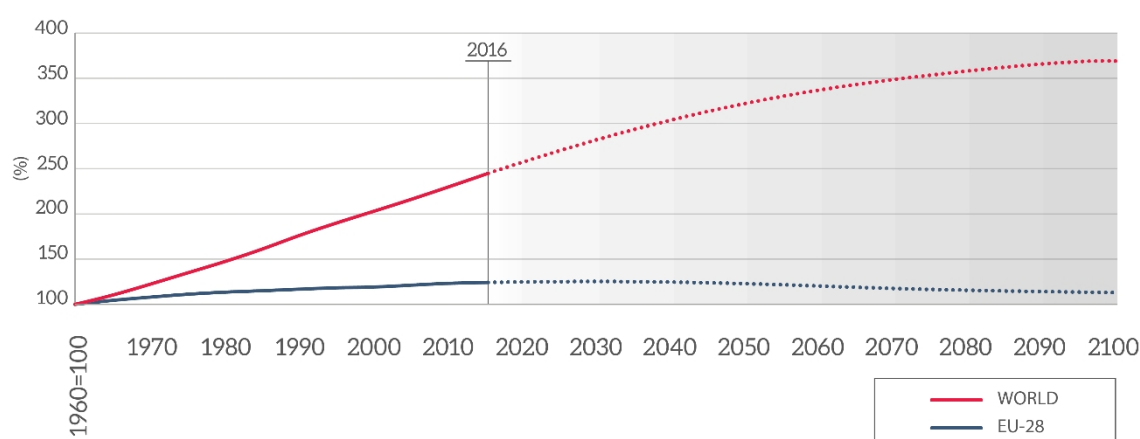
1. Introduction

The demographic structure of the European Union (EU) and its development are of huge consequence for the EU and its citizens in a host of areas, including: healthcare; pensions; the labour market; the economy; the environment; intergenerational fairness; election results; and the EU's very place in the world. So demography and how it is changing matters – indeed, 'demography is destiny'.¹

1.1. Historical population growth in EU-28 now levelling off

The population of the European Union (EU-28) has grown from 406.7 million in 1960 to 511.8 million in 2017. Yet there were only 5.1 million live births in 2016 compared to the 7.6 million in 1961. With 4.1 million deaths in 1961, the natural population increase at that time was 3.5 million people. In contrast, the (just over) 5.1 million deaths in 2016 meant there was a slight decline in the natural population for that year.² Eurostat's baseline projections suggest that the EU-28 population will grow more slowly than in the past, peaking at 528.5 million in 2050 before declining to 518.8 million by 2080.

Figure 1 – EU-28 and world population (1960=100)



Source: GlobalStat based on UNDESA data.

Note: Projections (2016 onwards, shown with dotted line) use the UN 'medium fertility variant' scenario.³

At the same time the world population has risen much more dramatically, from a little over 3 billion in 1960 to 7.3 billion in 2015, and is projected to rise further still, passing 10 billion in 2055 to over 11 billion in 2100 (see Figure 1). Therefore, even when it was growing strongly, the EU-28 population comprised an ever-shrinking proportion of the world population, down from 13.5 % in 1960 to 6.9 % in 2015 – and it is projected to be

¹ The quote is often attributed to the French philosopher [A. Comte](#) (1798-1857), although [some](#) suggest it was coined much more recently.

² Figures from [Eurostat \[demo_gind\]](#). [Natural population change](#) is the difference between the number of live births and deaths during a given time period (usually one year), which can be either positive or negative.

³ The medium fertility variant scenario assumes that fertility in each country will converge towards replacement level ([Population Analysis for Policies & Programmes](#)). The results presented above for future years are based on the medium fertility variant projections of the 2017 Revision of the United Nations World Population Prospects, according to which global fertility is projected to fall from just over 2.5 births per woman in 2010-2015 to around 2.2 in 2045-2050 and 2.0 in 2095-2100 (for further information see [Word Population Prospects: 2017 Revision, UNDESA, 2017](#)).

smaller still at just 4.9 % in 2055 and 4.1 % in 2100⁴ (see section 2.3 for more on EU in the world).

1.2. Dramatic and continuing ageing of the EU population

Within the EU population, the age profile has undergone massive change and is expected to evolve still further. In short, Europe is ageing dramatically, driven by significant increases in life expectancy and lower birth rates:

- The median age in the EU-28 has risen from 38.3 years in 2001 to 42.6 in 2016;⁵ a 4.3 year increase in just 15 years.
- In 2004, there were, for the first time ever, as many elderly people (age 65+) as children (0-14) in the EU-28.⁶
- The proportion of people aged 80 or over in the EU-28 population is expected to more than double by 2050 (from 5.4 % of the population in 2016 to 11.4 % in 2050).⁷
- The EU-28 working population (defined as those aged 15 to 64) shrank for the first time in 2010 and is expected to decline every year to 2060.⁸

1.3. Focus on adapting to ageing demographics

Policies to alter future demographics are limited and insofar as they are effective they take time to have an impact. For instance, policies which seek to encourage people to have, or have more, children through better support for families, or which encourage young people from third countries with sought-after skills to migrate to the EU. The demographic outlook is essentially set, at least in the short to medium-term, therefore, over this period the focus will be about adapting and smoothing the transition to an older EU.

2. Current situation

2.1. An ageing EU population

Figure 2 shows the population pyramid for 2001 and 2016, giving the distribution of the population of women and men across various age groups. Such figures get their name from the classic shape these often take, with longer bars at the bottom (representing large numbers of people in the younger age groups) and shorter bars at the top (the older age groups, containing fewer people). However in 2001 the shape of the EU-28 population is far from the classic pyramid. In 2016 it is further away still, with the top parts of the 'pyramid' being broader, due in part to people living longer on average than previously⁹ (see section 2.2.1 'Increasing life expectancy'). The lower parts of the 'pyramid' are also narrower due to people having fewer children than in the past,

⁴ Note for the EU-28 UNDESA figures are: 409.1m (1960) 507.5m (2015) 497.7m (2055) 462.0m (2100).

⁵ Source Eurostat [population structure and ageing](#).

⁶ Eurostat '[Being young in Europe today - demographic trends](#)', March 2015.

⁷ Source [Eurostat](#).

⁸ According to page 43 of '[Demography Report 2015](#)' Directorate-General for Employment, Social Affairs and Inclusion (DG EMPL), European Commission.

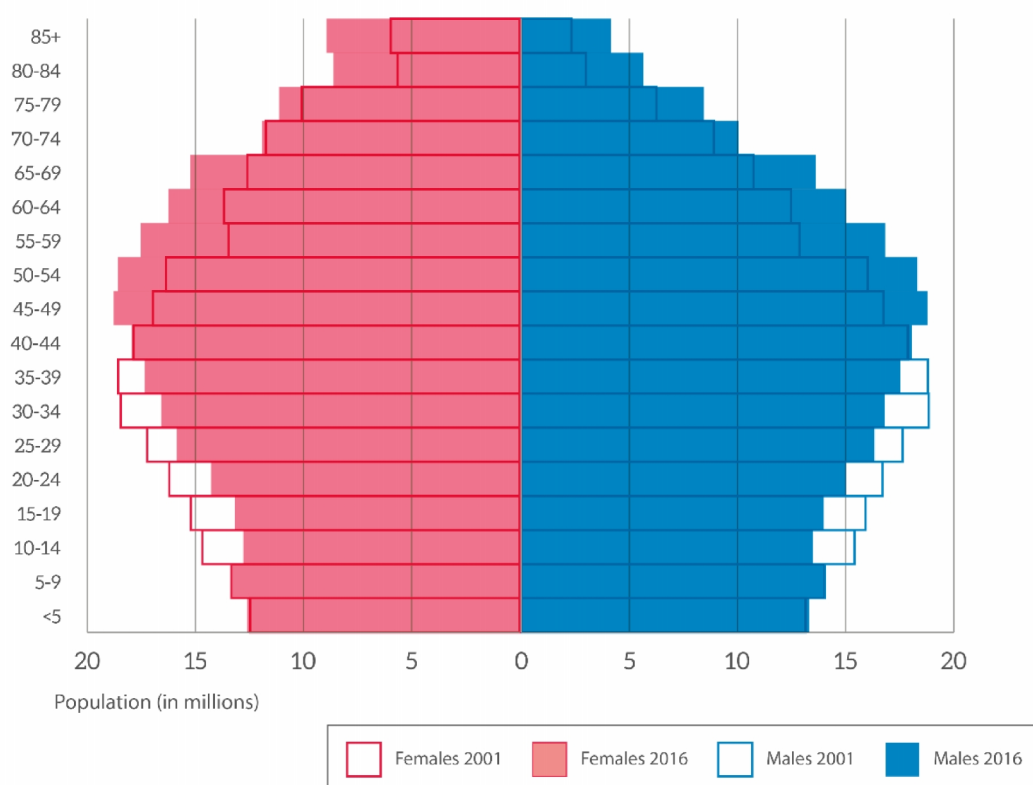
⁹ Note the very top bar on the pyramid also represents the only open-ended age group, covering all those aged 85 and over, whereas all the other bars represent age groups covering fixed five year spans.

including total fertility rates falling below the natural replacement rate. However, the similar size of the bottom two age bands show this has stabilised in recent years (see section 2.2.2 'low fertility rates').

The impact of higher past fertility rates is also clearly seen in the figure, in the bulge caused by the so-called 'baby-boomer' generation. The baby-boomer cohort stems from high fertility rates in a number of EU countries in the years following the Second World War. Subsequent declines in fertility rates meant fewer children joining the bottom of the pyramid after the baby-boomer cohort, hence the boomer cohort formed a population bulge that moved up the 'pyramid' as they aged. As this outsized cohort have now reached, or are reaching, retirement age, they have expanded the numbers in the older age groups, skewing the age structure of the EU population towards an older Europe.¹⁰

Another notable feature of the older age groups is that women are more prevalent in these groups, reflecting their greater longevity (on average) than men. Although this gender disparity in life expectancy has narrowed somewhat, it is currently expected to continue with the EU-28 average life expectancy at birth in 2015 estimated at 83.3 years for women but only 77.9 for men.¹¹

Figure 2 – Population pyramids EU-28, 2001 and 2016 (numbers of women and men by age tranches)



Source: GlobalStat based on Eurostat data.

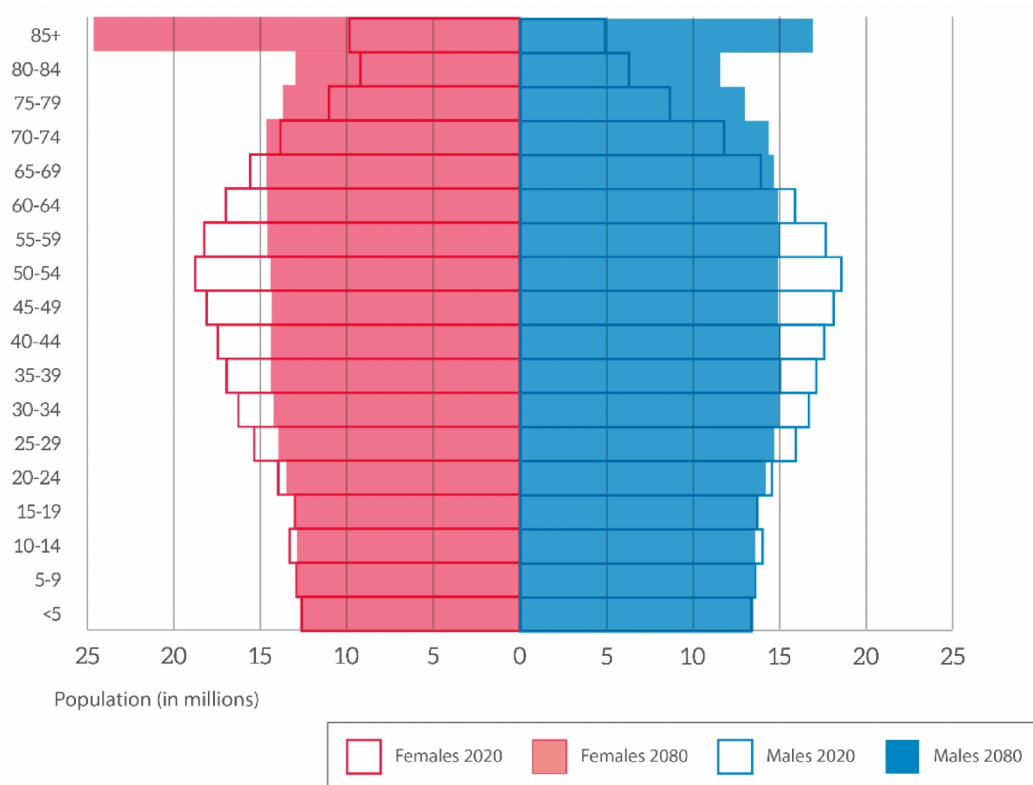
Looking at projections of the future age structure in the EU in 2020 and 2080 (see Figure 3), we can see that the shape is expected to change further as the baby-

¹⁰ Whilst there is no agreed definition of 'baby-boomer', it typically refers to those born in the final years of the Second World War, up until around the mid-1960s, a period which saw high birth rates in many EU and other western countries. More information: '[The greying of the baby boomers](#)', Eurostat, 2011.

