Pensions at a Glance 2023

OECD AND G20 INDICATORS

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Foreword

This tenth edition of *Pensions at a Glance* provides a range of indicators for comparing pension policies and their outcomes between OECD countries. The indicators are also, where possible, provided for the other major economies that are members of the G20. Two special chapters provide a review of the impact of the inflation surge on pensions and of recent pension reforms (Chapter 1) and an in-depth analysis of pension provisions for hazardous or arduous work (Chapter 2).

This report is the joint work of staff in both the Pensions Team of the Social Policy Division of the OECD Directorate for Employment, Labour and Social Affairs and of the Insurance, Private Pensions and Financial Markets Division of the OECD Directorate for Financial and Enterprise Affairs. National officials – particularly delegates to the OECD Employment, Labour and Social Affairs Committee and the OECD Working Party on Social Policy and members of the OECD pension expert group – provided invaluable input to the report.

Chapter 1 on "Recent pension reforms" was written by Wouter De Tavernier with contributions from Svyatoslav Yushchyshyn (currently studying at the Harvard Kennedy School). Chapter 2 entitled "Pension provisions for workers in hazardous or arduous jobs" was written by Maciej Lis with contributions from Yuta Fujiki. Chapters 3 to 8 were written and the indicators therein computed by Andrew Reilly with contributions from Yuta Fujiki, while Chapter 9 was written by Romain Despalins with inputs from Pablo Antolin and Stéphanie Payet. Hervé Boulhol led the team and was responsible for revising and enhancing these chapters under the leadership of Stefano Scarpetta (Director of ELS), Mark Pearson (Deputy Director of ELS) and Monika Queisser (Senior Counsellor and Head of Social Policy). Maxime Ladaique provided support for tables and figures. Lucy Hulett and Hanna Varkki prepared the manuscript for publication. Alastair Wood prepared the work on infographics. Eva Rauser provided technical assistance.

We are grateful to many national officials, to Sébastien Grobon and Claire Loupias (Conseil d'orientation des retraites) and to Slavina Spasova (European Social Observatory) for their useful comments as well as to colleagues in the OECD Secretariat, notably Anja Meierkord, Christopher Prinz and Andrea Salvatori (ELS). The OECD gratefully acknowledges the financial support from the European Union, which co-financed this project with the OECD.

Editorial

Working longer – what to do about hazardous or arduous work?

Since the last edition of *Pensions at a Glance* in 2021, the pension policy debate in OECD countries has switched from pandemic responses back to a focus on more long-term structural issues. The question of how to address the impact of population ageing on pension systems has moved back to centre stage.

The share of the population aged 65 and over stood at 18% in 2022 and is projected to rise to 27% by 2050, on average in the OECD. In the past, policy makers' chief concerns were around the fiscal impact of ageing and the funding of old-age security. Pension reforms thus aimed at making retirement income systems both financially and socially sustainable. Several OECD countries have passed reforms introducing and encouraging complementary private funded pensions. Promoting longer working lives was an important part of the agenda, but primarily to generate savings by having more people contribute to the systems while paying out fewer pensions.

Over the past decade, it has become clear that addressing the challenges of a rapidly ageing population requires promoting the employment and employability of older workers. This has become all the more central post-COVID as most OECD countries are facing labour shortages across many sectors and occupations. Unfilled job vacancies reached record-high levels in 2022; they remain high even in 2023 amidst a significant slow-down in economic activities. With large numbers of baby boomers retiring in the coming years, it is becoming even more important to promote the labour market participation of under-represented groups in general, and older workers in particular.

As documented also in previous editions of *Pensions at a Glance*, many OECD countries have combined action to increase statutory retirement ages, curb early retirement and offer incentives to work longer with efforts to foster employability, job mobility and labour demand for older workers. Normal retirement ages are set to increase in 23 out of 38 OECD countries, reaching an average of 66.3 years for men and 65.8 years for women starting their career today. In Denmark, Estonia, Italy, the Netherlands and Sweden, the normal retirement age will rise to 70 years or more if life-expectancy gains materialise as projected and legislated links with life expectancy are applied. Longer working lives are supported by growing life expectancy that, at age 65, increased by 4.8 years between 1970 and 2021, on average across the OECD, and by 1.6 years between 2000 and 2021. Despite the slowdown in life expectancy gains over the last decade, projections suggest further growth in the future.

The good news is that progress in the labour force participation of older workers across the OECD has been impressive. The employment rate of 55-64 year-olds in the OECD reached a record 64% in the second quarter of 2023, almost 8 percentage points higher than a decade ago.

But more needs to be done. Many older workers still struggle to keep their skills up to date, have limited access to good-quality jobs, and risk having an inadequate pension in old age because of short and unstable working careers. For example, concerns around productivity of older workers tend to fuel age discrimination and negative employer attitudes in hiring decisions. Perceptions of age discrimination remain common despite the fact that it is banned by legislation in virtually all OECD countries. Moreover,

older workers are potentially exposed to the risk of skills obsolescence in a rapidly changing labour market and need to adapt their skills. But participation in formal and informal training among older workers is less than half of that of prime-aged workers, on average. In addition, when looking at the reasons for quitting jobs, about one in five workers aged 50-64 across the OECD did so because of ill health.

Better prevention, improved working conditions, retraining and reskilling will increase healthy years in life further and help to keep more older workers in the labour market. But it also must be acknowledged that there are large differences in the expected number of years in retirement, especially in good health, between groups of workers and countries. For example, estimates show that low earners have three years fewer of life-expectancy at age 65 relative to high earners, which reduces their pension wealth by about 13%. Increasing retirement ages should thus be seen in the context of persistent socio-economic inequalities, potentially fuelling resistance against pension reforms. A case in this respect is that of older workers in hazardous or arduous jobs, as some of the working conditions in these jobs may have a long-lasting toll on their health status even after retirement.

In theory, the labour market would recognise hazardous or arduous work through better pay, given that workers have some choice which jobs to accept. But, in practice worse working conditions and larger job-related risks are not necessarily compensated through higher wages and many workers have de facto limited choices as to whether or not to take such jobs.

The traditional way in which pension policy has recognised the difficulties of hazardous or arduous jobs is to systematically grant workers performing them access to early retirement, either through specific pension schemes for certain occupations, or through special rules within the general pension scheme. But this approach is increasingly challenged by the evidence. Many jobs that were previously considered arduous have evolved thanks to technological progress, for example through the use of robots in production which take on repetitive and especially dangerous tasks. Work practices too are changing and within most job categories workers perform a range of different tasks, not all of which are hazardous or arduous.

This is not to say that hazardous or arduous work no longer exists, but it implies that broad-stroke policies are no longer appropriate. Instead, the focus should be on specific individual cases of workers, on their health conditions and their ability to work, including in other jobs. It also means that more efforts need to be made to address health problems of individual workers throughout the working life and thus avoid work-related chronic ill-health at older ages.

The first line of policy action, together with social partners, should be through prevention of health problems and moving workers out of arduous work before health deteriorates significantly. In addition, workplaces should be redesigned to prevent poor health outcomes of workers, to the extent possible also making greater use of supporting technologies, and to retain in the labour market those who have health issues. This requires better regulation of worktime and workplace safety and a strengthened role for labour inspection bodies and occupational health services.

Then, for those who do have work-related health problems, support should be provided primarily through work injury, sickness and disability insurance rather than old-age pension schemes.

In some cases, there might be a rationale to continue to offer early retirement options, such as in public security and safety services like the military, police, firefighters, and others, as the age-related decline of physical and cognitive capabilities may put themselves and others at danger. Here again, age-management policies should provide support for a career shift early on. Early retirement solutions could also be considered, after careful evaluation, in cases of health conditions that develop as a consequence of difficult working conditions, such as night shifts, but only become visible much later.

With an inclusive approach to health, work, training and retirement, countries can improve the employment prospects, and quality of jobs, of people at an older age so as to ensure that the benefits of longer life expectancy are shared more fairly and that pension systems remain financially sustainable and deliver decent incomes in retirement.

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Executive summary

This edition of *Pensions at a Glance* discusses the challenges of high inflation for pensions and reviews the pension measures legislated in OECD countries between September 2021 and September 2023. As in past editions, a comprehensive selection of pension policy indicators is included for OECD and G20 countries. Moreover, this edition provides an in-depth analysis of pension provisions for hazardous or arduous work.

Inflation and pensions

- The ongoing episode of high inflation reverses the standard way of thinking about pension indexation. In the short term, due to falling real wages, price indexation has become more favourable for pensioners than wage indexation. But it is more costly than initially anticipated for public finance or pension providers more generally.
- Over half of OECD countries protect pensioners fully from inflation trends over time. These countries index pensions to prices or to prices plus (part of) real-wage growth if positive.
- Frequent indexation is necessary to uphold pensioners' purchasing power. Loss of purchasing power can also be caused by delays when the indexation indicator is smoothed over long periods.
- Applying indexation rules consistently is key to build confidence in pensions. However, protecting pensioners against high inflation has been costly. It may be fair in exceptional times that high-income pensioners share some of the pain with the working-age population in terms of reduced benefit adjustments.

Life expectancy developments and main recent pension policy measures in OECD countries

- Life expectancy at older ages bounced back from 2021 after a drop of about half a year in 2020 on average. However, since about 2012, the trend in life expectancy gains at age 65 has slowed down.
- The Netherlands passed a systemic reform of private pensions from defined benefit to defined contribution. Spain formally removed the automatic adjustment mechanisms previously legislated to address financial sustainability, including low indexation of pensions in payment, and reintroduced price indexation. Instead, contributions were raised especially for high earners. Costa Rica extended the reference period for past wages used to calculate pensions from 20 last years to 25 best years.
- The Slovak Republic reintroduced a one-to-one link between the retirement age and life expectancy. Sweden raised the retirement age and will link it to two-thirds of life-expectancy gains. Costa Rica, the Czech Republic (hereafter "Czechia") and France have tightened early or minimum retirement ages. Switzerland will close the gender gap in normal retirement ages, and Israel will reduce it.
- Normal retirement ages are set to increase in three-fifths of OECD countries. Only Colombia, Costa Rica, Hungary, Israel, Poland and Türkiye will still maintain a gender gap in normal retirement ages. The average normal retirement age will increase from 64.4 years for men retiring now to 66.3 years for those starting their career now. Future levels range from 62 years in

Colombia, Luxembourg and Slovenia to 70 years or more in Denmark, Estonia, Italy, the Netherlands and Sweden.

- Canada, Chile, Estonia, France, Italy, Lithuania, Spain, Sweden and Türkiye substantially increased first-tier pensions, which will particularly benefit retirees with low pensions.
- On average, full-career average-wage workers will receive a net pension at 61% of net wages. Future net replacement rates are at 40% or below in Australia, Estonia, Ireland, Japan, Korea, Lithuania and Poland; they exceed 90% in Greece, the Netherlands, Portugal and Türkiye. The future net replacement rate of workers earning half the average wage is higher at 73% on average.

Most issues raised by hazardous or arduous jobs require interventions at working age

- Workers in physically intensive jobs tend to have poorer health than other workers. There is convincing evidence of some working conditions negatively affecting health.
- OECD countries have special pension provisions for hazardous or arduous work based on different approaches and can be classified into four groups: 15 countries provide access for a large number of jobs considered hazardous or arduous; 8 countries provide early retirement options to a limited number of jobs; 4 countries cover only public safety and security jobs traditionally considered as hazardous; and, 11 countries provide no early retirement options within mandatory pensions for such jobs.

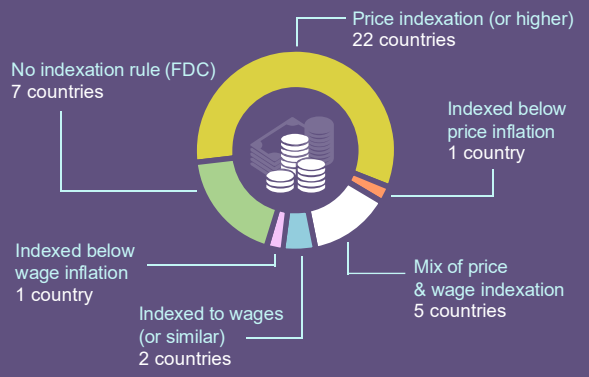
The issues raised by hazardous or arduous work should primarily be dealt with by policies outside the realm of old-age pensions.

- The first priority is to improve working conditions through health and safety regulations to limit exposure to risky factors, hardship and health risks.
- Communicating about the risks involved in working in hazardous or arduous jobs is essential as a moral imperative and to help workers weigh different job opportunities and ask to be compensated.
- Incapacity to work in a *specific job* until the minimum retirement age that apply to all workers is not enough to justify granting special *old-age* pension provisions for hazardous or arduous work.
- A reskilling and upskilling framework has to be put in place to facilitate career transitions and provide workers with the skills needed to prolong careers in different jobs. The permanent withdrawal from the labour market, sometimes at very early ages, is an inefficient solution.
- When job-related risks materialise and impair workers' health, long-term sickness benefits and disability insurance should be fit for purpose, accessible, efficient and responsive; on top of cushioning income consequences, they should help prevent permanent labour market withdrawal.
- Special pension schemes covering workers in hazardous or arduous jobs have been reduced in scope in many countries. Some of these schemes have included jobs in which hardship is questionable, resulting in serious mistargeting.
- As any delayed health impacts of some job characteristics (e.g. physical strain, noise or uncommon working-time patterns) are typically not covered by disability or sickness insurance schemes, some special pension provisions might complement these schemes, backed by solid evidence.
- For jobs generating health and safety risks at older ages (e.g. firefighters, police officers and military), there is a stronger case for special pension provisions. Still, age-management policies should strive as much as possible to prepare for a career shift at some point.
- Over the last two decades, some countries, including Finland and France, have improved the design of pension schemes covering hazardous or arduous jobs. These innovations link eligibility to some job characteristics, such as working at night, rather than based on occupations. In Austria, the special scheme allowing individuals working at night to retire earlier is highly targeted and imposes additional contributions on employers to help finance the scheme and limit such activities.

Infographic 1. Key facts and figures

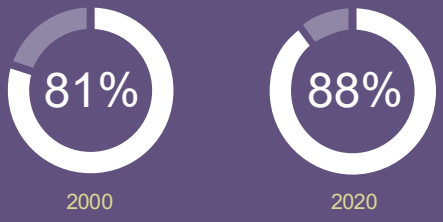
More than half of OECD countries fully protect pensions against inflation

Indexation of main earnings-related pensions to prices & wages



Average incomes have grown faster for older people than for the total population

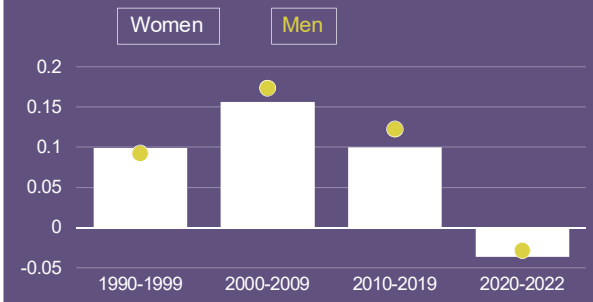
Income of people over 65, as % of average disposable income of total population



The over 65s have incomes ranging from about 70% of the total population or less in Estonia, Korea, Latvia and Lithuania to around 100% or more in Costa Rica, France, Israel, Italy, Luxembourg and Mexico.

Smaller gains in life expectancy in old age over the last decade

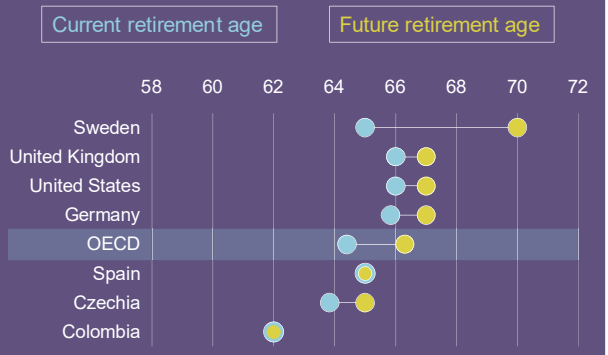
Annual change in life expectancy at age 65, in years



Annual life expectancy gains at age 65 were sharply reduced from 0.17 years in the 2000s to 0.11 years in the 2010s.

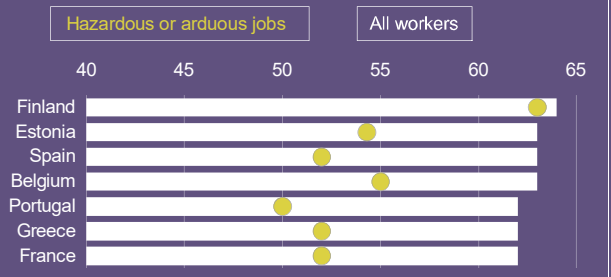
Normal retirement ages are on the rise in over half of OECD countries

Average normal retirement age, men



Minimum pensionable age is much lower for hazardous work in some countries

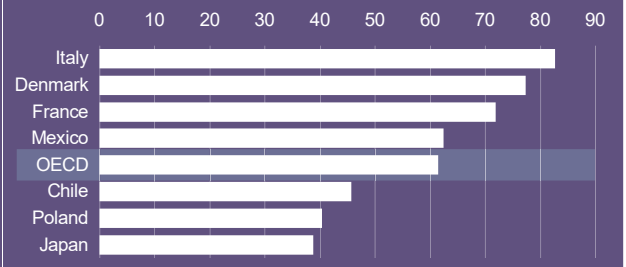
Minimum retirement age



Pension provisions for hazardous or arduous work reduce the minimum pensionable age by more than 5 years in some countries.

Mandatory pensions vary widely across OECD countriess

% of net income maintained at normal retirement age



Across the OECD, an average-wage worker starting a full-career in 2022 is expected to take home 61% of their previous income when they reach retirement.

1 Recent pension reforms

This chapter looks into pension developments over the past two years. It presents an overview of pension reforms introduced in OECD countries between September 2021 and September 2023. The chapter also describes recent trends in life expectancy and healthy life expectancy as well as inequalities in life expectancy. It provides an overview of long-term trends in employment rates for older age groups and labour market exit ages, and evolutions since COVID-19. The chapter assesses to what extent pension indexation protected pensioners' purchasing power throughout the surge in inflation since 2021.

Introduction

The COVID-19 pandemic, Russia's war of aggression against Ukraine and the policy response to these challenges have triggered an inflation wave felt across the globe. The inflation surge since 2021 has increased expenditures somewhat more for older people than for others in many countries, as energy and food make up a larger share of the consumption baskets of many older people compared to other age groups. Yet, pensioners' purchasing power is likely to be affected less than that of working-age people in countries indexing pension benefits to price increases. Over half of OECD countries tend to protect earnings-related pensions fully from inflation shocks over time. The impact of inflation on pensioners' purchasing power is particularly limited in countries where pensions are price adjusted shortly after prices rise, for instance through frequent indexation or by adjusting when the index crosses a certain threshold.

The impact of COVID-19 on both future life expectancy and employment is likely to be temporary in most OECD countries. Life expectancy dropped due to excess mortality in most OECD countries in 2020, but by the end of 2021, trends reversed in many of them. Concerns over a permanent reduction of labour supply ("great resignation") have not materialised, despite some concrete evidence of increasing inactivity among older individuals in some OECD countries in the initial stages of the pandemic. The employment rates of older workers grew between 2019 and 2022, resuming the trend of increasing employment at older ages since the turn of the millennium. Over the last two years, several countries took initiatives to further increase employment of older workers though reduced taxation, providing deferral incentives or reducing or eliminating the withdrawal of pension income against earned income.

Several countries have passed pension reforms increasing retirement ages, consistent with the general trend in the OECD since the 1990s. As three in five OECD countries will have a higher normal retirement age in the future, increasing retirement ages remains a common strategy to improve financial sustainability without reducing pension levels. Now that the Slovak Republic and Sweden introduced a link between their retirement ages and life expectancy over the last two years, one in four OECD countries now boast such a link. Costa Rica and Czechia tightened eligibility to early retirement and France raised the minimum retirement age over the last two years. In addition, Switzerland and Israel decided to gradually increase the retirement age for women, gradually closing and reducing the gender gap in retirement ages, respectively.

Concerns over financial sustainability remain an important driver of pension reform. Beyond adjusting retirement ages, this can also entail adjustments to benefits and contributions. The Netherlands passed a systemic pension reform entailing a transition of pension funds from funded defined benefit to funded defined contribution schemes to improve solvency. Costa Rica and Spain passed parametric reforms to contributions and benefits to improve pension finances.

Pension protection has been improved in several OECD countries over the last two years, in particular for low earners. Chile replaced its targeted public pension scheme with a quasi-universal scheme in January 2022, increasing the benefit and expanding coverage to 90% of the older population. Furthermore, Canada, Estonia, France, Italy, Lithuania, Spain, Sweden and Türkiye substantially increased basic pensions, minimum pensions and/or targeted benefits. Moreover, in their respective earnings-related pension systems, Hungary sped up the introduction of the 13th month payment, and Poland introduced a 14th month payment.

Finally, coverage of various pension schemes has been extended in several countries. The Slovak Republic has become the sixth OECD country to have introduced automatic enrolment, joining Lithuania, New Zealand, Poland, Türkiye and the United Kingdom. Australia and Costa Rica respectively removed and reduced minimum earnings thresholds to participate in earnings-related pension schemes, removing barriers to participate for low-income earners, and the Netherlands lowered the minimum age when workers can enter a pension scheme. Chile and Mexico extended coverage to platform and domestic workers, respectively, who previously were not covered by mandatory pensions. At the same time, New Zealand and Sweden tightened residency requirements to qualify for certain pension benefits.

Key findings

Inflation and pensions

- The ongoing episode of high inflation reverses the standard way of thinking about pension indexation. In normal circumstances, wages grow faster than prices due to productivity gains, and in the past many countries shifted from wage to price indexation to limit pension expenditures. In the short term, due to falling real wages, price indexation has become more favourable for pensioners. But it is more costly than initially anticipated for public finance or pension providers more generally.
- Over half of OECD countries protect pensioners fully from inflation trends over time. These countries index pensions to prices, to prices plus real-wage growth if positive, or to the higher of prices or wages. A few other countries index to a mix of prices and wages, or fully to wages.
- Frequent indexation is necessary to uphold pensioners' purchasing power. Belgium's fixed-threshold indexation, increasing pensions every time the price index increases by 2%, has provided good protection. By contrast, the real value of old-age safety-net benefits dropped drastically in Latvia and Poland as they are only indexed every three years and inflation was particularly high, resulting in both countries deviating from their indexation rules in 2023, and Latvia moving to annual indexation from January 2024.
- Loss of purchasing power can also be caused by delays when the indexation indicator is smoothed over long periods, as in Lithuania, or from a lag between the reference period and pension adjustment, as in Denmark.
- Applying indexation rules consistently is key to building confidence in pension promises. However, protecting all pensioners against high inflation has been costly. Depending on the fiscal space and national preferences, temporary deviations from full price adjustment for all can include flat-rate payments or full adjustment up to a threshold only. It may be fair in exceptional times of economic and fiscal pressure that pensioners with retirement income above a certain threshold share some of the pain with the working-age population in terms of reduced benefit adjustments.

Current income of pensioners

- On average across the OECD, people aged 66-75 have a disposable income of 93% of that of the total population, falling to 81% among people aged over 75. The disposable income of people aged 66+ is below 75% of that of the total population in the Baltic states and Korea whereas it is 100% or more in Costa Rica, France, Israel, Italy, Luxembourg and Mexico.
- Across all OECD countries, 12.5% of people aged 66-75 and 16.6% of those aged 76+ are in relative income poverty (equivalised disposable income below 50% of the median), compared to 11.4% of the total population. The relative income poverty rate among people aged 66+ exceeds 25% in the Baltic states and Korea and is below 6% in Czechia, Denmark, France, Iceland, Luxembourg and Norway.

Main recent pension policy measures in OECD countries

- The Netherlands passed a systemic reform of funded private pensions from defined benefit to defined contribution.
- The Slovak Republic reintroduced a one-to-one link between the retirement age and life expectancy. Sweden raised the retirement age and will link it to two-thirds of life-expectancy gains, which will boost pensions from the notional defined contribution scheme. One in four OECD countries now link retirement ages to life expectancy, including Denmark, Estonia, Finland, Greece, Italy, the Netherlands and Portugal.

- In France, the minimum retirement age of the main mandatory scheme was increased from 62 to 64 and some special pension schemes will be gradually eliminated. In Costa Rica, the tightening of early retirement ages results in the increase of the normal retirement age by three years for both men and women to 65 and 63, respectively. Czechia tightened early retirement eligibility from five to three years before the statutory retirement age. By contrast, Italy extended the early retirement options that were supposed to expire. In Türkiye, for people who entered employment before the statutory retirement age was legislated in 1999, the statutory retirement age was scrapped; among them, women can access a pension after at least 20 years of contributions and men after at least 25 years.
- Switzerland will close the gender gap in normal retirement ages, and Israel will reduce it from five to two years.
- Spain formally removed the automatic adjustment mechanisms previously legislated to address financial sustainability and reintroduced price indexation of pensions in payment. Instead, contributions were raised, especially for high earners, while income protection for low-income pensioners and workers with irregular careers, including mothers, was increased.
- Chile significantly raised low pensions by replacing its means-tested public pension scheme by a quasi-universal scheme. In addition to Chile and Spain, Canada, Estonia, France, Italy, Lithuania, Sweden and Türkiye substantially increased first-tier pensions, which benefit more the retirees with low pensions.
- Costa Rica extended the reference period for past wages used to calculate pensions from 20 last years to 25 best years, as well as Spain from 25 to 27 years from 2044. The only other countries that still continue to calculate earnings-related pensions on earnings for only part of the career are Colombia (10 years), Slovenia (24), France (25), the United States (35) and Portugal (40).

Implications

- In 2022, men with a full career from age 22 could retire with a full pension between 62 (Colombia, Costa Rica, Greece, Korea, Luxembourg and Slovenia) and 67 years (Denmark, Iceland, Israel and Norway), except Türkiye, with a current normal retirement age of 52.
- Normal retirement ages are set to increase in three-fifths of OECD countries. Only Colombia, Costa Rica, Hungary, Israel, Poland and Türkiye still maintain lower normal retirement ages for women than for men for labour market entrants in 2022. The average normal retirement age among OECD countries will increase from 64.4 years for men retiring now to 66.3 years for those starting their career now. Future levels range from 62 years in Colombia, Luxembourg and Slovenia to 70 years or more in Denmark, Estonia, Italy, the Netherlands and Sweden.
- On average across the OECD, full-career average-wage workers entering the labour market in 2022 will receive a net pension at 61% of net wages. Future net replacement rates are at 40% or below in Australia, Estonia, Ireland, Japan, Korea, Lithuania and Poland; they exceed 90% in Greece, the Netherlands, Portugal and Türkiye.
- The future net replacement rate of workers earning half the average wage is higher at 74% on average. In Japan, Lithuania and Poland, it is below 50%, while it exceeds 100% in Colombia, Denmark and Greece.
- As a result of recent pension reforms, net replacement rates of full-career workers will increase significantly in Chile, Spain and Sweden, and to some extent in the Slovak Republic, whereas they will decrease significantly in Costa Rica, although less so for workers with declining earnings towards the end of the career.

Other findings

- Life expectancy at older ages bounced back in most OECD countries from 2021 after a drop of about half a year in 2020 on average. Since 2012, the trend in life expectancy gains at age 65 has slowed significantly to 0.9 years per decade, from a fast pace of 1.4 years per decade between the mid-1990s and the early 2010s.
- It is sometimes argued that retirement ages should be linked to changes in healthy life expectancy instead of changes in life expectancy. Analysis in this chapter shows that available indicators of healthy life expectancy are not suited to determine how retirement ages should evolve.
- Most OECD countries have resumed the pre-COVID trend of growing employment at older ages, although employment rates did decline significantly between 2019 and 2020 in several Latin American countries.
- Denmark, France, Italy, Luxembourg and Slovenia have lower retirement ages without penalty for people with long careers who started working at a young age. In Germany and Portugal, early starters are exempt from the penalties that otherwise apply in case of early retirement.

This chapter is structured as follows. The first section takes stock of evolutions in life expectancy at older ages, including the impact of COVID-19, in inequalities in life expectancy and in healthy life expectancy. The second section provides an overview of employment at older ages and labour market exit ages. The third section analyses to what extent the various pension indexation mechanisms have managed to help shield older people from losing purchasing power given the recent surge in inflation. The chapter closes with a section on pension reforms legislated in OECD countries since the previous edition of *Pensions at a Glance*.

Population ageing: COVID-19 and life expectancy

The COVID-19 pandemic has left its mark on populations worldwide, affecting people's health and raising mortality especially among older people. Across OECD countries, excess mortality reached about 13% for the population aged 65+: the actual number of deaths exceeded the expected number of deaths based on 2015-19 figures by 13%.[1]

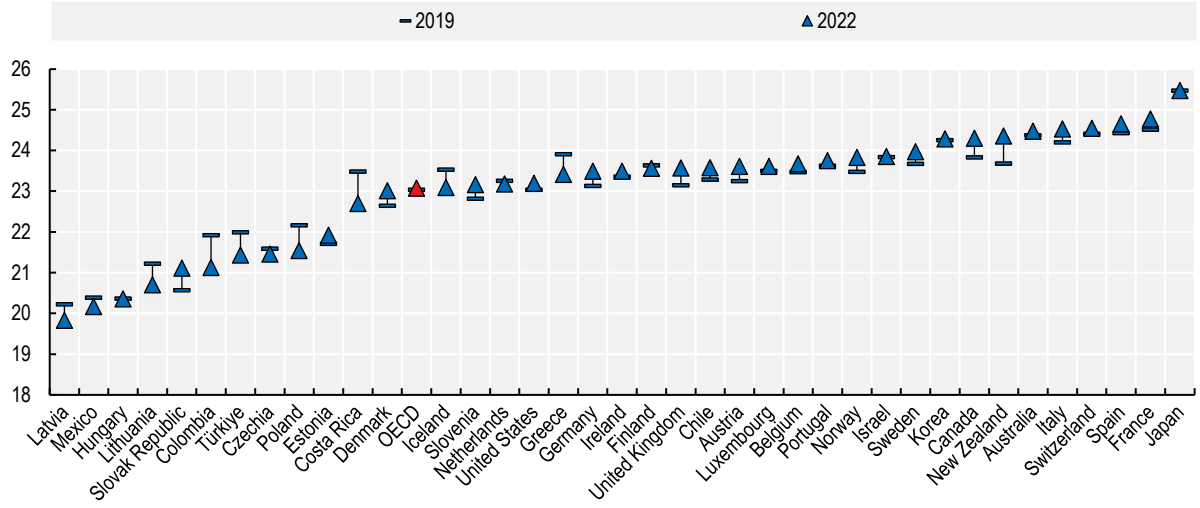
Trends in life expectancy gains and inequality

Life expectancy dropped due to excess mortality from COVID-19 in most OECD countries in 2020 (OECD, 2021[1]). Increased mortality among people aged 60+ is the most significant contributor to excess mortality, in particular in countries with lower full vaccination rates in this age group (Schöley et al., 2022[2]). By the end of 2021, trends had reversed in several countries and some already returned to their 2019 life-expectancy levels (OECD/European Union, 2022[3]; Schöley et al., 2022[2]).

New long-term projections of old-age life expectancy do not factor in any significant impact of COVID-19. The United Nations' 2022 projections of life expectancy at age 65 for the period 2050-55 are stable on average across OECD countries compared with projections made before COVID-19 (Figure 1.1). However, the new projections of remaining life expectancy at age 65 are at least half a year higher for New Zealand and the Slovak Republic, while they are at least half a year lower in Colombia, Costa Rica, Lithuania, Poland and Türkiye. As a result, cross-country differences in projected life expectancy have increased between 2019 and 2022 as countries with below-average life expectancy projections in 2019 have been particularly prone to downward adjustments in the 2022 projections, although the adjustments are not correlated with excess mortality due to COVID-19.

Figure 1.1. Projected remaining life expectancy at 65 for the period 2050-55

In years, comparing projections in 2019 and 2022



Source: United Nations, Department of Economic and Social Affairs (2022). World Population Prospects, Online Edition.

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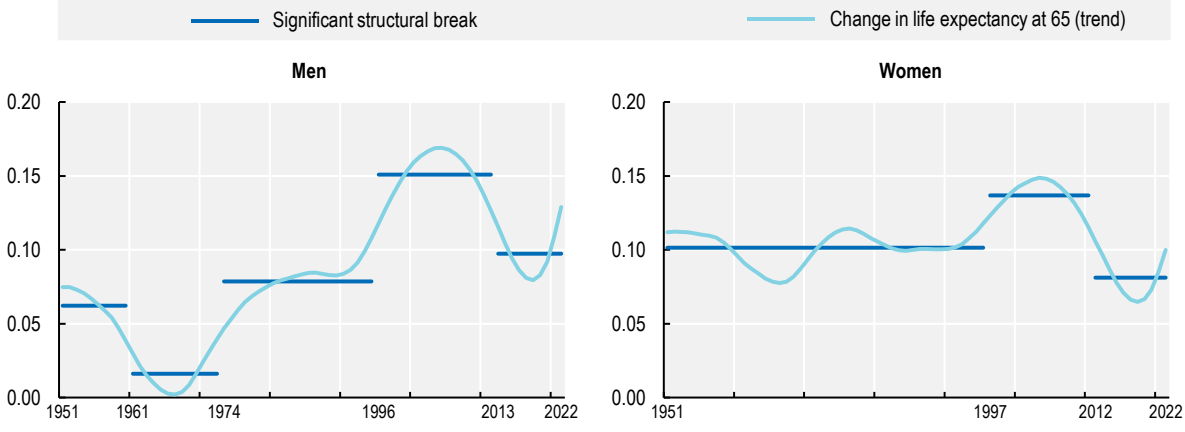
After a period of faster longevity growth between the mid-1990s and the early 2010s, improvements in remaining life expectancy at age 65 have slowed significantly for both men and women in recent years. On average in all 38 current OECD countries, life expectancy at age 65 increased at a pace of around 1.5 years for men per decade and 1.4 years for women during that period of faster life-expectancy increases (Figure 1.2). Since about 2012, this pace has slowed to 1.0 and 0.8 years per decade for men and women respectively, with the break in the trend being magnified by COVID-19.

Figure 1.2. Life expectancy gains have been smaller over the last decade

Annual change in remaining life expectancy at age 65 in the OECD on average, in years



Note: The breaks are significant at the 99% confidence level. To limit interferences from short-term fluctuations in change in period life expectancy, the breaks are estimated on the Hodrick-Prescott filtered trend series (lambda=100).
Source: See Chapter 6, Figure 6.4, https://stat.link/kqwb6l.

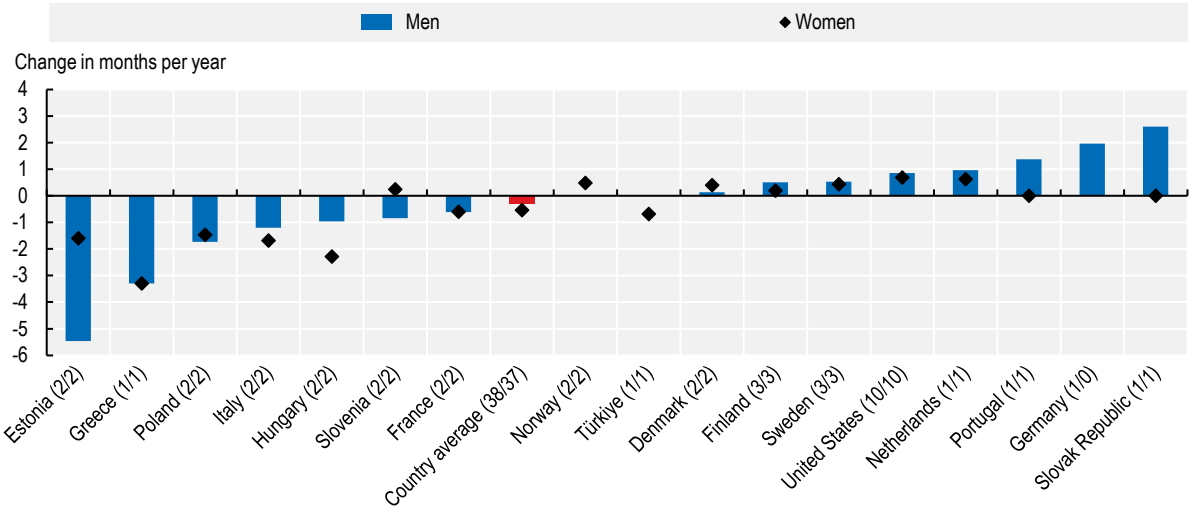
There are substantial inequalities in life expectancy between socio-economic groups in all countries, whether based on occupation, income and education (Mosquera et al., 2018[4]; OECD, 2017[5]). Lifestyle factors, in particular smoking, play an important role in explaining for example educational differences in life expectancy (Mackenbach et al., 2019[6]), and educational attainment and life expectancy have some common determinants such as the socio-economic status of the family one grew up in. Income redistribution from those dying early to those dying late is the core insurance function of pension systems. As low earners have a shorter life expectancy and thus receive benefits over a shorter period, this effect is regressive and thus it reduces the progressivity of pension systems.

Addressing longevity inequality is a challenge for pension policies. One theoretical solution would be to differentiate retirement ages by socio-economic groups based on differences in life expectancy, but those groups would be very difficult to define in a practical way and implementation of differentiated rules would be very difficult (Deeg, De Tavernier and de Breij, 2021[7]). Hence, policy makers should take this inequality into account when determining benefit levels for low-income workers as large longevity gaps can justify high redistribution within the pension benefit formulae. However, when dealing with adequate measures to respond to rising longevity, it is not the existence of inequalities in life expectancy but changes in life expectancy gaps over time that matter most for the distributive impact of linking retirement ages to life expectancy (OECD, 2021[8]). If inequalities in life expectancy are broadly stable, this means that improvements in life expectancy tend to benefit the different socio-economic groups equally.

While socio-economic inequalities in longevity are well-documented, the evidence on *changes* in these inequalities is mixed, varying across OECD countries and inequality measures. This updates and confirms the assessment in the previous edition of *Pensions at a Glance* (OECD, 2021[9]) based on accumulated evidence so far. Studies analysing how educational inequalities in life expectancy at age 60 or 65 evolve over time, show no general trend over time (Figure 1.3). There is wide evidence of a general trend of increasing inequalities in life expectancy in the United States (Crimmins and Saito, 2001[10]; Olshansky et al., 2012[11]; Solé-Auró, Beltrán-Sánchez and Crimmins, 2015[12]). Limited evidence for Germany suggests increasing educational inequalities among men between the mid-1990s and around 2010 (Grigoriev and Doblhammer, 2019[13]) and in Portugal and the Slovak Republic between 2010 and 2017 (Eurostat, 2020[14]). The gap has shrunk sharply in Estonia especially among men, and to a lesser extent in Greece, Hungary, Italy and Poland, between 2007 and 2017 (Eurostat, 2020[14]). These estimated sharp changes should not be extrapolated as they are likely to be temporary: just like a decline in the gap of more than five months per year in Estonia and three months per year in Greece cannot be sustained, the sharp increases found by single studies in Germany and the Slovak Republic could only reflect a snapshot rather than a sustainable long-term trend.

Figure 1.3. No international trend in the evolution of the educational gap in life expectancy

Average annual growth (in months) in life expectancy gap at 60 or 65 between the lowest and highest educational category, number of included study periods between brackets (men/women)



Note: Study periods are weighted by the length of the period assessed so that an evolution in life expectancy assessed over a 10-year period has double the weight of an evolution in life expectancy assessed over a five-year period. There is no change in the gap over time for men in Norway (covered by two study periods) and Türkiye (one study period).

Source: Crimmins and Saito (2001[10]), "Trends in healthy life expectancy in the United States, 1970-1990: gender, racial, and educational differences", https://doi.org/10.1016/s0277-9536(00)00273-2; Eurostat (2020[14]), "Life expectancy by age, sex and educational attainment level (demo_mlexpecedu)", https://ec.europa.eu/eurostat/databrowser/view/DEMO_MLEXPECEDU/default/table?lang=en; Gheorghe et al. (2016[15]), "Health inequalities in the Netherlands: trends in quality-adjusted life expectancy (QALE) by educational level", https://doi.org/10.1093/eurpub/ckw043; Grigoriev and Doblhammer (2019[13]), "Changing educational gradient in long-term care-free life expectancy among German men, 1997-2012", https://doi.org/10.1371/journal.pone.0222842; Insee (2016[16]), "Les inégalités sociales face à la mort", https://www.insee.fr/fr/statistiques/1893092?sommaire=1893101; Olshansky et al. (2012[11]), "Differences In Life Expectancy Due To Race And Educational Differences Are Widening, And Many May Not Catch Up", https://doi.org/10.1377/hlthaff.2011.0746; Solé-Auró, Beltrán-Sánchez and Crimmins (2015[12]), " Are Differences in Disability-Free Life Expectancy by Gender, Race, and Education Widening at Older Ages?", https://doi.org/10.1007/s11113-014-9337-6; Zarulli, Jasilionis and Jdanov (2012[17]), "Changes in educational differentials in old-age mortality in Finland and Sweden between 1971-1975 and 1996-2000", https://doi.org/10.4054/demres.2012.26.19.

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Based on the few studies analysing changes in occupational or income inequalities in remaining life expectancy at 60 or 65, it is not possible to exclude a potential widening of the occupational life-expectancy gap. Change in occupational inequalities in life expectancy at 60 or 65, often measured as the difference between manual workers and professionals or managers, was only assessed for France (Cambois, Robine and Hayward, 2001[18]; Insee, 2016[16]), Germany (Kibele, Jasilionis and Shkolnikov, 2013[19]) and Sweden (Burström, Johannesson and Diderichsen, 2005[20]). In France, the occupational gap in remaining life expectancy has been stable over time for women and at most increased slightly for men – by about one week per year. In Germany, the gap increased by 1.5 months per year for men, whereas in Sweden it increased by one month per year for men and 0.4 months per year for women. One German study on income inequalities in life expectancy at 65 found that inequalities increased for both men and women between the early 1990s and the early 2010s (Lampert, Hoebel and Kroll, 2019[21]).

Including studies assessing remaining life expectancy also at younger ages, there is no clear trend in educational and occupational inequalities in life expectancy for most OECD countries. This is the case for Australia, Austria, Denmark, Finland, France, Greece, Hungary, Iceland, Israel, Korea, Mexico, the Netherlands, New Zealand, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom. The lack of a clear trend can either be the consequence of

inequalities having remained stable or of contradictory trends between studies or over time periods. Among studies assessing life expectancy around age 30, educational gaps did grow in Belgium during the 1990s (Deboosere, Gadeyne and Van Oyen, 2009[22]), in Canada from the mid-1990s to around 2010 (Bushnik, Tjepkema and Martel, 2020[23]) and in Lithuania from 2001 to 2014 (Mesceriakova-Veliuliene et al., 2021[24]),[2] while they have decreased in Czechia between 2010 and 2016 (OECD, 2013[25]; OECD, 2019[26]).

Different measures of healthy life expectancy

In the debate on increasing retirement ages as people live longer it is sometimes proposed to link retirement ages to healthy life expectancy instead of life expectancy as not all extra years are spent in good health. Retirement-age links should be based on a robust indicator to ensure that changes in retirement ages are predictable and that people can adjust their retirement expectations in time.

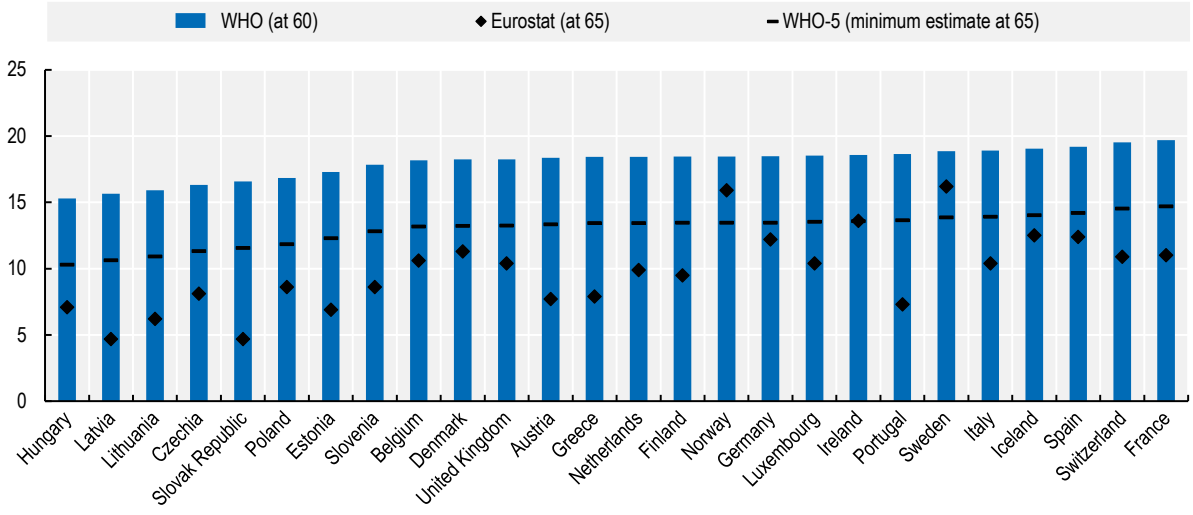
The World Health Organization (WHO) and Eurostat use different methodologies to produce estimates of healthy life expectancy.[3] The WHO defines healthy life expectancy (HALE) as the average number of years in good health a person (e.g. at age 60) can expect to live based on current rates of ill-health and mortality. The WHO publishes estimates by age and sex based on the disability-adjusted life years (DALY) methodology.[4] These estimates are produced from objective health data on 369 diseases and injuries gathered from a wide array of sources including among others censuses, household surveys, civil registration and vital statistics, disease registries and health service use (Vos et al., 2020[27]). Disability is not measured directly but estimated based on the expected disabling burden of conditions (Saito, Robine and Crimmins, 2014[28]).

Eurostat, on the other hand, defines healthy life years (HLY) as the number of remaining years that a person of specific age is expected to live without any severe or moderate health problems. Health problems are measured using the Global Activity Limitation Instrument (GALI) that is included in the annual EU Statistics on Income and Living Conditions (EU-SILC) survey. GALI is a single subjective question to assess health: “For at least the past six months, to what extent have you been limited because of a health problem in activities people usually do?”. Respondents can select one of the following options: severely limited; limited but not severely; and, not limited at all. Respondents are considered to be living without any severe or moderate health problems if they indicate not to be limited at all in performing usual activities (Eurostat, 2020[29]). The subjective nature of the indicator makes it unsuitable as a condition for automatic adjustments in pension policies such as retirement-age links for a number of reasons, including the need for reliable survey research with a large enough sample and the possibility for people to reply strategically to the survey question if they are aware that it can influence pension policy.

The WHO’s healthy life expectancy estimates are almost consistently higher than the ones produced by Eurostat. Numbers cannot be expected to be similar as the WHO calculates healthy life expectancy at age 60 while Eurostat analyses it at age 65, but based on the WHO estimate at age 60 a range of possible values at age 65 can be roughly estimated. The Eurostat estimates of healthy life expectancy at age 65 only fall in the range of possible WHO estimates for Ireland, Norway and Sweden (Figure 1.4).[5] However, the Eurostat and WHO measures are correlated, with a linear correlation coefficient of 0.63.

Figure 1.4. WHO estimates higher healthy life expectancy than Eurostat

Healthy life expectancy at age 65 according to Eurostat and at age 60 according to WHO, 2019



Note: Healthy life expectancy at 65 following the WHO calculation is likely to fall between the lines and the top of the blue bars. The top of the bar shows healthy life expectancy at age 60 (HLE60); the bottom shows HLE60 – 5. Hence, the bottom of the bar shows life expectancy at age 65 under the assumption that all life years between 60 and 65 are in good health. Eurostat data refer to 2018 for Iceland and the United Kingdom.
Source: Eurostat, Healthy life years by sex (HLTH_HLYE); WHO, Healthy life expectancy (HALE) at age 60 (WHOSIS_000007).

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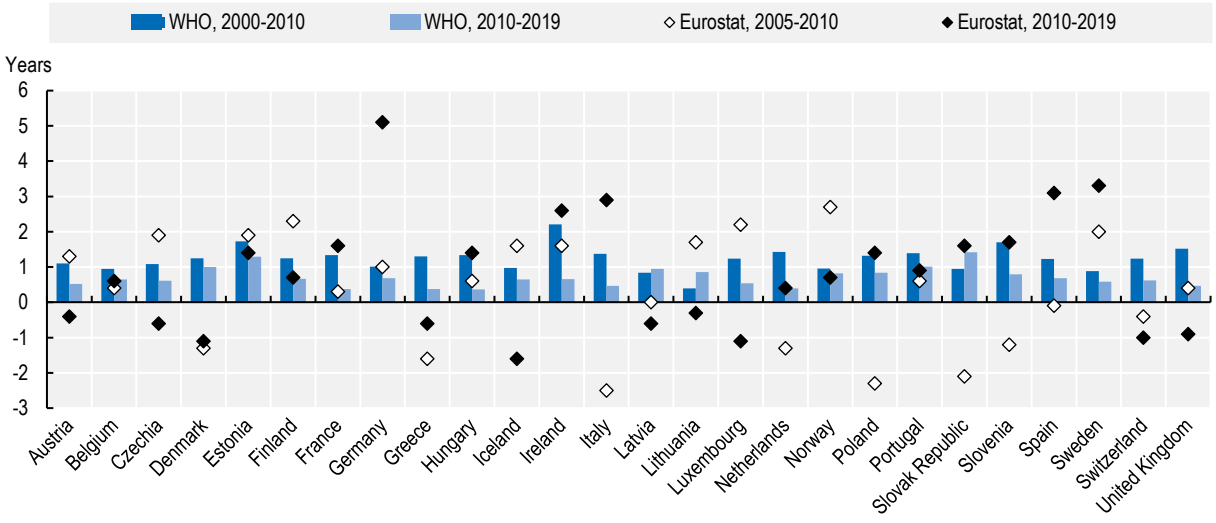
The WHO estimates show a stable growth in healthy life expectancy over time compared to Eurostat. According to the WHO calculations, all countries for which comparable data are available experienced growth in healthy life expectancy over both the first and the second decade of the 21st century (Figure 1.5). Eurostat estimates in contrast are less stable over time and show negative growth in 15 countries either between 2005 and 2010 or between 2010 and 2019 – or in both periods. For instance, in Denmark, the WHO calculated that healthy life expectancy grew by at least one year in each period, whereas Eurostat found a decrease of at least one year for both periods. The Eurostat measure changes a lot in an erratic manner over time for individual countries, potentially as a result of limited sample sizes.

The WHO indicator, while being more stable, provides little added value over measures of remaining life expectancy. The cross-country correlation between healthy life expectancy (as measured by WHO) and remaining life expectancy (as measured by UN) is very strong, with a linear coefficient of 0.95. Moreover, based on the WHO indicator, the share of remaining life expectancy people can expect to live in good health is remarkably stable across countries and over time. On average across the OECD, 76% of life expectancy at age 60 was in good health based on the WHO estimates in 2019, ranging from 71% in the United States to 78% in France, Israel and Japan. This share has remained stable since 2000 (OECD, 2023[30]). While the WHO measure may seem more robust, these limited cross-country differences are puzzling, which may suggest that the measure captures the reality only partially. Using the WHO measure for automatic links in pension policies would thus entail a complex procedure requiring more data and entailing a higher risk of errors than using remaining life expectancy, for little gain. Based on these estimates, retirement age links to life expectancy designed to keep the share of adult life spent in retirement constant (e.g. increasing the retirement age by two-thirds of life-expectancy increases) are unlikely to result in a shortening of healthy life expectancy at retirement.

Figure 1.5. WHO show more stable growth in healthy life expectancy over time than Eurostat

Growth in healthy life expectancy in years



Note: Eurostat data refer to 2007 instead of 2005 for Switzerland and to 2018 instead of 2020 for Iceland and the United Kingdom. Eurostat data are imputed for Italy for 2010 as data are missing for that year but the estimates for 2009 and 2011 are the same.
Source: Eurostat, Healthy life years by sex (HLTH_HLYE); WHO, Healthy life expectancy (HALE) at age 60 (WHOSIS_000007).

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Special rules for early starters

Some countries (see below) have introduced special rules for people who started working early as a way to account for inequalities in health and life expectancy. The reasoning is that those people have enjoyed fewer years of education and are unlikely to have a tertiary education degree, and therefore are more likely to perform physical labour or to work in hazardous environments, impacting their health and life expectancy. However, the analysis of such a scheme in France shows that mortality rates are not higher for people who retired through the early-starter scheme and that they in fact are in better health at retirement than people who retired in the general old-age pension scheme. A key explanatory factor is that early-starter schemes typically entail a long career requirement, so that only comparably healthy people can benefit from the scheme (Aubert, 2023[31]; Börsch-Supan et al., 2022[32]).

In most countries with special rules for early starters, early retirement rules are relaxed for this group. Denmark legislated a new flat-rate benefit in 2020 allowing people to retire early as of 2022. Access to the benefit requires between 42 and 44 years worked or credited between age 16 and six years before the statutory retirement age, resulting in between 1 and 3 years of early retirement, respectively. With the statutory retirement age currently at 67, the scheme can only be accessed by people who started working between age 16 and 19. In 2022 the benefit was equal to 35% of gross average earnings. France allows people who started working before age 16, 18, 20 and 21 to retire at age 58, 60, 62 and 63, respectively, on the condition of having a full career, which is increasing from 42 to 43 years (see Recent pension reforms). Italy allows people who worked at least 12 months before age 19 to retire after 41 years worked. In Luxembourg, early old-age pension is in principle available as of age 60 for people with a career of at least 40 years worked or credited with study years between age 18 and 27 counting as periods credited. However, early retirement is accessible already as of age 57 for people who effectively worked for 40 years. Hence, the scheme requires labour market entry before age 20. Slovenia allows men to retire

two years earlier and women three years earlier if they started to pay contributions before age 18 and have a 40-year career.

Germany and Portugal allow for early retirement without a penalty for early starters. In Germany, people can access early retirement without a penalty between 2 and 2.5 years (depending on year of birth) before the statutory retirement age in case of a 45-year career. For birth cohorts until 1952 this required entering the labour market latest at age 18; from the 1964 cohort it will require entering latest at age 20. Portugal allows people to access early retirement without a penalty after a 48-year career or after 46-year career with contributions first paid before age 17. In addition, for people who paid 40 years of contributions by age 60 – requiring labour market entry latest at age 20 –, old-age benefits are accessible without penalty four months earlier for each extra year contributed after 40 years of contributions, but not before age 60.

Austria and Switzerland treat years worked before age 20 in a special way although it does not grant access to early retirement. Austria provides a bonus to people who worked at least for one year before age 20. The bonus equals EUR 1 per month for each month worked before age 20 with a maximum of 60 months, corresponding to a monthly benefit of between EUR 12 and EUR 60. The bonus was introduced in 2022 to replace an early retirement scheme and is meant to improve pension adequacy of people who started early as they often have low pension build-up in their first years of employment. In Switzerland, the pension calculation in principle only accounts for contributions made as of age 20, but contributions paid between age 17 and 19 can be used to compensate up to three years of missing contributions later in the career.

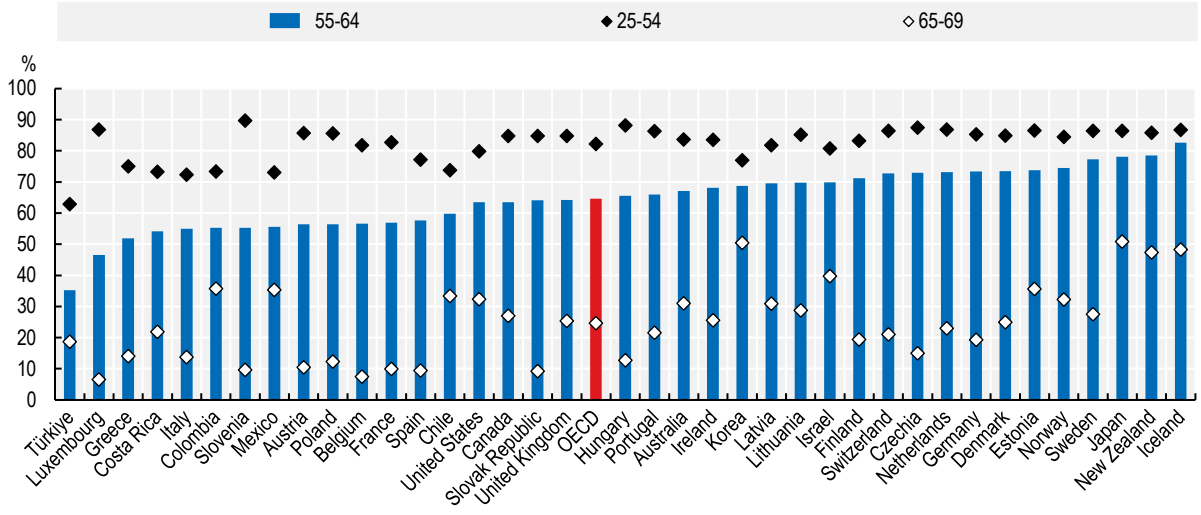
In contrast to special rules for people who entered the labour market early, some countries credit periods of education in pension build-up. This is a regressive policy as it strengthens the pensions of those who can expect to live longer and to do so in good health. A few OECD countries credit study periods. Germany credits up to eight years of studies from age 17, and Luxembourg credits all study years between age 18 and 27. Finland credits three to five years depending on the type of study, and in Sweden period are credited for students receiving certain types of government support such as study grants. Three countries abolished crediting new study periods but will still pay pensions based on credited study periods for decades to come: Czechia credits secondary education that took place before 1996 and tertiary education that took place before 2010; Hungary credits vocational and higher education study years before 1998 with the number of years credited depending on the type of study; and the Slovak Republic credits secondary and tertiary education as of age 16 that took place before 2004. In addition, study periods can be purchased in nine OECD countries, either through schemes that allow a certain number of years of education to be purchased (Austria, Belgium, Greece, Hungary, Italy and the Slovak Republic), or through a general purchase option (Czechia, Slovenia and the United Kingdom). Japan and Switzerland stand out as the only countries where students have to pay mandatory contributions as of age 20.

Still increasing employment of older ages throughout COVID-19

The employment rate of older age groups is well below that of prime-age workers. On average across the OECD, 64.6% of people aged 55-64 and 24.7% of those aged 65-69 are in employment, compared to 82.2% of those aged 25-54 (Figure 1.6). Less than half of people in the age group 55-64 are in employment in Luxembourg and Türkiye, compared with more than three-quarters in Iceland, Japan, New Zealand and Sweden. In the age group 65-69, fewer than one in ten are employed in Belgium, France, Luxembourg, the Slovak Republic, Slovenia and Spain against around half in Iceland, Japan, Korea and New Zealand. Moreover, in Iceland, Japan, Korea, New Zealand, Norway and Sweden the gap in employment rates between people aged 55-64 and those aged 25-54 is 10 percentage points. or less. That gap is between 25 and 30 percentage points in Austria, Belgium, France, Poland and Türkiye, and it is even larger in Luxembourg and Slovenia.

Figure 1.6. Employment rates for older adults lag behind those of prime-age individuals

Employment rates by age group, 2022



Source: *OECD Labour Force Statistics*, Australian Bureau of Statistics table LM9 for Australian employment rates 65-69.

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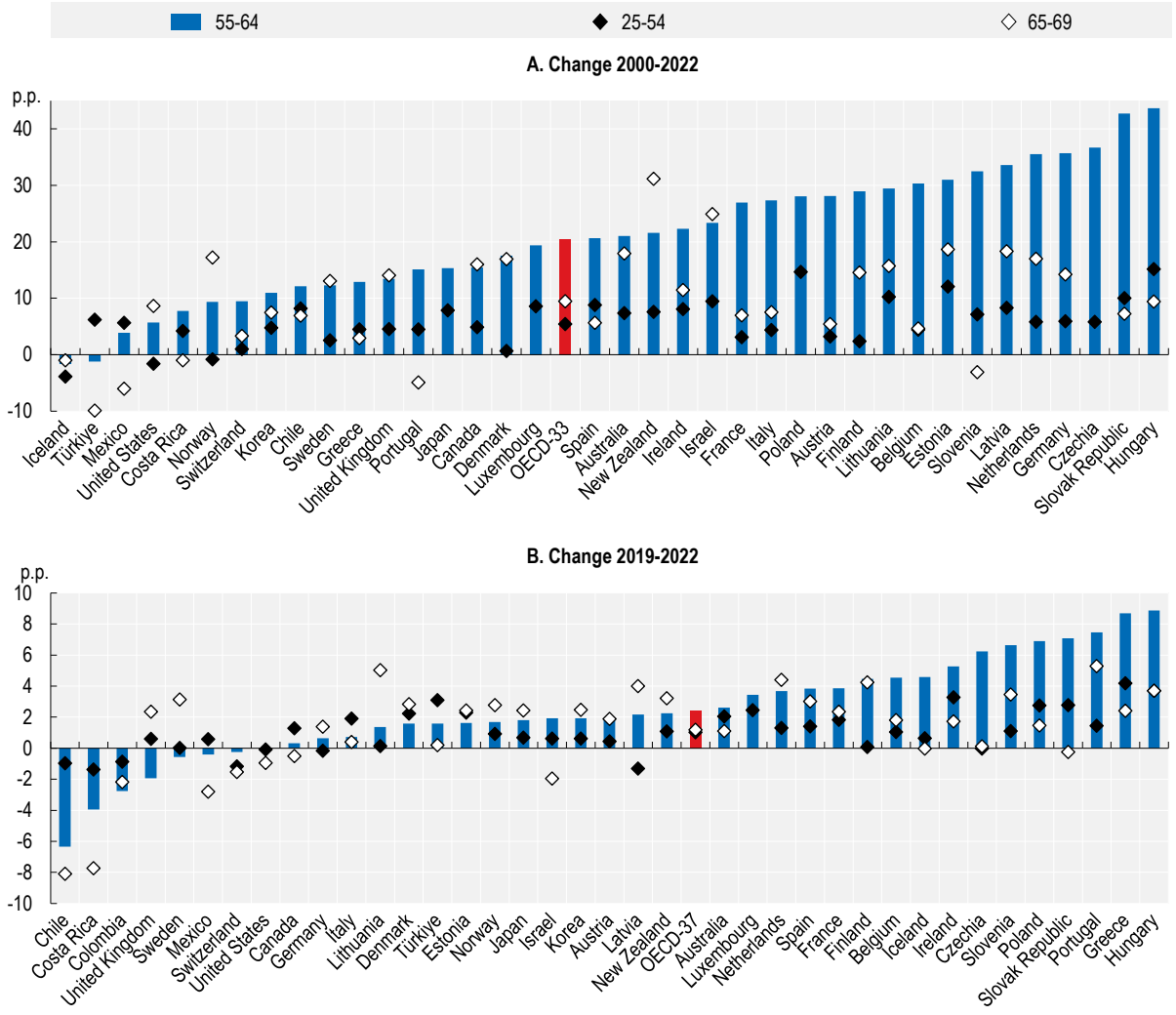
However, the situation has sharply improved over the last decades. Since 2000, the employment rates of older individuals have substantially increased in most OECD countries. Across the 33 OECD countries for which data are available for the entire 2000-22 period for all age groups, the employment rate among 55-64 year-olds grew by 20.5 percentage points (Figure 1.7, Panel A). The increase exceeded 40 percentage points in Hungary and the Slovak Republic, which had employment rates around half of the OECD average at the start of the period and have basically closed the gap in 2022.[6] Among the 65-69, the employment rate grew by 9.4 percentage points on average across the 33 OECD countries.

The impact of the COVID-19 pandemic has not reversed the trend of increasing employment at older ages. Concerns over a permanent reduction of labour supply ("great resignation") have not materialised (OECD, 2023[33]), despite some concrete evidence of increasing inactivity among older individuals in some OECD countries in the initial stages of the pandemic. The employment rates for the age groups 55-64 and 65-69 grew by 2.4 percentage points and 1.2 percentage points, respectively, compared to 1.0 percentage points among people aged 25-54, between 2019 and 2022 on average (Panel B). Among the 55-64, the increase was particularly strong in Greece and Hungary whereas Finland, Latvia, Lithuania, the Netherlands and Portugal saw substantial increases in employment among the 65-69 age group. However, the COVID-19 pandemic and its economic impact did result in declining employment rates in some countries in particular in Latin America, with declines of more than 1 percentage point for the age group 55-64 in Chile, Colombia, Costa Rica and the United Kingdom, and for the age group 65-69 in Chile, Colombia, Costa Rica, Israel, Mexico and Switzerland.

Figure 1.7. Most OECD countries have resumed the pre-COVID trend of growing employment at older ages

Percentage-point change in employment rates of different age groups over the periods 2000-22 (Panel A) and 2019-22 (Panel B)



Note: In Panel A, Czechia, Japan, Luxembourg and Poland are not included in the average as no data are available for the 65-69 age group; Colombia is not included as no data are available for all age groups for the year 2000. In Panel B, Luxembourg is not included in the average as no data are available for the 65-69 age group.
Source: *OECD Labour Force Statistics*, Australian Bureau of Statistics table LM9 for Australian employment rates 65-69.

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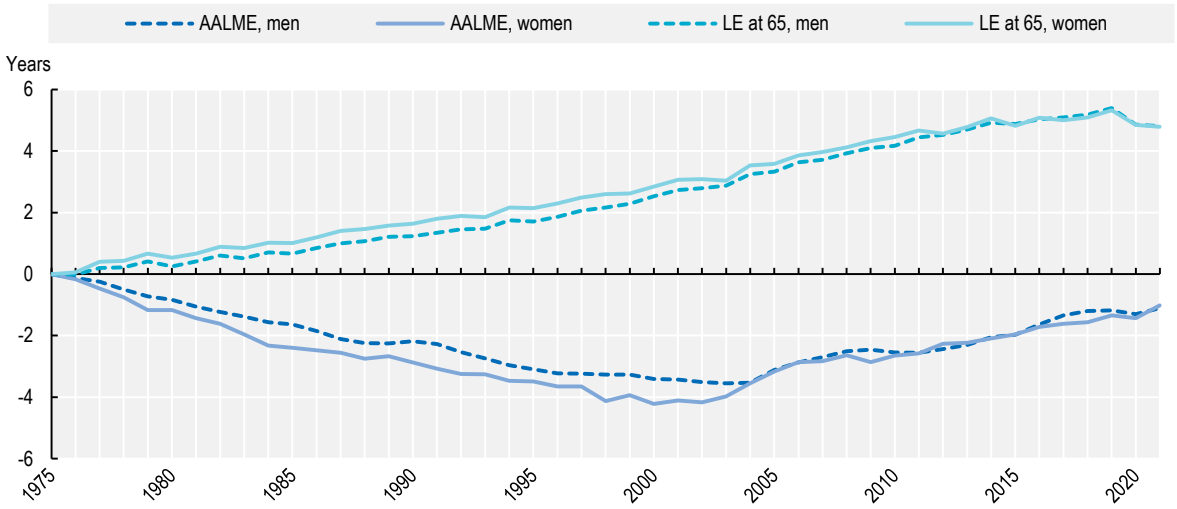
Combining long-term trends in life expectancy and labour market exit age suggests that health is currently not a key obstacle to higher participation rates at older ages. People on average still leave the labour market at an earlier age than in 1975 despite strong increases in life expectancy. With the exception of the impact of the COVID-19 pandemic in 2020, life expectancy at age 65 has been increasing steadily since 1975, by 5.3 years in total for both men and women by 2019, before dropping by half a year for both sexes in 2020 (Figure 1.8). At the same time, labour market exit ages had drifted lower until the turn of the millennium. Across 25 OECD countries for which data are available for the entire time series, men and women left the labour market 3.4 and 4.2 years earlier, respectively, in 2000 than in 1975. After a couple

of years of stability in the average age of labour market exit, the trend was reversed in the first half of the 2000s and people on average have been gradually exiting the labour market later, and in total by 2.3 years for men and 3.2 years for women since 2000. Since the mid-2000s, the labour market exit age has increased roughly at the same pace as remaining life expectancy at age 65.

Figure 1.8. Average time in retirement from the labour market increased substantially since 1975

Evolution in years of the average age of labour market exit (AALME) and life expectancy (LE) at the age of 65 by gender, average of 25 OECD countries, 1975-2021



Note: Average of 25 OECD countries for which data on effective age of labour market exit and life expectancy at the age of 65 are available for both men and women for all years in the period 1975-2021. Due to missing data, Austria, Canada, Chile, Colombia, Costa Rica, Germany, Ireland, Israel, Latvia, Lithuania, Slovenia, Türkiye and the United Kingdom are not included in the OECD average.
Source: OECD calculations.

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Pensioners' income security and inflation

The COVID-19 pandemic, Russia's war of aggression against Ukraine and adjustments of macroeconomic policies have triggered an inflation wave felt across the globe. While energy prices are declining since the end of 2022 and food price inflation has slowed down since spring 2023, core inflation (excluding food and energy) remains at an elevated level. Inflation has not hit all OECD countries equally, as Japan and Switzerland saw consumer prices increase by only 6% between January 2021 and August 2023, whereas Colombia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland and the Slovak Republic experienced price increases of between 25% and 40% over the same period. In Türkiye, the CPI even more than tripled over the same period. People facing increasing expenditures due to inflation are affected if their incomes are not adjusted at a similar pace in a timely manner. The extent to which older people are exposed to a potential loss in purchasing power thus depends on pension indexation mechanisms and their effective application. These mechanisms vary greatly across OECD countries as well.

Older people's consumption patterns and inflation

The inflation surge since 2021 has increased expenditures somewhat more for older people than for others in many countries. As older people tend to have lower incomes than the total population in most OECD countries, they tend to spend a larger share of their budgets on energy and food. Yet, not all older

people were affected in the same way: the impact of inflation differs substantially between older people themselves according to French data, with a higher variation in cost-of-living increases than for any other age group (Insee, 2023[34]). Certainly not all older people have thin budgetary margins to absorb price increases. Older people generally dissave at a much slower pace than the life-cycle model would imply, with a substantial part of older people even continuing to accumulate savings in retirement (Horioka and Ventura, 2022[35]; Niimi and Horioka, 2019[36]). In the majority of OECD countries studied in Causa et al. (2022[37]), inflation has had a bigger negative effect on the expenditures of older people relative to those of middle-aged people.[7]

Beyond lower incomes, some structural factors explain why inflation had a bigger impact on older people's cost of living. Increasing food prices[8] and, in particular, heating costs have weighed on older people's budgets. In France, for instance, heating accounts for 3% of expenditures of people younger than 30, compared to 6% for people aged 60-74, and about 9% for those aged 75+ (Insee, 2023[34]), while in Ireland, energy costs accounted for 49% of the cost-of-living increase of people aged 65+ in December 2021, compared to 35% for people younger than 35 (Lydon, 2022[38]). Related to the high home-ownership rates among older people (Cournède and Plouin, 2022[39]), people often stay in the same family home after the children moved out and even after losing their spouse. Not only do older people lose economies of scale on heating expenses as a result of staying in their homes, these older homes are often also less energy efficient (European Construction Sector Observatory, 2019[40]) and more likely to use heating systems based on fossil fuels (Insee, 2023[34]).[9] The large heterogeneity in the energy efficiency of older people's dwellings and in the types of energy sources they use for heating contribute to the higher variation in impact of inflation among older people compared to other age groups.

Inflation disparities between urban and rural areas also contribute to variation in inflation across age groups in most OECD countries as older people live relatively more often in rural areas (OECD, 2022[41]). On average across 10 OECD countries, for instance, the difference in the loss of purchasing power between rural and metropolitan areas was bigger than between the lowest and the highest income quintile over the period between August 2021 and August 2022 (Causa et al., 2022[37]).

Indexation rules and pensioners' exposure to inflation shocks

While the cost of living has risen faster for older people than for other age groups in many countries, pensioners may still be less affected in terms of purchasing power thanks to the indexation of pension benefits. Indexation mechanisms vary significantly across countries and across pension schemes within countries. The extent to which indexation prevented a real income loss among retirees depends on whether pensions are indexed to prices or another indicator such as wages, as well as on the timing of adjustments and the reference periods they are based on.

Price versus wage indexation

During a surge in inflation resulting from a negative supply shock, price indexation provides better protection against a drop in standards of living than wage indexation. While price indexation is meant to stabilise the purchasing power of retirees, in normal times wage indexation generates greater benefits over time as productivity gains translate in positive real-wage growth. However, with a sudden increase in prices and falling real wages, wage indexation does not protect the purchasing power of pensioners and price indexation becomes more costly than initially anticipated for public finance or pension providers more generally: the ongoing episode of high inflation thus reverses the standard way of thinking about pension indexation (OECD, 2022[42]).[10]

Price indexation may even have overcompensated pensioners in some countries. First, pensioners may have been compensated twice for high energy prices, first via energy cheques and subsequently via price indexation of pensions. Second, average price inflation may have effectively been lower than indicated by CPI in countries where fixed-price or regulated energy contracts are commonplace. Indeed, at any given

moment, CPI accounts for how much an average household would pay for energy if it were to sign a new energy contract today. When there is a temporary jump in energy prices, this is fully reflected in the index even if it does not affect those households with a fixed-price energy contract. For instance, in Belgium, the CPI indicates that energy was 81% more expensive in 2022 compared to 2018, whereas the average energy bill was estimated to be only 17% higher – the difference is only partially explained by reduced energy consumption. The overestimation of the price most people pay for energy would result in an overestimation of CPI by 3.3% on average over the whole of 2022 (Peersman, Schoors and van den Heuvel, 2023[43]). Similarly, in the Netherlands, year-on-year inflation would have been around half the official number for several months throughout 2022 if fixed-price contracts were accounted for (Statistics Netherlands, 2023[44]). Hence, Statistics Netherlands has decided to adjust its CPI calculations as of June 2023 to account for people with fixed-price contracts. However, these effects are temporary as CPI inflation is likely to underestimate price increases when energy prices come down, as some consumers will be locked in energy contracts with a higher fixed price.[11]

Price indexation is the most common form of indexation of pensions in payment across OECD countries, in particular for targeted benefits (Table 1.1). Targeted benefits are adjusted to prices in 21 OECD countries, basic pensions in four (out of 17) countries and earnings-related pensions in 18 countries. Japan adjusts basic and earnings-related pensions below prices when the number of active contributors to the pension scheme declines. Price indexation is typically based on the consumer price index (CPI), although some countries deviate from this standard.[12] The Slovak Republic indexes both targeted and earnings-related pensions to a pensioner-specific cost-of-living index, and Czechia will do so as well for the price component in its mixed indexation of earnings-related pensions as of 2025 – it currently uses highest of either CPI or a pensioner-specific cost-of-living index, as does Australia for its targeted pensions.[13] Spain reintroduced price indexation in November 2021, effective as of 2022, after the previous adjustment mechanism resulted in a decline in pensions in real terms several years in a row (OECD, 2021[8]).

Several countries index pensions in payment to prices, and in addition, partially or fully, to real-wage growth if positive. Within the OECD, 5 countries do so in their targeted scheme, 4 in their basic scheme and 4 in their earnings-related scheme.[14] Israel, Luxembourg and the United Kingdom adjust all their public pensions to the highest of either price or wage growth, with the latter applying in addition a minimum increase of 2.5% as part of the triple lock that was temporarily suspended in 2022 (see below). Czechia, Latvia and Poland index their earnings-related pensions fully to prices and in addition partially adjust to the growth rate of real wages (Czechia, Poland) or the real wage bill (Latvia) if the latter is positive. The targeted pension in Australia[15] and the basic pension in New Zealand are indexed to prices but are in practice over time adjusted to wages as their lower-bound level is defined relative to wages.

Finally, some OECD countries index pensions in payment to a mix of price and wage growth. Estonia, Switzerland and Norway since its 2022 pension indexation reform [16] combine partial indexation to CPI with partial indexation to nominal wages (Norway, Switzerland) or the wage bill (Estonia) in all their public pension schemes; Finland and Slovenia do so in their earnings-related scheme and Germany in its targeted scheme.