¹¹ Eurostat [life expectancy by age and sex](#) [demo_mlexpec].

boomer bulge leaves the picture. Together with longer lifespans enlarging the proportion of the population in the older age group, a more rectangular shape associated with a stagnating or slow growing population takes hold. The open-ended nature of the oldest age group of 85 years and over (rather than the fixed five year spans of all the others) accounts for the fact this age group is the most numerous.

Figure 3 – Population pyramids, EU-28, 2020 and 2080 (numbers of women and men by age tranches)



Source: GlobalStat based on Eurostat data.

An important measure of the age structure of a population is the total age-dependency ratio (see glossary). In 2001 the total dependency ratio for the EU-28 was 48.9 %, meaning there were around two people of working age (15-64) for every younger or older person likely to be dependent on them (i.e. aged 0-14 or 65 and over). Breaking this down, the old-age dependency ratio (those 65 and over compared to those 15-64) was 23.5 %, so there were more than four people aged 15-64 for each person aged 65 or over. The young-age dependency ratio (those aged 0-14 compared to those 15-64) was 25.2 %, meaning there were four people of working age for each person aged 0-14.¹²

In 2016, the total dependency ratio for the EU-28 had increased to 53.2 %. Breaking this down, the old-age dependency ratio was now 29.3 %, meaning between three and four people of working age (15-64) for each person aged 65 or over. Rather more precisely, this represents around seven working age people for every two people aged 65 or over. The young-age dependency ratio was 23.9 %, meaning more than four people of working age for each person aged 0-14.¹³ Not only was there a growing proportion of people likely to be dependent on the working age population overall, but this was therefore skewed towards those aged 65 plus, rather than children aged 0-14, who would at least in the future form part of the working age population potentially supporting others.

¹² [Eurostat \[demo_pjanind\]](#).

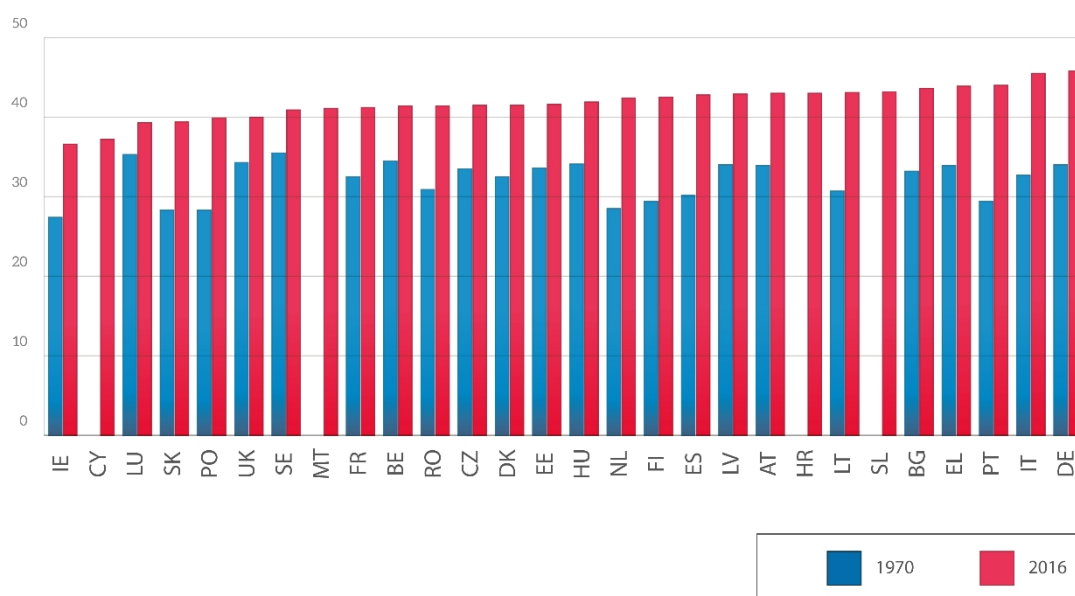
¹³ [Eurostat \[demo_pjanind\]](#).

Projections suggest that the worsening of the total age-dependency ratio will accelerate dramatically, with the ratio reaching 63.5 % as soon as 2030. It will continue to increase rapidly reaching 76.5 % in 2050 before increasing more slowly, nudging 80 % (projection 79.7 %) in 2080.¹⁴ At these levels, there would only be around five people of working age (15-64) for every four people older or younger than this age band. This shift has serious implications across a range of areas, including the economy, labour market, healthcare and pensions.

Once again, the main driver for changes in the total age-dependency ratio is the old-age dependency ratio, which is projected to reach 39.1 % in 2030 and 50.3 % in 2050.¹⁵ That means by 2050 there will then be just two people of working age (15-64) for every person aged 65 or over, a dramatic shift from the situation in 2001 when there were over four working age people for each person aged 65 or over. In contrast the young-age dependency ratio is projected to increase relatively slowly, to 24.4 % in 2030, 26.2 % in 2050 and 27.4 % in 2080.

These EU-28 level figures tell a clear story on aggregate and this broad message of population ageing also holds across all 28 Member States taken individually, without exception. However, differences exist in terms of degree and timing.

Figure 4 – Median age of the population (years) in EU 28 Member States in 1970 and 2016



Source GlobalStat based on Eurostat data. [demo_pjanind].

Notes: (1) France in 1970 is for metropolitan France. (2) East and West Germany presented the same data in 1970. (3) Data for 1970 is not available for Cyprus, Malta, Croatia and Slovenia.

Figure 4 shows the median age of the population in each of the EU-28 Member States in 1970 (where data is available) and 2016. This shows the rather different starting points in 1970, ranging from Ireland with a median age of just 27.4 years to the comparatively old 35.5 year median age in Sweden. By 2016, the median age of the population has increased in all the Member States. Ireland's population remains the youngest in the EU-28, at 36.6 years, despite having aged substantially. However, Sweden's population

¹⁴ [Eurostat \[proj_15ndbims\]](#).

¹⁵ [Eurostat](#).

now has the seventh lowest median age at 40.9 years, having experienced the second smallest increase (of 5.4 years) in median age of the EU-28 in the intervening years. The German population, at 45.8 years, now has the highest median age having seen a substantial increase in the median age of its population of 11.8 years since 1970. However, six Member States¹⁶ (of those with data available for both years) saw even bigger increases than Germany, albeit from a lower base. These variations in ageing between Member States will continue in the future. According to Eurostat projections, from 2018, Italy will have the highest median age at 46.3 years and will go on to be the first Member State to reach a median age of 50, in 2029.¹⁷ Greece is expected to take over from the early 2030s, reaching a median age of 52.7 years in 2040, then falling back to 52.3 years in 2050 (whilst maintaining the highest median age in the EU). These past and (projected) future differences are the product of the varying starting points and evolutions of fertility rates, life expectancy and migration in the Member States (see section 2.2).

2.2. Drivers of population change

Population change is driven by changes in how long people live (life expectancy), birth-rates (fertility rates) and the movement of people within and between regions and countries (free movement and migration). These factors are briefly discussed below, along with the regional dimensions of population change.

2.2.1. Increasing life expectancy

In the last decades, life expectancy has increased continuously in most developed countries, including in the EU, due to a number of reasons.¹⁸ Whether this trend will continue concerns not only individual citizens, but also governments, given the impacts across a range of public policy areas.

Life expectancy

Life expectancy at birth is the average number of years a new-born is expected to live, under the assumption that prevailing patterns of mortality stay the same throughout her or his life.

Any other age may be used to calculate the life expectancy from that point on, using current conditions. That age plus the remaining life expectancy then equals the total expected life span.

See Figures 5 and 6 for the change in female and male life expectancy from 1960 onwards.

Eurostat data for the EU-28 is currently available from 2002 to 2015¹⁹ for the commonly used indicator 'life expectancy at birth'. Figures show an initial slowing of the growth rate followed by a slight fall in life expectancy in 2015. While this decline is small – less than the change from 2013 to 2014 for the EU-28 – it is a variation in the pattern and only future observation will show if it is a new trend or merely a 'glitch'. Scientific studies available at present have not yet taken into account the data from 2015. A widely-cited

¹⁶ Portugal (14.6 years), The Netherlands (13.9 years), Finland (13.1 years), Italy (12.8 years), Spain (12.6 years) and Lithuania (12.4 years).

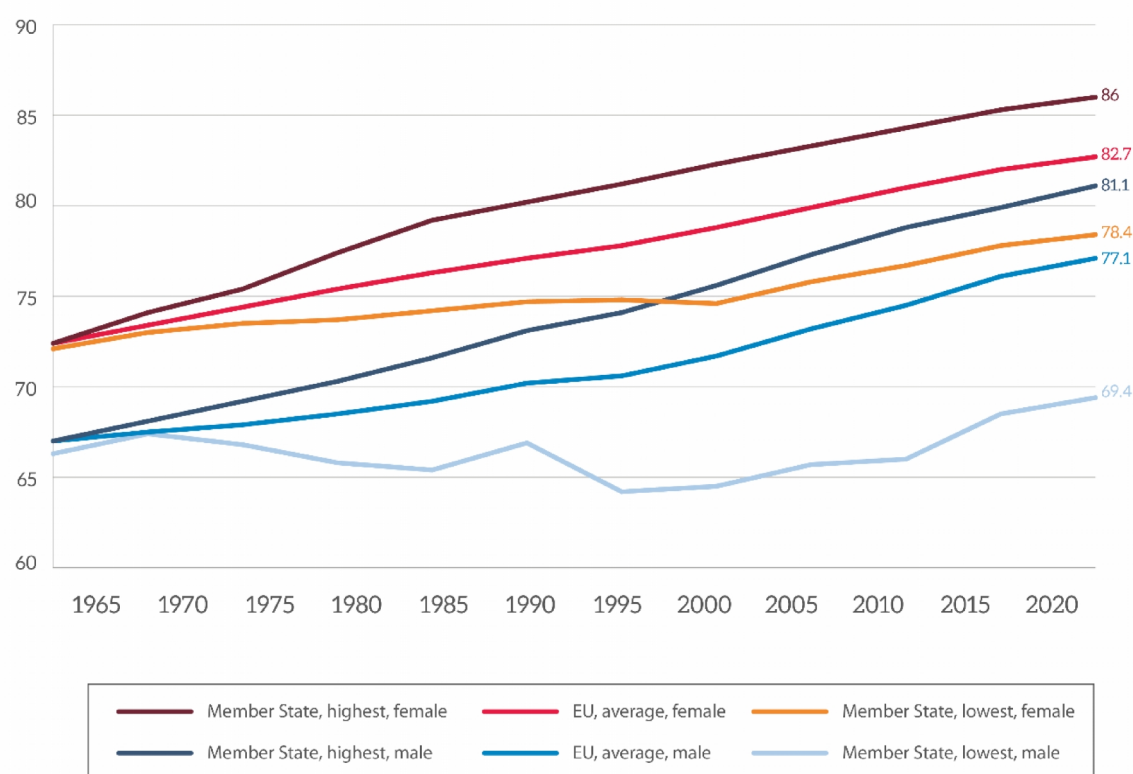
¹⁷ [Eurostat \[proj_15ndbims\]](#). More discussion on Member States' histories of ageing and future developments using various metrics (and noting the need to treat projections with caution) is available here: '[The greying of the baby boomers](#)', G. Lanzieri, Eurostat, 2011.

¹⁸ These gains in life expectancy can be attributed to a number of factors, including improved education, socio-economic conditions and lifestyle, as well as progress in health care. OECD/European Union, [Health at a Glance: Europe 2016](#), 2016, p. 56.

¹⁹ Eurostat, Life expectancy by age and sex, [\[demo-mlexpec\]](#).

article²⁰ from 2017 (not including the 2015 data) suggests that average life expectancy will continue to rise. While current debates involve the recent change in the statistical data with the slight fall in life expectancy in 2015, it is yet to be determined whether life expectancy will revert to increasing (indefinitely, or at least to a certain age at present only reached by few people). Only future data can prove if a new trend indeed exists.

Figure 5 – Average female and male life expectancy at birth



Source: GlobalStat based on UNDESA data (from 2015 onwards: the 'medium fertility variant' scenario).

Taking a look further back, with data from UNDESA's World Population Prospects 2017,²¹ life expectancy has risen rather dramatically (see Figure 5). On average for the EU-28, women's life expectancy at birth increased from 72.4 years (1960-65 period) to 82.7 years (2015-2020 period) – an increase of 10.3 years. The equivalent figures for men are 67.0 years and 77.1 years – an increase of 10.1 years.

As briefly mentioned in section 2.1, women have a greater life expectancy than men. This gap is a worldwide phenomenon,²² indicating that gender specific characteristics, biological as well as behavioural, social and life circumstances, have an influence. Life expectancy also varies significantly between EU Member States today. Women born in the 1960-1965 period started out with approximately 72 years of life expectancy in all EU Member States. But for the 2015-2020 period there is up to 7.6 years difference between Member States' life expectancy averages for women. Figure 5 shows a similar

²⁰ V. Kontis et al., [Future life expectancy in 35 industrialised countries](#), *The Lancet*, vol. 389, 2017, pp. 1323-1335.

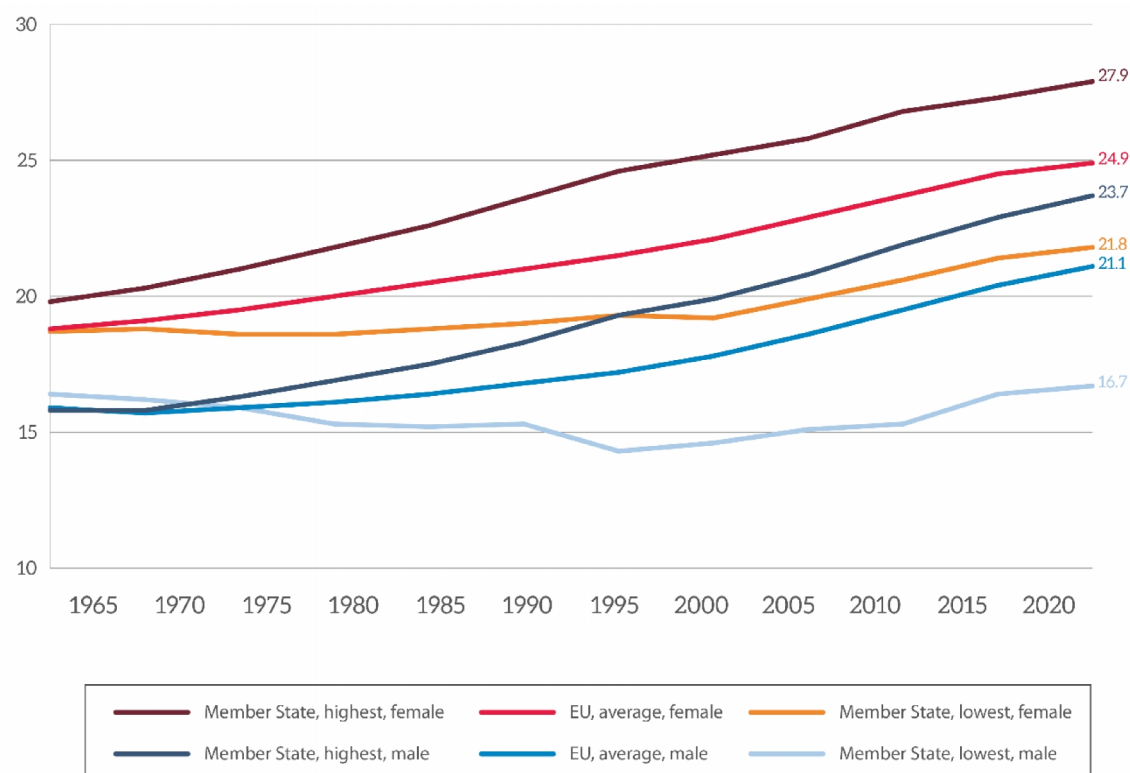
²¹ The 2017 Revision of [World Population Prospects](#) is the 25th round of official United Nations population estimates and projections that have been prepared by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat.

²² [Gender, aging and longevity in humans: an update of an intriguing/neglected scenario paving the way to a gender-specific medicine](#), R. Ostan et al., *Clinical Science*, 130(19), 2016, pp. 1711-1725.

if even more distinct scenario for men, with a difference of 11.7 years for the 2015-2020 period.

There is also a growing focus on life expectancy for later age brackets. A reason for this is the increase²³ in the proportion and absolute number of older people in the population and the impact of this increase on society and economies. People aged 60 or over made up²⁴ 25.3 % of the population of the EU-28 on 1 January 2016.

Figure 6 – Average female and male life expectancy at age 60 (years)



Source: GlobalStat based on UNDESA data (from 2015 onwards: the 'medium fertility variant' scenario).

Life expectancy at age 60 years has also risen rather dramatically (see Figure 6). On average for the EU-28, women's life expectancy at age 60 increased from 18.8 years (1960-1965 period) to 24.9 years (2015-2020 period) – an increase of 6.1 years. The equivalent figures for men are 15.9 years and 21.1 years – an increase of 5.2 years.

Therefore, as with life expectancy at birth, women do better than men regarding life expectancy at age 60. Once again, life expectancy also varies significantly between EU Member States today, with the 2015-2020 period showing a 6.1 year difference between the highest and lowest Member State averages of life expectancy for women. Figure 6 shows a similar scenario for men, with a difference of 7 years for the same 2015-2020 period.

It is possible to tie variations in life expectancy to levels of education,²⁵ income and occupation.²⁶ For example, life expectancy by educational attainment is one of the

²³ United Nations, [World Population Ageing 2015 Report](#), 2015.

²⁴ Eurostat, [Population structure and ageing](#), [demo_pjanind].

²⁵ W. C. Sanderson, S. Scherbov, [A New Perspective on Patterns of Aging in Europe by Education and Gender](#), *Journal of Population Ageing*, vol. 9, iss. 3, September 2016, pp. 207-225.

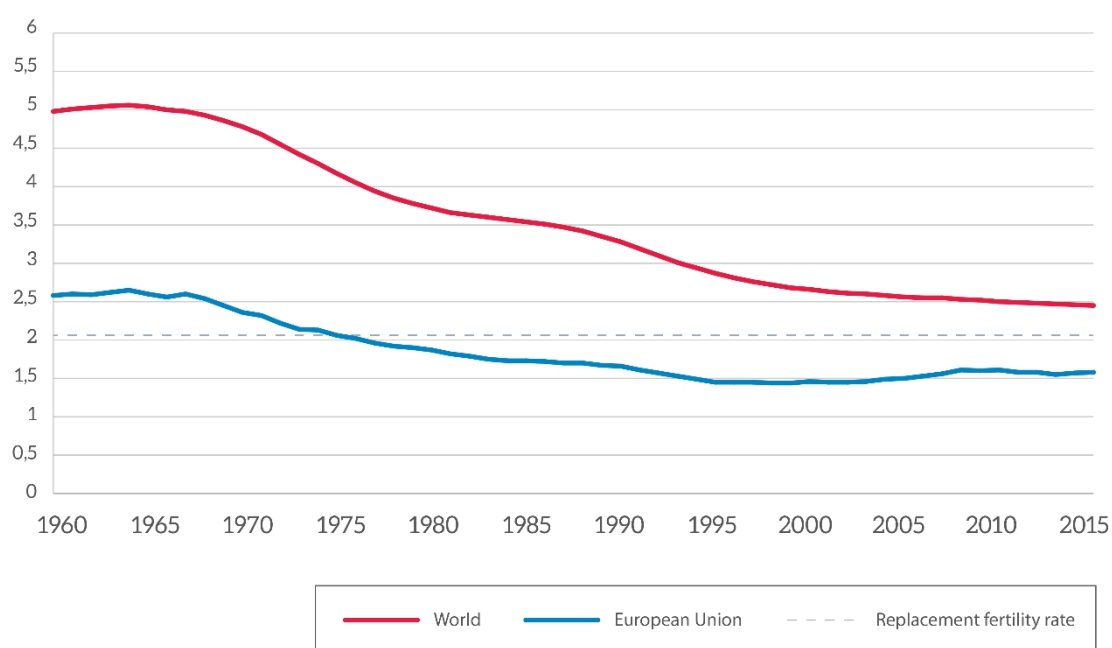
²⁶ Evidence shows that higher socio-economic groups live longer than those in lower socio-economic groupsOECD, *OECD Business and Finance Outlook 2016*, 2016, p. 177.

European Core Health Indicators (ECHI). Causes for change in life expectancy at older age can be considered broadly in six categories²⁷ of diseases. Among other factors, developments in medicine and healthcare have an impact on the prevalence of these health issues. However, living longer does not necessarily mean living in good health. For more insight on healthy life expectancy, see section 3 'Focus on Health'.

2.2.2. Low fertility rates

Fertility rates have declined in the EU-28 since the mid-1960s (see Figure 7). The EU-28 as a whole had a total fertility rate above 2.1 live births per woman until the mid-1970s, falling below this level in 1975. Rates continued to decline further, bottoming out at around 1.45 in the mid-1990s. They then maintained this low level (even falling to 1.44 in 1998 and 1999) until the early 2000s saw a modest recovery, reaching 1.50 in 2005 before climbing to 1.61 in 2010. Subsequently total fertility rates for the EU-28 have fallen back slightly, dipping to 1.55 in 2013, and they currently stand at 1.58 (in 2015). Total fertility rates in the world as a whole have also been on a generally declining trend, albeit from a much higher starting point of around 5 live births per women in 1960. They fell below 4 in 1977 and to under 3 by 1994 and currently (2015) stand at 2.45. See section 2.3 for more on the EU situation in comparison to other parts of the world.

Figure 7 – Total fertility rate (births per woman)



Source: GlobalStat based on Word Bank World Development Indicators data.²⁸

In terms of number of live births, during the period 1961–2016 the highest annual total in the EU-28 was recorded in 1964, at 7.8 million. By contrast, in 2016 there were just 5.1 million live births – less than two thirds of the 1964 peak – despite the EU-28 population having grown in the meantime by around one quarter, to 511.8 million

²⁷ Communicable diseases and nutritional deficiencies, cancers, cardiovascular diseases and diabetes mellitus, chronic respiratory diseases, other non-communicable diseases, and injuries. C.D. Mather et al., [Causes of international increases in older age life expectancy](#), *The Lancet*, vol. 385, 2015, pp. 540-548.

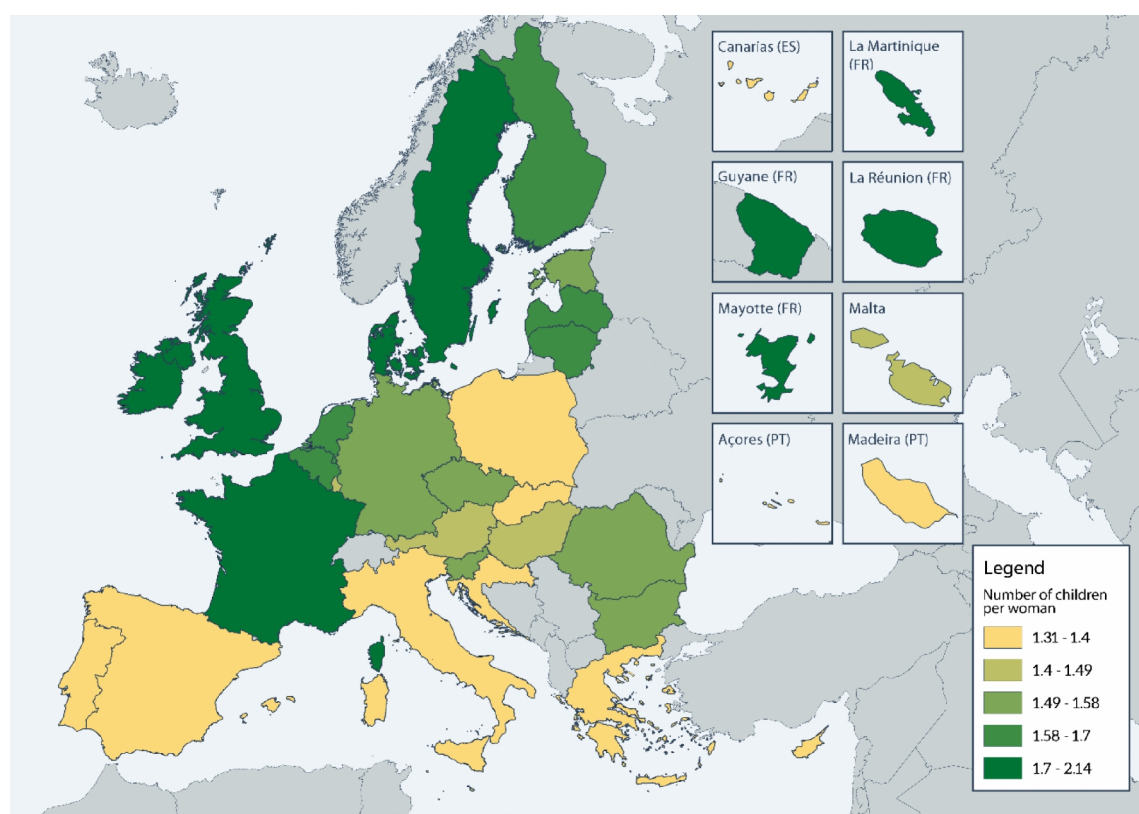
²⁸ 1) United Nations Population Division. World Population Prospects, (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) US Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.

people.²⁹ With deaths in the EU-28 in 2016 slightly over 5.1 million, this meant a reduction in the natural population of the EU-28 that year for only the second time since the data series began in 1961.³⁰ However, whilst the gap between births and deaths has been substantial in the past, it has been reducing and narrowed considerably by the mid-1990s. Since then, the gap has remained narrow, barring a period in the mid to late-2000s where increasing live births, peaking in 2008, widened the gap somewhat before falling back.