Table 1.1. Overview of OECD countries by way of indexing pensions in payment

Less than prices	Prices		At least prices		Mix of prices and wages	Wages	Less than wages	Discretionary
	CPI or similar		100% prices + x% real wages if positive	Highest of prices or wages	Part prices, part wages (%p+%w)	Avg. wage or similar		
TARGETED BENEFITS								
0	21		5		4	3	0	4
	AUT	JPN		AUS	CHE (50+50)	DNK		COL
	BEL	KOR		GBR (or 2.5%)	DEU (70+30)	LVA		CRI
	CAN	LTU		ISL	EST (20+80, wb)	NLD		CZE
	CHL	POL		LUX	NOR (50+50)			IRL
	ESP	PRT		NZL				
	FIN	SVK						
	FRA	SVN						
	GRC	SWE						
	HUN	TUR						
	ISR	USA						
	ITA							
BASIC PENSIONS								
1	4		4		2	4	0	2
JPN	CAN	ISR		GBR (or 2.5%)	EST (20+80, wb)	CZE		IRL
	GRC	KOR		ISL	NOR (50+50)	DNK		MEX
				LUX		LTU (wb)		
				NZL		NLD		
EARNINGS-RELATED PENSIONS								
1	18		4		5	2	1	0
JPN	AUT	HUN	CZE (50%)	LUX	CHE (50+50)	DEU	SWE	
	BEL	ITA	LVA (wb, 50-80%)		EST (20+80, wb)	LTU (wb)		
	CAN	KOR	POL (20%)		FIN (80+20)			
	CHL	MEX			NOR (50+50)			
	COL	NLD			SVN (40+60)			
	CRI	PRT						
	ESP	SVK						
	FRA	TUR						
	GRC	USA						

Note: The Statlink contains a more detailed overview of OECD countries' pension indexation policies. FDC annuities are not included with the exception of Chile and Mexico where CPI indexation is mandatory for FDC annuities. Wb = wage bill. Some countries indexing to prices do not use the (full) CPI but use similar metrics. This includes alternative cost-of-living measures (Australia, the Slovak Republic and the United States, as well as Japan for targeted benefits), CPI measures where certain types of goods are removed from the basket (Belgium, France and Portugal), and measures where indexation in principle follows CPI but can be higher or lower depending on other metrics (the Netherlands and Portugal). The targeted pension in Australia and the basic pension in New Zealand are indexed to prices but in practice adjust to wages over time as they cannot fall below a certain percentage of average earnings (see Statlink for more information). In Austria, Italy, Latvia and Portugal, full price indexation is only applied for pensions below a certain threshold. In Canada, indexation is frozen if there is a projected deficit in the pension system and a political agreement on how to restore long-term financial sustainability cannot be reached, although this has so far never happened. Czechia will reduce the wage-growth component in indexation of earnings-related pensions from 50% to 33.3% from 2025. Since 2023, the targeted benefit in Germany is additionally adjusted to full price inflation over the last year as a proxy for inflation over the current year, although this supplementary adjustment in the current year is not taken into account in the calculation of the benefit in the next year. Greece adjusts pensions to less than CPI if real GDP declines. Japan indexes earnings-related and basic pensions to the wage bill until age 67, and applies price indexation as of age 68. Ireland currently adjusts targeted and basic pensions on a discretionary basis but is expected to introduce indexation following a smoothed-earnings method.

StatLink https://stat.link/8yb9m3

Some countries only apply full indexation to low pensions and index pensions above a certain threshold at a lower rate or not at all. This is the case in Austria, Colombia,[17] Italy,[18] Latvia[19] and Portugal. While Colombia, Latvia and Portugal[20] have clear rules about the thresholds above which pensions are adjusted at a lower rate than prices, these thresholds change very regularly in Austria and Italy resulting in quasi-discretionary indexation.

More than half of OECD countries tend to protect earnings-related pensions fully from inflation shocks. These include countries where earnings-related pensions are fully indexed to prices – CPI or similar, 100% prices plus real-wage growth if positive, highest of prices or wages (Table 1.1, columns "Prices" and "At least prices"). However, whether price-indexed pensions are adjusted quickly after the shock or with some delay resulting in a temporary loss of purchasing power depends on timing aspects of indexation mechanisms, which are discussed below. A few countries index pensions in payment to a mix of prices and wages or fully to wages, which should enable catching up over time as positive real-wage growth tends to generate higher indexation than prices in the long term.

Timing and reference periods for adjustments

Pension indexation mechanisms' ability to maintain the real value of pensions throughout the inflation shock also depends on various timing aspects of the mechanisms, including adjustment frequency, smoothing and the time between the reference period and indexation.

There are two general approaches to the timing of adjustments: fixed-frequency and fixed-threshold indexation. Almost all OECD countries apply fixed-frequency indexation, typically indexing once per year in a specific month, most often January. Australia, Hungary, the Netherlands and Türkiye index twice per year, Canada's targeted pension is indexed quarterly and the annuities in Chile's FDC scheme are even adjusted on a monthly basis. By contrast, Switzerland only indexes its earnings-related pensions every two years and Poland indexes its targeted benefits only every three years.[21] Facing similar lags, Latvia has recently decided to increase the frequency of adjustments of its targeted benefit and minimum pension from every three years to annually from 2024.

Belgium and Luxembourg do not adjust at fixed times but instead when an index exceeds a certain level (fixed-threshold indexation), and several other countries use fixed-threshold indexation as a secondary indexation mechanism to protect pensioners at a time of high inflation. In Belgium, pensions are increased by 2% whenever the CPI index exceeds the level it had at the time of the previous indexation by 2%. Luxembourg has the same rule in steps of 2.5% and combines it with fixed-frequency indexation for adjustments to real-wage growth, although indexation was temporarily suspended (see below). Several countries supplement fixed-frequency indexation with fixed-threshold indexation with higher thresholds than the ones used in Belgium and Luxembourg to provide income protection to pensioners at times of exceptionally high inflation: Chile for its targeted scheme (fixed threshold of 10%), Czechia and, since 2023, the Slovak Republic (5%) and Switzerland (4%). Czechia deviated from this rule in 2023 (see below).

Smoothing is a useful tool to avoid that indexation is too much affected by month-to-month fluctuations in prices or wages, but long smoothing periods also delay the adjustment after an inflation shock. Most OECD countries smooth adjustments over 12-month periods.[22] This is the case for pension schemes in Austria, Denmark, France, Germany, Greece, Hungary, Italy, Latvia, Norway, Poland, Portugal, Slovenia, Spain and Sweden, as well as Canada's mandatory earnings-related scheme and Lithuania's targeted scheme. Schemes in Chile, Czechia, Estonia, Israel, New Zealand, Switzerland, Türkiye and the United Kingdom do not apply any smoothing, and merely compare the index in a single month to the index in another month. Other countries apply smoothing over three months (Canada, Finland and the United States), four months (Belgium) or six months (Australia, Luxembourg and the Slovak Republic). Lithuania is an absolute outlier smoothing wage-bill growth over seven years in its contributory pension scheme.

Timely adjustment matters as the gap between the end of the reference period and the pension adjustment taking effect contributes to pensioners temporarily losing purchasing power when inflation accelerates. For most countries pensions are adjusted three or four months after the end of the assessment period. However, for some it is substantially longer: six months in Austria, seven months in Czechia, Germany[23] and the United Kingdom and for the Swedish targeted scheme, and even a full year in Denmark and two years in Latvia's targeted scheme.[24] By contrast, in Belgium, Israel, Luxembourg and Türkiye, pensions are adjusted in the month after the end of the assessment period, and the gap is two months in France and Spain as well as for the earnings-related scheme in Mexico. Slovenia indexes earnings-related pensions two months after the end of the assessment period, but the adjustment is applied retroactively starting from the previous month.

Finally, some countries index pensions based on projections of how inflation or wages will develop over the current year; they implement corrections afterwards to adjust for the difference between projected and observed changes.[25] Hungary indexes in January to the projected annual change in CPI, with a retroactive correction from January applied in November. Italy similarly indexes to the projected CPI inflation but implements the correction together with next year's January indexation. The Netherlands adjusts its basic and targeted schemes based on the projected increase in minimum wages set in collective bargaining over the current year. In both January and July, indexation equals 50% of the projected increase for the current year, plus a correction of the gap between projection and effective evolution over the last six months. Finally, Sweden indexes to projected wage growth minus 1.6% and Norway now to a mix of projected wage growth and price inflation for the current year, while correcting for differences between effective and projected changes in the past year.

A surge in inflation may create early-retirement incentives depending on indexation rules, in particular when pensions in payment are indexed (mostly) to prices whereas past earnings are either not uprated around the time of retirement or uprated based on wages. In those cases, there is an incentive to retire early and benefit from a high first indexation of the pension in payment to prices. In Finland, for instance, past earnings are uprated based on 80% wages and 20% prices whereas pensions in payment are indexed to 20% wages and 80% prices. Hence, it was financially beneficial to retire at the end of 2022 rather than at the beginning of 2023 as high inflation has created an incentive to retire as long as price inflation persists and wages lag. As a result, the number of people claiming a pension increased sharply in the autumn of 2022. In particular in December, the number of new pension claimants bounced to very high levels compared with the monthly average for both old-age and partial old-age pensions (Finnish Centre for Pensions, 2023[45]). Similarly, in Austria, in the calendar year of retirement, past earnings are not uprated and pensions are not indexed, while pensions are indexed on a pro-rata basis in the year after retirement depending on the exact month one retired. After the inflation shock, these rules generated an incentive to retire early and receive the full price indexation in the year after retirement; they were subsequently revised.

In sum, the impact of inflation on the purchasing power of pensioners is very dependent on the characteristics of the indexation mechanism. Figure 1.9 illustrates this with developments recorded in six countries. In Belgium, where indexation is based on a fixed threshold of 2% as discussed above, there were six indexations between September 2021 and May 2023. This resulted in earnings-related pensions rising roughly at the same pace as inflation overall and with limited lags. Targeted benefits grew even faster due to some previously scheduled supplementary benefit increases taking effect over this period (Figure 1.9). In Canada, targeted and earnings-related pensions are indexed to CPI on a quarterly and annual basis, respectively. The more frequent adjustment of targeted benefits provided better protection of purchasing power throughout the inflation surge.

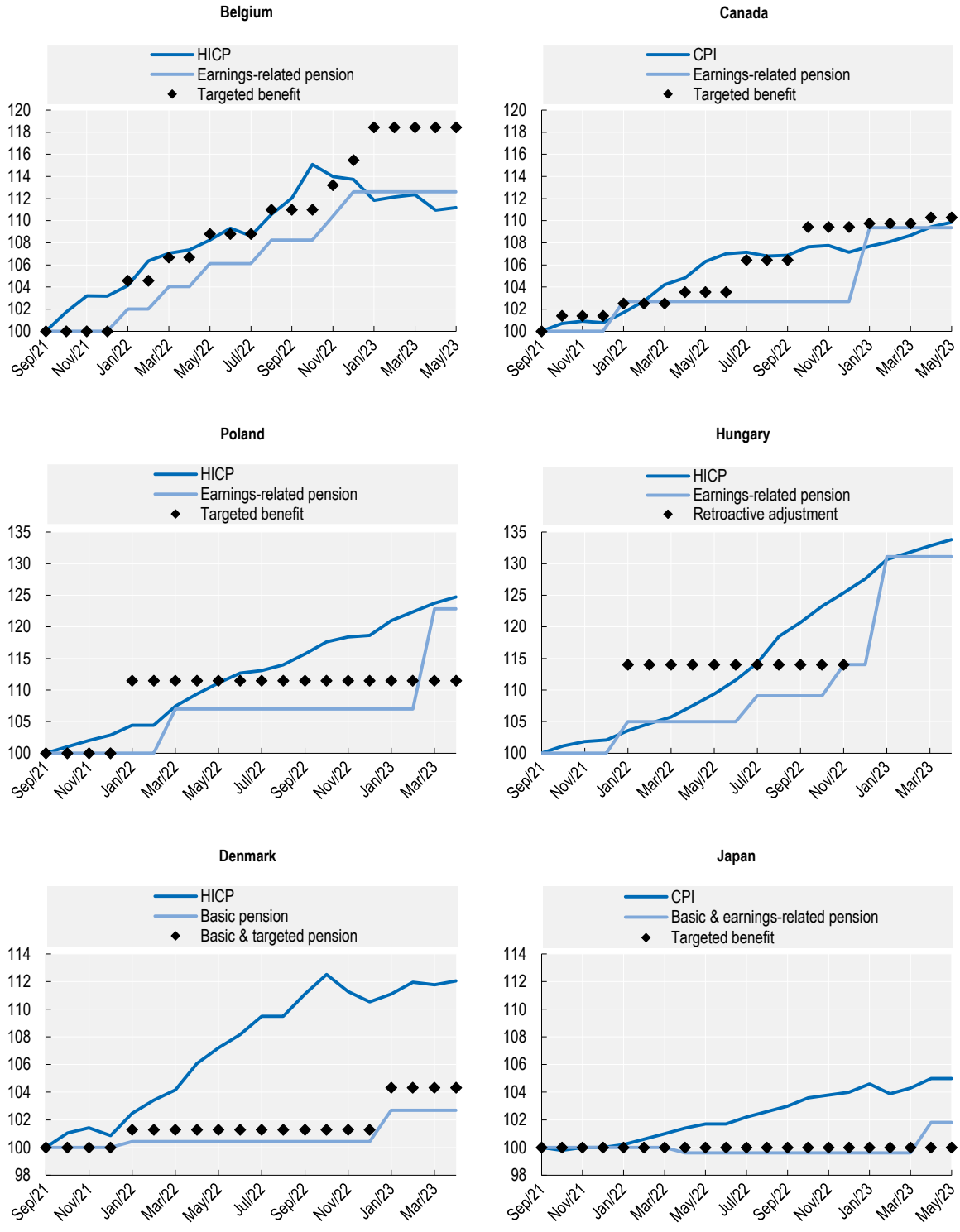
In Poland earnings-related pensions recorded steadily growing losses in real terms between April 2022 and March 2023 due to the sharp rise in consumer prices, but once pensions were adjusted in March 2023 their value caught up again. Hungary faced an even steeper increase in prices. Hungary adjusts pensions at the start of the year to projected CPI inflation for that year, and then applies corrections throughout the year as needed. These corrections are applied retroactively from January through lump-sum payments

covering the difference between the initial and the corrected benefit level. This projection-based approach is complex and not well suited to deal with sharp price increases: inflation for the year 2022 was severely underestimated in the January indexation and even after a supplementary correction in July. However, the November adjustment and its retroactive implementation has resulted in pensions being fully adjusted to 2022 inflation.

Denmark and Japan have been much less successful in upholding pensioners' purchasing power in the short term. As Denmark combines wage indexation with smoothing over a full year and a one-year gap between the end of the reference period and indexation taking effect – pensions are indexed to the change in average wage between the third and the second year before indexation –, all aspects of its indexation mechanism result in a delayed response in case of an inflation shock and pensioners' incomes falling behind. This resulted in pensioners losing significant purchasing power over a longer period of time, although wage indexation will ultimately provide higher benefits as wage growth usually exceeds price growth. In Japan, pensions have also not kept up with price increases over this period – although the increase in inflation has been less steep than in other OECD countries. Basic and earnings-related pensions are indexed to less than prices which results in pensions losing value in real terms. Targeted benefits, which are only adjusted every five years, were not adjusted at all over this period.

Figure 1.9. Different types of pension indexation and their impact

Pension indexation and inflation (September 2021 = 100)



Note: HICP = harmonised index of consumer prices. For Hungary, additional indexations throughout the year are retroactively applied from January.

Source: OECD Consumer Price Indices database; OECD calculations based on information provided by Member States.

StatLink https://stat.link/q2dezo

Deviations from pension rules

In addition to the permanent changes in indexation rules in Norway and Spain (see above), several countries applied temporary deviations from their standard indexation rules since September 2021 (Table 1.2). Norway, Poland, Portugal and Spain increased low pensions above what the indexation rule would have required as CPI underestimated the cost-of-living increase for low-income people during the inflation shock. Norway increased its targeted benefits by 1.72% above regular indexation in January 2023. Poland adjusted earnings-related pensions following the general indexation rule in March 2023, but set a minimum flat-rate increase of 8.6% of the average pension[26] so that lower pensions were increased at a higher rate than inflation. Similarly, Portugal followed the general indexation rule but increased pensions by at least EUR 10 in 2022.[27] In Spain, on top of the re-introduction of price indexation on contributory benefits at the end of 2021 (see Recent pension reforms), non-contributory benefits were increased by 6.5% above inflation in January 2023. Finally, Lithuania, Slovenia and Türkiye increased all earnings-related pensions by more than the rule required. Lithuania, adjusting earnings-related pensions to wage-bill growth, implemented a supplementary 5% indexation in June 2022 to help people cope with the inflation surge. Slovenia increased earnings-related pensions in January 2022 by between 1.0% and 3.5% depending on the date the pension was claimed. Türkiye increased pensions by 30% in January 2023 ahead of the elections, exceeding the 16.5% adjustment The indexation rule would have required.

Czechia, Italy and the United Kingdom adjusted pensions at a lower rate than the index required (Table 1.2). In Czechia, the supplementary fixed-threshold indexation rule would have triggered an indexation of 11.5% in June 2023,[28] but due to its budgetary impact the rule was deviated from and an indexation of 2.3% plus a fixed sum of around 1.6% of the average pension was implemented instead. Italy applies reduced indexation to higher pensions. Finally, the United Kingdom temporarily suspended the triple-lock mechanism in 2022. In 2021, pensions were increased by 2.5% given yearly (as of September 2020) low inflation and negative wage growth. As COVID-19 restrictions were eased and wages rebounded in 2021, pensions would have had to increase by around 8% in 2022 if the triple lock was upheld. Due to the suspension, pensions were instead indexed in line with inflation (3.1%).

Some countries also adjusted the timing of indexation, with Finland, France and Latvia advancing indexation and Luxembourg and Portugal postponing it. Finland in principle indexes its targeted pension benefit once per year in January but moved forward part of that indexation to August 2022 to avoid that the purchasing power of people on these benefits drops too much (Table 1.2). After a long period of sub-indexation (OECD, 2022[42]), France similarly advanced part of the January 2023 indexation, increasing earnings-related and targeted benefits by 4% in July 2022. Latvia advanced indexation by two months in 2022. In addition, Italy advanced the correction for the underestimation of inflation in 2023 with one month: normally, the correction for the difference between projected and confirmed inflation takes place together with the next indexation in January, but the correction for 2023 (0.8%) is exceptionally applied in December. By contrast, Luxembourg, which applies threshold indexation to prices, suspended indexation between June 2022 and April 2023 to avoid further boosting inflation. In Portugal, indexation in January 2023 was only about half the amount it should have been if the rule was followed, although in combination with ad hoc supplements paid in 2022, low-income pensioners have received somewhat more than if the rule would have been followed. An additional adjustment in July 2023 increased pensions to the level of the full indexation required by the rule.

Table 1.2. Several countries have deviated from their pension indexation rules

Deviations from indexation rules since September 2021

	Amount		Timing	
	Better than index	Worse than index	Advanced	Delayed
Czechia		2.3% + flat amount equal to 1.6% of average pension compared with an increase of 11.5%		
Finland			5 months	
France			6 months	
Italy		Lower indexation in higher pension income bands	1 month	
Latvia			2 months	
Lithuania	Earnings-related pensions: +5%			
Luxembourg				9 months
Norway	Targeted benefits: +1.72%			
Poland	General indexation rule, but with a minimum flat-rate increase of 8.6% of the average pension			
Portugal	General indexation rule, but with minimum increase of EUR 10 (2.2% of average pension of private-sector workers)			6 months
Slovenia	Earnings-related pensions: +3.5% for pensions in payment since before 2011 +1.7% for pensions in payment since 2011 +1.0% other pensions and minimum pensions			
Spain	Targeted pension: +6.5%			
Türkiye	+13.5%			
United Kingdom		Suspension of triple lock: price instead of wage indexation		

Note: While France advanced indexation through an intermediary indexation based on the evolution of CPI in part of the reference period and Finland did so for its targeted benefits, Latvia advanced indexation by reducing the gap between the end of the reference period and implementation of the adjustment. Germany terminated a deviation from its indexation rule. As Germany does not apply negative indexation, a catch-up factor offsets non-implemented negative indexation by lowering the positive indexation in the following years. That factor was suspended in 2018 as there was a fear that it could result in the replacement rate for a standard worker falling below 48% before 2025 (OECD, 2021[8]). The catch-up factor was reinstated in July 2022, hence regular indexation was reduced by 1.17 percentage points to compensate for the lack of negative indexation in 2021 as a result of wages falling the year before due to the pandemic.
Source: Information provided by countries.

Pensions fell in real terms in many OECD countries

Bringing together both inflation trends and pension adjustments, the real value of pensions was lower in January 2023 compared to January 2022 in most OECD countries (Figure 1.10). The period is arbitrarily selected to cover the lion's share of the inflation surge and to correspond to the most-used indexation cycle in OECD countries, i.e. annual indexation in January. These results should be interpreted with care as the precise indexation timing plays a key role in the outcome shown in the chart for many countries, as the case of Poland discussed above illustrates. In a given country, the graph would show no change in the real value of pensions if indexation to inflation in the previous year were applied in January whereas it would show a significant loss if the same indexation rule is only applied in February.

First, earnings-related pensions in payment lost more than 5% of their real value in Austria, Costa Rica, Estonia, Poland and Sweden. Among these countries, Sweden does not index to prices at all and pensions are only partially adjusted to prices in Costa Rica and Estonia (20%). In Austria and Poland, there is some delay in pensions adjusting to price increases as they all apply a smoothed price indicator comparing inflation between two 12-month periods.

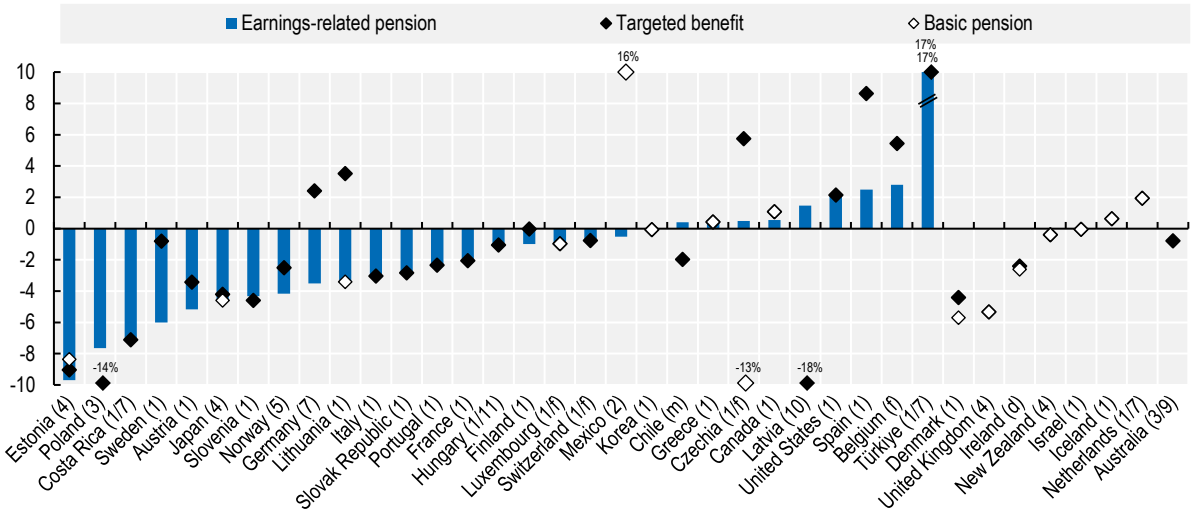
Second, targeted benefits were more than 5% lower in real terms in Costa Rica, Estonia, Latvia, Poland and the United Kingdom in January 2023 compared to January 2022. Latvia's targeted pension lost around 18% and Poland's 14% of their real value due to high inflation combined with an indexation rule that only requires adjustments once every three years so that no indexation took place during this period. Both countries decided to index their targeted benefits before the end of the three-year period: Latvia increased targeted benefits in nominal terms by 14.7% in July 2023 and by 9.6% in January 2024, and has moved to annual indexation from 2024 (see Recent pension reforms); in Poland, targeted benefits are scheduled to increase by 39% in January 2024.

Third, basic pensions were more than 5% lower in real terms in Czechia, Denmark, Estonia and the United Kingdom in January 2023 compared to January 2022. Basic pensions in Czechia, Denmark and Estonia are adjusted to wages or the wage bill, which resulted in a loss of purchasing power over this period, further exacerbated in Denmark by the lag between wage increases and pension adjustments (see above). The loss of value of the basic pension in the United Kingdom is related to the suspension of the triple lock indexing pensions to the highest of inflation, wage growth or 2.5%.

Only a few countries saw their pensions improve in real terms over the same period. In Türkiye, the real value of earnings-related and targeted pensions increased by around 17% over this period due to deviations from the indexation rule discussed above. In addition, Lithuania and Spain saw steep increases in the real value of their targeted benefits. In Lithuania the steep increase is the consequence of the importance of food prices in indexation of targeted benefits. In Spain, on top of the re-introduction of price indexation on contributory benefits at the end of 2021 (see below), non-contributory benefits were increased by 6.5% above inflation in January 2023. Targeted benefits also steeply increased in Czechia over this period following a discretionary adjustment. In Mexico, the basic pension increased by about 16% in real terms in Mexico as part of a wider reform to bolster old-age income.

Figure 1.10. Pensions were lower in real terms in many countries in January 2023 compared to January 2022

Percentage difference in real value of pensions in payment in January 2023 compared to January 2022 accounting for CPI inflation and pension indexation



Note: The numbers between brackets refer to the month(s) of indexation of the earnings-related pension or, if that is not included, the basic pension (targeted pension for Australia). d = discretionary adjustments; f = fixed-threshold indexation; m = monthly indexation. Colombia is not included as no data are available. HICP is used for EU countries and Norway, CPI for all other countries. For countries indexing pensions at different rates based on pension height (Austria, Italy, Latvia and Portugal) or career length (Latvia), the scenario for the average pensioner is shown (average male pensioner for Austria).
Source: OECD calculations based on information provided by Member States.

StatLink https://stat.link/bhzo8x

Other measures reducing the impact of inflation on pensioners

Some countries have made other interventions to support retirement income in response to the inflation surge. Australia temporarily loosened (between July 2022 and June 2024) the means test to qualify for the targeted pension benefit for people with investment income. The Netherlands relaxed its funding requirements for pension funds to be able to better index pensions in payment ahead of the systemic reform leading to the transition to the new occupational pension scheme (see below). Hungary moved forward the introduction of its 13th-month pension payment, reaching the full amount in 2022 instead of 2024.

Several countries have implemented ad hoc payments for pensioners including Austria, Estonia, Germany, Poland, Portugal, the Slovak Republic, Slovenia and the United Kingdom. Moreover, in Denmark and Greece ad hoc payments specifically targeted low-income pensioners. At the same time, most OECD countries provided support that was not targeted to older people but that older people could benefit from, such as heating allowances or lower VAT rates on energy.

Policy implications

The surge in inflation raises the competing objectives between sound pension finances and retirement income adequacy with some unusual acuity due to large short-term impacts. Upholding pensioners' purchasing power requires adjusting pensions to increasing prices. But, in the recent period, wages, and therefore most pension schemes' revenues, have not increased at the same pace as the negative terms-

of-trade shock in most countries translates into general-income and real-wage losses. Therefore, if benefits are adjusted in line with price inflation, this generates deficits in pension finances – and indeed in public finances more broadly (Bańkowski et al., 2023[46]). Hence, whether to apply existing indexation rules or to deviate from them in response to fast inflation depends in each country on the fiscal space and political preferences. Applying the rules is in general essential for confidence in the pension system, but these exceptional circumstances raise thorny questions which may warrant exceptional deviations from the rules.

Even in countries with price indexation, in order to protect pensioners' purchasing power, it is important that the indexation takes place soon after the price index surges. Threshold indexation to prices with a low threshold such as Belgium's 2% is very appealing to achieve this goal. However, in addition to overall concerns about the cost of price indexation during an inflation wave, any indexation mechanism that involves frequent adjustments throughout the year makes budgeting more challenging. Projection-based indexation rules are easier to predict in the short term of course, but they may be complex, are prone to large revisions and have not been effective at protecting pensioners' purchasing power during the inflation surge.

Protecting the lowest pensions while limiting the impact of price indexation on pension financing at times of high inflation can be achieved through price indexing pensions only partially above a certain threshold, at least temporarily. Reduced indexation of higher pensions as is often done in Austria and Italy can be an effective strategy to control pension expenditures while fully protecting the purchasing power of low-income pensioners who spend a large share of their incomes on essential goods such as heating and food. In that case, one policy question around this redistributive measure is whether it should be followed by a catch-up phase for pensions above the threshold once the situation normalises in order to limit permanent losses in pension benefits.

While pensioner-specific cost-of-living indices in theory may better reflect the changes in the cost-of-living of older people, it is questionable whether such an index would perform better than standard CPI combined with discretionary adjustments in truly exceptional circumstances. Research has highlighted short-term differences in inflation measured by different consumption baskets but has typically found little evidence of persistent differences over time. For example, in France, the impact of changing the consumption basket to better fit the consumption of retirees would have had a very limited impact, estimated at a total of -0.3% cumulated over 1998-2015 (Insee, 2015[47]), although since mid-2021, inflation is estimated to have affected older people more than other age groups (Insee, 2022[48]). In the United States, the Consumer Price Index for the Elderly (CPI-E) weighs prices to the specific spending pattern of older people including larger expenditure on medical care. While over 1983-2002 annual inflation measured by CPI-E outpaced the CPI index that is used to uprate old-age benefits (CPI-W) by 0.4 percentage points on average, there was virtually no difference between 2002-21, in part due to slower growth of healthcare costs (Munnell and Hubbard, 2021[49]). Differences in consumption patterns are larger across income levels than between working-age and old-age households in most countries. If the objective of price indexation were to better protect the purchasing power of low-income pensioners, this would suggest considering a price index better reflecting the consumption basket of individuals with low income.

Recent pension reforms

This section summarises pension reforms introduced in OECD countries between September 2021 and September 2023.

Retirement age reforms

Retirement ages are increasingly linked to life expectancy

The Slovak Republic and Sweden introduced a link between their retirement ages and life expectancy over the last two years, joining Denmark, Estonia, Finland, Greece, Italy, the Netherlands and Portugal, discussed in greater detail in the previous edition of *Pensions at a Glance* (OECD, 2021[8]). The establishment of a retirement-age link to life expectancy is also being discussed in Czechia as well as in Norway after their Pension Commission proposed it in 2022.

The Slovak Republic previously had a short-lived retirement-age link to life expectancy but abolished it effectively by capping the retirement age once it will reach 64 in 2030. In October 2022, a new link to life expectancy was established. From 2030 onwards, for those born from 1967, the retirement age will increase at the same pace as life expectancy.[29] Higher retirement ages will generate higher replacement rates for workers who can extend their career, although this will be partially offset by past wages being uprated by 95% of wage growth instead of full wage growth from January 2023. While before the reform, future pension spending was projected to rise at very high levels (Chapter 8), the retirement-age link is expected to limit spending increases significantly.

Sweden reformed retirement ages in the targeted and NDC schemes. As of 2023, the eligibility age for targeted benefits (Guarantee pension) has been increased from 65 to 66 years, and it will be increased again to 67 in 2026 and then linked to two-thirds of life expectancy gains at age 65.[30] In the NDC scheme, a target retirement age is introduced which aims to nudge retirement decisions by providing a clear suggestion of what the adequate age to retire should be. The target retirement age will be 67 upon taking effect in 2026 and will subsequently follow the same life-expectancy link as the eligibility age for the Guarantee pension. The minimum retirement age for the NDC pension was increased from 61 to 62 in 2020, and further to 63 years in 2023 and will move up to 64 in 2026. From then onwards, the minimum retirement age will remain three years before the target retirement age and thus also follow changes in life expectancy.

Automatic mechanisms are increasingly used to adjust retirement ages to life expectancy among OECD countries, with one in four now boasting such a link. Denmark, Estonia, Greece, Italy and the Slovak Republic increase the retirement age by the full increase in life expectancy (one-to-one link) whereas Finland, the Netherlands, Portugal and Sweden increase it by eight months per one-year increase in life expectancy (two-third link) which roughly keeps the share of adult life that people can expect to spend in retirement constant across cohorts. The Netherlands moved from a one-to-one link to a two-third one before it took effect and discussions in Denmark are ongoing on whether to move from a one-to-one to a slower link. Hence, while a one-to-one link may be beneficial from a perspective of financial sustainability, the political sustainability of such a link might be weak over time.

Retirement ages will increase by about two years by the 2060s based on current legislation

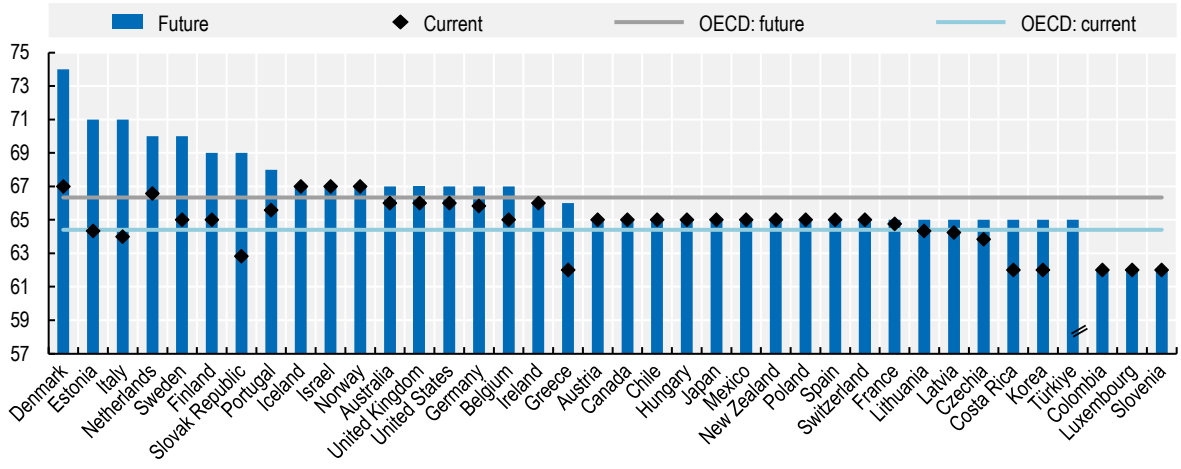
The range in the current normal retirement age among OECD countries is between 62 (except Türkiye where it is much lower) and 67 years. The normal retirement age is defined as the age at which individuals are eligible for retirement benefits from all pension components without penalties, assuming a full career from age 22. The average of the current (people retiring in 2022) normal retirement in OECD countries is 64.4 years for men – for gender differences, see below –, from 67 years in Denmark, Iceland, Israel and Norway, to 62 years in Colombia, Costa Rica, Korea, Luxembourg and Slovenia – Türkiye is an absolute outlier with a current normal retirement age of 52 years (Figure 1.11).[31]

In the future, based on already legislated measures, the average normal retirement age in the OECD will increase by two years to 66.3 years for a man entering the labour market in 2022. There is an increase in 20 out of 38 OECD countries – in 3 more countries, the normal retirement age will increase for women only

–, and cross-country differences are set to become starker: the normal retirement age will remain at 62 in Colombia, Luxembourg and Slovenia, whereas it is expected to reach 70 years in the Netherlands and Sweden, 71 years in Estonia and Italy and even 74 years in Denmark[32] based on established links between the retirement age and life expectancy (Figure 1.11).[33] The eight countries with the highest future normal retirement age are all countries with such a link, including also Finland, Portugal and the Slovak Republic. The other OECD country with a retirement-age link to life expectancy is Greece, transferring the full increase in life expectancy to an increase in the statutory and the minimum retirement age. Yet the Greek normal retirement age is only projected to be just below the OECD average in the future: this is because early retirement is accessible without penalty after a 40-year career, hence the minimum age which is set to increase from 62 to 66 in the future determines the normal retirement age in Greece.

Figure 1.11. The normal retirement age will be rising in more than half of OECD countries

Normal retirement age for men entering the labour market at age 22 with a full career



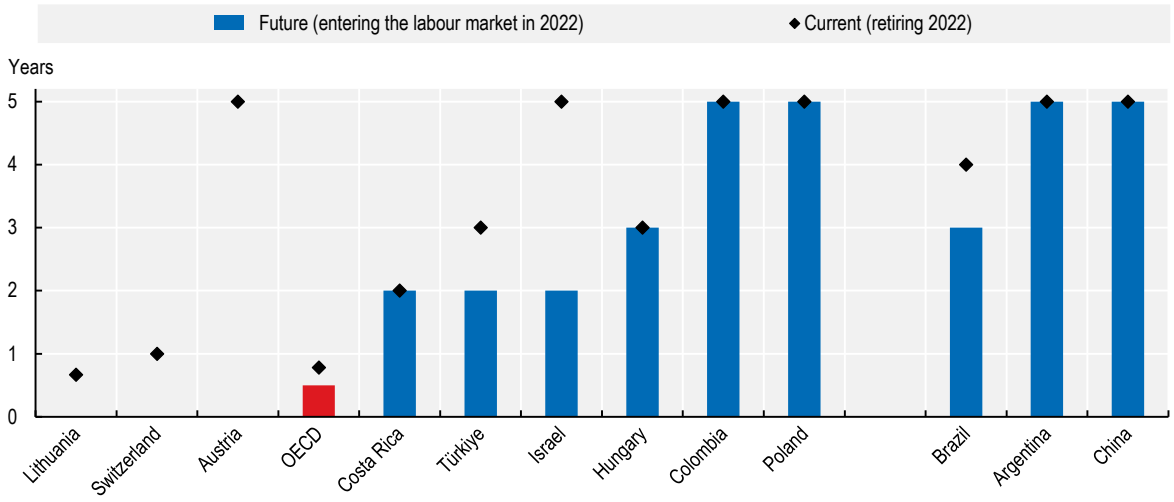
Note: The normal retirement age is calculated for an individual with a full career from age 22. "Current" refers to people retiring in 2022. "Future" refers to the age from which someone is eligible to full retirement benefits from all mandatory components (without any reduction), assuming a full career from age 22 in 2022. Educational credits are not included. For better visibility, the scale of this chart excludes the lowest observed value of 52 for current normal retirement age in Türkiye.
Source: See Chapter 3, Figure 3.8, https://stat.link/f9zejl.

Gender gaps in retirement ages are fading

Israel and Switzerland took action to reduce gender gaps in retirement ages over the last two years. Switzerland decided by referendum in September 2022 to gradually increase the retirement age for women from 64 to 65 in steps of three months from 2025, equalising their retirement age with the one for men by 2028. Hence, Switzerland joins the ranks of Austria and Lithuania which previously decided to close the gender gap in normal retirement ages, with the five-year gap in Austria set to close at a high pace from 2024 to 2033 (Figure 1.12). In November 2021, Israel decided to gradually reduce the gender gap from five to two years: while the statutory retirement age for men is 67, the one for women is now set to increase by four months per year from 62 in 2022 to 65 in 2032. On top of Israel, only five OECD countries still maintain lower normal retirement ages for women than for men for people entering the labour market now: Colombia, Costa Rica, Hungary, Poland and Türkiye. However, the gender gap in the normal retirement age is scheduled to be eliminated in Türkiye for people entering the labour market as of 2028. In Chile, FDC pensions can be accessed by women at age 60 compared to 65 for men, but the targeted scheme (PGU) is only accessible as of 65 for both men and women. Among G20 countries, gender gaps in the normal retirement age exist in Argentina, Brazil and China and are maintained in the future.

Figure 1.12. Only six OECD countries maintain gender gaps in future normal retirement ages

Gender gap in current and future normal retirement ages for men and women who entered the labour market age 22



Note: In Türkiye, the gender gap will be closed for men and women entering the labour market aged 22 in 2026.
Source: See Chapter 3, Figure 3.7, https://stat.link/b04nhr.

By contrast, Italy extended once again the so-called women's option, initially introduced for a year in 2017, although access has been tightened since January 2023. In 2022, as in 2021, this option allowed women to retire at age 58 (or 59 if self-employed) after a 35-year career, but it then requires that pensions are fully calculated based on the notional defined contributions (NDC) rules while pensions from defined benefit (DB) and NDC schemes are prorated when retiring at the statutory retirement age. The NDC rules generally result in benefits being lower than those based on the DB scheme, due to the automatic actuarial adjustments in NDC and low penalties in DB. For 2023, the age condition is increased to 60 – actually 59 for women with one child and 58 for women with two or more children – and the option is tightened as it is now only available for women who are caregivers, disabled at least 74% or employed or laid off by companies in crisis. As a result of these tighter conditions, the number of new pensions taken up in this scheme fell by 39% in the first half of 2023 compared to 2022 (INPS, 2023[50]).[34]

Some countries have increased early or minimum retirement ages

Consistent with the general trend in the OECD since the 1990s, Costa Rica and Czechia tightened eligibility to early retirement and France raised the minimum retirement age over the last two years. At the same time, Türkiye and, to a lesser extent, Iceland made retirement possible at earlier ages, while Italy temporarily extended the early retirement options that were supposed to expire. The Slovak Republic restricted early retirement for some people and relaxed them for others.

Costa Rica decided in January 2022 to eliminate the early retirement option for men and to increase the early retirement age for women. From 2024 onwards, men will only be able to draw a pension once they reach the statutory retirement age of 65 instead of 62 today. Conditional on 405 months of contributions (33.75 years), women will be able to draw a pension without penalty two years before the statutory retirement age, from age 63 instead of 59 years and 11 months now.

Czechia has reduced early retirement from five to three years before the statutory retirement age from October 2023. A unified penalty of 6% per year of early retirement now applies, whereas previously the penalty ranged between 3.6% and 6% depending on the duration of early retirement. Moreover, from October 2024 onwards, a career of 40 years will be required to become eligible to early retirement instead

of 35 years now, and from 2025 onwards early-retirement pensions will no longer be indexed until the recipient reaches the statutory retirement age.

The 2023 pension reform in France, mainly motivated to improve pension finances by 2030, has increased the minimum retirement age of the main mandatory schemes. Initially at 62, the age is set to increase in steps of three months per year from September 2023, reaching 64 in 2032. Moreover, the gradual increase in the contribution-period requirement to access a full pension from 42 years currently (1961 birth cohort) to 43 years will be accelerated as 43 years will now apply from about 2028 (more precisely for the 1965 birth cohort) instead of about 2036 (1973 birth cohort) before the reform.[35] The reform will gradually eliminate the special pension schemes for the energy sector, the Paris metro company, the central bank and notary clerks, which have their own advantageous rules often including early retirement options. New entrants in these sectors or occupations from September 2023 will fall under the general private-sector scheme (grandfathering). People already working in these occupations will stay in their respective special schemes, but their eligibility age and career length requirement will increase at the same pace as in the general scheme as of 2025. In October 2023, social partners removed the three-year penalty in the mandatory occupational pension scheme for people retiring without exceeding by at least one year the contribution period required in the general scheme, resulting in the lowering of the future normal retirement age from 66 to 65.

By contrast, Türkiye relaxed access conditions in March 2023, ahead of the elections. When Türkiye introduced its statutory retirement age on 8 September 1999, at age 52 before the 2023 reform, it also applied to people who were already in employment and building up pension entitlements. Considered by some as a breach of contract, the statutory retirement age is now scrapped again for people who entered employment before the introduction of the statutory retirement age, and for them pension eligibility only depends on fulfilling the career-length requirement. Women can access a pension after at least 20 years of contributions and men after at least 25 years.[36] As this applies to people who entered employment at the latest on the day before the law was introduced in 1999, the elimination of the statutory retirement age is likely to affect pension uptake patterns for another two decades.

As with the women's option (see above), Italy extended temporary early retirement options which were supposed to expire by 2022, undermining the impact of the 2012 reforms increasing the statutory retirement age to improve financial sustainability of the pension system. The quota system, initially legislated as "Quota 100" in 2019 to terminate in 2021, was extended once again. In 2023, a person can retire at age 64 with 38 years of contributions (Quota 102) or at age 62 with 41 years of contributions (Quota 103), whereas the statutory retirement age currently is at 67. Furthermore, the option to retire at age 63 with 30 years of contributions for people who are unemployed, disabled or giving care, or after 36 years for people in arduous occupations (Social APE) was extended. A similar extension to retire from age 58 was granted to workers in companies undergoing restructuring.

Iceland added an early retirement option in its funded occupational pension scheme. In June 2022, the mandatory minimum employer contributions in the occupational pension scheme was increased from 8% to 11.5%.[37] The employee can decide whether to add the supplementary 3.5% to the general FDC pension or whether to put it in another individual account. If it is put in this other account, the funds can be used to finance early retirement: a pension can be drawn from the individual account from age 62, five years before the statutory retirement age, and the account can be drawn down fully by age 67.

The Slovak Republic revised its early retirement conditions taking effect from January 2023. On the one hand, access to early retirement for people with low pensions has been restricted with the minimum amount of pension, as a ratio of the minimum subsistence level, required to draw a pension before the statutory retirement age being increased by one-third.[38] On the other hand, early retirement conditions are somewhat relaxed for people with long careers as early retirement is now possible after a 40-year career with a penalty of 0.3% per month of anticipation – for people with shorter careers early retirement remains possible two years before the statutory retirement age with a penalty of 0.5% per month.

Incentives to defer pension uptake and to work beyond retirement

Poland and Spain introduced incentives to delay pension uptake. Poland opted for a favourable tax treatment of labour income of people who have reached the statutory retirement age but do not take up their pension in order to encourage delaying retirement. Since January 2022, the threshold below which income is not taxed is almost three times higher for people above the statutory retirement age who do not take up their pension than it is for those who do take up their pension.[39] Spain introduced an incentive for delaying retirement in December 2021, which can be taken up as a supplement to the monthly pension or as a lump sum – or a combination of both. By default, the deferral incentive comes in the form of a 4% pension bonus supplementing the monthly pension for each year the retirement is delayed after becoming eligible to an old-age pension. However, it is possible to opt for a lump sum instead. While the lump sum option may be a good tool to nudge people in delaying retirement,[40] it has been estimated (BBVA, 2022[51]) that the choice between both options is far from an actuarially neutral one as the lump sum would be well below what most people could expect to receive from the 4% increase in their monthly pensions.

Denmark and Germany eliminated and Australia reduced the withdrawal of pension income against earned income. Denmark removed disincentives for both retirees and their partners to remain in employment. Since January 2023, both the older person's and their spouse's or cohabitating partner's income from work are removed from the income test of its basic and targeted benefits in the public pension system (i.e. excluding social assistance). In addition, the partner's income was also removed from the income test of certain disability benefits. Germany abolished the earnings limit for old-age pensioners in January 2023, beyond which pension income was withdrawn. Australia reduced the importance of income from work in the means test for their targeted pension benefits. Australia temporarily increased the threshold above which income from work is accounted for in the means test of the targeted scheme by 51% from 1 December 2022 to 31 December 2023, a measure that will likely be made permanent.[41]

Within its pay-as-you-go pensions, Czechia decided in July 2022 to reduce employers' social insurance contributions for certain groups of workers who are often in vulnerable positions in the labour market, including people older than 55 working part-time. For these people, employers' social insurance contributions decreased from 24.8% to 19.8%. In addition, the government has proposed to no longer let working pensioners further accrue pension entitlements and instead exempt them from paying pension contributions.

Adjustments to benefits and contributions

Improving financial sustainability

Financial sustainability can be improved not only through adjusting retirement ages, but also through adjustments to benefits and contributions. The Netherlands passed a systemic pension reform of its occupational pension scheme and Costa Rica and Spain passed parametric reforms to contributions and benefits. In Switzerland, the parliament passed a reform to improve financial sustainability in the occupational scheme, but it will be subject to a referendum in 2024.

The Netherlands passed a systemic pension reform that entered into force in July 2023, obliging pension funds to transition from FDB to FDC schemes, with social partners playing a key role in the reform process. From 2028 onwards, new entitlements can only be built up in DC schemes. Age-specific contributions are abolished, so the same contribution rate applies to all people contributing to a specific pension scheme. Moreover, funds are encouraged to transfer existing DB entitlements to the new pension system. Low expected real interest rates over the long term have created financial pressure. Implied requirements for funding ratios of FDB pensions led to little or no indexation of pensions in payment for more than one decade despite high returns (OECD, 2021[8]), Financial solvency issues and discontent about the lack of indexation have weakened the support for FDB schemes. In addition, the transition to DC is meant to

make occupational pensions more individual and transparent, and to accommodate increasing flexibility in the labour market.

Social partners can choose one of three types of DC schemes. First, a flexible scheme allows members to make their own investment choices for their individual pension savings. Upon retirement, members can choose between an annuity of a fixed monthly amount – i.e. without indexation – or a variable annuity depending on investment returns. Second, a collective scheme has a single investment policy for all members. Collective schemes will apply life-cycle investment strategies, meaning that the share of assets invested in risky assets is larger at the beginning of the accumulation phase and declines as the individual gets closer to retirement (OECD, 2022[52]). Similar to current DB plans, the contribution rate of a collective scheme should be based on a pension target and can be revised every five years. Pay-out happens through a variable annuity depending on investment returns. In both flexible and collective schemes, all fund members pay the same contribution rate. The third type of DC scheme has existed since 2011 and remains in place. Under this scheme, employers pay contributions to individual accounts managed by specific institutions. These institutions invest the funds they manage but they are neither allowed to carry any risks nor to provide insurance services – they cannot pay annuities, survivor's or disability benefits, and upon retirement, the employee must use the capital to purchase a pension product from an insurer. The Dutch Parliament is discussing whether to allow people to take out a lump sum of up to 10% of the total value of the individual's DC assets or estimated total value of DB entitlements upon retirement.

Ahead of pension funds transitioning from DB to DC pensions, indexation rules have been relaxed since 1 July 2022. The funding-ratio threshold from which full price indexation can be applied has been lowered from around 130% to 105%. Only pension funds that expect to transfer already built-up pension entitlements to the new system are able to index pensions based on the relaxed rules.

The Dutch reform follows an international trend of funded occupational pensions increasingly shifting from DB to DC (Boulhol, Lis and Queisser, 2023[53]). Easier to manage and more in line with the idea that the role of occupational pension funds is to provide a supplement in a multi-tiered pension system, most countries with substantial occupational schemes have moved from DB to DC occupational pensions since the 1990s. After the Dutch reform, Switzerland is the only country with large occupational pension funds to maintain DB funded occupational pensions for new private-sector workers.

Switzerland passed a reform in parliament reducing their funded occupational pensions to improve financial sustainability, although the measure is subject to a referendum. In March 2023, the Swiss Parliament voted to reduce the conversion rate used to convert pension assets from the mandatory part of the occupational pension scheme into annual pensions from 6.8% to 6%. The current high level of the conversion rate is not actuarially consistent with projected life expectancy. The proposed reduction improves financial sustainability but lowers new pensions by 12% all other things equal. Whether the conversion rate will be lowered to 6% will depend on the outcome of a referendum in 2024 as trade unions have challenged this change.

Already suspended since 2018, Spain formally removed in November 2021 the revalorisation pension index (IRP) used for pension indexation and the sustainability factor (SF) to be used to adjust new benefit levels. As these automatic adjustment mechanisms were initially put in place to improve financial sustainability, their removal meant that alternative measures had to be found under the pressure from the European Commission as a condition to allocate funds from the European Recovery and Resilience Facility.[42] The March 2023 reform aims to reduce future pension deficits through raising additional pension revenues and improves protection for low-income pensioners and people with irregular careers, including women.

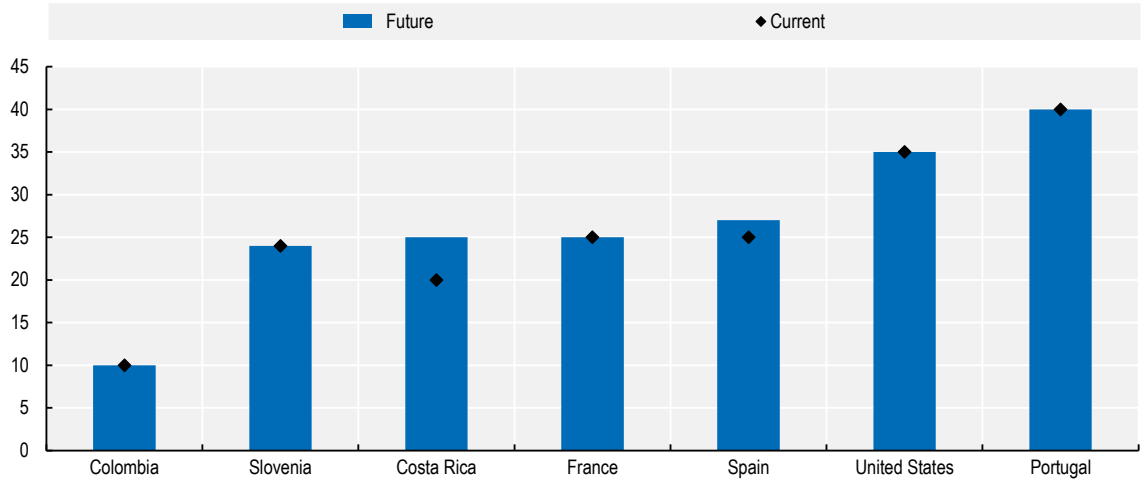
The Spanish reform relies on higher contributions in particular from high earners that are only to a small degree offset by increasing their pensions, which will be used to improve pension finances and build the reserve fund. A new contribution is introduced on the part of earnings exceeding the maximum contribution base, beyond which no pension entitlement accrues and which was equal to 1.75 times average earnings

in 2022.[43] From 2025, the new contribution equals 0.92% of the part of the salary between 100% and 110% of the maximum contribution base, plus 1.00% between 110% and 150% and 1.17% above 150%. These rates will gradually increase to reach high levels of 5.5%, 6% and 7% in 2045, respectively. This potentially has a substantial impact on pension revenues. Furthermore, Spain will gradually double the contributions to its reserve fund. Set at 0.6 percentage points upon its introduction in December 2021, this component of the contribution rate will increase by 0.1 percentage points every year from 2024 onwards to reach 1.2 percentage points in 2029. Withdrawals from the reserve fund may be made from 2032 to finance pension spending. The annual drawdown cannot be higher than 0.2% of GDP and until around 2040 flows into the fund must exceed the outflow. The maximum contribution base is set to increase annually by 1.2 percentage points above inflation between 2024 and 2050, while at the same time the maximum pension will only increase each year by 0.115 percentage points above inflation over the same period, or a total increase of 32.4 percentage points and 3.0 p.p. in real terms over the full period, respectively.[44] In total, these measures, together with a reform of contributions of the self-employed, are estimated to generate annual revenues of 1.3% of GDP in 2050 (AIReF, 2023[54]). With Spain's pension expenditures forecasted to grow fast until 2049, the sharp rise in the maximum contribution base combined with a limited increase in the maximum pension will help finance the increase in expenditures. However, the additional revenues only partially cover increasing expenditures mainly stemming from the re-introduction of price indexation: annual expenditures are projected to increase by 2.4% of GDP, resulting in a projected increase in the deficit of 1.1% of GDP in 2050 (AIReF, 2023[54]).

In addition, an extension of the reference contribution period to calculate pensions was a key demand of the European Commission.[45] The large majority of OECD countries take into account wages throughout the whole career for calculating pension benefits. Recently, Austria, Czechia, Greece and Norway joined this group. Only Colombia, Costa Rica, France, Portugal, Slovenia, Spain and the United States still continue to calculate earnings-related pensions on earnings for only part of the career (Figure 1.13).

Figure 1.13. Only a few countries do not take the whole career into account for the reference wage

Number of years used to compute the reference wage of private-sector workers



Note: In Colombia, the full career is taken into account for the reference wage if this results in a higher pension.
Source: See "Country Profiles" available at http://oe.cd/pag.

StatLink https://stat.link/sguope

Rather than introducing a significant change in this area, Spain opted for a small extension and a long transition period with unclear impacts. Since 2022, the reference contribution period is the last 25 years, which was increased from the last 15 years in 2013. With the reform, this will become the best 27 out of the last 29 career years for people retiring from 2044.[46] Until then people can choose the most beneficial of the two calculation methods, meaning that until 2044 this change can only increase benefits and expenditure.

Costa Rica reduced the effective accrual rates for the first 25 years of contributions and extended the reference period for past wages used to calculate pensions. From January 2024, a career of 25 instead of 20 years is required to accrue between 43% and 52.5% (depending on wage level), while the accrual for additional years remains unchanged at 1% per year. The period on which the reference wage is calculated is adjusted in parallel: the pension will be calculated based on the average wage in the best 300 months (25 years) instead of the last 20 years of the career. For people with declining earnings towards the end of the career, the change from last to best years may result in a higher reference wage, which could compensate for some of the impact of the reduction in effective accrual rates.

For given pension spending levels, calculating pensions based on earnings during only part of the career generates inequities as people with the same lifetime earnings and the same total contributions may end up receiving very different pensions. While taking into account only the best years protects against some forms of career incidents, it also generates perverse, regressive effects – for the same total spending level – by favouring workers experiencing large wage improvements who tend to be high-wage earners, as the low-wage periods often at the beginning of the career are ignored. In addition, people with longer career breaks rarely enjoy strong career progression and therefore they do not benefit from the shorter period to calculate the reference wage. As women are more likely than men to take longer career breaks to take up family responsibilities, taking only part of the career into account for the reference wage contributes to the gender pension gap.

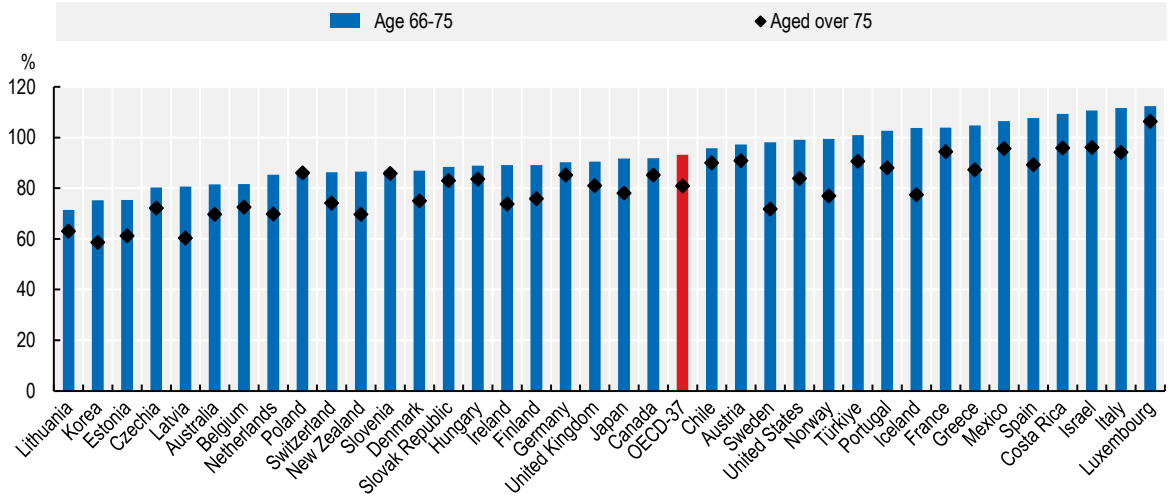
In addition, Ireland slightly increased social insurance contribution rates. An earlier plan to increase financial sustainability of the public pension system through increasing the retirement age was abandoned in 2023. Instead, the government proposed to improve financial sustainability through gradually increasing social contributions. The contribution rate for employees and employers, of currently 4% and 8.8% or 11.05% depending on income level, respectively, will both increase by 0.1 percentage points in October 2024. The contribution rate is expected to increase further in the coming years.

Improving pension protection of low earners

People aged 65+, and in particular those aged 75+, have a lower disposable income than the total population in most OECD countries. On average across the OECD, people aged 66-75 have a disposable income of 93% of the disposable income of the total population, falling further to 81% among people aged over 75 (Figure 1.14). There are stark differences between countries, with average relative income below 80% of the disposable income of the total population in Estonia, Korea and Lithuania in the age group 66-75, and below 65% in the same three countries and Latvia in the age group 76+. The relative income of people aged 66-75 is higher than that of the total population in 11 OECD countries and exceeds 110% in Israel, Italy and Luxembourg. Luxembourg is the only country where the relative income of people over 75 exceeds that of the total population.

Figure 1.14. Older people on average have lower incomes than other age groups

Average disposable income by age group in percentage of average disposable income of total population, 2020 or latest available year



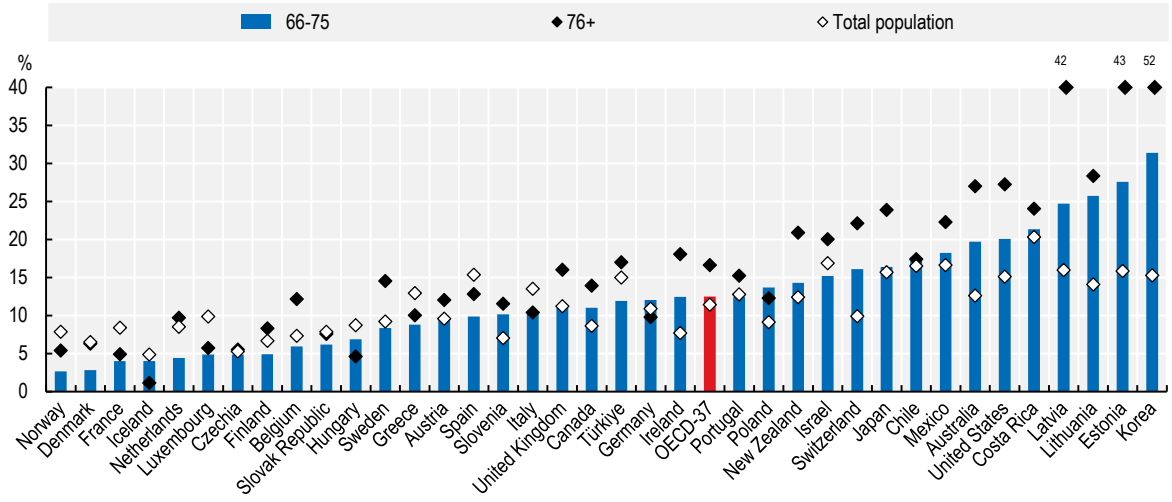
Note: Most recent data are for 2020 except for the following countries: Costa Rica, Finland, Latvia, the Netherlands, Norway, Sweden and the United States (2021), Denmark, France, Germany, Hungary, the Slovak Republic, Switzerland and Türkiye (2019), Japan (2018) and Chile and Iceland (2017). Data for Colombia are unavailable.
Source: See Chapter 7, Table 7.1, https://stat.link/jcruw9.

Older people are more likely to fall below the relative income poverty threshold than other age groups. Across all OECD countries, 12.5% of people aged 66-75 and 16.6% of those aged 76+ are in relative income poverty, meaning that they have an equivalised disposable income below 50% of the median, compared to 11.4% of the total population (Figure 1.15). The relative income poverty rate is below 5% in eight countries in the 66-75 age group and in France, Hungary and Iceland in the age group above 75. In contrast, the Baltic states and Korea have relative income poverty rates around or above 25% in the age group 66-74 and even above 40% in the age group 76+ – with the notable exception of Lithuania. The Latin-American OECD members, Australia and the United States are also among the countries with elevated relative poverty levels among older people.

Chile replaced its targeted public pension scheme with a quasi-universal scheme in January 2022. While the previous scheme (basic solidarity pension) was targeted at those aged 65+ belonging to the poorest 60% of the population, the new scheme (universal guaranteed pension) was initially accessible to the 90% poorest people aged 65+.[47] Coverage was further expanded in February 2023 to all people aged 65+ belonging to the 90% poorest people in the entire population, which is estimated to include another 70 000 beneficiaries or an increase of around 4%. Moreover, the benefit level was increased: upon introduction, it was 4% higher in real terms than its predecessor, or about 19% of gross average earnings. Withdrawal rules have changed substantially with large improvements for pension benefits: while the basic solidarity pension was withdrawn by 33.8% from the first peso received from the FDC pension, no withdrawal takes place in the new scheme until the FDC pension renders 3.4 times the amount of the universal guaranteed pension, after which a withdrawal rate of 50% applies. Hence, the reform improves the old-age income of a large majority of retirees.[48]

Figure 1.15. Older people are more likely to be in relative income poverty than other age groups

Percentage with income lower than 50% of median equivalised household disposable income



Note: Most recent data are for 2020 except for the following countries: Costa Rica, Finland, Latvia, the Netherlands, Norway, Sweden and the United States (2021), Denmark, France, Germany, Hungary, the Slovak Republic, Switzerland and Türkiye (2019), Japan (2018) and Chile and Iceland (2017). Data for Colombia are unavailable.
Source: See Chapter 7, Table 7.2, https://stat.link/pv3isj.

In addition to Chile, Canada, Estonia, France, Italy, Lithuania, Spain, Sweden and Türkiye, and to a lesser extent Austria and Belgium, increased first-tier benefits. Canada increased its residence-based basic pension by 10% for people aged 75 and over in July 2022. Estonia increased its basic and targeted pension by EUR 20, or about 7% above indexation in January 2023. Sweden increased its targeted pension benefits by about 12% in August 2022.

France, Italy, Lithuania, Spain and Türkiye passed increases in their minimum contributory pensions, for France and Spain as part of a larger package of reforms improving financial sustainability. France significantly increased the minimum pension from the general scheme after a full career, and much less so for careers that are shorter than 30 years of contributions.[49] Combined with the mandatory occupational pension, the total gross minimum pension after a full career at the minimum wage is now set at 85% of the net minimum wage, or about EUR 1 200 per month in 2023, or an increase of about 9%. Italy increased minimum pensions above regular indexation by 1.5% for pensioners younger than 75 and by 6.4% for pensioners aged 75+ in 2023. Lithuania abolished the pro-rata reduction in the contributory basic pension for shorter careers. Previously, 33 years of contributions (supposed to increase to 35 years by 2027) were required to receive the full amount of the basic pension. Now, everyone who qualifies for the public pension – conditional on having 15 years of contributions – receives the full amount of the basic pension. In Spain, minimum contributory pensions and targeted pension benefits were raised. Between 2024 and 2027, the minimum pension for a pensioner with a dependent spouse will gradually be increased from 51% in 2021 to 60% of median equivalised disposable income for this type of household.[50] The safety net benefiting the most vulnerable old-age individuals will similarly be increased over the period 2024-27, so that for a single individual the benefit will be equal to 45% of median equivalised disposable income compared to 35% in 2021.[51] Moreover, the supplement for women who raised children, which was introduced in 2021, will be increased by 10% above inflation in the period 2024-25 with the aim of reducing the gender pension gap. The benefit, EUR 30.40 per month in 2023, is also accessible to men if they can show that they have interrupted their career to raise children. In addition, credits for periods of care leave or part-time work due to care responsibilities have been extended. Türkiye has tripled its minimum pension to keep up the

purchasing power of its low-income pensioners throughout the last two years in response to the exceptionally high level of inflation the country faces. Together with the last adjustment to the minimum pension in April 2023, the holiday bonus was increased by 82%.

Finally, Austria and Belgium passed more modest increases in their first-tier benefits. Austria increased its income-tested top-up to the earnings-related pension by EUR 20, or about 1.9%, above inflation. In Belgium, the contributory minimum pension for employees and the self-employed was increased by 2.65% above inflation in January 2022 and 2023, and by 2% in July 2023. The minimum entitlement per career year, another type of minimum pension, was increased by 2% above inflation in January 2022. In addition, social assistance benefits for older people were increased by 2.58% above price indexation in January 2022 and 2023, and by 2% in July 2023.

Increasing importance of children, changes in entitlements for spouses

Beyond Spain discussed above, Czechia, France, the Slovak Republic and Slovenia have improved pensions for parents, in particular mothers. Finland and Greece reformed survivor's benefits, albeit in different directions.

Czechia introduced a bonus for raising children to one parent and a similar bonus in Slovenia became transferable between both parents. Czechia introduced a top-up to the earnings-related pension for parents in September 2022. For each child, the parent who provided most care to the child – usually the mother – receives a monthly flat-rate top-up equal to about 1% of the average wage or 3% of the average pension as of January 2023. Slovenia already had a pension bonus of 1.36% per child, but since April 2022, the father can claim the bonus if the mother agrees regardless of the father having received parental benefits, provided that the mother does not receive a pension yet.

Both France and the Slovak Republic introduced parental benefits available to both parents. As part of the 2023 French pension reform, the 10% pension increase in the general private-sector scheme for parents of at least three children was extended to the liberal professions. The Slovak Republic introduced a new form of intergenerational support measure in its pension system. As of 2023, children can decide whether their parents' pension should receive a top-up calculated based on the child's earnings. For each child, a parent can receive a top-up of 1.5% of the child's monthly pensionable earnings capped at 1.2 times the average wage.[52] The granting of the parental pension happens automatically, but children can decide to exclude one or more parents from receiving the parental pension. The introduction of the parental pension, which is meant to compensate parents for their lower pensions compared to childless retirees, does not impact the contribution rate nor the future pension benefits of the children.

Finland, Greece and the Slovak Republic made adjustments to survivor's benefits. Finland substantially reformed its survivor's pensions in November 2021. From January 2022, the duration of the survivor's pension was limited to 10 years for surviving spouses born as of 1975, or until the youngest child turns 18 years old. When a partner of a non-married cohabitating couple passes away, the surviving partner receives a survivor's pension, on the condition that they have at least one child together, until the youngest child turns 18. After the reform, survivor's benefits for children have improved: children who lost a parent receive a benefit until age 20 instead of 18 previously, and if the deceased does not have a spouse, the spousal survivor's pension is now given to the children as well. In January 2023, Greece increased the minimum survivor's pension by 8% for people whose deceased spouse had a career of at least 15 years. The Slovak Republic extended the standard duration of the survivor's pension from one to two years as of January 2023. Extended periods for parents, retired and disabled survivors remain in place, and parents of one child can now receive an extended survivor's pension from age 57 instead of from the statutory retirement age.

Improving earnings-related pension benefits and reducing taxation

Several countries have taken measures to improve the income position of pensioners beyond indexation measures discussed in greater detail in the previous section. In Belgium, the wage ceiling applied in the calculation of new pensions was increased by 4.38% above price indexation in January 2022 and by 2.38% in January 2023. It will be increased a third time by 2% above inflation in 2024. Hungary sped up the introduction of the 13th month payment. Reintroduced in 2021, it was initially scheduled to increase gradually in four stages to take full effect as of 2024, but in February 2022 it was decided to already pay the full 13th month as of 2022. Poland introduced a 14th month payment, first paid in September 2023. The level of the payment is not fixed, but it cannot be below the level of the minimum pension. Lithuania devised a new supplementary pension indexation mechanism for its earnings-related pension, linking pension indexation to adequacy indicators since 2022.[53]

Estonia, Greece and Sweden improved older people's disposable incomes through reducing taxation. In December 2021, Estonia decided to exempt pension benefits from income taxation up to the level of the average pension from 2023 onwards. While pensions were taxed under the same rules as earnings before, the threshold below which income is not taxed now is 8% higher for pensioners than for other people. In September 2022, Greece abolished a tax on pension benefits that was introduced in 2010. Previously, pensioners had to pay a supplementary tax of between 3% and 14% depending on pension level on the part of the pension exceeding EUR 1 400. Sweden expanded its basic tax allowance for people aged 66+ in 2022. The basic tax allowance depends on a person's income, with the allowance for retirees being between 1 and 3.2 times the one for employees depending on the income level. To encourage working beyond the retirement age, both Estonia and Sweden apply the tax rules for pensioners also to their employment income.

In March 2023, as part of the new budget, the United Kingdom increased the annual tax-free allowance for contributions to a pension savings account by 50%, and removed the upper limit people can save in their pension accounts throughout their life. This change will mostly impact high-income individuals, although also middle-income people may benefit as well under specific circumstances.[54]

On average across the OECD, an average-wage worker who will retire at the normal retirement age after a full career from age 22 in 2022 will receive a net pension from mandatory schemes at 61% of net wages based on already legislated measures (Figure 1.16). Future net replacement rates are at 40% or below in Australia, Estonia, Ireland, Japan, Korea, Lithuania and Poland. They are at or above 90%, on the other hand, in Greece, the Netherlands, Portugal and Türkiye.

On average among OECD countries, the future net replacement rate of workers with low earnings (50% of the average wage) is 73%, more than 10 percentage points above the replacement rate for average earners. Replacement rates are generally higher for low earners due to redistributive features within pension systems. In Japan, Lithuania and Poland, the net replacement rate for low earners is below 50%, and it is close to that in Canada, Estonia and Korea. At the other side of the spectrum, in Colombia, Denmark and Greece, the net replacement rate of low earners is more than 100%, meaning that income is higher when moving from work to retirement, with Luxembourg, the Netherlands and Portugal being close to 100%.

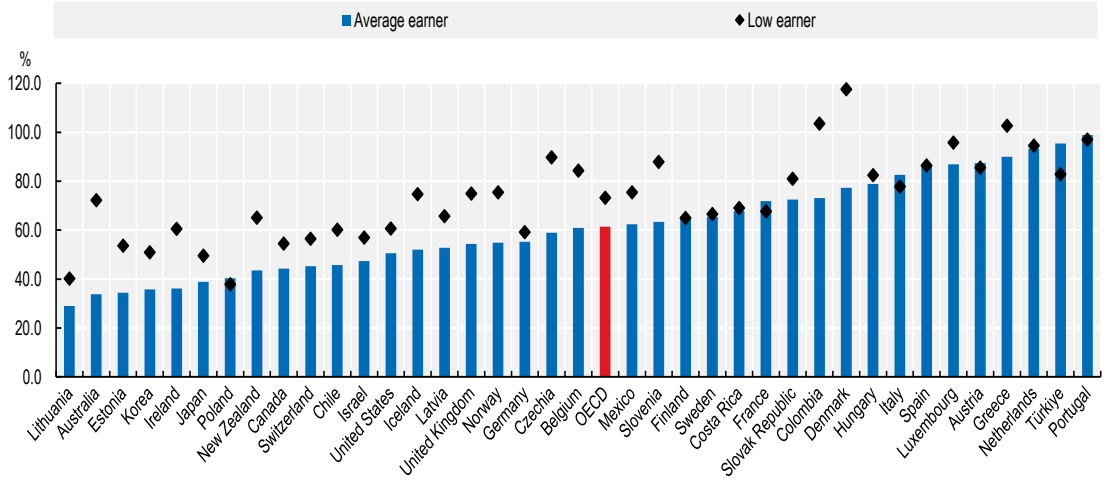
Measures legislated over the last two years and described above have the largest positive impact on net replacement rates over the long term in Chile, Spain and Sweden. Chile's replacement rates increased by about 8. percentage points due to the reform vastly expanding the targeted pension. For Spain, the elimination of the sustainability factor results in net replacement rates that are around 7 percentage points higher. Sweden also records a significant increase in replacement rates due to the effect of higher retirement ages. In Greece, the shift from NDC to FDC for the auxiliary pensions, legislated in 2021 and effective as of 2022 (OECD, 2021[9]), generates the typical trade-off when replacing PAYG by funded pensions: higher future pensions – especially as the NDC returns in Greece are influenced by the sharp

projected fall in the working-age population which affects long-term GDP potential growth – and medium-term pressure to publicly finance accumulated NDC entitlements as new contributions are invested in FDC accounts. Moreover, replacement rates will increase in the Slovak Republic due to higher retirement ages.

By contrast, Costa Rica's replacement rates dropped by about 8.5 percentage points in particular due to the reduction in effective accrual rates to improve financial sustainability. Net replacement rates decreased in Czechia as well as for low earners in Türkiye due to reductions in the taxation income from work, which boost net wages. Czechia, for instance, passed a tax reform in 2021 excluding employer contributions from taxable income. As this causes an increase in net earnings while net pensions remain stable, the net replacement rate for an average earner drops by 4 percentage points.

Figure 1.16. Net pension replacement rates for average and low earners

Future net replacement rate from mandatory schemes after entering the labour market in 2022 aged 22



Note: Normal retirement age between brackets. Low earners earn 50% of the average earner. Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level. For Hungary, the net replacement rate is based on the assumption that the thresholds above which only part of earnings are taken into account in the pension calculation are constant in nominal terms, which has been the case since their introduction in 2013. If the thresholds instead were to be price- or wage-indexed, the net replacement rate increases from 78.8% to 83.7% or 89.8%, respectively.
Source: See Chapter 4, Table 4.4, https://stat.link/r1pgws.

Early withdrawals from funded schemes

Australia and the Slovak Republic have made changes to the types of payments people can receive from their funded pensions or the conditions for a lump-sum withdrawal. Australia increased the amount people can withdraw from their FDC accounts for the purchase of their first home by two-thirds in July 2022.[55] As of January 2025, the Slovak FDC scheme in which automatic enrolment was introduced (see below) will be paid out in two phases. First, half of the account's value has to be withdrawn via a programmed withdrawal. The programmed withdrawal should cover half of the median life expectancy at the age of initial withdrawal. During this phase further contributions can be paid into the account. At the end of the programmed withdrawal, the remaining assets are to be turned into a lifetime annuity.

Coverage reforms

Several OECD countries have implemented reforms to extend the coverage of pension schemes. This includes the introduction of automatic enrolment as well as initiatives to extend coverage to vulnerable workers such as reducing or eliminating minimum earnings thresholds or expanding coverage to domestic

and platform workers. Reforms changing residency requirements for access to certain pension benefits have gone the other way, however, with residency requirements having become more restrictive in some countries.

Expanding the use of automatic enrolment

The number of OECD countries operating an automatic enrolment scheme in a retirement savings plan at the national level is increasing further. The Slovak Republic has joined the ranks of Lithuania, New Zealand, Poland, Türkiye and the United Kingdom who introduced automatic-enrolment programmes over the last 15 years, and Ireland is set to follow soon as well (see below). The Slovak Republic legislated automatic enrolment in November 2022. People below age 40 entering employment for the first time as of May 2023 are automatically enrolled in the FDC scheme but can decide to opt out within two years after being enrolled. The contribution rate under automatic enrolment is 5.5% in 2023, increasing to 6% in 2027 – three years later than previously legislated. Enrolment is voluntary for people under 40 who entered employment earlier. Before the introduction of automatic enrolment, enrolment in the DC scheme was voluntary although for those people under 35 who did opt in, paying contributions was mandatory. Furthermore, the United Kingdom passed a legal amendment in September 2023 allowing the government to set a lower minimum age and a lower minimum earnings threshold for automatic enrolment than the minima defined in the law.[56]

Increasing coverage of vulnerable workers

Access to earnings-related pensions was improved for low-income earners in Australia and Costa Rica.[57] Australia decided to remove the minimum earnings threshold for mandatory employer contributions, the so-called Superannuation Guarantee, effective as of July 2022.[58] This means that individuals on very low earnings will also build up entitlements in the FDC scheme. As a result, the 3% of employees who previously fell below the minimum earnings threshold now also receive employer contributions. The workers affected are mostly young, low-wage and part-time workers, the majority being women (Treasury of the Australian Government, 2020[55]). Also, all Australian workers now have the possibility to pursue employers for unpaid superannuation contributions.[59] In addition, Australia relaxed access conditions to the targeted pension for pensioners selling their principal home[60] and to healthcare at a reduced rate.[61] To reduce informal employment and increase the social protection of part-time workers, Costa Rica halved the minimum contribution wage in the earnings-related pension scheme for part-time workers taking effect as of January 2023. Previously, workers earning less than the monthly minimum wage, in particular part-time workers, were obliged to pay contributions at the monthly minimum-wage level. An estimated 16% of employed people would be affected by the reform (CCSS, 2023[56]).