With falling numbers of children being born in the EU-28, the relative importance of migration in increasing or maintaining the EU-28 population has grown (see section 2.2.4 on migration). Migration can also have second order effects, at least for a period, by raising the total fertility rate where, for a variety of reasons, migrants may display fertility rates higher than the native population.³¹ Numbers of new-borns may also be boosted by the migrant population being disproportionately of child-bearing age compared to the native population as a whole, thereby adding to the stock of potential parents.

Lower fertility rates compared to past periods not only mean slower (or no) population growth, but also affect the age profile of the EU-28 (see section 2.1). Together with increasing life expectancy (see section 2.2.1) these past falls in fertility rates drive the dramatic ageing of the EU population.

Map 1 – Total fertility rates in EU-28 Member States in 2015



Data source: [Eurostat](#).

Looking below the EU-28 level (see Map 1) we see considerable variation in fertility rates. France (at 1.96) had the highest total fertility rate in 2015, whilst Portugal had the lowest

²⁹ All figures from [Eurostat \[demo_gind\]](#), population total (estimated, provisional) as at 1 January 2017.

³⁰ The other year seeing a reduction in the natural population was 2015.

³¹ For instance page 45 of the '[Eurostat regional yearbook 2017 edition](#)' notes that '...several of these regions [those with the highest fertility rates] were characterised by relatively high levels of migrants'.

(at 1.31). Other Member States with relatively high fertility rates included Ireland (1.92), Sweden (1.85) and the United Kingdom (1.80). At the other end of the scale, with Portugal, were Poland and Cyprus (both 1.32), Greece and Spain (both 1.33), and Italy (1.35).³² Fertility rates are falling worldwide and are associated with growing economic and social development. However, research suggests that once a certain level of development is achieved, fertility rates may stabilise or recover to some extent. The interactions between policies to support families and diverging fertility rates do not suggest clear solutions, although a common characteristic among countries with stable or even increasing birth rates is a high degree of female labour force participation.³³

2.2.3. Demographic implications at the EU regional and local level

Demographic trends affect EU regions in a variety of ways and hence there is no 'one size fits all' description of demographic developments. Nevertheless, a few basic demographic generalisations can be made.

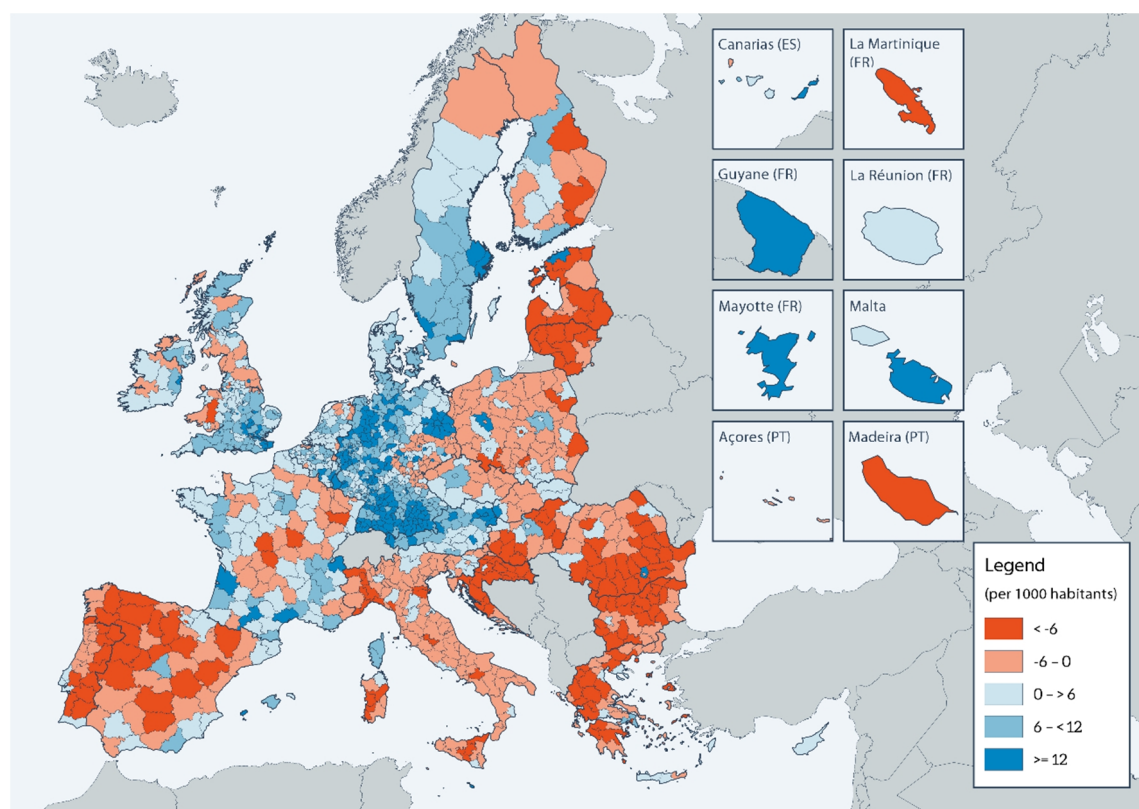
Population decline can be observed across parts of Eastern Europe – the Baltic States, Bulgaria, Romania, Eastern Germany, Portugal, Greece, Spain, Italy, Croatia and the central regions of France. However, recent immigration trends stemming from non-EU countries have altered the demographic balance in various EU regions. Map 2 presents the crude rate of total population change in 2015. The blue coloured areas show the EU NUTS level 3 regions³⁴ where the population grew, whereas the red areas show those where populations declined.³⁵

³² [Eurostat \[demo_frate\]](#).

³³ ['Mission Not Accomplished'](#), Population Europe, 2011; ['Policies for families: is there a best practice?'](#) Population Europe, 2016.

³⁴ [NUTS](#) is the Nomenclature of territorial units for statistics, a geographical nomenclature subdividing the economic territory of the European Union (EU) into regions at three different levels (NUTS 1, 2 and 3 respectively, moving from larger to smaller territorial units).

³⁵ [Eurostat Regional Yearbook 2017](#), European Commission, pp.32-49.

Map 2 – Crude rate of total population change in NUTS 3 regions 2015

Data source: [Eurostat Regional Yearbook](#), 2017, p. 40.

Important demographic contrasts can be observed between the core and periphery, both in the EU and also within EU Member States. In the EU, considerable population growth has been recorded in Western Ireland, the south of the United Kingdom, Belgium, the Netherlands, Austria and in metropolitan centres, such as Paris and London. Parts of Western Germany also seem to benefit from population growth, as do Northern Italy, and the southern part of Scandinavia.

Overall, trends show that there is an increasing concentration of population in certain urban areas (especially capital cities) vis-à-vis depopulation phenomena in rural, mountainous, sparsely populated areas, while certain coastal areas have also seen a population increase. Towns and cities in EU regions lagging behind economically also tend to lose population. Peripheral and rural areas, as well as post-industrial urban and mountain areas, are more at risk of depopulation.³⁶

Regions which lose population tend to be rural, already sparsely populated and remote. However, declining industrial areas and various peripheral towns are also affected by depopulation trends. However, rural regions which are close to dynamic urban centres, areas within commuting distance or which enjoy good transport connections with them can experience good population development. Regions with high unemployment often have declining and ageing populations. Highly skilled professionals are often attracted to regions of considerable economic growth. Therefore, people tend to move wherever there are jobs, career opportunities and favourable economic prospects. For instance, within Europe, movements of young educated professionals from Southern Europe to North Western Europe have been recorded since the beginning of the economic crisis.

³⁶ ['How can regional and cohesion policies tackle demographic challenges?'](#), Directorate-General for Internal Policies, European Parliament, 2013.

The preferred destinations of immigration from outside the EU are also the wealthiest European regions.³⁷

In recent years more than three quarters of the total population increase in the EU resulted from net inward migration.³⁸ The latest statistics suggest that the same trend continues even more strongly. This immigration trend is, however, uneven and directed to certain EU Member States. For instance, in 2015, the fastest expanding populations were often concentrated in Germany or Austria, while there was also relatively high population growth in the south-eastern corner of the United Kingdom, the southern regions of the Nordic Member States, as well as several regions in Belgium, France and Luxembourg.³⁹ Nevertheless, immigrants may only temporarily ease the problem of ageing in particular regions, as in the long-term they will gradually become older themselves.

The 'attractiveness' of a particular region matters when it comes to maintaining and attracting population. This relates not only to job prospects and growth, but also to wider 'quality of life' factors. For instance, various parts of the Mediterranean, such as coastal towns, have been successful in increasing their share of population although they did not initially constitute poles of economic growth. Regions which may offer good job prospects are appealing to young professionals and therefore have a high degree of 'attractiveness'.⁴⁰

Population trends may cause a number of issues. For instance, overconcentration of population in certain urban areas has already led to undesirable side-effects: congestion, rising housing/transport prices, pollution, deterioration of quality of life, urban sprawl, or exclusion of less well-off people and families from the city centres. On the other hand, certain EU areas that suffer from depopulation may encounter problems such as a stagnating economy, lack of professional opportunities and increasing poverty. In addition, certain of these areas may face issues of inadequate health coverage, as public health provisions tend to decline and private health service practitioners find operations in these areas unprofitable.⁴¹

Other less predictable factors, such as natural disasters and climate change, may have a considerable impact on the population of EU regions.⁴²

2.2.4. Migration

Migration to the EU from third countries and free movement within the EU play a central role in shaping the demographics of the European Union and the individual Member States. Ever since the 2004 and 2007 enlargement rounds, EU citizen movement has increased, in particular from east to west, reducing the population of some Member States, while increasing that of others. According to Eurostat, 35.1 million people born outside the EU-28 were living in an EU Member State on 1 January 2016, while 19.3 million persons were born in a different EU Member State to that in which they

³⁷ [The Spatial Effects of Demographic Trends and Migration](#), ESPON, 2002.

³⁸ How can regional and cohesion policies tackle demographic challenges, op.cit., p. 21.

³⁹ Eurostat Regional Yearbook 2017, p. 39.

⁴⁰ [The impact of demographic change on European regions](#), Committee of the Regions, p. 22.

⁴¹ For further analysis see: V. Margaras, [Sparsely populated and underpopulated areas](#), EPRS, European Parliament, 2016.

⁴² [Increasing risk over time of weather-related hazards to the European population: a data-driven prognostic study](#), G. Forzieri, A. Cescatti, F. Batista e Silva, L. Feyen, *The Lancet*, Vol 1, no 5, pp. 200-208, August 2017.