Chile and Mexico extended coverage to platform and domestic workers, respectively, who previously were not covered by mandatory pensions. In Chile, platform workers are covered by mandatory FDC pensions under the same rules as the self-employed since September 2022. As for all self-employed, coverage is conditional on the issuing of invoices. In Mexico, mandatory FDC coverage was extended to domestic workers. In 2019, the Mexican Constitutional Court ruled that it was discriminatory that social security coverage was mandatory for all employees except for domestic workers, for whom it was voluntary. As per the Court's ruling, a pilot programme to extend mandatory coverage to domestic workers was set up that same year, followed by Parliament unanimously adopting a law formally expanding their coverage in October 2022. Domestic workers are subject to the same mandatory social insurance rules as other employees. As domestic workers often provide services to multiple households and as a result have complex working-time arrangements, they are considered as insured for the entire month if their total income in the month is at least equal to the minimum monthly salary, irrespective of days worked. If that threshold is not reached, employees are only covered for the days they are registered as working. An online platform makes it easy for families register a domestic worker and pay social contributions.

Households can decide whether to pay contributions twice per month, monthly, every six months or once per year.

The Dutch pension reform includes some measures to increase coverage. Employees build up pension entitlements from the very first day they work for an employer covered by a pension scheme from July 2023, and the minimum age workers can enter a pension scheme is also lowered from 21 to 18 from January 2024. The tax exemption for pension contributions to an individual pension is expanded from 13.3% to 30% from July 2023.

Tightening residency requirements

New Zealand and Sweden both made changes to their residency requirements to receive first-tier pensions. In November 2021, New Zealand decided to gradually increase the minimum residence requirement to qualify for the public pension from 10 years currently to 20 years for those born on or after 1 July 1977 with a full effect from 2042.[62] Since January 2023, Sweden no longer provides the targeted top-up (*Minimum Garantipension*) to the earnings-related pension to individuals residing outside of the country.

At the same time, Greece decided to temporarily lower the residency requirement for some specific groups of immigrants in 2022. In order to receive a full basic pension, the residency requirement was reduced from 40 to 30 years in 2022 specifically for Albanian and former Soviet nationals who have been legally and permanently residing in Greece since 1992. The limit will gradually be increased to reach 40 years again in 2032.

Pension reforms in progress

Governments in several Latin-American OECD countries are preparing substantial reforms, in particular by increasing pension benefits for low-income earners and expanding coverage through formalisation of employment in order to reduce old-age poverty. In Chile, contribution rates will likely increase in the future although so far there is no political agreement on a concrete reform. There is a broad political consensus to increase mandatory contributions for employers by 6 percentage points[63] Employers currently only pay a contribution of 1.5% to the FDC scheme, which is the third lowest mandatory contribution rate for employers in the OECD as there are no mandatory employer contributions in Lithuania and New Zealand. However, there is no political consensus on how the supplementary employer contributions should be used. While opposition parties favour strengthening individual FDC accounts, the government proposes to use these contributions to finance a contribution-based basic pension for current pensioners on a pay-as-you-go basis.[64] Contributors would in turn build up entitlements in a new notional-account scheme with a strong redistributive feature: flows in the individual notional accounts will be equal to contributions applying to 70% of the individual's wages and 30% of the economy-wide average wage. The proposed reform also contains some instruments to compensate women for their lower FDC annuities due to higher life expectancy.

Colombia and Costa Rica are also working on important reforms. Colombia is debating transforming its pension system currently consisting of two alternative earnings-related pension schemes into a multi-pillar system with a targeted, a public earnings-related, a mandatory private earnings-related and a voluntary component. Costa Rica is developing a reform proposal that would transform its targeted scheme into a residence-based basic pension financed from a reserve fund to be created. The reform is among others driven by a concern over high poverty rates among older people who have been in informal employment for a significant part of their careers.

There is a political agreement in Belgium to tighten the eligibility conditions for the minimum contributory pension. Currently, people can access the minimum pension after 30 years worked or credited. A supplementary condition would be added on top of the 30 years worked or credited requiring that people

worked at least at 80% of a full-time job during at least 20 years. Periods such as maternity and palliative care leave would be credited as work under the 20-year condition nonetheless. Furthermore, Belgium plans to introduce a deferral incentive similar to the one introduced in Spain (see above). There is an agreement within the government coalition to award people with a lump sum of a fixed amount per year of deferral of pension uptake irrespective of the height of the pension.[65]

Germany is preparing a draft law reform expanding the pension coverage of the self-employed. Currently, the statutory pension system is only mandatory for certain categories of self-employed. In the 2021 coalition agreement, the governing parties agreed to introduce mandatory old-age pension insurance for all new self-employed. The new self-employed would be insured in the statutory pension system unless they choose an "equivalent" private pension product. The reform mainly aims to reduce old-age poverty and harmonise pension protection between employees and the self-employed.

Ireland is in the process of setting up automatic enrolment schemes for employees who currently are not covered by occupational pension schemes provided by employers. A bill to establish the scheme is currently being drafted, with the parliament expected to enact the legislation in 2024. Announced in 2019 with implementation planned for 2022, after some delays due to COVID-19 automatic enrolment is now expected to take effect in the second half of 2024. When the measure does come into effect, workers aged between 23 and 60 who are currently not covered by a pension scheme will be automatically enrolled into the new retirement savings system on the condition that they earn more than EUR 20 000 annually. Workers who do not meet these criteria can join the scheme on an opt-in basis. For every EUR 3 the employee contributes, the employer will also contribute EUR 3 and the state will put in EUR 1. Employers and employees will each contribute 1.5% and the state 0.5% upon introduction, gradually increasing to reach to 6% and 2%, respectively, or a total of 14% over a ten-year period.[66] Ireland is furthermore scheduled to enact legislation in January 2024 to introduce the option to defer the uptake of the basic pension from age 66 up to 70. The basic pension will be increased for each year of deferral in an actuarially neutral way.

In Switzerland, contributions paid after reaching the statutory retirement age will be included in the calculation of the public pension in the future, increasing incentives to continue working.[67] People working beyond the statutory retirement age of 65 currently pay mandatory contributions but do not build up pension entitlements. In addition, flexibility in retirement between 63 and 67 is further extended as partial retirement will become an option, so that people can take up part of their pension early or defer it in order to supplement earnings from part-time work.

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Annex 1.A. Recent pension reform overview

Annex Table 1.A.1. Pension reform decided between September 2021 and September 2023

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
Australia		February 2022: As of July 2022, the minimum earnings threshold above which the employer has to pay the minimum contribution rate (Superannuation Guarantee) is removed. Previously, it was AUD 450. June 2023: On 30 June 2023, the Protecting Workers Entitlements legislation received Royal Assent, including a right to superannuation in the National Employment Standards. This gives Australian workers the power to pursue their unpaid superannuation as a workplace entitlement.	The Home Equity Access Scheme (HEAS), previously known as the Pensions Loans Scheme prior to 1 January 2022, allows seniors to access home equity for additional retirement funds. It was enhanced on 1 July 2022, allowing participants to receive lump sum payments, and a No Negative Equity Guarantee was introduced.		Deeming is the assumed income returned from financial investments in the income test for the targeted pension. The annual deeming rates were frozen at 0.25% and 2.25% until 30 June 2024. From 1 January 2023, pensioners can more easily sell their principal home without the proceeds affecting their pension. The assets-test exemption for principal home sale proceeds was extended to 24 months from 12 months, and these proceeds are deemed at the lower rate only (0.25%). From December 2022 to December 2023, Age Pension recipients receive a one-off AUD 4 000 increase to their Work Bonus balance and the maximum balance increases temporarily to AUD 11 800. The Work Bonus reduces the amount of eligible income included in the Age Pension income test.		February 2022: In July 2022, the maximum first home super saver (FHSS) withdrawal limit increased from AUD 30 000 to AUD 50 000. July 2022: From January 2023, up to AUD 300 000 from the proceeds of the sale of one's home can be contributed to one's superannuation fund as of age 55, down from 60 since July 2022 and 65 since July 2018 (downsizer contributions). In November 2022, the income limits for Commonwealth Seniors Health Card (CSHC) increased. The card is for seniors of Age Pension age whose income or assets preclude them from receiving Age Pension. From July 2023, the annual superannuation performance test covers more products, protecting more members from investing in products with poor long term investment performance.
Austria			January 2022: Pension indexation in 2022 deviated from the rule (prices, 1.8%) for lower monthly pensions:		In January 2023, the income-tested top up was increased by EUR 20 per month on top of the 5.8% indexation, resulting in a		A one-off payment was paid in March 2023 to help low- and middle-income pensioners in the face of high inflation:

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
			3% for pensions up to EUR 1 000; declining from 3% to 1.8% for pensions between EUR 1 000-1300; 1.8% for pensions above EUR 1 300. January 2023: Pension indexation followed the rule (5.8%) for total pension incomes up to EUR 5 670 per month; for total pensions exceeding that amount, the pension increased by EUR 328.86. The 2020 Social Security Act determined that for those retiring as of 2022, indexation in the year after retirement depends on the month of retirement: people retiring in January receive 100% of the indexation in the next year, those retiring in February, 90%, etc. People retiring in November or December receive no indexation the year after. Due to high inflation, the rule was temporarily altered from January 2023 (at least 50% of the full indexation) and suspended for 2024 and 2025 (everyone will receive full indexation).		total increase of 7.74%.		If the total monthly pension does not exceed EUR 1 666,66 the payment equals 30% of total pension income; if the total monthly pension is over EUR 1 666,66 and below EUR 2 000, the payment is EUR 500; for incomes from EUR 2 000 up to 2 500, the payment amount decreases linearly from EUR 500 to EUR 0.
Belgium			In 2024, the wage ceiling applied in the calculation of new pensions is increased by 2%.		In July 2023, minimum pension and social assistance benefits for older people were increased by 2%. In		

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
					January 2024, the minimum pension will be increased by 2.08% and the amount and ceiling of the minimum right per career year by 2%.		
Canada	The Government of Quebec passed legislation that the maximum deferral age for a retirement pension under the Quebec Pension Plan will increase from age 70 to age 72 as of 2024.		In July 2022, the Old Age Security pension increased by 10% for people aged 75 and over.	As part of the seven-year phase-in of the Canada Pension Plan Enhancement decided in 2016 and taking effect between 2019 and 2025, the contribution rate for the Canada Pension Plan (CPP) was increased from 5.45% to 5.7% for both employees and 5.7% for employers on 1 January 2022. The contribution rate payable on self-employment earnings was similarly increased from 10.9% in 2021 to 11.4% in 2022 as self-employed persons pay both the employer and employee components of CPP contributions. The level of maximum annual pensionable earnings on which contributions are payable also increased from CAD 61 600 to CAD 64 900 in 2022.		An additional one-time goods and services tax credit (GST credit) payment took effect in November 2022. This additional one-time payment will double the GST credit for six months for those who receive it. Seniors could potentially receive this payment. In July 2023, a grocery tax rebate was paid to persons who were entitled to receive the GST credit for January 2023, including seniors. This measure provided an extra CAD 225 for seniors, on average, and was expected to deliver targeted inflation relief for 11 million individuals and families, including more than half of Canadian seniors.	In December 2022, persons who have paid rent in 2022 equaling 30% or more of their net family income received a one-time top-up of CAD 500 to the Canada Housing Benefit. The benefit is application-based, non-taxable and can be received by pensioners. In March 2023 the government announced that a new Canada Dental Care Plan will become available to uninsured Canadians under 18, persons with disabilities, and seniors who have an annual family income of less than CAD 90 000. There will be no co-pays for those with an annual family income under CAD 70 000. By 2025, the Canadian Dental Care Plan will cover all uninsured Canadians with an annual family income under CAD 90 000.
Chile		As of September 2022, digital platform workers are covered by social security, including pensions. To be covered, the workers have to issue invoices and are therefore subject to the			January 2022: The new Universal Guaranteed Pension (PGU) replaces the Basic Solidarity Pension as of February 2022. People aged 65+ can access it if		

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
		same rules as the rest of self-employed workers who issue invoices.			they have resided at least 20 years in Chile since age 20 and at least 4 years in the last 5 years before claiming PGU. The benefit is not accessible to the 10% richest people aged 65+ and to people with a monthly pension income exceeding CLP 1 048 200. The monthly amount of the PGU equals CLP 193 917 for people with a pension income up to CLP 660 366, after which the benefit declines linearly with pension income until reaching 0 when the monthly pension income exceeds CLP 1 048 200. February 2023: Starting April 2023 the coverage of the PGU was increased. The means test was changed to grant access to the 90% poorest among all the people in the country (previously 90% of all 65+), which is estimated to increase the number of beneficiaries by 70 000.		
Colombia							
Costa Rica	January 2022: From January 2024, men can no longer retire early (now possible at 61 years and 11 months after 462 months of contributions). Women	September 2022: From 2023, the minimum contributory base is halved for part-time workers, from CRC 307 000 to CRC 153 500, to reduce	January 2022: As of January 2024, the reference wage to calculate the pension benefit is the average (corrected for inflation) of the best 300 months of				

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
	will have access to early retirement from age 63 with 405 months of contributions (now at 59 years and 11 months after 450 months of contributions). As before, pension can be drawn from statutory retirement age of 65 on the condition of 300 months of contributions, or at a reduced rate with 180 months of contributions.	informality. For IVM Insurance, contribution bases for employer contributions can be 25%, 50%, 75% or 100% of the minimum contributory base; the amount closest to the worker's salary is applied. From 2023, the reduction applies to people under 35, from 2025 to people under 50 and from 2025 to all workers without age limit.	contributions instead of the last 240 months of contributions made. At the same time, a replacement rate of 43-52.5% (depending on earnings level in the last 60 months before retirement) is attained after 300 months of contributions instead of 240 months of contributions.				
Czechia	September 2023: From October 2023 early retirement is tightened from 5 years to 3 years before reaching statutory retirement age, and penalties increased. The penalty is now 1.5% for each quarter, whereas previously penalties were lower for the first (0.9% per quarter) and second year of early retirement (1.2%). From October 2024 the required number of years of contributions to qualify for early retirement will be 40 instead of 35.		As of January 2023, a CZK 500 top up to the monthly earnings-related pension is granted for each raised child to the parent who provided most care to the child. September 2023: From January 2025, pensions will be indexed to prices plus 1/3 of real wage growth, compared to 1/2 now. Only the pensioner price index will be used to decide the indexation (the CPI will no longer be tracked). Early pensions will not be indexed until the recipient reaches statutory retirement age.	July 2022: As of February 2023, employers' social insurance contributions are reduced by 5 percentage points (from 24.8% to 19.8%) for workers younger than 21, as well as for part-time workers working between 8 and 30 hours per week who are either older than 55, or parents caring for young children, or people with disabilities.			
Denmark					June 2022 and June 2023 (applied retroactively): From January 2023, both the older person's and their spouse's or cohabitating partner's		

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
					income from work are excluded from the income test of basic and targeted benefits in the public pension system (i.e. excluding social assistance). The partner's income was also removed from the income test of early-retirement and disability benefits, removing disincentives for partners of retirees to remain in employment.		
Estonia			October 2021: In January 2023, the monthly amount of the basic flat-rate component of the social insurance old-age pension and of the social assistance national pension increases by EUR 20.			December 2021: Starting in 2023, the tax exemption for pensioners is expanded so that the average pension is exempt from income tax.	
Finland			November 2021: As of January 2022, for surviving spouses born as of 1975, the survivor's pension is limited in time to 10 years after death of the spouse, or until the youngest child becomes 18 years old. The child's pension in the earnings-related pension system is paid until the age of 20 after the reform (earlier 18) and the surviving spouse's part of the earnings-related pension is paid to the child if there is no surviving spouse. Also, a cohabiting partner	June 2022: As of January 2023, in addition to the self-employed persons' confirmed income, defined as the monetary value of the work input of the self-employed person, the pension provider also takes into account the median wage of the field of self-employed person's business, the value and amount of their work input, the scope of their entire business activity and their professional skills. The confirmed	A one-off advanced indexation of 3.5% on the 1st of August 2022.	The responsibility for organising healthcare, social welfare and rescue services was transferred from municipalities and joint municipal authorities to 21 well-being services counties on 1 January 2023. This led to structural reform in taxation as the municipal tax rate was lowered at the same time as state taxes were raised. Overall, there was no significant change in the level of individual taxation.	The act with the goal to promote the return to work of employees on disability pension is extended from the beginning of 2023 until the end of 2024.

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
			can receive a survivors' pension if they had a child with the deceased until the child is 18.	income will be adjusted regularly every three years by the pension provider.			
France	March 2023: From September 2023, the minimum retirement age increases from 62 to 64 in 2032 (1968 birth cohort) in increments of 3 months per cohort. The retirement age also increases by 2 years for active occupations in the public sector. The extension of the minimum contribution period for a full-rate pension from 42 years (168 quarters) to 43 years (172 quarters) is accelerated to 2028 (1965 cohort). People who started working before age 16 can retire at 58, before 18 at 60, before 20 between 60 and 62 depending on cohort, and before 21 at 63. Periods spent as stay-at-home parents to take care of children (assurance vieillesse des parents au foyer) will be taken into account in the eligibility for the long careers scheme (up to 4 quarters) as well as in the minimum pension calculation. Special pension schemes for among	March 2023: From September 2023, old-age insurance coverage has been extended to more types of caregivers and some trainee periods sponsored by the State in the past will be included in the contribution period.	March 2023: The 10% pension increase in the general private and public sector schemes for parents of at least three children was extended to the liberal professions. The reform increases flexibility for working after retirement. Returning to work after claiming a full pension will provide additional pension rights, and civil servants now have the option of a gradual retirement (combining working and a partial pension). October 2023: Social partners agreed to eliminate the 3-year temporary penalty in the mandatory occupational pension scheme for people retiring from December 2023. Similarly, the deferral bonus is eliminated from December 2023 for people born as of September 1961, except for people who were not affected by the reform of the public pension on the condition of a deferral of between 2 and 4 years.		March 2023: As of September 2023, the minimum pension from the general scheme is increased from EUR 748 to EUR 848 after a full career and from EUR 684 to EUR 709 for careers shorter than 30 years. Together with the mandatory occupational pension, the total gross minimum pension after a full career at the minimum wage is now 85% of the net minimum wage, or about EUR 1 200 per month in 2023.		

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
	others the energy sector, the Paris metro company, the central bank and notary clerks will be gradually eliminated. New entrants in these sectors or occupations from September 2023 will fall under the general private-sector scheme (grandfathering). People already working in these occupations will stay in their respective special schemes, but their eligibility age and career length requirement will increase at the same pace as in the general scheme as of 2025.						
Germany			July 2022: The catch-up factor was reinstated, so that the increase of the pension in line with regular indexation was reduced to compensate for the lack of negative indexation in 2021 (pension guarantee). In the former West-German states, pensions were increased by 5.35%; in former East-German states by 6.12%. July 2023: In the former West-German states, pensions were increased by 4.39%; in former East-German states by 5.86%.				January 2023: The earnings limit was abolished for people receiving early old-age pensions. The earnings limit for people receiving disability pensions was increased from EUR 6 300 per year to EUR 35 650 in case of a partial disability pension and to EUR 17 820 in case of a full disability pension. The source of earnings should fall within the determined capacity. June 2022: In July 2024, disability pensions claimed between 2001 and June 2014 will be increased by 7.5%, and

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
							between July 2014 and 2018 will by 4.5%. Since 2019, new disability pensions are calculated as if one worked until the statutory retirement age, but benefits in payment were not yet adjusted.
Greece			Since 2022, the residence requirement for a full national pension is temporarily reduced from 40 to 30 years for expatriates with Albanian nationality and expatriates coming from the former Soviet Union who have been legally and permanently residing in Greece since 1992. The requirement will increase again by one year each year until it reaches 40 again in 2032. The gross total amount of auxiliary pension was capped at 6/20th of the pension paid by the main scheme for people who paid contributions before 2015.	As of 25 November 2022, the special contribution of 1% of all employees of the public sector was abolished.	Regarding survivors' pensions, the statutory minimum benefit was changed to EUR 387.90 per month if the deceased has an insurance record of 15 years and a max of EUR 413.76 per month if the deceased has an insurance record of 20 years. The benefit is not subject to means-test. Regarding invalidity pensions, the statutory minimum pension (national and contributory pension combined) in the case of invalidity due to accident at work or occupational disease cannot be less than double the amount of the national pension corresponding for 20 years of insurance (i.e. 2 x EUR 413.76 per month).	In September 2022, the social solidarity contribution for pensioners was abolished. Previously, pensioners had to pay a supplementary tax of between 3% and 14% depending on pension level on the part of the pension exceeding EUR 1 400.	
Hungary			February 2022: The 13th month pension benefit was planned to be reintroduced gradually from 2021 to 2024, but the implementation has been accelerated and the 13th		The monthly minimum amount of HUF 24 250 for orphan allowance was increased to HUF 50 000 per month from 1 January 2022.The increase applies to both newly established orphan		Since September 2022, the national Firewood Programme provides Hungarian families, including pensioners, with firewood to meet energy needs for the 2022/23 heating season. A maximum

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
			month was paid out in full already in 2022.		benefits and orphan benefits in payment.		of 10 forest cubic metres of firewood per household can be purchased at a set price, as defined by law.
Iceland	June 2022: If the supplementary 3.5% of contributions (see 'contributions') is put in another individual account instead of the general FDC pension, it can be withdrawn as an early-retirement pension as of age 62, until reaching the statutory retirement age of 67.		June 2022: The pension system aims to ensure an annual accrual of 1.4% of career-average wages, resulting in a replacement rate of 56% after a 40-year career. However, if the supplementary 3.5% of contributions (see 'contributions') is put into the general FDC pension, the target replacement rate is 72%, corresponding to an accrual rate of 1.8% over a 40-year career.	June 2022: As of 2023, minimum contributions in the occupational pension scheme are increased from 12.0% to 15.5% (11.5% employer contributions + 4% employee contributions), in line with previous collective agreements. The employee can decide whether to put the supplementary 3.5% in the general FDC pension or in another individual account.			June 2022: If the supplementary 3.5% contributions are put in an individual account (see 'contributions'), then the money in the account can be inherited in case the owner passes away.
Ireland			The total contributions approach (TCA) to determine the state pension is gradually introduced between 2025 and 2034. Currently, the pension is based on the average number of contributions paid each year between entering the labour market and reaching the statutory retirement age, making later labour-market entry more beneficial than early entry followed by a career break even if the total period in which contributions are made is the same. Under TCA, a full pension is reached after 40 years' worth of	October 2023: The contribution rate for employees and employers, currently respectively 4% and 8.8% or 11.05% depending on income level, will both increase by 0.1 percentage points in October 2024. The contribution rate is expected to increase further in the coming years.			

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
			contributions irrespective of when these contributions were paid. During the transition period, the importance of the TCA in pension calculation gradually increases by one-tenth each year. Enhanced State Pension provision for carers (in excess of 20 years) is introduced from January 2024. People who spent more than 20 years providing full-time care to an incapacitated person get these periods credited in the contribution record for the contributory State Pension.				
Israel	November 2021: The statutory retirement age for women will be increased from 62 to 65. From 2022 it will increase by 4 months a year to 63 in 2024 and then by 3 months a year to 65 in 2032. The age for men remains at 67.						
Italy	Some temporary early retirement programmes were extended: - Early retirement for women (Opzione Donna): with 35 years of contributions, women could retire at 58 years (59 years if self-employed) in 2022, and		In 2023-24, only the lowest pensions will be indexed fully to prices, with lower indexation of higher pension bands: - up to 4 times INPS minimum: 100% prices - between 4 and 5 times INPS minimum: 85%		December 2022: The budget law n. 197/2022 introduced an extraordinary and temporary revaluation for minimum pensions only in 2023, in order to counteract the negative effects of inflation. The minimum pension is	In 2022, the tax reform changed income brackets and tax rates: 23% for pension income up to EUR 15 000, 25% between EUR 15 001 and EUR 28 000, 35% between EUR 28 001 and EUR 50 000 and	

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
	at 60 (59 with one child or age 58 with two children) in 2023. As of 2023, Opzione Donna is only available for women who are caregivers, disabled at least 74% or fired or employed by companies in crisis. - Early retirement for unemployed or disabled people, caregivers or people in arduous occupations (Social APE): In 2022 and 2023, people who have contributed for more than 30 years (36 years in case of an arduous occupation) can receive an old-age pension from the age of 63. - Early retirement for restructuring: with 35 years of contributions, employees in firms in crisis can retire at 58. - Quota 102 / quota 103: In 2023, a person can retire at age 64 with 38 years of contributions (Quota 102) or at age 62 with 41 years of contributions (Quota 103).		prices - between 5 and 6 times: 53% - between 6 and 8 times: 47% - between 8 and 10 times: 37% - over 10 times: 32%		increased by 1.5% on top of regular indexation for older pensioners under 75 years of age and by 6.4% for pensioners aged 75+.	43% above EUR 50 000.	
Japan				September 2021: From December 2024, the maximum monthly contribution amounts for DC plans change as follows: - Corporate-type DC plan:			

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
				JPY 55 000 minus the contribution amount for DB plans etc. - Individual-type DC plan: the lowest of JPY 20 000, or JPY 55 000 minus the sum of contribution for corporate-type DC plan and the contribution amount for DB plans etc.			
Korea							
Latvia		July 2023: A person who permanently lives outside the EU/EEA countries has the right to an old-age pension and a survivor's pension if the length of the period of insurance in Latvia required for granting pension is at least 15 years.			March 2023: After a supplementary indexation in July 2023, the frequency of indexation of first-tier benefits is increased from every three years to annually from January 2024. Minimum pension applying after 15 years (1.1 * 25% of median income 3 years prior): from EUR 150 since January 2021 to EUR 172 in July 2023 and EUR 188 in January 2024 Basic pension and targeted benefit (20% of median income 3 years prior): from EUR 109 since January 2021 to EUR 125 in July 2023 and EUR 137 in January 2024.	In 2022, the non-taxable minimum of the pensioner was increased from EUR 330 per month to EUR 350 per month in the first half of 2022 and from July 2022 to EUR 500 per month.	
Lithuania			November 2021: From 2022, a supplementary indexation applies to the social security pension		November 2021: From 2022, the pro-rata reduction in the contributory basic pension for shorter careers is		

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
			(i.e. indexation of pension points). If the at-risk-of-poverty rate for people 65+ exceeds 25% and/or the average old-age pension is projected to fall below 50% of the average net salary in the year of indexation, the supplementary index of pension points is applied. If the social insurance fund budget is expected to be in surplus in the year of indexation and the application of standard indexation is expected to cost less than 75% of the surplus, then the supplementary indexation of pension points is applied so that the total cost of indexation equals 75% of the surplus. In 2023, the pension point value was indexed by a supplementary 5.8%, on top of the 9.02% indexation. April 2022: An additional index of social insurance pension benefits of 5% was applied in June 2022 to compensate for the high level of inflation.		abolished. Previously, 33 years of contributions (increasing to 35 by 2027) were required to receive the full amount of the basic pension. Now, everyone who qualifies for the public pension – conditional on having 15 years of contributions – receives the full amount of the basic pension.		
Luxembourg							
Mexico		November 2022: Mandatory FDC coverage was extended to domestic workers.					

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
Netherlands			May 2023: A new law entering into force in July 2023 obliges pension funds to transition from FDB to FDC schemes before 2028. From 2028, new entitlements can only be built up in DC schemes. Funds are encouraged to transfer existing DB entitlements to the new pension system. Social partners can choose one of three types of DC schemes: 1. A flexible scheme allows members to choose between different investment profiles which are defined by the pension fund. Upon retirement, members can choose between an annuity of a fixed monthly amount (not indexed) or a variable annuity depending on investment returns. 2. A collective scheme has a single investment policy for all members, applying life-cycle investment strategies. The contribution rate should be based on a pension target and the probability of achieving this pension target should be calculated at least every five years. Pay-out happens through a variable annuity				

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
			depending on investment returns. 3. Employers pay contributions to individual accounts managed by specific institutions (in existence since 2011). These institutions invest the funds they manage but they are neither allowed to carry any risks nor to provide insurance services (no annuities, survivor's or disability benefits). Upon retirement, the employee must use the capital to purchase a pension product from an insurer. In both flexible and collective schemes, all fund members pay the same contribution rate. In the run-up to the new pension system, indexation rules have been relaxed from 1 July 2022 up until the end of 2023. The threshold from which indexation may be applied has been lowered (from ~130% to 105%) and a computational rule that indexations granted should be future proof has been abolished. Only pension funds that indicate they are expecting to transfer current pension rights to the new system are able to use the relaxed rules.				

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
New Zealand		In 2021, the New Zealand Super / Veteran Pension minimum residence requirement increased. The residence requirement after age 20 is gradually raised from 10 years to 20 years by birthdate. The full 20 years are required for people born from July 1977 onwards. The increase does not apply to refugees arriving in New Zealand aged 55 or older, and a reduced requirement applies to refugees arriving between age 45 and 55.					
Norway			From 1 May 2022, the targeted pension benefit and the mandatory earnings-related pension benefit are indexed to the average of wage and price growth.	January 2022: Contributions to the FDC scheme are made on all income up to 12 base amounts, instead of on income between 1 and 12 base amounts.	From January 2023, the minimum pension is increased by NOK 4 000 for single pensioners (1.72%) above indexation.		
Poland			October 2022: All benefits were increased from March 2023 following the general indexation rule but by no less than PLN 250. July 2023: A 14th month pension payment was made permanent, first paid in September 2023; in 2021 and 2022 it was paid as a discretionary benefit. The level of the payment is not		October 2022: The minimum pension was increased from March 2023 by PLN 250.	November 2021: As of January 2022, old-age and disability pension benefits are exempt from tax up to PLN 30 000 per year (aligned with the tax-free allowance for earnings), and income up to PLN 85 528 per year is exempt from taxation for people who have reached the statutory retirement age but continue to work without claiming	

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
			fixed, but it cannot be below the level of the minimum pension.			pension benefits.	
Portugal	Following the automatic adjustment of the retirement age to life expectancy, the normal age of retirement increased from 66 years and 6 months in 2021 to 66 years and 7 months in 2022. In 2023, the normal retirement age dropped to 66 years and 4 months.		In 2021, total pensions up to 1.5 times Social Support Index (EUR 658.22) were increased by EUR 10 above indexation. In July 2022, indexation of total pensions up to 2.5 times SSI (EUR 1 108) at the beginning of the year was topped up to EUR 10, applied retroactively from January. In October 2022, all the pensioners received a bonus worth half of their monthly pension (one-off payment). In January 2023, pensions were increased below regular indexation. Total pensions up to 2 times SSI (EUR 960.86) were increased by 4.83%, between 2 and 6 times SSI by 4.49% and above 6 times SSI by 3.89%. In July 2023 all pensioners received an extraordinary increase of 3.57%, increasing pensions to the level of the full indexation required by the rule.			In 2023, the special tax allowance for pensioners is EUR 10 640 for annual pension income.	
Slovak Republic	As of January 2023, the cap on the increase in the statutory retirement age at 64 is removed.	From May 2023 auto enrolment into second pillar will be set up with the possibility to opt out	November 2022: As of 2023, a parental pension is introduced. For each child, a parent	If a person decides to join or stay in the FDC scheme with automatic enrolment, mandatory			As of May 2023, a default investment strategy is introduced in the FDC scheme with automatic

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
	The retirement age increase is equal to the median of the average yearly life expectancy increase over the last available 7 5-year periods. From 1 November 2022, the condition for entitlement to early retirement has been tightened to 1.6 times the adult subsistence minimum income level (previously 1.2 times). From 1 January 2023, in addition to the option to retire two years before the statutory retirement age with a penalty of 0.5% per month, it is now possible also to retire after a career of 40 years regardless of age, in which case a reduced penalty of 0.3% per month applies.	within two years. At the same time, the upper age limit for entry will be increased from 35 to 40 years.	receives 1.5% of 1/12 of the child's annual assessment base for pension contributions from two years ago, capped at 1.2 times the average wage. The parental pension is paid monthly, except the year 2023 when the whole amount of the parental pension is paid once a year. Since 2023, the pension point value is indexed to 95% of average earnings growth instead of full average earnings growth. From 1 January 2024, half of the saved amount in second pillar savings is paid as a programmed withdrawal by a pension management company, and afterwards the second part is paid as a lifetime annuity by a life insurance company. The programmed withdrawal covers half of the median life expectancy for men and women of the saver's at the age of (early) retirement, and can be paid as a fixed or variable amount. During this period, the saver can continue to contribute voluntarily, or has to continue to pay mandatory contributions if employed. February 2023 From January 2024, an	contributions amount to 5.50% of the assessment base in 2023 and 2024, 5.75% of the assessment base in 2025 and 2026, and 6% from 2027 from the assessment base. The contribution rate to the public earnings-related scheme is reduced proportionately, so that the total contribution rate remains constant at 18%.			enrolment, in which during the first phase of saving, the saver's assets, are placed exclusively in equity investments through a passively managed index non-guaranteed pension fund. At a certain time horizon (50 years in 2023), the saver's property and contributions to less risky bond and cash investments will subsequently begin: the share of the net value of assets in the index non-guaranteed pension fund will be reduced by 4 percentage points per year in favour of the share of the net value of assets in the bond guaranteed pension fund.

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
			additional indexation mechanism is introduced, so that pension benefits increase by 5% when the cost-of-living index grows by at least 5% since the previous indexation.				
Slovenia			As of April 2022, a father can claim the bonus for having children if the mother has not yet claimed the right to an early, old-age or disability pension, in mutual agreement. The bonus remains the same at 1.36% accrual per child up to three children. If the mother dies before claiming an early, old-age or disability pension, the father may assert an additional percentage of the assessment.				
Spain	December 2021: From 1 January 2022, the person who delays retirement will receive a bonus of 4% per full year worked after reaching the retirement age, or can opt to receive it as a lump sum which depends on the amount of the initial pension and the period of contributions, or as a combination of both.		November 2021: The revalorisation pension index (IRP) used for pension indexation and the sustainability factor (SF) to be used to adjust new benefit levels but never implemented were removed. As of January 2022, the pensions in the public PAYGO system are automatically adjusted to CPI. If inflation is negative, pensions will remain unchanged. March 2023: - The period on which the	November 2021: As of January 2023, the contribution rate is increased by 0.6 percentage points (0.1 percentage points for workers, 0.5 percentage points for employers) from 2023 to 2032 to finance the Intergenerational Equity Mechanism (MEI), a reserve fund. July 2022: From January 2023, the self-employed can no longer choose their contribution base, which	March 2023: Between 2024 and 2027: - The minimum pension for a pensioner with a dependent spouse will gradually be increased to 60% of median equivalised disposable income for this type of household. Other minimum pensions follow the same evolution. - The safety net benefit for older people will be increased so that for a single individual the benefit will be equal to 45% of median		

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
			reference wage is calculated is expanded from the last 25 years to the last 29 years with the possibility of discarding the worst 20-four monthly contributions from 2044. Until then people can choose the most beneficial of the two calculation methods. - The maximum pension will increase each year by 0.115 percentage points above inflation between 2024 and 2050 and faster after 2050, with a total increase of 20 percentage points by 2065. - The supplement for reducing the gender pension gap received by women (or men under certain conditions) who raised children, EUR 30.40 per month in 2023, will be increased by 10% above inflation in the period 2024-25 with the aim of reducing the gender pension gap.	resulted in the majority paying minimum contributions. Self-employed are now divided in 15 groups based on their net income level, with a specific minimum and maximum contribution base defined for each group. Between 2023 and 2025, the minimum and maximum contribution bases will decline for the lowest three income groups and increase for the highest nine income groups. March 2023: The maximum contribution base is gradually increased by 1.2 percentage points above inflation each year between 2024 and 2050, and a new solidarity contribution is established on the part of earnings exceeding the maximum contribution base for which no pension entitlements are built up. From 2025, the new contribution equals 0.92% of the part of the salary between the 100% and 110% of the maximum contribution base, 1% between 110% and 150% and 1.17% above 150%. These rates will gradually increase to reach 5.5%, 6% and 7%	equivalised disposable income (i.e. 75% of the at-risk-of-poverty threshold at 60% of median equivalised disposable income). Other old-age safety net benefits for older people follow the same evolution.		

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
				in 2045, respectively. - From 2024, the contribution to the MEI doubles from 0.6 to 1.2 percentage points in 2029, by 0.1 percentage points per year.			
Sweden	May 2022: The eligibility age for targeted benefits (guarantee pension, income pension supplement and housing supplement) increased from 65 to 66 years in 2023, and to 67 in 2026. From 2026, eligibility age for targeted benefits and the target retirement age in the earnings-related pension (currently 67) are linked to two-thirds of life-expectancy gains at age 65. As increases have to be announced 6 years before taking effect, these retirement ages remain at 67 at least until 2029. The minimum retirement age for the earnings-related pension increased from 62 to 63 in 2023, and to 64 in 2026, after which it will remain three years before the target retirement age.	September 2022: As of January 2023, the guarantee pension is no longer paid to individuals residing outside of Sweden.	June 2022: In August 2022, the guarantee pension levels were increased to boost adequacy. For those born in 1938 or later, the maximum guarantee pension was raised from SEK 8 779 to SEK 9 781 for unmarried persons, and from SEK 7 853 to SEK 8 855 for married persons. For those born in 1937 or earlier, the increase was from SEK 8 985 to SEK 9 988 for the unmarried, and from SEK 8 027 to SEK 9 030 for the married.			December 2021: From 1 January 2022, the basic tax allowance for people aged 65 and above was increased for a yearly income of app. SEK 100 000 or more. November 2022: From 1 January 2023, the age requirement for the basic allowance for the elderly was increased from age 65 to 66.	December 2021: In January 2022, the ceiling for housing cost was raised from SEK 7 000 per month to SEK 7 500 per month. The consumption allowance in the housing supplement increased by SEK 200 for those who are unmarried and by SEK 100 for those who are married in January 2022, and by SEK 300 and SEK 150, respectively, in August 2022.
Switzerland	Confirmed by referendum in September 2022:		March 2023: Parliament voted to reduce the conversion			September 2022: From January 2024, VAT will increase by	

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
	Between 2025 and 2028, the statutory retirement age for women increases from 64 to 65, equaling that of men, by 3 months per year. The reference age for the occupational pension will be raised at the same rate. Compensation measures are provided to women born in 1969 or before. Retirement flexibility is increased, including the possibility to retire between 63 and 70 or partial retirement. Contributions paid after 65 will result in pension build-up. From 2027, reduction rates for early retirement and deferral supplements will be adjusted to life expectancy, with a lower reduction rate for low incomes.		rate used to convert pension assets from the mandatory part of the occupational pension scheme into annual pensions from 6.8% to 6%. This reduction takes into account the increase in life expectancy and the situation of the financial markets. The reform, which aims to strengthen the financing of occupational pensions, to maintain the overall level of pensions and to improve coverage of part-time workers, is subject to a referendum in 2024.			0.4 percentage points to finance the AVS. The new standard rate will therefore be 8.1%.	
Türkiye					The minimum pension, previously TRY 1 500, was increased several times: - January 2022: TRY 2 500 - July 2022: TRY 3 500 - January 2023: TRY 5 500 - April 2023: TRY 7 500		April 2023: The amount of the bairam bonus was increased from TRY 1 100 to TRY 2000, for both bairams. In November 2023, a one-time bonus of TRY 5 000 was paid to all retirees who are not working (12.2 million people) to increase their purchasing power.
United Kingdom				For automatic enrolment (AE) into a workplace pension the upper and			From October 2022, the simpler statements regulations introduce new

	Retirement age	Coverage	Pension benefits	Contributions	Minimum and basic pensions, income and means testing	Taxes and fees	Other
				lower earnings limits are determined every year by the statutory AE thresholds review. The 2023/24 thresholds have been maintained at the 2022/23 levels of GBP 6 240 for the lower earnings limit of the qualifying earnings band and GBP 50 270 for the upper earnings limit of the qualifying earnings band. Contributions are based on earnings between these two thresholds, which amounts to a minimum contribution of 8% of earnings within the thresholds (5% from employees, 3% from employers). The annual allowance for pension savings is increased from GBP 40 000 to GBP 60 000.			requirements for the trustees or managers of DC pension schemes that provide money purchase benefits only and that are used for automatic enrolment. Simpler statements should be in a prescribed format not exceeding a double-sided A4 paper (or digital equivalent). From April 2022, flat-fee charges levied on members of a DC pension scheme used for automatic enrolment with rights invested in the pension scheme's default fund are no longer allowed if it would result in the value of the account falling below GBP 100. From April 2023, specified performance-based fees are excluded from the charge cap. From April 2023, most occupational DC schemes with 12+ members are required to report their policies on illiquid investment in their default Statement of Investment Principles (SIP), and to publicly disclose their asset allocations in their annual Chair's Statement.
United States							

Notes

[1] OECD Health Statistics, COVID-19 Health Indicators: Mortality (by week): Excess deaths by week, 2020-23.

[2] On average, studies covering the period 2000-10 are more likely to find increasing gaps in life expectancy compared to studies covering other periods, as are studies published in academic journals compared to data from databases or other papers. The latter could be the result of publication bias meaning that studies that do not find increasing gaps in life expectancy are less likely to be accepted for publication in a journal, of researchers' interests in analysing inequalities or of good-quality data being more accessible to academic researchers in countries where the gaps increase.

[3] Healthy life expectancy can also be calculated based on a variety of other indicators including subjective health as well as various indicators to assess disability (Saito, Robine and Crimmins, 2014[28]).

[4] The WHO's healthy life expectancy indicator is based on one of two components of DALY, years lost due to disability (YLD). It does not include years of life lost due to premature mortality (YLL). See www.who.int/data/gho/data/indicators/indicator-details/GHO/gho-ghe-hale-healthy-life-expectancy-at-age-60 and www.who.int/data/gho/indicator-metadata-registry/imr-details/158.

[5] More recent estimates of healthy life expectancy are available in *Health at a Glance 2023* (OECD, 2023[64]). For the purpose of comparison, the data in this report refer to the most recent year in which the healthy life expectancy measures are available in both WHO and Eurostat databases.

[6] Over the same period, the employment rate among the 55-64 did not improve at all in Iceland and Türkiye, notably the countries with the highest and the lowest employment rates in this age group, respectively.

[7] Age gaps can differ greatly depending on the age groups compared. Causa et al. (2022[37]) conclude that the age gap in loss of purchasing power due to inflation is less pronounced than the income gap based on comparisons mostly of people aged 65-74 to those in middle-age, mainly in the age group 35-44. Across countries, younger people have been impacted markedly less by increasing inflation, and hence age differences are more pronounced when comparing older people to those under 30 than when comparing them to middle-aged people. In Austria, year-on-year price inflation for people aged 65 and over was 1.2 percentage points higher than for those below 30 in August 2022 whereas it was similar compared to those aged 30-64 (Koch, Neusser and Haupt, 2022[57]). In France, there was an almost linear incremental increase of inflation with age with an increase of about 0.5-0.7 percentage points per 15-year age group in January 2023 (Insee, 2023[34]). In Ireland and Spain, inflation was respectively 0.9 and 1.9 percentage points higher for people over 65 compared to people below 35 (Cardoso et al., 2022[58]; Lydon, 2022[38]).

[8] French people aged 60+ spent 21% of their budget on food compared to 11% of people younger than 30 (Insee, 2023[34]). French data moreover show that prices have increased faster for the types of alimentation older people consume more of – particular proteins of animal origin, fats and oil – than for other foods, although stark differences in dietary habits between older people contribute to the greater variation in the impact of inflation among older people (Insee, 2023[34]).

[9] Sensitivity to temperatures changes as people age, which may further affect heating consumption. The neutral temperature for older people is over 2 degrees Celsius higher than for other adults, although at the same time they are comfortable in a wider range of temperatures (Baquero and Forcada, 2022[63]).

[10] At the same time, the net impact for pension finances is more difficult to anticipate with price indexation than with wage indexation as pension revenues tend to follow wages.

[11] In contrast, the Spanish Statistical Office only takes the electricity prices in the regulated market into account. Hence, fluctuations in electricity prices may not fully be reflected in official inflation statistics (Basso, Dimakou and Pidkuyko, 2023[59]).

[12] The United States indexes pension benefits to a cost-of-living index for urban and clerical workers. Belgium (alcohol, tobacco and motor fuels), France (tobacco) and Portugal (housing) take certain products out of the basket to determine indexation, in particular goods that are subject to excise duties to avoid that raising duties automatically results in higher pensions. Lithuania on the other hand indexes targeted benefits to a mix of food costs and total price inflation.

[13] Pensioner-specific cost-of-living indices are calculated in the same way as the overall CPI index, but products are weighted by the average consumption basket of pensioners instead of the full population. Moreover, Australia and New Zealand apply price indexation, but set a minimum threshold relative to average wages below which pensions cannot sink.

[14] Wage indexation comes in various forms as well, with countries indexing pensions to average wage, minimum wage or wage bill growth, or to growth of the median income. Indexation purely to nominal wage growth applies to the basic pension in Czechia and basic and targeted pensions in Denmark. Germany adjusts earnings-related pensions to nominal wage growth in addition to other factors adjusting to changes in the contribution rate and in the rate of pensioners to contributors. Lithuania indexes earnings-related and basic pensions to wage bill growth. The Netherlands adjusts its basic and targeted pensions to minimum wages. Sweden adjusts earnings-related pensions to nominal wage growth reduced by 1.6%. In Latvia, the targeted benefit equals 20% of median income three years prior and the minimum pension 25%.

[15] Australia uses male wages as a benchmark.

[16] In May 2022, the indexation of earnings-related pensions to wage growth minus 0.75% was replaced by the average of wage and price growth.

[17] Colombia indexes pensions up to the minimum wage to minimum-wage growth, and pensions exceeding that to price inflation.

[18] While Austria applies thresholds for full pension indexation in a discretionary manner, Italy has changed the legislated thresholds several times in recent years. A 2019 reform reduced the number of income bands to which a specific indexation rate applied in Italy from seven to three bands as of 2022. However, in 2022 a temporary deviation from this rule was legislated, with indexation in 2023-24 varying across six income bands.

[19] Latvia only indexes the part of the pension that is below 50% of the average insurable earnings in the previous year. The threshold was at EUR 534 in 2022.

[20] Portugal furthermore adjusts indexation to CPI both upward and downward depending on past real GDP growth and individual pension levels.

[21] Japan indexes its targeted benefits only every five years based on local cost-of-living surveys.

[22] Either indexing to the annual inflation index comparing the last year to the previous one, or averaging monthly year-on-year inflation over a 12-month period.

[23] Germany adjusted the procedure for indexation of its targeted benefits as of 2023 to ensure that the value of its targeted benefit would not fall behind on inflation too much before the next indexation. The indexation each year is now composed of a basic adjustment, which has a permanent impact on the benefit amount, and a supplementary adjustment, which only affects the benefit for one year. The basic adjustment increases targeted benefits in January each year by 70% of price increases and 30% of net nominal wage increases between the last period July-June and the previous period July-June. On top of that, the supplementary adjustment, which happens at the same time, adjusts to 100% of the change between average monthly CPI over the last period April-June and the previous period April-June – which effectively serves as an approximation of the inflation that will take place throughout the year. The benefit level in the next year is calculated based on the benefit level in the current year after basic adjustment but without supplementary adjustment.

[24] Latvia set its targeted benefit at 20% of the median income three years prior, so the 2024 benefit is set at 20% of the median income in 2021. Following the same procedure, the minimum pension is set at 25% of the median income three years prior.

[25] Since 2022, Greece similarly uses an estimate of CPI growth for the previous year in order to index pensions already in January, with a correction being applied once the CPI statistics for the previous year are confirmed.

[26] The minimum increase was PLN 250.

[27] The general indexation rule was applied in January 2022, while the minimum indexation of EUR 10 was only paid from July 2022 but applied retroactively as of January.

[28] The rule requires an indexation to prices five months after the 5% threshold is exceeded, and hence it can trigger indexations exceeding 5% if prices increase further over this five-month period.

[29] The retirement age is calculated for each cohort based on life expectancy at the retirement age applying to the previous cohort, and announced five years before taking effect.

[30] The life-expectancy link will be in place as of 2026 but as increases take effect six years after announcement and no increases have been announced yet, the eligibility age will remain at 67 at least until 2029.

[31] After the elimination of the retirement age in March 2023 for people who entered the labour market before 8 September 1999, the normal retirement age in Türkiye even dropped to 47 for men and 46 for women.

[32] Increases in the statutory retirement age require parliamentary approval in Denmark. So far, Parliament has approved the increase of the statutory retirement age to 69 in 2035. The retirement age revisions take place every five years and take effect 15 years after approval (OECD, 2021[8]).

[33] While Türkiye is an absolute outlier for people retiring now, its normal retirement age is set to increase fast as it will be 65 for men entering the labour market in 2022.

[34] In the first half of 2023, 7 536 new pensions were paid under the women's option compared to 24 559 in the full year of 2022. The uptake of the women's option before age 60 fell by 63%, from 9 568 in 2022 to 1 781 in the first half of 2023 (INPS, 2023[50]).

[35] For people who started working before age 21 with long careers, the age condition is relaxed if they fulfil the career-length requirement: retirement is possible at 58 for those who started working before age 16, at 60 for those who started working before 18, between 60 and 62 (depending on cohort) for those who started working before age 20, and at 63 for those who started working before age 21.

[36] Self-employed and civil servants can access a pension after 7 200 days of contributions for women and 9 000 days for men.

[37] The minimum contributions as set in the law now correspond to those previously agreed in collective agreements, although the change impacts 17% of the workforce who were previously not covered by a collective agreement including these minima.

[38] In the Slovak Republic, early retirement is now only possible with a pension of at least 1.6 times the subsistence minimum (EUR 375 in the first half of 2023), up from 1.2 times previously.

[39] In 2022, the threshold below which no income tax is paid is PLN 85 528 for people above the statutory retirement age who do not take up their pension, compared to PLN 30 000 for those who do.

[40] Survey research indicates that some people prefer receiving the lump sum over the 4% bonus (Ministerio de Inclusión, Seguridad Social y Migraciones, 2021[66]).

[41] Australia increased its so-called Work Bonus from AUD 7 800 to AUD 11 800 for the period between 1 December 2022 and 31 December 2023.

[42] www.lamoncloa.gob.es/temas/fondos-recuperacion/Documents/16062021-Componente30.pdf.

[43] In 2022, the maximum contribution base was EUR 49 673, or 1.75 times average annual earnings reported in *Taxing Wages 2023* (OECD, 2023[65]).

[44] However, the maximum pension is subsequently scheduled to increase fast from 3.2 percentage points above inflation in 2051 to 20 percentage points in 2065, after which it will be left to the social partners to decide whether to increase it further to 30 percentage points, that would roughly correspond to the total increase in the maximum contribution base.

[45] https://elpais.com/economia/2021-11-10/bruselas-obliga-a-espana-aumentar-el-periodo-de-calculo-de-las-pensiones-para-recibir-los-fondos-de-recuperacion.html.

[46] More precisely, this new reference period in Spain covers the 29 last years, but the 24 months with the lowest contributions can be excluded.

[47] Whether a person belongs to the 90% poorest people and thus is eligible to the universal guaranteed pension is determined based on the household's pension targeting score. The score takes various sources of income into account, as well as the family type and family needs. See www.spensiones.cl/portal/compendio/596/w3-propertyvalue-4394.html.

[48] For people with FDC pensions up to 5.4 times the universal guaranteed pension benefit or about four times the average FDC pension benefit. The gains are particularly high for people with FDC pensions around 3 times the universal guaranteed pension benefit (between about half and two-thirds of the gross average wage) as they would not have received any benefits from the public scheme in the old system yet would be entitled to the full amount of the public benefit in the new system.

[49] The French minimum pension was increased as of September 2023 from EUR 748 to EUR 848 after a full career and from EUR 684 to EUR 709 for careers shorter than 30 years.

[50] The Spanish minimum pension for persons with a dependent spouse, EUR 13 527 per year in 2023, is projected to reach EUR 16 511 in 2027. The minimum for single pensioners is expected to increase from EUR 10 963 in 2023 to EUR 12 881 in 2027.

[51] The non-contributory targeted benefit will increase from EUR 6 785 per year in 2023 to EUR 8 250 in 2027. The benefit is set at 75% of the at-risk-of-poverty threshold for a single individual at 60% of median equivalised disposable income, or 45% of the median.

[52] The maximum amount of the parental pension in 2023 is EUR 21.80 per month per child; according to preliminary data the average parental pension parents received from all their children combined is EUR 25.50 per month (Ministry of Labour, Social Affairs and Family of the Slovak Republic, 2023[62]).

[53] If at least one-quarter of people aged 65+ have an equivalised disposable income below the at-risk-of-poverty threshold of 60% of the median for the total population or if the average old-age pension is projected to fall below 50% of the average net salary in the year of indexation, a supplementary index is applied on the condition that the social security pension is expected to be in surplus in the year of indexation. If the standard indexation rule is expected to cost less than 75% of the surplus, the supplementary indexation tops this up to the 75% threshold. The new indexation mechanism already resulted in supplementary adjustments in 2022 and 2023, and is expected to do so in 2024 as well. Lithuania currently meets both criteria for indexation: the provisional at-risk-of-poverty rate for 2023 in Lithuania is 36.5%, above the 25% threshold; and, the average pension was 43% of the average net salary in the second quarter of 2023 (Statistics Lithuania, 2023[61]). Hence, the new indexation mechanism is likely to be activated as the pension system's revenues are expected to exceed its expenditures by 3.7% of in 2023. www.lrt.lt/naujienos/verslas/4/1823806/seimas-prieme-2023-m-sodros-biudzeta-dides-pensijos-ir-kitos-ismokos.

[54] The reform also expands the annual allowance for people who have previously accessed their pension savings, increasing the maximum annual contributions for these people from GBP 4 000 to GBP 10 000. www.gov.uk/government/publications/abolition-of-lifetime-allowance-and-increases-to-pension-tax-limits/pension-tax-limits.

[55] The first home super saver (FHSS) scheme allows for the withdrawal of voluntary contributions for the purchase of a first home – mandatory employer contributions cannot be withdrawn through the scheme. The withdrawal limit increased from AUD 30 000 to AUD 50 000 or 21% of average annual earnings. At the same time, the possibility to put the proceeds of the sale of the home into one's FDC account known as "downsizer contributions" was expanded from age 65+ to 60+ in July 2022 and 55+ in January 2023.

[56] The government has not yet changed these minima, although it is expected that the minimum age for automatic enrolment will be lowered from 22 to 18 and the minimum earnings threshold eliminated by the mid-2020s.

[57] Moreover, Norway abolished its minimum earnings threshold for contributions to the FDC scheme in January 2022. Previously, no contributions had to be paid on earnings below the basic amount, which is about 18% of the average wage.

[58] The minimum earnings threshold for mandatory employer contributions in Australia was previously AUD 450 per month, or 6% of average earnings.

[59] Previously only workers covered by specific industrial instruments (modern awards or enterprise agreements) could directly pursue unpaid superannuation contributions from an employer.

[60] In January 2023, the exemption from the means test of the proceeds of pensioners selling their principal home was extended from one to two years. Assets are accounted for in the means test based on an assumed yearly return of 0.25% below a certain asset threshold and 2.25% above the threshold, and the assumed return is added to other sources of income to determine eligibility to and the level of the targeted pension. Under the exemption, the part of the proceeds from the sale of the principal home that the targeted pension recipient plans to use to purchase, build or renovate a new principal home are accounted for in the means test based on an assumed return of 0.25% regardless of the threshold.

[61] The income threshold below which older people are entitled to the Commonwealth Seniors Health Card was increased by 47% in November 2022.

[62] The increase happens in steps of one full year per two birth cohorts, with residency requirements increasing for people reaching the statutory retirement age between 2024 and 2042. It does not apply to refugees arriving in New Zealand aged 55 or older, and a reduced requirement applies to refugees arriving between ae 45 and 55.

[63] www.camara.cl/cms/noticias/2023/01/12/reforma-a-las-pensiones-en-que-va-la-tramitacion-del-proyecto/.

[64] The government proposal foresees a pension to current retirees of 0.1 U.F. (Unidad de Fomento, a unit of account used in finance in Chile) per year worked, with a maximum of 3 U.F.-. The average FDC old-age pension paid out in July 2023 was 7.13 U.F., or around CLP 257 000 (Superintendencia de Pensiones, 2023[60]).

[65] For each year worked after becoming eligible to early retirement up to a maximum of three years, a one-off payment of EUR 7 550 would be granted.

[66] Any worker who is in the system will be able to leave or pause their contributions under certain circumstances, but they will be automatically re-enrolled after two years if they are still eligible.

[67] These changes are yet to be legislated and are expected to be in place by 2027 at the earliest.

2 Pension provisions for workers in hazardous or arduous jobs

This chapter describes pension provisions for hazardous or arduous jobs in OECD countries, discusses the issues they raise and provides policy guidance in this area. The first section asks why hazardous or arduous jobs may call for special pension provisions. The second section documents differences across occupations in terms of health and life expectancy as well as the impact of working conditions on health and mortality. The third section analyses existing special pension provisions for workers in hazardous or arduous jobs among OECD countries. The following section presents trends in pension reforms for hazardous or arduous jobs. Then, the role of various policies (other than old-age pensions) in addressing hazardousness and arduousness of jobs is analysed. The final section provides policy implications.

Introduction

The debate on hardship of work is complex with respect to defining the criteria and controversial, which makes it hard to reach an agreement between social partners. Issues at stake are not limited to physical wear and tear at work; they extend to potential delayed effects of working conditions on health. The complexity of the subject has been compounded by increased focus on the psychological problems caused by stress at work, which is even more difficult to measure.

OECD countries differ fundamentally in how they approach hazardous or arduous work in pension design, from providing no special pension provision to covering many occupations or jobs. Yet, there are some common trends. Along with broader efforts to increase employment of older workers, many countries have tightened access or fully eliminated special pension provisions for hazardous or arduous work. Some countries have improved their targeting through linking eligibility to actual work characteristics considered hazardous or arduous instead of covering broad occupations or sectors.

This chapter aims to provide insights into questions raised by hazardous or arduous jobs for pensions. Should the serious issues raised by work capacity in hazardous or arduous jobs be dealt with by old-age pension systems? It is argued below that the measures which can provide the most efficient response (first-best policies) should primarily combine: health and safety regulations to limit the risks; informing about the remaining risks; lifelong learning and reskilling to allow job mobility into healthier jobs; and, disability insurance. Moreover, as delayed health impacts of some job characteristics (e.g. physical strain, noise or uncommon working-time patterns) are typically not covered by disability insurance, some special pension provisions can complement disability insurance. The objective is to compensate workers in these jobs for the potential long-term consequences, which occurrence should be backed by solid evidence, through well-targeted early retirement options.

The chapter is organised as follows. The first section asks why hazardous or arduous jobs may call for special pension provisions. It presents justifications put forward in national legislation as well as economic considerations about them. The second section documents differences across occupations in terms of health and life expectancy as well as the impact of working conditions on health and mortality. The third section discusses existing special pension provisions for workers in hazardous or arduous jobs among OECD countries. The following section presents trends in pension reforms for hazardous or arduous jobs. Then, the role of various policies (other than old-age pensions) in addressing hazardousness and arduousness of jobs is analysed, namely: health and safety regulations; communication; reskilling measures and age management; and, disability insurance. The final section provides policy implications.

Key findings and policy implications

Scope of pension provisions for hazardous or arduous jobs in the OECD

- Workers in physically intensive jobs tend to have poorer health than other workers. Some factors such as income, education and lifestyle correlate with both health and occupations and may be the main drivers of bad health, rather than bad health being the result of hazardous or arduous jobs.
- While life expectancy differs by broad occupational groups, a large part of occupational differences in life expectancy is related to socio-economic factors that are not caused by working conditions. However, even when socio-economic factors are controlled for, the differences in health status and life expectancy across occupational groups remain significant. There is convincing evidence of some working conditions negatively affecting health, sometimes with some delay. This is the case in particular for working at night.

- There is no consensus across OECD countries on how to define hazardous or arduous jobs. Countries define eligibility conditions for special pension provisions for hazardous or arduous jobs based on either occupational titles or measurable characteristics of jobs.
- When they exist, special pension provisions for hazardous or arduous work are based on different approaches among OECD countries to compensate for tough working conditions, and to account for declining capabilities to work until retirement ages and for immediate or delayed health risks caused by working conditions.
- OECD countries can be classified into four groups in their treatment of pensions for hazardous or arduous jobs in mandatory or quasi-mandatory schemes:
  - The first group of 15 countries provide access to pension provisions for hazardous or arduous jobs for a large number of jobs: Austria, Belgium, Chile, Colombia, Estonia, Finland, France, Greece, Italy, Norway, Poland, the Slovak Republic, Slovenia, Spain and Türkiye.
  - The 8 countries in the second group provide early retirement options based on the hazardousness or arduousness to a limited number of jobs: Czechia, Germany, Hungary, Japan, Korea, Latvia, New Zealand and Portugal.
  - In the third group of 4 countries, only public safety and security jobs traditionally considered as hazardous, such as police, firefighters and military, are covered by special pension provisions: Canada, Ireland, Israel and the United States.
  - The 11 countries in the last group do not provide any early retirement options within mandatory pensions for hazardous or arduous jobs: Australia, Costa Rica, Denmark, Iceland, Lithuania, Luxembourg, Mexico, the Netherlands, Sweden, Switzerland and the United Kingdom.

Most issues raised by hazardous or arduous jobs require interventions at working age

- Hazardousness or arduousness of jobs raise first and foremost an issue for labour market policies. The first priority is to improve working conditions through health and safety regulations to limit exposure to risky factors as well as by encouraging or incentivising social partners to take measures to limit hardship and health risks. However, even if health and safety regulations are fully effective, some necessary jobs are likely to impair workers' health.
- Communicating about the risks – backed by evidence – involved in working in hazardous or arduous jobs is essential: first, as a moral imperative to ensure that workers accept the jobs in full knowledge of the facts; second, to help workers weigh different job opportunities and ask to be compensated for the risks the jobs bring with it.
- In many jobs, access to the information about effective risks is unlikely to ensure that these risks are well rewarded. Poor working conditions tend to coexist with low wages while impediments to labour mobility might result in limited options for workers in unhealthy and low-paid jobs to move into some offering better conditions. Many hazardous or arduous jobs are in the public sector where wage formation is more likely to deviate from the standard market mechanisms that in principle generate higher wages to compensate for higher risks. Those limitations that prevent wage levels from reflecting difficult working conditions should be addressed more by labour market and tax policies than by pension systems.
- Reskilling policies should facilitate career transitions well before older ages. The permanent withdrawal from the labour market in countries where special pension schemes exist, sometimes at very early ages, is an inefficient solution.
- A professional training framework providing reskilling and upskilling has therefore to be put in place by governments and social partners to allow workers in hazardous or arduous jobs to acquire the skills needed to prolong careers in different jobs. Establishing such a good framework is

challenging; the chapter includes some interesting examples of countries implementing career-guidance policies.

- Age-management policies shifting workers to different tasks as they age – e.g. from more physical to more clerical tasks – can boost employment opportunities within one institution or firm in the later stage of the career. Within civil service in particular, transferring workers between different positions need to be made possible by employment contracts.
- When job-related risks materialise at working age and impair workers' health, long-term sickness benefits and disability insurance should be fit for purpose, accessible, efficient and responsive; on top of cushioning income consequences until the retirement age, they should help prevent permanent labour market withdrawal.

Pension reforms to deal with hazardous or arduous jobs

- Incapacity to work in a *specific job* until the minimum retirement age that apply to all workers is not enough to justify granting special *old-age* pension provisions for hazardous or arduous work: the issues raised by hazardous or arduous work should primarily be dealt with by other policies outside the realm of old-age pensions.
- There have been serious issues of mistargeting the special pension schemes for hazardous or arduous jobs by including jobs in which hardship is questionable.
- In the wake of pension reforms over recent decades, special pension schemes covering workers in hazardous or arduous jobs have been reduced in scope. General reform trends to deal with the challenges triggered by population ageing have contributed to increasing employment at older ages and to unifying pension rules across occupations and sectors. One standard argument put forward for the initial design – allowing very early retirement based solely on not being able to continue a career in some specific job – has lost ground over time. Many OECD countries have phased out or tightened access to pension provisions for hazardous or arduous jobs.
- In some countries historically, some special pension rules for hazardous or arduous jobs were granted as a way to boost the attractiveness of some occupations and defer the related cost. In cases where special pension provisions are not or no longer justified, removing them may be done through so-called grandfathering, applying the new rules to new employees only, or by applying longer transition periods than with other parametric reforms. Avoiding the loss of attractiveness of these jobs requires to offer other, more efficient forms of compensation, higher wages in particular, which may, however, have some negative short- and medium-term impact on public finance.
- As any delayed health impacts of some job characteristics (e.g. physical strain, noise or uncommon working-time patterns) are typically not covered by disability or sickness insurance schemes, some special pension provisions might complement these schemes. The objective is to compensate workers for the potential long-term health consequences, through well-targeted early retirement options. Any such programmes should be backed by solid evidence.
- In general, for jobs for which working at older ages generates health and safety risks (e.g. firefighters, police officers and military), there is a stronger case for special pension provisions. Still, age-management policies should strive as much as possible to prepare for a career shift at some point in order to maintain individuals in employment until the minimum retirement age for all workers.
- Given the difficulties to assess the long-term impact of specific working conditions on health, limiting special pension provisions only to areas for which solid evidence exists creates the risk of unfair treatment of some workers. Yet, providing too broad a coverage also raises equity issues because some workers then unduly benefit from these provisions.
- Over the last two decades, some countries, including Finland and France, have improved the design of pension schemes covering hazardous or arduous jobs. These innovations link eligibility

to some actual job characteristics that are considered hazardous or arduous in nature, such as working at night, rather than based on occupational groups, thereby limiting mistargeting and ensuring the transferability of pension entitlements across occupations. These measures reduce retirement age by two years at most. However, there is cost involved for companies, workers and public institutions in tracking individuals' exposure to hazardous or arduous working conditions, which may be difficult to bear for small firms in particular. In Austria, the special scheme allowing individuals working at night to retire earlier is highly targeted and increases the cost of night work by imposing additional contributions on employers to help finance the scheme and limit such activities.

Why special pension rules for hazardous or arduous jobs?

Arduousness of jobs or occupations refers to mental or physical effort related to work, e.g. unhealthy working hours, high stress, lifting heavy burdens or remaining in uncomfortable posture for prolonged periods of time. Hazardousness refers to health or life risks related to work, e.g. in relation with the use of chemical substances or larger risks of physical injuries. Hazardousness is often linked to risks of work-related accidents, sometimes severe ones. Arduousness or hazardousness may lead to immediate and/or delayed negative health consequences. In a very broad sense, they may also include the depreciation of some capabilities to work safely and efficiently in some occupations with age, such as ballet dancers or air traffic controllers who are not likely to be in worse general health than many other workers of similar age.

Different approaches to justify special pension provisions in the law

OECD countries justify special pension provisions for workers in hazardous or arduous jobs in the legislation along several dimensions: accounting for health risks and health deterioration; facing difficulties to continue the career until retirement ages; and, compensating for tough working conditions. Zaidi and Whitehouse (2009[1]) note, in addition, that some countries have used special provisions for hazardous or arduous jobs as a way to improve the attractiveness of selected occupations.

In some countries, the law directly refers to the health deterioration of older workers in hazardous or arduous jobs, or its prevention as a rationale for special retirement provisions. Chile refers to premature ageing caused by accelerated physical, intellectual or mental exhaustion among the majority of workers in some occupations (for example miners, trash collectors, paramedics). Colombia refers to the negative health impact of working conditions. France uses different approaches in the public and in the private sector. In the private sector the focus is on the possible health impact of being exposed while working to physical risk factors: work in hyperbaric environments; extreme temperatures; noise; night work; alternating shift work; and, repetitive (assembly-line) movements. Lithuania refers directly to health risks and death risks. The Slovak Republic focuses on health risk factors that cannot be reduced by protective measures.

The legislation in some other countries reflects a broader approach and recognises both negative health effects of hazardous or arduous work and low employability of some workers as the reason for special pension provisions. Czechia's scheme includes the lack of abilities to work due to health conditions at older ages. In Finland, the years-of-service pension was introduced in 2017 to offer an early route to retirement for persons who are not entitled to a full disability pension despite their ability to work being reduced due to hazardous or arduous jobs (see below). Employability issues, due to skills and health deterioration before the statutory retirement age, are cited in Latvia. Poland's legislation highlights increasing health risks and the deterioration of abilities – those which cannot be eliminated with technical, organisational and medical preventive measures – with age in hazardous or arduous jobs. Slovenia states that occupational pensions for hazardous or arduous jobs are targeted at people working in demanding jobs and professions that they cannot be expected to hold until statutory retirement age.

Another group of OECD countries highlight that these special pension provisions compensate for tough working conditions beyond their health impact. The law in Portugal refers to the particularly painful or exhausting nature of some occupations. Türkiye states that the main reason for such early retirement provisions is to compensate for tough working conditions, including the risk of contracting diseases and having accidents and becoming mentally or physically exhausted. These provisions are supposed also to attract workers who perform physically intensive or strenuous jobs.

Some economic considerations about special pension provisions

Some jobs, including those of firefighters, police officers and armed forces, are particularly exposed to significant risks in performing the corresponding tasks or duties. Some of these risks can be mitigated by prevention measures. But prevention policies – even if well-designed – may not be sufficient in all circumstances. When risks materialise at working age and impair workers' health, sickness and disability benefits may help deal with the consequences until the retirement age. Disability pensions require individual assessments and only address risks that have materialised.[1] Additionally, as individuals age and as their capacity to work well and safely in some jobs diminishes, measures must be taken to protect workers. This chapter will discuss whether hazardous or arduous pension schemes are the best tools to ensure old-age protection in these cases.

Delayed impacts of hazardous or arduous jobs on health and mortality may be a valid reason for the existence of special pension provisions. This should be backed by solid evidence of the actual negative impacts of some job characteristics. The next section discusses this evidence in detail. These delayed consequences cannot be individually and immediately assessed, and they may materialise with different lags for different individuals. If so, they are certainly a reason to limit the exposure to such risks, and may justify redistributive policies to allow these workers to retire early or with higher pension benefits or both.

How wages adjust to compensate for the hazardous or arduous nature of jobs is an important aspect. To the extent that workers are informed or aware of the embedded risks in these jobs, they, in theory at least, choose to take the jobs provided that they receive some forms of compensation, for example through higher wages or shorter working hours compared to other jobs they can do. In practice, some labour market features might prevent or limit such a compensation. Poor working conditions tend to coexist with low wages while impediments to labour mobility might result in limited options for workers in unhealthy and low-paid jobs to move to those offering better conditions, in particular when bargaining power of workers is low (OECD, 2019[2]). Many of hazardous or arduous jobs are in the public sector where wage formation is more likely to deviate from standard market mechanisms, especially if financial resources are scarce (OECD, 2023[3]). In the private sector, insufficient coverage by collective agreements may limit wages for workers in hazardous or arduous jobs. In addition, notwithstanding individual preferences, short-sighted behaviours may limit the wage premium that balances supply and demand in the labour market. Indeed, delayed health impacts are likely to be overlooked by many workers (Viscusit, 1984[4]). The following sections investigate whether special pension provisions allowing to retire early may improve aggregate welfare given short-sighted behaviours, constraints on wage adjustments and exposure to health risks at work.

Early retirement can thus prevent, limit or at least compensate for delayed health deteriorations. However, by providing more generous pensions, whether in the form of early retirement options or higher benefit levels, these provisions improve job attractiveness with the following consequences: they may lower wages and eliminate the wage premia, thus working as a trade-off between income while working and during retirement as pension systems generally do;[2] and, through lowering labour costs of these jobs, they might even contribute to perpetuating these jobs. This relates to the ways hazardous or arduous pension schemes are financed, which is discussed later in this chapter.

Pension provisions for hazardous or arduous jobs are often mistargeted

Workers actually covered by retirement provisions for hazardous or arduous occupations do not necessarily have above-average mortality or worse health. In 2014, the National Audit Office of Estonia conducted a study showing that the health status of workers in professions covered by early retirement provisions for hazardous or arduous conditions was not worse than that in other professions (National Audit Office, 2014[5]).[3] Meanwhile, textile workers had high disability rates and were not covered by special schemes. As a result, the National Audit Office concluded that the special retirement provisions for hazardous or arduous occupations are not justified. Similarly, mortality rates among pensioners receiving early retirement pensions for hazardous or arduous jobs in Hungary are not higher than the average among all pensioners.[4] In Slovenia, standardised mortality rates are not statistically different in any occupational group covered by pension provisions for hazardous or arduous work from those of the general population based on 1997-2016 data.[5] However, assessing mortality differences across occupational groups might be influenced by the self-selection of workers into these jobs: poor health hinder entering arduous occupations, and health deterioration at the working age can lead to early exit from a given job or from the labour market in general.

Furthermore, workers actually covered by pension provisions for hazardous or arduous jobs often work beyond their minimum retirement age. For example, in Estonia, the National Audit Office found that the majority of people covered by early retirement schemes for hazardous or arduous occupations still work one year after having acquired the right to retire. It implies that the majority of them have substantial employment capacity. Many occupations that seem arduous are not among those benefiting from special pension rules. For example, workers performing the same jobs in the public sector may be covered while those in the private sector are not (e.g. dancers, actors etc.). In Norway, pension provisions for hazardous or arduous occupations emerged mainly in the public sector.

The mistargeting of pension provisions for hazardous or arduous occupations partially originates from the political process due to difficulties in managing different objectives. In the 1990s, as governments started responding to population ageing by tightening access to early retirement, some occupations were exempted from the changes. To what extent this process was driven by fairness and to what extent it was the result of the strong bargaining power of some occupational groups remain open questions. Zaidi and Whitehouse (2009[1]) highlight that the bargaining power of some occupations has played an important role, at least in the past. Furthermore, some of these schemes were designed to improve the attractiveness of certain public-sector jobs without creating an immediate cost to public finance; this applies in particular to special pension provisions for teachers.

The more recent design of special pension provisions that base their eligibility on job characteristics which have been identified as hazardous or arduous can better target the risks effectively taken than schemes built on broad occupational or sectoral categories. However, tracking individuals' exposure to hazardous or arduous working conditions increases the administrative burden on companies, workers and public institutions. Moreover, the process of recognising specific work characteristics may be subject to political pressure rather than be based on solid evidence.

Hazardous or arduous jobs may not be the same as before

Many pension provisions for hazardous or arduous occupations emerged a long time ago, when job tasks were very different. In France for example, farmers, marine workers and miners were among the first to be covered by pension schemes before social insurances were developed in the late 1920s (Bruno, 2016[6]). In Norway, many pension regulations for hazardous or arduous work date from 1917. In some countries, hazardous occupations such as firefighters, police officers and military were included in parallel to civil service pensions.

Technological and organisational innovations have tended to reduce the hazardousness and arduousness of work. On the technological side, automation in particular has been efficient in performing or supporting many physically intensive tasks, including in farming and manufacturing. This has raised productivity and reduced both employment in these sectors (deindustrialisation), and arduousness of some remaining jobs. For example, in OECD countries, modern mechanisation of coal mining began in the 1950s and since the mid-1990s new developments have improved equipment reliability, miner's health and safety as including through dust control techniques and remote control of machinery (Peng et al., 2019[7]). Recent evidence suggests that arduousness will continue to diminish as workers in jobs that are most likely to be automated have poor health (Liu, 2022[8]).

Scope and causes of occupational differences in health and mortality

This section documents differences across occupations in terms of health and life expectancy as well as the impact of working conditions on health and mortality. First, it briefly looks into statistics that first come to mind when hazardousness and arduousness are discussed: work-related deaths, accidents at work, occupational diseases and work strain. It then takes a deeper look at substantial health differences by occupations and tries to assess the actual impact of job characteristics beyond the well-known correlation. Finally, differences in life expectancy across occupations are reviewed. A causal link of some job characteristics to health status and life expectancy would provide support for the existence of specific pension provisions for hazardous or arduous work. Likewise, in the absence of an established causal link, the justification of special rules would be less obvious.