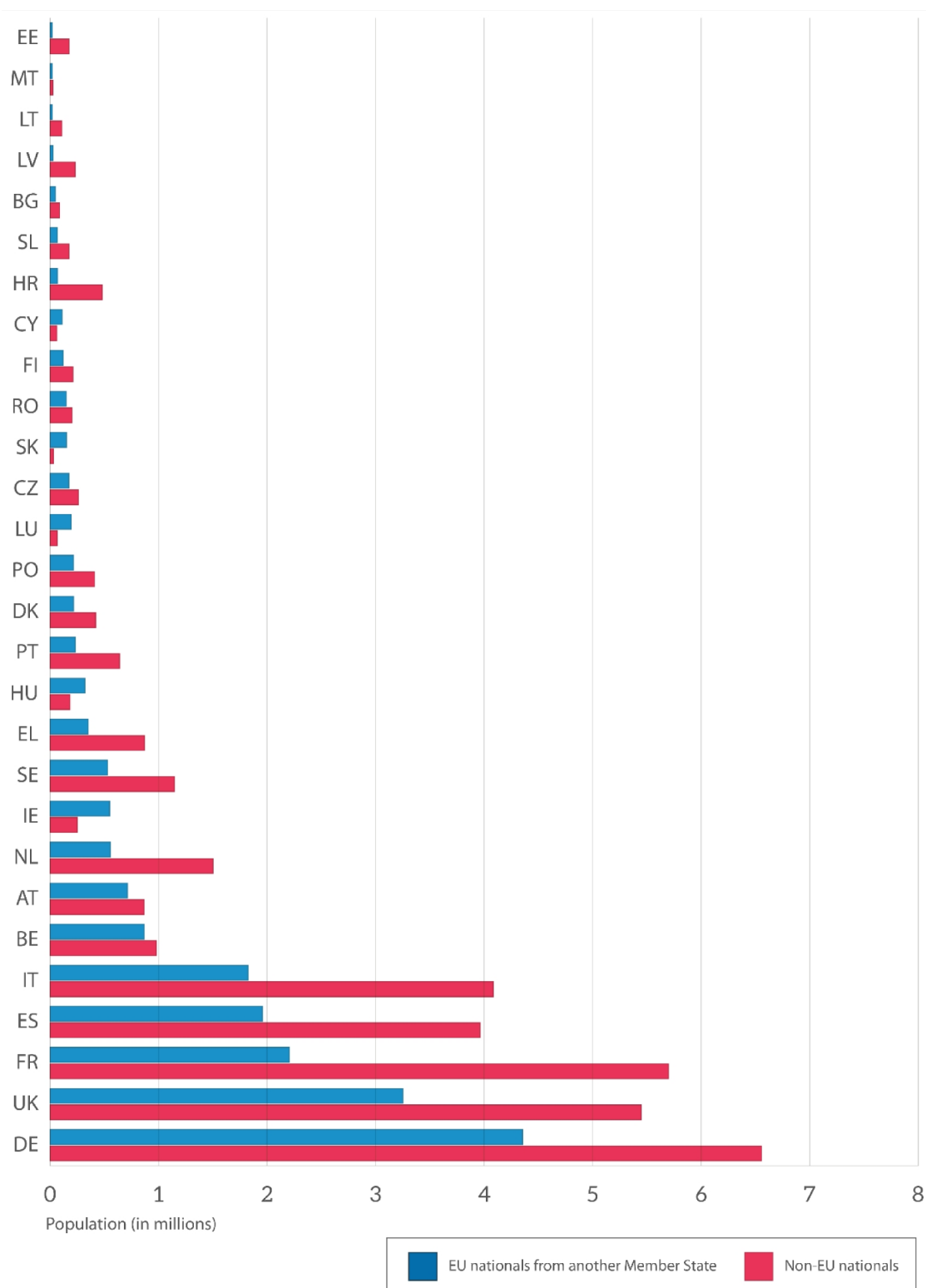
were resident. These 54.4 million people residing outside their country of birth accounted for 10.7 % of the total EU population of 510.3 million people on 1 January 2016. In 2016, the stock of foreign population within the EU was unevenly distributed among Member States, especially for third country nationals (see Figure 8).⁴³

The above figures clearly show that, in addition to free movement-based internal flows, Europe has received large numbers of immigrants from outside Europe for many decades. Indeed each year, the EU receives significant numbers of regular workers, family members and students: in the three year period from 2014 to 2016 alone, 2 million first residency permits were issued on average per year to third country nationals. Moreover, migration flows from outside the EU also consist of large numbers of people fleeing war and violence: in the same triennium from 2014 to 2016, 1.5 million irregular migrants, many of whom were in need of international protection, entered the EU via Italy and Greece through the Mediterranean route, subsequently requesting asylum in other northern and western EU Member States. This inflow of particularly vulnerable people, often relying on smugglers and traffickers to reach their European destinations, was unprecedented in volume. Admission numbers nevertheless vary between EU Member States, with an EU average of about 2 599 applicants per million inhabitants.⁴⁴

⁴³ See '[Building a People's Europe](#)', European University Institute, May 2017; '[Migration and migrant population statistics](#)', Eurostat, September 2017.

⁴⁴ See '[The integration of migrants and refugees: An EUI Forum on migration, citizenship and demography](#)', European University Institute, January 2017; '[Residence permits statistics](#)', referring to the period from 1 January 2014 to 31 December 2016, Eurostat, September 2017; UNHCR [Mediterranean Situation](#), September 2017; Infographic '[Recent migration flows to the EU](#)', EPRS, European February 2017.

Figure 8 – Foreign population (other EU Member State nationals and non-EU nationals) residing in each Member State in 2016



Source: GlobalStat based on Eurostat data [migr_pop3ctb].

As noted in section 2.1, decreasing birth rates and rising life expectancy are leading to the dramatic ageing of the EU population. The European labour force (aged 20-64) is expected to decline by 8.2 % (or by around 19 million people) between 2023 and 2060. This shrinking working age population has to sustain pension and health care services for a rapidly growing number of pensioners. Moreover, a predominantly older workforce

might translate into a deficit of new skills required for innovation alongside serious labour shortages and great difficulties in sustaining European welfare states.⁴⁵

Migration, therefore, can contribute to the mitigation of the important demographic challenges the EU faces. Neighbouring regions to the south will rank among the areas with the lowest average age. The scenario of an ageing Europe and a youth bulge in the Middle East and North Africa seems to have some potential for beneficial cooperation across the Mediterranean. The recent wave of migrants and refugees consists primarily of younger working-age people and can therefore help ease the effects of the ageing population. However, the European economy is expected to generate employment for skilled workers and see a decline in low-skilled categories of employment, whilst immigrants may not necessarily have the skills profile that the knowledge economy will need. Such factors, combined with the sheer scale of the ageing challenge the EU faces, make it clear that increasing immigration *per se* cannot fully compensate for the effects of ageing societies.⁴⁶

Clearly, the initial impact of asylum seekers and refugees, in particular that of highly-skilled people, on the labour force depends on the official recognition of asylum-seekers as refugees, and the length of the application process. These factors vary considerably by country of origin, country of destination – the Member State in the EU case – and over time.

Refugee employment rates lag behind those of labour migrants and, in some Member States, of family migrants – not to mention natives. In 2014, in 12 European countries an average 55 % of working age (15-64 years) beneficiaries of international protection were in employment, compared to 58 % of family migrants, 73 % of labour migrants and 83 % of those who entered these countries thanks to internal employer sponsorship; while the general employment rate in the EU was 64.9 %.⁴⁷ More broadly, comparing non-EU nationals and EU nationals, over the past eight years, non-EU nationals systematically recorded lower activity rates than EU nationals. As recently reported, the gap increased from 3 percentage points (pp) in 2008 to 8 pp in 2015 compared with EU nationals and from 6 pp in 2008 to 12 pp in 2015 compared with EU nationals from other Member States. In 2016, the employment rate in the EU reached 71.1 %.⁴⁸

2.3. EU in the world

As noted in the introduction, while the EU faces demographic decline and ageing, the world's population continues to grow (see section 1.1 and Figure 1). How does the EU stand demographically, in relation with its main economic competitors – the non-EU G20 countries? What can the EU learn from other ageing societies? How will global demographic growth impact the EU?

⁴⁵ See ['The 2015 Ageing Report'](#), European Commission, 2015; ['Building a People's Europe'](#), European University Institute, May 2017.

⁴⁶ See E. Noonan, ['Migration and the EU: A long-term perspective'](#), EPRS, European Parliament, May 2016; ['Building a People's Europe'](#), European University Institute, May 2017.

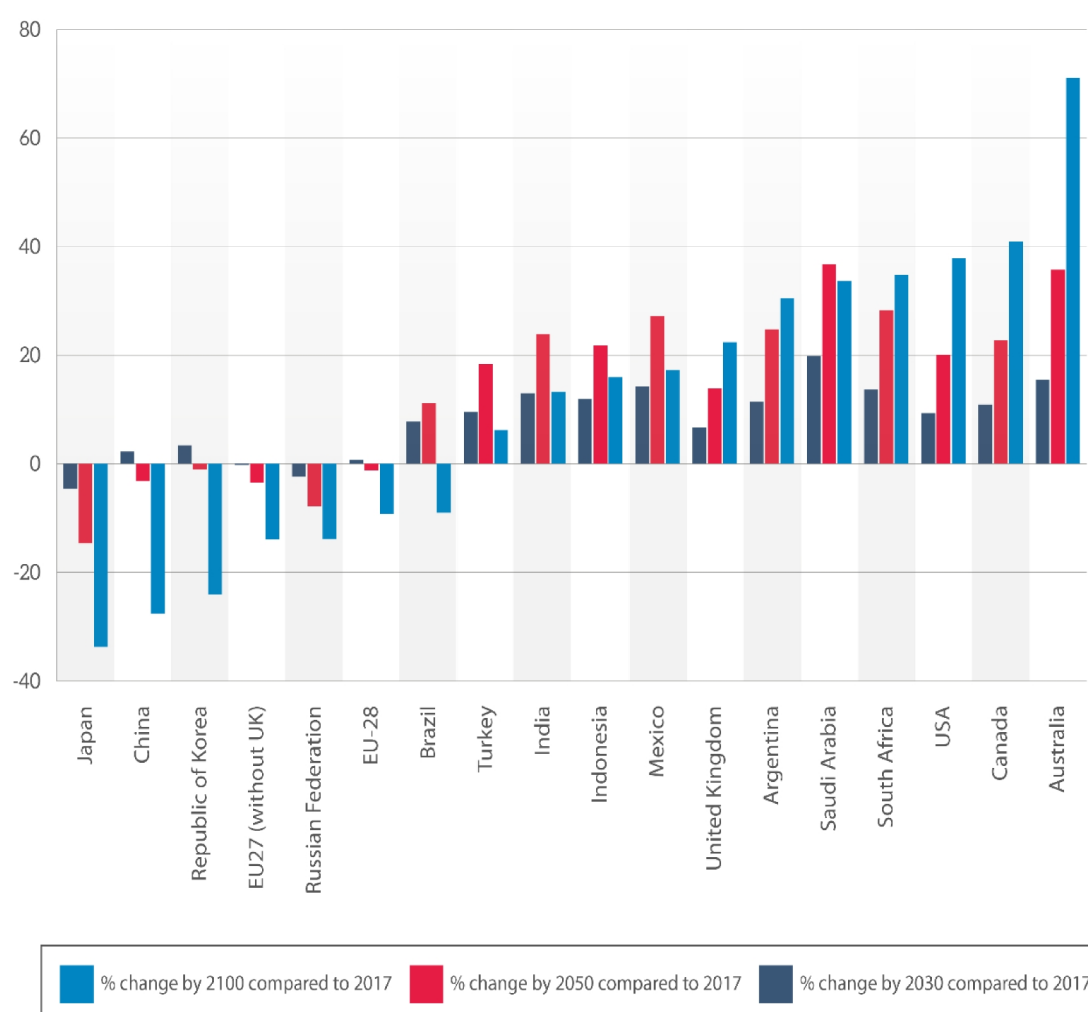
⁴⁷ The 12 European countries examined are Austria, Belgium, Finland, France, Germany, Italy, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom, see ['Migrant integration 2017 Edition'](#), Eurostat, October 2017.

⁴⁸ See ['How will the refugee surge affect the European economy?'](#), Organization for Economic Development and Cooperation, Migration Policy Debates, November 2015; M.V. Desiderio, ['Integrating Refugees into Host Country Labor Markets: Challenges and Policy Options'](#), Migration Policy Institute, Washington DC, October 2016; ['Migrant integration 2017 Edition'](#), Eurostat, October 2017; [Europe 2020 indicators – employment](#).

2.3.1. Demographic evolution in the G20

The non-EU G20 countries provide an interesting reference point for comparison with the EU. An informal forum for international cooperation composed of 19 major economies, including the four biggest EU economies – respectively, Germany, the United Kingdom, France, and Italy – plus the European Union itself, the G20 currently produces around 85 % of the world's GDP and is home to two thirds of the world's population. According to the medium variant estimates of the UN Population Division in its most recent report,⁴⁹ the EU's population will slowly and continuously decline this century, in contrast to the majority of the non-EU G20 countries, whose population will grow (see Figure 9).

Figure 9 – EU and other G20 countries – demographic forecasts for the 21st century



Data source: UN Population Division, The 2017 Revision of World Population Prospects.

Comparing the EU with other 'advanced economies'⁵⁰ in the group, the EU belongs to the group with shrinking populations, albeit shrinking at a slower pace than Japan and South Korea.⁵¹ Among the non-EU G20 advanced economies (which, beyond some EU

⁴⁹ The demographic data in this section are based on the [2017 Revision of World Population Prospects](#), UN Population Division, June 2017.

⁵⁰ The term 'advanced economies' was coined by the [IMF](#).

⁵¹ Nevertheless, note that demographic forecasts for the three G20 countries expected to record the highest relative demographic growth, the USA, Canada and Australia, are based on the assumption that growth will be driven mainly by migration. This cannot be taken for granted in the current political context.

countries, include Australia, Canada, Japan, South Korea and the USA), Japan, the most intensely ageing society in the world, is expected to record the strongest population decline by the end of the century. Its working age population is already shrinking. The Japanese response to related challenges therefore deserves attention. Japan tries to use the opportunities an ageing population provides, for example by driving automation and robotics in a number of sectors or through retaining some older people longer in the work force, to substitute for a shrinking work force. The Japanese people are also enjoying the benefits of a shrinking population, such as greater housing availability. However, the challenges ageing brings are undeniable, and for the first time in history the country is considering opening up to migration, particularly in the health sector.

Looking at the emerging non-EU G20 countries, they are generally expected to see their populations grow further, with the notable exceptions of China and possibly Brazil. China stands in strong contrast to India, the other demographic giant of the group, and demographic trends do not bode well for China's economy.⁵² China's working age population is expected to start contracting by 2020. The recent termination of the one child policy failed to increase births to the level expected by the government. The UN predicts that India will overtake China in terms of population in 2024, and will continue growing demographically for some time, albeit slowly. Nevertheless, it is a matter of debate whether India will be able to exploit its 'demographic dividend' to drive its economic transformation. A skilled workforce is believed to be an essential prerequisite, and India has the largest illiterate population in the world.

2.3.2. Developing countries: between ageing populations and youth bulges

Many of the developing countries, particularly in Latin America and South-East Asia, will see their population get older and more or less stagnate or shrink – and this could happen before they become wealthy.⁵³ In the global comparison, however, one entire continent stands apart: Africa. Sub-Saharan Africa will be the demographic engine of the world in the 21st century. Sub-Saharan Africa's population is projected to more than double by 2050, from 1.02 billion in 2017 to 2.17 billion, and then to almost double again by the end of the century. One in four working age persons in the world could be African by 2050 – a chance for Africa to reap the demographic dividend for developing its economy. However, the right conditions have to be in place: African youth must be well-educated and highly-skilled, and enough jobs created, which is more difficult in the current age of declining manufacturing and increasing automation. Unemployed and marginalised young people may contribute to continued political instability, including terrorism.⁵⁴

On the whole, not only the EU, but the entire planet is ageing. Even in regions still experiencing high birth rates, the number of aged persons is rising rapidly. The number of those aged 65 or older is projected to grow from an estimated 612 million in 2015 to over 1.5 billion in 2050. Most of this increase will take place in developing countries. As this trend combines with lower fertility, most world regions will see their share of old people relative to their working populations increase sharply, which will lead to higher old-age dependency ratios. The EU is therefore not alone in this situation. However, very young societies, such

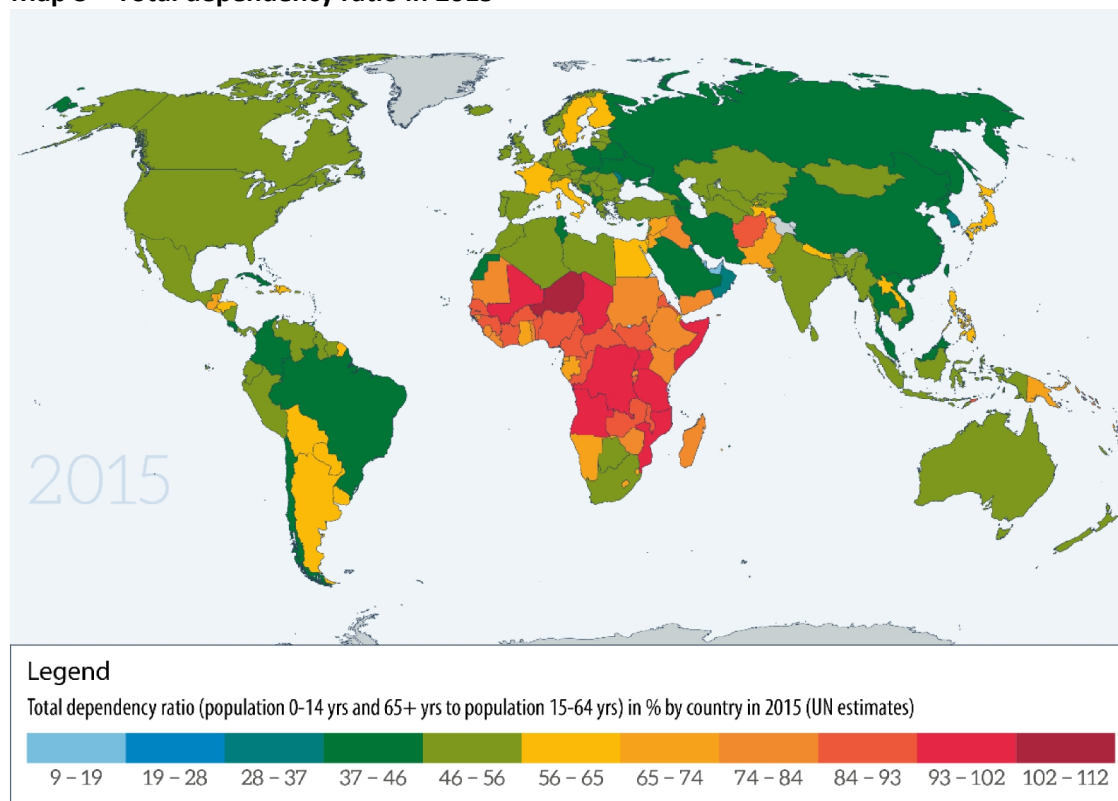
⁵² According to American Economist N. Eberstadt, quoted in [Why Demographic Trends Spell Trouble For China And Russia, Forbes, - And Prosperity For US](#), November 2015.

⁵³ See for example [Emerging Asia risks growing old before becoming rich](#), Y. N. Lee, CNBC, April 2017.

⁵⁴ On the issue of youth bulges and conflict, see for example [Population Action International, The Security demographic. Population and conflict after the Cold War](#) and H. Urdal, 'The Demographics of Political Violence: Youth Bulges, Insecurity and Conflict', in *Too Poor for Peace? Global Poverty, Conflict and Security in the 21st Century*, 2007.

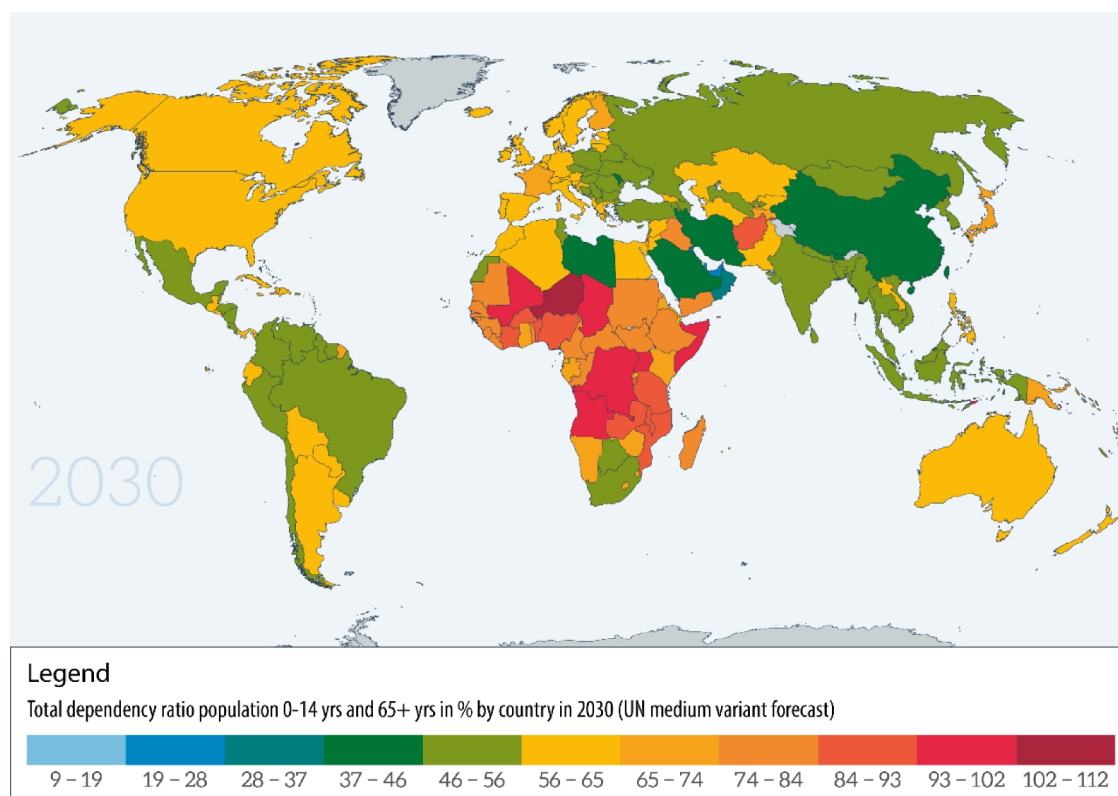
as those in Sub-Saharan Africa, also record, and will continue to do so, high young-age dependency ratios, as numerous children are to be supported by working adults (see Maps 3 and 4).

Map 3 – Total dependency ratio in 2015



Source: EPRS based on [UN World Population Prospects](#), June 2017.

Map 4 – Total dependency ratio in 2030



Source: EPRS based on [UN World Population Prospects](#), June 2017.

2.3.3. Ageing and health in the world

According to the World Health Organization,⁵⁵ the vast majority of older people and the most rapidly aging populations are already to be found in less developed countries. Such countries are experiencing a rapid increase in the number and percentage of older people, often within a single generation – a time span much shorter than it took developed countries to undergo the same transition. This does not necessarily entail an increase in the demand for, and utilisation of, health services by old people: 'evidence indicates there is a disconnect between health-care need and health-care utilisation'⁵⁶ in less developed countries. This is due to the cost of health-care visits and transportation, and sometimes also due to the prioritisation of the health needs of younger people, often by the old people themselves.

3. Focus on health

3.1. Is 70 the new 60?

3.1.1. Life expectancy and healthy life years

Europeans born today can expect to live long lives. In 2015, life expectancy at birth in the EU-28 stood at 83.3 years for women and 77.9 years for men. Between 2002 and 2015, it increased by 2.4 years and 3.4 years, respectively (see also section 2.2.1 'Increasing life expectancy'). However, whether these longer years are also lived in good health is a central and thorny question for policy-makers.⁵⁷ Indicators focus on the years of life spent in a healthy condition, free from the limitations of chronic and degenerative diseases, frailty, mental health problems, and physical disability. One such indicator is Healthy Life Years (HLY), calculated annually by Eurostat. The HLY is a composite indicator that combines (objective) data from mortality statistics and (subjective) data on activity limitation, assessed by means of health surveys. This may raise issues of reliability and comparability, a caveat that needs to be factored in when considering the data (see boxes).⁵⁸

Healthy Life Years (HLY) and Health-Adjusted Life Expectancy (HALE)

This analysis is primarily based on Eurostat health data and the HLY indicator, developed under the Lisbon Strategy (2000-2010). The HLY indicator measures the number of remaining years that a person of a specific age can expect to live without any moderate or severe health problems. The notion of 'health problem' reflects a disability dimension and is based on a question instrument that aims to assess the extent of an activity limitation of at least six months' duration due to a health problem that may have affected respondents as regards their usual activities. This is known as the Global Activity Limitation Instrument (GALI), used in the annual Eurostat survey Statistics on Income and Living Conditions (EU-SILC). The HLY is therefore also known as 'disability-free life expectancy' (DFLE).⁵⁹

⁵⁵ See [Global health and ageing](#), WHO, US National Institute of Aging, October 2011.

⁵⁶ [Word report on ageing and health](#), WHO, 2015.

⁵⁷ European Commission, [Health indicators](#).

⁵⁸ Comparing trends in HLY and life expectancy can show whether extra years of life are healthy years, whereby valid comparisons depend on the underlying health measure being reliable and comparable (OECD/EU, [Health at a Glance: Europe 2016](#), 2016, p. 56).

⁵⁹ See also Eurostat, [Healthy life years \(from 2004 onwards\)](#), reference metadata. For more on HLY methodology, see: European Community Health Indicators Monitoring (ECHIM), [Documentation sheet for indicator 40. Health Expectancy: Healthy Life Years \(HLY\)](#), 2011.