Impact of the working environment on mortality, sickness and job strain

Accidents at work happen mostly in physically demanding jobs involving machinery e.g. construction or transport. Many countries monitor outcome measures of occupational hazards: work-related deaths and injuries as well as occupational diseases and sick leaves. In Austria, Belgium, Canada, Costa Rica, Portugal and Türkiye among others, work-related deaths and injuries are concentrated in agriculture, construction, manufacturing and transport while they are less common in services, including electricity and water distribution as well as waste management. In Costa Rica in 2021, most accidents at work happened among occupations consisting of simple and routine tasks that mainly require the use of manual tools and often some physical effort, as well as among operators of machinery.[6] In Portugal in 2021, most work-related deaths happened among craftsmen, machine operators and unskilled workers In Türkiye, most deaths at work concerned the following sectors in 2021: construction, civil engineering, mining, manufacturing of mineral products and land transport.

Fatal accidents account for only a small share of total accidents at work. Statistics on health disorders resulting from working conditions, or occupational diseases, are collected by many countries but international statistics are scarce. ILO statistics from 2003 show that in Western Europe and North America the number of fatal occupational accidents was around 5 per 100 000 workers[7] and the number of accidents causing an absence from work of at least four days were reported to be 4 000 per 100 000 workers in Western Europe and North America.[8] In Poland, occupational diseases are not very common and around 2000 cases have been reported yearly for about 16 million workers, being roughly equally distributed among those aged between 45 and 64 years. Most of these diseases are related to infectious and parasitic diseases, lung, vocal and hearing issues.

Work strain, however, is quite common among workers and more frequent among low-skilled workers. Based on the European Working Conditions Survey, about one-third of employees declare to be (moderately or heavily) strained at work in 28 OECD countries on average (Murtin et al., 2022[9]). The share of employees that are heavily strained is close to 10%. Job strain is relatively more frequent among employees with low education and low occupational skills, and is relatively less frequent in the service

sector, and in the public sector in particular. Given the high share of women in the public sector, this implies that women hold on average slightly less straining jobs than men.

Physically intensive work often negatively affects health

There is substantial evidence that workers in physically intensive jobs often have poorer health than other workers. In Belgium, workers in physically demanding occupations were found to be more likely to report poor health, in particular in extraction, construction and elementary services such as cleaning or delivering goods, while it was the opposite for employees in teaching, scientific, health-related and managerial positions (Van den Borre and Deboosere, 2018[10]). In Finland, workers in physically intensive jobs use relatively more healthcare (Rinne, Laaksonen and Blomgren, 2022[11]). This is particularly the case for personal care workers, machine operators, and workers in mining, construction and transport. Higher healthcare consumption may reflect more the effects of other factors such as unhealthy diet that may be correlated to both holding a manual job and being in relatively bad health rather than resulting from a causal impact of manual jobs on bad health. In Germany, various measures of workload are strongly associated with health outcomes such as self-perceived health status, perceived health risks at work or sickness absence days (Kroll, 2011[12]).

Holtermann et al. (2021[13]) point to the paradox that leisure physical activity has a strong positive impact on health while physically demanding jobs have negative effects. An article from the Institute for Work & Health in Canada adds the following comment: “Don’t think of physically demanding work as being the same as exercise. The physically demanding work that we’re seeing associated with heart disease is more like snow shovelling, where you’re doing a lot of arm work that increases blood pressure drastically, while your legs don’t move much, raising your blood pressure even more”.[9] Some mitigating measures can be taken including “allowing and encouraging workers to do warm-ups before starting a physically strenuous job task and to take frequent breaks to give their bodies time to recover”.

Identifying the causal impact of working conditions on health is key to design correct policy responses, but it raises intricate issues. Researchers who want to estimate a causal impact of working in some occupations or of working conditions on health status have to take into account the possibility of reverse causality. Additionally, some factors such as income, education and lifestyle, correlate with both health and occupations and could be the main drivers of bad health, rather than bad health being the result of hazardous or arduous jobs (omitted variables bias).[10]

Accounting for these methodological difficulties, there is convincing evidence of a causal negative impact of some working conditions on health. Based on a summary of 17 studies, Bøggild and Knutsson (1999[14]) conclude that shift work increases the risk of cardiovascular diseases by 40% on average e.g. through a mismatch between circadian rhythm and sleep and through disturbed socio-temporal patterns leading to stress. More recently, reviewing the evidence covering 600 000 people from 27 cohort studies in Europe, the United States and Japan, Kivimäki and Kawachi (2015[15]) found that job strain, long working hours and other job stressors are robustly associated with a 10-40% elevated risk of incident coronary heart disease, stroke and diabetes, but without any significant impact on risk of cancers or lung diseases. Fletcher, Sindelar and Yamaguchi (2011[16]) control for initial health and earnings and find a causal impact of physically demanding jobs on health outcomes of female and older workers. For France, Defebvre (2017[17]) estimates that workers in physically demanding jobs suffer from a faster development of chronic health conditions. For miners specifically, based on a review of evidence, Donoghue (2004[18]) concludes that noise-induced hearing loss and respiratory diseases were common occupational risks in many countries. Italian workers in shipyards exposed to asbestos saw significantly higher mortality rates due to cancers (Merlo et al., 2018[19]). Baurin, Tubeuf and Vandenberghe (2023[20]) estimate that whilst occupation arduousness is a significant contributor to poor health at later age, it is still quantitatively less important than other factors such as initial health endowment. According to Ravesteijn, Kippersluis and Doorslaer (2017[21]), selection bias and unobservable heterogeneity account for at least 60% of the association

between physical burden of work and health status in Germany. Furthermore, Nicholas, Done and Baum (2020[22]) control for socio-economic background and show that intense lifetime exposure to routine manual work is robustly associated with worse health and increased likelihood of disability claims in the United States. In addition, they interpret their results that those who are still working in physically demanding jobs after multiple years of exposure are likely to be healthiest, and able to retire at later ages, while those who are quickly harmed by physical or cognitive demands early on leave the work force after high average exposure. However, Lombardi et al. (2022[23]) does not confirm negative effects of physical work exposure in middle of life on disability of women aged 90 or more.

As for general health, regular physical activity is generally associated with better mental health outcomes but there is also evidence that mental health is negatively affected by physically intensive work. Nabe-Nielsen et al. (2020[24]) show that occupational physical activity increases risks of dementia while there is no impact of leisure-time physical activities in Denmark. More broadly, Harvey (2017[25]) reviewed 37 studies and found moderate evidence that high job demands, low job control, high effort-reward imbalance, low relational justice, low procedural justice, role stress, bullying and low social support in the workplace are associated with a greater risk of developing mental health problems. More specifically, in Belgium, Van Droogenbroeck and Spruyt (2015[26]) find evidence of poorer mental health for some low-skilled occupations but not for teachers.

Life expectancy differs by broad occupational groups

Due to both work-related and non-work-related reasons, manual workers face higher mortality rates than other workers**.** Higher mortality rates for manual workers are found for ages 20-59 in Finland (Rinne and Laaksonen, 2020[27]), Japan (Chan, Zimmer and Saito, 2011[28]), the United Kingdom (Katikireddi et al., 2017[29]) and for ages 50-75 in Denmark (Brønnum-Hansen, Foverskov and Andersen, 2019[30]), England, Finland, France and Sweden (Head et al., 2018[31]). Differences in mortality rates after age 30 among men result in workers in professional occupations living about 5 years more than manual workers in Italy (Luy, Di Giulio and Caselli, 2011[32]).

Remaining life expectancy of low-skilled and manual workers after retirement is relatively low, but workers covered by special pension schemes for hazardous or arduous work often do not belong to this group of workers. The difference in life expectancy at age 65 between high-earnings and low-earnings (which are mainly low-skilled) occupations has been estimated between 2 and 5 years in Germany in 1998 (Luy et al., 2015[33]), France in early 2000s (Cambois et al., 2011[34]) and in the United States in 1997-2014 (Singh and Lee, 2020[35]). Mosquera et al. (2019[36]) review 29 studies on socio-economic differences in life expectancy in Europe, which use different methods, and conclude that differences at age 65 between top and bottom occupational groups are of about 2-3 years in Germany, Norway, Sweden and almost 5 years in France. Among hospital workers in France, life expectancy at age 65 of middle-level employees is shorter by 2.3 years for men and 1.4 years for women compared to executives while for blue-collar workers these differences increase to 3.7 and 2.2 years, respectively (Bulcourt, Lemonnier and Soulat, 2022[37]). Similarly in Norway, life expectancy at age 67 of cleaners is about 1-year lower than for all professions on average, and 3-year lower than for academic professions that record the highest life expectancy (Borgan and Texmon, 2015[38]). More recently for Norway, differences in life expectancy at 62 between occupational groups were estimated at 3.5 years (Texmon, 2022[39]). In Finland, all occupations with higher-than-average mortality were found to be low-skilled (Rinne et al., 2018[40]). More precisely, mortality and disability incidence are high in occupations that are physically strenuous and where there is exposure to chemical risk factors. The differences in life expectancy are largely due to lung cancer, breast cancer and cardiovascular diseases. The transitions from work into disability are also more common among people from low-skilled occupations. From a broader perspective, life expectancy is the lowest among those not having worked at all (Luy, Di Giulio and Caselli, 2011[32]; Burgard and Lin, 2013[41]) and those with disabilities (Cambois et al., 2011[34]).

A large part of occupational differences in life expectancy is related to education, income and habits but even when these are controlled for the differences remain substantial. Rinne et al. (2018[40]) estimate that some of the differences between occupations in Finland can be attributed to education or level of income, but factors related to occupation itself have an independent effect on the incidence of disability and mortality. Physically strenuous work may lead to premature retirement, but the causes of death also indicate a higher incidence of unhealthy lifestyles and risk behaviours in many occupations in the construction, metal, pulp and paper industries as well as among non-specialised employees such as cleaners. Moreover, occupational differences in life expectancy at age 60 remain substantial in Spain once education and habits are controlled for (Lozano and Solé-Auró, 2021[42]).[11] For Italy, Lallo and Raitano (2018[43]) conclude that white- and blue-collar workers have very different mortality risks, even when controlling for a large number of proxies for individual demographic and socio-economic characteristics. Deeg, De Tavernier and de Breij (2021[44]) estimate that, after having accounted for differences in gender, age and education levels, workers in academic professions have a life expectancy at 65 that is 3.5 years longer than that of low-skilled workers in the Netherlands.

Differences in healthy life expectancy have been reported to be larger than differences in life expectancy in the United States and the United Kingdom (Zaninotto et al., 2020[45]), France (Platts et al., 2016[46]), England, Finland and Sweden (Head et al., 2018[31]). In Denmark, Pedersen et al. (2020[47]) concluded that high physical work demands tend to significantly shorten the number of working years and raise the number of sick-leave and unemployment years.

Results on the effects of working conditions on mortality and life expectancy may not correctly reflect the current labour market situations. This is because such evidence is based on past data as several decades are needed to gather mortality data. This is important because working conditions are changing rapidly due to improvements in regulation and technological progress. Moreover, working conditions in the same occupations differ substantially among countries.

Pension provisions for workers in hazardous or arduous jobs in OECD countries

This section discusses existing special pension provisions for workers in hazardous or arduous jobs in mandatory or quasi-mandatory schemes among OECD countries. First, the scope of occupations and jobs covered by these provisions is described. Then the share of workers, new retirees and all retirees covered by those schemes are presented. The section then focuses on early retirement options for these workers and their benefits. Finally, the financing of these special pension provisions for workers in hazardous or arduous jobs is considered.

Occupations and jobs covered

Pension provisions for workers in hazardous or arduous jobs differ a lot among OECD countries in terms of jobs and occupations covered. In order to obtain a broad picture of how countries compare, some examples of occupations representing various dimensions of potential hazardousness or arduousness were grouped along four dimensions.

- abilities declining with age: airline pilots and ballet dancers;
- physical strain and irregular working hours: bus and train drivers, electricians, miners, marine workers and nurses.
- potential psychological pressure: journalists and teachers;
- public safety and security: police, military and firefighters.

Table 2.1 indicates the occupations listed above where special pension provisions cover new starters in each country. It shows that OECD countries can be grouped into four groups. This classification does not account for the rules that may apply to many workers today but are being phased out.

Countries define eligibility conditions to special pension provisions for hazardous or arduous jobs based on either occupational titles or measurable characteristics of jobs (e.g. lifting heavy weights, extreme temperatures, chemical risks, night shifts), which may apply to any occupation. Some countries mix these approaches and provide both a list of occupations, often in the public sector only, and a list of criteria related to job tasks. Selected occupations can be based on some explicit characteristics of work or on some less precise definitions of arduousness or hazardousness; government or a designated public body, which might include social partners, sets and modifies the list of occupations or jobs covered. For example in Austria, a working party – consisting of social partners, occupational physicians, representatives of the social insurance institutions and representatives of government – makes proposals for possible adjustments of the list of occupations covered. In Chile, the procedure is simple as it does not involve public finance: an expert commission makes binding decisions about inclusion of a job as hazardous or arduous. In Greece, a council of experts makes a proposal, which upon approval of the Social Security Council, is conveyed to the Ministry of Labour and Social Affairs, and the final decision in made jointly by Ministry of Finance and Ministry of Labour and Social Affairs.

OECD countries can be classified into four groups (Table 2.1). The first group consists of 15 countries providing access to pension provisions for hazardous or arduous jobs to a large number of occupations or jobs. Among this group, Belgium, Estonia, Norway, Slovenia, Spain and Türkiye cover a broad list of occupations or sectors without a direct link to specific job characteristics. Also included in this first group, Austria, Colombia, Greece, Italy and Poland provide a selection of occupations based on more precise job characteristics (e.g. temperature, body postures, air pressure, working underground, night shifts, calories consumption). In France, some so-called active occupations in the public sector, including police officers, firefighters, underground sewer workers and caregivers are entitled to early retirement without penalty and with no explicit link to their work characteristics.[12] In addition, in France as in Chile, Finland and the Slovak Republic, the coverage of certain jobs by special provisions is done on case-by-case basis. In Chile, an expert commission (*Comisión Ergonómica Nacional*) assesses the application of employers and employees based on job characteristics. In Finland, workers are required to provide the description of their strenuous tasks (preferably confirmed by employers) and a medical proof of reduced work capacity. The direct links between occupational titles and specific pension provisions were gradually abandoned starting in 1995. In France, based on specific criteria related to hazardous or arduous risks, private-sector workers in some jobs – not occupation-specific – accrue points in *pénibilité* accounts (C2P, *compte professionnel de prévention*), which can be used for early retirement, training or part-time work paid full time. The Slovak Republic defines a broad criterion of an increased risk of developing an occupational disease or other work-related health damage but is does not provide a closed list of occupations covered except for military, police and firefighters. Based on this broad criterion, the public health authority decides whether specific jobs should be mandatorily covered by occupational pensions which are voluntary for other workers.

Similar to France, some countries treat hazardous or arduous jobs differently in public and private sectors. In the private sector in Belgium, there are specific regulations for miners, marine workers, journalists and the flying staff of civil aviation. In the public sector, entitlements to early retirement are accrued for work being “exposed to weather conditions, fatigues and dangers to which civil servants with a sedentary job are not exposed to”, which is called “active service”. In Greece, workers in some public-sector occupations can retire earlier, while early retirement in the private sector is linked to specific working conditions rather than occupational titles. In Latvia, early retirement for hazardous or arduous work is possible for selected public-sector workers only while in the private sector some railway workers are mandatorily covered by occupational pensions that finance early retirement. In the Slovak Republic, only firefighters, police officers and military staff benefit from exceptional early retirement while some private-sector occupations, including

ballet dancers, electricians, miners and nurses, are mandatorily covered by supplementary pensions, which can finance early retirement.

The 8 countries in the second group: Czechia, Germany, Hungary, Japan, Korea, Latvia, New Zealand and Portugal, provide early retirement options based on the hazardousness or arduousness to a limited number of jobs. All of them except for Latvia and New Zealand include miners. Germany includes no other workers than miners in the statutory public pension scheme, but some collective agreements provide options to retire early for some occupations (Natali, Spasova and Vanhercke, 2016[48]). Additionally, police officers, firefighters and military are covered by the separate pension scheme for civil servants. In Czechia, special retirement provisions apply to firefighters and paramedics (from 2023 only) while in Hungary this concerns only underground miners and ballet dancers. In Korea, special regulations apply to fishermen and the military; firefighters and police officers are covered by the scheme for civil servants. In Japan, coal miners are covered by mandatory pension scheme which is voluntary for others while special pension rules no longer apply to new firefighters, sailors and some law-enforcement occupations. Portugal covers air traffic controllers and pilots, ballet dancers, marine workers, sea fishermen, miners, quarry workers, some traditional craftsmen and firefighters in the public sector. In New Zealand, police officers, military, firefighters, airline pilots and train drivers are mandatorily covered by occupational pensions which are voluntary for others.

In the third group of countries: Canada, Ireland, Israel and the United States, only public safety and security jobs traditionally considered as hazardous, such as police, firefighters and military, are covered by special pension provisions. In the United States, firefighters, regional police officers and the military are covered by occupational schemes but not by social security.

The 11 countries in the last group do not provide any early retirement options within mandatory pensions for hazardous or arduous jobs. In Costa Rica, policemen, firefighters and teachers belong to sectoral schemes, which cover other occupations and are not aimed at hazardous or arduous jobs or occupations. In Lithuania, the early provisions for hazardous or arduous work were abandoned recently although some workers still benefit from them based on grandfathering. In some countries, occupational pensions provide more early retirement options for workers in hazardous or arduous jobs. In Switzerland, there are more than 1 400 occupational pension schemes with separate rules, which can grant benefits from the age of 58. For example, in the construction sector, collective agreements are binding for all firms and provide an option to retire at 60 to workers whose jobs considered hazardous or arduous (Natali, Spasova and Vanhercke, 2016[48]). Collective agreements provide some early retirement options in occupational pensions to workers in hazardous or arduous jobs in e.g. the Netherlands and Sweden (Jolivet, 2023[49]).

Table 2.1. Occupational scope of pension provisions for hazardous or arduous jobs in OECD countries

Rules for workers starting career in 2023

		Airline pilots	Ballet dancers	Electricians	Marine workers	Miners	Train drivers	Bus drivers	Nurses	Journalists	Teachers	Firefighters	Police	Military
Group 1	Austria	Y	Y			Y							Y	Y
	Belgium	Y			Y	Y	Y			Y	Y	Y	Y	Y
	Chile+													
	Colombia+					Y					*	Y	Y	Y
	Estonia	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y
	Finland+													Y
	France	Y	Y		Y	Y			Y			Y	Y	Y
	Greece			Y	Y	Y	Y	Y	Y			Y		
	Italy	Y			Y	Y	Y	Y	Y	*	Y	Y	Y	Y
	Norway	Y	Y		Y				Y			Y	Y	Y
	Poland	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y
	Slovak Republic		Y	Y		Y			Y			Y	Y	Y
	Slovenia	Y	Y		Y	Y	Y	Y				Y	Y	Y
	Spain	Y	Y		Y	Y	Y					Y	Y	Y
	Türkiye					Y			Y	Y		Y	Y	Y
Group 2	Czechia					Y						Y		
	Germany					Y						*	*	*
	Hungary		Y			Y								
	Japan					Y								
	Korea				Y	Y						*	*	Y
	Latvia		Y				Y					Y	Y	Y
	New Zealand	Y					Y					Y	Y	Y
	Portugal	Y	Y		Y	Y						Y		
Group 3	Canada											Y	Y	
	Israel												Y	Y
	Ireland											Y	Y	Y
	United States											Y	Y	Y
Group 4	Australia													
	Costa Rica										*	*	*	
	Denmark													
	Iceland													
	Lithuania													
	Luxembourg													
	Mexico													
	Netherlands													
	Sweden													
	Switzerland													
	United Kingdom													

Note: "Y" indicates that countries cover this occupation with special provisions for hazardous or arduous work;
* indicates that the occupation is covered by special occupational or sectoral provisions but not considered hazardous or arduous.
+ In Chile, Colombia and Finland no or very few occupations are explicitly covered, but they are included in the Group 1 because the rules allow many jobs to be covered based on work characteristics as explained in the text in greater detail. In Colombia, special pension provisions apply also to air traffic controllers, and workers exposed to high temperatures, ionizing radiation, and to carcinogenic substances while teachers do have special pension provisions, but their work is not considered hazardous or arduous. In Finland, the "years-of-service" scheme is closer to disability as it requires medical certificate about reduced capacity to work and a confirmation of having worked in hazardous or arduous jobs. In Costa Rica, policemen, firefighters and teachers belong to judicial and educational sectoral schemes, respectively, which cover other occupations and are not aimed at hazardous or arduous jobs Also in Denmark, the "seniority pension" scheme requires certificate of reduced work ability. On top of occupations ticked in the table, Latvia provides special pension provisions to some artistic occupations and employees of the State Emergency Medical Service, and other public sector jobs which are not necessarily hazardous or arduous. In Germany and Korea, miliary (only in Germany), police officers and firefighters are covered by the general pension scheme for civil servants and, thereby, they are not considered as being covered by special pension provisions for hazardous or arduous jobs. In Italy, journalists have their own pension scheme, but they are not considered a hazardous or arduous occupation while only early-education teachers are classified to this group. In Japan, coal miners are covered by mandatory private pension scheme (which has 132 active members) while special pension provisions for firefighters and police officers are expiring and do not cover newcomers. In France, nurses in general are not considered a hazardous or arduous job while midwives are. In the United States only a small group of workers, including local police officers and firefighters, are not covered by national social security and are covered by occupational schemes.
Source: Information provided by countries.

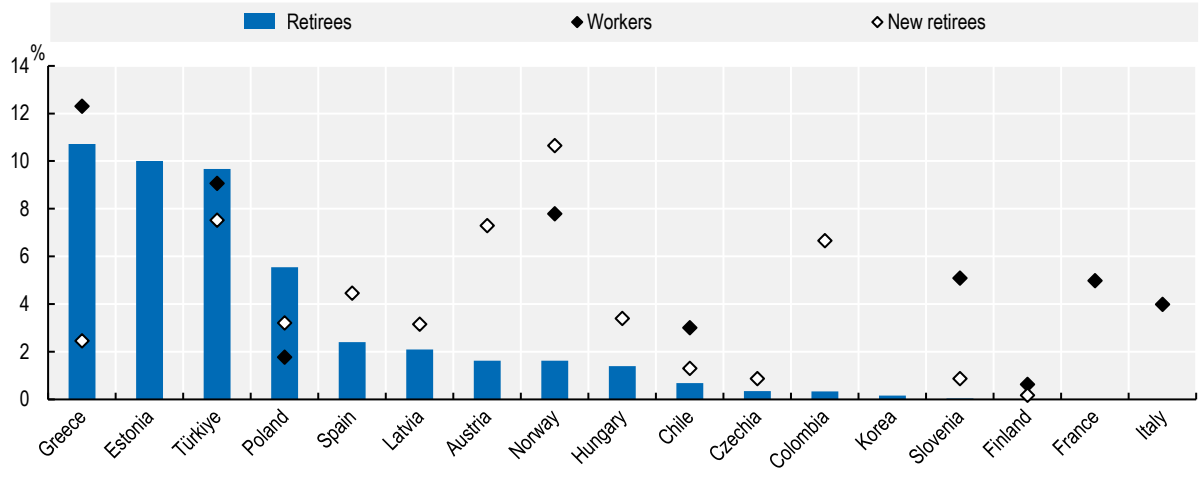
Number of workers and pensioners covered by special pension provisions

Among OECD countries for which data are available, the coverage of special retirement provisions for hazardous or arduous jobs varies from less than 1% of *retirees* in Chile, Colombia, Czechia, Finland, and Korea to 10% or more in Estonia, Greece and Türkiye (Figure 2.1).[13] In Poland, that share – miners and police officers are the main group among beneficiaries – is 5.6%, higher than among new retirees (3.2%), and than the share of current workers accruing entitlements in these schemes (1.8%). In Greece, only 2.2% of those having retired in 2021 used provisions for hazardous or arduous jobs, which is substantially less than among total retirees or the share of covered workers, at 11.2% and 13.4%, respectively. This suggests that, even though many workers are still eligible to these provisions, using them is less beneficial than in the past. In France and Italy provisions for hazardous or arduous work cover 5% and 4% of workers, respectively. In France, workers in the private sector accruing points on the accounts dedicated to hazardous or arduous working conditions (C2P) make about half (47%) of workers covered by provisions for hazardous or arduous jobs (the above mentioned 5%), while "active" public-sector workers make the remainder. However, C2P accounts are not dedicated to pension entitlements only and account holders may use the acquired points for training or reducing working hours rather than for retiring early.

Despite the fact that the coverage of pension provisions for hazardous or arduous jobs is shrinking, the share of people retiring based on these provisions is higher among new retirees than among all retirees in Norway (10.7% vs. 1.6%), Austria (7.3% vs. 1.6%), Colombia (6.7% vs. 0.3%), Spain (4.5% vs. 2.4%), Hungary (3.4% vs. 1.4%), Latvia (3.1% vs. 2.1%), and Czechia (0.9% vs. 0.4%). This may be because some special provisions cover only temporary early retirement benefits until reaching minimum age to claim old-age pension. In Hungary, in particular, this is because since 2014 early retirement benefits for hazardous or arduous jobs are temporary until reaching the statutory retirement age.

Figure 2.1. Coverage of pension provisions for hazardous or arduous jobs among workers, new retirees and retirees

2022 or latest year



Note: French number refer to 2021 numbers from C2P scheme as well as for the active category of the public servant scheme. Italian number refer to 2011. For Latvia, numbers include workers covered by special pension provisions, of which only part are hazardous or arduous. For Poland, the number for current retirees includes beneficiaries of the bridge pensions (38 600), miners (194 000) and police officers (163 400) and it does not include farmers and military. For Spain, data refer to 2019.
Source: Countries responses to the questionnaire.

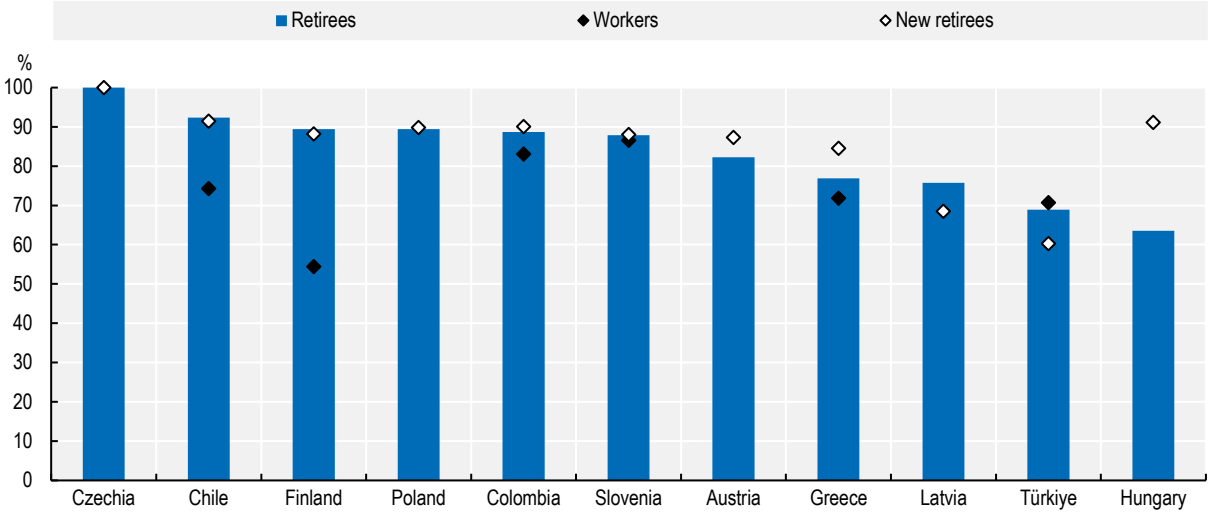
StatLink https://stat.link/1qn5ul

In Chile and Slovenia, only part of the workers who have accumulated additional pension entitlements through employer's contributions to occupational pensions use them to finance early retirement while the majority prefer to boost income after having retired. Using additional assets for early retirement is possible only for workers who contributed for at least 20 years to pension from any job in Chile.[14] As a result of often not using the early retirement option, the share of workers in hazardous or arduous jobs among workers is much higher than the share of new retirees, at 3.0% vs. 1.3% and 5.1% vs. 0.9% in these two countries, respectively.

The vast majority of workers covered by hazardous or arduous pension provisions are men (Figure 2.2), because these schemes often cover male-dominated occupations, such as miners. Among retirees, men make more than 75% of beneficiaries in Austria, Chile, Colombia, Czechia, Finland, Latvia, Poland and Slovenia.

Figure 2.2. Pension provisions of hazardous or arduous jobs effectively cover mainly men

Share of men among retirees, new retirees and workers covered by the schemes



Note: Women make 70% among workers working in hazardous or arduous conditions in Norway, potentially due to the inclusion of care workers, where women are over-represented.
Source: Information provided by countries.

StatLink https://stat.link/lhbdnu

Early retirement provisions for hazardous or arduous work

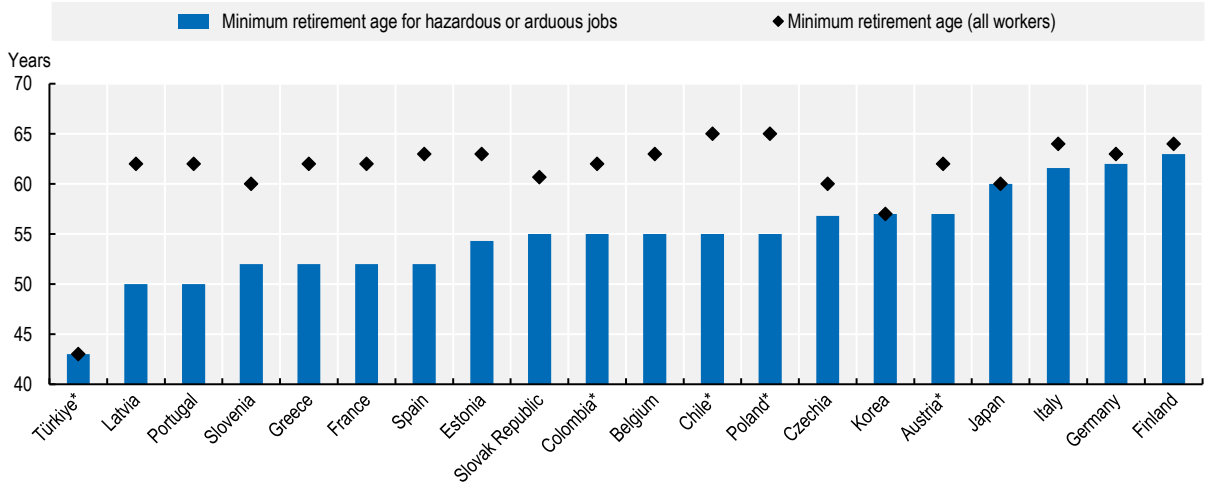
Pension provisions for workers in hazardous or arduous jobs allow them to retire before the minimum retirement age that applies in general. Rules differ among jobs, with e.g. ballet dancers in France, Norway and Portugal being generally allowed to retire very early, in their forties. Some other workers covered by provisions for hazardous or arduous work can retire at 55 or earlier in Belgium, Chile, Colombia, Estonia, Greece, Latvia, Poland, Portugal, the Slovak Republic, Slovenia, Spain and Türkiye, while in Finland, Germany, Italy, Japan and Norway they can retire at the age of 60 or later.[15] In Austria, workers working nightshifts can retire at age 57 and 52 for men and women, respectively, while other arduous working conditions allow to retire, after a 45-year career, at age 60 compared to the early retirement age of 62 for other workers. In Chile, workers in hazardous or arduous jobs are entitled to anticipate their retirement up to 10 years provided they have a general contribution record of at least 20 years. In France the minimum age for most so-called active occupations in the public sector is 57 and 52 for some other so-called super active while for private-sector workers the retirement age can be reduced through the C2P by up to 2 years

from the statutory age of 62 years. The 2023 reform increased all these ages by 2 years. Norway, depending on sectors and occupations, retirement ages are 60, 63 and 65 while the statutory retirement age is 67. Ballet dancers, vocal soloists and choral singers at the Norwegian National Opera and Ballet have an age limit of, respectively, 41, 52 and 56 years. Additionally, Norway applies a so-called "85-year rule" which makes it possible to retire three years before the special age limit if the sum of age and tenure exceeds 85 years. In Portugal, ballet dancers can retire without early retirement penalties from age 45, airline pilots from age 65, which is higher than in many other countries, and other occupations covered by specific rules are allowed to retire within this range. In Spain, the retirement age can be reduced by between 5% and 50% of years worked in hazardous or arduous occupations, with e.g. 10% applying to local police officers, 15% to train drivers, 40% to pilots and 50% for some miners. There is a general floor at age 52 but some occupations, such as miners and marine workers, are exempted from this limit.

Compared to the current minimum retirement age, i.e. the age at which workers can access a pension from the main earnings-related scheme, Chile, Estonia, Greece, Latvia, Poland, Portugal, Slovenia and Spain provide some workers in hazardous or arduous jobs with options to retire 10 or more years before (Figure 2.3). This is between 5 and 9 years in Austria, Belgium, Colombia, Estonia, France and the Slovak Republic; and less in Czechia, Finland, Germany, Italy and Norway. In Korea, workers in hazardous or arduous job cannot retire below the minimum retirement age for other workers but their pensions are not subject to penalties for early retirement. In Türkiye, the age-related eligibility condition for public pension in general applies only to workers who started their careers after 8 September 1999; for men and women who started working before that date 25 and 20 years of contribution, respectively, are required to receive a pension.

Figure 2.3. Pension provisions for hazardous or arduous work reduce the minimum pensionable age by more than 5 years in some countries

Excluding ballet dancers and artists, 2022



Note: (*) In these countries, women can retire earlier than men, and shown values apply to men only. For Austria, 57 years applies to workers working in night. In France, the age of 52 applies to some "super active" public-sector occupations, including national police officers, prison officers and air-traffic controllers; while other `active' public sector occupations, including local police officers and firefighters, can retire at 57; the C2P in the private sector allows to lower the retirement age by 2 years. In Poland, the minimum age for the so-called bridge pensions for men is 60 in general, but it is 55 for some specific workers including marine workers and miners. In Spain, the minimum age applies to most hazardous or arduous jobs, but miners and marine workers are exempted. For Türkiye, the current minimum retirement age of 43 is refers to a man starting career at age 18 and retiring with 25 years of contributions; men born in 1980 can retire with 25 years of contributions as the age-related condition has been introduced later.
Source: Data provided by countries.

StatLink https://stat.link/p4l265

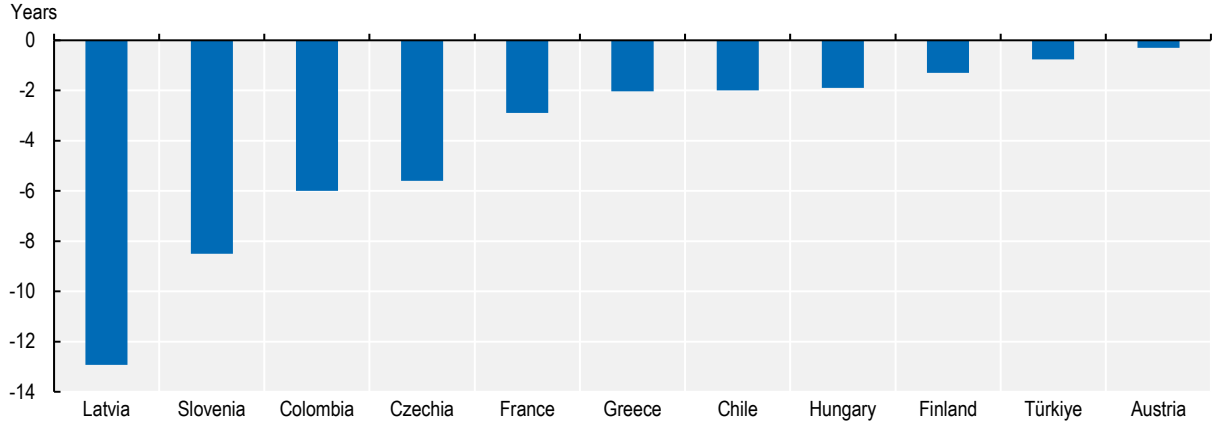
Both Austria and Italy have some special schemes for those who started their career very early and worked in arduous conditions. In Austria, 10 out of last 20 years in hazardous or arduous jobs are required to retire at age 60 on top of the 45 years of paying contributions. Workers with long careers (also 45 years) but not working in hazardous or arduous work can retire two years later, i.e. from age 62. In Italy, there are three options to retire early for workers working in occupations classified as arduous (different occupations qualify for different options): at age 61 and 7 months with at least 35 years of contributions and the sum of age and career contribution being at least 97.6; 41-year career and working before the age of 19; or, at age 63 with 36 years of contribution with the so-called Social APE. This compares with the statutory retirement age of 67 and to the so-called quota 103 allowing to retire at age 62 with 41 years of contribution (as of 2023).

Pension provisions for hazardous or arduous jobs require a substantial part, but not all, of the career to be performed in these jobs. For example, Poland requires 15 years, Greece 12 years, Portugal between 10 and 22 years and the Slovak Republic between 10 and 20 years depending on occupations. Like Austria (see above), Italy requires a minimum tenure of 7 years in hazardous or arduous work in the last 10 years before retirement. In Italy, eligibility conditions for some occupations are not linked to life expectancy developments contrary to the general rule. In Estonia and Korea, contribution period in hazardous or arduous work needs to make at least 50% and 60% of total contribution period, respectively. In Türkiye, workers in hazardous or arduous occupations accrue up to 50% more contribution period for up to 5 years. In Chile and France (C2P), workers accrue entitlements to early retirement for every period of work in hazardous or arduous jobs.

Workers covered by pension provisions for hazardous or arduous work actually claim their pensions earlier than other workers (Figure 2.4). Latvia stands out as workers covered by pension provisions for hazardous or arduous work, which apply to selected public-sector occupations, claim benefits almost 13 years earlier than other workers on average, at age 50. In Slovenia, pension provisions for hazardous or arduous jobs take the form of a supplementary occupational scheme, and workers covered retire at 54 on average, which is 8.5 years earlier than those in other occupations. In Colombia and Czechia having access to these specific pension provisions result in retiring around 6 years earlier, while the difference is less than 3 years in Austria, Chile, Finland, France, Greece, Hungary and Türkiye.

Figure 2.4. Workers in hazardous or arduous jobs effectively claim pensions earlier

Difference in the average age of claiming pensions between workers in hazardous or arduous jobs and all workers, 2021 or latest year



Source: Information provided by countries, www.cor-retraites.fr/sites/default/files/2023-03/Doc_15_SG_Cat%C3%A9gories%20actives_fonction%20publique.pdf for France.

StatLink https://stat.link/vtmqi4

Pension levels for workers in hazardous or arduous jobs are more generous

Pension provisions for workers in hazardous or arduous jobs include higher accrual of pension entitlements and no penalty – or sometimes lower penalties – for retiring earlier. In Germany miners accrue one-third more per year than other workers. In Ireland, accruals are higher for some occupations. In Latvia, the specific schemes do not follow notional defined contribution (NDC) rules introduced for most workers in 1995, but are based on DB principles, granting a gross replacement rate of 45%-65% after 20-30 years of work. By comparison, based on the OECD pension model, NDC rules imply a replacement rate of 40% after a 42-year career for people retiring today.[16] There are no penalties for early retirement based on provisions for hazardous or arduous work in Belgium. In Austria, the penalty for retiring earlier, at 1.8% per year, for workers with arduous work other than night work is lower than the general 4.2% penalty while those working at night are subject to regular penalties capped at 13.8%.

In some countries, workers covered by retirement provisions for hazardous or arduous work receive additional benefits until reaching statutory retirement age. In Poland, men and women working in hazardous or arduous jobs can claim the so-called bridge pensions from ages 60 and 55 compared to the minimum statutory retirement ages of 65 and 60, respectively. Bridge pensions are calculated in the same way as old-age pensions and are therefore adjusted based on the age of granting benefits. This adjustment, however, does reduce pensions beyond the age-60 adjustment for those (women) retiring before age 60. In Italy, Social APE for workers in hazardous or arduous jobs is a tax-financed benefit that ceases when the beneficiary becomes eligible to old-age pensions. In Slovenia, early retirement for workers in hazardous or arduous jobs are calculated based on capital accumulated in a funded occupational scheme and its expected duration. It does not affect entitlements from the public old-age pension.

Financing of pension provisions for hazardous or arduous jobs

To finance earlier benefits for hazardous or arduous jobs within PAYG schemes, countries often use both additional (employee and employer) contributions and general pension revenues. In Portugal, the schemes are financed from the general social security budget, with additional contributions for miners and air traffic controllers paid by employers. In Türkiye, additional contributions vary from 1 to 3 percentage points in the private sector and between 3.33 and 10 percentage points in the public sector. In France, C2P is financed from contributions paid by all employers through a work-accident insurance fund.[17] In Austria, employers pay additional contributions at the rate of 2% for workers working at night while exposure to other arduous working conditions such as high or low temperature, or heavy physical work do not incur additional contributions and are covered by the general public pension budget. In Colombia, additional contribution for hazardous or arduous jobs of 10 percentage points are made by employers.

In some countries the financing of early retirement provision for hazardous or arduous jobs is partially or fully separated from general pension finances. In Chile, higher contributions lead to higher benefits for workers in hazardous or arduous jobs compared to benefits of other workers; in both cases they are based on FDC calculations. In the Slovak Republic separate voluntary contributions are directed into a specific FDC scheme, with the minimum rate of 2% while up to 6% are tax deductible. In Slovenia, the contribution rate in an occupational FDC scheme is 9.25%. In Poland, these early pensions are financed from state subsidies and employers' contributions at a 1.5% rate. Latvia pays most pensions for hazardous or arduous jobs from the state budget, while a private FDC scheme finances early pensions for railway workers from employer's contributions. In Norway, early retirement benefit until reaching the statutory retirement age is financed from private occupational pensions through higher employers' contributions in the private sector while in the public sector they are financed from the state budget. By contrast, in Luxembourg early retirement for hazardous or arduous jobs are fully financed from the pension budget.

Reform trends

Tightening access to pensions for hazardous or arduous jobs

Many OECD countries have tightened access to pension provisions for hazardous or arduous jobs. This trend started in the 1990s or even earlier as longevity improvements started putting financial pressure on pension systems. With increasing retirement ages across the board, very low retirement ages for some occupations became even more difficult to justify. As job mobility has tended to increase across sectors, there has also been a broader trend to simplify and unify pension systems across occupations, including for civil servants, and occupation-specific pension entitlements have become obsolete, particularly in heavy industry sectors.

For example, Ireland removed the lower retirement age for police officers, soldiers and firefighters in 1995, and Lithuania eliminated the special provisions for most occupations also in 1995. In Luxembourg, only workers who started work before 1999 can qualify for provisions for hazardous schemes, but all workers can retire early from age 57, which is very low in international comparison. Finland eliminated most occupational-specific early retirement options in the public sector in the 1990s, with a long transition period until the 2030s. In 2016, early retirement for marine workers was abandoned and only soldiers kept some special provisions. In the private sector, early retirement provisions were abandoned in the early 2000s. In 2017, the so-called years-of-service early retirement scheme was introduced to allow those with 38 years of contributions subject to a verifiable declaration that the job is arduous to retire 2 years below the statutory retirement age, which is currently of 65 years and will gradually increase. Hungary introduced additional contributions to finance early retirement for selected occupations in 2007. In 2011, early retirement for military personnel was eliminated. Since 2014 almost no new entitlements to early retirement are accrued among workers in hazardous or arduous occupations and the additional contributions are not collected, which leads to the gradual disappearance of additional pension rights for these occupations. The only two exemptions are underground miners and ballet dancers. The Slovak Republic has been extending the minimum contributory period to access early retirement for soldiers, police officers and firefighters from 15 years in 2013 to 25 years in 2032. The special provisions are fading out also in Japan.

In Estonia and Norway reforms limiting early retirement provisions for workers in hazardous or arduous jobs are underway. Estonia is working on terminating special provisions for workers in hazardous or arduous jobs based on improvements in working conditions over time. Moreover, the government is planning to improve workplace safety and retraining policies. The current plans assume maintaining already acquired pension entitlements while stopping any new accruals. In Norway, a systemic reform introduced NDC pensions in 2011, affecting cohorts born after 1962. In 2020, the early retirement scheme (AFP) for public-sector workers was aligned with the private-sector scheme and turned into a pension supplement. Reforms to early retirement options for workers in hazardous or arduous jobs are supposed to follow, but the negotiation process has been difficult.

In Belgium and Slovenia, despite some efforts, reforms to pension provisions for hazardous or arduous work have stalled. In Belgium, the issue has generated debates, especially in the wake of the 2014 report published by the Commission Pension Reform 2020-40. One of the Commission's recommendations was that social partners draft a list of so-called arduous jobs (within a certain framework established by the Commission) that could be used to decide about early retirement conditions. The subsequent government asked social partners to come up with such a list, but a consensus has never been reached. Setting up rules within social dialogue has been problematic and no agreement has been reached so far with the government.

Coverage of hazardous or arduous jobs and general pension reforms

Systemic pension reforms have had a very different impact across countries on the pension coverage of hazardous or arduous jobs. When implementing systemic pension reforms a few decades ago, Chile and Poland adjusted pension provisions for hazardous or arduous jobs, while Latvia kept these provisions largely untouched. Sweden did not have any such provisions even before implementing new pension system in 1990s and it has not introduced any. Following parametric pension reforms increasing retirement ages, France and Finland have favoured special pension provisions based on job characteristics rather than occupations while Italy expanded these provisions to mitigate the impact of tightening access to early retirement for all workers.

Chile substituted a PAYG DB scheme with FDC pensions in 1981, which, among others, unified pension rules across occupations. In 1995, the FDC scheme was amended with the introduction of an early retirement option for arduous work. Additional individual contributions were set to finance options to retire before the statutory retirement age for selected workers.

Poland eliminated many occupational differences in pension provisions as a consequence of introducing notional defined contributions (NDC) scheme but introduced a unified early retirement option for workers having worked in hazardous or arduous jobs before the reform (Esser and Palme, 2016[50]). In 1999, Poland substituted its financially unsustainable and fragmented public DB pension scheme with an NDC scheme, for people born after 1949. As the first generation of people covered by the NDC rules introduced in 1999 reached the age of 60 in 2009, Poland introduced a so-called bridge pension scheme for a broad set of hazardous or arduous jobs. The scheme grants benefit for up to five years below the statutory retirement age of 65 and 60 for men and women, respectively, until reaching the statutory retirement age. The benefits are calculated following the NDC rules, without, however, any adjustment for retiring below 60. The scheme is financed by additional pension contributions of 1.5 percentage points and state subsidies. Initially it was planned to be a temporary solution only for those who started career before 1999 but in 2023, applying from 2024, it became permanent. As remaining exceptions, miners can retire after 25 years of work without age limit, or at age between 50 and 55 for shorter careers, and military and police officers can retire at age 55 after 25 years. Latvia introduced NDC in 1996 but many occupations, including those classified as hazardous or arduous, in the public sector were kept out of the new scheme, resulting in lower retirement ages and higher benefits calculated based on defined benefit principles.

In Sweden, the public pension system has been universal for more than 100 years and thereby the systemic reform in 1990s did not generate specific entitlements for workers who may, in other countries, be considered as having hazardous or arduous jobs.

In some countries, e.g. in Austria, Finland, France and Italy, early retirement options for workers in hazardous or arduous jobs may have been introduced to mitigate the impact of tightening general pension eligibility conditions and to replace past occupation- or sector-specific rules. New rules are linked to job-specific characteristics rather than occupation titles, making entitlements more transferable across jobs. Still, these schemes may incur substantial administrative costs on firms or on public administration. After having tightened general eligibility conditions to pension in 2000, Austria enacted the current rules for workers in arduous jobs (*Schwerarbeitspension*) in 2003, being effective from 2007. The scheme is effectively designed for those who started their career early as it requires 45 years of contributions.

In the 1990s, Finland started tightening access to early retirement for all workers. In 1995, special entitlements to early retirement stopped accruing for, among others, firefighters, nurses and police officers; and in 2016 for marine workers. To partially compensate for these, in 2017 the so-called years-of-service pension were introduced which allows to retire 2 years before other workers based on arduous job characteristics, assessed individually.

In France, early retirement provisions for some occupations were created in the late 1990s and early 2000s. These were, for example, early retirement options for workers working in arduous jobs (so-called

CATS), which expired from 2005 as early retirement for early-career starters (before age 20) had been introduced in 2003. Another early retirement option for asbestos-exposed workers (CAATA) was introduced in 1999 (Bonnand, 2016[51]). Since 2003 policy makers sought to establish arduousness criteria, which were enacted in 2010. Today, workers in jobs fulfilling the criteria accrue points in so-called C2P accounts (*Compte professionnel de prévention*).[18] These points can be used for three purposes: training (to facilitate moving into less arduous jobs), reduction in working hours or early retirement. The criteria are defined based on six work characteristics, based on working: at night; in successive shifts; in hyperbaric environment; in noise; in extreme temperatures; and, performing repetitive work. This is a reduction from ten criteria used until 2017 as four were excluded due to difficulties in their measurement: awkward postures, manual handling of heavy loads, mechanical vibrations and dangerous chemical substances. Along with this tightening access to these accounts, additional pension contributions of employers to finance the scheme were abolished. With the 2023 reform (Chapter 1) increasing retirement ages for all workers, some occupational schemes, including for public transport and the energy sector, were closed for new workers, who may become eligible to C2P accounts. Moreover, the 2023 reform eased the criteria to benefit from C2P for work at night work and in successive shifts, and removed the ceiling applying to the total number of points that can be accumulated through the career.

In Italy, following the substantial tightening of eligibility conditions to pensions in the 1990s, special pension rules for hazardous or arduous jobs were introduced in 1993. In 2012, for the first set of strenuous occupations (*lavori usuranti*), the minimum retirement age was set at age 60, which was 5 years below the statutory retirement age, to increase in parallel with the statutory retirement age (Jessoula, Pavolini and Strati, 2016[52]). In 2016, a broader category of arduous jobs was created (*lavori gravosi*) (Nadalet, 2020[53]). In 2018, this list was further expanded.[19] Workers in occupations included in this list can retire after a 41-year career if they started working before age of 19. Additionally, since 2017, the so-called social APE (it. *Anticipo Pensionistico*) social, financed from general taxation, is available from age 63 with 36 years of contribution, as of 2023, if having performed arduous jobs in at least seven out of the last ten years before retirement. Social APE was supposed to be a temporary measure, but it has remained in place ever since. The expansion of schemes for hazardous or arduous jobs in Italy after 2016 is part of a broader trend to ease early access to old-age pensions.

To address reduced work capacity of some workers before reaching the statutory retirement age, Denmark introduced senior pensions in 2020. This is a horizontal early retirement scheme that allows to retire six years below the statutory retirement age, of 67 in 2022, if work capacity is permanently reduced based on an individual assessment by specialists. It can be combined with up to 15 hours of work per week. The senior pension replaced the so-called Senior Disability Pension, which had stricter eligibility condition.[20]

Mandatory retirement ages for pilots do not exist in all countries, and these ages are influenced by factors going beyond safety considerations. Currently, the Civil Aviation Organization (ICAO), a specialised unit of the United Nations, sets the maximum age of pilots in international flights at 65. The age was increased from 60 in 2006 when it was raised from 45 since 1963.[21] Some countries, e.g. Australia, Canada and New Zealand, provide no mandatory retirement ages, which implies that the older pilots in these countries are only able to operate domestic flights. In the United States, the mandatory retirement age for pilots has increased from 60 to 65 in 2007, with a further increase to 67 currently undergoing legislative process; this would align it with the statutory retirement age for Social Security which is increasing to 67 for people born in 1960 or later. The political debate goes much beyond safety issues as pilots undergo strict medical tests regularly, and it includes discussions about labour shortages in the sector and the competition between older and younger pilots.[22]

How labour market and other social policies address work-related risks

Whether pension provisions are needed for hazardous or arduous jobs partly depends on the existence and efficiency of other preventive, active and compensating policies. The section starts by discussing health and safety regulations which can reduce the scope of hazardous or arduous working conditions as well as their negative impact on health. There is large room for improving preventive measures, but they cannot by themselves fully eliminate the negative health impact of some jobs. Then the section turns to activation measures, related to lifelong learning and reskilling, which are key for workers to acquire and to maintain skills needed to remain in employment, in particular when it becomes difficult or even impossible to continue work in the same job due to ageing. Finally, the section looks into disability benefits which provide income when long-term health issues impede work. Some specific disability benefits require proving a strict causal link between working conditions and lost earning capacity, which is difficult when long-term exposure to some risks has delayed impacts.

Health and safety regulations, and other preventive policies

By setting minimum standards in terms of health, safety and well-being in the workplace, workplace regulations limit both hazardousness and arduousness of jobs and their impact on workers' health and well-being. The health and safety regulation of working conditions has at least a century-long tradition within OECD countries. There are some crucial elements to ensuring the efficiency of these regulations. First, duly reporting injuries and occupational diseases is the prerequisite to detect potential issues, target prevention and allow workers to make informed decisions. Many countries impose the obligation to disclose information about work-related risks on firms, as for instance in France, where employers must identify, evaluate and inform employees about work-related risks, take measures to prevent those that can be prevented, and specify the measures undertaken to mitigate the remaining ones based on collective agreements (Mittlaender, 2023[54]). Second, financial incentives for firms, such as contribution rates for accident insurance reflecting actual risks level at specific firms, tax credits and grants are an important lever to encourage employers to go beyond basic accident prevention and safety, and comprehensively promote health and well-being in the workplace (OECD, 2022[55]).

Government agencies or other institutions are often in charge of reporting cases, enforcing standards and implementing prevention programmes, including in Belgium, Chile, Czechia, Denmark, Luxembourg, Norway and Poland. For example, in Chile, a specialised institution[23] establishes plans for occupational trainings as well as the prevention of occupational accidents and diseases. In Denmark, the Danish Working Environment Authority can fine the enterprises that do not comply with the health and safety regulations. In addition, the National Research Centre for the Working Environment (NFA) conducts and disseminates research to develop healthy and safe working environment. In Norway, the National Institute of Occupational Health operates the national monitoring system for the working environment and publishes the Factbook on working environment and health every three years.[24]

Czechia, Luxembourg and Portugal have introduced interesting innovations to improving health and safety of work. In Czechia, the legislation limits the maximum exposition to various adverse working conditions, including noise. If the maximum duration of exposition is exceeded, the worker must be assigned to another job. Luxembourg is implementing the so-called Vision Zero strategy accepted by government, employers and employees for 2023-30 in order to decrease the number and severity of work accidents and occupational diseases by 20%. The strategy involves a series of communication events.[25] Portugal launched a campaign in 2016 on "Safe and healthy workplaces" emphasising that safe and healthy working conditions throughout the whole working life are good for workers, businesses and society as a whole. Specifically, the campaign had four objectives: promoting sustainable work and healthy ageing from the start of the working life; preventing health problems throughout the working life; providing ways for employers and workers to manage occupational safety and health in the context of an ageing workforce, and encouraging the exchange of information and good practice (OECD, 2022[56]).

In many countries, including Germany, Latvia, Norway and Poland, prevention programmes are individually tailored and often organised and financed by insurance institutions, for which reducing incidence of injury, occupational diseases and disability improves financial balance. For example, the Polish social security agency finances occupational disease prevention programmes. In Latvia, based on individual assessment, individuals at risk of disability are offered individually tailored assistance. In Norway, the government, businesses and social partners signed an agreement to reduce sick leave and labour market drop-out. The agreement focuses on improving the working environment by, among others, early mapping of work-related risks. In New Zealand, the Accident Compensation Commission (ACC) provides sickness insurance, and to reduce spending on benefits, takes efforts to reduce the number and severity of work injuries. These efforts often include retraining components which are preventively directed also at people at risk of disability or those with partial disability.

The complex issues of improving health and safety at work require comprehensive strategies, as implemented for example in Korea and Sweden (OECD, 2022[56]). In 2020, Korea overhauled the Occupational Safety and Health Act in 2019 and expanded regulations on preventive measures against industrial accidents. Sweden updates the *Work Environment Strategy* every five years, and the current one for 2021-25 takes into account not only preventing illnesses and accidents but it also aims to develop good work conditions through four priority areas: sustainable working life: everyone should be able to have the capacity to work a full working life; healthy working life: working life is to contribute towards development and well-being; safe working life: no-one is to place their life or health at risk due to their job; and, a labour market free from crime and cheating: a poor work environment is never to be a competitive tool.

Lifelong learning, reskilling and age-management policies

Continuous training throughout working lives is critical to ensure that employees have the right skills to stay in employment as they age. This is particularly the case where changing jobs is required to limit negative health effects or due to the lack of ability to continue the work at certain ages, as e.g. in the case of ballet dancers or football professionals. One objective of old-age pensions is to provide income security to face age-related limitations to work, with social norms helping to shape reasonable retirement ages. Not being able to continue work in one very specific job should not be dealt with by early retirement.

Reskilling and upskilling ensure that workers can remain productive and adapt to a new job, increasing the likelihood of remaining in employment (OECD, 2023[57]). Governments and social partners therefore need to put in place a policy framework that enables workers in hazardous or arduous jobs to acquire new skills (Global Deal, 2023[58]). Creating such a framework is an ongoing challenge, however, which requires substantial efforts from all parties involved: policy makers, employers and workers. Public policies should also ensure that training is attractive to older workers, particularly in small- and medium-sized enterprises.

There are many policy examples of reskilling policies applied to workers at different ages, but a systematic evaluation of these policies is often lacking. In 2018, the Australian Government introduced a new programme – the *Skills Checkpoint for older workers* – with the aim of providing older workers with guidance on either transitioning into new roles within their current industry or pathways to new careers. Overall, the programme encourages lifelong learning and helps older workers access training to upskill or reskill and participate in the labour market. Korea has implemented skills development programmes customised to middle-aged workers (OECD, 2022[56]). In Luxembourg, workers who are incapable of performing their jobs due to health reasons, disability, or wear and tear, but who are not eligible to disability benefits, are proposed to remain in the same company in a different position, or to be employed in a different company (OECD, 2023[59]). The Netherlands introduced a five-year subsidy scheme for firms to invest in the employability of workers, including older workers. For older workers for whom it is hard to continue working until the retirement age because of physical or mental burn-out, the programme offers training and counselling, but it can also subsidise early retirement up to 3 years before the statutory

retirement age. The skill development centre in Scotland has been assessed as very successful (Rising et al., 2021[60]). It offers a wide range of services to support individuals facing redundancy.[26] The centre aims to anticipate skills demand, adjust training programmes and offer career guidance.

Tools like mid-life career reviews, personal development plans and career conversations can help workers make informed decisions about investments in future skills. Mid-life career reviews are indeed simple and cost-effective ways to identify upskilling and reskilling needs. In 2021, France introduced a new medical examination at age of 45, intended to raise employees' awareness of ageing at work and to prevent occupational wear and tear. During the visit, a professional reskilling agreement in the company can be proposed (OECD, 2023[59]).

When not fit to perform arduous tasks, older workers can remain at work in different roles that may involve more clerical tasks, mentoring or coaching. Mentoring and coaching as devices to develop skills and competences in the workforce are amongst the most widespread tools in talent management (OECD, 2020[61]). For example, in France, older bus drivers are sometimes moved to easier tasks.[27] In the case of bus drivers, age-management practices might include for example drastically limiting night shifts for older drivers. Also, job rotation programmes might minimise long-term exposure to harmful working conditions and increase the ability to perform different jobs. Through job rotation, employees familiarise themselves with various tasks while acquiring technical and practical skills applicable throughout firms, thereby being more versatile and competent to handle multiple functions. Small and medium enterprises face serious challenges, however, to implement these solutions.

Public employment services in many OECD countries try to act proactively and provide re-qualification programmes to both the unemployed and workers who risk losing their job. In Latvia, workers facing work-related risks of health deterioration or being unable to continue working in a profession with high emotional or physical strain can be trained in a new profession. Public employment services in Estonia offer career counselling to both workers and the unemployed. If needed, a career-information specialist helps find the relevant information to develop the career. In Norway, labour market policies contain a wide range of general measures targeting employees with health-related challenges. This includes various programmes for skills development and other measures to get or keep work. People with health-related challenges are the largest group participating in labour market programmes in Norway. Unemployment benefits complement the activation measures to smooth job transitions, in particular when acquiring new skills requires some time commitment that is hard to reconcile with working.

The transition from one career to another is never easy but it is often feasible, in particular when supported by good policies (Bimrose and Brown, 2010[62]). For example, ballet dancers in Australia, Switzerland and the United Kingdom are not covered by special pension provisions, and many of them successfully pursue alternative careers, be they related (e.g. as choreographers) or unrelated to dancing (Jeffri and Throsby, 2006[63]). Nonetheless, retraining comes with significant challenges. About half of former dancers in all three countries indicated that they had to make significant use of their own funds to finance their further retraining. Many countries systematically offer career reorientation for soldiers, including Czechia, Korea and the United States (Binková, 2018[64]).[28] Evaluation of reorientation programmes for soldiers in the United States show that such programmes improve employment outcomes compared to those not covered by such policies (Chief Evaluation Office, 2023[65]). Reskilling policies played an important role in absorbing labour market consequences that older workers faced during the phasing out of some economic activities like coal mining in Germany, Poland, and the United Kingdom; and fisheries in Canada (White, 2003[66]; Pollin, 2023[67]).

Disability insurance and rehabilitation

Social or occupational insurance provides benefits to workers in the case of disability, including when it results from hazardous or arduous work (OECD, 2022[68]). Work-related injuries and occupational diseases most often lead to higher disability benefits relative to those granted for other reasons. Many

OECD countries have special work injury insurance schemes that provide up to 100% wage compensation for work-related injuries.

Workers eligible to special pensions for hazardous or arduous jobs do not often qualify for disability benefits and in particular for work-related disability benefits. While pension schemes for hazardous or arduous jobs are typically accessible to all people in these jobs fulfilling the age and career requirements, eligibility to disability benefits is always based on an individual health and work-capacity assessment.[29] Moreover, eligibility to work-related disability benefits requires proof of a causal link between the illness or disability and work performed. This causal link can be difficult to prove, in particular for mental health issues and when prolonged exposure to hazardous or arduous conditions results in delayed occupational diseases. Viscusit (1984[4]) points out that some occupational illnesses have long latency periods and their symptoms do not appear until many years after the exposure to the risk.

There is a tension – magnified by the growing importance of labour shortages in some countries (OECD, 2023[69]) – between providing early retirement options for hazardous or arduous jobs and policy efforts by many OECD countries to limit the negative impact of sickness and disability on labour market participation (MacDonald, Prinz and Immervoll, 2020[70]) and to strengthen activation measures for those who receive disability benefits (OECD, 2010[71]). Related measures include providing rehabilitation and employment services to people with disabilities and to those facing disability risks, including workers in hazardous or arduous occupations. Some OECD countries, including Austria, Belgium, the Netherlands, Norway and Switzerland, have made substantial efforts to manage sickness absences in a more active way by promoting and facilitating a fast return to work, often through partial benefits and a gradual return to work (OECD, 2022[68]). In Finland, partial sickness and rehabilitation allowances support employees with reduced working capacity to return to work quickly on a part-time basis. Additionally, earnings-related pension providers organise occupational rehabilitation to people who have health issues and face problems at work because of disabilities. Rehabilitation may consist of training to a new job at the workplace or at educational institutions. Lithuania introduced vocational rehabilitation benefits and a programme for adaptation to new jobs in 2005.

Policy implications

Arduousness or hazardousness are present in many jobs and exposure to work accidents, occupational diseases and work strain differs substantially across occupations (see above section). There is convincing evidence of a causal negative impact of some working conditions on health, sometimes with some delay.

Yet, the debate on hardship of work is very difficult, both from the point of view of defining the criteria and from that of reaching an agreement between social partners. As a result, most countries find it difficult to include hardship considerations in pension schemes. Issues at stake are not limited to wear and tear at work; they extend to delayed potential effects of working conditions on health. The complexity of the subject has been compounded by the fact that attention is now focused not only on physical problems or disability, but also on the psychological problems of stress at work, which is even much more difficult to measure.

Reform trends have tightened or eliminated special old-age pension provisions

OECD countries can be classified into four groups in their treatment of pensions for hazardous or arduous jobs (see Table 2.1 in a preceding section). Pension provisions for workers in hazardous or arduous jobs differ a lot among OECD countries in terms of jobs and occupations covered. Countries define eligibility conditions to special pension provisions for hazardous or arduous jobs based on either occupational titles or measurable characteristics of jobs (e.g. lifting heavy weights, extreme temperatures, chemical risks, night shifts), which may apply to any occupation. Some countries mix these approaches and provide both a list of occupations, often in the public sector only, and a list of criteria related to job tasks.

Following reforms of pension systems over recent decades, special pension schemes covering workers in hazardous or arduous jobs have been reduced in scope. General reform trends have contributed to increasing employment at older ages and to unifying pension rules across occupations and sectors. Over the last three decades, as a response to longevity improvements, statutory retirement ages have been raised, including through linking them to life expectancy, and early retirement options have been reduced (Whitehouse et al., 2009[72]; Boulhol, Lis and Queisser, 2023[73]). Many OECD countries, e.g. in Finland and Poland, have largely unified pension rules applying in particular to civil servants and the self-employed to improve risk-sharing and provide a fairer treatment of all workers (OECD, 2016[74]; OECD, 2019[75]). Unified rules becoming the default solution for the whole pension system make it harder to justify separate pension rules for workers in hazardous or arduous jobs.

The incapacity to work until minimum retirement ages for all workers does not justify granting special old-age pension provisions for hazardous or arduous work. From a work perspective, pension systems play a key role in shaping social norms about what is old age and what is working age. In modern societies and labour markets, individuals are not identified by one function or occupation. A career for life in one occupation or one job tends to be a thing of the past. Being unable to continue working in the same occupation only in the second part of a career – while being a serious issue that needs to be tackled by the adequate policies discussed above – does not and should not imply permanently retiring from the labour market.

There have been serious issues of mistargeting the special pension schemes for hazardous or arduous jobs by including jobs in which hardship is questionable. Evidence from Estonia, Hungary and Slovenia shows that: jobs of many workers covered by these schemes were not more hazardous or arduous compared to other jobs; workers did not experience higher mortality; and, many of them continued to work while getting their early pension benefits. Additionally, the selection of some jobs looks very ad hoc, as for example workers performing the same jobs in the public sector being covered while those in the private sector being excluded. In Poland, special pension provisions for teachers aimed to improve attractiveness and boost employment without creating an immediate cost to public finance. In France, ballet dancers from the Paris Opera were granted the right to retire at age 40 in the 17th century, which has been increased to 42 years in 2010.

Many OECD countries have phased out or tightened access to pension provisions for hazardous or arduous jobs. One standard argument put forward for their initial design has become particularly obsolete over time. This refers to allowing to retire very early based on the sole reason of not being able to continue the career in some specific job. Finland, Ireland, Lithuania and Luxembourg eliminated the special provisions for most occupations in the 1990s. When introducing systemic pension reforms, Chile and Poland adjusted pension provisions for hazardous or arduous jobs, while Latvia kept these provisions largely untouched. In Sweden, the public pension system has been universal for more than 100 years and there are no specific entitlements for workers who may, in other countries, be considered as having hazardous or arduous jobs. In some countries, however, e.g. in Austria, Finland, France and Italy, early retirement options for workers in hazardous or arduous jobs may have been introduced to mitigate the impact of tightening general pension eligibility conditions and to replace past occupation- or sector-specific rules. While in Estonia and Norway reforms limiting early retirement provisions for workers in hazardous or arduous jobs are underway.

Over the last two decades, some countries, including Finland and France, have improved the design of pension schemes covering hazardous or arduous jobs to better address actual risks. These innovations link eligibility to some actual job characteristics that are considered hazardous or arduous rather than based on occupational groups, thereby limiting mistargeting, ensuring the transferability of pension entitlements across occupations, and reducing retirement age by two years at most. While Finland started to phase out many occupation-specific early retirement provisions in the 1990s, it introduced in 2017 the so-called years-of-service pension which allows two years before other workers (currently 65 and increasing) based on arduous job characteristics, assessed individually. In 2010 France introduced

individual accounts in which workers accrue points for periods worked in jobs having strictly described arduous characteristics. These points can be used for three purposes: training (to facilitate moving into less arduous job), reduction in working hours or early retirement by up to two years. As it is difficult to prove the health and mortality impact of specific work characteristics with robustness, whether to cover a specific condition is strongly influenced by what is perceived as fair. Hence, the scope of the schemes, in terms of selected job characteristics is not uncontroversial.

Should jobs with negative health effects be covered by special pension rules?

While special pension rules seem to be a natural response to deal with the negative impacts of hazardous or arduous working conditions on health, other considerations must be brought into the debate. The most obvious situation justifying special pension rules for hazardous or arduous work seems to arise when there is robust evidence that job characteristics lower life expectancy. This case is extreme but keeping it in mind helps illustrate more general related questions at stake, which will be discussed below. First, authorising jobs with such dire consequences should be limited to those that are absolutely necessary despite being inherently associated with high risks. For example, many countries have reduced as much as possible the exposure of jobs to asbestos. For those that must be authorised, trying to prevent and mitigate these difficult working conditions is the first line of defence. Second, if despite these efforts, these jobs still raise mortality rates, it is critical to inform potential workers of the induced risks. Third, for those well-informed who take the risks, one question to consider is how special pension provisions modify compensation and whether they in the end improve welfare. Early retirement options increase the attractiveness of hazardous or arduous jobs, which otherwise would need to pay higher wages. The wage mechanism is likely not to work well in markets where alternative job opportunities are scarce and bargaining power of workers is low as well as in the public sector. However, these limitations in wage responses should be addressed where they arise, i.e. in the labour market, rather than being inefficiently addressed through pension provisions. Beyond health, the negative impacts of hazardous or arduous working conditions on the well-being of workers who feel tired and uncomfortable at work could be addressed by other measures than pension provisions, including through proper technologies, collective agreements and management decisions.

One main question is therefore whether the serious issues raised by hazardous or arduous jobs should be dealt with by old-age pension systems. It is argued in this chapter that measures which can provide the most efficient response (first-best policies) should primarily combine: first, health and safety regulations to limit the risks; second, informing about the remaining risks; third, lifelong learning; and, fourth, disability insurance. In general, for jobs for which working at older ages generates immediate health and safety risks (e.g. firefighters and military), there is a stronger case for special pension provisions. Still, age-management policies, including lifelong learning and reskilling, should strive as much as possible to shift the career at some point and prepare for this in order to maintain individuals in employment until the minimum retirement age for all workers. Moreover, as delayed health impacts of some job characteristics (e.g. physical strain, noise or uncommon working-time patterns) are typically not covered by disability insurance, some special pension provisions can complement disability insurance. The objective is to compensate workers in these jobs for the potential long-term consequences, which occurrence should be backed by solid evidence, through well-targeted early retirement options. For example, there is some robust evidence (Dutheil et al., 2020[76]; Wang et al., 2014[77]) showing that working at nights has a long-lasting negative health effects, and monitoring this working condition generates little administrative burden for employers; this condition is recognised by special pension provisions in Austria and France, among others. Given the difficulties to prove the long-term impact of specific working conditions on health, limiting special pension provisions only to areas for which solid evidence exists creates the risk of unfair treatment of some workers. Yet, providing too broad a coverage also raises equity issues because some workers then unduly benefit from the scheme.

The above policies help prevent, mitigate and compensate the effect of hazardous or arduous working conditions. They can create a framework of measures that is largely outside the scope of pension policies.

When a proper framework is in place to protect workers in hazardous or arduous jobs, this implies that pension measures such as linking retirement ages to life expectancy to deal with population ageing are largely orthogonal to those tackling the issues raised by hardship of work.

In countries where this good framework is not in place, the priority should be to develop it. Setting up effective lifelong learning policies in particular can have broader positive consequences, e.g. to help adjust to the future of work. What to do in the meantime is not obvious. On the one hand, some special pension rules for jobs assessed as hazardous or arduous based on solid evidence could be maintained as long as the framework is not sufficiently developed. On the other hand, as often when similar policy questions arise, maintaining the special rules might defer indefinitely this framework implementation by limiting its need. Similar considerations apply to limited incentives to improve working conditions when some forms of compensation for workers in harmful jobs are maintained.

Policy priorities to address those issues are outside the realm of pensions

Hazardousness or arduousness of jobs thus raise first and foremost an issue for labour market policies. That is, the policy priority should be, when possible, to improve working conditions for such jobs. Long-term exposure to related risk factors, such as physical strain, noise or uncommon working-time patterns, is likely to generate some delayed negative health consequences. Improving working conditions can be achieved through health and safety regulations to limit exposure to risky factors as well as by encouraging or incentivising social partners to take measures to limit hardship and health risks.

Communicating about the risks – backed by evidence – involved in working in hazardous or arduous jobs is essential for two reasons. First, information must be conveyed as a moral imperative to ensure that workers accept the jobs in full knowledge of the facts. Second, informing about the risks helps workers weigh different job opportunities and ask to be compensated for the risks to be taken, which in turn contributes to internalising the negative impact of those jobs, mainly by raising their cost and therefore the price of related goods and services. Likewise, effective communication could be used by employers to limit either hardship or the related activities. However, some workers may effectively have limited choice and take hazardous or arduous jobs without being duly compensated. Even in this case, it is not obvious that this issue should be dealt with by pension systems. Instead, policy efforts should focus on overcoming the labour market limitations that prevent the compensation mechanism from working.

Even if health and safety regulations are fully efficient, some jobs are likely to impair workers' health. Reskilling and upskilling aim to enable workers to remain productive and adapt to new job tasks, boosting employment prospects, albeit performing different tasks or moving to a different job, in the same or at different firm or institution. A professional-training and guidance framework has therefore to be put in place by governments and social partners to allow workers in hazardous or arduous jobs to make the needed extra effort into acquiring new skills, such that they can prolong their careers in different jobs. Not being able to continue working in one specific job should not be dealt with by early retirement. Special pensions for hazardous or arduous work cannot be in the long term an antidote for strong limitations in labour market policies.

The permanent withdrawal from the labour market in countries where special pension schemes exist, sometimes at very early ages, is an inefficient solution to address the decline in the ability to perform some specific tasks at older ages. Indeed, people in this case can most often successfully perform other jobs. In some countries, ballet dancers are covered by special pension provisions (but not sport professionals) which represents an extreme case in this context. While it may indeed be difficult to redesign careers in the middle of life or at advanced ages, many workers face similar challenges given changing labour markets. Active labour market and educational policies should facilitate career transitions.

Early retirement options for workers in hazardous or arduous jobs may indeed not be consistent with the activation priority set in labour market policies, especially at older ages, to deal with ageing challenges. In

2015, the OECD Council on Ageing and Employment Policies made three Recommendations that focus on strengthening incentives for workers to build up longer careers and continue working at older ages through, among others, restricting the use of publicly funded early retirement schemes and enhancing participation in training by workers throughout their working lives (OECD, 2015[78]). The Recommendations recognise the need to enhance job quality for workers at all ages in terms of strengthening workplace safety and physical and mental health as well as reducing the incidence of hazardous or arduous work. If too broadly defined, early retirement provisions for hazardous or arduous work provide obvious disincentives to continue working for people who can actually work (OECD, 2015[78]). Occupation-specific pension provisions can also reduce job mobility if changing jobs results in losing some pension entitlements. Furthermore, special pension provisions, when publicly financed, lower the incentives by firms to reduce the incidence of hazardous or arduous work.

Developing lifelong learning and reskilling programmes is an ongoing effort in most OECD countries. There are successful examples of such policies. Finland's skill development system is one of the most successful in the OECD (OECD, 2020[79]). Labour market training encompasses a range of tools such as vocational short courses; standard initial, further or specialist vocational qualifications; vocational qualification modules; and, entrepreneurship training. Public employment services purchase training, which is free for individual, from education providers and companies. Austria introduced a co-ordinated programme to enable adults to obtain basic competences and educational qualifications free of charge (OECD, 2020[80]) in 2012. Between 2012 and 2017 approximately 50 000 individuals participated in the measure. The Netherlands introduced several policies to help older (50+) unemployed back to work between 2013 and 2017. Training-related measures in this plan include the introduction of mandatory free-of-charge job-search training, and the introduction of training vouchers.

When job-related risks materialise at working age and impair workers' health, long-term sickness benefits and disability insurance may help deal with the consequences until the retirement age. While they increasingly aim at activating people with disabilities, disability benefits typically compensate for both work- and non-work-related disability based on the individual assessment of the capacity loss. However, they do not compensate for the health impacts that may become fully visible only after having retired. Eligibility to higher benefits provided by disability or injury insurance, requires establishing a causal link between work and the loss of work capacity. Even when existing, these causal links are often difficult to prove, in particular when prolonged exposure to hazardous or arduous conditions result in delayed diseases.

Even if some special pension rules benefiting certain professions are no longer justified, eliminating them should be done carefully. This chapter argues that most of the issues raised by hazardous or arduous jobs should be primarily addressed by a set of policies that are beyond the realm of pensions. This set includes regulations and prevention measures, communication of the health-related risks, lifelong learning and disability insurance. Eliminating special old-age pension provisions covering workers in hazardous or arduous jobs should be decided if the policy framework enables in particular these workers to develop employment prospects in other jobs as they age during their career.

Moreover, in some countries historically, these special pension rules were granted as a way to boost the attractiveness of some occupations, and by allowing policy makers or countries to defer the cost of these schemes in the medium to long term. This means that removing these special provisions may be done through so-called grandfathering, applying the new rules to new employees only, or by applying longer transition periods than with other parametric reforms. Avoiding the loss of attractiveness of these jobs requires to offer other, more efficient forms of compensation, higher wages in particular. In the private sector, this is likely to happen over time as a result of market forces. In the public sector, the wage adjustment requires policy action and policy makers should be ready to face the short- and medium-term cost for public finance of improving wage conditions.

How pensions for workers in hazardous or arduous jobs are financed has therefore important economic and social consequences. Except in the case where pensions are effectively claimed for shorter periods

due to lower life expectancy caused by poor working conditions, early retirement or higher benefits generate costs for public finance. Publicly financing special pension provisions for hazardous or arduous private-sector jobs is likely to lower wages, and thereby, labour costs leading to higher demand for harmful work, and in the end more public spending. In some jobs or occupations, potentially including the police and the military, it may be fair that these extra costs are shared broadly, but in other cases individual firms may need to at least partly finance special pension provisions, if only to provide them with financial incentives to improve working conditions.

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White, M. (2003), "Retraining Programs for Displaced Workers in the Post-Industrial Era: An exploration of government policies and programs in Canada and England", *Compare: A Journal of Comparative and International Education*, Vol. 33/4, pp. 497-506, https://doi.org/10.1080/0305792032000127784. [66]

Zaidi, A. and E. Whitehouse (2009), "Should Pension Systems Recognise "Hazardous and Arduous Work"?", *OECD Social, Employment and Migration Working Papers*, No. 91, OECD Publishing, Paris, https://doi.org/10.1787/221835736557. [1]

Notes

[1] Theoretically, Pestieau and Racionero (2015[81]) develop a framework in which differentiating retirement age by occupation might be superior to individually-assessed disability pensions when health verification is expensive and imprecise, and occupations differ substantially in terms of disability and health.

[2] Mittlaender (2023[54]) summarises existing evidence and concludes that research has found positive wage premiums for shift work, work with contact to pollution, unsafe and dangerous work, work involving risks of fatal accidents. Also, reviewing the extensive evidence that wages may compensate harmful job characteristics, Ravesteijn, Kippersluis and Doorslaer (2017[21]) conclude that the assumption that all arduousness and hazardousness are fully compensated through wages lacks robustness.

[3] The study is entitled *Sustainability of the state pension system*.

[4] Based on an internal analysis of mortality data by the Hungarian State Treasury.

[5] www.kimdps.si/sites/default/files/analiza_in_model_rangiranja_koncno_splet.pdf.

[6] Based on country responses to the questionnaire sent for Pensions at a Glance 2023.

[7] www.ilo.org/moscow/areas-of-work/occupational-safety-and-health/WCMS_249278/lang--en/index.htm.

[8] www.ilo.org/moscow/areas-of-work/occupational-safety-and-health/WCMS_249278/lang--en/index.htm.

[9] www.iwh.on.ca/newsletters/at-work/105/emerging-evidence-points-to-negative-health-effects-of-physical-work-demands.

[10] There is an additional difficulty due to unobservable heterogeneity and selection bias (Defebvre, 2017[17]).

[11] The results are based on Continuous Working Life Sample (CWLS), which is an administrative dataset including information from the Spanish Social Security system.

[12] www.cnracl.retraites.fr/actif/ma-future-retraite/departs-anticipes/depart-anticipe-pour-categorie-active; www.cor-retraites.fr/sites/default/files/2023-03/Doc_15_SG_Catégories actives_fonction publique.pdf.

[13] For comparison, Natali, Spasova and Vanhercke (2016[48]) summarise that the number of workers covered by special provisions in the European Union member countries is between 1% and 4% while it is between 5% and 8% among pensioners.

[14] Only 44% and 67% of all women and men, respectively, retiring in August 2023 have met this 20-year condition.

[15] These ages apply to both men and women in most countries, and only to men in Austria, Chile, Colombia Poland and Türkiye where retirement ages for women in all occupations are lower.

[16] www.oecd.org/els/public-pensions/OECD-Policy-Brief-Future-Pensioners-2019.pdf.

[17] www.editions-legislatives.fr/actualite/comment-fonctionne-le-nouveau-c2p-compte-professionnel-de-prevention/.

[18] www.editions-tissot.fr/actualite/sante-securite/penibilite-feu-le-c3p-vive-le-c2p-compte-professionnel-de-prevention.

[19] www.leggioggi.it/lavori-usuranti-2023-elenco/.

[20] www.ssa.gov/policy/docs/progdesc/intl_update/2020-01/index.html#denmark.

[21] www.aero-news.net/index.cfm?do=main.textpost&id=484c27c5-c198-4534-b55e-1b9c9fcb3f15.

[22] www.reuters.com/business/aerospace-defense/us-airline-pilots-fight-their-unions-increase-retirement-age-2023-08-22/.

[23] *Organismo Administrador de la Ley.*

[24] It also provides an online industry-specific tool to help firms improve working environment website. https://enbradagpajobb.no.

[25] https://visionzero.lu/en/.

[26] It has several programmes that facilitate access to employment: apprenticeships, for training in industry-specific skills, and programmes to support those with a more uncertain path to employment.

[27] www.etf-europe.org/wp-content/uploads/2018/09/Arduous-Occupations-and-the-European-Pensions-Debate_EN.pdf (page 38).

[28] www.vnet.go.kr/VnetIndex.do.

[29] Disability benefits also do not compensate for health impacts that only become visible after having retired.

3 Design of pension systems

The five indicators in this section look in detail at the design of retirement income systems in OECD countries and other major economies. The first indicator sets out the taxonomy of the different kinds of retirement-income programmes found around the world. It uses this framework to describe the architecture of the pension systems of OECD and G20 countries.
The next four indicators set out the parameters and rules of the pension systems. The second indicator covers first-tier schemes and shows the values and coverage of basic, targeted and minimum contributory pensions. The third indicator looks at the mandatory earnings-related pension systems showing how benefits are determined in these schemes and the range of earnings that are covered. The fourth and fifth indicators present, respectively, the current and the future retirement ages by pension scheme for an individual entering the labour market at age 22 and working a full, uninterrupted career.

Architecture of national pension systems

Key results

Retirement-income regimes are diverse and often involve a number of different programmes. The taxonomy of pensions used here consists of two mandatory "tiers"; the first generates retirement income independent of past earnings level with the second covering earnings-related components. Voluntary provision, be it personal or employer-provided, comprises the third tier.

Figure 3.1 is based on the role of each part of the system. The first tier comprises programmes offering the first layer of social protection in old age, and for which past earnings are irrelevant in the calculation of retirement income. Such schemes often target some minimum standard of living in retirement. Mandatory earnings-related components (second tier) contribute to smoothing consumption, and therefore standards of living, between working life and retirement. *Pensions at a Glance* focuses mainly on these mandatory components, although information is also provided on some widespread voluntary private schemes (third tier, see Chapter 4).

Table 3.1 shows the architecture of pension systems in OECD countries based on the rules that determine eligibility and benefit level while categorising mandatory earnings-related pensions as public or private in accordance with national accounts. Panel A describes the latest legislation applying to future retirees while Panel B shows where those rules have changed compared to current retirees.

Basic pensions can take two different forms: a residence-based benefit or a benefit that is only available to those who contributed during their career (i.e. contribution-based). The level of the benefit may vary with the number of residence or contribution years but is independent of earnings levels during the career. Eight OECD countries have a residence-based basic pension for future retirees while Norway is replacing it with a targeted scheme that involves a means test. Nine OECD countries feature a contribution-based basic pension.

Eligibility for ***targeted*** plans requires meeting some residence criteria. In these plans, the value of the benefit depends on income from other sources and possibly also assets. Hence, poorer pensioners receive higher benefits than better-off retirees. All countries have general safety nets of this type but only those countries are marked in which full-career workers with very low earnings (30% of average) would be entitled. This holds for eight OECD countries, both currently and in the future.

Minimum contributory pensions can refer to either the minimum of a specific contributory scheme, or to all schemes combined and are currently found in 18 OECD countries, with Chile and Italy phasing it out for future retirees. In most countries, the value of entitlements only takes account of pensions rather than testing for other income. Minimum contributory pensions either define a minimum for total lifetime entitlements, which may increase in level once the length of the contribution period exceeds certain thresholds, or they are based on minimum pension credits that calculate year-by-year entitlements of low earners based on a higher earnings level.

There are three kinds of ***second-tier pension*** schemes, defined benefit, points or defined contribution. For future retirees, public pay-as-you-go schemes follow a general ***defined benefit*** (DB) format in 20 OECD countries, with pension's dependent on the number of years of contributions, accrual rates and individual pensionable earnings. In another eight countries, DB schemes apply to current retirees but have been or will be closed to new workers (Table 3.1 Panel B). Private occupational DB schemes are currently mandatory or quasi-mandatory in two OECD countries – Switzerland and the Netherlands, respectively – however, in the Netherlands, they are being replaced by defined contribution (DC) pensions from 2028 at the latest.

There are ***points*** schemes in five OECD countries: French occupational plans managed by social partners under public supervision and the Estonian, German, Lithuanian and Slovak public schemes. Workers earn pension points based on their earnings. At retirement, the sum pension points is multiplied by the pension-point value to convert them into a regular pension payment.

Defined contribution schemes can follow one of two paths, either being funded or notional. ***Funded defined contribution*** (FDC) plans are compulsory for future retirees in 14 OECD countries. In these schemes, contributions flow into an individual account. The accumulation of contributions and investment returns is usually converted into a monthly pension at retirement. Five of these countries, Denmark, Iceland, the Netherlands, Sweden and the United Kingdom, also have quasi-mandatory, occupational FDC schemes in addition to either compulsory earnings-related public plans or basic pensions.

The ***notional defined contribution*** (NDC) schemes are at the core of the pension system in five OECD countries (Italy, Latvia, Norway, Poland and Sweden). In addition, the smaller supplementary component of the pension system in Greece is also NDC for current retirees but will be funded defined contribution (FDC) for future retirees. These are pay-as-you-go public schemes with individual accounts that apply a notional rate of return to contributions made, mimicking FDC plans. The accounts are "notional" in that the balances exist only on the books of the managing institution. At retirement, the accumulated notional capital is converted into a monthly pension using a formula based on life expectancy or mortality rates.

Only Ireland and New Zealand in the OECD do not have second-tier pensions.

Further reading

OECD (2019), "Will future pensioners work for longer and retire on less?", *Policy brief on pensions*, OECD, Paris, https://www.oecd.org/pensions/public-pensions/OECD-Policy-Brief-Future-Pensioners-2019.pdf.

Figure 3.1. Taxonomy: Different types of retirement-income provision

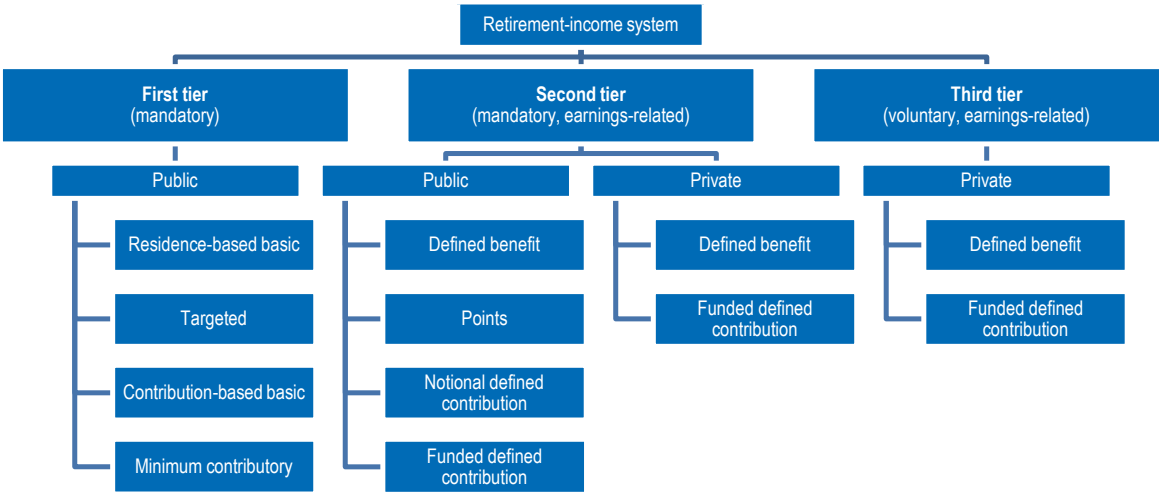


Table 3.1. Structure of retirement-income provision through mandatory schemes

	First tier				Second tier			First tier				Second tier	
	Residence-based		Contribution-based					Residence-based		Contribution-based			
	Basic	Targeted	Basic	Minimum contributory	Public	Private		Basic	Targeted	Basic	Minimum contributory	Public	Private
Panel A. Latest legislation (applying to future retirees entering the labour market in 2022 at age 22)													
Australia		✓				FDC	Luxembourg			✓	✓	DB	
Austria				✓	DB		Mexico	✓			✓		FDC
Belgium				✓	DB		Netherlands	✓					FDC [q]
Canada	✓	✓			DB		New Zealand	✓					
Chile		✓				FDC	Norway		✓			NDC	FDC
Colombia				✓	DB	FDC	Poland				✓	NDC	
Costa Rica					DB	FDC	Portugal				✓	DB	
Czechia			✓	✓	DB		Slovak Republic				✓	Points	
Denmark	✓	✓			FDC	FDC [q]	Slovenia				✓	DB	
Estonia			✓		Points		Spain				✓	DB	
Finland		✓			DB		Sweden		✓			NDC + FDC	FDC [q]
France				✓	DB + Points		Switzerland				✓	DB	DB
Germany					Points		Türkiye				✓	DB	
Greece	✓				DB + FDC		United Kingdom			✓			FDC [q]
Hungary				✓	DB		United States					DB	
Iceland	✓	✓				FDC [q]							
Ireland			✓				Argentina			✓	✓	DB	
Israel	✓		✓			FDC	Brazil				✓	DB	
Italy					NDC		China				✓	NDC + FDC	
Japan			✓		DB		India				✓	DB + FDC	
Korea		✓	✓		DB		Indonesia				✓	DB + FDC	
Latvia				✓	NDC + FDC		Saudi Arabia				✓	DB	
Lithuania			✓		Points		South Africa		✓				
Panel B. Current legislation where different from Panel A (applying to new retirees in 2022)*													
Chile		✓		✓	DB	FDC	Mexico				✓	DB	
Estonia			✓		DB / Points	FDC	Netherlands	✓					DB
Greece	✓				DB + NDC		Norway	✓	✓			DB	FDC
Italy				✓	DB + NDC		United Kingdom			✓		DB	

Note: A tick for the column "Targeted" is only shown if a full-career worker at 30% of the average wage is eligible. [q] = Quasi-mandatory scheme based on collective agreements with very high coverage rate, see Chapter 8. DB = defined benefit, FDC = funded defined contribution, NDC = notional defined contribution. In Canada, the basic pension (OAS) is income-tested but only through the tax system ("claw back"). The contribution-based basic pension in Israel is a 2% top-up (total maximum 50%) on the residence-based basic pension for each contribution year beyond 10 years. In the Netherlands workers entering in 2022 would normally be in a quasi-mandatory private DB scheme, but these will all be converted to FDC by 2028 (Chapter 1). In Mexico, the government pays a transfer to the individual private FDC account of a contributing employee every month. In Switzerland, the government sets the contribution rate, the minimum rate of return or/and the annuity rate at which the accumulation is converted into a pension for mandatory occupational plans. These schemes are therefore implicitly defined benefit.

Source: See "Country Profiles" available at http://oe.cd/pag.

StatLink https://stat.link/ojsvfc

Basic, targeted and minimum contributory pensions

Key results

Residence-based basic pensions exist in nine OECD countries and are, on average, worth 21% of the gross average wage. All OECD countries provide targeted benefits for their residents to ensure at least some income. On average in the OECD, people without a contributory record could receive 16% of gross average earnings from targeted schemes, subject to a means test, and 21% when including residence-based basic pensions. For the nine OECD countries with contribution-based basic pensions the full benefit equals 15% of the gross average wage on average. Half of OECD countries provide a minimum pension benefit within their contributory scheme, with the full minimum contributory benefit level averaging 25% of average earnings for these countries.

There are four main ways in which OECD countries might provide retirement incomes to meet a minimum standard of living in old age (Table 3.2). The left-hand columns of the table for each country show the value of benefits provided under these different types of schemes. Values are presented in relative terms – as a percentage of countries' gross average wages – to facilitate comparisons between countries (see the "Average wage" indicator in Chapter 7). The right-hand columns show the number of total recipients as a share of the population aged 65 and over.

Benefit level

Benefit values are shown for a single person. In some cases – in particular for minimum contributory pensions – each partner in a couple can receive an individual entitlement. In other cases – especially for targeted schemes – the household is treated as the unit of assessment and generally receives less than twice the entitlement of a single person.

Most countries have multiple programmes within the first tier, which complicates the analysis of effective benefit levels. In some cases, benefits under these schemes are additive. In others, there is a degree of substitution between them. All OECD countries provide targeted benefits that are subject to means tests, but in Australia, Finland, Germany and the United States these are the only first-tier schemes in place. However, Germany recently introduced a new supplemental pension to the points scheme, which will provide additional contributory benefits to low earners with careers of at least 33 years.

Figure 3.2 summarises the level of non-contributory residence-based benefits. Residence-based basic pensions are present in nine countries with an average benefit of 21% of the gross average wage and a maximum of 40% in New Zealand. Norway is phasing it out, with a full elimination in 2030. Those eligible to the residence-based basic pensions in Greece, the Netherlands and New Zealand cannot receive targeted benefits on top. In Canada, Denmark and Iceland, residence-based basic pensions do not reduce the targeted benefit. On average amongst all OECD countries, 16% of gross average earnings can be received from targeted schemes subject to means tests, but this increases to 21%, on average, if the residence-based basic pensions, of the nine countries, are also included.

As for the contributory components of first-tier pensions, one-third of OECD countries has neither contribution-based basic nor minimum contributory pensions (Figure 3.3). Nine OECD countries provide contribution-based basic pensions, which lie on average at 15% of average earnings for the full benefit for these nine countries, or 3% when averaged across all countries. They range from 5% of average earnings in Israel to 26% in Ireland. In half of OECD countries, low contributory pensions are topped up to a higher minimum pension level, up to 25% of average earnings, on average, among countries with minimum contributory pensions (13% across all 38 countries). These minimum pensions vary between a low of about 5% of the average wage in Hungary and 11-12% in Czechia and Latvia to a high of about 35-36% in Belgium and Spain and even 63% in Colombia where the minimum contributory pension is set at the minimum wage.

Coverage

The importance of first-tier benefits varies enormously across OECD countries. The percentage of over-65s receiving such benefits is shown in the final four columns for each country in Table 3.2. Different approaches of reporting the number of recipients, for example in case of benefits paid to couples or even households, may blur the data comparability across countries to some extent.

Naturally, residence-based basic pensions have on average the highest coverage. However, contribution-based basic pensions also have very high recipient numbers in most countries that have such a scheme. Sometimes recipient numbers exceed 100% of the population aged 65 and older hinting to recipients being younger than 65 or living abroad.

The incidence of receiving a minimum contributory pension is very diverse across countries, being received by 44% of the over-65s in Portugal, 34% in France and 31% in Belgium while it is only around 5% in Poland and the Slovak Republic and 2% or under in Hungary and Slovenia.

The range in targeted schemes is similarly big, with in particular Australia, Chile, Denmark and Korea showing high recipient numbers of more than 50% for those aged 65 or older, but in many cases the value of benefit received may be quite small due to withdrawal rules.

Table 3.2. Current level and recipients of first-tier benefits

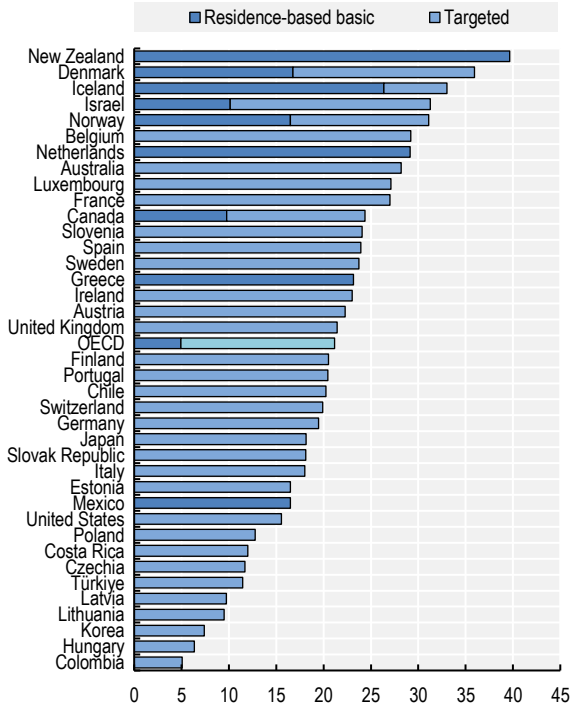
	Benefit value in 2022 (% of gross AW earnings)				Recipients in 2022 (% of population aged 65 and over)					Benefit value in 2022 (% of gross AW earnings)				Recipients in 2022 (% of population aged 65 and over)			
	Residence-based basic	Targeted	Contribution-based basic	Minimum contributory	Residence-based basic	Targeted	Contribution-based basic	Minimum contributory		Residence-based basic	Targeted	Contribution-based basic	Minimum contributory	Residence-based basic	Targeted	Contribution-based basic	Minimum contributory
Australia		28.2				58			Luxembourg		27.1	10.5	33.9			106	
Austria		22.3		27.4		0.7		11	Mexico	16.5			28.2	99			
Belgium		29.2		34.5		4.6		31	Netherlands	29.1				101			
Canada	9.8	14.6			95	31			New Zealand	39.7				103			
Chile		20.2		18.0		76			Norway	16.5	31.1			102	19		
Colombia		5.1		63.5		33		27	Poland		12.8		22.0		3		5
Costa Rica		12.0		18.3		22		24	Portugal		20.4		23.0		6		44
Czechia		11.7	9.9	11.9		3	109		Slovak Republic		18.1		25.8		0.1		13
Denmark	16.8	19.2			87	72			Slovenia		24.1		33.6		5.2		2
Estonia		16.5	16.5			1	107		Spain		23.9		35.6		5		15
Finland		20.5				32			Sweden		23.7				47		
France		27.0		21.4		4		34	Switzerland		19.8		14.6		12		1
Germany		19.5				4			Türkiye		11.5		33.5		10		
Greece	23.1								United Kingdom		21.4	21.7			11	97	
Hungary		6.4		5.9		0.4		1	United States		15.6				13		
Iceland	26.4	6.7			75												
Ireland		23.0	26.2			13	64		Argentina		46.9	26.8	58.7		5	106	49
Israel	10.2	21.1	5.1		95				Brazil		45.1		48.9				
Italy		18.0		20.2		0.6		15	China				..				
Japan		18.2	15.1			3	92		India				5.9				
Korea		7.4	12.5			71	57		Indonesia				11.8				
Latvia		9.7		10.7					Saudi Arabia				30.1				
Lithuania		9.5	14.8			3	107		South Africa		8.0						

Note:. = Data are not available. The benefit level shown is for new pensioners in 2022. The contribution-based basic amounts refer to the benefit level for a full career. People in Greece, the Netherlands and New Zealand cannot receive a targeted benefit on top of a full residence-based basic pension. Average wage can be found in Table 7.5, which may differ significantly from country estimates, thereby affecting the above percentages.
Source: Information provided by countries and OECD calculations.

StatLink https://stat.link/g9xtac

Figure 3.2. Non-contributory first-tier benefits

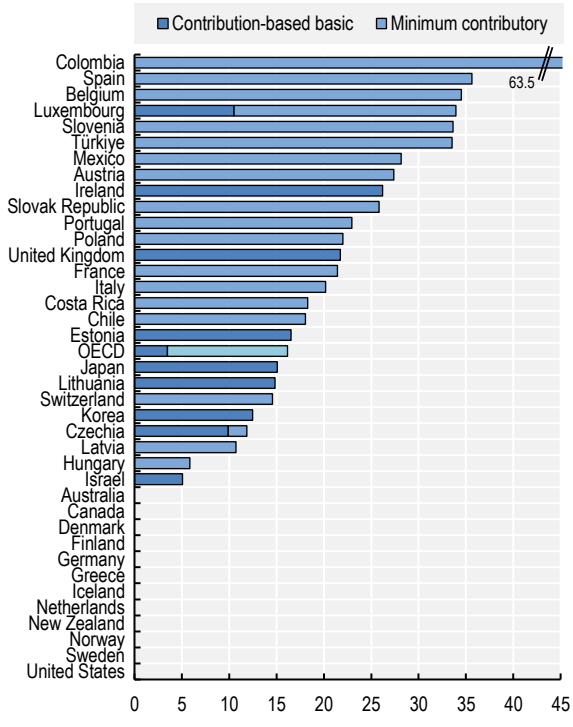
Percentage of gross average earnings, 2022



StatLink https://stat.link/5zbugi

Figure 3.3. Contributory first-tier benefits

Percentage of gross average earnings, 2022



StatLink https://stat.link/hzne82

Eligibility and indexation for first-tier benefits

Key results

On average 34 years of contributions are needed for a full contribution-based basic pension, with 13 years contributions to be entitled to any benefit. Six countries currently require 10 years to be eligible for such a benefit, while Czechia requires 35 years for eligibility, which is also the same level for the full benefit. Minimum contributory pensions on average require 29 years for a full benefit. Partial benefits are available in France and Switzerland when any payment has been made to the pension system, with at least 15 years required in other OECD countries.

Contribution-based basic pensions

The full rates of first-tier pensions are described in the previous indicator, but these levels are only applicable after full eligibility. In most countries with such systems, partial eligibility is achieved after much shorter careers. For example, whilst full entitlement to the contribution-based basic pension is achieved after 40 years in Canada, Japan and Luxembourg, only 10 years of contribution are required for eligibility for a reduced benefit (Figure 3.4). On average across the OECD countries that have contribution-based basic pensions 34 years are required for a full pension and 13 years for initial eligibility. In Czechia 35 years are required for eligibility, with Argentina at 30 years and no other OECD or G20 country requiring more than 15 years. Residence-based basic pensions also have proportionally reduced benefits in many countries but the default assumption for the analysis in this report is full residence irrespective of career breaks.

Minimum contributory pensions

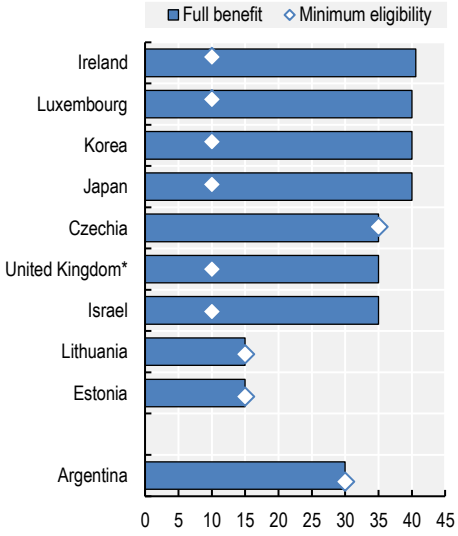
Likewise for minimum contributory pensions there are different eligibility rules across countries. Minimum contributory pensions are much more widespread than contribution-based basic pensions and more commonly have only one monetary value irrespective of the eligible contribution period, with fewer than half of countries applying higher rates for longer careers of contribution. On average 19 years of contribution are required for eligibility to a minimum contributory pension, with 29 years required on average for the full pension. In France and Switzerland, only one period of contribution is required for a minimum contributory pension, whilst over 40 years are required for the full benefit. In the Slovak Republic, the minimum contributory pension is achieved after 30 years, with no explicit maximum duration. Full pensions are achieved with 25 years of contributions or fewer in Chile, Colombia, Costa Rica, Hungary, Italy, Mexico, Poland, Slovenia, Spain and Türkiye.

Indexation

Once eligible for a basic, targeted or minimum contributory pension, how they are indexed in payment is one key factor to be effective in the fight against old-age poverty. With current high inflation levels in many countries how and when these benefits are indexed has become more important with many countries having additional discretionary adjustments in the last couple of years (see Chapter 1). If benefits are indexed to wages, as is the case for the basic and safety-net benefits in Denmark, for example, then they will hold their value relative to average wages throughout the retirement period, decreasing future poverty risks and maintaining the relative standard of living of the retiree. However, indexing first-tier benefits to wage growth is rare across OECD countries (Table 3.3). Price indexation is a much more common approach, which means that during normal times of positive real-wage growth, fuelled by productivity gains, the relative value of the benefit tends to decline over time. Beyond benefits already in payment, price indexation also reduces future eligibility thresholds for targeted benefits relative to wages, which is likely to reduce the number of individuals or households that will be initially eligible.

Figure 3.4. Number of years required for partial and full contribution-based basic pensions

Number of years required for initial eligibility and for full contribution-based basic pensions

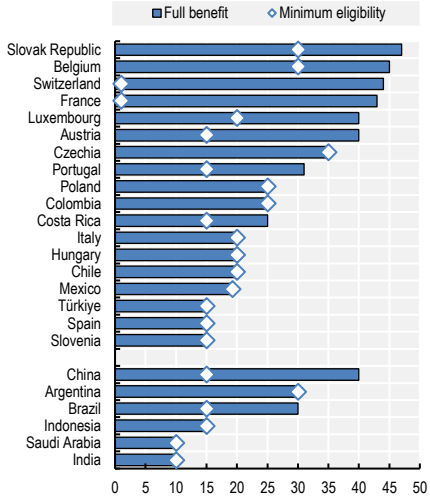


Note: *Subject to transitional rules for current retirees, based on a person's National Insurance record.
Source: See "Country Profiles" available at http://oe.cd/pag.

StatLink https://stat.link/w604kq

Figure 3.5. Number of years required for partial and full minimum contributory pensions

Number of years required for initial eligibility and for full minimum contributory pensions



Note: In the Slovak Republic, the full benefit of 47 years recorded in the chart, reflects the full career case from age 22, as there is no explicit maximum duration. Those retiring in 2022 in France only need 41.75 years of contributions for the full benefit.
Source: See "Country Profiles" available at http://oe.cd/pag.

StatLink https://stat.link/0mftzp

Table 3.3. Indexation of first-tier benefits

	Basic	Minimum contributory	Safety net		Basic	Minimum contributory	Safety net
Australia			Highest of two price indexes, benchmarked to wages	Japan	Wages until age 67, then prices		Cost of living and wages
Austria		Prices	Discretionary	Korea	Prices		Prices
Belgium		Prices	Prices	Latvia		50%-80% wages/ 50% prices	50%-80% wages/ 50% prices
Canada	Prices (R)		Prices	Lithuania	Wb (C)		Prices
Chile		Prices	Prices	Luxembourg	Cost of living and annually consider wages (C)	Cost of living and annually consider wages	Cost of living and annually consider wages
Colombia		Wages		Mexico	Prices (R)	Prices	
Costa Rica		Wages	Wages	Netherlands	Legal net minimum wage (R)		Legal net minimum wage
Czechia	Wages (C)	Wages/none	Discretionary	New Zealand	Prices and periodically net average wage (R)		Prices and periodically net average wage
Denmark	Wages (R)		Wages	Norway	50% wages/ 50% prices (R)		50% wages/ 50% prices
Estonia	80% wages/20% prices (C)		80% wages/20% prices	Poland		Prices + 20% wages	Prices
Finland			Prices	Portugal		GDP and consumer price index without housing	Prices
France		Prices	Prices	Slovak Republic		Prices	Prices
Germany			70% prices/ 30% wages	Slovenia		60% wages/40% prices	Prices
Greece	Prices (R)		Prices	Spain		Prices	Prices
Hungary		Prices	Prices	Sweden			Prices
Iceland	Whatever is higher: wages or cost of living (R)		Whatever is higher: wages or cost of living	Switzerland		50% wages/50% prices	50% wages/50% prices
Ireland	Discretionary (C)		Discretionary	Türkiye		Prices	Prices
Israel	Prices (R/C)		Prices	United Kingdom	Whatever is highest: prices, wages or 2.5% (C)		Whatever is higher: prices, wages or 2.5%
Italy		Prices	Prices	United States			Prices

Note: (C) refers to contribution-based basic and (R) refers to residence-based basic.
Source: See "Country Profiles" available at http://oe.cd/pag.

Mandatory earnings-related pensions

Key results

The second tier of the OECD's taxonomy of retirement-income provision comprises mandatory or quasi-mandatory earnings-related pensions, covering defined benefit, points and defined contribution schemes. Key parameters and rules of these schemes determine the future value of entitlements.

Generic earnings-related schemes are of three different types governed by different rules of benefit calculation. **Defined benefit** (DB) schemes typically specify an accrual rate, expressed as a percentage of individual pensionable earnings, at which benefit entitlements build up for each year of coverage. The higher the contribution rate the higher the accrual rate that can be sustained. Defined benefit schemes can be funded or pay-as-you-go or a combination of both over their lifetime. In **points** schemes, the pension benefit is equal to the number of points accumulated during the career multiplied by the point value. Points schemes that currently exist in OECD countries are all pay-as-you-go. **Defined contribution** (DC) schemes are individual account-based schemes that accumulate contributions during the working career to finance retirement. When the accounts accumulate capital in the form of financial assets, these schemes are classified as **funded defined contribution (FDC)** whilst if schemes are based on notional accumulated capital, then they are referred to as **notional defined contribution (NDC)** schemes. In both cases for the modelling of a replacement rate in Chapter 4 an annuity divisor is applied to transform financial assets (real or notional) into monthly pensions. Table 3.4 presents future parameters and rules for benefit calculation that will apply to people who enter the labour market in 2022, according to the latest legislation.

Within PAYG DB schemes, ***accrual rates*** of at least 2% apply in Colombia, Portugal, Spain and Türkiye. Japan and Korea credit the lowest rates of about 0.5%. In half of DB schemes, the accrual rate is the same irrespective of career length or earnings level. However, in Czechia, Portugal, the United States and for the public scheme in Switzerland, entitlements vary with earnings levels, granting higher accrual rates to lower earners. Accrual rates increase with a longer contribution history in Greece and Luxembourg while in Hungary, Slovenia and Spain accruals are higher for the first years of coverage. Moreover, in the Swiss occupational plan accrual rates increase with age as do contribution rates. In some countries, total accrual rates are limited by an earnings ceiling or by a maximum number of years that generate accruals.

Pensionable earnings measures used to calculate benefits differ by country. Nearly all OECD countries use the entire career earnings, with Portugal and the United States coming close by using the best 40 and 35 years, respectively. Only the main scheme in France and public pensions in Colombia, Costa Rica, Slovenia and Spain will still be based on a comparatively small fraction of career earnings; the best 25, final 10, final 25, best 24 and final 25, respectively, but Spain will increase to best 27 of the final 29 years of earnings from 2044.

All schemes apply a ***valorisation rate*** to past earnings to take account of changes in "living standards" between the time pension rights accrued and the time they are claimed. The most used rate is the growth of average earnings. However, Belgium, Colombia, Costa Rica, Spain and the main scheme in France only revalue past earnings with price inflation, thereby leading to a negative impact of real-wage growth on replacement rates and making the finances of the system more sensitive to real-wage growth (OECD, 2019). Also, Finland, Portugal and the United States revalue earlier years' earnings with a mix of price and wage inflation, and in Estonia and Türkiye it is a mix of prices and, respectively, wage bill and GDP growth.

For DC plans the cumulative growth of the contributions is determined by the rates of return. It is based on financial market returns in FDC schemes and on notional interest rates in NDC schemes. The latter are equal to the rate of GDP growth in Italy, wage bill growth in Latvia and a mix of the two in Poland. Norway and Sweden apply earnings growth. One key parameter for DC plans is the ***contribution rate*** paid into individual accounts.

Most countries set a limit on the earnings used to calculate pension benefits. Pension schemes in nine countries do not have a ceiling. The highest ceilings apply in the occupational scheme in Colombia, France, and the Slovak Republic, at over 6 times average earnings. The lowest at 0.65 to 0.8 times are in Canada, Israel and Switzerland, with France at 0.99 for the public scheme.

Indexation refers to the growth of pensions in payment, i.e. during retirement. Price indexation is most common. However, eight countries uprate benefits with a mix of price inflation and wage growth, and four countries combine price inflation and GDP or wage bill growth. Sweden indexes pensions based on wage growth minus 1.6%.

The ***effective accrual rate*** measures the rate at which benefit entitlements are effectively built for each year of coverage. It thus depends on modelling assumptions and is closely connected to the replacement rates shown in Chapter 4. For DB schemes, it equals the nominal accrual rate after adjusting for all the elements that apply to pensionable earnings i.e. thresholds, valorisation of past earnings, sustainability factors. In FDC and NDC schemes the effective accrual rate the replacement rate, which depends on contribution rates, rates of return and annuity factors, divided by the number of years of contribution.

Based on current legislation, at the average-wage level, the highest future effective annual accrual rates of 1.9% are in Colombia and Spain with Austria, Italy, Luxembourg, Portugal and Türkiye also above 1.5%. The lowest rates, below 0.2%, are in the points scheme in Lithuania and the FDC schemes of Norway and Sweden, reflecting low contribution rates.

Futher reading

OECD (2019), *OECD Reviews of Pension Systems: Portugal,* OECD Reviews of Pension Systems, OECD Publishing, Paris, https://doi.org/10.1787/9789264313736-en.

Table 3.4. Future parameters and rules of mandatory earnings-related pensions, latest legislation

At the normal retirement age for a full-career worker who entered the labour market at age 22 in 2022

	Type of scheme	DB schemes	DB, points or NDC schemes			FDC or NDC schemes	Ceiling for pensionable earnings (multiple of average earnings)	Effective accrual rate of a male full-career average earner (% of earnings)
		Nominal accrual rate (% of individual pensionable earnings)	Earnings measure	Valorisation rate	Indexation rate	Total contribution rate (%)		
Australia	FDC					12.0	2.54	0.58
Austria	DB	1.78	L	w	p		1.51	1.72
Belgium	DB	1.33	L	p	p		1.35	0.94
Canada	DB	0.83	L	w	p [c]		0.79	0.72
Chile	FDC					10.0	2.99	0.59
Colombia	DB or FDC	2 [w]	F10	p	p	11.5	14.19	1.87
Costa Rica	DB / FDC	1.2 [w]	F25	p	p	4.25	None	1.27 / 0.23
Czechia	DB	0.87 [w]	L	w	50%w + 100%p		3.04	0.87
Denmark	FDC (Occ.)					12.0	None	0.83
Estonia	Points		L	w	80%wb + 20%p		None	0.30
Finland	DB	1.50	L	80%w + 20%p	20%w + 80%p		None	1.24
France	DB / points	1.16	B25 / L	p / w	p / p		0.99 / 7.92	0.98 / 0.36
Germany	Points		L	w	w – x		1.54	0.97
Greece	DB / DC	1.14 [y]	L	p, w	50%p+50%g / p	6.0	4.66 / 4.66	1.14 / 0.39
Hungary	DB	1.22 [y]	L	w	p		None	1.22
Iceland	FDC (Occ.)					15.5	None	0.96
Ireland	None							
Israel	FDC					12.5	0.85	0.63
Italy	NDC		L	g	p	33.0	3.10	1.55
Japan	DB	0.55	L	w	p or w [a]		2.39	0.50
Korea	DB	0.44	L	w	p		1.33	0.44
Latvia	NDC / FDC		L	wb	p + 50%-80%wb	14.0 / 6.0	4.66 / none	0.58 / 0.39
Lithuania	Points		L	w	wb		4.84	0.18
Luxembourg	DB	1.57 [y]	L	w	p, w [c]		1.94	1.57
Mexico	FDC					15.0	3.33	0.94
Netherlands	FDC (Occ.)					18.6	None	0.95
New Zealand	None							
Norway	NDC / FDC		L	w	average (p,w)	18.1 / 2.0	1.17 / 1.98	0.87 / 0.12
Poland	NDC		L	p, wb, g	p, w [c]	19.5	2.44	0.68
Portugal	DB	2.3 [w]	B40	min(25%w+75%p,p +0.5%)	p, d		None	1.61
Slovak Republic	Points		L	w	p		6.56	1.17
Slovenia	DB	1.03 [y]	B24	w, d	60%w + 40%p		3.26	1.03
Spain	DB	2.7 [y]	F25	p	p		1.39	1.87
Sweden	NDC / FDC / FDC (occ.)		L	w	w – 1.6% [c]	14.9 / 2.3 / 4.5 [w]	1.16 / 1.16 / none	0.8 / 0.16 / 0.28
Switzerland	DB / DB (occ.)	0.63 [w] / 0.69 [a]	L / L	f / r	50%w+50%p / 0%		0.65 / 0.65	0.49 / 0.44
Türkiye	DB	2.00	L	p + 30%g	p		4.24	1.64
United Kingdom	FDC					8.0	1.13	0.45
United States	DB	1.23 [w]	B35	w or p	p		2.27	0.87

Note: Empty cells indicate that the parameter is not relevant. [a] = varies with age, B = number of best years, [c] = valorisation/indexation conditional on financial sustainability, d = discretionary, F = number of final years, f = fixed-rate valorisation, [f/m] = varies by gender, g = with growth of gross domestic product, L = lifetime average, p = with price inflation, r = with financial market return, w = with growth of average earnings, wb = with growth of wage bill, [w] = varies with earnings, [y] = varies with years of service. Denmark: contribution rate reported is typical rate for quasi-mandatory occupational plans. ATP pension only enters the last column. Germany: x depends on changes in both sustainability and contribution factor. More precisely, x is positive if the ratio of contributors to pensioners drops or/and if the contribution rate rises. Greece: Past earnings are uprated by CPI until 2024 and wages thereafter. Italy: indexation is to price inflation for low pensions and to 75% of price inflation for high pensions. Japan: indexation is to earnings growth until age 67 and to price inflation after age 68. Latvia: Proportion of wage bill increases to 60%, 70% or 80% if career is at least 30, 40 or 45 years, respectively. Luxembourg: indexation is to price inflation plus a share of real earnings growth, depending on the financial situation of the pension scheme. Poland: indexation is to price inflation + at least 20% of real average earnings growth in the previous year. Portugal: indexation is higher relative to prices for low pensions and vice versa. Indexation rises with higher GDP growth. Sweden: the contribution rate is 2.5% in the mandatory personal FDC plan up to the ceiling for the public scheme. For quasi-mandatory occupational plans the contribution rates are 4.5% on a lower slice of earnings and 30% on an upper slice with no ceiling. Switzerland: in the public scheme, ceiling applies to average earnings measure at retirement rather than annual earnings in the contribution years. United States: valorisation with earnings growth to age 60, no adjustment from 60 to 62, valorisation with price inflation from 62 to 67. Accrual rates applied to average earnings measure at retirement. In some countries accrual stops after a certain number of contribution years or when a certain total accrual rate is reached. This is the case in Belgium (45 years), Canada (40 years), Portugal (40 years), Spain (100%), Türkiye (90%) and the United States (35 years). In other countries a maximum pension or a late retirement age may stop accrual too.

Source: See "Country Profiles" available at http://oe.cd/pag.

StatLink https://stat.link/b4rhvw

Current retirement ages

Key results

The rules for eligibility to retire and withdraw a pension benefit are complex and often reflect conflicting objectives. This is all mirrored in the different criteria for pension benefit withdrawal in different schemes. The 2022 average normal retirement age across OECD countries for an individual with a full career and who entered the labour market at age 22 was equal to 63.6 years for women and 64.4 years for men. Türkiye is an outlier with a normal retirement age of 49 and 52 for women and men, respectively. Except for Türkiye, the lowest ages are 57 for women in Colombia and 62 for men in Colombia, Luxembourg and Slovenia. Denmark, Iceland, Norway and, for men only, Israel have the highest normal retirement age of 67. Nine OECD countries have a lower normal retirement age for women than for men with the largest gender difference of 5 years in Austria, Colombia, Israel and Poland.

In many OECD countries, rules differ across pension components. The normal retirement age (NRA) is the eligibility age to pensions without penalty in all schemes combined after a full career from age 22. Where retirement ages differ across schemes the maximum across schemes thus defines the NRA of the country.

Table 3.5 shows the rules for both normal and early retirement for mandatory pension schemes. In some schemes, a pension can be claimed earlier than the normal retirement age, from the "early" retirement age onwards, implying benefit penalties.

Early age

The early retirement age is the first age at which a pension can be claimed (Table 3.5). It is generally not possible to retire before the standard statutory age within residence-based basic pensions or for safety-net benefits.

Most DB and points schemes specify an early retirement age, commonly between two and five years below the normal statutory retirement age. Only in Austria (for women), Colombia, Costa Rica, Hungary (men), Türkiye and the United Kingdom do DB schemes currently not include an early-retirement option, with Costa Rica recently eliminating it for men (Chapter 1). Elsewhere, the future benefit is in general not only lower because of the reduced contribution period, but it also has a further reduction for each year that the pension is taken early. Belgium and Luxembourg do not apply a penalty.

In a few countries early-retirement ages depend on the length of past contributions. Early retirement age is based on having made a given number of years of contributions in Austria (40 years), Germany (35), Greece (40) and Luxembourg (40), while in Belgium, Estonia and Italy there are variable early retirement ages based on some variable numbers of years of contribution. For example, in Estonia, early retirement is possible one year early with 20 years of contribution, increasing to five years with 40 years of contribution.

It is possible to retire at a very early age in a few countries for individuals who started their full career from an early age, as shown in the "early start" column in Table 3.5. For example, retirement is possible without penalty at age 60 with 44 years of contributions in Belgium or at age 57 with 40 years of contributions in Luxembourg. Whilst there are penalties within the earnings-related schemes in the other countries listed in the "early start" column they do not apply for the early start cases, meaning there is no sustainability factor in Portugal if there are 46 years of contribution by age 60.

For the earnings-related schemes, there are a number of different rules that influence the pensionable age. For example, in the FDC schemes of Chile, Colombia and Mexico and the DB scheme in the Slovak Republic, early retirement requires that the pension entitlements exceed a floor. In the Slovak Republic, this is only possible within two years of the statutory retirement age while no age conditions apply in the others.

Normal retirement age

The OECD defines the NRA in a given country as the age of eligibility of all schemes combined without penalty, based on a full career from age 22. Women in Chile, for example, are eligible for the FDC component at age 60 but they are not eligible to the targeted pension before age 65. The latter is therefore recorded as their NRA in 2022.

In 2022, the OECD average NRA was equal to 64.4 years for men and 63.6 years for women. It ranges from 49 for women and 52 for men in Türkiye to 67 in Denmark, Iceland, Norway and, for men only, Israel. The statutory retirement age in Italy is 67 but if the career length and retirement age combined sum to at least 102 years then retirement is possible without penalty, from age 64. Pension schemes in nine countries still have lower NRA for women (Figure 3.6). The largest gender difference of 5 years are in Austria, Colombia, Israel and Poland – the gap is also 5 years for the DC scheme in Chile but because women as men are only eligible to the targeted scheme at age 65 it is assumed that this difference does not translate in any gender gap for the NRA (Figure 3.6).

In most countries entry age has a limited impact on retirement age and, if career entry had been at age 20 rather than 22 for retirement in 2022, only six countries would have a different NRA (Figure 3.6). In Luxembourg and Slovenia as well as in Hungary for women, 40 years are needed for a full pension, hence the NRAs would all be 60. In Germany retirement is possible at 65 with 45 years of contributions which is possible with entry at age 20 but not at 22. In Portugal the retirement age is reduced by four months for every year of contribution beyond 40 years at age 60.

Table 3.5. Current early and normal retirement ages by type of pension scheme

For an individual retiring in 2022 after an uninterrupted career from age 22 except for early starters

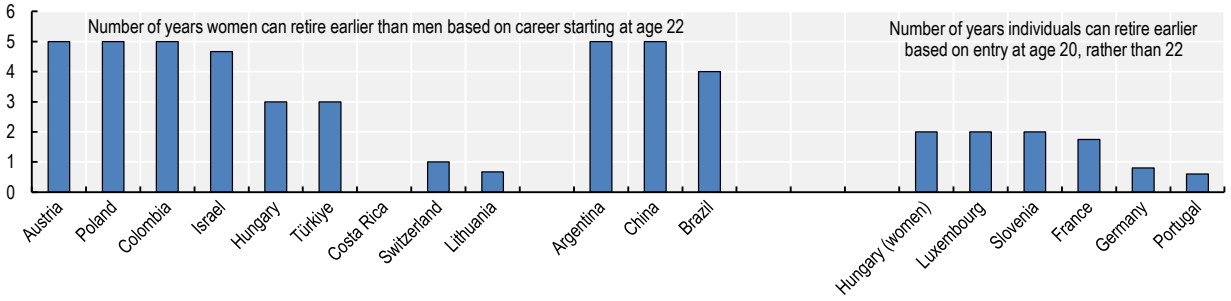
		Scheme	Early	Normal	Early start			Scheme	Early	Normal	Early start
Australia		T	n.a.	66.5		Israel (cont)	women	FDC	62	..	
		FDC	55	..		Italy		NDC + DB	64	64	<59***
Austria	men	DB, Min	62	65		Japan		Basic, DB	60	65	
	women	DB, Min	n.a.	60		Korea		Basic, DB	57	62	
Belgium		DB	64*	65	60	Latvia		NDC, Min, FDC	62.3	64.3	
		Min	n.a.	65		Lithuania	men	Basic, points	59.3	64.3	
Canada		Basic, T	n.a.	65			women	Basic, points	58.7	63.7	
		DB	60	65		Luxembourg		Basic, DB, Min	62	62	57
Chile		Min, T	n.a.	65		Mexico		Min	60	65	
	men	FDC	any age & SL	65				Basic	n.a.	65	
	women	FDC	any age & SL	60				DB	60	..	
Colombia	men	DB, Min	n.a.	62				FDC	60 or SL	..	
	men	FDC	any age & SL	62		Netherlands		Basic	n.a.	66.6	
	women	DB, Min	n.a.	57				DB (Occ)	sector-specific	..	
	women	FDC	any age & SL	57		New Zealand		Basic	n.a.	65	
Costa Rica	men	DB, FDC	n.a.	62		Norway		Basic, T	n.a.	67	
	women	DB, FDC	n.a.	60				DB	62	67	
Czechia		Basic, DB, Min	60.8	63.8				FDC	62		
Denmark		Basic, T	n.a.	67	64	Poland	men	NDC, Min	n.a.	65	
		FDC (ATP)	67	..			women	NDC, Min	n.a.	60	
		FDC (Occ)	64	..		Portugal		DB	62	65.6	60
Estonia		Basic, points	61.3	64.3				Min	n.a.	65.6	
		FDC	62	..		Slovak Republic		Points, Min	60.8 & SL	62.8****	
Finland		DB, T	64	65		Slovenia	men	DB, Min	60	62	58
France		DB, Min	62	63.8	58		women	DB, Min	60	62	57
		Points	55	64.8		Spain		DB, Min	64.2	65	
Germany		Points	63	65.8	**	Sweden		Basic, T	n.a.	65	
		T	n.a.	65.8				DB / NDC, FDC	62	..	
Greece		Basic, DB, NDC	62	62				FDC (Occ)	55	65	
Hungary	men	DB, Min	n.a.	65		Switzerland	men	DB, Min	63	65	
	women	DB, Min	62	62			women	DB, Min	62	64	
Iceland		Basic, T	n.a.	67			men	DB (Occ)	58	65	
		FDC (Occ)	65	67			women	DB (Occ)	58	64	
Ireland		Basic	n.a.	66		Türkiye	men	DB, Min	n.a.	52	
Israel	men	Basic	n.a.	67			women	DB, Min	n.a.	49	
	women	Basic	n.a.	62		United Kingdom		Basic, DB	n.a.	66	
	men	FDC	67	..		United States		DB	62	66	

Note: n.a. = early retirement or deferral of pension is not available; Occ = occupational, Min = minimum pension, SL = subsistence level reached, T = targeted,. = no normal retirement age indicated as benefits automatically adjusted to the age of retirement in an actuarially neutral way. * Early retirement is possible at age 63 with 42 years, 61 with 43 years and 60 with 44 years. ** An early starter can retire at age 64 without penalty with 45 years of contribution. *** It is possible to retire in Italy at any age with 41 years of contribution provided 12 months of contribution were made before age 19. **** For women with children the retirement age is reduced dependent on the number of children. Normal and early retirement ages for a scheme describe the ages at which the receipt of a pension, respectively, with and without penalties is first possible, assuming labour market entry at age 22 and an uninterrupted career. Credits for educational periods are not included.
Source: OECD based on information provided by countries; see "Country Profiles" available at http://oe.cd/pag.

StatLink https://stat.link/q1lofr

Figure 3.6. Difference in the normal retirement age by gender and for earlier career start

For an individual retiring in 2022 after an uninterrupted career



Note: The retirement age difference for women is based on labour market entry at age 22. There is a five-year gender gap for the DC scheme in Chile but because women are only eligible to the targeted scheme at age 65, whilst the age for all components is 65 for men, it is assumed that this difference does not translate in any gender gap for the normal retirement age. Only countries with a difference for either gender or entry age are shown. For all others see Table 3.5.
Source: OECD based on information provided by countries; see "Country Profiles" available at http://oe.cd/pag.

StatLink https://stat.link/7r4vqf

Future retirement ages

Key results

Future normal and early retirement ages will continue to rise. Assuming labour market entry at age 22 in 2022 the normal retirement age will increase to 66.3 for men and 65.8 for women on average across all OECD countries against 64.4 and 63.6 years, respectively, for retirement in 2022.

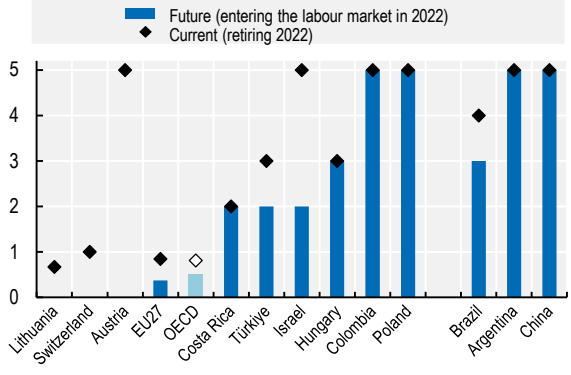
Normal retirement age

Across countries, the average normal retirement age for a man with a full career from age 22 is 66.3 years (hence around 2066) based on current legislation for men entering the labour market in 2022 against 64.4 for those retiring in 2022 (Figure 3.8). Meanwhile, the remaining life expectancy of men at age 65 is projected to increase on average from 18.0 to 22.9 years (see Chapter 6). So, the average legislated increase in men's normal retirement ages accounts for about 40% of the average projected increase in old-age life expectancy.

The normal retirement age of men will increase in 20 out of 38 OECD countries. The highest increase is projected for Türkiye, from 52 currently to 65 years for men and from 49 to 63 for women. Assuming that legislated life-expectancy links are applied, the retirement age will increase substantially also in Denmark, from 67 to 74 years, and Estonia, from 64.3 to 71 years. This is also true for Italy where the retirement age will increase from 64 in 2022 (as mentioned earlier, the retirement age in 2022 is temporarily lowered from 67 years) to 71 years for the modelled cohort. Likewise in Finland, Greece, the Netherlands, Portugal, the Slovak Republic and Sweden future pension ages are also being linked to increases in life expectancy with increases of between 2.5 and 6 years expected over the next 50 years. The lowest future retirement age for men equals 62 in Colombia, Luxembourg and Slovenia.

Figure 3.7. Gender gap in current and future normal retirement ages

Based on a full career from labour market entry at age 22



Note: See the StatLink.
Source: OECD based on information provided by countries.

StatLink https://stat.link/b04nhr

Among the nine OECD countries with gender differences in the normal retirement age in 2022, gender gaps will have been phased out everywhere in the OECD for the generation entering the labour market in 2022, except in Colombia, Costa Rica, Hungary, Israel, Poland and Türkiye (Figure 3.7). In Türkiye, it will be phased out for those entering in 2028.

Table 3.6 shows the rules for early, normal and late retirement by pension scheme for a person entering the labour force at age 22 in 2022.

Early retirement

Ignoring schemes with careers starting at a very early age, the early retirement age averages 62.2 years across the OECD, just over two years below the normal retirement age of 64.4 years (Figure 3.9). It will increase to 64.0 years, widening the gap with the average the normal retirement age of 66.4 years. Over half of OECD countries will not see any change in the early retirement age for those entering the labour market in 2022 compared to those retiring in 2022.

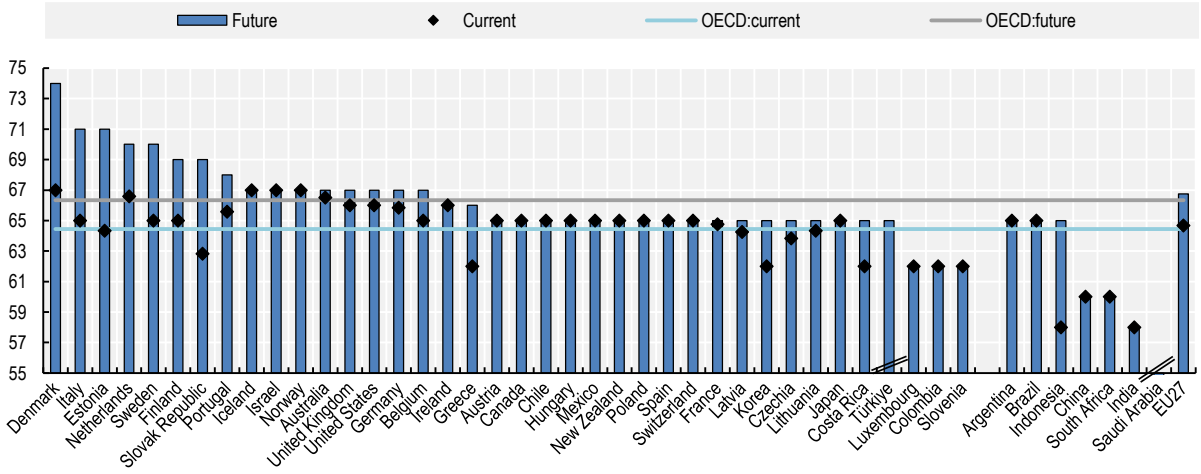
Figure 3.9 also shows the earlier retirement ages that are possible for those that have a full career from an early age. These long-career schemes are not a common practice but still exist in seven countries, Belgium, Denmark, France, Italy, Luxembourg, Portugal and Slovenia. It is possible to retire at age 57 in Luxembourg and at age 58 in France and Slovenia though in France contributions would have had to start before age 15. In Italy one can retire at age 59 with 41 years of contributions, whilst in Portugal it is possible at age 60 with contributions having started at age 14. For Denmark retirement is possible at age 64 if at least 44 years of labour market attachment has been achieved before age 61.

Late retirement

DB, FDC and points schemes usually compensate the shorter expected retirement spell by bonuses which tend to be higher than the penalties for early retirement, with a maximum rate of about 12% per year in case of a 10-year deferral in the basic/targeted scheme of Denmark and in some exceptional cases for a one-year deferral in the Portuguese DB scheme. Belgium, Colombia, France in the mandatory occupational scheme, Greece and Luxembourg, deviate by not paying an additional deferral bonus in DB or points schemes. Many basic, minimum and targeted schemes do not pay a bonus either. Late retirement ages, maximum accrual rates and maximum pensions stop the accrual of pension rights in some countries (see note of Table 3.4).

Figure 3.8. Current and future normal retirement ages for a man with a full career from age 22

Current and future refer to retiring 2022 and entering the labour market in 2022, respectively

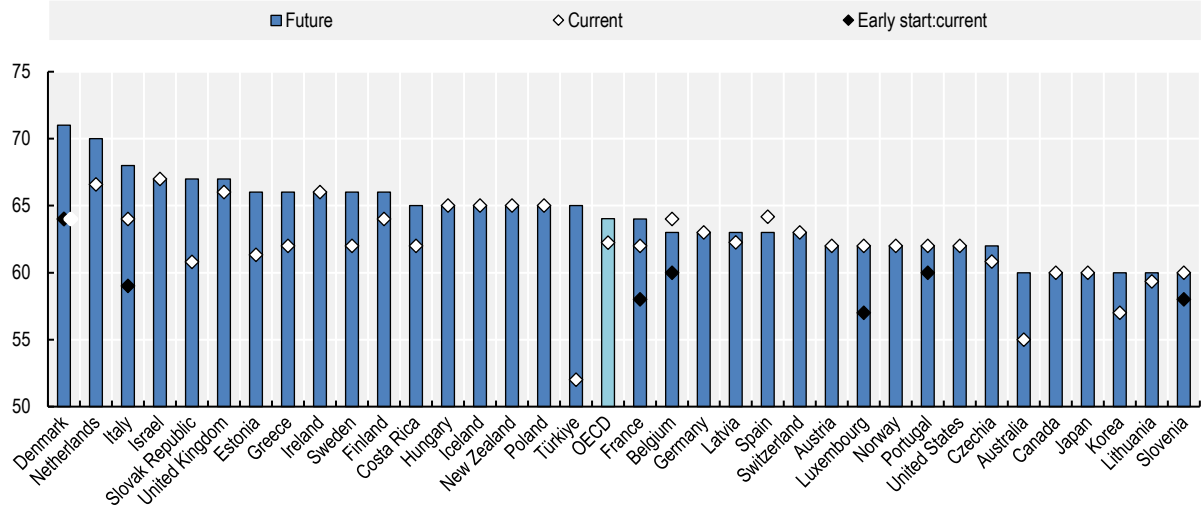


Note: NRA: current and NRA: future refer to retiring in 2022 and entering the labour market in 2022, respectively. Earliest: current and Earliest: future are not based on a set entry age. For better visibility, the scale of this chart excludes the lowest observed values of 52 for current normal and current earliest in Türkiye. Credits for educational periods are not included.
Source: OECD based on information provided by countries; see "Country Profiles" available at http://oe.cd/pag.

StatLink https://stat.link/f9zejl

Figure 3.9. Current and future early retirement ages for a man with a full career from age 22

Current and future refer to retiring in 2022 and entering the labour market in 2022, respectively



Note: See Table 3.5 and Table 3.6. Chile, Colombia and Mexico are not included as early retirement is possible at any age subject to reaching a minimum benefit level. Early start case involves the career starting well before age 22.
Source: OECD based on information provided by countries; see "Country Profiles" available at http://oe.cd/pag.

StatLink https://stat.link/5bqet2

Table 3.6. Future ages, penalties and bonuses for early, normal and late retirement by type of pension scheme

For an individual with an uninterrupted career after entering the labour market at age 22 in 2022

		Scheme	Early age	Penalty (p.a.)	Normal age	Bonus (p.a.)			Scheme	Early age	Penalty (p.a.)	Normal age	Bonus (p.a.)
Australia		T	n.a.		**67**	0.0%	Israel (cont)	(W)	Basic	n.a.		**65**	5.0%
		FDC	60	..		..		(M)	FDC	67			
Austria		DB, Min	62	5.1%	**65**	4.2%		(W)	FDC	65			
Belgium		DB	63	0.0%	**67**	0.0%	Italy		NDC	68	..	**71**	..
		Min	n.a.		67	0.0%	Japan		Basic, DB	60	4.8%	**65**	8.4%
Canada		Basic	n.a.		**65**	7.2%	Korea		Basic, DB	60	6.0%	**65**	7.2%
		T	n.a.		65	0.0%	Latvia		NDC, Min, FDC	63	..	**65**	..
		DB	60	7.2%	65	8.4%	Lithuania		Basic, Points	60	3.84%	**65**	8.0%
Chile		Min, T	n.a.		**65**	0.0%	Luxembourg		Basic, DB, Min	62	0.0%	**62**	0.0%
	(M)	FDC	any age & SL	..	65	..	Mexico		Basic	n.a.		**65**	
	(W)	FDC	any age & SL	..	60	..			Min	60		65	0.0%
Colombia	(M)	DB, Min	n.a.		**62**				FDC	60 or SL	..		..
	(M)	FDC	any age & SL		62		Netherlands		Basic	n.a.		**70**	0.0%
	(W)	DB, Min	n.a.		**57**				DB (Occ)	sector-specific	..		..
	(W)	FDC	any age & SL		57		New Zealand		Basic	n.a.		**65**	0.0%
Costa Rica	(M)	DB, FDC	n.a.		**65**	1.6%	Norway		T	n.a.		**67**	0.0%
	(W)	DB, FDC	n.a.		**63**	1.6%			NDC	62	..		..
Czechia		DB	62	6.0%	**65**	6.0%			FDC (Occ)	62	..		..
		Basic, Min	62	0.0%	65	0.0%	Poland	(M)	NDC, Min	n.a.		**65**	..
Denmark		Basic, T	n.a.		**74**	6.9-11.9% [l]		(W)	NDC, Min	n.a.		**60**	..
		FDC (ATP)	74	..		5.0%	Portugal		DB	62	6.0%	**68**	0.0-12.0% [l,w,y]
		FDC (Occ)	71	..		..			Min	n.a.		68	0.0%
Estonia		Basic, points	66.0	5.1%	**71**	5.6%	Slovak Republic		Points, Min	67 & SL	3.9-6.5%	**69**	6.0%
Finland		DB	66	4.8%	**69**	4.8%	Slovenia		DB, Min	60	3.6%	**62**	3.0%
		T	n.a.		69	4.8%	Spain		DB, Min	63	6.0% [y]	**65**	4.0% [y]
France		DB, Min	64	5.0%	**65**	5.0%	Sweden		T	n.a.		**70**	0.0%
		Points	57	4-5.7.0% [l,y]	65	0.0%			NDC, FDC	66	..		..
Germany		Points	63	3.6%	**67**	6.0%			FDC (Occ)	55	..	70	..
Greece		Basic, DB, NDC	66	6.0%	**66**	0.0%	Switzerland		DB, Min	63	6.8%	**65**	5.2-6.3% [l]
Hungary	(M)	DB, Min	n.a.		**65**	6.0%			DB (Occ)	58	2.0-3.0% [l]	65	4.0-4.4% [l]
	(W)	DB, Min	n.a.		**62**	6.0%	Türkiye	(M)	DB, Min	n.a.		**65**	0.0%
Iceland		Basic, T	n.a.		**67**	6.0%		(W)	DB, Min	n.a.		**63**	0.0%
		FDC (Occ)	65	6.6%	67	6.0%	United Kingdom		Basic	n.a.		**67**	5.8%
Ireland		Basic	n.a.		**66**	0.0%			FDC (Occ)	57		67	
Israel	(M)	Basic	n.a.		**67**	5.0%	United States		DB	62	6.7-5.0% [l]	67	8.0%

Note: (M) = men, (W) = women, [a] = depending on age, [l] = depending on length of anticipation or deferral, [y] = depending on number of contribution years, n.a. = early retirement is not available, Min = minimum pension, Occ = occupational, SL = subsistence level reached, T = targeted,. = no data indicated as benefits in DC schemes automatically adjusted to the age of retirement in an actuarially neutral way. Normal and early retirement ages for a scheme describe the ages at which the receipt of a pension, respectively, with and without penalties is first possible, assuming labour market entry at age 22 and an uninterrupted career. Where retirement ages for men and women differ they are shown separately. The reference retirement age used in the modelling has been bolded. Denmark: The bonus rate in the basic/targeted scheme is based on life expectancy at the age of first pension receipt and therefore depends on the length of deferral. Slovak Republic: For women with children the pension age is reduced dependent on the number of children. Finland: Only partial early retirement on 25% or 50% of accrued pension rights is possible from age 61. In Greece and Latvia, there are temporary penalties of early retirement until the normal retirement age of 10% and 50% of the pension respectively. *There is no bonus for postponing retirement in Luxembourg but the accrual rate is higher for each year that the sum of the individual's age and number of contribution years will exceed 100. Credits for educational periods are not included.

Source: OECD based on information provided by countries; see "Country Profiles" available at http://oe.cd/pag.

StatLink https://stat.link/gmyqhx

4 Pension entitlements for the base case

Pension entitlements are calculated using the OECD pension models. The theoretical calculations relate to workers entering the labour market at age 22 in 2022 and include the full impact of legislated pension measures. A note on the methodology used and assumptions made precedes the pension indicators.

The indicators begin with the gross pension replacement rate in mandatory pension schemes: the ratio of pensions to individual earnings. The second shows the replacement rates for mandatory and voluntary pension schemes where these schemes have broad coverage. Thereafter follows an analysis of the tax treatment of pensions and pensioners. The fourth and fifth indicators show the net replacement rates, taking account of taxes and contributions. After this follows two indicators of pension wealth: the lifetime discounted value of the flow of retirement benefits. This indicator accounts for the retirement age, indexation rules and life expectancy, and is presented in gross and net terms.

Methodology and assumptions

Introduction

The indicators of pension entitlements that follow here in Chapter 4 use the OECD cohort-based pension models. The methodology and assumptions are common to the analysis of all countries, allowing the design of pension systems to be compared directly. This enables the comparison of future entitlements under today's parameters and rules.

The pension entitlements that are presented are those that are currently legislated in OECD countries. Reforms that have been legislated before publication are included where sufficient information is available. Changes that have already been legislated and are being phased in gradually are modelled from the year that they are implemented and onwards.

The values of all pension system parameters reflect the situation in 2022 and onwards. The calculations in this chapter show the pension benefits of a worker who enters the system that year at age 22 – that worker is thus born in 2000 – and retires after a full career. Chapter 5 deals with career break cases due to childcare or unemployment, examines the sensitivity of results to changing economic assumptions or different wage profiles, and compares futures pensions of self-employed workers to the full-career employee. The baseline results are shown for single individuals. All indexation and valorisation rules follow what is legislated.

Career length

A full career is defined here as entering the labour market at age of 22 and working until the normal pension age (see indicator on "Future retirement ages"). The implication is that the modelled length of the career is country-specific and varies with the normal retirement age: 40 years for retirement at 62, 45 for retirement at 67, etc.

Coverage

The pension models presented here include all mandatory pension schemes for private-sector workers, regardless of whether they are public *(*i.e. they involve payments from government or from social security institutions, as defined in the System of National Accounts) or private. For each country, the main national scheme for private-sector employees is modelled. Schemes for civil servants, public-sector workers and special professional groups are excluded.

Schemes with near-universal coverage are also included, provided that they cover at least 85% of employees. Such plans are called "quasi-mandatory" in this report and are included for Denmark, the Netherlands, Sweden and the United Kingdom.

An increasing number of OECD countries have broad coverage of voluntary, occupational pensions, which play an important role in providing retirement incomes. For these countries, a second set of results for replacement rates is shown with entitlements from these voluntary pension plans.

Resource-tested benefits for which retired people may be eligible are also modelled. These can be means-tested, where both assets and income are taken into account, purely income-tested or withdrawn only against pension income. The calculations assume that all entitled pensioners take up these benefits. However, the only applicable asset or income included in the model is from the mandatory, and, if applicable, the voluntary pensions that have been accumulated.

Pension entitlements are compared for workers with a range of different earnings levels from 0.5 times the average worker earnings (AW).

Economic variables

The comparisons are based on a single set of economic assumptions for all the OECD countries and other major economies analysed. In practice, the level of pensions will be affected by economic growth, rates of return on financial assets, price inflation, real-wage growth and discount rates, and these will vary across countries. However, by using common economic assumptions across all countries, the results indicate the differences in pension design rather than the economic performance of a particular country. In this way, differences across countries in pension levels reflect differences in pension systems and policies alone. The baseline assumptions are set out below.

Price inflation is assumed to be 2% per year. ***Real earnings*** are assumed to grow by 1.25% per year on average (given the assumption for price inflation, this implies nominal wage growth of 3.275%). ***Individual earnings*** are assumed to grow in line with the economy-wide average. This means that the individual is assumed to remain at the same point in the earnings distribution, earning the same percentage of average earnings in every year of the working life. The ***real discount rate*** (for actuarial calculations) is assumed to be 1.5% per year, lower than 2.0% in the last edition. The net ***real rate of return*** on funded, defined contribution pensions over the long term has also been changed similarly for this edition and is now assumed to be 2.5% per year, maintaining the 100 basis points gap to discount rate. Administrative charges, fee structures and the cost of buying an annuity are assumed to result in a ***defined contribution conversion factor*** of 90% applied to the accumulated defined contribution wealth when calculating the annuity.

The baseline modelling uses country-specific projections of ***mortality rates*** from the United Nations population database for every year from 2022 to 2100. The mortality tables used include projected changes in mortality rates after the retirement age (cohort-based mortality projections).

The calculations assume that benefits from defined contribution plans are paid in the form of a price-indexed life annuity, which is calculated by applying the conversion factor to the actuarially fair price assuming perfect foresight. This is calculated from the mortality projections. Similarly, the annuity rate in notional accounts schemes is calculated from mortality data using the indexation rules and discounting assumptions employed by the respective country.

Taxes and social security contributions

Information on personal income tax and social security contributions paid by pensioners, which were used to calculate pension entitlements, are in the "Country Profiles" available at http://oe.cd/pag.

The modelling assumes that tax systems and social-security contributions remain unchanged in the future. This constant policy assumption implicitly means that "value" parameters, such as tax allowances or contribution ceilings, are adjusted annually in line with average worker earnings, while "rate" parameters, such as the personal income tax schedule and social security contribution rates, remain unchanged.

General provisions and the tax treatment of workers for 2022 can be found in the OECD's *Taxing Wages* report. The conventions used in that report, such as which payments are considered taxes, are followed here.

Gross pension replacement rates

Key results

The future gross replacement rate represents the level of pension benefits in retirement from mandatory public and private pension schemes relative to earnings when working. For workers with average earnings and a full career from age 22, the future gross replacement rate at the normal retirement age averages 50.7% for men and 50.1% for women in OECD countries, with substantial cross-country variation. Future gross replacement rates from mandatory schemes are below 30% at the average wage in Australia, Estonia, Ireland and Lithuania while they are at 70% or more in Austria, Colombia, Denmark, Greece, Italy, Luxembourg, the Netherlands, Portugal, Spain and Türkiye.

All of the replacement rates are calculated for full-career workers from the age of 22, which means that career lengths differ between countries. Denmark has an estimated long-term retirement age of 74 years for those starting in 2022, whilst in Colombia it will be 57 for women and 62 for men, and in both Luxembourg and Slovenia retirement will still be possible with a full pension at age 62 for both men and women (Table 4.1).

Full-career male workers will have a replacement rate of 50.7% on average across OECD countries, with a high of 80% or more in Greece and Spain and a low of under 30% in Australia, Estonia, Ireland and Lithuania. The average for women is slightly lower, at 50.1%. Gross pension replacement rates differ for women in eight countries, due to a lower future pension eligibility age than for men (Colombia, Hungary, Israel, Poland and Türkiye) and higher life expectancy when sex-specific mortality rates are used to compute annuities (Australia, Chile and Mexico). The replacement rates are expressed as percentage of earnings which are not gender specific. Women in Australia, Hungary and Israel will receive benefits around 7-8% lower than for men with the biggest gap being found in Poland, with replacement rates for women being 22% lower than for men (i.e. 6.4 percentage points).

Most OECD countries aim to better protect low-income workers (here defined as workers earning half of average earnings), in particular to limit old-age poverty risks, which results in higher replacement rates for them than for average earners. Low-income workers would receive gross replacement rates averaging 63.8%. Some countries, such as Australia and Ireland, pay relatively small benefits to average earners, but are closer to or even above average across the OECD for low-income workers. Australia, Czechia and Denmark record the largest difference between gross replacement rates applying to low-wage and average-wage workers, of at least 30 percentage points. However, projected replacement rates in six countries are basically the same for a full career at average and half-average pay: Austria, Finland, France, Italy, Spain, Sweden and Türkiye.

At the top of the range, based on current legislation, low earners in Denmark will receive a future gross replacement rate of 117% after a full career; retirement benefits are thus higher than their earnings when working. At the other end of the scale, Lithuania and Poland offer gross replacement rates of 30% or lower to low-income earners, thus implying a gross retirement income around 15% of average earnings after a full career.

On average, the gross replacement rate at twice average earnings (here called “high earnings”) is 42%. Replacement rates for these high earners equal 70% or more in Colombia, Greece, Italy, Portugal, Sweden and Türkiye, while at the other end of the spectrum, Canada, Estonia, Ireland, Israel, Korea, Lithuania and New Zealand offer a replacement rate below 20%.

Gross pension replacement rates fall with age from 51% of the average wage at the time of retirement on average across countries to 45% of the projected average wage at age 80, a fall of 11% relative (Figure 4.1). Given projected real-wage growth, this difference is due to the indexation of pension benefits in payment, which do not follow wages in many countries. With price indexation from a normal retirement age of 65, the fall is equal to 17% based on the OECD model assumptions – as found in Austria, Costa Rica, Hungary, Korea, Mexico, Poland and Türkiye. The earlier the normal retirement age the larger the fall with price indexation. Countries where the indexation of pension benefits follows wages have the same replacement rate at age 80 than at the normal retirement age. Australia actually shows a large increase in the replacement rate at age 80 compared to normal retirement age, because the means-tested component is not available for average-earner retirees at the retirement age as their FDC pension has a capital value over the ceiling, but as capital diminishes eligibility to the Age Pension increases.

Definition and measurement

The old-age pension replacement rate measures how effectively a pension system provides a retirement income to replace earnings, the main source of income before retirement. The gross replacement rate is shown as gross pension entitlement divided by gross pre-retirement earnings. Under the baseline assumptions, workers earn the same percentage of average-worker earnings throughout their career. Therefore, final earnings are equal to lifetime average earnings revalued in line with economy-wide earnings growth. Replacement rates expressed as a percentage of final earnings are thus identical to those expressed as a percentage of lifetime earnings.