The World Health Organization (WHO) uses the Health-Adjusted Life Expectancy (HALE) indicator for calculating healthy life expectancy at birth. HALE is defined as the average number of years that a person can expect to live in 'full health' by taking into account years lived in less than full health due to disease and/or injury.⁶⁰

It has been pointed out that, since HALE and HLY calculations use different underlying data, assumptions and methodologies, their outcomes are different. Indeed, it would seem that HALE (WHO) data paint a rather more positive picture than HLY (Eurostat) data and do not vary to the same extent. By way of example, the 2015 **EU-28 average** for healthy life years in absolute value at birth (**HLY, Eurostat**) is **63.3 years for women and 62.6 years for men**, while healthy life expectancy at birth (**HALE, WHO**) is **72.3 years for women and 68.3 years for men**. A comparison suggests that, for women, HLY values range from 54.1 years in Latvia to 74.6 years in Malta, while HALE values range from 69.2 years in Bulgaria to 74.4 years in France. For men, HLY values range from 51.8 years in Latvia to 74 years in Sweden, while HALE values range from 62 years in Latvia to 71.8 years in Italy. (Eurostat values are depicted in Figures 10 and 11).

A Eurostat snapshot (2014) showed that, on average, 67 % of the population aged 16 and over in the EU-28 perceived their health to be very good or good. In comparison, 23 % rated it as fair and 10 % as bad or very bad. The negative perception of health increased with age, to peak among those aged 74-84 years. According to Eurostat, self-perceived health is related both to the existence or absence of health problems and to people's capacity to afford medical examination and treatment. In a previous analysis (2013), Eurostat came to the following findings: self-perceived health declined with age; men tended to report being in better health than women; people with higher income had better self-perceived health; people in education or training and full-time employees assessed their health most positively; the least educated had the worst self-perceived health; and those who were able to benefit from support from others reported better health.⁶¹ There appeared to be a strong connection between bad self-perceived health and low life satisfaction. On the other hand, self-perceived health and severe limitations in usual activities were not always correlated (in some Member States, only a small proportion of people reported long-standing limitations, while a large proportion of these countries' residents reported to be in bad or very bad health).

⁶⁰ See WHO, [Health Status Statistics: Mortality](#) and [Healthy life expectancy \(HALE\) at birth](#). For more on HALE methodology, see: WHO, [WHO methods for life expectancy and healthy life expectancy](#), 2014.

⁶¹ Eurostat, [Quality of life in Europe – facts and views – health](#).

Measuring health: objective data vs self-assessment

Measuring the health of a population is central to evidence-based public health policy. Population health can be measured using a number of indicators (i.e. data sets that allow for monitoring and comparison and can be useful for determining policy priorities), each with their strengths and weaknesses.⁶² Macro or population-level indicators provide a broad picture of health, such as life expectancy or mortality rate. While useful as tools for measuring differences in population health across countries, they may provide little indication on the underlying factors, such as socioeconomic characteristics (education, income level, etc.). Micro or individual-level indicators comprise two types of health measures. **Objective measures**, such as blood pressure and body mass index, are important from a clinical and health system perspective, but may be more expensive to collect and prone to measurement error. **Self-assessed measures**, such as self-perceived general health and self-reported limitations in daily activities, are broadly available, but may be influenced by differences in perception and other factors, including geographic location, gender, age and socioeconomic position. Cultural and individual expectations and definitions of health also play a role. Methodological challenges also exist in comparing measures across countries, such as differences in survey approach (e.g., wording of assessment questions and diverse cultural understandings).

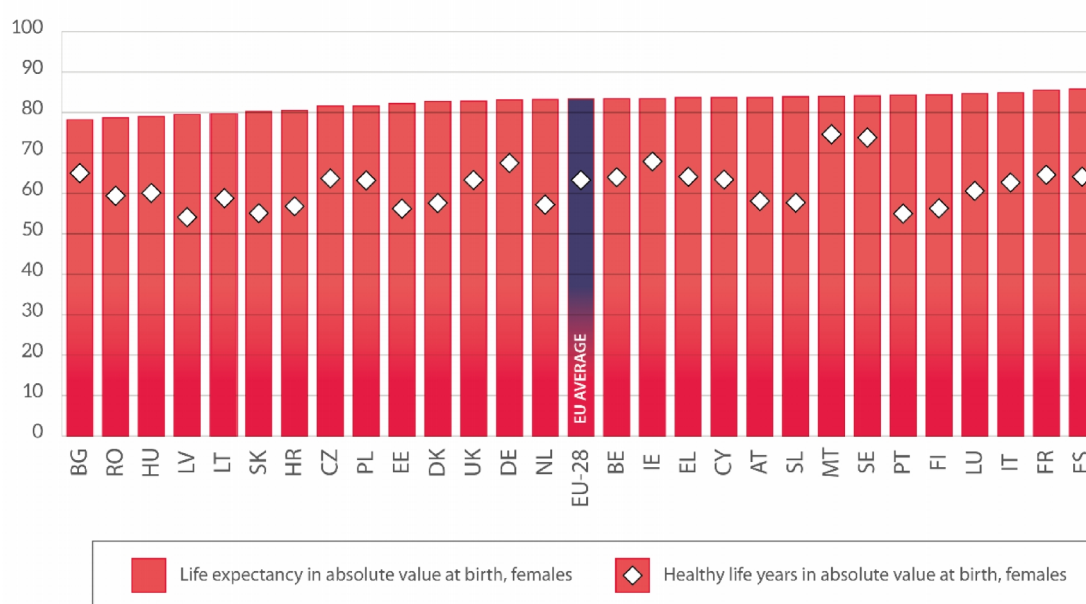
In the most recent year for which Eurostat data is available (2015), healthy life years at birth across the EU were estimated to average 63.3 years for women and 62.6 years for men. The difference between women and men (the 'gender gap') in terms of self-assessed healthy life years therefore amounted to just 0.7 years in favour of women. The gap was thus considerably smaller than the gender gap for overall life expectancy of 5.4 years. In other words, according to their own assessment, women tend to live a greater share of their (longer) lives with a disability or a disease, while men can expect to spend a greater proportion of their somewhat shorter lives free from activity limitations.⁶³ Women perceived around 76 % of their life as lived in good health, and men 80 % of theirs (see Figures 10 and 11).

The number of perceived healthy life years varied considerably between Member States – the range between the country with the highest and lowest value was 20 years for women and 22.2 years for men. The differences between Member States in perceived (health-related) quality of life were much more pronounced than for life expectancy.

⁶² C. Masseria et al., '[What are the methodological issues related to measuring health and drawing comparisons across countries?](#)', The London School of Economics and Political Science/European Commission, 2007.

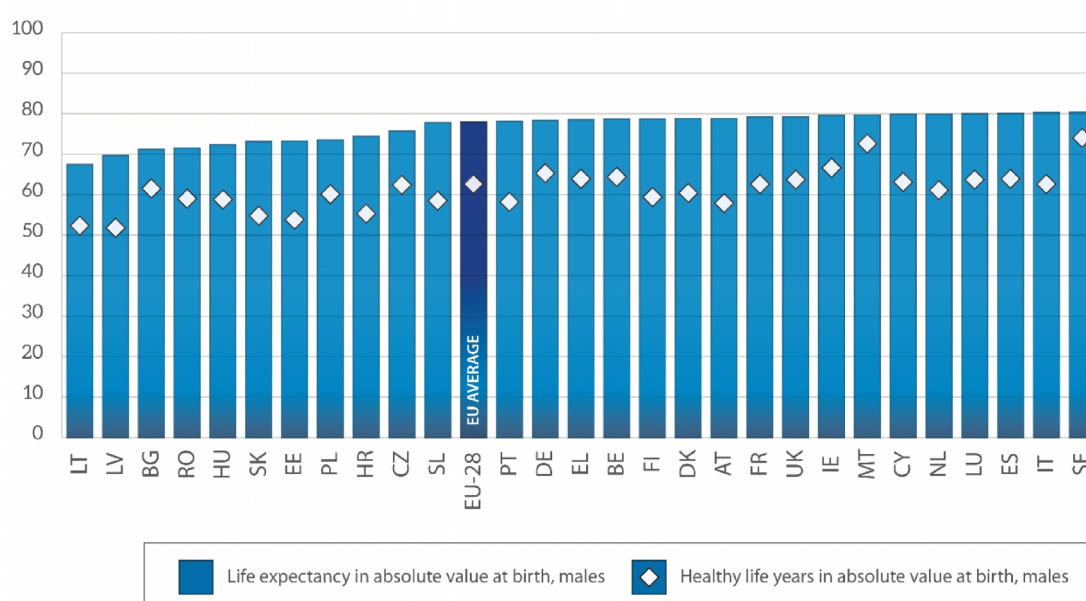
⁶³ Eurostat, [Sustainable development – public health](#).

Figure 10 – Life expectancy at birth 2015, females, by country, and healthy life years at birth 2015



Source: GlobalStat elaboration on Eurostat data.

Figure 11 – Life expectancy at birth 2015, males, by country, and healthy life years at birth 2015



Source: GlobalStat elaboration on Eurostat data.

Eurostat data show a decrease in the averages of self-assessed healthy life years between 2010 and 2014 for women (0.8 years) and men (0.4 years).⁶⁴ However, the 2015 averages are more positive, and looking at the 2010-2015 timespan, this would imply average gains of 0.7 years for women and 0.8 years for men. When analysed at individual EU Member State level, however, data show much bigger differences amongst Member

⁶⁴ Eurostat, [Healthy life years and life expectancy at birth, by sex](#), dataset.

States and between years within the same Member State, and are not always consistent with the averages. It is extremely difficult to draw a conclusion from these figures – bearing in mind the self-assessed nature of survey data and the difficulty of forecasting trends – however, they appear to suggest that people do not experience the extra life years without limitations to their usual activity.

Of anecdotal interest is a recent EU-funded research among inhabitants of religious institutions that set out to elucidate the 'gender and health paradox', that is, the seemingly contradictory observation that women live longer than men in spite of experiencing worse health. The research found that while women do typically suffer from more chronic diseases than men, this is not because of their gender, but because they live longer.⁶⁵

3.1.2. 'Live long and prosper'

How long we live, and whether and when age-related illness strikes, can be influenced by many factors.⁶⁶ Genetic and biological characteristics, personal behaviour, socio-economic background and the physical environment all play a role. Cancer, ischaemic heart diseases (for example, heart attack) and cerebrovascular diseases (for example, stroke) were among the three most common causes of death for both women and men in the EU in 2014.⁶⁷

According to the WHO, chronic diseases are a major cause of mortality and disability worldwide. Chronic diseases are generally long-term and persistent, often leading to a gradual deterioration of health. Many chronic diseases become more prevalent with older age. They may not be immediately life-threatening, but can create limitations (that is, difficulties in accomplishing everyday activities) and disability, which affects people's quality of life. There are four main types of chronic diseases: cardiovascular diseases, such as heart attack and stroke; cancers; chronic respiratory diseases, such as chronic obstructive pulmonary disease and asthma; and diabetes.⁶⁸ The European Commission asserts that major and chronic diseases together are responsible for 87 % of all deaths in the EU. As per the Commission's definition, major and chronic diseases are those affecting at least 50 per 100 000 people. They include the four main chronic diseases as well as mental health problems, such as depression; and neurodegenerative diseases, such as Alzheimer's disease and other dementias.

There is broad consensus that many chronic diseases can be positively impacted by tackling four major risk factors through lifestyle changes: smoking, alcohol abuse, unhealthy diet and physical inactivity. A recent study found that people who do not smoke, maintain a normal weight and consume alcohol moderately can expect to live up to seven years longer, and to spend most of these extra years in good health.⁶⁹ In addition, mental well-being plays an important role in healthy ageing, and strong social networks – including a broad range of relationships with family, friends, neighbours, or community-service providers – can enhance older people's life expectancy and quality of

⁶⁵ European Commission, [Women get sicker but men die quicker disproved](#), HEMOX project results.

⁶⁶ G. Finnegan, ['Who wants to live forever?'](#), European Research Council.

⁶⁷ Eurostat, [Women and men in Europe – A statistical portrait](#), 2017 (see [1.3 Health perception](#)).

⁶⁸ WHO, [Chronic diseases and health promotion](#) and [Noncommunicable diseases](#).

⁶⁹ Max-Planck-Gesellschaft, ['A healthy lifestyle increases life expectancy by up to seven years'](#), 20 July 2017.

life, protect against functional decline and promote resilience.⁷⁰ Research suggests that subjective well-being in later life is to a large degree dependent of psychosocial factors: depression and anxiety, in particular, had strong negative effects, as did, in the case of women, living alone.⁷¹

The Organisation for Economic Co-operation and Development (OECD) argues that more than 1.2 million people across the EU died in 2013 from illnesses and injuries 'that might have been avoided through more effective public health and prevention policies or more timely and effective health care'.⁷² While acknowledging that 'notable progress' has been achieved in reducing smoking in most EU Member States, the OECD pleads for greater efforts to tackle two growing public health issues: harmful use of alcohol and obesity. According to the OECD, more than one in five adults in the EU reported heavy drinking at least once a month in 2014. One in six adults was obese, compared to one in nine in 2000.