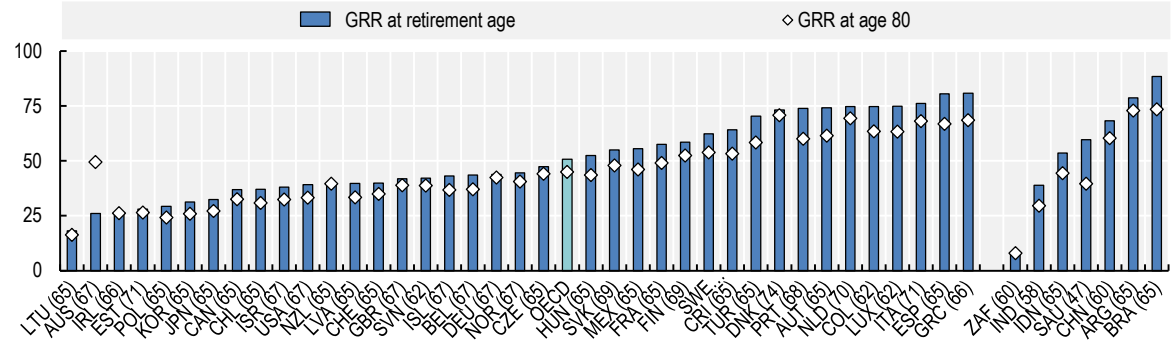
Table 4.1. Gross pension replacement rates by earnings, in percentage, mandatory schemes

	Individual earnings, multiple of mean for men (women where different)															
	Pension age		0.5		1		2			Pension age		0.5		1		2	
Australia	67		64.5	*(62.3)*	26.0	*(23.8)*	26.0	*(23.8)*	Mexico	65		73.5		55.5		45.2	*(41.5)*
Austria	65		74.1		74.1		55.9		Netherlands	70		87.3		74.7		68.4	
Belgium	67		67.7		43.5		31.4		New Zealand	65		62.9		39.7		19.8	
Canada	65		46.0		36.8		18.4		Norway	67		60.3		44.5		28.2	
Chile	65		48.8	*(46.7)*	37.1	*(34.9)*	28.7	*(27.6)*	Poland	65	*(60)*	30.3	*(29.8)*	29.3	*(22.9)*	28.7	*(22.3)*
Colombia	62	*(57)*	99.2		74.8		74.8	*(73.8)*	Portugal	68		75.7		73.9		71.3	
Costa Rica	65	*(63)*	65.3	*(62.7)*	64.1	*(61.5)*	60.4	*(57.7)*	Slovak Republic	69		65.9		54.9		48.3	
Czechia	65		78.1		47.4		32.1		Slovenia	62		62.1		42.1		41.3	
Denmark	74		116.6		73.1		53.1		Spain	65		80.4		80.4		49.6	
Estonia	71		48.6		28.1		17.8		Sweden	70		62.3		62.3		76.4	
Finland	69		58.4		58.4		58.4		Switzerland	65		52.2		39.9		20.3	
France	65		57.7		57.6		49.4		Türkiye	65	*(63)*	70.3	*(67.6)*	70.3	*(67.6)*	70.3	*(67.6)*
Germany	67		47.8		43.9		33.7		United Kingdom	67		61.8		41.9		28.3	
Greece	66		94.2		80.8		74.1		United States	67		49.4		39.1		27.8	
Hungary	65	*(62)*	54.9	*(51.5)*	52.4	*(49.0)*	51.2	*(47.8)*	**OECD**	**66.3**	**(65.8)**	**63.8**	**(63.4)**	**50.7**	**(50.1)**	**42.3**	**(41.7)**
Iceland	67		65.6		43.1		43.1										
Ireland	66		52.4		26.2		13.1		Argentina	65	*(60)*	109.5	*(103.8)*	78.7	*(75.8)*	63.3	*(61.8)*
Israel	67	*(65)*	52.6	*(49.4)*	38.0	*(35.2)*	19.0	*(17.6)*	Brazil	65	*(62)*	88.4	*(93.3)*	88.4	*(93.3)*	82.7	*(88.6)*
Italy	71		76.1		76.1		76.1		China	60	*(55)*	87.3	*(70.3)*	68.3	*(53.8)*	58.8	*(45.6)*
Japan	65		43.3		32.4		26.9		India	58		38.9	*(37.8)*	38.9	*(37.8)*	22.4	*(20.7)*
Korea	65		47.6		31.2		18.8		Indonesia	65		53.5	*(50.6)*	53.5	*(50.6)*	52.8	*(49.9)*
Latvia	65		55.0		39.8		39.8		Saudi Arabia	47		59.6		59.6		59.6	
Lithuania	65		28.9		18.2		12.9		South Africa	60		16.0		8.0		4.0	
Luxembourg	62		86.7		74.8		68.8		EU27	66.7	(66.4)	64.6	(64.3)	54.8	(54.3)	48.3	(47.9)

Note: *Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level.
Source: OECD pension models.

StatLink https://stat.link/zdi9jr

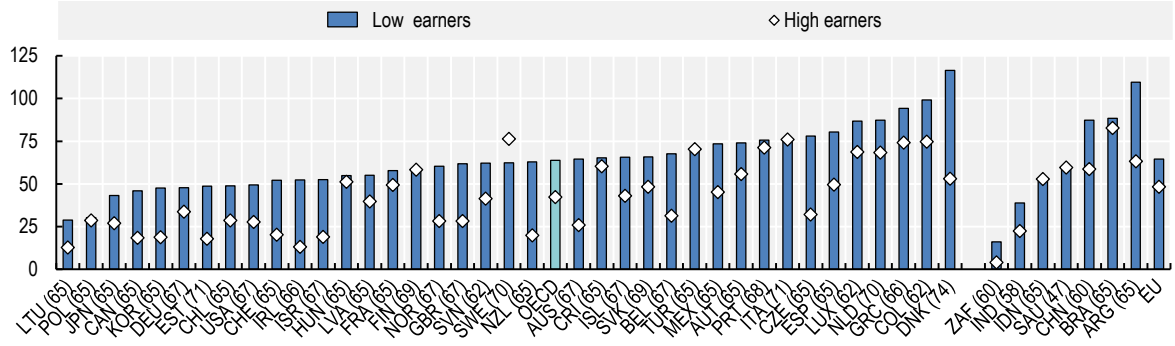
Figure 4.1. Gross pension replacement rates in percentage: Average earners at retirement age and age 80



Source: OECD pension models.

StatLink https://stat.link/3gsmhl

Figure 4.2. Gross pension replacement rates in percentage: Low and high earners



Source: OECD pension models.

StatLink https://stat.link/347s5e

Gross replacement rates: Public vs. Private, Mandatory vs. Voluntary schemes

Key results

Private pensions play a significant role in over one-third of OECD countries. For mandatory schemes, the OECD average for gross replacement rates of a full-career average earner from public schemes alone is 42.3%, compared with 50.7% with private pensions included and 55.3% when including voluntary schemes and assuming contributions for the full career. For the eight OECD countries where voluntary private pensions are widespread the average replacement rate is 53.2% for an average earner contributing for the whole career, while it is 54.2% when Israel and Mexico are also included compared with 37.0% when only mandatory schemes are considered. If the full-career average-wage earner only starts contributing to a voluntary scheme from age 45, the replacement rate is 42.5% on average among these eight countries.

Table 4.2 shows the interplay between mandatory public, mandatory private and voluntary pension schemes. All OECD countries have mandatory public schemes, which generate a replacement rate of 42% at the average-wage level. As shown in the previous indicator, the average replacement rate from mandatory schemes – combining public and private schemes – for a full-career average earner is equal to 51%: for the 18 OECD countries where the calculations of entitlements only cover mandatory public pensions, the average replacement rate for an average worker earner is 59%; for the 10 OECD countries with both public and mandatory private provision but no voluntary, the average replacement rate is 50%; and for the last 10 countries with significant voluntary pensions, the replacement rate from the mandatory component alone is 37%.

Mandatory private pensions

Mandatory private pensions are funded schemes that exist in 8 countries while they have near universal coverage ("quasi-mandatory") in Denmark, the Netherlands, Sweden and the United Kingdom.

In Switzerland, private pensions are mainly defined benefit, whilst in the other countries they are defined contribution. Replacement rates from mandatory private schemes range from 5% in Norway and 10% in Costa Rica to 43% in both Denmark and Iceland and 46% in the Netherlands. In Sweden the contribution rate for the private pension increases from 4.5% below to 30% above the ceiling for the public scheme, hence the total replacement rate is higher for high earners than average earners.

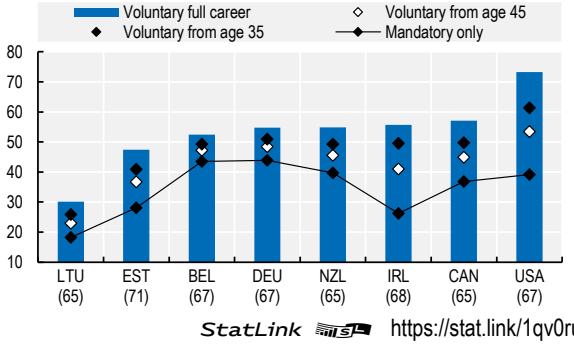
Voluntary private pensions

Voluntary private pensions are shown for eight countries where voluntary private pensions have broad coverage (either assets are above 25% of GDP or coverage is above 75%): Belgium, Canada, Estonia, Germany, Ireland, Lithuania, New Zealand and the United States. Voluntary private pensions include both voluntary occupational and voluntary personal plans. In Estonia the FDC scheme was previously mandatory, but since January 2021 it has become voluntary, with the possibility of re-joining 10 years after opting out. The rules that have been modelled are in the "Country Profiles" available at http://oe.cd/pag. In all eight countries a funded defined contribution plan is modelled. Data on actual contribution rates by earnings are not available for some countries, and so in these cases an average or typical rate is assumed across the earnings range. In addition, the severance account in Israel and the housing account in Mexico have been added as if they are not utilised during the working career, they are then transferred to the pension accounts at retirement.

When voluntary private pensions are taken into account for the whole career in these ten countries (the eight listed above plus Israel and Mexico), the average total replacement rate is 54.2% for an average earner compared with 37.0% when only mandatory schemes are considered. The voluntary component has the largest impact on the replacement rate, around 30 and 35 percentage points, in Ireland and the United States, respectively.

The length of the contribution period clearly has an impact on the total replacement rate. The chart below compares the full-career full-contribution case with the full-career case but with contributions in the voluntary scheme from age 35 and 45 only, perhaps a more appropriate scenario. The schemes in Israel and Mexico are not considered as contributions are mandatory at all ages to severance and housing accounts, respectively.

Gross replacement rate including voluntary contributions from different ages, in percentage



Among these eight countries, only contributing from age 35 (45) reduces the gross replacement rate to 47% (43%) on average compared with the full-contribution case at 53%. Contributing to the voluntary scheme from age 35 in these countries generates the highest replacement rate in the United States, at 61%, which is above the OECD average for a full-career worker, at 54%, once these voluntary schemes are included.

Table 4.2. Gross pension replacement rates from mandatory public, mandatory private and voluntary private pension schemes, in percentage

Percentage of individual earnings

	Mandatory Public			Mandatory private (DB & DC)			Total mandatory			Voluntary (DB & DC)			Total with voluntary		
	0.5	1	2	0.5	1	2	0.5	1	2	0.5	1	2	0.5	1	2
Australia	38.5	0.0	0.0	26.0	26.0	26.0	64.5	26.0	26.0						
Austria	74.1	74.1	55.9				74.1	74.1	55.9						
Belgium	67.7	43.5	31.4				67.7	43.5	31.4	3.5	8.9	23.3	71.2	52.4	54.7
Canada	46.0	36.8	18.4				46.0	36.8	18.4	20.2	20.2	20.2	66.2	57.0	38.6
Chile	23.7	11.9	3.4	25.1	25.2	25.3	48.8	37.1	28.7						
Colombia	99.2	74.8	74.8				99.2	74.8	74.8						
Costa Rica	55.6	54.4	50.6	9.7	9.7	9.7	65.3	64.1	60.4						
Czechia	78.1	47.4	32.1				78.1	47.4	32.1						
Denmark	73.6	30.2	10.1	42.9	42.9	42.9	116.6	73.1	53.1						
Estonia	48.6	28.1	17.8				48.6	28.1	17.8	22.3	22.3	22.3	66.6	47.4	37.9
Finland	58.4	58.4	58.4				58.4	58.4	58.4						
France	57.7	57.6	49.4				57.7	57.6	49.4						
Germany	47.8	43.9	33.7				47.8	43.9	33.7	10.9	10.9	10.9	58.6	54.7	44.6
Greece	94.2	80.8	74.1				94.2	80.8	74.1						
Hungary	54.9	52.4	51.2				54.9	52.4	51.2						
Iceland	22.5	0.0	0.0	43.1	43.1	43.1	65.6	43.1	43.1						
Ireland	52.4	26.2	13.1				52.4	26.2	13.1	29.5	29.5	29.5	81.9	55.7	42.6
Israel	19.0	9.5	4.8	33.6	28.5	14.3	52.6	38.0	19.0	16.1	13.7	6.8	68.7	51.7	25.9
Italy	76.1	76.1	76.1				76.1	76.1	76.1						
Japan	43.3	32.4	26.9				43.3	32.4	26.9						
Korea	47.6	31.2	18.8				48.6	31.6	19.4						
Latvia	55.0	39.8	39.8				55.0	39.8	39.8						
Lithuania	28.9	18.2	12.9				28.9	18.2	12.9	15.7	11.9	10.0	44.6	30.1	22.9
Luxembourg	86.7	74.8	68.8				86.7	74.8	68.8						
Mexico	55.2	15.2	4.9	18.2	40.3	40.3	73.5	55.5	45.2	14.5	14.5	14.5	73.5	64.7	59.7
Netherlands	58.2	29.1	14.6	29.0	45.6	53.8	87.3	74.7	68.4						
New Zealand	62.9	39.7	19.8				62.9	39.7	19.8	15.8	15.2	14.7	78.8	54.9	34.5
Norway	54.9	39.1	22.9	5.4	5.4	5.3	60.3	44.5	28.2						
Poland	30.3	29.3	28.7				30.3	29.3	28.7						
Portugal	75.7	73.9	71.3				75.7	73.9	71.3						
Slovak Republic	65.9	54.9	48.3				65.9	54.9	48.3						
Slovenia	62.1	42.1	41.3				62.1	42.1	41.3						
Spain	80.4	80.4	49.6				80.4	80.4	49.6						
Sweden	49.0	49.0	28.4	13.3	13.3	48.0	62.3	62.3	76.4						
Switzerland	32.2	21.2	10.9	20.0	18.7	9.4	52.2	39.9	20.3						
Türkiye	70.3	70.3	70.3				70.3	70.3	70.3						
United Kingdom	43.5	21.7	10.9	18.4	20.1	17.5	61.8	41.9	28.3						
United States	49.4	39.1	27.8				49.4	39.1	27.8	34.1	34.1	34.1	83.5	73.2	61.9
OECD-38	**56.3**	**42.3**	**33.5**				**63.8**	**50.7**	**42.3**				**68.1**	**55.3**	**47.2**
Argentina	109.5	78.7	63.3				109.5	78.7	63.3						
Brazil	88.4	88.4	82.7				88.4	88.4	82.7						
China	87.3	68.3	58.8				87.3	68.3	58.8						
India	23.4	23.4	0.0	15.5	15.5	22.4	38.9	38.9	22.4						
Indonesia	33.1	33.1	32.4	20.4	20.4	20.4	53.5	53.5	52.8						
Saudi Arabia	59.6	59.6	59.6				59.6	59.6	59.6						
South Africa	16.0	8.0	4.0				16.0	8.0	4.0	29.0	29.0	29.0	29.0	29.0	29.0
EU27	59.9	49.5	41.6				64.6	54.8	48.3				67.5	57.8	51.8

Note: DB=defined benefit; DC = defined contribution. *Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level. Contribution rates for voluntary pensions in Belgium vary by earnings level, see country profile for more details. The OECD average refers to the average of all 38 OECD countries.
Source: OECD pension models.

StatLink https://stat.link/8yc2b9

Tax treatment of pensions and pensioners

Key results

Payments through either social security or through taxes play an important role in old-age support as pensioners commonly do not pay the former and the latter is often reduced. Personal income taxes are progressive and pension entitlements are usually lower than earnings before retirement. Hence, overall the average total tax rate on pension income is typically less than on labour income. In addition, half of OECD countries give additional tax concessions to pensioners through either increased personal allowances or extra tax credits.

Half of OECD countries provide either higher personal allowances or extra tax credits to older people than to working-age individuals (Table 4.3). In many cases – Canada and the United Kingdom, for example – this additional relief is phased out for older people with higher incomes.

In addition, 16 OECD countries have specific tax rules for pension income, from either public or private schemes. For example, between 15% and 50% of income from public pensions in the United States (social security) is not taxed, depending on the total income of the pensioner. In Australia, pension contributions and investment returns are not taxed, and, in addition, pension benefits are not taxable in payment for individuals aged over 60 years. This applies to both mandatory and voluntary contributions.

By contrast some countries such as Denmark, Iceland, the Netherlands and Sweden tax earned income from work less than pensions, which helps limit tax disincentives to work.

Overall, 28 OECD countries have some concession for older people or pension income under their personal income taxes. In only ten countries are the income tax rates or allowances applied to pensions and pensioners at least equal to those for people of working age.

Virtually all OECD countries levy employee social security contributions on workers: Australia and New Zealand are the only exceptions, where payments are either covered by the employer or the State. By comparison, 21 OECD countries do not levy social security contributions on pensioners. For the 17 countries that do levy social security contributions the rate for retirees is always lower than the rate charged for workers. Typically, old-age retirement income is not subject to contributions for pensions or unemployment (for obvious reasons). However, pensioners can be subject to levies to pay for health or long-term care, which can be higher than the level applied to workers, and, in some cases, are liable for "solidarity" contributions to finance a broad range of benefits.

Empirical results

Figure 4.3 shows the percentage of income paid in personal taxes and social security contributions by workers and pensioners. Starting with workers, countries have been ranked by the proportion of income paid in total taxes (including social contributions paid by employees) at the average-wage level. This is then compared to the total tax rate paid by a pensioner after a full-career at the average wage, hence receiving the gross replacement rate in the base case (Table 4.1, as set out in the indicator "Gross pension replacement rates" above).

In 11 OECD countries and four other major economies, such a pensioner would not pay any tax in retirement. In some cases, such as the Slovak Republic and Türkiye, this is because pensions are not taxable. In the United States it is because the pension income would be less than the income-tax personal allowance offered to older people. Pensioners with the gross replacement rate of a full-career average earner would pay 10% of their income in taxes and contributions on average across the OECD, and under 1% in the other G20 countries. By comparison, taxes and contributions paid by an average earner – so not including any contributions from the employer – average 27% of the gross wage in OECD countries and 13% in other G20 countries. The last series in the chart shows how much a pensioner would pay if her income before tax is equal to the gross average wage. The total tax rate is 16% on average in OECD countries, some 11 percentage points lower than what workers' pay with the same level of income.

The difference between this 16% rate for pensioners with an income equal to average earnings and the 10% paid in taxes and contributions paid on the income which is equal to the gross replacement rate for an average earner illustrates the impact of progressivity in income-tax systems for pensioners.

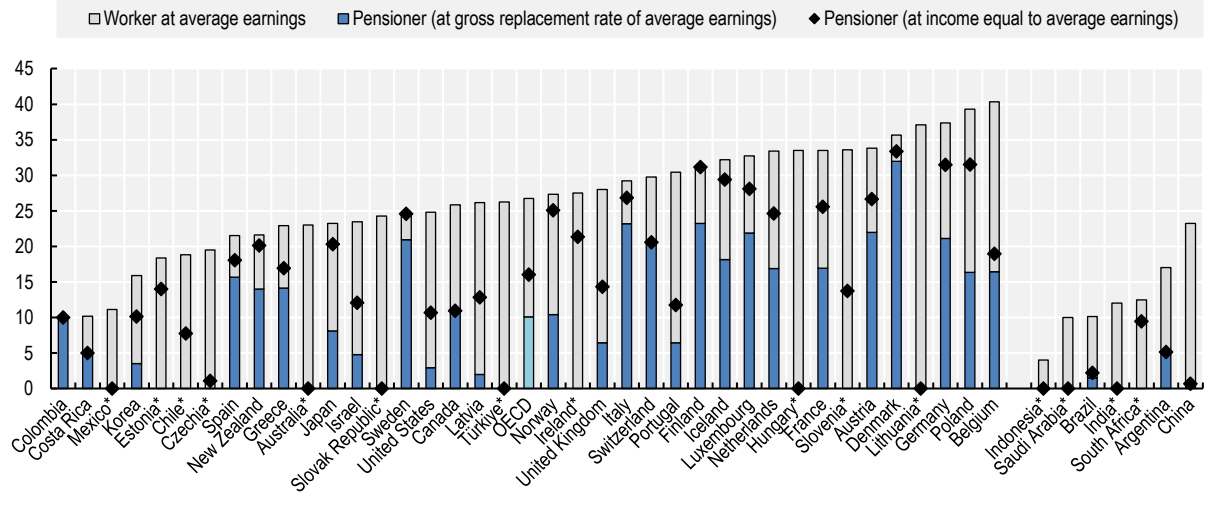
Table 4.3. Treatment of pensions and pensioners under personal income tax and mandatory public and private contributions

	Extra tax Allowance /credit	Full or partial relief for pension income		Mandatory contributions on pension income		Extra tax Allowance/ credit	Full or partial relief for pension income		Mandatory contributions on pension income
		Public scheme	Private scheme				Public scheme	Private scheme	
Australia	✓	✓	✓	*None*	Luxembourg	✓			Low
Austria				*Low*	Mexico			✓	*None*
Belgium		✓		*Low*	Netherlands	✓			*Low*
Canada	✓	✓	✓	*None*	New Zealand				*None*
Chile	✓			*None*	Norway	✓	✓	✓	*Low*
Czechia	✓	✓		*None*	Poland				*Low*
Colombia				*Low*	Portugal	✓			*None*
Costa Rica				*Low*	Slovak Republic		✓		*None*
Denmark				*None*	Slovenia	✓			*Low*
Estonia	✓			*None*	Spain		✓		*None*
Finland		✓		*Low*	Sweden	✓			*None*
France				*Low*	Switzerland				*Low*
Germany		✓	✓	*Low*	Türkiye		✓		*None*
Greece				*Low*	United Kingdom	✓			*None*
Hungary		✓	✓	*None*	United States	✓	✓		*None*
Iceland				*None*					
Ireland	✓			*Low*	Argentina		✓		*Low*
Israel	✓			*Low*	Brazil		✓		*None*
Italy	✓		✓	*None*	China				*None*
Japan	✓	✓	✓	*Low*	India	✓			*None*
Korea	✓	✓		*None*	Indonesia				*None*
Latvia	✓			*None*	Saudi Arabia				*Low*
Lithuania		✓	✓	*None*	South Africa	✓			*None*

Source: See online "Country Profiles available at http://oe.cd/pag.

StatLink https://stat.link/4bjvg5

Figure 4.3. Personal income taxes and social security contributions paid by pensioners and workers, percentage of income



Note: *Pensioners at the gross replacement rate of average earnings have zero income tax and social security. Workers in Colombia at the average earnings pay 8% in taxes and social security contributions, lower than that of pensioners at the gross replacement rate of average earnings.
Source: OECD pension models; OECD tax and benefit models.

StatLink https://stat.link/2dhobi

Net pension replacement rates

Key results

Whilst the gross replacement rate gives a clear indication of the design of the pension system, the net replacement matters more to individuals, as it reflects their disposable income in retirement in comparison to when working. For average earners with a full career, the net replacement rate from mandatory pension schemes at the normal retirement age averages 61.4% across the OECD, which is 10.7 percentage points higher than the average gross replacement rate. This reflects the higher effective tax and social contribution rates that people pay on their earnings than on their pensions in retirement, mostly due to the progressivity of tax systems, some tax advantages to pensions and lower social contributions on pension benefits. Net replacement rates vary from under 35% in Australia, Estonia and Lithuania to 90% or more in Greece, the Netherlands, Portugal and Türkiye for average-wage workers. For low earners (with half of average worker earnings), the average net replacement rate across OECD countries is 73.2% while it is 52.8% for high earners (200% of average worker earnings).

The previous indicator of the "Tax treatment of pensions and pensioners" showed the important role that the personal tax and social security contribution systems play in old-age income support. Pensioners often only pay health contributions and receive preferential treatment under the income tax. Tax expenditures and the progressivity of income taxes coupled with gross replacement rates of less than 100% also mean that pensioners have a lower income tax rate than workers. As a result, net replacement rates are generally higher than gross replacement rates.

For average earners, the net replacement rate across the OECD averages 61% for mandatory schemes, from a low of under 35% in Australia, Estonia and Lithuania to a high of 99% in Portugal and over 90% in Greece, the Netherlands and Türkiye (Table 4.4). Moreover, the pattern of replacement rates across countries is different on a net rather than a gross basis.

On average, for average earners, the net replacement rate is 11 percentage points higher than the gross replacement rate (Figure 4.4). The difference is 25 percentage points in Hungary, Portugal and Türkiye with Belgium, the Netherlands, the Slovak Republic and Slovenia around 15-20 percentage points higher. In Hungary, the Slovak Republic and Türkiye, pension income is neither liable for taxes or social security contributions, whilst in Belgium and Portugal they are much lower because of either higher tax allowances or much lower contribution levels.

For low earners, the effect of taxes and contributions on net replacement rates is slightly more muted than for workers higher up the earnings scale. This is because low-income workers typically pay less in taxes and contributions relative to average earners. In many cases, their retirement incomes are below the level of the standard reliefs in the personal income tax (allowances, credits, etc.). Thus, they are often unable to benefit fully from any additional concessions granted to pensions or pensioners under their personal income tax. The difference between gross and net replacement rates for low earners is nine percentage points on average. Belgium, Portugal, the Slovak Republic, Slovenia and particularly Hungary have much higher replacement rates for low earners on a net basis than in gross terms.

The net replacement rate for workers earning 200% of the average is highest in Türkiye at 104%. The lowest replacement rates for high earners are found in Canada, Estonia, Ireland, Israel, Korea, Lithuania, New Zealand and Switzerland where workers earning 200% of the average will receive net pensions that amount to less than 30% of their net earnings when working. In addition to the higher contribution levels in the occupational system for higher earners in Sweden, the net replacement rates are furthermore affected by the fact that pension income and work income are taxed differently and at different rates.

Definition and measurement

The net replacement rate is defined as the individual net pension entitlement divided by net pre-retirement earnings, taking account of personal income taxes and social security contributions paid by workers and pensioners. Otherwise, the definition and measurement of the net replacement rates are the same as for the gross replacement rate. Details of the rules that national tax systems apply to pensioners can be found in the online Country Profiles available at http://oe.cd/pag.

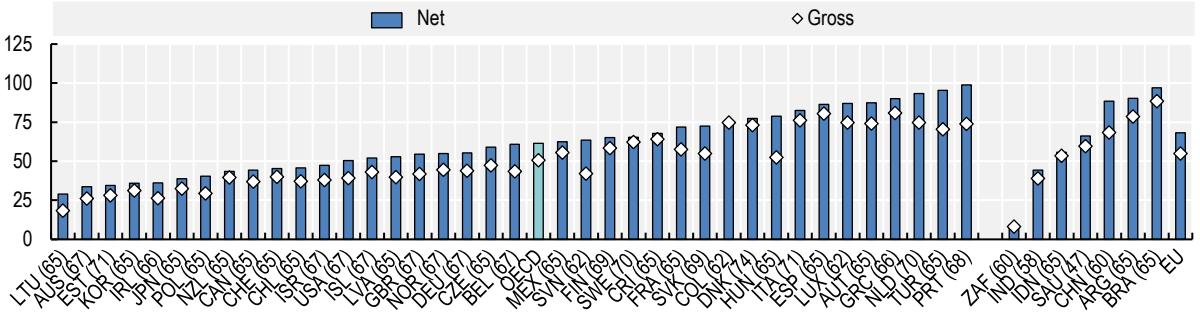
Table 4.4. Net pension replacement rates by earnings, in percentage

	Individual earnings, multiple of mean for men (women where different)															
	Pension age		0.5		1		2			Pension age		0.5		1		2	
Australia	67		72.2	*(69.7)*	33.7	*(30.9)*	37.9	*(34.7)*	Mexico	65		75.4		62.4		54.4	*(49.9)*
Austria	65		85.5		87.4		65.9		Netherlands	70		94.6		93.2		87.5	
Belgium	67		84.3		60.9		45.1		New Zealand	65		65.0		43.5		23.7	
Canada	65		54.5		44.2		24.7		Norway	67		75.4		54.8		36.8	
Chile	65		60.1	*(57.5)*	45.7	*(43.0)*	36.1	*(34.7)*	Poland	65	*(60)*	37.9	*(37.4)*	40.3	*(31.5)*	39.1	*(32.5)*
Colombia	62	*(57)*	103.5		73.1		71.5	*(70.6)*	Portugal	68		97.0		98.8		96.1	
Costa Rica	65	*(63)*	69.1	*(66.3)*	67.8	*(65.0)*	65.7	*(63.0)*	Slovak Republic	69		81.0		72.5		67.2	
Czechia	65		89.7		58.9		41.5		Slovenia	62		87.8		63.4		59.6	
Denmark	74		117.5		77.3		62.5		Spain	65		86.4		86.5		57.6	
Estonia	71		53.6		34.4		21.9		Sweden	70		66.5		65.3		82.9	
Finland	69		64.9		65.1		66.1		Switzerland	65		56.5		45.3	*(45.2)*	24.1	
France	65		67.7		71.9		61.8		Türkiye	65	*(63)*	82.8	*(79.5)*	95.4	*(91.6)*	104.2	*(100.1)*
Germany	67		59.2		55.3		43.2		United Kingdom	67		74.9		54.4		39.0	
Greece	66		102.6		90.0		82.7		United States	67		60.6		50.5		38.9	
Hungary	65	*(62)*	82.5	*(77.4)*	78.8	*(73.7)*	77.0	*(71.8)*	**OECD**	**66.3**	**(65.8)**	**73.2**	**(72.7)**	**61.4**	**(60.6)**	**52.8**	**(52.0)**
Iceland	67		74.7		52.1		51.3										
Ireland	66		60.5		36.1		21.6		Argentina	65	*(60)*	126.1	*(119.6)*	90.1	*(86.9)*	72.2	*(70.5)*
Israel	67	*(65)*	56.9	*(53.3)*	47.3	*(43.9)*	27.3	*(25.4)*	Brazil	65	*(62)*	95.7	*(101.1)*	96.9	*(102.0)*	94.1	*(99.6)*
Italy	71		77.8		82.6		87.5		China	60	*(55)*	112.6	*(90.7)*	88.3	*(70.1)*	77.1	*(60.9)*
Japan	65		49.5		38.8		31.8		India	58		44.2	*(42.9)*	44.2	*(42.9)*	26.0	*(24.1)*
Korea	65		50.9		35.8		23.0		Indonesia	65		55.8	*(51.7)*	55.8	*(51.7)*	55.5	*(51.4)*
Latvia	65		65.7		52.8		50.3		Saudi Arabia	47		66.2		66.2		66.2	
Lithuania	65		40.1		28.9		21.3		South Africa	60		17.2		9.2		5.0	
Luxembourg	62		95.7		86.9		78.7		EU27	66.7	(66.4)	76.2	(75.9)	68.1	(67.5)	60.9	(60.3)

Note: *Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level.
Source: OECD pension models.

StatLink https://stat.link/r1pgws

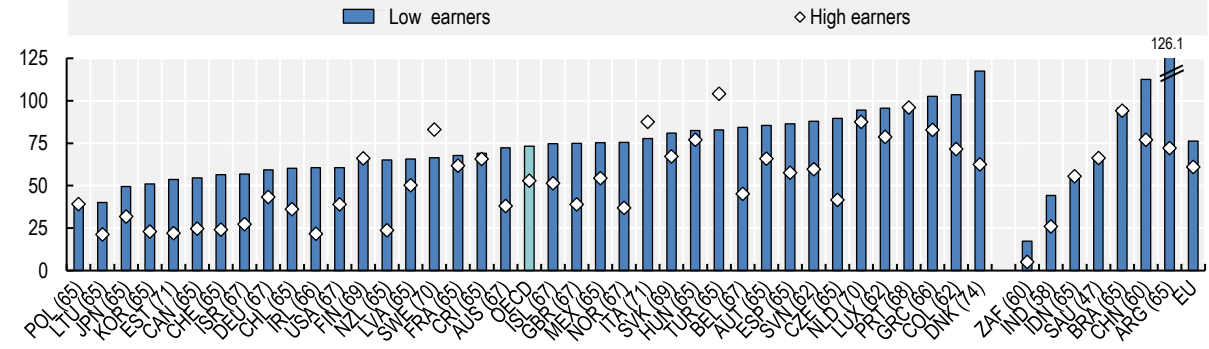
Figure 4.4. Net and gross pension replacement rates: Average earners, in percentage



Source: OECD pension models.

StatLink https://stat.link/v8jpaz

Figure 4.5. Net pension replacement rates: Low and high earners, in percentage



Source: OECD pension models.

StatLink https://stat.link/fwaeqd

Net pension replacement rates: Mandatory and voluntary schemes

Key results

The OECD average for net replacement rates of an average earner from mandatory (public and private) schemes is 61.4%, increasing to 66.9% when the voluntary schemes are included for the full career. The average across the 28 countries where voluntary pensions play a limited role, and which are therefore not taken into account in the projections, is 66.7%. Among the 8 OECD countries where voluntary private pensions are widespread plus Israel and Mexico, when voluntary private pensions are taken into account, the average net replacement rate is 67.2% assuming contributions for the whole career compared with 46.5% based on mandatory schemes only.

For the 18 OECD countries where the calculations cover only public pensions, the net replacement rate for a full-career average earner is 71% on average (Table 4.5). For the 10 OECD countries with public and mandatory private provision, but no voluntary schemes the average net replacement rate is 59%. In the 10 remaining countries where voluntary pensions are modelled the average net replacement rate is 47% from mandatory schemes and reaches 67% for a worker contributing for the whole career.

For the other major economies, although there is a wide variation between country and across earnings level, there is a smaller difference between gross and net replacement rates as both earnings and pensions are not normally liable for any taxation with only social security contributions being deducted.

Mandatory private pensions

Twelve countries have mandatory private pensions, including a subset of four countries – Denmark, the Netherlands, Sweden and the United Kingdom – having private pensions that ensure near-universal coverage and so are described as "quasi-mandatory". In Switzerland, private pensions are defined benefit while in the other countries they are defined contribution.

Voluntary private pensions

Replacement rates are shown for ten countries where voluntary private pensions have broad coverage. For the other large economies, South Africa also has a significant voluntary scheme. The rules that have been modelled are in the "Country Profiles" available at http://oe.cd/pag. In all countries a defined contribution plan is modelled.

In general, the defined contribution schemes pay a constant gross replacement rate with earnings. Data on actual contribution rates by earnings are not available for some countries, and so in these cases an average or typical rate is assumed across the earnings range. Progressive tax rules mean that the net replacement rate differs across the earnings range even if gross replacement rates are similar. The difference between the gross and net replacement rates often increases as earnings levels rise as the previous work earnings are taxed at much higher rates as individuals move up the earnings distribution.

Definition and measurement

The net replacement rate is defined as the individual net pension entitlement divided by net pre-retirement earnings, taking account of personal income taxes and social security contributions paid by workers and pensioners. Otherwise, the definition and measurement of the net replacement rates are the same as for the gross replacement rate. Details of the rules that national tax systems apply to pensioners can be found in the online Country Profiles available at http://oe.cd/pag.

Table 4.5. Gross and net pension replacement rates from mandatory (public and private) and voluntary pension schemes, in percentage

Percentage of individual earnings

	Gross mandatory public and private			Net mandatory public and private			Total gross with voluntary			Total net with voluntary		
	0.5	1	2	0.5	1	2	0.5	1	2	0.5	1	2
Australia	64.5	26.0	26.0	72.2	33.7	37.9						
Austria	74.1	74.1	55.9	85.5	87.4	65.9						
Belgium	67.7	43.5	31.4	84.3	60.9	45.1	71.2	52.4	54.7	88.5	73.8	83.8
Canada	46.0	36.8	18.4	54.5	44.2	24.7	66.2	57.0	38.6	74.2	66.0	47.8
Chile	48.8	37.1	28.7	60.1	45.7	36.1						
Colombia*	99.2	74.8	74.8	103.5	73.1	71.5						
Costa Rica	65.3	64.1	60.4	69.1	67.8	65.7						
Czechia	78.1	47.4	32.1	89.7	58.9	41.5						
Denmark	116.6	73.1	53.1	117.5	77.3	62.5						
Estonia	48.6	28.1	17.8	53.6	34.4	21.9	66.6	47.4	37.9	72.9	54.7	43.0
Finland	58.4	58.4	58.4	64.9	65.1	66.1						
France	57.7	57.6	49.4	67.7	71.9	61.8						
Germany	47.8	43.9	33.7	59.2	55.3	43.2	58.6	54.7	44.6	73.4	69.5	56.6
Greece	94.2	80.8	74.1	102.6	90.0	82.7						
Hungary	54.9	52.4	51.2	82.5	78.8	77.0						
Iceland	65.6	43.1	43.1	74.7	52.1	51.3						
Ireland	52.4	26.2	13.1	60.5	36.1	21.6	81.9	55.7	42.6	97.1	74.4	62.0
Israel	52.6	38.0	19.0	56.9	47.3	27.3	68.7	51.7	25.9	75.4	63.2	36.5
Italy	76.1	76.1	76.1	77.8	82.6	87.5						
Japan	43.3	32.4	26.9	49.5	38.8	31.8						
Korea	47.6	31.2	18.8	50.9	35.8	23.0						
Latvia	55.0	39.8	39.8	65.7	52.8	50.3						
Lithuania	28.9	18.2	12.9	40.1	28.9	21.3	44.6	30.1	22.9	61.9	47.9	37.9
Mexico	86.7	74.8	68.8	95.7	86.9	78.7						
Luxembourg	73.5	55.5	45.2	75.4	62.4	54.4	73.5	64.7	59.7	75.4	72.7	71.9
Netherlands	87.3	74.7	68.4	94.6	93.2	87.5						
New Zealand*	62.9	39.7	19.8	65.0	43.5	23.7	78.8	54.9	34.5	83.7	61.9	42.2
Norway	60.3	44.5	28.2	75.4	54.8	36.8						
Poland	30.3	29.3	28.7	37.9	40.3	39.1						
Portugal	75.7	73.9	71.3	97.0	98.8	96.1						
Slovak Republic	65.9	54.9	48.3	81.0	72.5	67.2						
Slovenia*	62.1	42.1	41.3	87.8	63.4	59.6						
Spain	80.4	80.4	49.6	86.4	86.5	57.6						
Sweden	62.3	62.3	76.4	66.5	65.3	82.9						
Switzerland	52.2	39.9	20.3	56.5	45.3	24.1						
Türkiye	70.3	70.3	70.3	82.8	95.4	104.2						
United Kingdom	61.8	41.9	28.3	74.9	54.4	39.0						
United States	49.4	39.1	27.8	60.6	50.5	38.9	83.5	73.2	61.9	101.5	87.7	75.7
OECD38	**63.8**	**50.7**	**42.3**	**73.2**	**61.4**	**52.8**	**68.1**	**55.3**	**47.2**	**78.3**	**66.9**	**59.0**
Argentina	109.5	78.7	63.3	126.1	90.1	72.2						
Brazil	88.4	88.4	82.7	95.7	96.9	94.1						
China	87.3	68.3	58.8	112.6	88.3	77.1						
India	38.9	38.9	22.4	44.2	44.2	26.0						
Indonesia	53.5	53.5	52.8	55.8	55.8	55.5						
Saudi Arabia	59.6	59.6	59.6	66.2	66.2	66.2						
South Africa	16.0	8.0	4.0	17.2	9.2	5.0	29.0	29.0	29.0	34.3	36.6	39.1
EU27	64.6	54.8	48.3	76.2	68.1	60.9				79.8	72.0	65.7

Note: *Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level. The OECD average refers to the average of all 38 OECD countries.
Source: OECD pension models.

StatLink https://stat.link/t27sw1

Gross pension wealth

Key results

Pension wealth measures the total discounted value of the lifetime flow of all retirement incomes in mandatory pension schemes at retirement age as a ratio of annual earnings before retirement. For average earners, pension wealth for men is 10.1 times and for women 11.2 times annual individual earnings on average in OECD countries. Gross pension wealth relative to annual individual earnings is higher for women because of their longer life expectancy. The main determinants of differences across countries are differences in the gross replacement rate, in the length of the retirement period measured by remaining life expectancy at the normal retirement age, and in indexation rules.

Replacement rates give an indication of the pension promise relative to individual earnings, but they are not comprehensive measures of cumulated pension payments; they look only at the benefit level relative to individual earnings at the point of retirement, or more generally at a given, later age. For a full picture, life expectancy, normal retirement age and indexation of pension benefits must also be taken into account. Together, these determine for how long the pension benefit is paid, and how its value evolves over time. Pension wealth – a measure of the stock of future discounted flows of pension benefits – takes account of these factors. It can be thought of as the lump sum needed at the retirement age to purchase, without paying any fee, an annuity giving the same flow of pension payments as that promised by mandatory retirement-income schemes.

In defined benefit systems there is often no or a weak systematic link between the replacement rate and the expected duration of benefit withdrawal. However, in the long run, ensuring financial sustainability imposes a trade-off between the replacement rate and the duration of retirement. When retirement ages and pension benefits are held constant, pension wealth increases with longevity gains. In defined contribution systems there is a more direct link between the size of the benefit and the expected duration of benefit withdrawals. In these systems the pension wealth measure is equal to the accumulated assets and therefore independent of longevity increases as these automatically reduce the monthly benefits.

Gross pension wealth at individual earnings equal to the average wage is highest in Luxembourg at 19.7 times annual individual earnings for men and 21.8 times for women (Table 4.6). It is also larger than 15 times for men and 17 times for women in Austria (men only), Colombia, Greece and Spain. The lowest pension wealth for both men and women is found in Lithuania at 3.3 and 3.7 years of annual earnings, respectively, due to low replacement rates. Estonia, Ireland, Japan (men only), Korea and Poland also have pension wealth levels below 7 years for men and 8 years for women, with Canada, Chile, Israel and the United States also below 8 years for women.

While this indicator takes into account gender-specific mortality rates it assumes away differences in life expectancy across income levels. Given that individuals with low (high) income generally have a lower (higher) life expectancy, this implies that the computed numbers overestimate pension wealth for low earners and underestimate it for high earners (OECD, 2017). With this caveat in mind, higher individual replacement rates for low earners than for average earners mechanically translate into higher pension wealth relative to individual earnings low earners. For men with individual earnings equal to half average-earnings, pension wealth is 12.8 times their annual earnings on average and it is 14.4 times for women. Colombia and Luxembourg have the highest values for low earners at 24 and 23 times individual earnings for men, respectively, and 30 and 25 times individual earnings for women, with Colombia having a larger increase because of the lower retirement age for women.

Impact of life expectancy

In countries where the duration in retirement is shorter, such as Estonia and Latvia, pension wealth is smaller. The effect is the opposite in Luxembourg and Slovenia, where life expectancy is higher and retirement ages are much lower. Similarly, since women's life expectancy is longer than men's, pension wealth for women is higher in all countries that use unisex mortality tables to compute annuities from defined contribution schemes or that have defined benefit systems. In addition, some countries still have lower retirement ages for women; this extends the payment period even further.

Impact of indexation

Pension wealth is affected by indexation rules at a given initial replacement rate level. Although most OECD countries now index pensions in payment to prices, there are exceptions: Ireland, for example, has adopted a smoothed earnings method to calculate an indexed rate of the basic pension, which is assumed equivalent to average earnings growth for this report. Since earnings tend to grow faster than prices pension wealth is higher with wage than price indexation, for a given level of replacement rate. If Ireland, for example, indexed to prices, the pension wealth for an average male earner would decrease from 6.0 to 5.2 with unchanged initial benefit based on the OECD pension model.

Definition and measurement

The calculation of pension wealth uses a uniform real discount rate of 1.5%, decreased from the 2.0% used in previous editions, thereby increasing the pension wealth by around 6%, all other things equal. However, to the extent that lower long-term interest rates reflect lower (explicit or implicit) returns to pension contributions, the overall impact on pension wealth is muted. Since the comparisons refer to prospective pension entitlements, the calculations use country-specific mortality rates by age and sex at the year of retirement. Pension wealth is expressed as a multiple of annual individual earnings.

Further reading

OECD (2017), Preventing Ageing Unequally, OECD Publishing, Paris, https://doi.org/10.1787/9789264279087-en.

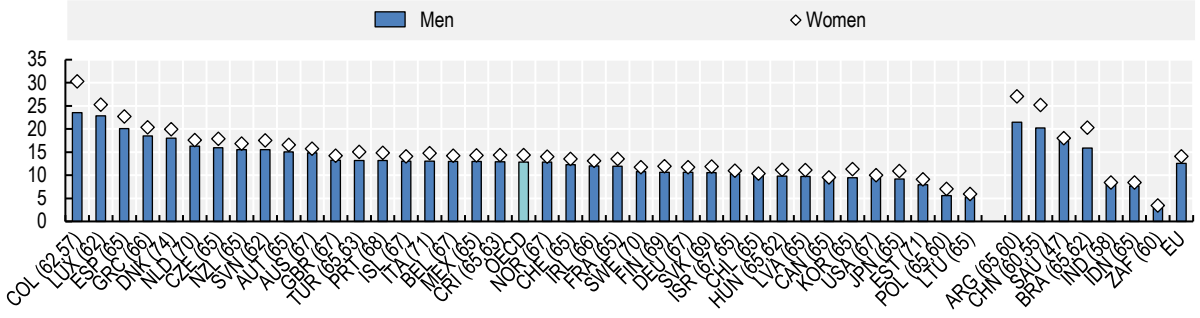
Table 4.6. Gross pension wealth by earnings, multiple of annual earnings

	Individual earnings, multiple of average wage							Individual earnings, multiple of average wage					
	0.5	1	2	0.5	1	2		0.5	1	2	0.5	1	2
	Men			Women				Men			Women		
Australia	14.8	8.1	5.6	15.8	8.5	5.7	Mexico	13.0	9.8	8.0	14.3	10.8	8.1
Austria	15.0	15.0	11.3	16.6	16.6	12.5	Netherlands	16.3	13.5	12.0	17.6	14.5	13.0
Belgium	13.0	8.4	6.0	14.2	9.1	6.6	New Zealand	15.5	9.8	4.9	16.9	10.6	5.3
Canada	9.5	7.6	3.8	9.5	7.6	3.8	Norway	12.8	9.4	5.9	14.0	10.3	6.5
Chile	9.9	7.5	5.8	10.3	7.7	6.1	Poland	5.6	5.4	5.3	7.0	5.4	5.3
Colombia	23.6	15.2	15.2	30.3	18.8	18.5	Portugal	13.1	12.8	12.1	14.8	14.4	13.5
Costa Rica	12.9	12.7	11.9	14.3	14.1	13.2	Slovak Republic	10.6	8.8	7.7	11.9	9.9	8.7
Czechia	16.0	9.7	6.5	17.8	10.8	7.3	Slovenia	15.5	10.5	10.3	17.5	11.9	11.7
Denmark	18.0	11.0	7.8	19.9	12.2	8.6	Spain	20.1	20.1	12.4	22.7	22.7	14.0
Estonia	7.9	4.6	2.9	9.1	5.3	3.4	Sweden	10.8	10.8	13.4	11.7	11.7	14.5
Finland	10.6	10.6	10.6	12.0	12.0	12.0	Switzerland	12.3	9.4	4.8	13.5	10.3	5.2
France	11.9	11.9	10.2	13.5	13.5	11.6	Türkiye	13.2	13.2	13.2	15.0	15.0	15.0
Germany	10.6	9.7	7.5	11.8	10.8	8.3	United Kingdom	13.2	8.7	5.8	14.2	9.4	6.2
Greece	18.5	15.8	14.5	20.4	17.5	16.0	United States	9.3	7.4	5.3	10.0	7.9	5.6
Hungary	9.8	9.4	9.2	11.2	10.6	10.3	**OECD**	**12.8**	**10.1**	**8.3**	**14.4**	**11.2**	**9.2**
Iceland	13.1	8.2	8.2	14.1	8.7	8.7							
Ireland	12.0	6.0	3.0	13.1	6.5	3.3	Argentina	21.4	15.4	12.4	27.0	19.7	16.1
Israel	10.3	7.4	3.7	11.0	7.8	3.9	Brazil	15.9	15.9	14.8	20.3	20.3	19.3
Italy	13.0	13.0	13.0	14.8	14.8	14.8	China	20.2	15.7	13.4	25.2	19.5	16.7
Japan	9.2	6.9	5.7	10.9	8.2	6.8	India	8.0	8.0	4.6	8.4	8.4	4.6
Korea	9.5	6.2	3.7	11.3	7.4	4.5	Indonesia	7.7	7.7	7.6	8.4	8.4	8.3
Latvia	9.7	7.0	7.0	11.1	8.0	8.0	Saudi Arabia	17.4	17.4	17.4	18.0	18.0	18.0
Lithuania	5.2	3.3	2.3	5.9	3.7	2.6	South Africa	2.8	1.4	0.7	3.4	1.7	0.9
Luxembourg	22.9	19.7	18.1	25.2	21.8	20.0	EU27	12.6	10.6	9.3	14.1	11.8	10.3

Note: *Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level.
Source: OECD pension models.

StatLink https://stat.link/q0lyia

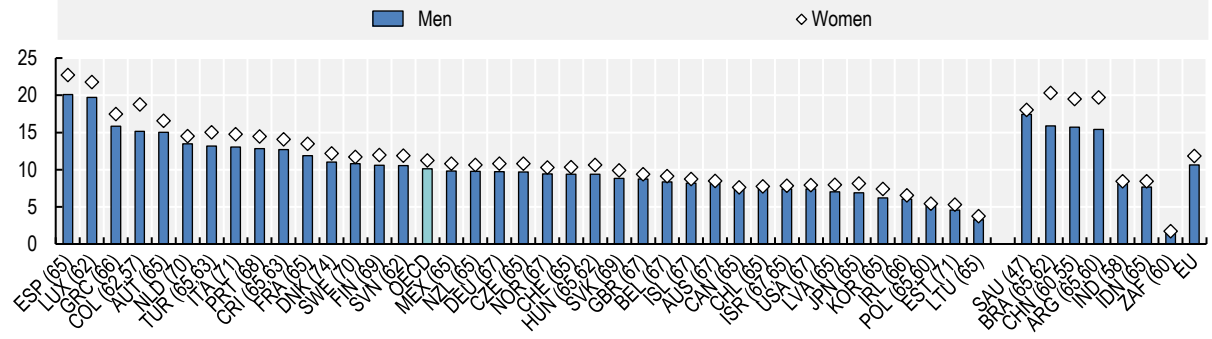
Figure 4.6. Gross pension wealth for lower earners by gender, multiple of annual earnings



Source: OECD pension models.

StatLink https://stat.link/figqrs

Figure 4.7. Gross pension wealth for average earners by gender, multiple of annual earnings



Source: OECD pension models.

StatLink https://stat.link/0akim4

Net pension wealth

Key results

As with gross pension wealth, net pension wealth relative to individual net earnings measures the total discounted value of the lifetime flow of all retirement incomes in mandatory pension schemes at retirement age. For average earners, net pension wealth for men is 12.3 times and for women 13.6 times annual individual net earnings on average in OECD countries. Net pension wealth relative to annual individual earnings is higher for women because of their longer life expectancy, and even more so in the six countries maintaining lower future retirement ages for women. The main determinants of differences across countries are differences in the net replacement rate, in the length of the retirement period measured by remaining life expectancy at the normal retirement age, and in indexation rules.

Replacement rates give an indication of the pension promise relative to individual earnings, but they are not comprehensive measures of cumulated pension payments; they look only at the benefit level relative to individual earnings at the point of retirement, or more generally at a given, later age. For a full picture, remaining life expectancy, normal retirement age and indexation of pension benefits must also be taken into account. Together, these determine for how long the pension benefit is paid, and how its value evolves over time. Net pension wealth – a measure of the stock of future discounted flows of pension benefits after taxes and social contributions – takes account of these factors. It can be thought of as the total net benefits that will be received on average from the mandatory retirement-income schemes.

In defined benefit systems there is often no or a weak direct link between the replacement rate and the expected duration of benefit withdrawal. Of course, in the long run, ensuring financial sustainability imposes a trade-off between the replacement rate and the duration of retirement. When retirement ages and pension benefits are held constant, pension wealth increases with longevity gains. In defined contribution systems there is a more direct link between the size of the benefit and the expected duration of benefit withdrawals. In these systems the pension wealth measure is equal to the accumulated assets and therefore independent of longevity increases as these automatically reduce the benefits.

Net pension wealth at individual earnings equal to average worker earnings is highest in Luxembourg at 22.9 times annual individual net earnings for men and 25.3 times for women (Table 4.7). The lowest pension wealth is found in Lithuania at 5.2 and 5.9 times for men and women respectively, due to low replacement rates.

Higher individual replacement rates and the increased tax allowance for many pensioners mean that net pension wealth relative to individual net earnings tends to be higher for low earners than for average earners as well, at least as the estimations here abstract from differences in life expectancy across income levels. For men with individual earnings equal to half-average earnings, net pension wealth is 14.6 times their net earnings on average, compared with 12.3 times for average wage workers. Similarly, for women with low earnings, net pension wealth of 16.3 compares with 13.6 times individual earnings for average earners.

For higher earners net pension wealth is on average 10.3 for men and 11.5 for women, only slightly lower than that for average earners, with Luxembourg and Türkiye highest and Estonia and Lithuania lowest.

Impact of life expectancy

In countries where the duration in retirement is shorter and where pension benefits are defined benefit, such as Estonia and Latvia, the individual pension wealth is smaller. The effect is the opposite in Switzerland and some of the Nordic countries (in DB systems), where life expectancies are high. Similarly, since women's life expectancy is longer than men's, pension wealth for women is higher in all countries that use unisex mortality tables or that have defined benefit systems. This is simply because in that case the same level of pension benefits can be expected to be paid over a longer retirement period. In addition, some countries still have lower retirement ages for women; this extends the payment period even further. Pension wealth is also affected by pension ages. A low retirement age in a defined benefit system such as in Luxembourg increases the pension wealth at a given level of benefit.

For the non-OECD countries there is great variation with South Africa at only 1.6 times individual earnings for average earners for men and 2.0 for women compared to 20.3 for men in China and 25.4 times individual earnings for women.

Definition and measurement

Net pension wealth is the present value of the flow of pension benefits, taking account of the taxes and social security contributions that retirees have to pay on their pensions. It is measured and expressed as a multiple of net annual individual earnings in the respective country.

Taxes and contributions paid by pensioners are calculated conditional on the mandatory pension benefit to which individuals are entitled to at different levels of earnings. The calculations take account of all standard tax allowances and tax reliefs as well as concessions granted either to pension income or to people of pension age.

Details of the rules that national tax systems apply to pensioners can be found in the online "Country Profiles" available at http://oe.cd/pag.

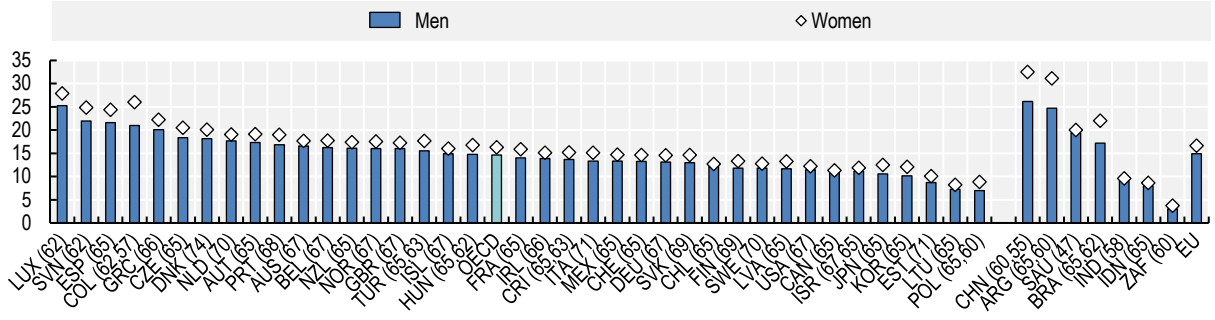
Table 4.7. Net pension wealth by earnings

	Individual earnings, multiple of average wage							Individual earnings, multiple of average wage					
	0.5	1.0	2	0.5	1.0	2		0.5	1.0	2	0.5	1.0	2
	Men			Women				Men			Women		
Australia	16.6	10.6	8.2	17.7	11.0	8.3	Mexico	13.3	11.0	9.6	14.7	12.1	9.7
Austria	17.4	17.7	13.4	19.1	19.5	14.7	Netherlands	17.6	16.8	15.4	19.1	18.1	16.6
Belgium	16.2	11.7	8.7	17.7	12.8	9.5	New Zealand	16.1	10.7	5.8	17.4	11.6	6.3
Canada	11.3	9.2	5.1	11.3	9.2	5.1	Norway	16.0	11.6	7.8	17.5	12.7	8.5
Chile	12.2	9.2	7.3	12.7	9.5	7.7	Poland	7.0	7.4	7.2	8.8	7.4	7.7
Colombia	21.0	14.8	14.5	26.0	18.4	17.7	Portugal	16.9	17.2	16.3	19.0	19.3	18.3
Costa Rica	13.7	13.4	13.0	15.2	14.9	14.4	Slovak Republic	13.0	11.6	10.8	14.6	13.1	12.1
Czechia	18.3	12.0	8.4	20.5	13.4	9.4	Slovenia	22.0	15.8	14.9	24.8	17.9	16.8
Denmark	18.1	11.7	9.2	20.1	12.9	10.2	Spain	21.6	21.6	14.4	24.4	24.4	16.3
Estonia	8.7	5.6	3.6	10.1	6.5	4.1	Sweden	11.8	11.6	14.7	12.8	12.6	16.0
Finland	11.8	11.8	12.0	13.3	13.3	13.5	Switzerland	13.3	10.6	5.7	14.6	11.7	6.2
France	14.0	14.8	12.8	15.9	16.8	14.5	Türkiye	15.5	17.9	19.5	17.7	20.4	22.3
Germany	13.1	12.3	9.6	14.6	13.6	10.6	United Kingdom	16.0	11.3	8.0	17.2	12.2	8.5
Greece	20.1	17.6	16.2	22.2	19.5	17.9	United States	11.5	9.5	7.4	12.2	10.2	7.9
Hungary	14.8	14.1	13.8	16.8	16.0	15.6	**OECD**	**14.6**	**12.3**	**10.3**	**16.3**	**13.6**	**11.5**
Iceland	14.9	9.8	9.7	16.0	10.5	10.4							
Ireland	13.9	8.3	4.9	15.1	9.0	5.4	Argentina	24.7	17.6	14.1	31.1	22.6	18.4
Israel	11.1	9.2	5.3	11.8	9.8	5.6	Brazil	17.2	17.4	16.9	22.0	22.2	21.7
Italy	13.3	14.2	15.0	15.1	16.0	17.0	China	26.1	20.3	17.6	32.5	25.4	22.3
Japan	10.5	8.2	6.8	12.5	9.8	8.0	India	9.1	9.1	5.4	9.6	9.6	5.4
Korea	10.1	7.1	4.6	12.1	8.5	5.5	Indonesia	8.0	8.0	7.9	8.6	8.6	8.6
Latvia	11.6	9.3	8.9	13.3	10.6	10.1	Saudi Arabia	19.4	19.4	19.4	20.0	20.0	20.0
Lithuania	7.2	5.2	3.8	8.2	5.9	4.4	South Africa	3.0	1.6	0.9	3.7	2.0	1.1
Luxembourg	25.2	22.9	20.7	27.9	25.3	22.9	EU27	14.9	13.3	11.7	16.7	14.8	13.0

Note: *Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level.
Source: OECD pension models.

StatLink https://stat.link/wjae61

Figure 4.8. Net pension wealth for lower earners by gender, multiple of annual earnings



Source: OECD pension models.

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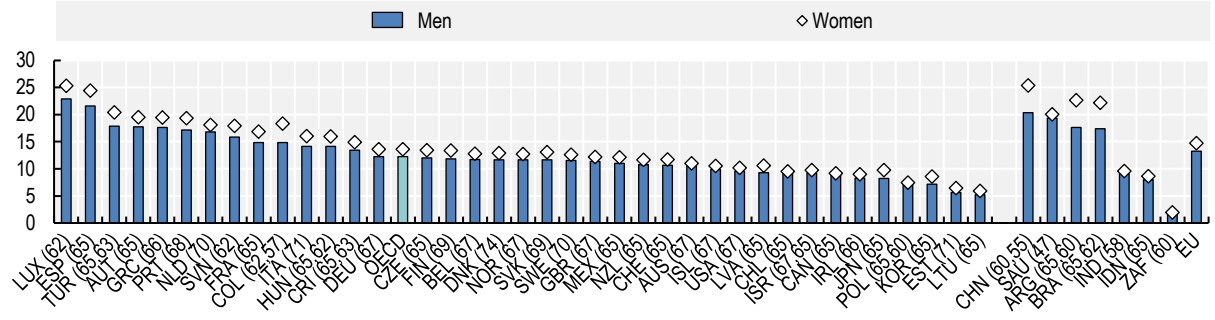
Figure 4.9. Net pension wealth for average earners by gender, multiple of annual earnings



Source: OECD pension models.

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5 Pension entitlements for alternative scenarios

Full-career single individuals being covered in Chapter 4, the analysis turns to those with different career paths or for couples. The indicators start by showing pension entitlements for couples compared to single workers. As people often spend periods out of paid work in unemployment or caring for children the following indicators show the gross pension replacement rates in mandatory pension schemes for unemployment breaks and for childcare breaks, with breaks of five and ten years, and with a later entry also for the longer unemployment period. Next a comparison of gross replacement rates is given for alternative economic assumptions compared with the base case. Finally, there is a comparison of the replacement rates for the self-employed with that of dependent employees.

Gross pension entitlements for couples

Key results

Half of OECD countries provide some support for non-working partners in a couple. An average-wage single-earner couple receives total benefits for both people of 55.6% of the average wage compared with 50.7% for single full-career male earners after a full career. When both partners have been full-career average earners then replacement rates are lower than that for two individuals in five countries, Denmark, Ireland, Lithuania, the Netherlands and New Zealand.

There are two ways in which partnership status affects pension entitlements. First, some systems offer "derived" rights: these are benefits for the couple that derive from the working experience and contributions of one spouse. Secondly, some first-tier benefits are calculated based on family status, assessed using the couple as a "pension unit" rather than treating each individual separately. For this analysis the word "couple" refers to the benefit unit that is recognised in each country, be that through marriage, civil partnership or cohabitation.

Table 5.1 shows calculations of pension entitlements for three different family types. In the first two, total gross earnings are held constant at 100% of the economy-wide individual average. A single man with these earnings is compared with a single-earner couple (male earner). The final case shows a couple consisting of two earners, each with 100% of average earnings, compared with two singles, each with average earnings.

There is significant variation between countries in terms of the policy stance adopted for non-workers within a couple. In some countries, benefits are higher for couples than for single people because of basic schemes that pay a higher rate to a couple than to a single person (although less than the entitlement of two single people) as in the Netherlands, for example. In Ireland there are spousal benefits in the basic pension for partners in a couple who do not earn a full basic pension entitlement in their own right.

In Japan and the United States, there are spousal benefits in the public, earnings-related schemes. Again, these higher benefits are paid to couples where one partner has not earned a large entitlement in his or her own right. Additionally, there are several countries with either residence-based basic pensions or means-tested targeted benefits that are provided on an individual basis and so are paid to the non-working partner in the couple.

On average for couples in which there is a male average earner and a non-working partner, the pension benefit is 55.6% of average earnings, at the normal retirement age, compared to 50.7% for a single male worker at average earnings. Overall, just under half of OECD countries provide higher total benefits for one-earner couples than for single earners, at the average wage. The largest difference is found in Australia where benefits for single-earner couples are 32 percentage points higher than for single earners, with Denmark, Ireland, New Zealand and Norway all over 20 percentage points. In Australia, Denmark, Ireland and Norway, the non-working partner has full entitlement to the means-tested targeted pensions and, in addition in Denmark, to the flat-rate residence-based basic pension, whilst in New Zealand both partners are entitled to the residence-based basic pension at the couple rate (76% of the individual rate for each partner). In Finland and Sweden, a single person on average earnings would not be eligible to the contributory minimum pension. However, a couple with one partner earning the economy-wide average would receive a top-up. Lithuania actually has a lower replacement rate as the living alone supplement is withdrawn.

Given an equivalence scale of square root of 2 for a couple in order to account for economies of scale in living costs (Chapter 7), the single-earner couple benefit level of 55.6% of average earnings provides an equivalent, at the individual level, of 39.3%, so over 11 percentage points lower than for single men, reflecting the fact that the second person has not received any labour income.

For couples with both earning the average wage, results are only shown for those cases that would give a different pension entitlement than for two single individuals. The only countries with couple specific rules in that case are Denmark, Ireland, Lithuania, the Netherlands and New Zealand. In New Zealand the residence-based basic component is paid at a lower level for each individual in a couple than if they were single. This is also the case in the Netherlands. In Denmark the rate of withdrawal of the means-tested component is higher for couples than for single individuals. In Ireland and Lithuania, living alone allowances are lost for the couple compared to two single individuals.

Definition and measurement

The old-age pension entitlement measures how effectively a pension system provides a retirement income to replace earnings, the main source of income before retirement. The gross entitlement is defined as gross pension divided by gross pre-retirement earnings.

For the couple analysis, a male and female partner of the same age are assumed to enable easier comparison with the single-earner scenario. For the two-earner couple, both are assumed to retire at the earliest age at which no penalty will apply to their benefits, with the female pensioner then having their benefits indexed until reaching the male retirement age for those countries with lower female retirement age.

Table 5.1. Gross pension entitlements by earnings: singles versus couples, percentage of average earnings

	Single, average earner – male (female where different)		Single earner couple – male at average earnings, if different from single male average earner	Couple, each with average earnings, if different from two single average earners
Australia	26.0	*(23.8)*	57.8	
Austria	74.1			
Belgium	43.5		54.0	
Canada	36.8		42.6	
Chile	37.1	*(34.9)*		
Colombia	74.8			
Costa Rica	64.1	*(61.5)*		
Czechia	47.4		57.8	
Denmark	73.1		96.0	139.1
Estonia	28.1		40.1	
Finland	58.4		69.9	
France	57.6			
Germany	43.9			
Greece	80.8			
Hungary	52.4	*(49.0)*		
Iceland	43.1		61.6	
Ireland	26.2		47.1	48.2
Israel	38.0	*(35.2)*	42.8	
Italy	76.1			
Japan	32.4		43.3	
Korea	31.2		33.5	
Latvia	39.8			
Lithuania	18.2		17.0	34.0
Luxembourg	74.8			
Mexico	55.5		65.1	
Netherlands	74.7		85.6	131.2
New Zealand	39.7		60.2	60.2
Norway	44.5		68.0	
Poland	29.3	*(22.9)*		
Portugal	73.9			
Slovak Republic	54.9			
Slovenia	42.1			
Spain	80.4			
Sweden	62.3		74.1	
Switzerland	39.9			
Türkiye	70.3	*(67.6)*		
United Kingdom	41.9			
United States	39.1		48.0	
OECD	**50.7**	***(50.1)***	**55.6**	**99.5**

Note: Values are only shown for single-earner couples where the pension received differs from that of a single male earner. Values are only shown for couples with average earnings when they differ from the rates that would apply to a single man and single woman combined.
Source: OECD pension models.

StatLink https://stat.link/fz7yng

Impact of unemployment breaks on pension entitlements

Key results

Whilst starting late reduces earnings-related pensions, periods of unemployment normally provide some pension protection through credited years of contribution for example. In addition, residence-based and contributory minimum pensions help cushion the impact of unemployment breaks. This indicator shows how these career breaks affect future pension entitlements. Workers with average earnings and having five years out of the labour market due to unemployment will have a pension equal to 94% of that of a full-career worker on average across the 38 OECD countries. Benefits are below 90% of the full-career worker in Hungary, Korea, Latvia and the Slovak Republic as there is limited credit provided to cushion the impact of the break.

Most OECD countries provide some degree of unemployment credit for at least an initial period. On average five years of unemployment will result in a pension of 94% of that of a full-career worker for the average-wage case. When starting the career 5 years later and then having a period of 10 years of unemployment during the career, this falls to 79%, with both scenarios leading to a higher required retirement age in a few countries. For low earners, the impact of these two career-break cases on pensions is slightly lower, with a relative pension of 95% and 83%, respectively, compared with the full-career baseline. Compared with a full-career worker in a country with a normal retirement age of 66 for example, these 5- and 15-year missing years represent about 11.5% and 34% of the career length, respectively. Without any protection, these shares would provide an order of magnitude of the expected negative impacts of these breaks on pensions.

For the average-wage worker, pension shortfalls relative to someone with a full, unbroken career varies widely across countries. They are larger for longer duration of career absence and for high earners. In Hungary, Korea, Latvia and the Slovak Republic the pension loss after a five-year unemployment break is around 11% or more as only the first year is partially covered in Hungary and Latvia, with no credit at all in the Slovak Republic and with Korea providing full credit for the first year only, based on last earnings.

In other countries, pension rules can fully offset the fallout from spells of unemployment. This applies for example in Ireland, Spain and the United States. In Spain and the United States, this is because total accrual rates and the reference wage used to compute benefits are not affected – for example, pension entitlements stop accruing in Spain and the United States after 38.5 – which on top take only part of the career to calculate the reference wage – and 35 years, respectively. In Ireland, this is because such a break does not affect the contribution-based basic pension level. In New Zealand, as well, periods of unemployment do not affect the basic pension as it is entirely residence based. The Netherlands' residence-based basic pension provides a constant level of benefit irrespective of unemployment periods but the occupational pension is sharply reduced by unemployment breaks. In Australia and Iceland, although there is no protection in the FDC pension schemes, both countries have basic pensions that are gradually withdrawn against other income, so whilst this does not provide protection for the five-year case it does cushion the impact of the longer unemployment break scenario.

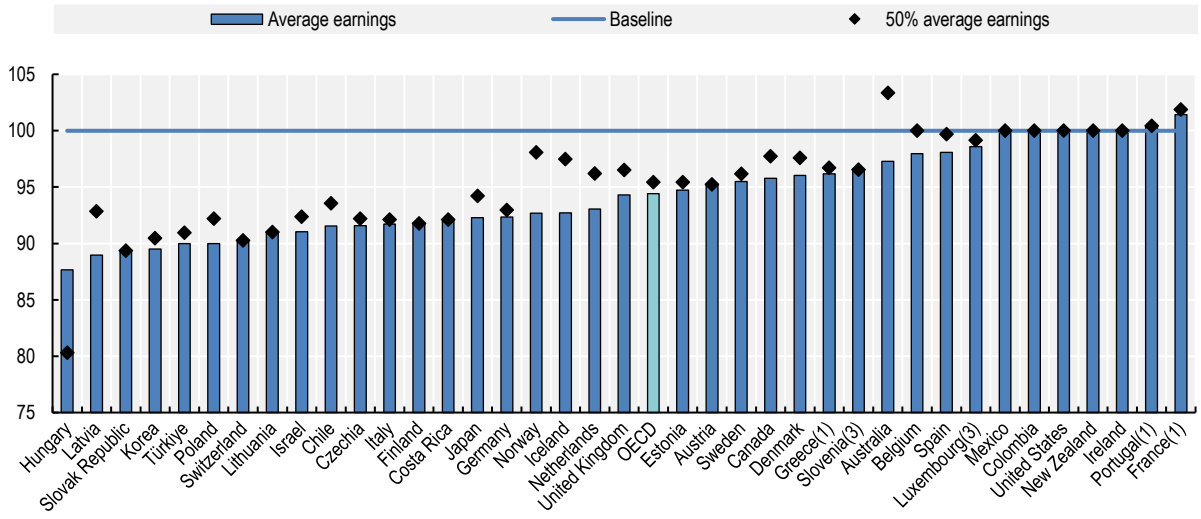
In Greece, Luxembourg and Slovenia the loss in future benefits is small but the individual needs to work one, three and three years longer, respectively, to get a full pension (i.e. without penalty). For Greece and Slovenia, the limited loss is also due to the indexation of benefits in payment, as the full-career worker will have been receiving pensions indexed below wage growth, therefore declining in relative terms. Average-wage workers have to retire later to benefit from a full pension after experiencing a five-year unemployment break in France and Portugal as well due to the required contribution rules and in both cases the benefit level is slightly above 100% of the full career case.

There are countries which afford low-paid workers better protection against long-term unemployment than average earners, because contributory minimum pensions and resource-tested schemes play a crucial role – Australia, Belgium, Canada, Chile, Colombia, Iceland, Mexico, Norway and Poland. By contrast, lower earners in Germany are more affected by the longer unemployment break than average earners, as low earners then lose their entitlement to the supplemental component of the pension due to their shorter contribution period.

Definition and measurement

For the unemployment career case, men are assumed to embark on their careers as full-time employees at 22 or 27 for the late entry case, and to stop working during a break of up to ten years from age 35 due to unemployment; they are then assumed to resume full-time work until normal retirement age, which may increase because of the career break. Any increase in retirement age is shown in brackets after the country name on the charts, with the corresponding benefits for the full career worker indexed until this age. The simulations are based on parameters and rules set out in the online "Country Profiles" available at http://oe.cd/pag.

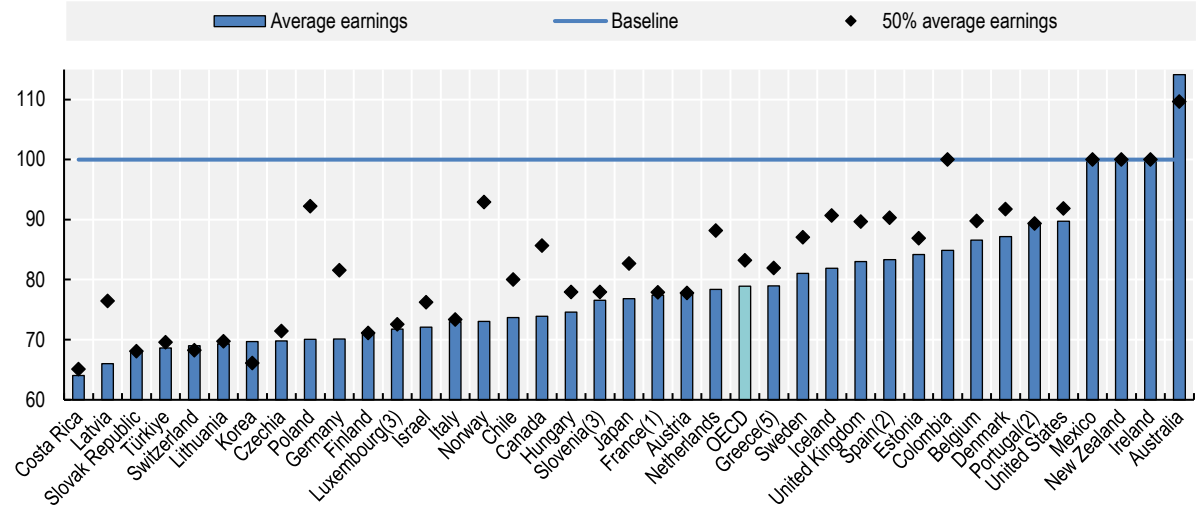
Figure 5.1. Gross pension entitlements of low and average earners with a 5-year unemployment break versus worker with a full career



Note: Figure in brackets refers to increase in retirement age due to the career break. Individuals enter the labour market at age 22 in 2020. The unemployment break starts in 2033. Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level.
Source: OECD pension models.

StatLink https://stat.link/vmfu6t

Figure 5.2. Gross pension entitlements of low and average earners with a 10-year unemployment break after entering the labour market 5 years later



Note: Figure in brackets refers to increase in retirement age due to the career break. Individuals enter the labour market at age 27 in 2025. The unemployment break starts in 2033. Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level.
Source: OECD pension models.

StatLink https://stat.link/eltwqp

Impact of childcare breaks on pension entitlements

Key results

Many individuals have interrupted careers because of having children and this indicator shows how this affects future pension entitlements. Average-wage women with two children and taking five years out of the labour market to care for the children will have a pension equal to 95% of that for a full-career female worker with two children but not taking a break on average across the 38 OECD countries. Hungary, Ireland, Mexico, New Zealand, Spain and the United States offer benefits at the same level as the interrupted career case, whilst in Colombia, Israel, Korea, Poland and Türkiye the impact is large as future benefits are about 90% of the full-career workers. For low earners, the negative impact of such breaks on future pensions is more limited in most countries.

Five countries give credits just for having had children, irrespective of whether a career break occurred to take care of children. Extra years of credit are given in France and Germany, a more favourable conversion factor being applied in Italy and a pension bonus is given in Czechia and Spain. For example, at the average-wage level, the full-career mother will get a higher replacement rate compared with the no-children female worker of 3, 2, 4, 3 and 2 percentage points in Czechia, France, Germany, Italy and Spain, respectively. In Germany having a child gives one parent a credit of one pension point annually for three years, thereby making it equivalent for pension purposes to earning the average wage throughout the credit period, resulting in a much higher benefit entitlement (11 percentages point higher) for low earners. In addition, in both France and the Slovak Republic it is possible to retire one year earlier for the no-break with children case in comparison to the full-career worker without children. The results shown are a comparison between those women taking a career break having had two children compared to those who continued to work.

Most OECD countries aim to protect some periods of absence from the labour market to care for children. Credits for childcare typically cover career breaks until children reach a certain age. They are generally less generous for longer breaks and for older children. Many OECD countries credit time spent caring for very young children (usually up to 3 or 4 years-old) as insured periods and consider it as paid employment. However, once children are aged 6 years or older any credit given for this extended period is usually only to determine eligibility for early retirement and the minimum pension, and not to raise benefits. Some countries (Czechia, Greece, Hungary and Luxembourg) factor childcare into assessments of eligibility but disregard them when computing the earnings base, thereby limiting the negative impact. In Greece and Slovenia for both 5- and 10-year breaks and in Costa Rica, France, Hungary, Luxembourg and Portugal for the 10-year break, workers have to retire later to be entitled to a pension without penalty due the rules governing required contribution periods. In Slovenia, for example, a worker who enters paid employment at 22 but takes ten years out of work will have contributed for less than 40 years at age 62 and will therefore have to work until 65 to be able to retire without penalty.

On average, a 5-year break lowers future benefit entitlements at the average wage by 5%, and by 2% for low earners (Figure 5.3). In Colombia, Germany, Israel, Korea, Poland and Türkiye the future benefit is about 90% of the full-career workers at the average earnings level as there is limited credit given for periods not working, and in the case of Korea credit is only given to the second child. Conversely, in Hungary, Ireland, Mexico, New Zealand, Spain and the United States, for women with two children the benefit is exactly the same as for the full-career case. Low earners in both Colombia and Poland are protected by the minimum pension, as is also the case in Slovenia where women have to retire two years later in comparison to the no-break case.

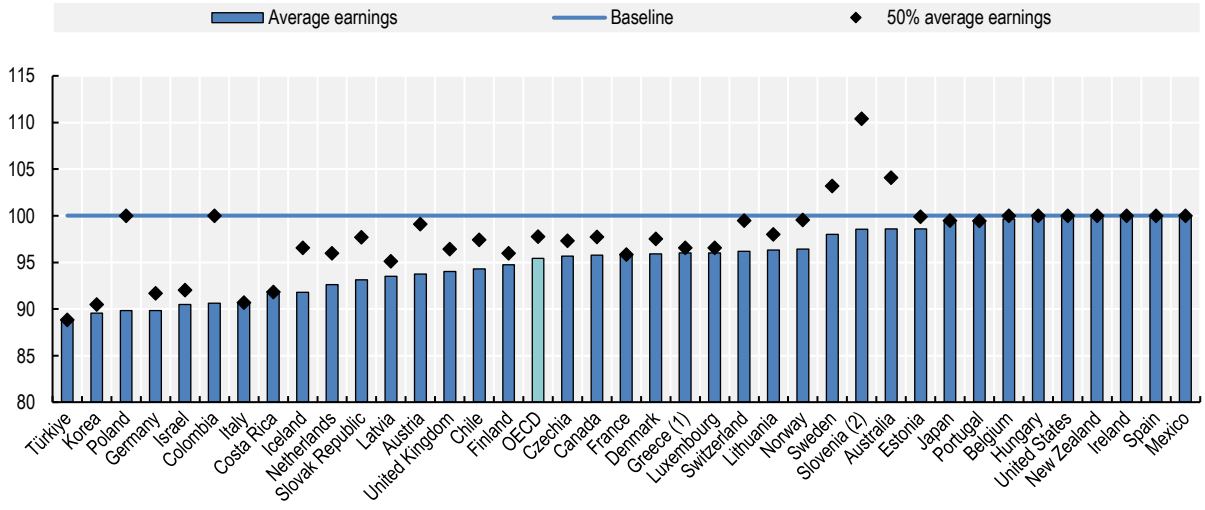
In Estonia and Sweden, credits are given based on the nationwide average income and 75% thereof, respectively, resulting in higher benefits for low earners. Other countries where low-wage mothers are much more protected than average-wage mothers for childcare breaks are: Austria and the Slovak Republic as they provide flat-rate credits during childcare breaks which are worth more to lower earners, and Australia, Colombia, Iceland and Poland due to safety-nets and minimum pensions providing greater protection to low earners.

For the 10-year break case, the average loss in benefit increases to over 11% for average earners and 7% for low earners (Figure 5.4). Average earners in Germany, Poland and Türkiye have future pensions under 80% of the full-career worker with low earners being similarly affected in Germany and Türkiye, whilst in Poland the minimum pension maintains low earners at 100% of the no-break woman. In Australia the benefit is actually higher by around 9% for both earnings levels as the career-break individuals have greater entitlement to the asset-tested Age Pension.

Definition and measurement

The OECD baseline full-career simulation model assumes labour market entry at the age of 22. For the childcare career case, women are assumed to embark on their careers as full-time employees at 22, and to stop working during a break of up to ten years from age 30 to care for their two children born when the mother was aged 30 and 32; they are then assumed to resume full-time work until normal retirement age, which may increase because of the career break. Any increase in retirement age is shown in brackets after the country name on the charts, with the corresponding benefits for the full career worker indexed until this age. The simulations are based on parameters and rules set out in the online “Country Profiles” available at http://oe.cd/pag.

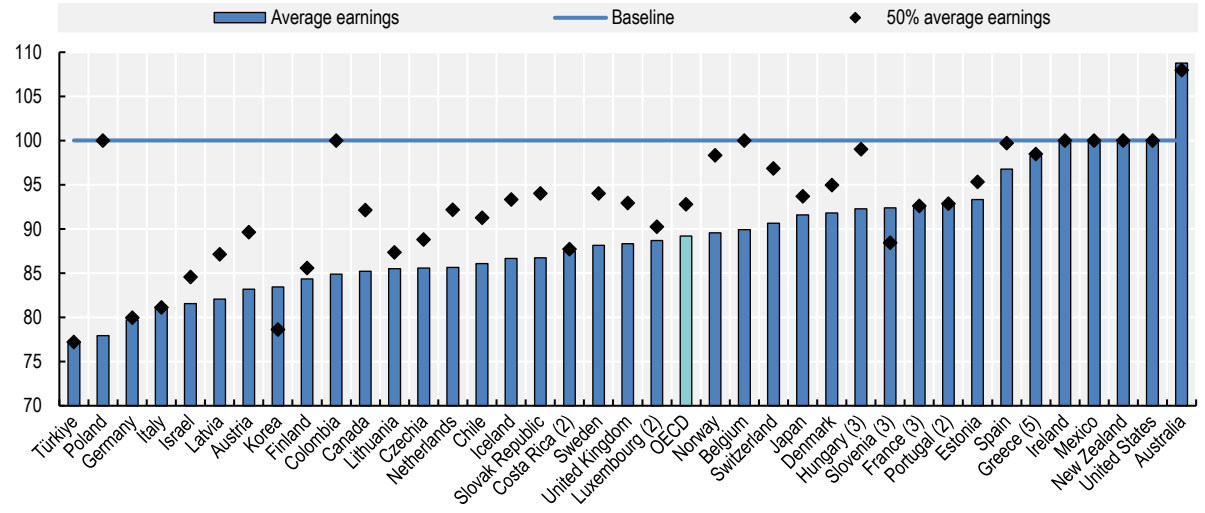
Figure 5.3. Gross pension entitlements of low and average earners with a 5-year childcare break versus women with two children with an uninterrupted career



Note: Figure in brackets refers to increase/decrease in retirement age. Individuals enter the labour market at age 22 in 2022. Two children are born in 2030 and 2032 with the career break starting in 2030. Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level.
Reading note: In Canada, the gross replacement rate is 36.8% for a full-career female average earner with two children, the same as for a single female earner without children (see Table 4.1). When taking a five-year break the pension falls to 95.8% of this value thereby giving a replacement rate of 35.3%.
Source: OECD pension models.

StatLink https://stat.link/m9ix1f

Figure 5.4. Gross pension entitlements of low and average earners with a 10-year childcare break versus women with two children with an uninterrupted career



Note: Figure in brackets refers to increase/decrease in retirement age. Individuals enter the labour market at age 22 in 2022. Two children are born in 2030 and 2032 with the career break starting in 2030. Low earners in Colombia, New Zealand and Slovenia are at 64%, 63% and 56% of average earnings, respectively, to account for the minimum wage level.
Source: OECD pension models.

StatLink https://stat.link/16pbwh

Impact of different earnings profile on pension entitlements

Key results

The base case in Chapter 4 concentrates on full-career replacement rates when individuals are at a constant level of earnings relative to the average during their whole career. In the alternative earnings profile shown here individuals start at a lower salary before steadily progressing until age 55 from which the wage remains at a constant share of the average wage. For comparison purposes, this scenario is calibrated such that over the career the average wage is equal to 100% of the average wage for the whole economy, which allows comparisons for the same lifetime earnings. Under this scenario the benefit level for male workers is 52.0% of the average wage, slightly higher than for the base case at 50.7%. For women, it is 51.3%, compared to the base case of 50.1%.

Full-career male workers at the average wage throughout their career have, on average, a future gross replacement rate of 50.7%, when they start working at age 22. For the earnings profile shown here the benefit level as a percentage of the average wage is slightly higher at 52.0%. That is, while under this scenario, the relative wage increases throughout the career – from 60% of the average wage at age 22 to 123.33% at retirement age, ensuring the same lifetime earnings (see below) – the pension amount is similar to that of the base case scenario. Figure 5.5 shows the earnings profile for the retirement at age 66 case. However, whilst in the base case final earnings and lifetime average earnings are the same this is not the case for the alternative profile case as the final earnings are higher, implying a benefit level of 42.2% of final earnings on average. The equivalent figures for female workers are 50.1% for the base case and 51.3% for the earnings profile, equivalent to 41.6% of final earnings.

In some countries, the pension benefit level is identical in the earnings profile and the base cases, as pension systems that have flat-rate benefits, or points systems or constant accrual rates with wage valorisation of past earnings are not affected, as career average earnings are the same and any ceilings to contributions do not come into play. These countries are Austria, Canada, Czechia, Germany, Hungary, Ireland, Japan, Lithuania, Luxembourg, Mexico, New Zealand and the Slovak Republic.

By contrast, countries that do not use the entire career earnings and price uprate past wages when calculating pensions have higher benefit values using the earnings profile scenario compared to the base case. The countries in question are Colombia, Costa Rica, France, Portugal, Slovenia, Spain and the United States as only 10, 25, 25, 40, 24, 27 and 35 years of earnings, respectively, are used. For example, in Costa Rica the final 25 years are now used to calculate the reference wage for pension calculations. Under the base case this gives a reference wage equivalent to 79% of the average wage at retirement, as past earnings are only adjusted for inflation, whereas for the earning profile it is 92%, with Spain showing a similar increase. The impact is not as large in Portugal because 40 of the 46 years of career are used, nor in France as there is a ceiling to contributions to the general DB scheme so the higher earnings at the end of the career are less relevant as the pensionable salary is around the average wage.

For countries that have large defined contribution pension schemes, the lower earnings at the start of the career – while having the same average over the career – has a greater effect on reducing the future benefit level, assuming the level of returns are higher than wage growth, than is countered by the higher earnings at the end of the career as there is less time for these increased contributions to accumulate. The largest falls are found in Australia, Chile, Denmark, Iceland, Israel, the Netherlands, Norway and the United Kingdom, but even in the highest case in the Netherlands the effective future replacement rate only falls by 2.2 percentage points with all the others around 1 percentage point. In Sweden the replacement rate actually increases as the contribution rate to the occupational pension increases from 4.5% to 30% for earnings above 108% of the average.

Definition and measurement

Under the baseline assumptions, workers earn the same percentage of average worker earnings throughout their career. However, although the average wage over the career is maintained at 100% (past wages are uprated based on average-wage growth), the individual starts at 60% of average earnings, increasing to average earnings between 12 and 25 years later – the exact year depends on the retirement age so as to ensure that the career average is equal to 100% of average wage -, then increasing to 123.33% of average earnings at age 55 and remaining at this level until retirement age. Therefore, final earnings are no longer equal to lifetime average earnings revalued in line with economy-wide earnings growth. The benefit levels shown are expressed as a percentage of career average earnings.

Figure 5.5. Earnings profile compared to base case, retirement at age 66

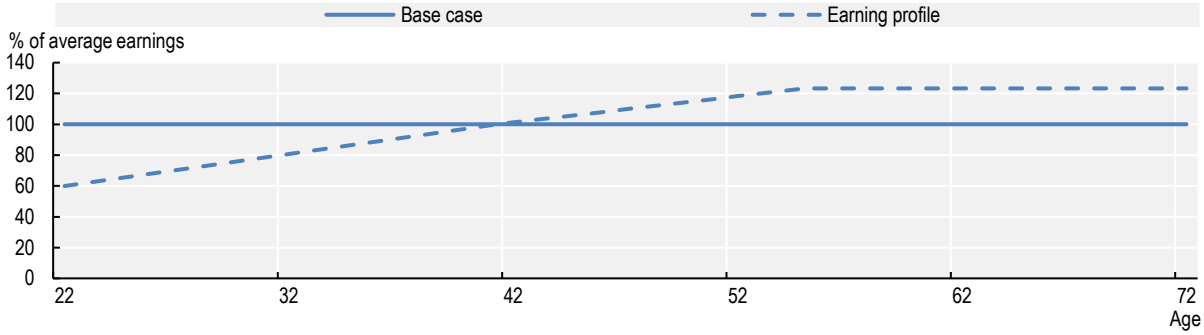


Table 5.2. Gross and net pension benefit level by earnings profile

Percentage of average wage at retirement

	Pension age		GRR				NRR			
			Base case		Earning profile		Base case		Earning profile	
Australia	67		26.0	*(23.8)*	25.4	*(23.3)*	33.7	*(30.9)*	33.0	*(30.2)*
Austria*	65		74.1		74.1		87.4		87.4	
Belgium	67		43.5		46.6		60.9		54.9	
Canada*	65		36.8		36.8		44.2		44.2	
Chile	65		37.1	*(34.9)*	36.3	*(34.2)*	45.7	*(43.0)*	44.7	*(42.4)*
Colombia	62	*(57)*	74.8		91.6	*(89.2)*	73.1		89.6	*(87.3)*
Costa Rica	65	*(63)*	64.1	*(61.5)*	71.2	*(67.2)*	67.8	*(65.0)*	75.3	*(71.0)*
Czechia*	65		47.4		47.4		58.9		58.9	
Denmark	74		73.1		72.6		77.3		76.8	
Estonia	71		28.1		28.0		34.4		34.3	
Finland	69		58.4		58.8		65.1		65.5	
France	65		57.6		59.7		71.9		73.9	
Germany*	67		43.9		43.9		55.3		55.3	
Greece	66		80.8		80.3		90.0		75.0	
Hungary*	65	*(62)*	52.4	*(49.0)*	52.4	*(49.0)*	78.8	*(73.7)*	78.8	*(73.7)*
Iceland	67		43.1		41.7		52.1		50.8	
Ireland*	66		26.2		26.2		36.1		36.1	
Israel	67	*(65)*	38.0	*(35.2)*	36.5	*(33.8)*	47.3	*(43.9)*	45.5	*(43.5)*
Italy	71		76.1		77.5		82.6		87.2	
Japan*	65		32.4		32.4		38.8		38.8	
Korea	65		31.2		30.6		35.8		35.1	
Latvia	65		39.8		39.9		52.8		52.9	
Lithuania*	65		18.2		18.2		28.9		28.9	
Luxembourg*	62		74.8		74.8		86.9		86.9	
Mexico*	65		55.5		55.5		62.4		62.4	
Netherlands	70		74.7		72.5		93.2		91.7	
New Zealand*	65		39.7		39.7		43.5		43.5	
Norway	67		44.5		43.6		54.8		52.8	
Poland	65	*(60)*	29.3	*(22.9)*	30.0	*(23.4)*	40.3	*(31.5)*	41.3	*(32.1)*
Portugal	68		73.9		78.6		98.8		104.1	
Slovak Republic*	69		54.9		54.9		72.5		72.5	
Slovenia	62		42.1		47.5		63.4		70.1	
Spain	65		80.4		92.5		86.5		97.6	
Sweden	70		62.3		64.7		65.3		67.6	
Switzerland	65		39.9		40.1		45.3	*(45.2)*	45.5	*(46.4)*
Türkiye	65	*(63)*	70.3	*(67.6)*	71.8	*(68.2)*	95.4	*(91.6)*	97.3	*(92.4)*
United Kingdom	67		41.9		40.9		54.4		53.4	
United States	67		39.1		41.7		50.5		53.8	
OECD	**66.3**	***(65.8)***	**50.7**	***(50.1)***	**52.0**	***(51.3)***	**61.4**	***(60.6)***	**62.2**	***(61.4)***
Argentina	65	*(60)*	78.7	*(75.8)*	89.8	*(86.4)*	90.1	*(86.9)*	102.8	*(98.9)*
Brazil	65	*(62)*	88.4	*(93.3)*	91.1	*(95.4)*	96.9	*(102.0)*	99.7	*(104.1)*
China	60	*(55)*	68.3	*(53.8)*	77.5	*(61.6)*	88.3	*(70.1)*	100.0	*(79.9)*
India	58		38.9	*(37.8)*	43.6	*(42.5)*	44.2	*(42.9)*	49.6	*(48.3)*
Indonesia	65		53.5	*(50.6)*	53.9	*(51.1)*	55.8	*(51.7)*	56.2	*(52.1)*
Saudi Arabia	47		59.6		N/A		66.2		N/A	
South Africa*	60		8.0		8.0		9.2		9.4	
EU27	66.7	(66.4)	54.8	(54.3)	54.4	(53.9)	68.1	(67.5)	66.7	(66.0)

Note: * Individuals have the same gross benefit under both the base case and earnings profile scenarios.
Source: OECD pension models.

StatLink https://stat.link/dmhs8k

Sensitivity of replacement rates to changes in the economic assumptions

Key results

The base case in Chapter 4 concentrates on showing full-career replacement rates under the standard economic parameters that apply within the report, with some changes from those used in previous editions. This indicator focuses on two different sets of economic assumptions: one that may better reflect the possibility of an extended period of low growth and low interest rates (alternative scenario); and the one used in the last edition of the publication (old assumptions). For workers with average earnings and a full career from age 22, the future gross replacement rate at the normal retirement age averages 52.7% for men and 52.1% for women in the 38 OECD countries under the alternative scenario, which is around 2 percentage points higher than the base case figures. Compared with the old assumptions, the revision of economic assumptions generates over a 1 percentage point fall in the average replacement rate, with some countries being significantly affected.

Full career male workers at the average wage throughout their career will have, on average, a gross replacement rate of 50.7%, when they start working at age 22. These estimates are based on the standard economic parameters described in Chapter 4. As an alternative these standard parameters have been lowered to account for the possibility of a low economic growth and low interest rates scenario over the long term, which might be partly related to population ageing (Table 5.3). In addition, as the discount rate and the rate of return have changed within this edition, replacement rates are also reported based on the old values (OECD, 2021) of economic assumptions.

Table 5.3. Annual economic assumptions

Economic assumptions that apply every year from 2022

	Base case assumptions	Alternative scenario	Old assumptions (Pensions at a Glance 2021)
Real discount rate	1.5%	1.0%	2.0%
Price inflation	2.0%	1.0%	2.0%
Real wage growth	1.25%	0.75%	1.25%
Real rate of return	2.5%	2.0%	3.0%
GDP growth	Country specific based on projections of working-age population	Adjusted downward by 0.50%	Country specific based on projections of working-age population

Alternative scenario

The gross replacement rate for male workers at average earnings increases slightly from 50.7% to 52.7%, with similar increases for women under the alternative scenario.

There are six OECD countries, Czechia, Germany, Ireland, Japan, New Zealand and Slovenia that have the same replacement rate under both the alternative scenario and the base case. In all these countries there is either just a basic pension linked to earnings growth, or the relevant parameters of the pension system are unaffected by discount rate or the rate of return, resulting in a steady state replacement rate if the earnings are at a constant proportion of the average. Although the replacement rates are the same in both cases for Japan, this will not hold for all economic conditions.

The largest increases in replacement rates are found in Belgium, Mexico, Portugal, Spain, Türkiye and the United Kingdom, with increases of between 5.0 percentage points and 8.8 percentage points. In these countries past earnings are valorised to prices (Belgium, Portugal and Spain) or partially to GDP (Türkiye), or the basic pension is indexed to prices (Mexico), which generate higher pension value relative to future wages as a result of lower real-earnings growth. In the United Kingdom the triple lock commitment of a minimum of 2.5% increase in the basic pension comes into effect significantly increasing the value of the pension relative to average earnings and counteracting a 1.3 percentage points drop in the FDC. Conversely, the replacement rates fall by 2 percentage points in the Netherlands and by 1 percentage point in Latvia. In FDC schemes, the lower real rates of return by 50 basis points in the alternative scenario is offset by lower real-wage growth in the accumulation phase, but the lower real discount rate raises the price of price-indexed annuities, lowering replacement rates.

Old assumptions

Trends over the last decades towards lower real financial rates have required lowering the discount rate and the rate of return by 50 basis points compared with the last edition of *Pensions at a Glance*. If the assumptions had not been changed since the last edition, the gross replacement rate for men would be 1.3 percentage points higher at 52.0% with women being 1.2 percentage points higher at 51.3%. As the rate of return under the old assumptions was 1.75 percentage points higher than real wage growth, the countries with FDC schemes are those affected. The largest fall can be found in Iceland and the Netherlands at around 9 percentage points as both have big FDC schemes being modelled, with Australia and Sweden also over 4 percentage points at the average-wage level.

Definition and measurement

The old-age pension replacement rate measures how effectively a pension system provides a retirement income to replace earnings, the main source of income before retirement. The gross replacement rate is defined as gross pension entitlement divided by gross pre-retirement earnings.

Often, the replacement rate is expressed as the ratio of the pension to final earnings (just before retirement). Under the baseline assumptions, workers earn the same percentage of average worker earnings throughout their career. Therefore, final earnings are equal to lifetime average earnings revalued in line with economy-wide earnings growth. Replacement rates expressed as a percentage of final earnings are thus identical to those expressed as a percentage of lifetime earnings.

Further reading

OECD (2021), *Pensions at a Glance 2021: OECD and G20 Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/ca401ebd-en.

Table 5.4. Gross pension replacement rates by different economic assumptions

Percentage of average earnings

	Full career male workers at average earnings (women where different)													
	Pension age		Base case		Alternative scenario		Difference (p.p.)		Old assumptions		Base case		Difference (p.p.)	
Australia	67		26.0	*(23.8)*	25.1	*(22.9)*	*-0.8*	*-0.9*	30.8	*(28.3)*	*26.0*	*(23.8)*	*-4.8*	*-4.5*
Austria	65		74.1		75.2		*1.1*		74.1		*74.1*		*0.0*	
Belgium	67		43.5		48.5		*5.0*		43.5		*43.5*		*0.0*	
Canada	65		36.8		39.1		*2.3*		36.8		*36.8*		*0.0*	
Chile	65		37.1	*(34.9)*	38.4	*(36.2)*	*1.3*	*1.3*	38.7	*(36.5)*	*37.1*	*(34.9)*	*-1.6*	*-1.6*
Colombia	62	*(57)*	74.8		76.8		*2.0*		74.8		*74.8*		*0.0*	
Costa Rica	65	*(63)*	64.1	*(61.5)*	67.5	*(63.9)*	*3.3*	*2.4*	66.6	*(62.7)*	*64.1*	*(61.5)*	*-2.4*	*-1.2*
Czechia*	65		47.4		47.4		*0.0*		47.4		*47.4*		*0.0*	
Denmark	74		73.1		73.5		*0.4*		74.9		*73.1*		*-1.8*	
Estonia	71		28.1		29.6		*1.5*		28.1		*28.1*		*0.0*	
Finland	69		58.4		59.8		*1.4*		58.4		*58.4*		*0.0*	
France	65		57.6		61.5		*3.9*		57.6		*57.6*		*0.0*	
Germany*	67		43.9		43.9		*0.0*		43.9		*43.9*		*0.0*	
Greece	66		80.8		83.8		*3.0*		84.3		*80.8*		*-3.4*	
Hungary	65	*(62)*	52.4	*(49.0)*	55.3	*(51.7)*	*2.9*	*2.7*	52.4	*(49.0)*	*52.4*	*(49.0)*	*0.0*	*0.0*
Iceland	67		43.1		46.8		*3.6*		51.7		*43.1*		*-8.6*	
Ireland*	66		26.2		26.2		*0.0*		26.2		*26.2*		*0.0*	
Israel	67	*(65)*	38.0	*(35.2)*	40.4	*(37.5)*	*2.4*	*2.3*	41.8	*(38.3)*	*38.0*	*(35.2)*	*-3.8*	*-3.1*
Italy	71		76.1		76.0		*-0.1*		76.1		*76.1*		*0.0*	
Japan*	65		32.4		32.4		*0.0*		32.4		*32.4*		*0.0*	
Korea	65		31.2		34.0		*2.8*		31.2		*31.2*		*0.0*	
Latvia	65		39.8		38.8		*-1.0*		43.0		*39.8*		*-3.2*	
Lithuania	65		18.2		18.1		*-0.2*		18.2		*18.2*		*0.0*	
Luxembourg	62		74.8		76.3		*1.5*		74.8		*74.8*		*0.0*	
Mexico	65		55.5		60.9		*5.4*		57.5	*(55.5)*	*55.5*	*(55.5)*	*-2.0*	*0.0*
Netherlands	70		74.7		72.5		*-2.2*		83.9		*74.7*		*-9.2*	
New Zealand*	65		39.7		39.7		*0.0*		39.7		*39.7*		*0.0*	
Norway	67		44.5		44.2		*-0.3*		45.5		*44.5*		*-1.1*	
Poland	65	*(60)*	29.3	*(22.9)*	29.5	*(23.1)*	*0.2*	*0.2*	29.3	*(22.9)*	*29.3*	*(22.9)*	*0.0*	*0.0*
Portugal	68		73.9		82.7		*8.8*		73.9		*73.9*		*0.0*	
Slovak Republic	69		54.9		57.0		*2.1*		54.9		*54.9*		*0.0*	
Slovenia*	62		42.1		42.1		*0.0*		42.1		*42.1*		*0.0*	
Spain	65		80.4		88.0		*7.6*		80.4		*80.4*		*0.0*	
Sweden	70		62.3		63.4		*1.1*		66.4		*62.3*		*-4.1*	
Switzerland	65		39.9		43.8		*3.9*		41.3		*39.9*		*-1.4*	
Türkiye	65	*(63)*	70.3	*(67.6)*	76.6	*(73.4)*	*6.2*	*5.8*	70.3	*(67.6)*	*70.3*	*(67.6)*	*0.0*	*0.0*
United Kingdom	67		41.9		47.9		*6.0*		44.3		*41.9*		*-2.4*	
United States	67		39.1		40.7		*1.6*		39.1		*39.1*		*0.0*	
OECD	**66.3**	**(65.8)**	**50.7**	**(50.1)**	**52.7**	**(52.1)**	**2.0**	*2.0*	**52.0**	**(51.3)**	**50.7**	**(50.1)**	**-1.3**	*-1.2*
Argentina	65	*(60)*	78.7	*(75.8)*	85.4	*(82.5)*	*6.7*	*6.7*	84.0	*(81.1)*	*78.7*	*(75.8)*	*-5.3*	*-5.3*
Brazil	65	*(62)*	88.4	*(93.3)*	97.8	*(102.6)*	*9.4*	*9.3*	88.4	*(93.3)*	*88.4*	*(93.3)*	*0.0*	*0.0*
China	60	*(55)*	68.3	*(53.8)*	68.3	*(53.8)*	*0.0*	*0.0*	67.2	*(52.4)*	*68.3*	*(53.8)*	*1.1*	*1.4*
India	58		38.9	*(37.8)*	34.3	*(33.5)*	*-4.6*	*-4.3*	41.7	*(40.4)*	*38.9*	*(37.8)*	*-2.8*	*-2.6*
Indonesia	65		53.5	*(50.6)*	56.2	*(53.3)*	*2.6*	*2.7*	57.2	*(53.9)*	*53.5*	*(50.6)*	*-3.6*	*-3.3*
Saudi Arabia	47		59.6		60.9		*1.3*		59.6		*59.6*		*0.0*	
South Africa*	60		8.0		8.0		*0.0*		8.0		*8.0*		*0.0*	

Note: * Individuals have the same gross benefit under both the base case and alternative economic assumption scenarios.
Source: OECD pension models.

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Theoretical relative pensions of the self-employed

Key results

Self-employed workers with a taxable income (i.e. net of social security contributions) equal to the net average wage before tax (gross wage net of employee's contributions) can, on average in the OECD, expect to receive an old-age pension equal to 79% of the pension of the average-wage dependent worker in the private sector.

While the self-employed are required to participate in earnings-related pension schemes in most countries, they contribute the combined employee and employer contributions only in Canada, Costa Rica, Czechia, Estonia, Finland, Hungary, Korea, Lithuania, Luxembourg, Portugal, Slovenia, Türkiye and the United States (Table 5.5). Even in these countries, insufficient compliance with rules may undermine pension coverage.

In 13 countries, while self-employed workers are mandatorily covered by earnings-related schemes, pension coverage is limited because they are allowed to contribute less than employees, through reduced contribution rates (France, Iceland, Israel, Italy, Latvia, Norway, the Slovak Republic, Sweden and Switzerland), or flat-rate contribution (Colombia, Greece, Poland and Spain). Chile is currently in the former category but, after reform, will be employee-like from 2027. In Austria, the state contributes 4.3% for the self-employed to fully offset the lower contribution rate they pay (18.5%) compared with that of employees and employers (22.8%) for dependent employees. In Belgium, contribution rates are lower for the self-employed than for employees but the accrual rate is the same for both. In Australia, Denmark, Germany, Japan, Mexico and the Netherlands, the self-employed are, in contrast to employees, not required to join earnings-related schemes. In Ireland, the self-employed participate in contribution-based basic schemes on similar terms as employees while the earnings-related schemes are voluntary for all, whilst in New Zealand there are no mandatory pension contributions for either employees or the self-employed.

In countries where the self-employed are not required to contribute to earnings-related pension schemes the relative pension level is among the lowest as the pension of the self-employed is limited to first-tier benefits. In the full-career case, the relative pension of the self-employed is about half that of employees in Denmark, Germany, Greece and the Netherlands and is much lower in Mexico (17%) and Japan (34%) (Figure 5.6). Among countries with no mandatory contributions to earnings-related pensions by the self-employed, Australia stands out, as the means-tested basic pension actually gives the self-employed 109% of what average-wage employees get from mandatory schemes.

Low relative pensions for the self-employed – between 40% and 60% of employees' pensions – are also projected in Greece, Poland and Spain where only flat-rate contributions to earnings-related schemes are mandatory for the self-employed, and at 75% in Latvia, where mandatory contributions above the minimum wage are reduced substantially.

Lower contribution rates and a reduced contribution base result in lower pensions from mandatory earnings-related schemes for the self-employed relative to employees with the same taxable earnings in many countries. For example, in France (points scheme) and Italy, reduced contribution rates directly affect entitlements within the public system while in Norway, Sweden and Switzerland pensions are lower because the self-employed are not obliged to pay any contributions towards the occupational schemes. As a result, pensions of the self-employed relative to employees reach 51% in Switzerland; 66-70% in Italy and Sweden; between 74% and 87% in Chile, Costa Rica, Colombia, Czechia, Israel, Portugal and Slovenia; and above 90% in Estonia, France, Iceland, Korea, Lithuania and Norway.

Lower contributions of the self-employed do not always result in proportionally lower pensions. For example, in Czechia, progressive replacement rates result in the relative theoretical pensions of the self-employed reaching 87% even though the contribution base is set at only 50% of taxable income. In Belgium and Norway, the reduced contribution rates to public schemes do not reduce the benefits implicitly while in Austria and Costa Rica the reduced contributions of the self-employed are explicitly topped up with taxes.

Some countries calculate pensions of the self-employed based on gross income, i.e. income before deducting contributions. This leads to higher pensionable earnings "all else equal" in the case studied here (taxable income of the self-employed equal to the net wage before tax) when the contribution rate paid by the self-employed is higher than the employee part for dependent workers. Hence, the theoretical pension of the self-employed is slightly higher than that of employees in Austria and Luxembourg. The United States allows the self-employed to deduct half of social security contributions before calculating the contribution base. Given that employees and employers pay equal shares of contributions, this deduction equalises theoretical pensions between the self-employed and employees.

Definition and measurement

Theoretical pensions of a self-employed worker relative to an employee assumes that both have a taxable income (net income or net wage before taxes) equal to the average net wage before taxes, their career starts at age 22 in 2022, they do not face any interruptions and they retire at the normal retirement age. They contribute the amount that is (quasi) mandatory to pensions.

Table 5.5. Contributions requirements to mandatory and quasi-mandatory pensions for the self-employed

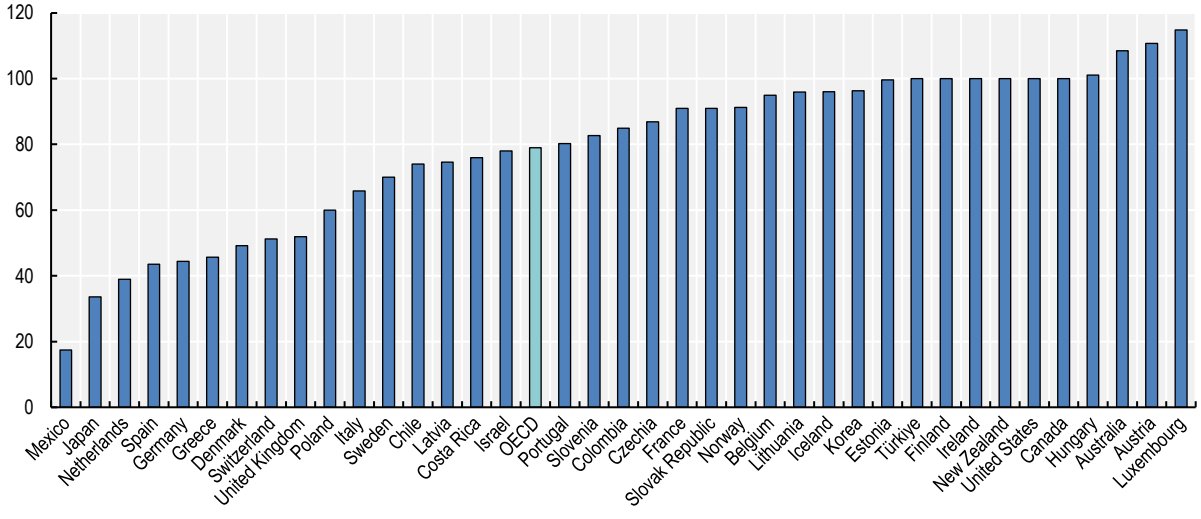
Mandatory or quasi-mandatory contributions to earnings-related schemes			Mandatory contributions to basic pensions only	No mandatory pension contributions
Employee-like	Reduced contribution rate	Flat-rate or lower contributions		
Canada	Austria*	Colombia	Ireland	Australia
Costa Rica	Belgium	Greece	Japan	Denmark
Czechia	Chile**	Poland	Netherlands	Germany
Estonia	France	Spain	United Kingdom	Mexico
Finland	Iceland			New Zealand
Hungary	Israel			
Korea	Italy			
Lithuania	Latvia			
Luxembourg	Norway			
Portugal	Slovak Republic			
Slovenia	Sweden			
Türkiye	Switzerland			
United States				

Note: *The self-employed contribute 18.5% compared to a total contribution rate of 22.8% for the employee and employer combined, but the remaining 4.3% for the self-employed is financed by the state. **Following the completion of the phase-in reform (2018-2027) Chile will move to the employee-like column. Employee-like means that self-employed are covered by the same or equivalent schemes as employees, have the same contribution rates and thresholds, and that their contributions are income based. In Ireland neither self-employed nor dependent workers are covered by mandatory or quasi-mandatory earnings-related schemes, but basic pensions are financed with contributions.
Source: Country Profiles available at http://oe.cd/pag.

StatLink https://stat.link/beg4kf

Figure 5.6. Theoretical relative pensions of the self-employed as a percentage of those of employees

Theoretical pensions of a self-employed worker relative to an employee having both a taxable income (net income or net wage before taxes) equal to the average net wage before taxes, for individuals with a full career from age 22 in 2022 and contributing only the amount that is (quasi) mandatory to pensions



Source: OECD pension models.

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6 Demographic and economic context

Population ageing has been the main driving force behind changes in pension policies. Ageing is the result of demographic trends in fertility and life expectancy. The first indicator looks into the number of births per woman and its development over the last 50 years. Changes in life expectancy – at birth and at age 65 – are shown as the second indicator. The third looks into the degree of ageing measured as the level of and change in the number of people aged 65 and above relative to the number of people of working age (20-64). The fourth indicator looks at the employment rates of older workers. The fifth indicator presents calculations for the age at which people leave the labour market – the "Effective age of labour market exit", with the last indicator measuring the expected life years from this age by combining life expectancy with the previous indicator.

Fertility

Key Results

The total fertility rate is below the estimated replacement level – the number of children per woman needed to keep the total population constant – of about 2.1 in developed countries in 2022, in all OECD countries except Israel. Fertility rates fell sharply in the second half of the 20th century and have tended to stabilise in the OECD on average over the last two decades. In 15 OECD countries, fertility rates have slightly increased since the early 2000s. Over the last two years, fertility rates decreased, and to a larger extent in Australia, Costa Rica, Korea, Mexico and Türkiye. Fertility rates have a profound implication for pension systems because they, along with life expectancy, are the drivers of substantial shifts in demographic structures. Since 1960, there has been a steady convergence of fertility rates across countries.

Fertility rates currently average 1.59 across OECD countries, well below the level that ensures population replacement. The trend to fewer children started in the late 1950s, and the average fertility rate across OECD countries has stabilised close to 1.6 over the last two decades and is projected to remain at this level in the future. The fall in fertility rates reflected changes in individuals' lifestyle preferences, in family formation, and in constraints of everyday living, such as those driven by labour market insecurity, difficulties in finding suitable housing and affordable childcare.

Another effect might come from changes in women's aspirations regarding partnership and childbearing norms, especially in countries such as Japan and Korea where there is a strong link between marriage and maternity. However, the childbearing patterns of unmarried men and women have also changed. For example, half or more of births now occur outside of marriage in France, Iceland, Norway and Sweden. The average proportion of births outside marriage in OECD countries is now one-third of the total.

Over the last 50 years, there has been a steady convergence in fertility rates across OECD countries. In the early 1960s, Colombia, Costa Rica, Korea, Mexico and Türkiye had rates around twice the OECD average, with Hungary and Latvia not much over half. There has been a steady convergence across countries: the standard deviation declined from 1.4 in 1962 to 0.3 in 2022 and is projected to continue to drift lower to only 0.1 in the 2060s.

Since 2000, the fertility rates have slightly increased in 15 out of 38 countries while the average has decreased slightly. The increases from a very low level have been the strongest in a few countries, including Czechia (+0.52), Latvia (+0.33) and Slovenia (+0.42). The largest declines have been observed in Colombia (-0.74), Costa Rica (-0.66) and Mexico (-0.82). However, between 2020 and 2022 fertility levels have fallen in a large majority of OECD countries, and by 0.1 on average. Falls of 0.2 or more have occurred in Australia (-0.23), Costa Rica (-0.24), Korea (-0.24), Mexico (-0.34) and Türkiye (-0.20), with the decrease in Korea being particularly marked as fertility was already at the lowest level in the OECD in 2020.

While the average fertility rate will be 1.63 across OECD countries by 2062 according to the median forecast of the United Nations Population Prospects, forecast uncertainty is considerable, with the 20th percentile of probabilistic projections for the OECD average at only 1.28 and the 80th percentile close to reproduction at 1.97 (Figure 6.1).

As a result, the old-age to working-age ratio will increase sharply placing additional burdens on the working-age population to finance pay-as-you-go pensions and healthcare for older people.

Among the other major economies, Indonesia, Saudi Arabia and South Africa all currently have fertility rates above the replacement level of 2.1, with India just below. However, the downward trend is expected to continue in these countries, with fertility rates going below the natural replacement rate by 2030. By contrast, the trough has now been reached in China with levels projected to increase over the next 40 years.

Definition and measurement

The total fertility rate is the number of children that would be born to each woman if she were to live to the end of her child-bearing years and if the likelihood of her giving birth to children at each age was the currently prevailing age-specific fertility rate. It is generally computed by summing up the age-specific fertility rates defined over a five-year interval. A total fertility rate of 2.1 children per woman – the replacement level – broadly ensures a stable population size, on the assumptions of no migration flows and unchanged mortality rates.

Table 6.1. Total fertility rates, 1962-2062

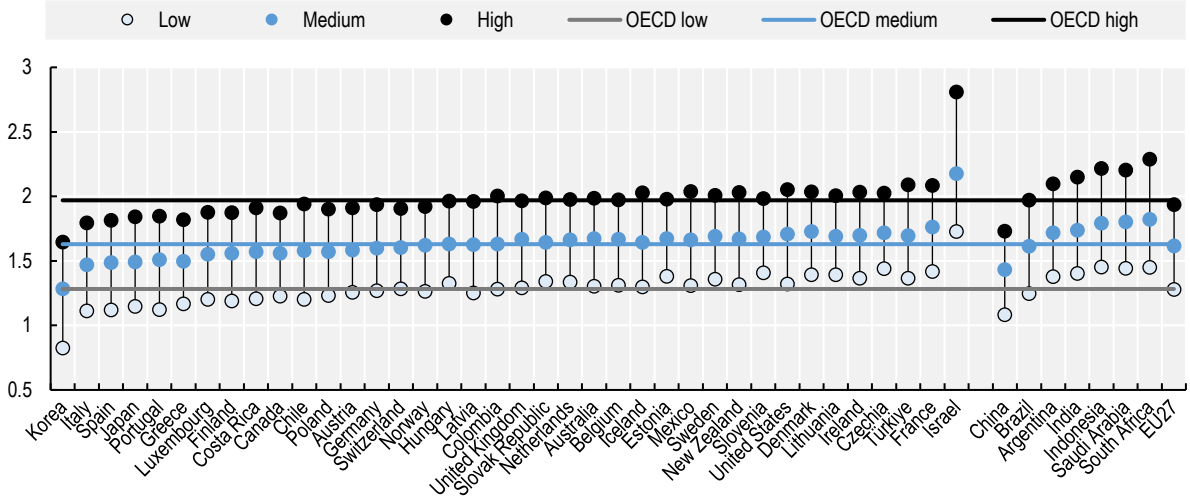
	1962	1982	2002	2022	2042	2062		1962	1982	2002	2022	2042	2062
Australia	3.39	1.93	1.76	1.60	1.65	1.67	Mexico	6.77	4.44	2.62	1.80	1.70	1.67
Austria	2.80	1.66	1.37	1.47	1.55	1.59	Netherlands	3.17	1.50	1.73	1.64	1.66	1.67
Belgium	2.60	1.62	1.64	1.59	1.65	1.67	New Zealand	4.13	1.94	1.87	1.76	1.69	1.68
Canada	3.73	1.70	1.49	1.47	1.53	1.55	Norway	2.87	1.71	1.76	1.51	1.59	1.62
Chile	4.60	2.65	1.92	1.54	1.55	1.58	Poland	2.74	2.32	1.25	1.46	1.54	1.57
Colombia	6.65	3.62	2.43	1.69	1.64	1.63	Portugal	3.27	2.07	1.46	1.37	1.45	1.51
Costa Rica	6.51	3.53	2.18	1.52	1.53	1.56	Slovak Republic	2.84	2.29	1.19	1.57	1.62	1.64
Czechia	2.11	1.99	1.18	1.70	1.72	1.72	Slovenia	2.29	1.92	1.21	1.63	1.68	1.69
Denmark	2.54	1.42	1.73	1.72	1.72	1.73	Spain	2.78	1.93	1.24	1.29	1.41	1.48
Estonia	1.95	2.08	1.36	1.68	1.67	1.68	Sweden	2.22	1.61	1.65	1.67	1.68	1.69
Finland	2.66	1.72	1.71	1.40	1.50	1.56	Switzerland	2.56	1.54	1.37	1.50	1.57	1.60
France	2.77	1.92	1.86	1.79	1.78	1.76	Türkiye	6.22	4.14	2.32	1.88	1.76	1.72
Germany	2.50	1.49	1.33	1.53	1.57	1.59	United Kingdom	2.89	1.77	1.62	1.57	1.63	1.66
Greece	2.30	2.10	1.32	1.37	1.45	1.50	United States	3.34	1.82	2.00	1.66	1.69	1.70
Hungary	1.80	1.78	1.30	1.58	1.62	1.64	**OECD**	**3.30**	**2.15**	**1.65**	**1.59**	**1.62**	**1.63**
Iceland	3.97	2.28	1.94	1.73	1.68	1.65							
Ireland	3.91	2.95	1.95	1.76	1.72	1.71	Argentina	3.09	3.19	2.48	1.88	1.77	1.72
Israel	3.76	3.15	2.88	2.95	2.54	2.21	Brazil	5.97	3.82	2.08	1.63	1.60	1.62
Italy	2.46	1.56	1.27	1.29	1.41	1.47	China	6.07	3.00	1.55	1.18	1.35	1.43
Japan	1.99	1.70	1.33	1.31	1.44	1.50	India	5.90	4.57	3.20	2.01	1.83	1.75
Korea	5.64	2.46	1.19	0.87	1.11	1.27	Indonesia	5.53	4.20	2.45	2.15	1.92	1.81
Latvia	1.92	1.99	1.26	1.59	1.61	1.63	Saudi Arabia	7.44	6.95	3.71	2.39	1.96	1.82
Lithuania	2.49	1.97	1.24	1.62	1.67	1.70	South Africa	6.04	4.62	2.31	2.34	2.00	1.84
Luxembourg	2.26	1.49	1.62	1.39	1.50	1.55	EU27	2.59	1.93	1.44	1.53	1.59	1.62

Note: The data refers to 5-year periods whose endpoint is indicated in the first row of the table.
Source: United Nations, Department of Economic and Social Affairs, (2022). World Population Prospects 2022, Online Edition (for future periods: medium-variant forecast).

StatLink https://stat.link/4euijq

Figure 6.1. Uncertainty about total fertility-rate projections

Low, medium and high variant projections for 2055



Note: Low, medium and high variant projections correspond to the 20%, 50% and 80% percentiles of probabilistic projections, respectively.
Source: United Nations, Department of Economic and Social Affairs (2022). Probabilistic Population Projections based on the World Population Prospects 2022: http://population.un.org/wpp/.

StatLink https://stat.link/n0wfqi

Life expectancy

Key Results

The remarkable increase in life expectancy is one of the greatest achievements of the last century. Lives continue to get longer, and this trend is predicted to continue although the pace of improvement in old age has slowed recently, and particularly given COVID-19. In 2022, life expectancy at age 65 averaged 83.0 years for men and 86.2 years for women. The figure was highest for women in Japan (89.9 years) and men in Australia, New Zealand and Switzerland (at 85.3 years or more) and lowest for women in Colombia, Hungary and the Slovak Republic (below 83.0 years) and men in Lithuania (78.1 years). On average across OECD countries, remaining life expectancy at age 65 is projected to increase by 4.4 years among women and 4.9 years among men by 2065.

Prior to COVID-19 life expectancy at age 65 for the period 2015-20 was 83.1 years for men and 86.3 years for women, on average (OECD, 2021). These are virtually the same levels that apply in 2022, as men were at 83.0 years and women at 86.2 years for the OECD average (Figure 6.2). The highest levels are found in Japan for women, at 89.9 years, with France, Italy, Korea and Spain also above 88 years. For men Australia, Canada, France, Italy, Japan, New Zealand and Switzerland are all at 85.0 years or above. The lowest levels for women are in Colombia (82.8 years), Hungary (82.5 years) and the Slovak Republic (82.5 years) with Hungary (78.5 years), Lithuania (78.1 years) and the Slovak Republic (78.6 years) being lowest for men.

There is considerable variation between OECD countries in life expectancy at older ages. Women in Japan are predicted to live another 29.1 years on reaching age 65 in 2065, followed by Korea (28.1 years). In contrast, remaining life expectancy at 65 in 2065 for women in both Latvia and Mexico is equal to 22.5 years (Figure 6.3). For men there is less variation between countries than there is for women. Switzerland will have the longest life expectancy at age 65 in 2065 (24.5 years), followed by Australia and New Zealand (24.4 years). By contrast, Latvia (19.3 years) and Mexico (20.0 years) are ranked at the bottom.

The gender gap in life expectancy at age 65 is predicted to be between almost two and four years in favour of women in nearly all OECD countries in 2065. Larger gender gaps of 5 years are observed in both Japan and Korea. The smallest forecasted gender gap of 1.7 years is in Iceland, the Netherlands, the United Kingdom and the United States.

The above numbers refer to period life expectancy, which measures life expectancy (current or projected) based on mortality rates for people of different ages at a given time (2022 or 2065 here) that hence belong to different birth cohorts. By contrast, cohort life expectancy is based on the projected mortality rates that would apply to the same birth cohort at different ages. It thus takes account of continuing improvements (after 2022 or 2065) that would benefit a given birth cohort. On average, these cohort estimates add 1.3 years for women aged 65 in 2065 and 1.0 years for men (Figure 6.3).

Between 2019 and 2020 life expectancy at age 65 decreased for men from 20.7 years to 19.9 years and for women from 24.6 years to 24.0 years, though both recovered their 2019 levels again by 2022.

Improvements in remaining life expectancy at age 65 has recently slowed from a period of fast longevity gains. The trend in the pace of old-age life-expectancy peaked in the mid-2000s (Figure 6.4) for both men and women. This slowdown leads to a structural break in the series in 2012-13 in the OECD on average. Between the mid-1990s and 2012 for women and 2013 for men the increasing trend in life expectancy at age 65 was fast at around 1.5 years for men per decade and 1.4 years for women, an acceleration from 0.8 and 1.0 years per decade before, respectively. Since 2012-13, the estimated structural trend equals 1.0 and 0.8 years, respectively, with the break in the series being magnified by COVID-19. However, these estimates should be treated cautiously as they are based on a statistical filtering method which can lead to significant revisions down the road even though this problem has been reduced by using projected life expectancy to compute (current) estimated values (Box 1.1 in (OECD, 2021)).

Definition and measurement

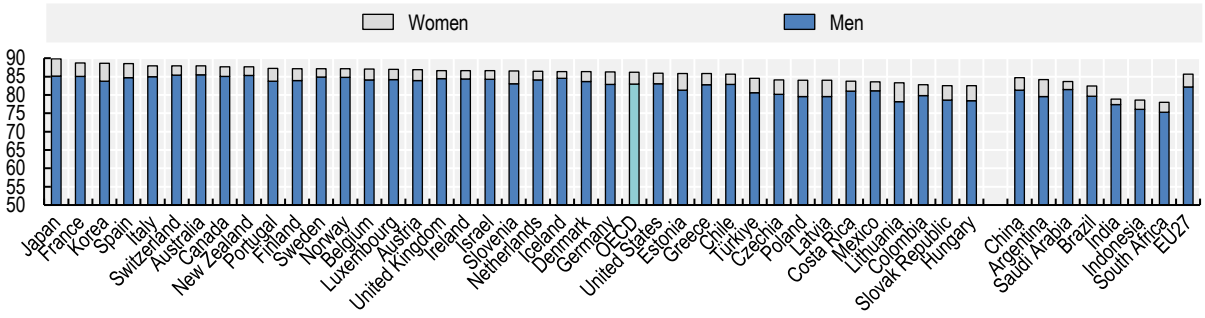
Life expectancy is defined as the average number of years that people of a particular age could expect to live if they experienced the age- and sex-specific mortality rates prevalent in a given country in a particular year: in this case, 2022 and 2065. Since the determinants of longevity change slowly, life expectancy is best analysed over a long-time horizon. Cohort life expectancy takes account of the projected changes in mortality estimates for a given cohort.

Further reading

OECD (2021), *Pensions at a Glance 2021: OECD and G20 Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/ca401ebd-en.

Whitehouse, E. (2007), "Life-Expectancy Risk and Pensions: Who Bears the Burden?", *OECD Social, Employment and Migration Working Papers*, No. 60, OECD Publishing, Paris, https://doi.org/10.1787/060025254440.

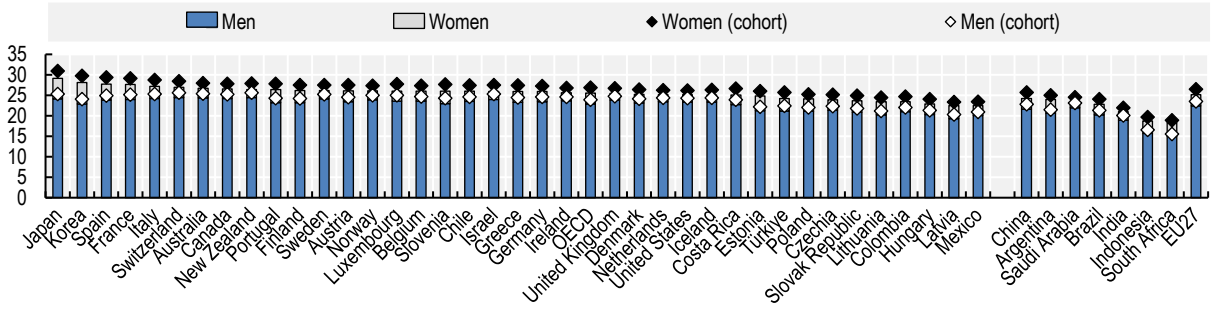
Figure 6.2. Current life expectancy at age 65 for men and women, in years, 2022



Source: United Nations, Department of Economic and Social Affairs, (2022). World Population Prospects 2022, Online Edition.

StatLink https://stat.link/xnylmo

Figure 6.3. Projected remaining life expectancy at age 65, 2065, in years



Source: United Nations, Department of Economic and Social Affairs, (2022). World Population Prospects 2022, Online Edition.

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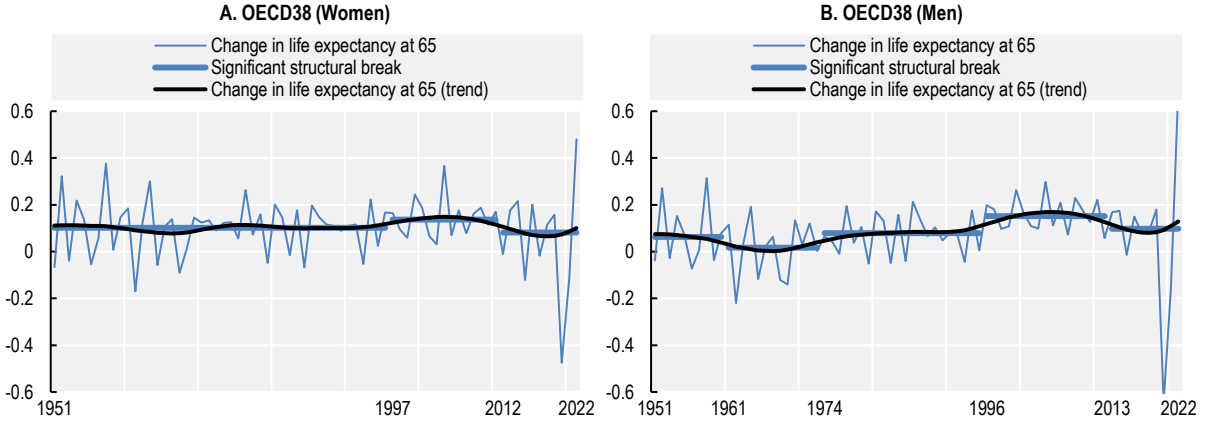
Figure 6.4. Structural breaks in life-expectancy gains

Annual change in remaining life expectancy at age 65, in years



Note: The breaks are significant at the 99% confidence level. To limit interferences from short-term fluctuations in change in period life expectancy, the breaks are estimated on the Hodrick-Prescott filtered trend series (lambda=100). For visual purposes, the range of the vertical axis has been limited from -0.6 to +0.6, but recent changes for men were larger in absolute terms: -0.64 in 2020 and +0.72 in 2022.
Source: United Nations, Department of Economic and Social Affairs, (2022). World Population Prospects 2022, Online Edition.

StatLink https://stat.link/kqwb6l

Demographic old-age to working-age ratio

Key Results

There are 31 individuals aged 65 and over for every 100 persons of working age (ages 20 to 64) on average across all OECD countries while there were only 20 thirty years ago and 16 sixty years ago. Population ageing has been accelerating as this average old-age to working-age demographic ratio – computed by keeping age thresholds constant – is projected to reach 54 over the next 30 years.

The evolution of old-age to working-age ratios depends on mortality rates, fertility rates and migration. OECD countries have seen prolonged increases in life expectancy that most analysts project to continue, implying an increasing number of older people and of pensioners.

Currently, the demographically oldest OECD country is Japan, with an old-age to working-age ratio equal to 55.4 (meaning 55 individuals aged 65 and over for 100 persons of working age defined as 20 to 64). Finland and Italy also have high old-age ratios, over 40. By 2052, the old-age to working-age ratio is expected to reach more than 70 in Greece (70.7), Italy (78.1), Japan (80.0), Korea (82.3) and Spain (77.2).

By contrast, Colombia, Mexico and Türkiye are the youngest countries based on this indicator, with old-age to working-age ratios of 14.5, 14.2 and 14.2 respectively, In the second half of this century, however, these countries are expected to age considerably. By 2080, the old-age ratio is projected to be much nearer to the OECD average for all three countries (64.2, 63.1 and 60.9 respectively compared to average of 66.1).

There have also been substantial declines in fertility, which, of course, will eventually diminish the number of workers entering the labour market. For example, fertility rates fell below the replacement level on average in OECD countries around the mid-1980s, implying shrinking populations in the long term. In the future, however, there is a great deal of uncertainty over how fertility rates will evolve (see Figure 6.1 above).

For the OECD as a whole, the increase in the old-age to working-age ratio is projected to continue at a faster pace according to the medium forecast of United Nations Populations Prospects, from 31.3 in 2022 to 53.8 in 2052 and 66.1 in 2082. By far, Korea is facing the most rapid population ageing among OECD countries. The old-age ratio would increase from (7.5 in 1962) 26.3 in 2022 to 117.0 in 2082 and Korea would move from being the tenth youngest country in the OECD in 2022 to the oldest in 2082.

The projected working-age population (20-64) will decrease by 11% in the OECD on average by 2062, i.e. by 0.28% per year. It will fall by over 35% in Korea, Latvia, Lithuania and Poland, and also by more than 30% in Greece, Italy, Japan, the Slovak Republic and Spain. It is projected to increase by more than 10% in Australia, Canada, Israel and Norway, with Israel being a clear outlier with an increase of 67% (Figure 6.5). EU countries are heavily represented amongst the list of countries with large declines, resulting in an average fall of 21% by 2062, nearly double that of the OECD. This will have a significant impact on the financing of pay-as-you-go (PAYG) systems as it is closely related to their internal rates of return. Even funded pension systems might be negatively affected by rapidly declining working-age populations through its effect on labour supply, in turn potentially lowering output growth and equilibrium interest rates.

Projections of the old-age to working-age ratio vary by source, as shown when comparing those obtained from UN and Eurostat data (Figure 6.6). On average for the EU22 countries in the OECD, projections based on UN data leads to an old-age to working-age ratio which is 3 percentage points higher in 2050 than based on Eurostat data, with large country variation. For Italy and Spain, the projected ratio is 12 percentage points lower and for Germany it is 8 percentage points lower based on Eurostat compared with UN data. Only five countries – Czechia, Denmark, Greece, Latvia and Lithuania – show a higher future ratio based on Eurostat versus UN data:

Definition and measurement

The old-age to working-age demographic ratio is defined as the number of individuals aged 65 and over per 100 people of working age defined as those at ages 20 to 64.

Further reading

Boulhol, H., M. Lis and M. Queisser (2022), “Trends in Pension Reforms in OECD Countries”, in Bloom, D., A. Sousa-Poza and U. Sunde (eds.), *Handbook on the Economics of Ageing*, Routledge, Abingdon.

Boulhol, H. and C. Geppert (2018), *Population ageing: Pension policies alone will not prevent the decline in the relative size of the labour force*, https://cepr.org/voxeu/columns/population-ageing-pension-policies-alone-will-not-prevent-decline-relative-size.

Table 6.2. Demographic old-age to working-age ratio: Historical and projected values, 1952-2082

	1952	1962	1992	2022	2052	2082		1952	1962	1992	2022	2052	2082
Australia	14.2	16.2	19.3	28.6	43.7	59.1	Mexico	7.0	7.2	9.1	14.2	34.0	63.1
Austria	18.1	21.8	24.4	32.5	59.0	66.0	Netherlands	14.7	17.6	20.9	34.7	51.0	63.0
Belgium	18.5	21.5	25.5	34.0	52.2	63.9	New Zealand	17.0	17.0	19.6	27.7	44.9	62.0
Canada	14.5	15.3	18.9	31.7	46.3	59.5	Norway	16.6	20.8	28.1	31.3	46.5	61.0
Chile	6.4	7.3	11.6	20.9	48.6	73.0	Poland	9.5	11.5	18.2	30.3	59.9	68.7
Colombia	7.5	7.7	8.0	14.5	37.7	64.2	Portugal	13.3	15.1	24.6	39.0	69.7	74.7
Costa Rica	6.9	7.4	9.9	17.5	43.7	74.8	Slovak Republic	12.0	13.5	18.4	27.3	56.8	62.4
Czechia	14.1	17.2	21.9	35.3	49.0	46.3	Slovenia	13.5	14.0	18.3	35.3	65.7	66.9
Denmark	16.3	19.7	25.7	35.6	44.3	55.9	Spain	13.0	15.2	24.3	33.4	77.2	84.7
Estonia	18.4	17.9	20.7	35.6	57.9	64.7	Sweden	17.4	20.9	30.8	35.9	46.0	60.4
Finland	12.2	13.9	22.5	41.5	52.4	69.6	Switzerland	16.1	18.0	23.4	31.8	56.4	62.0
France	19.7	21.5	24.9	39.3	57.1	68.4	Türkiye	8.4	9.7	9.7	14.2	39.3	60.9
Germany	16.9	19.8	23.7	38.0	59.1	64.8	United Kingdom	18.3	20.7	26.9	33.2	49.1	63.8
Greece	12.9	14.9	24.1	39.3	70.7	79.4	United States	14.9	18.1	21.0	29.4	43.4	57.7
Hungary	13.6	16.3	23.3	33.2	51.8	57.5	**OECD**	**13.8**	**15.7**	**20.4**	**31.3**	**53.8**	**66.1**
Iceland	14.4	17.2	19.2	25.5	45.7	64.9							
Ireland	20.7	23.1	21.7	25.8	51.2	61.4	Argentina	7.6	9.9	17.3	20.8	34.4	57.4
Israel	7.8	10.9	19.3	23.1	31.1	40.9	Brazil	5.5	6.3	9.1	15.8	40.1	62.3
Italy	14.6	16.9	25.4	41.0	78.1	83.4	China	9.6	8.0	9.7	21.6	58.8	92.9
Japan	9.9	10.8	21.6	55.4	80.0	85.7	India	6.5	7.3	8.6	11.7	26.2	50.4
Korea	6.3	7.5	8.6	26.3	82.3	117.0	Indonesia	4.0	5.4	8.3	11.5	26.2	39.4
Latvia	17.9	17.7	21.2	38.0	56.4	60.8	Saudi Arabia	7.7	8.4	5.5	4.4	39.5	49.6
Lithuania	14.8	15.1	19.4	35.1	56.8	60.9	South Africa	8.3	7.6	8.0	10.3	19.7	29.6
Luxembourg	16.0	18.0	21.2	23.5	48.2	59.4	EU27	14.8	16.6	22.3	34.6	58.2	66.7

Note: The demographic old-age to working-age ratio is defined as the number of individuals aged 65 and over per 100 people aged between 20 and 64.
Source: United Nations, Department of Economic and Social Affairs (2022), World Population Prospects 2022, Online Edition (for future periods: medium-variant forecast).

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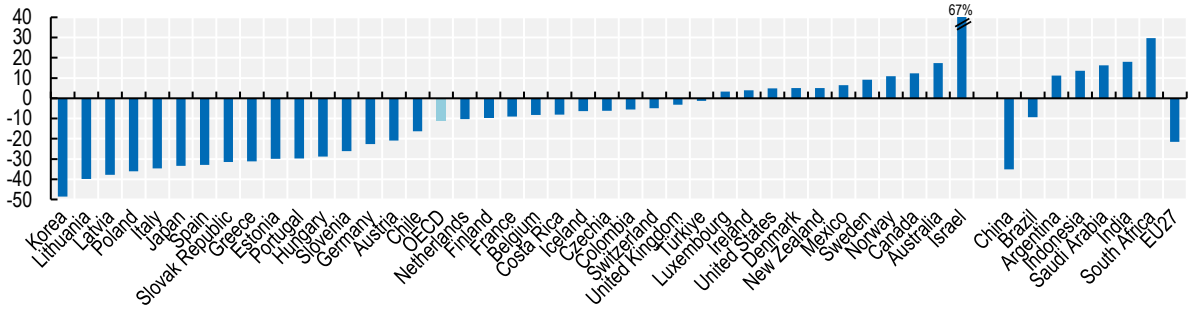
Figure 6.5. The working-age population will decline in a large number of OECD countries

Change in the working age population (20-64), 2022-62, percentage



Source: United Nations World Population Prospects: The 2022 Revision.

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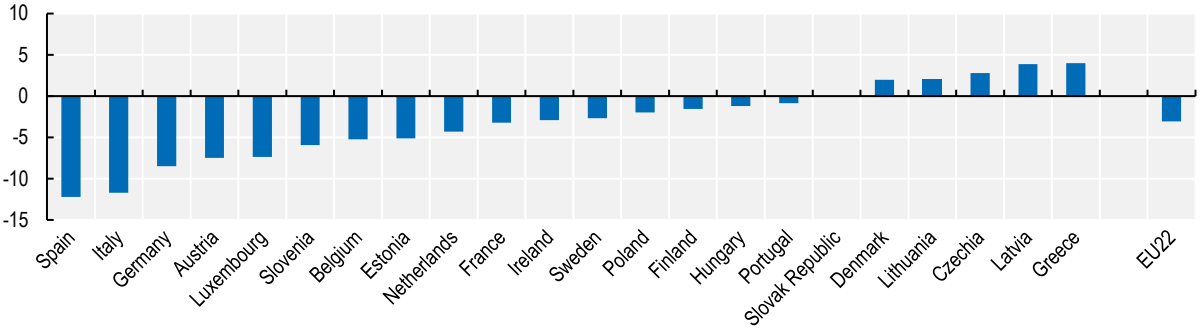
Figure 6.6. Future demographic old-age to working-age ratio projections differ based on data sources

Difference in projections for 2050 (EU – UN data source), in percentage points



Note: The demographic old-age to working-age ratio is defined as the number of individuals aged 65 and over per 100 people aged between 20 and 64.
Source: United Nations, Department of Economic and Social Affairs (2022), World Population Prospects 2022, Online Edition (for future periods: medium-variant forecast). Eurostat population projections, EUROPOP 2023.

StatLink https://stat.link/s7504z

Employment rates of older workers and gender gaps

Key Results

Employment rates fall with age in all OECD countries, often sharply. For individuals aged 55 to 59, the average employment rate across all OECD countries was 74.6% in 2022, 53.8% for the 60-64 age group and 24.5% for those aged 65-69. Although employment rates of older workers fell initially during COVID-19, between 2019 and 2020, they had recovered to at least 2019 values on average by 2021 and increased again in 2022. Employment rates for men are higher than for women among older workers in all but four OECD countries, Estonia, Finland, Latvia and Lithuania, averaging 14 percentage points across all countries. Resulting gender gaps in pensions range from 3% in Slovenia to 47% in Japan, with an OECD average of 24%, with men receiving higher levels in all countries.

There are large cross-country variations in the employment rates of people aged 55 to 69. In 2022, Czechia had the highest rates for those aged 55 to 59, at 88.6%, Iceland is highest for individuals aged 60-64 at 79.7% and 50.9% is the highest for those aged 65 to 69, in Japan. By contrast, the lowest employment rates were found in Türkiye where employment rates for people aged 55 to 59 were only around 40%, more than 20 percentage points lower than any other OECD country. At ages 60-64 and 65-69 Luxembourg recorded the lowest employment rates in 2022, with 23.4% and 6.6% respectively.

Employment rates across all ages fell between 2019 and 2020 with the onset of COVID-19 lockdowns, declining by 0.7 percentage points for those aged 55-59, 0.3 percentage points for those aged 60-64 and 0.9 percentage points for the 65-69 age group. However, they recovered quickly and were again above the 2019 values by 2021 and increased more rapidly between 2021 and 2022, by 1.7 percentage points, 2.1 percentage points and 1.2 percentage points for the three age groups in order.

On average across the OECD the employment rate falls with age, from 74.6% for those aged 55 to 59, to 53.8% for those aged 60 to 64 and 24.5% for those aged 65 to 69. Amongst those aged 60 to 64 the employment rate is over 70% in Iceland, Japan and New Zealand. However, it is under 35% in Austria, Luxembourg, Slovenia and Türkiye, all countries with low normal retirement ages. The employment rate is also lower than 42% in Belgium, France, Greece, Italy and Poland.

The employment rates fall sharply, by over 40 percentage points, i.e. twice the OECD average, in Austria, France, Luxembourg and Slovenia when comparing those aged 55 to 59 and those aged 60 to 64. By contrast the fall is by less than 10 percentage points in Iceland, Japan, New Zealand and Norway.

Employment rates for women are lower than that for men in all countries for the 25 to 54 age group with only Estonia, Finland, Latvia and Lithuania reversing this pattern for the older 55 to 64 age group. For older workers (55-64) the OECD average gender gap is 14 percentage points, slightly higher than for the prime age group at 11 percentage points. The largest gender gaps for older workers are found in Chile, Colombia, Costa Rica, Mexico and Türkiye, all of which are above 30 percentage points.

High employment differences between men and women over time lead to large differences in pension entitlements, especially as employment gender gaps have historically been even wider. Across the 34 OECD countries where data are available pension payments for women are 24% lower than those for men. The level is 40% or larger in Japan and Mexico. By contrast the gap is below 10% in Denmark, Estonia, Iceland, the Slovak Republic and Slovenia.

All the OECD countries in the Americas, with the slight exception of Costa Rica, have higher than average employment rates for the 65 to 69 age group but they are all, including Costa Rica, below the OECD average for the two younger age groups apart from those aged 60-64 in the United States. In Australia, Israel, Japan, Korea and New Zealand the employment rates are above the OECD for each age group, though there is no data for the 65-69 age group in Australia. By contrast, the employment rates are below the OECD average for all age groups considered in Belgium, Greece, Italy, Luxembourg, Poland, Spain and Türkiye.

Definition and measurement

Employment rates are calculated as the ratio of the employed to the total population in the respective age group. Employed people are those (aged 15 or over) who report that they have worked in gainful employment for at least one hour in the previous week or who had a job but were absent from work during the reference week. A gap in retirement income, i.e. a gender pension gap, is the difference between the average retirement income of men and women in the latest year available. It is expressed as a percentage of men's average pension and is calculated over the population of pension beneficiaries aged 65+ for comparability purposes across countries.

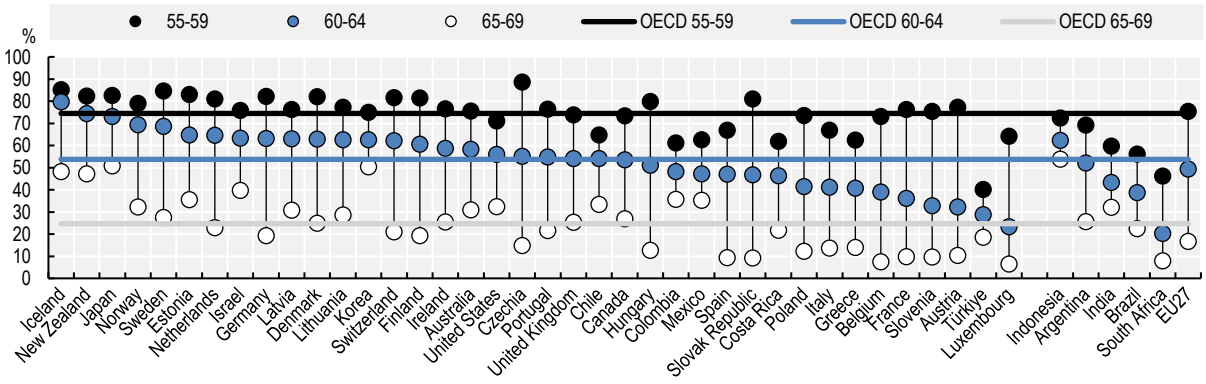
Further reading

Lis, M. and B. Bonthuis (2019), "Drivers of the Gender Gap in Pensions: Evidence from EU-SILC and the OECD Pension Models", in *Progress and Challenges of Nonfinancial Defined Contribution Pension Schemes: Volume 2. Addressing Gender, Administration, and Communication*, The World Bank, https://doi.org/10.1596/978-1-4648-1455-6_ch18.

OECD (2023), *Joining Forces for Gender Equality: What is Holding us Back?*, OECD Publishing, Paris, https://doi.org/10.1787/67d48024-en.

OECD (2021), *Towards Improved Retirement Savings Outcomes for Women*, OECD Publishing, Paris, https://doi.org/10.1787/f7b48808-en.

Figure 6.7. Employment rates of workers aged 55-59, 60-64 and 65-69 in 2022

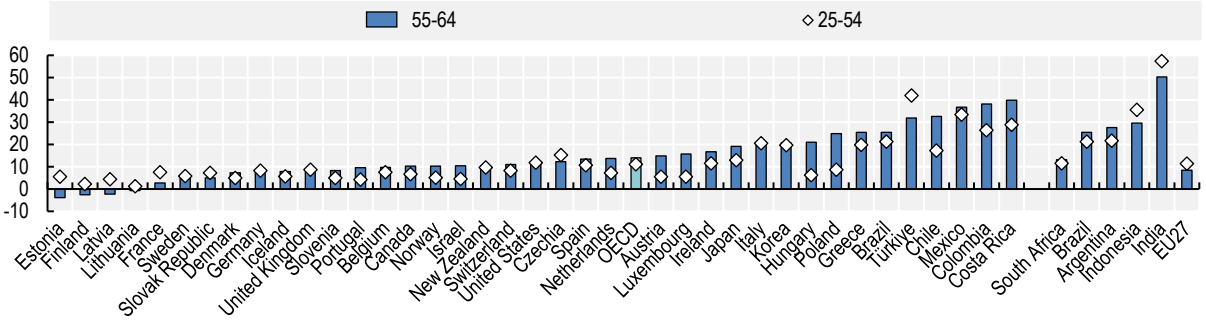


Note: Data for Argentina and Indonesia refer to year 2021 and 2019 respectively.
Source: OECD database Labour Market Statistics by sex and age: employment-population ratio.

StatLink https://stat.link/s8vkry

Figure 6.8. Gender gap in employment rates by age group, 2022

Percentage-point difference (male – female)

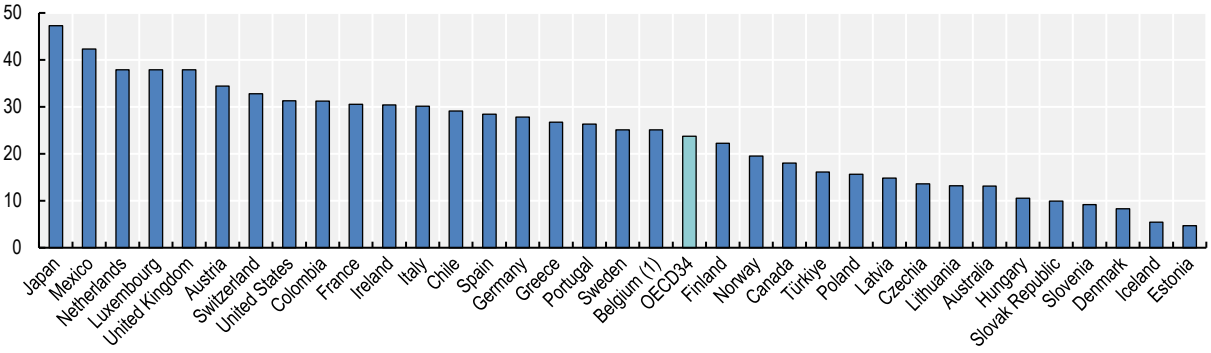


Note: Data for Argentina and Indonesia refer to 2021 and 2019 respectively.
Source: OECD database Labour Market Statistics by sex and age: employment-population ratio.