3.2. How ageing affects healthcare and health systems in the EU

3.2.1. A challenge for the sustainability of health systems

As noted in sections 1.2 and 2.1, the EU is ageing dramatically. On average across EU Member States, the share of the population aged over 65 has increased from less than 10 % in 1960 to nearly 20 % in 2015, and it is projected to increase further to nearly 30 % by 2060. Currently, around 50 million people in the EU live with two or more chronic conditions ('multi-morbidity'), and most of these people are over 65. The risk of having a physical or mental disability that leads to a situation of dependency requiring long-term care tends to increase with age, especially with very old age (80 years and over).⁷³

According to Eurostat, government expenditure on health in 2015 accounted for just over 1 trillion euros (€1 058 billion) or 7.2 % of GDP in the EU.⁷⁴ The OECD's estimate for 2015 is slightly higher (9.9 % of EU GDP), possibly because the health part of long-term care is included under health expenditure. The Commission's 2015 Ageing Report lays out two reasons why ageing may pose a risk for the sustainability of healthcare financing: (1) increased life expectancy, without an improvement in health status, leads to a higher demand for healthcare services over a longer period of lifetime. This increases total lifetime healthcare expenditure and overall healthcare spending; (2) Since ageing leads to an increase in the old-age dependency ratio (see glossary), far fewer people will contribute to finance public healthcare, while a growing share of older people may require additional healthcare services. As the report points out, projections of age-related public expenditure are fraught with uncertainty, and the crux is whether gains in life expectancy are spent in good or bad health: if all extra life years are experienced as healthy life years, the additional cost burden from ageing can be lowered. Improvements in health status may be crucial for keeping expenditure on healthcare under control in the future. Other commentators assert that the extension of healthy old age may only temporarily mitigate the expected increases in healthcare costs. Chronic disease and disability may drive up costs in the longer-term, given that the increasing proportion of

⁷⁰ A. Zaidi et al., '[Measuring active and healthy ageing in Europe](#)', Journal of European Social Policy, Vol. 27, Issue 2, 2017.

⁷¹ Helmholtz Zentrum München – German Research Center for Environmental Health, '[Well-being in later life: The mind plays an important role](#)', 1 July 2017.

⁷² OECD/EU, [Health at a Glance: Europe 2016](#), 2016.

⁷³ European Commission, [The 2015 Ageing Report](#), 2015.

⁷⁴ Eurostat, [Member States spent over €1000 billion on health](#), 25 August 2017.

those aged eighty and over would have more extensive and expensive healthcare needs.⁷⁵

3.2.2. *Looking for new solutions*

In its communication on effective, accessible and resilient health systems, the European Commission points to the growing common challenges EU health systems face: increasing cost; an ageing population with an associated rise of chronic diseases and multi-morbidity, leading to growing demand for healthcare; shortages of health professionals; and inequities in access to healthcare.⁷⁶ According to the Commission, EU Member States' ability to provide universal and equitable access to high-quality care will depend on making health systems more resilient and better able to cope with the challenges ahead, while at the same time remaining cost-effective and sustainable.

The OECD makes the case that population ageing, combined with budgetary constraints, will require profound adaptations to the EU Member States' health systems, to promote more healthy ageing and respond in a more integrated and patient-centred way to changing healthcare needs. This implies the need for Member States 'to improve the resilience of health systems to be able to respond to new needs in the most efficient way', and for health systems to remain fiscally sustainable.

According to the European Commission's independent expert panel on effective ways of investing in health, disruptive innovation (creating new networks and new organisational cultures involving new players) may be important for improving health and healthcare in Europe:

'Health systems must change fundamentally to survive but there are cultural, economic, institutional, legal, organisational and workforce barriers to change. Each of these requires a different approach. Policy-makers need to exercise leadership and find the courage to bring all interests together to find difficult compromise.'⁷⁷

3.2.3. *What can the EU do?*

The EU has a supporting competence in health (Article 168 of the Treaty on the Functioning of the European Union): the Member States are responsible for defining their health policy and for organising and delivering health services, which includes the management of health services and medical care and the allocation of the resources assigned to them. Against this background, EU health policy focuses, among other things, on prevention – especially by promoting healthier lifestyles – and on keeping people healthy into old age. Specific EU action involves providing the Member States with tools to help them cooperate and identify best practice (for instance, health promotion activities) and funding health projects through the EU health programme. More concretely, the European Innovation Partnership on Active and Healthy Ageing (EIP-AHA), launched in 2011, aims to increase the average healthy lifespan of Europeans by two years by 2020.⁷⁸ It sets out to do so by: improving health and quality of life; ensuring

⁷⁵ M.J. Burrows, [Reducing the risks from rapid demographic change](#), Atlantic Council, 2016.

⁷⁶ European Commission, [Communication on effective, accessible and resilient health systems](#), COM(2014) 215.

⁷⁷ Expert panel on effective ways of investing in health, [Disruptive innovation](#), 2016.

⁷⁸ European Commission, [European Innovation Partnership on Active and Healthy Ageing](#).

that health and social care systems are sustainable and efficient; and creating growth and market opportunities for business.⁷⁹

Focus is growing on new digital solutions that can contribute to ageing well. The Commission's eHealth action plan 2012-2020 recognised that 'fostering a spirit of innovation in eHealth in Europe is the way forward to ensure better health and better and safer care for EU citizens', especially given that EU health systems are under severe budgetary constraints, while having to respond to the challenges of an ageing population, among other issues.⁸⁰ Research in digital health for healthy ageing is funded under Horizon 2020, the EU's framework programme for research and innovation. For example, the ongoing MARIO (Managing active and healthy aging with use of caring service robots) project addresses the challenges of loneliness, isolation and dementia in older persons through innovative interventions delivered by service robots.⁸¹

'State of health in the EU' initiative 2016-2017

'State of health' is a two-year joint exercise between the European Commission, the OECD, the European Observatory on Health Systems and Policies and the EU Member States. It aims to bring together internationally recognised expertise in an effort to boost analytical capacity and support Member States in their evidence-based policy making. Four deliverables are included: (1) the biennial 'Health at a Glance: Europe' report (the latest edition was published in November 2017); (2) a set of individual country health profiles for each Member State with a companion report, developed by the OECD and the Observatory in cooperation with the Commission (released in November 2017); (3) a Commission paper to accompany the country health profiles, linking them to the broader EU agenda; and (4) voluntary exchanges to discuss concrete implications of the findings and how to make best use of the evidence (as soon as the second and third deliverable are released).⁸²

3.3. Young people and health

Young people (those aged from 15 to 29 years) make up an estimated 17.4 % of the EU-28 population. They are generally in better health and feel healthier than older age groups: in 2013, 92 % of the EU's young population declared that they were in 'good' or 'very good' health. At the same time, 12 % of the young reported suffering from a chronic disease or long-standing health problem, and 8 % declared they had health-related limitations to their usual activities of longer than six months. Both the health problems and the activity limitations varied according to gender and income level (see also the discussion on objective vs self-assessed measures of health in section 3.1).

A number of health-related behaviours that are established in adolescence not only affect health at the time, but also contribute to chronic diseases in adulthood.⁸³ For instance, childhood obesity remains a considerable public health problem in the EU. Excess weight in childhood and adolescence is associated with a number of serious health consequences, and it is thought to place an economic burden on healthcare systems. On the other hand, some behaviours begun in young adulthood can play a

⁷⁹ In a [reply to a June 2017 parliamentary question](#) on whether the objective set by the EIP-AHA can still be achieved, Health and Food Safety Commissioner, Vytenis Andriukaitis, reaffirmed that the EIP-AHA partners remain committed to the goal.

⁸⁰ European Commission, [Communication: eHealth Action Plan 2012-2020 – Innovative healthcare for the 21st century](#), COM(2012) 736.

⁸¹ European Union-funded project, [MARIO](#).

⁸² European Commission, [State of the Health in the EU](#).

⁸³ WHO, [Adolescent's health-related behaviours](#).

positive role in health in development – for instance, healthy eating and adequate physical activity – or may prevent health problems. Recent research is a case in point in favour of early prevention: according to the study, people who took steps to keep their heart healthy in young adulthood, such as exercising, eating a healthy diet, controlling blood pressure and cholesterol, reducing blood sugar and avoiding or stopping smoking, had higher brain volume in later adulthood (brain volume loss, or shrinking, has been associated with the onset of Alzheimer's disease and other dementias).⁸⁴ The EU supports the health and well-being of young people in a number of ways. The EU youth strategy, for instance, has a health focus on:

- promoting mental and sexual health, sport, physical activity and healthy lifestyles;
- preventing and treating injury, eating disorders, addictions and substance abuse;
- education on nutrition;
- promoting cooperation between schools, youth workers, health professionals and sport organisations.⁸⁵

Moreover, the EU supports Member States' efforts to tackle childhood obesity, including with the EU action plan on childhood obesity 2014-2020.⁸⁶

Lastly, young people's health-related behaviour is strongly influenced by social and environmental factors. In this context, an EU-funded project is looking into ways of harnessing the possibilities for health communication offered by social media.⁸⁷ Researchers have developed a 'wearable lab' bracelet that can track the activities and interactions of adolescents in small social media circles. By identifying the most influential teens, they intend to explore creating the positive peer pressure that influences young people to live healthier lives.

Health matters to millennials

According to [research](#) presented at a 2016 Committee of the Regions conference, millennials (generally being regarded as people born between 1977 and 1995) regard health, equality, education and job creation as priorities, with health taking first place.

4. Prospects

As noted in section 1.3 'Focus on adapting to ageing demographics', the broad demographic outlook at the EU level is essentially set in the short to medium term. Fertility rates and life expectancy in the EU are unlikely to change suddenly and even if they did, the effect would not be immediate. As we have seen in recent years, migration flows can change rapidly and dramatically. However, even at the unprecedented levels of the last few years, they cannot, at EU level at least, radically change demographic destiny on their own. The EU population will be slow growing and continue to age significantly for now, whilst also forming a decreasing proportion of the world population.

However, whilst this demographic outlook is relatively set in the shorter term, changes to fertility rates, life expectancy and migration which may happen in the coming years can build up over time to change the situation in the longer term. EU level fertility rate

⁸⁴ M.P. Bancks et al., '[Cardiovascular health in young adulthood and structural brain MRI in midlife – The CARDIA study](#)', *Neurology*, 19 July 2017.

⁸⁵ European Commission, [EU Youth Strategy: Health and well-being](#).

⁸⁶ European Commission, [EU Action Plan on Childhood Obesity 2014-2020](#), 2014.

⁸⁷ European Commission, '[Social media peer pressure used to help adolescents live healthier lives](#)', *Horizon – The EU Research and Innovation Magazine*, 30 June 2017.

averages have recovered a little from their mid-1990s lows and the wide variation between Member States suggests there is nothing inherently 'fixed' about current levels. EU average life expectancy gains have been slowing somewhat and the 2015 data saw a (small) surprise drop in life expectancy. Whether the previous rising trend for life expectancy continues, and if so to what level, will have to await further data. Developments on migration are also, by their nature, rather uncertain. With an ageing EU and significant population growth in the form of a 'youth bulge' expected in some other parts of the world, notably Africa, the potential for substantial migration in-flows nevertheless clearly remains.

Below the EU level, free movement and external migration also influences demography at Member State and regional level. This affects both the size of the population in countries and regions and their age profile, for instance as younger people move to more economically dynamic areas for work. These interact with the different patterns of fertility and life expectancy across the EU.

Looking beyond the EU populations' size and age profile, the outlook for healthy life expectancy is clearly important both to individuals and governments. Apart from the personal impact, long periods of poor health in older age imply high expenditure on health and social care and limit opportunities for longer working to support incomes and the wider economy. Whilst it is difficult to draw clear conclusions from the data, it does suggest that people are not experiencing the extra life years stemming from increased life expectancy without limitations to their usual activity. New data may shed more light on this situation in future.

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This paper is the first in an annual series which EPRS will be producing on the demographic outlook for the European Union (EU).

Demography matters. The economy, labour market, healthcare, pensions, the environment, intergenerational fairness and election results – they are all driven by demography. The European Union (EU) has seen its population grow substantially – by around a quarter in the five and a half decades since 1960 – and it currently stands at over 500 million people. However, it is now beginning to stagnate, before its expected decline from around the middle of the century. With the world population having risen still more substantially and growth continuing, the EU represents a shrinking proportion of the world population. The EU population is also ageing dramatically, as life expectancy increases and fertility rates are lower than in the past. This has serious implications across a range of areas including the economy, healthcare and pensions. Free movement within the EU and migration from third countries also plays an important role in shaping demography in individual Member States and regions. The 'in-focus' section of this analysis looks at health and notes that the data, whilst inconsistent, suggests that people are not necessarily experiencing the extra life years without limitations to their usual activity.

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