StatLink https://stat.link/5qtlhy

Figure 6.9. Gender gap in pensions in selected OECD countries, latest year available

Relative difference between men and women aged 65+ as a percentage of male pension (among pension beneficiaries)



Note: The gender gap in pensions is calculated as the difference between the mean retirement income of men and women (aged 65+) over the mean retirement income of men (aged 65+), among pension beneficiaries. Data are at 2022 for all EU member countries; 2021 for Switzerland, Türkiye and the United States; 2020 for Canada, Colombia, Japan, Norway and the United Kingdom: 2018 for Australia and Iceland. (1) In Belgium when partner A's pension rights are less than 25% of those of partner B, the pension of A is not paid out and B receives a family pension (calculated at 75% of wages instead of 60%).
Source: OECD calculations based on the LIS and the HFCS; Eurostat (for the EU-SILC); OECD (2021), Towards Improved Retirement Savings Outcomes for Women, https://dx.doi.org/10.1787/f7b48808-en.

StatLink https://stat.link/e13h5q

Changes in employment rates of older workers

Key Results

Employment rates of people aged 55-64 have improved sharply over the last 20 years in most OECD countries, from 46.1% in 2002 to 64.6% in 2022 on average. By comparison, the employment rate among those aged 25 to 54 only increased by 5.5 percentage points since 2002. On average, 55-64 year-olds at all levels of educational attainment have experienced a marked increase in employment, with those with a medium level of education doing slightly better on average than those with low or high levels of education.

Countries with higher normal retirement ages tend to have higher employer rates for older workers (Figure 6.10). Iceland and Norway have retirement ages of 67 years for both men and women and have among the highest employment rates for those age 60 to 64, at 80% and 75%, respectively, well above the OECD average of 54%.

Except for Colombia, Costa Rica and Korea where informality in the labour market is high or the pension system has not yet matured, countries with low normal retirement ages tend to have low employment rates among people aged between 60 and 64 years. This is the case in particular in Austria, Greece, Luxembourg, Poland and Slovenia where the current normal retirement age (averaged across genders) is at 62.5 years or lower.

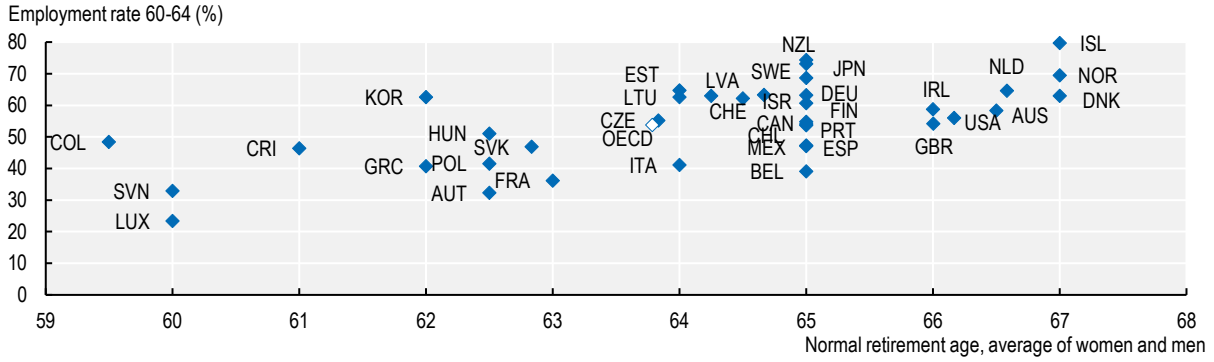
Employment rates of people aged between 55 and 64 have improved in almost all OECD countries since 2002, both among the 55-59 and 60-64 age groups (Figure 6.11). On average, they have increased by 17.5 percentage points for those aged 55 to 59 and by 20.2 percentage points for those aged 60 to 64, reaching 74.6% and 53.8% in 2022, respectively. By comparison, the employment rate in the 25-to-54 age group only increased, on average, from 76.7% in 2002 to 82.2% in 2022. The greatest increases for the 55-to-59 age group occurred in Hungary, the Slovak Republic and Slovenia, all of which increased by over 40 percentage points between 2002 and 2022. For the 60-to-64 age group Germany, Hungary, the Netherlands and the Slovak Republic also increased by over 40 percentage points. Conversely, In Iceland, for those aged 55-59 and 60-64 the employment rates declined over the 20-year period albeit from very high levels, as was also the case for those aged 60-64 in Türkiye.

On average, 55-64 year-olds at all levels of educational attainment have experienced a marked increase in employment between 2002-21, averaging 12 percentage points for low and high levels of education and by 15 percentage points for those with a medium level of education (Figure 6.12). In terms of changes in employment rates, low-educated older workers have lagged significantly behind their high-educated peers in Belgium, Israel, Portugal and Slovenia, while it is the opposite in Australia, Denmark, Luxembourg and Mexico.

Definition and measurement

Employment rates are calculated as the ratio of the employed to the total population in the respective age group. Employed people are those (aged 15 or over) who report that they have worked in gainful employment for at least one hour in the previous week or who had a job but were absent from work during the reference week.

Figure 6.10. Employment rate at ages 60-64 vs. normal retirement age in 2022

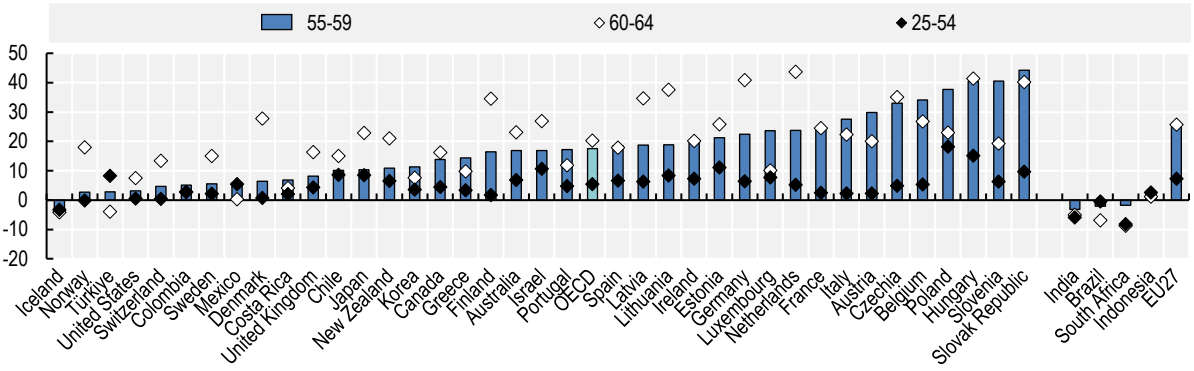


Note: For better visibility, the scale of this chart excludes the lowest observed value for the normal retirement age in Türkiye, which is 50.5 (average of 49 and 52 for women and men respectively), with the employment rate equalling 28.9%. Normal retirement age is based on entry at age 20.
Source: OECD database Labour Market Statistics by sex and age: employment-population ratio. Normal retirement age data: See Chapter 3.

StatLink https://stat.link/1qpxvi

Figure 6.11. Change in employment rates of older workers and prime-age workers, 2002-22

Percentage-point difference



Note: Data for India and Indonesia refer to period 2005-22 and 2002-19 respectively.
Source: OECD database Labour Market Statistics by sex and age: employment-population ratio.

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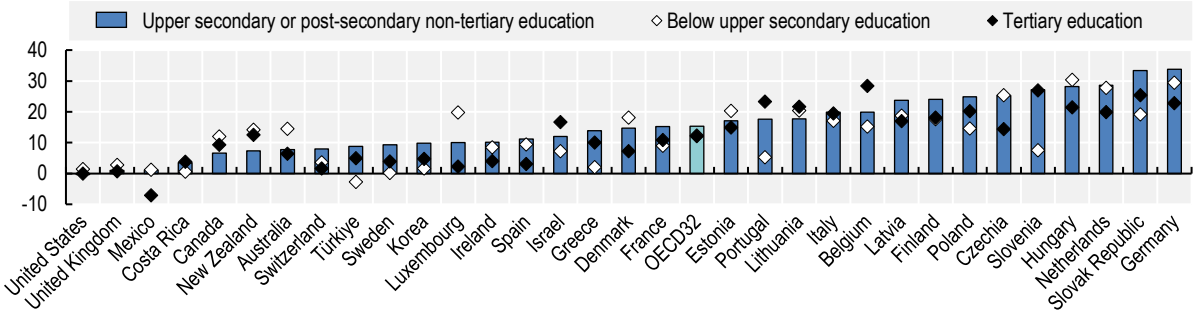
Figure 6.12. Growth of employment rates of older workers by education level

Change in employment rates, 2002-21, percentage points



Note: Data for Finland, Lithuania and Luxembourg are from 2000-21, as is the Tertiary education for Slovenia. The OECD averages for "Below upper secondary education" and "Tertiary education" are 12.3 and 12.2 respectively, hence why the former is not visible on the chart.
Source: OECD.Stats database, Labour Force Survey.

StatLink https://stat.link/u0deyn

Effective age of labour market exit

Key Results

The average effective age of labour market exit was 64.4 years for men and 63.1 years for women across OECD countries in 2022. The lowest effective exit age is found in Luxembourg for both men and women at 60.5 years and 58.4 years respectively. At the other end of the range, Iceland (men) and Korea (women) displayed the highest figures, at 68.3 years and 67.4 years, respectively.

The average effective age of labour market exit remained below 64 in 2022 in just under half of OECD countries for men and in more than two-thirds of them for women (Figure 6.13). Average exit ages are at 61 years or below for men in Belgium, France, Luxembourg and Türkiye and at 60.5 years or below for women in Greece, Luxembourg, Slovenia and Türkiye. By contrast, men in Chile, Colombia, Iceland and New Zealand withdrew from the labour market after age 67 on average, with women withdrawing after age 65 in Estonia, Iceland, Israel, Japan, Korea, Mexico, New Zealand and the United States. In all but eight OECD countries, men exit the labour market after women, with the largest differences observed in Colombia (7.1 years), Costa Rica (4.5 years) and Chile, Greece and Poland all between three and four years. By contrast women in both France, Korea and Latvia leave the labour market at least 1.5 years later than men.

The average age of labour market exit is equal to 63.1 years for women and 64.4 years for men in 2022. The effective age is only slightly correlated with the normal retirement age for men, with a linear correlation coefficient of 0.28, compared to 0.48 for women. Countries such as Luxembourg, the Slovak Republic and Slovenia have both low labour market exit age and normal retirement age and Iceland both high levels. However, the correlation is distorted with countries such as Colombia, Costa Rica and Korea all of which have low normal retirement ages but high exit ages as low pensions therein imply that workers have to continue to work at very old ages to supplement their income. For women the correlation is stronger as Austria, Colombia, Greece, Hungary, Luxembourg and Slovenia all have low ages for both measures, while Israel and Korea – among countries with low female retirement ages – distort the picture as they both have much higher labour market exit ages.

After several decades of a sharp downward trend, the average effective exit age reached its lowest level around the year 2000 for both men and women on average across countries (Figure 6.14). In 1972, the average effective exit age was 65.8 years for men and 64.4 years for women, against 61.8 and 59.7 years, respectively, in 2000. Since 2002, the effective age increased by four years or more for men in Estonia, Hungary, the Netherlands, New Zealand, Poland and Portugal and by over five years for women in Belgium, Estonia, Hungary, Lithuania, the Netherlands, New Zealand and the Slovak Republic. Over the same time period there was actually a decline in the effective exit age for men in Colombia (-2.8 years) and Mexico (-1.4 years) and for women in Costa Rica (-1.7 years), Iceland (-1.0 years) and in Luxembourg and Türkiye (under -0.5 years).

Definition and measurement

The average effective age of labour market exit is defined as the average age of exit from the labour force for workers aged 40 and over. In order to abstract from compositional effects in the age structure of the population, labour force withdrawals are estimated using changes in labour force participation rates rather than labour force levels. These changes are calculated for each (synthetic) cohort divided into five-year age groups. Each age group is weighted by its average population share among OECD countries. Based on this methodology, absolute numbers for a given country should be interpreted cautiously. However, comparisons across countries or through time within countries are robust (www.oecd.org/els/soc/Labour-Market-Exit-Age-Methodology.pdf).

The normal retirement age is defined as the age of eligibility to all mandatory components of the pension system in 2022, assuming labour market entry at age 22 and an uninterrupted career. This age corresponds to Table 3.5 in Chapter 3.

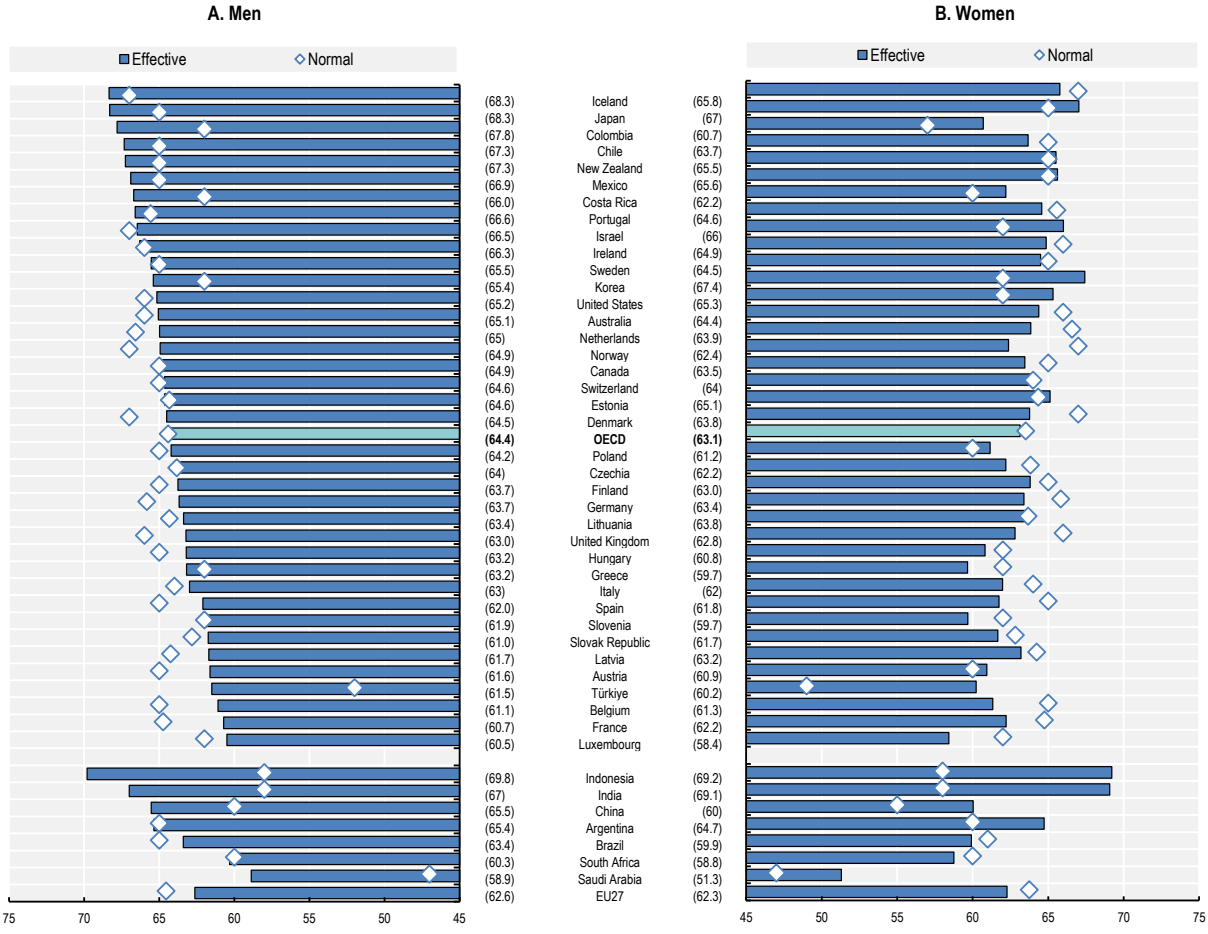
Further reading

Boulhol, H. and M. Keese (2021), *A method for calculating the average age of labour market exit*, OECD, https://www.oecd.org/els/soc/Labour-Market-Exit-Age-Methodology.pdf.

OECD (2017), *OECD Employment Outlook 2017*, OECD Publishing, Paris, https://doi.org/10.1787/empl_outlook-2017-en.

OECD (n.d.), "Ageing and Employment Policies", Working Better with Age reports on Denmark, France, Japan, Korea, Netherlands, Norway, Poland, Switzerland and the United States, https://doi.org/10.1787/19901011.

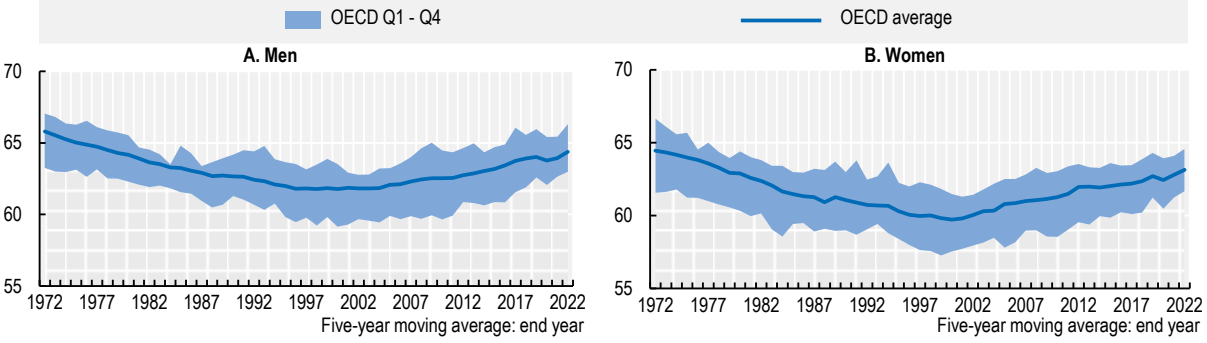
Figure 6.13. Average effective age of labour market exit and normal retirement age in 2022



Note: Effective labour market exit age is shown for the five-year period 2017-22. Normal retirement age is shown for individuals retiring in 2022 after a full career from labour market entry at age 22.
Source: OECD estimates based on the results of national labour force surveys and the European Union Labour Force Survey. Normal retirement age: See Chapter 3.

StatLink https://stat.link/9zyo7u

Figure 6.14. Average effective age of labour market exit in OECD countries, 1972-2022



Source: OECD estimates based on the results of national labour force surveys, the European Union Labour Force Survey and, for earlier years in some countries, national censuses, www.oecd.org/els/emp/average-effective-age-of-retirement.htm.

StatLink https://stat.link/g49cd3

Expected life years after labour market exit

Key Results

The expected life years after labour market exit indicator measures the remaining life expectancy at the average age of labour market exit by gender. In 2022, the OECD average was 22.8 years for women and 18.4 years for men. Luxembourg had the highest expected duration for women equal to 27.8 years, with France highest for men at 23.3 years. The lowest remaining life expectancy equalled 14.0 years for men in Lithuania and 18.1 years for women in Mexico. The average number of expected life years after labour market exit across OECD countries has sharply increased over time. In 1972, women and men in the OECD countries could expect to live about six years fewer after labour market exit compared to now.

This indicator measures the remaining life expectancy at the average age of labour market exit. Women can expect to live 26 years or more after exiting the labour market in France, Luxembourg, Slovenia and Spain (Figure 6.15, Panel B). Similarly, men can expect to survive more than 22 years after labour market exit in Belgium, France, Luxembourg and Spain (Figure 6.15, Panel A). Women's remaining life expectancy at the average age of labour market exit was below 20 years in Lithuania and Mexico, and men's was below 15 years, in these two countries and in Colombia, Costa Rica and Hungary.

Men typically can expect to live 4.3 years less than women after labour market exit on average in the OECD (Figure 6.15). In Costa Rica, Colombia, Greece, Hungary and Poland, the gender gap was six years or more. This gap between men and women is due to both higher life expectancy and lower labour market exit age among women. The gender gap in life expectancy at 65 years is equal to 3.2 years on average (see above in this chapter) while the gender gap in average labour market exit age is equal to 1.2 years (Figure 6.13). Longer periods after labour market exit expose women to old-age income poverty (cf. Chapter 7), as in some countries price indexation magnifies the impact of gender pay gaps, observed in all OECD countries, on pension benefits.

The average length of life after labour market exit has increased over time. In 1972 men in OECD countries spent on average 12.5 years of life after their exit from the labour market while by 2022 they could expect a duration of 18.4 years (Figure 6.16, Panel B). Women's life expectancy at labour market exit equalled 16.5 years on average in the OECD in 1972, which increased to 22.8 years in 2022 (Figure 6.16, Panel A).

The increase in the expected lifetime after labour market exit from 1972 to around 2000 is due to both a drop in the effective exit age from the labour force and increased longevity. Since then, expected life years after exit from the labour market have rather stabilised as continuing life expectancy gains in old age have been offset by increases in labour market exit ages.

Definition and measurement

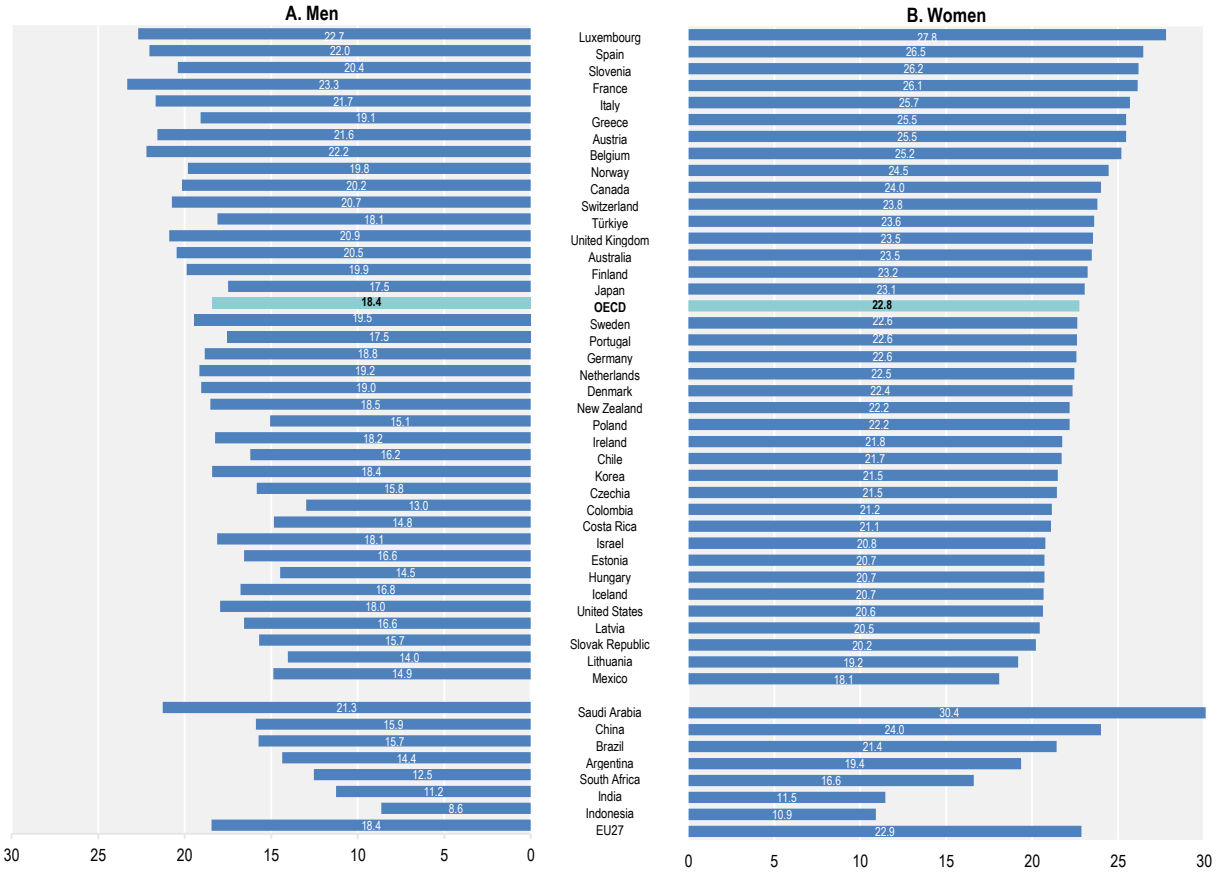
Expected life years after labour market exit for women and men is measured as the respective remaining life expectancy at the average age of effective labour market exit. Estimates of remaining life expectancy are calculated based on the UN World Population Prospects – The 2022 Revision dataset.

The average effective age of labour market exit is defined as the average age of exit from the labour force for workers aged 40 and over. In order to abstract from compositional effects in the age structure of the population, labour force withdrawals are estimated using changes in labour force participation rates rather than labour force levels. These changes are calculated for each (synthetic) cohort divided into five-year age groups. Each age group is weighted by its average population share among OECD countries. Based on this methodology, absolute numbers for a given country should be interpreted cautiously. However, comparisons across countries or through time within countries are robust.

Further reading

Boulhol, H. and M. Keese (2021), *A method for calculating the average age of labour market exit*, OECD, https://www.oecd.org/els/soc/Labour-Market-Exit-Age-Methodology.pdf.

Figure 6.15. Remaining life expectancy at average labour market exit age, by gender in 2022



Note: Numbers in parenthesis indicate the average effective age of labour market exit in 2022 by gender. Life expectancy at labour market exit is based on period-specific mortality rates.
Source: OECD calculations based on United Nations Population Prospects: 2022 Revision, exit ages: see previous section.

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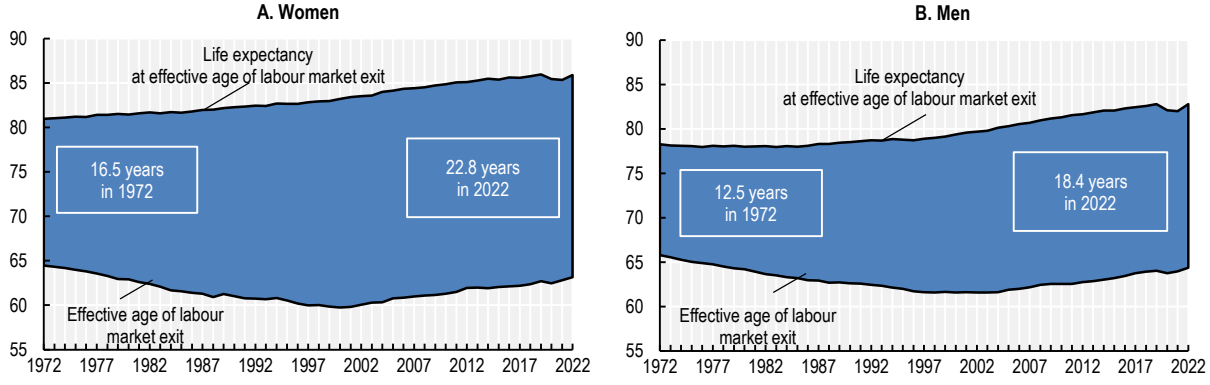
Figure 6.16. Expected life years after labour market exit, OECD average 1972-2022



Note: Life expectancy at labour market exit is based on period-specific mortality rates.
Source: OECD calculations based on United Nations Population Prospects: 2022 Revision, exit ages: see previous section.

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7 Incomes and poverty of older people

These four indicators look at the economic situation of older people. The first examines the income of older people, comparing them with the population as a whole. It also shows whether the income comes from publicly provided benefits, private occupational transfers, work, or private personal pensions and other savings.

The second looks at relative income poverty of older people. It shows the proportion of older people living on incomes of less than half the national median disposable income and their average income gap to the poverty line.

The third looks at income inequality among older people, showing Gini and percentile ratios for people aged 66+, also comparing them to the total population and across time.

The final indicator presents the “Average worker earnings” that underpin pension modelling. They are used throughout the report and many parameters and all modelling results are reported as percentages of national average worker earnings.

Incomes of older people

Key Results

Disposable incomes of older people are on average lower than those of the total population. The over-65s had incomes of 88% of that of the total population in 2020 on average, broken down into 93% for the 66-75 age group and 81% for the over-75s. Among the over-65s, the range goes from about 70% or less in Estonia, Korea, Latvia and Lithuania to around 100% or more in Costa Rica, France, Israel, Italy, Luxembourg and Mexico. In two-thirds of OECD countries, public transfers provide more than half of gross income after age 65.

People over 65 had incomes amounting to 88% of the overall average population incomes in 2020 or the latest year available on average across countries (Table 7.1). Older people fared best in Costa Rica, France, Israel, Italy, Luxembourg and Mexico in relative terms where incomes for the over-65s were about or slightly higher than for the total population. Older people also had high relative incomes on average in Greece, Iceland, Portugal, Spain and Türkiye in international comparison. In Estonia, Korea and Lithuania, by contrast, the income of older people was about one-third lower.

Average relative incomes tend to fall with age after retirement. Lower relative incomes for older retirees are partly explained by cohort effects given growth trends in real earnings across cohorts driven by productivity gains. Where pensions are indexed to average-wage growth, pensions during retirement improve similarly; however, many countries index at a lower level than wage growth in normal times. While price indexation protects purchasing power, it tends to lower relative income over time, particularly affecting relatively those who live long including women. For the latter, this adds to their lower own entitlements due to lower past employment and wages compared to men. Moreover, older people live alone more often, which lowers their equivalised disposable income given household economies of scale.

The income of people aged over 65 has increased relative to that of the total population in more than two-thirds of OECD countries over the last two decades, and on average by 6.7 percentage points across all countries for which data is available. Driven by a maturing pension system, the over-65s in Israel have seen the strongest rise in their relative income, about 24 percentage points, from 81% in 2000 to 105% in 2020. Italy, Norway and Spain also record strong increases. The sharpest declines are reported in Poland (-10 percentage points since 2005) and Chile (-8 percentage points since 2006).

Sources of income

Of the four main sources of income on which older people draw, public transfers (earnings-related pensions, resource-tested benefits, etc.) and private occupational transfers (pensions, severance payments, death grants, etc.) account for around two-thirds of the total income (Figure 7.1). Public transfers account for 57% and private occupational transfers represent 7% of older people's incomes on average. The countries where over-65s are most reliant on public transfers are Austria, Belgium, Finland and Luxembourg: more than 80% of their incomes come from that source. Public transfers represent only 10% and 18% of all income in Mexico and Chile, respectively. Private occupational transfers are relevant in 13 OECD countries, with the Netherlands being highest at 40%.

Work accounts for 26% and capital for about 10% of older people's incomes on average. Work is especially important in Chile, Korea and Mexico, where it accounts for around half of old-age income; it also represents a large share of income in Costa Rica, Estonia, Iceland, Japan, Latvia, Lithuania, New Zealand, Poland, the Slovak Republic and the United States. Also, as incomes are measured at the household level, work is likely to be a more important income source for older people where many of them live in multi-generational households.

Capital, mostly private pensions, represents over 40% of all income sources of older people in Canada. In Denmark, Korea and the United States, capital represents over 20% of all income.

Definition and measurement

Incomes of older people groups all incomes from employment, self-employment, capital and public transfers. The data shown are for disposable incomes (i.e. net of personal income tax and social security contributions). Incomes are measured on a household basis and equivalised with the square-root equivalence scale to adjust for differences in household size. See OECD Income Distribution Database for more details on definitions and data sources. The special chapter on "Incomes and poverty of older people" in OECD (2013) provides a more detailed analysis.

Further reading

OECD (2023), *Income Distribution Database*, http://www.oecd.org/social/income-distribution-database.htm.

OECD (2019), *Will future pensioners work for longer and retire on less?*, OECD, Paris, https://www.oecd.org/pensions/public-pensions/OECD-Policy-Brief-Future-Pensioners-2019.pdf.

OECD (2013), *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/pension_glance-2013-en.

Table 7.1. Incomes of older people, 2020 or latest available year

Average income by age group in percentage of average income of total population

	All aged over 65	Age 66-75	Aged over 75	Change for all aged over 65 since 2000 or earliest thereafter		All aged over 65	Age 66-75	Aged over 75	Change for all aged over 65 since 2000 or earliest thereafter
Australia	76.9	81.6	69.8	7.6	Korea	68.0	75.3	58.6	
Austria	94.5	97.3	90.9	7.4	Latvia	72.0	80.6	60.4	-0.5
Belgium	77.7	81.7	72.6		Lithuania	67.4	71.5	63.0	-5.8
Canada	89.3	91.8	85.2	0.8	Luxembourg	110.1	112.4	106.4	
Chile	93.5	95.8	90.0	-8.0	Mexico	102.3	106.5	95.6	16.1
Colombia					Netherlands	79.2	85.3	69.8	-5.4
Costa Rica	104.1	109.3	95.9		New Zealand	80.1	86.5	69.7	8.9
Czechia	77.3	80.3	72.2	-1.1	Norway	90.0	99.5	77.0	18.8
Denmark	82.0	86.9	75.0	10.6	Poland	85.7	85.5	86.0	-10.0
Estonia	69.0	75.3	61.3		Portugal	95.7	102.6	88.1	15.3
Finland	83.6	89.2	75.9	5.3	Slovak Republic	86.6	88.5	82.9	6.8
France	99.8	103.9	94.5	1.9	Slovenia	86.5	86.9	85.9	2.2
Germany	87.6	90.2	85.3	-0.4	Spain	99.0	107.7	89.2	18.0
Greece	96.9	104.7	87.4	15.3	Sweden	86.5	98.1	71.9	8.4
Hungary	87.0	89.0	83.7	0.0	Switzerland	80.8	86.4	74.2	-0.9
Iceland	95.0	103.8	77.5	14.6	Türkiye	97.3	101.0	90.6	7.1
Ireland	83.0	89.1	73.8	13.0	United Kingdom	86.4	90.5	81.0	13.4
Israel	105.2	110.7	96.2	23.7	United States	93.2	99.1	83.8	10.1
Italy	103.0	111.6	94.2	17.5					
Japan	85.2	91.8	78.0	-4.5	**OECD**	**88.0**	**93.2**	**80.9**	**6.7**

Notes: Most recent data are for 2020 except for the following countries: Costa Rica, Finland, Latvia, the Netherlands, Norway, Sweden and the United States (2021), Denmark, France, Germany, Hungary, the Slovak Republic, Switzerland and Türkiye (2019), Japan (2018) and Chile and Iceland (2017).: Data for 2000 except for Greece and Türkiye (2004), Chile and Switzerland (2006), Czechia, Iceland, Ireland, Latvia, Lithuania, Poland, Portugal, the Slovak Republic and Slovenia (2005), Austria and Spain (2007). Due to a break in series, 2006-data for Chile are scaled with a factor measuring the age-specific effect of the series break on income levels using data from 2011 or closest available. Historical data for Belgium, Estonia, Korea and Luxembourg are not comparable due to breaks in series and those for Costa Rica are unavailable and are not shown here. Data for Colombia is unavailable.

Source: *OECD Income Distribution Database*, www.oecd.org/social/income-distribution-database.htm (June 2023 version).

StatLink https://stat.link/jcruw9

Figure 7.1. Income sources of older people, 2020 or latest available year

Percentage of total equivalised gross household income and transfers

Note: Income from work includes both earnings (employment income) and income from self-employment. Private occupational transfers include pensions, severance payments, death grants and other. Capital income includes private personal pensions and income from the returns on non-pension savings. Data are for 2020 except for some countries; see note of Table 7.1.

Source: *OECD Income Distribution Database*, www.oecd.org/social/income-distribution-database.htm (June 2023 version).

StatLink https://stat.link/l1tj27

Old-age income poverty

Key Results

On average in the OECD, 14.2% of individuals aged over 65 live in relative income poverty, defined as having an income below half the national median equivalised household disposable income. Their income gap to the relative poverty line is 23.1% on average. Poverty rates for older people are higher than for the total population in around two-thirds of countries. The average for the total population is 11.4%, some 2.8 percentage points below the old-age level, but this difference is driven by only a handful of countries. The old-age income poverty rate tends to rise with age during retirement and is higher for women than for men among all age groups. In recent decades, relative poverty has tended to shift from people aged over 65 to people aged 18 to 25.

According to the latest available figures, relative poverty rates of people aged over 65 exceeded 40% in Korea, were above 30% in Estonia and Latvia, and 20% or more in Australia, Costa Rica, Japan, Lithuania and the United States. By contrast, Czechia, Denmark, France, Iceland, Luxembourg and Norway have the lowest relative poverty rates, close to 5% or below. First-tier pension levels are important factors influencing old-age poverty rates (see the indicator on "Basic, targeted and minimum pensions" in Chapter 3). These numbers are based on income data and the considerable country differences in wealth (housing or otherwise) held by older people may not be reflected in income poverty rates.

In 23 OECD countries, older people are more likely to be income poor than the total population (Figure 7.2). The largest difference between old-age and total-population poverty rates is found in Korea where older people have 25 percentage point higher poverty rates than the total population, followed by Estonia and Latvia. Older people are less likely to be poor than the total population in several countries, especially France, Greece, Luxembourg, Norway and Spain where the old-age poverty rate is at least 4 percentage points lower.

Poverty among older age groups

Poverty among the "younger old" (aged 66-75) is less frequent than among the "older old" (aged 76 and over); the OECD average poverty rates are 12.5% and 16.6%, respectively. The difference between the two is particularly high in Korea (+20.6 percentage points), Latvia (+17.5 percentage points) and Estonia (+15.4 percentage points). There are many explanations for this pattern. In Korea, the pension system is still maturing, and current generations of very old people still have very low pensions. Moreover, in all three countries, individual pensions are indexed to less than earnings growth (Table 3.3 in Chapter 3). This tends to lower the relative value of pensions compared to earnings when retirees grow older. Nevertheless, in five OECD countries – Chile, Germany, Hungary, Iceland and Poland – the over 75s fare slightly better than their younger counterparts do. Pension reforms that have reduced the generosity of pension systems typically lower the relative income of new generations of retirees.

Poverty and gender

The average old-age poverty rates for women and men in the OECD equal 16.6% and 11.1%, respectively. Lower earnings-related pension income and longer life expectancy are among the main drivers of higher poverty incidence among women than among men. Older women are at greater risk of poverty than older men in all countries except Chile, Costa Rica and Iceland. In addition to these three countries, gender differences in the poverty rate are relatively small (less than 2 percentage points) in France, Luxembourg, Mexico and the Netherlands.

The largest gender differences, 20 percentage points or more, are in the Baltic countries and in Korea at about 11 percentage points. There are also significant differences of more than 5 percentage points in Australia, Austria, Canada, Ireland, Israel, Japan, New Zealand, Poland, Portugal, Slovenia, Sweden and the United States.

Definition and measurement

For international comparisons, the OECD treats poverty as a "relative" concept. The yardstick for poverty depends on the median household income in the total population in a particular country at a particular point in time. Here, the poverty threshold is set at 50% of median, equivalised household disposable income. Poverty depth measures how much the average income of the poor is below the relative poverty threshold, in percent of this threshold. See OECD Income Distribution Database for more details on definitions and data sources.

Further reading

OECD (2023), *Income Distribution Database*, http://www.oecd.org/social/income-distribution-database.htm.

OECD (2017), *Preventing Ageing Unequally*, OECD Publishing, Paris, https://doi.org/10.1787/9789264279087-en.

OECD (2013), *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/pension_glance-2013-en.

Table 7.2. Income poverty rates by age and gender, 2020 or latest available year

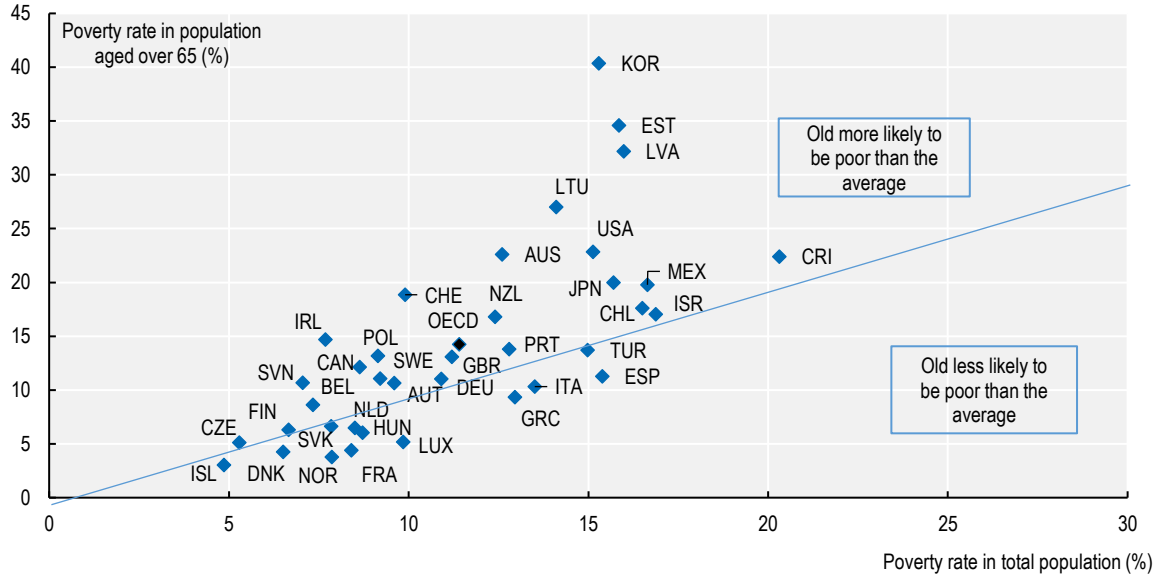
Percentage with income lower than 50% of median equivalised household disposable income

	Older people (aged over 65)					Total population		Older people (aged over 65)					Total population
	All	By age		By gender				All	By age		By gender		
		Age 66-75	Aged over 75	Men	Women				Age 66-75	Aged over 75	Men	Women	
Australia	22.6	19.7	27.0	18.2	26.6	12.6	Korea	40.4	31.4	52.0	34.0	45.3	15.3
Austria	10.6	9.6	12.0	7.3	13.2	9.6	Latvia	32.2	24.7	42.3	19.0	38.6	16.0
Belgium	8.6	5.9	12.2	7.3	9.8	7.3	Lithuania	27.0	25.7	28.4	13.9	33.8	14.1
Canada	12.1	11.0	13.9	9.2	14.6	8.6	Luxembourg	5.2	4.9	5.7	4.9	5.4	9.8
Chile	17.6	17.7	17.4	17.6	17.5	16.5	Mexico	19.8	18.2	22.3	18.9	20.4	16.6
Colombia							Netherlands	6.5	4.4	9.7	6.1	6.9	8.5
Costa Rica	22.4	21.4	24.0	22.8	22.1	20.3	New Zealand	16.8	14.3	20.9	13.2	20.1	12.4
Czechia	5.1	4.9	5.5	2.3	7.2	5.3	Norway	3.8	2.7	5.4	2.3	5.1	7.9
Denmark	4.3	2.8	6.3	3.2	5.2	6.5	Poland	13.2	13.7	12.3	7.6	16.8	9.1
Estonia	34.6	27.6	43.0	20.8	41.8	15.8	Portugal	13.8	12.5	15.2	10.4	16.2	12.8
Finland	6.3	4.9	8.3	4.5	7.7	6.7	Slovak Republic	6.6	6.2	7.6	4.4	8.2	7.8
France	4.4	4.0	4.9	3.3	5.2	8.4	Slovenia	10.7	10.2	11.6	7.1	13.4	7.0
Germany	11.0	12.1	9.8	8.6	12.7	10.9	Spain	11.3	9.9	12.8	10.1	12.2	15.4
Greece	9.3	8.8	10.0	7.0	11.2	13.0	Sweden	11.1	8.3	14.5	7.2	14.5	9.2
Hungary	6.1	6.9	4.6	4.4	7.1	8.7	Switzerland	18.8	16.1	22.1	16.9	20.6	9.9
Iceland	3.1	4.0	1.1	4.5	1.7	4.9	Türkiye	13.7	11.9	17.0	12.1	15.0	15.0
Ireland	14.7	12.4	18.1	11.2	17.8	7.7	United Kingdom	13.1	11.0	16.0	11.1	14.9	11.2
Israel	17.0	15.2	20.1	14.3	19.3	16.9	United States	22.8	20.1	27.2	19.8	25.3	15.1
Italy	10.3	10.3	10.4	7.7	12.4	13.5							
Japan	20.0	16.4	23.9	16.4	22.8	15.7	**OECD**	**14.2**	**12.5**	**16.6**	**11.1**	**16.5**	**11.4**

Notes: Data are for 2020 except for some countries; see note of Table 7.1 for details. Data for Colombia is unavailable.
Source: *OECD Income Distribution Database*, www.oec d.org/social/income-distribution-database.htm (June 2023 version).

StatLink https://stat.link/pv3isj

Figure 7.2. Income poverty rates by age: older vs. total population, 2020 or latest available year



Note: Data are for 2020 except for some countries; see note of Table 7.1 for details.
Source: *OECD Income Distribution Database*, www.oecd.org/social/income-distribution-database.htm (June 2023 version).

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Poverty depth

Substantial country differences exist in the so-called poverty depth measured by the gap between the average income of the poor and the relative poverty line, here defined as 50% of median income (Figure 7.3). Among the elderly, the largest poverty depth – more than 35% of the income at the poverty threshold – is in Iceland, Türkiye and the United States. This means that in these countries the average income of those aged 66+ who are relatively poor is less than about one-third (65%*50%) of the median income for the total population. In Austria, Japan, Korea, Mexico and Spain, the poverty depth of the 66+ also exceeds 30%. The lowest average gaps, of less than 15%, are reported in Canada, Czechia, Denmark, Estonia, Finland, Ireland and Sweden. The average poverty depth is smaller for the elderly (23%) than for all poor (29%).

Change in poverty in recent decades

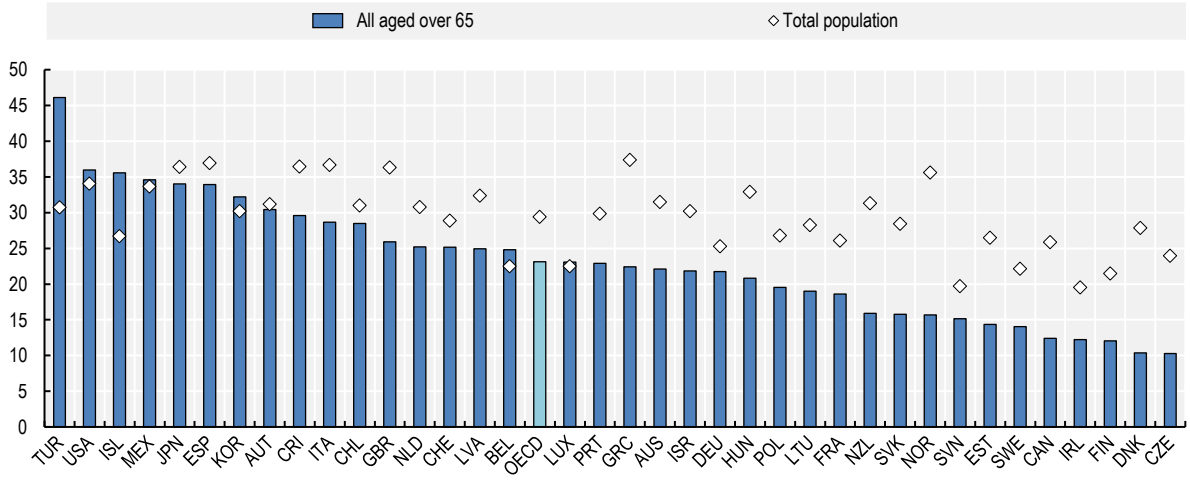
The incidence of poverty has substantially changed over time in some countries (Table 7.3). However, the average relative old-age poverty rate across countries has been broadly stable, falling by -0.8 percentage points across the 32 OECD countries for which data are available, with considerable country variation. The largest declines were observed in Greece (-10.4 percentage points), Israel (-8.5 percentage points), Norway (-8.7 percentage points), Spain (-8.6 percentage points) and the United Kingdom (-9.6 percentage points) while old-age poverty rates increased substantially in Latvia (+8.4 percentage points), Lithuania (+11.5 percentage points), New Zealand (+13.7 percentage points) and Poland (+8.8 percentage points).

Poverty rates increased, on average, over the last 20 years for the working-age groups – and in particular for young adults. The poverty rate of the 18-25 year-olds increased in 19 out of 32 countries between 2000 and 2020 and by 1.1 percentage points on average. It increased strongly in Denmark (+5.0 percentage points), Finland (+12.8 percentage points), Germany (+5.7 percentage points), Israel (+6.2 percentage points) and Norway (+7.0 percentage points), while declining most in Canada (-5.6 percentage points), Iceland (-5.1 percentage points), Ireland (-4.4 percentage points), Latvia (-3.0 percentage points), New Zealand (-3.7 percentage points) and Poland (-4.2 percentage points).

As a result, on average, there was a shift in poverty rates from the old, who used to have the highest poverty incidence, to the young adults of about 2 percentage points between the over-65s and the 18-25s. for the OECD-32 between 2000 and the latest available data. The most extreme shift in poverty from the old to the young happened in Denmark (-11.0 percentage points), Finland (-14.8 percentage points), Greece (-14.9 percentage points), Israel (-14.7 percentage points), Norway (-15.8 percentage points) and Spain (-11.2 percentage points) since 2000. The strongest poverty shifts in the opposite direction, hence from young to old, were in Canada (+12.5 percentage points), Latvia (+11.4 percentage points), Lithuania (+10.4 percentage points), New Zealand (+17.4 percentage points) and Poland (+12.9 percentage points).

Figure 7.3. Income poverty depth by age: older vs. total population, 2020 or latest available year

Poverty depth is measured as mean income gap of poor population to income at poverty line (in percentage)



Note: Data are for 2020 except for some countries; see note of Figure 7.1 for details. In Greece, for example, the average income of the poor aged over 65 is 22.4% below the income threshold that determines whether a person counts as poor, which equals 50% of the median income in the total population here. That is, their average income is equal to 38.9% of median income. The average income of all poor in Greece is 37.4% below that poverty line.
Source: *OECD Income Distribution Database*, www.oecd.org/social/income-distribution-database.htm (June 2023 version).

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Table 7.3. Change in relative income poverty rates between 2000 and 2020 by age

Percentage-point change in share with income lower than 50% of median equivalised household disposable income

Country (change since 2000 or latest thereafter)	Aged over 65	Age 0-17	Age 18-25	Age 26-65	Total	Poverty shift: aged over 65 vs. 18-25	Country (change since 2000 or latest thereafter)	Aged over 65	Age 0-17	Age 18-25	Age 26-65	Total	Poverty shift: aged over 65 vs. 18-25
Australia	0.9	-1.2	1.8	-0.2	0.2	-0.9	Korea						
Austria	-2.7	2.3	-0.6	0.0	-0.1	-2.0	Latvia	8.4	-9.3	-3.0	-3.1	-1.6	11.4
Belgium							Lithuania	11.5	-8.2	1.1	-2.1	-0.4	10.4
Canada	6.9	-7.6	-5.6	-3.8	-3.4	12.5	Luxembourg						
Chile	0.5	-4.7	0.3	-3.7	-3.6	0.2	Mexico	-7.1	-3.5	0.3	-0.9	-2.4	-7.3
Colombia							Netherlands	2.6	0.8	2.7	2.1	1.6	-0.1
Costa Rica							New Zealand	13.7	-2.6	-3.7	-2.3	-0.9	17.4
Czechia	2.7	-1.8	-0.2	-0.3	-0.2	2.9	Norway	-8.7	3.6	7.0	2.5	1.6	-15.8
Denmark	-6.0	2.6	5.0	2.6	1.6	-11.0	Poland	8.8	-10.7	-4.2	-3.4	-3.3	12.9
Estonia							Portugal	-4.2	0.7	4.4	0.5	0.2	-8.6
Finland	-2.0	-0.1	12.8	0.9	1.4	-14.8	Slovak Republic	-0.7	2.8	0.5	0.3	0.6	-1.2
France	-0.5	2.5	3.2	1.6	1.4	-3.8	Slovenia	-3.9	-0.1	0.0	0.7	0.0	-3.9
Germany	1.6	3.0	5.7	3.7	3.4	-4.1	Spain	-8.6	2.0	2.5	3.1	1.0	-11.2
Greece	-10.4	2.8	4.5	3.1	0.6	-14.9	Sweden	2.1	5.1	1.7	4.8	4.2	0.5
Hungary	4.3	0.4	3.3	1.9	2.2	1.0	Switzerland	1.0	0.3	-0.5	-0.5	0.2	1.5
Iceland	-1.4	-2.3	-5.1	0.0	-1.4	3.7	Türkiye	-1.2	-1.4	-0.9	-1.4	-2.0	-0.4
Ireland	-3.8	-6.5	-4.4	-3.1	-3.9	0.6	United Kingdom	-9.6	-4.3	-0.4	0.3	-1.8	-9.1
Israel	-8.5	5.7	6.2	3.8	3.8	-14.7	United States	-3.4	-7.8	-1.0	0.7	-1.6	-2.5
Italy	-6.6	4.3	2.0	3.1	1.2	-8.6							
Japan	-1.2	-0.5	0.7	-0.5	0.4	-1.8	**OECD32**	**-0.8**	**-1.1**	**1.1**	**0.3**	**0.0**	**-1.9**

Notes: Data are for 2020 except for some countries; see note of Figure 7.1 for details. Historical data for Belgium, Estonia, Korea and Luxembourg are not comparable due to breaks in series and are not shown here. Data for Colombia and Costa Rica are unavailable.
Source: OECD calculations based on *OECD Income Distribution Database*, www.oecd.org/social/income-distribution-database.htm (June 2023 version).

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Old-age income inequality

Key Results

On average in the OECD, the Gini of disposable income equals 0.306 among people aged over 65. The highest value is observed for Costa Rica (0.500) and the lowest in Czechia (0.198). Two other measures of income inequality, the P90/P10 and the P50/P10 ratios, paint a similar picture across countries as the coefficient of linear correlation between the Gini and both percentile ratios are very high at 0.95 and 0.87, respectively. Income inequality tends to be lower among the elderly than in the total population. For the Gini this holds for just under two-thirds of OECD countries and by 0.009 on average.

According to the latest available figures, the Gini of disposable income for people aged over 65 was very high in Costa Rica (0.500), Mexico (0.451), Chile (0.441), the United States (0.409) and Türkiye (0.402). By contrast, Czechia (0.198), the Slovak Republic (0.208), Belgium (0.213), Slovenia (0.245), the Netherlands (0.248) and Norway (0.249) have the lowest Gini values (Table 7.4). Such a range means that there are huge differences in the level of old-age income inequality across OECD countries.

The Gini indices of income inequality in 2020 (or latest available) at older ages display a similar pattern across countries as those at working ages. Among the OECD countries, the linear cross-country correlation between these two age groups is very high at 94%. In 23 OECD countries, income inequality (measured by the Gini index) among older people is lower than for the total population. The largest difference equalling 0.050 between the two Ginis is found in Czechia, followed by Lithuania and the Netherlands.

Important factors that limit income inequality in old-age relative to income inequality during the working age are first-tier pension benefits, other redistributive features of earnings-related pension schemes and ceilings on pensionable earnings (Chapter 3). Yet, older people are more unequal than the total population in 14 countries, most notably Korea, Mexico and the United States.

P90/P10 and P50/P10 ratios

The coefficient of correlation between the Gini and both the 90/10 and the 50/10 percentile ratios are very high (0.95 and 0.87, respectively), indicating a very similar country ranking of income inequality as for the Gini. Also, the age pattern follows mostly the one observed for the Gini.

On average in the OECD, a person at the 90th percentile of the disposable income distribution among the over-65-year-olds has an income equal to 4.0 times the one at the tenth percentile. At the fiftieth percentile, the income is 1.9 times the P10 level. Among OECD countries, the highest P90/P10 ratios for older people are again in Costa Rica (10.1), Mexico (8.1), the United States (6.7) and Chile (6.6). For the P50/P10 ratio Costa Rica and Mexico rank highest, followed by the United States. Belgium (2.4), Czechia (2.3), Denmark (2.3) and the Netherlands (2.4) are the only countries reporting a P90/P10 ratio below 2.5. Denmark and the Netherlands (both 1.4) report the lowest P50/P10 ratios with Australia, Belgium, Czechia, Estonia, Finland, Iceland, New Zealand and the Slovak Republic at 1.5.

Change of inequality over time

Income inequality among people older than 65 has barely changed on average since 2000 based on the Gini index. The same is true for income inequality for the total population (Figure 7.4). However, there are substantial country differences. Inequality among older people decreased markedly since 2000 in Greece, Israel, Mexico and the Slovak Republic (by around 0.05 or more in the Gini index). At the other end of the country range, New Zealand and (albeit from a very low level) Sweden report large increases in inequality since 2000 (0.06 and 0.10 respectively).

Definition and measurement

Gini and percentile ratios are core measures of inequality, here based on the distribution of equivalised household disposable income. The Gini index is defined between 0 (complete equality between all) and 1 (complete inequality, i.e. one person receives all income). Percentile ratios indicate the ratio of incomes of two persons who are at different positions in the disposable income distribution. The P90/P10 ratio compares the income at the 90th percentile to the one at the tenth percentile while the P50/P10 uses accordingly the 50th percentile in the numerator. See OECD Income Distribution Database for more details on definitions and data sources.

Further reading

OECD (2023), *Income Distribution Database*, http://www.oecd.org/social/income-distribution-database.htm.

OECD (2017), *Preventing Ageing Unequally*, OECD Publishing, Paris, https://doi.org/10.1787/9789264279087-en.

Table 7.4. Income inequality by age: older vs. total population, 2020 or latest available year

Gini coefficient, P90/P10 and P50/P10 ratios of the distribution of equivalised disposable household income

	Gini		P90/P10 ratio		P50/P10 ratio			Gini		P90/P10 ratio		P50/P10 ratio	
	Aged over 65	Total population	Aged over 65	Total population	Aged over 65	Total population		Aged over 65	Total population	Aged over 65	Total population	Aged over 65	Total population
Australia	0.319	0.318	3.4	4.3	1.5	2.2	Korea	0.376	0.331	5.3	4.8	2.2	2.4
Austria	0.268	0.272	3.4	3.5	1.9	2.0	Latvia	0.344	0.343	4.3	5.2	1.8	2.5
Belgium	0.213	0.248	2.4	3.0	1.5	1.8	Lithuania	0.307	0.357	3.6	5.0	1.7	2.3
Canada	0.278	0.280	3.3	3.5	1.8	1.9	Luxembourg	0.268	0.290	3.6	3.8	1.9	2.0
Chile	0.441	0.460	6.6	7.2	2.5	2.5	Mexico	0.451	0.420	8.1	6.6	2.8	2.6
Colombia							Netherlands	0.248	0.297	2.4	3.4	1.4	1.9
Costa Rica	0.500	0.487	10.1	10.1	2.8	3.0	New Zealand	0.313	0.320	3.4	4.2	1.5	2.1
Czechia	0.198	0.255	2.3	3.0	1.5	1.7	Norway	0.249	0.285	2.6	3.1	1.6	1.9
Denmark	0.254	0.268	2.3	3.0	1.4	1.8	Poland	0.255	0.265	3.2	3.3	1.8	1.9
Estonia	0.284	0.305	3.2	4.4	1.5	2.3	Portugal	0.344	0.327	4.4	4.5	1.9	2.2
Finland	0.254	0.273	2.6	3.2	1.5	1.8	Slovak Republic	0.208	0.222	2.5	2.9	1.5	1.8
France	0.275	0.292	3.0	3.5	1.7	1.9	Slovenia	0.245	0.238	2.9	3.0	1.7	1.8
Germany	0.270	0.296	3.3	3.7	1.8	2.1	Spain	0.310	0.329	4.1	5.0	2.1	2.5
Greece	0.285	0.320	3.6	4.2	1.9	2.2	Sweden	0.298	0.286	3.1	3.4	1.6	2.0
Hungary	0.245	0.280	2.7	3.4	1.6	1.9	Switzerland	0.326	0.316	4.0	3.8	2.0	2.0
Iceland	0.275	0.250	2.6	2.8	1.5	1.7	Türkiye	0.402	0.415	5.8	5.6	2.4	2.3
Ireland	0.284	0.282	3.3	3.4	1.7	1.9	United Kingdom	0.319	0.355	3.9	4.3	2.0	2.1
Israel	0.346	0.340	5.2	5.1	2.4	2.5	United States	0.409	0.375	6.7	5.4	2.7	2.4
Italy	0.323	0.331	4.1	4.6	2.0	2.3							
Japan	0.339	0.334	4.8	5.2	2.4	2.6	**OECD**	**0.306**	**0.315**	**4.0**	**4.3**	**1.9**	**2.1**

Notes: Data are for 2020 except for some countries; see note of Table 7.1 for details.
Source: *OECD Income Distribution Database*, www.oecd.org/social/income-distribution-database.htm (June 2023 version).

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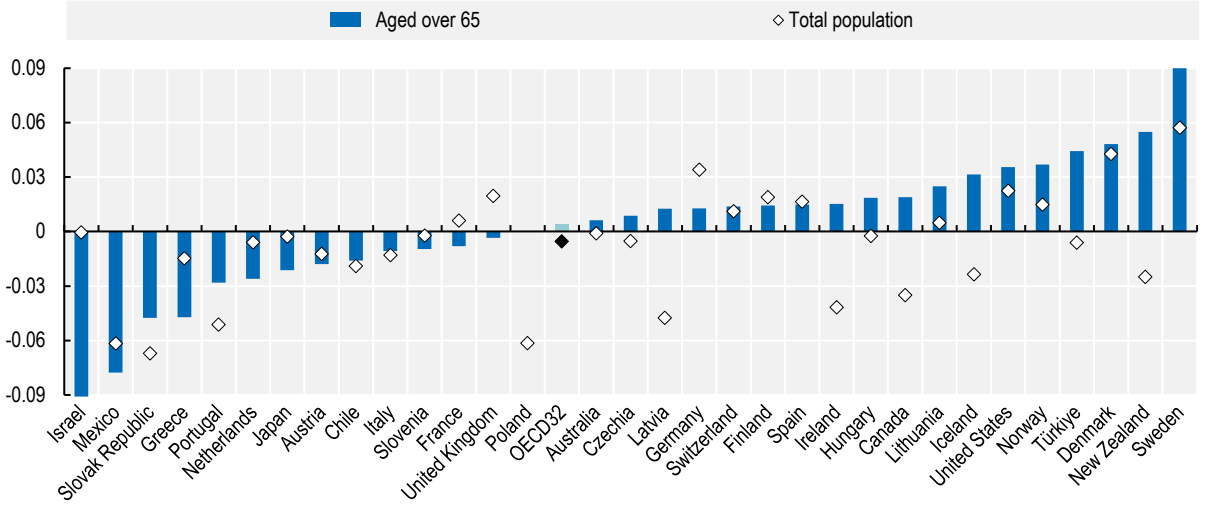
Figure 7.4. Change in income inequality over time among the older and the total population

Change in Gini of disposable income between 2000 and 2020 or latest available year



Note: Disposable income here refers to equivalised disposable household income. Data are for 2020 except for some countries; see note of Table 7.1 for details. Historical data for Belgium, Estonia, Korea and Luxembourg are not comparable due to breaks in series and are not shown here. Data for Colombia and Costa Rica are unavailable.
Source: *OECD Income Distribution Database*, www.oecd.org/social/income-distribution-database.htm (June 2023 version).

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Average wage

Key Results

"Average wage (AW)" is an important metric as all pension modelling results are presented as multiples of this measure. The average for all OECD countries was USD 41 261 in 2020 and USD 52 884 in PPP terms.

Table 7.5 reports the OECD's full-time average wage (AW) levels for the year 2022. The wage earnings are defined as gross wages before deductions of any kind (including personal income taxes and social security contributions), but including overtime pay and other cash supplements paid to employees.

Average wages are displayed in national currencies and in US dollars (both at market exchange rates and at purchasing power parities, PPP). The PPP exchange rate adjusts for the fact that the purchasing power of a dollar varies between countries: it allows for differences in the price of a basket of goods and services between countries.

Wage earnings across the OECD countries averaged USD 41 261 in 2022 at market exchange rates. Switzerland has the highest level at USD 103 142. This is over 23 times the level recorded in Colombia, at USD 4 443, and nearly 15 times that of Mexico at USD 6 962.

At PPP, wages averaged USD 52 884. Switzerland's levels remain the highest amongst OECD countries, at USD 93 620, with, Luxembourg, Iceland and Belgium next at USD 83 143, USD 76 768 and USD 76 416 respectively. Mexico is the lowest, at USD 13 503, followed by Colombia at USD 13 593. The higher figure for PPP wages suggests that many OECD countries' exchange rates with the US Dollar were lower than the rate that would equalise the cost of a standard basket of goods and services.

Average wages for the other major economies have been sourced from the latest ILO Global Wage Report (ILO, 2022). The wages range from a low of USD 2 481 in Indonesia to a high of USD 21 069 in Saudi Arabia, at market exchange rates.

Between 2021 and 2022 nominal wages increased in every country, and by an average of 7.0% in the OECD on average (Figure 7.5). This is about 4 percentage points below average CPI inflation, which ranges from 2.5% in Japan to 72% in Türkiye. This means that wages fell in real terms except in Colombia and Hungary while average real wages were basically flat in France, Luxembourg, New Zealand, Poland and Switzerland.

Definition and measurement

The "average worker" earnings series (AW), defined as the average full-time adult gross wage earnings, was adopted from the second edition of *Pensions at a Glance* (OECD, 2007). This concept is broader than the previous benchmark of the "average manual production worker" (APW) because it covers more economic sectors and includes both manual and non-manual workers. The new AW measure was introduced in the OECD report *Taxing Wages* and also serves as benchmark for *Benefits and Wages*. The third edition of *Pensions at a Glance* (OECD, 2009) also included a comparison of replacement rates under the old and new measures of earnings for eight countries where the results were significantly different.

Further reading

ILO (2022), *Global wage report 2022-23 : the impact of inflation and COVID-19 on wages and purchasing power*, International Labour Organization, https://doi.org/10.54394/zlfg5119.

OECD (2023), *Purchasing Power Parities - Frequently Asked Questions (FAQs)*, OECD, Paris, https://www.oecd.org/sdd/prices-ppp/purchasingpowerparities-frequentlyaskedquestionsfaqs.htm.

OECD (2023), *Taxing Wages 2023: Indexation of Labour Taxation and Benefits in OECD Countries*, OECD Publishing, Paris, https://doi.org/10.1787/8c99fa4d-en.

OECD (2009), *Pensions at a Glance 2009: Retirement-Income Systems in OECD Countries*, OECD Publishing, Paris, https://doi.org/10.1787/pension_glance-2009-en.

Table 7.5. Gross average wage (AW), 2022

	OECD measures of average wages			Exchange rate, national currency per USD	
	National currency	USD, market exchange rate	USD, PPP	Market rate	PPP
Australia	94 685	65 678	66 714	1.44	1.42
Austria	52 666	55 460	72 273	0.95	0.73
Belgium	55 332	58 267	76 416	0.95	0.72
Canada	81 163	62 359	66 254	1.30	1.23
Chile	11 492 895	13 160	25 919	873.31	443.42
Colombia	18 908 349	4 443	13 593	4 256.19	1 391.00
Costa Rica	10 140 000	15 669	29 587	647.14	342.72
Czechia	472 783	20 242	36 579	23.36	12.93
Denmark	468 195	66 165	73 102	7.08	6.40
Estonia	19 996	21 057	34 706	0.95	0.58
Finland	50 774	53 468	62 450	0.95	0.81
France	41 540	43 744	59 259	0.95	0.70
Germany	55 041	57 961	75 573	0.95	0.73
Greece	19 912	20 968	37 255	0.95	0.53
Hungary	6 328 111	16 984	38 549	372.60	164.16
Iceland	10 959 626	81 014	76 768	135.28	142.76
Ireland	54 649	57 548	70 196	0.95	0.78
Israel	172 609	51 378	46 536	3.36	3.71
Italy	33 855	35 651	54 131	0.95	0.63
Japan	5 154 009	39 195	52 822	131.50	97.57
Korea	49 775 096	38 542	59 830	1 291.45	831.94
Latvia	16 758	17 647	32 269	0.95	0.52
Lithuania	20 667	21 763	42 425	0.95	0.49
Luxembourg	70 189	73 913	83 143	0.95	0.84
Mexico	140 125	6 962	13 503	20.13	10.38
Netherlands	57 513	60 564	75 267	0.95	0.76
New Zealand	70 588	44 756	48 204	1.58	1.46
Norway	666 115	69 285	74 996	9.61	8.88
Poland	72 945	16 364	38 645	4.46	1.89
Portugal	25 725	27 090	46 259	0.95	0.56
Slovak Republic	15 538	16 362	28 832	0.95	0.54
Slovenia	23 332	24 569	41 730	0.95	0.56
Spain	28 360	29 865	46 629	0.95	0.61
Sweden	494 513	48 893	56 510	10.11	8.75
Switzerland	98 483	103 142	93 620	0.95	1.05
Türkiye	137 340	8 299	29 112	16.55	4.72
United Kingdom	44 300	54 604	65 027	0.81	0.68
United States	64 889	64 889	64 889	1.00	1.00
OECD		**41 261**	**52 884**		
Argentina	839 544	6 428	19 652	130.62	42.72
Brazil	32 235	6 242	12 741	5.16	2.53
China	114 029	16 925	28 352	6.74	4.02
India	204 204	2 598	8 487	78.60	24.06
Indonesia	36 849 072	2 481	7 468	14 849.85	4 934.26
Saudi Arabia	79 008	21 069	44 263	3.75	1.78
South Africa	297 936	18 216	41 789	16.36	7.13

Note: USD = the United States of America Dollar, PPP = purchasing power parity.
Source: OECD (2023), *Taxing Wages 2023*, https://doi.org/10.1787/8c99fa4d-en, ILO (2022) Global wage report 2022-23, https://doi.org/10.54394/zlfg5119, *and OECD's National Accounts Database.*

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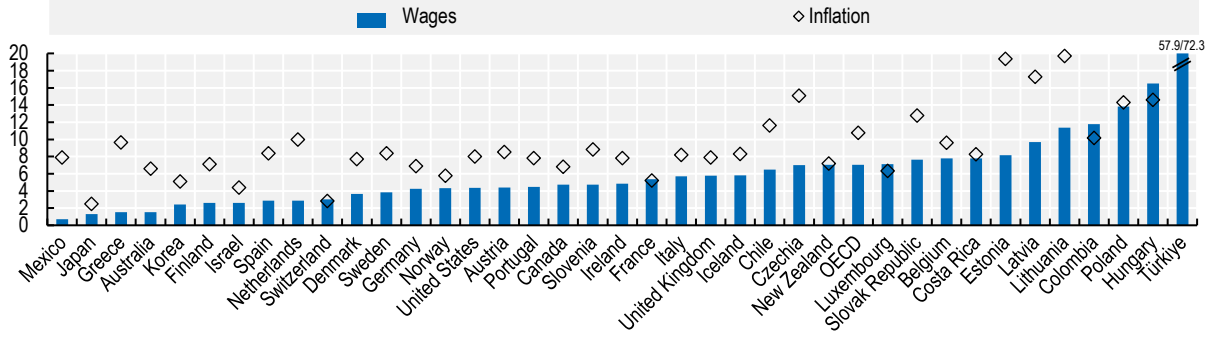
Figure 7.5. Change in average wage, national currency

Percentage change in average wage between 2021 and 2022, with annual inflation for reference



Source: OECD (2023), *Taxing Wages 2023*, https://doi.org/10.1787/8c99fa4d-en. Consumer prices annual inflation sourced from OECD.Stat.

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8 Finances of retirement-income systems

The indicators in this chapter look at the finances of pension systems. The first indicator presents an overview of the pension contributions paid by employees and employers for the mandatory or quasi-mandatory schemes. The second indicator looks at the "Public expenditure on pensions". It shows how much of gross domestic product is allocated towards national public pensions and the overall share of public pensions in the government budget. The third indicator focuses on private pension spending and looks at the total benefit spending on mandatory, quasi-mandatory and voluntary private schemes.

The final indicator presents long-term projections of public pension spending and how it is projected to evolve in the future.

Mandatory pension contributions

Key Results

Total mandatory effective pension contribution rates for an average earner averaged 18.2% in 2022 among OECD countries. The highest levels are found in Italy at 33.0%, Czechia (28.0%), France (27.8%) and Greece (26.0%) with the lowest in Canada, Korea, Lithuania and Mexico all under 10%, on top of New Zealand which does not have any mandatory contributory scheme.

Most of the measures presented in *Pensions at a Glance* look at the benefits side of the pension system. The indicators here look at the contribution side, mapping out how much workers contributed towards their pension in 2022. Tax-financed pension benefits are not covered here. Since different pension components in a country can be financed through different income sources, mapping out the pension's contribution terrain is very important, but it can also be difficult.

Table 8.1 presents the 37 OECD countries where pension contributions are mandatory, either public or private, and New Zealand where there is no mandatory contributory scheme. There are 12 countries – Austria, Canada, Czechia, Denmark, Finland, Germany, Iceland, Italy, Lithuania, Luxembourg, Slovenia and Türkiye – where contributions also finance disability or invalidity benefits. In addition, there are three countries, Ireland, Spain and the United Kingdom, where it is difficult to separate the pension contributions from the other parts of social insurance such as disability benefits, sickness, unemployment, etc.; these three countries are not included in the average. Overall, the average effective contribution rate equalled 18.2% at the average-wage level in 2022. The highest total mandatory contribution rates are found in Italy at 33.0%. Czechia, France and Greece also have high effective contribution rates, around 26-28%.

By contrast the mandatory contribution rate in Mexico amounts to only 6.275% but will increase to 15% over the next few years. In Canada, Korea and Lithuania, the contribution rate is also 9% or lower. However, in Canada, a large component of public pensions comes from tax-financed first-tier components (Chapter 4), reducing the role of the earnings-related pension within the country's retirement system. In addition, there is a contribution ceiling which is equivalent to 79% of average earnings thereby reducing the contribution rate from an actual 11.4% on eligible earnings to an effective rate of 9.1% for an average earner.

The average effective contribution rate to the public schemes is 15.5% compared to 2.7% for private schemes, for the OECD35 at the average wage, which makes a total of 18.2%. Within the public scheme employee contributions are over two-thirds of those of employers, representing effective contribution rates of 6.3% and 9.1%, respectively. In Slovenia, the split is almost reverse, as employees pay 15.5% compared to 8.85% for employers. In Australia and Estonia, all mandatory contributions are paid by employers, while in Lithuania employees pay total contributions.

Countries with higher pension contribution rates often have above average pension benefits (as in the case of France and Italy). The choice of the contribution level should be the result of trading off lower net wages against higher future pensions. However, in addition higher mandatory contribution rates might hurt the competitiveness of the economy, and lower total employment while potentially increasing informality.

Further reading

OECD (2023), *Taxing Wages 2023: Indexation of Labour Taxation and Benefits in OECD Countries*, OECD Publishing, Paris, https://doi.org/10.1787/8c99fa4d-en.

Table 8.1. Contribution rates for an average worker in 2022

Contributions to mandatory and quasi-mandatory pension schemes

	Nominal rate					Ceiling (multiple of gross average earnings), public / private	Effective rate on average earnings
	Employee, public	Employer, public	Employee, private	Employer, private	Total		
Australia			0.0	10.5	10.5	2.54	10.5
Austria*	10.25	12.55			22.8	1.51	22.8
Belgium	7.54	8.86			16.4	1.29	16.4
Canada*	5.7	5.7			11.4	0.79	9.1
Chile			11.15	1.54	12.7	2.99	12.7
Colombia	4.0	12.0			16.0	14.19	16.0
Costa Rica	4.0	5.25	1.0	3.25	13.5	None	13.5
Czechia*	6.5	21.5			28.0	3.04	28.0
Denmark*			4.0	8.0	12.0	None	12.7
Estonia	0.0	20.0			20.0	None	20.0
Finland*	7.47 [a]	17.4			24.85 [a]	None	24.15 [a]
France	11.3 [w]	16.5 [w]			27.8 [w]	0.99 / 7.92	27.8
Germany*	9.3	9.3			18.6	1.54	18.6
Greece	9.67	16.33			26.0	4.66	26.0
Hungary	10.0	9.31			19.3	None	19.3
Iceland*	0.0	6.35	4.0	11.5	21.9	None	21.9
Israel	7.0 [w]	7.6 [w]	6.0	6.5	27.1 [w]	3.18 / 0.85	19.8
Italy*	9.19	23.81			33.0	3.10	33.0
Japan	9.15	9.15			18.3	2.39	18.3
Korea	4.5	4.5			9.0	1.33	9.0
Latvia	10.0	10.0			20.0	4.66	20.0
Lithuania*	8.72	0.0			8.72	4.84	8.72
Luxembourg*	8.0	8.0			16.0	1.94	16.0
Mexico			1.125	5.15	6.3	5.67	6.275
Netherlands	18.0	0.0	7.44 [w]	11.16 [w]	36.6 [w]	0.62 / none	23.2
New Zealand					0.0		0.0
Norway	8.0	13.0	0.0	2.0	23.0	None / 1.98	23.0
Poland	9.76	9.76			19.52	2.44	19.52
Portugal	7.2	15.5			22.7	None	22.7
Slovak Republic	4.0	18.75			22.8	6.56	22.8
Slovenia*	15.5	8.85			24.4	3.26	24.4
Sweden	7.0	10.81	0.0	4.5 [w]	22.3 [w]	1.08 / none	22.3
Switzerland	4.35	4.35	6.25 [a,w]	6.25 [a,w]	21.2 [a,w]	None / 0.85	17.3 [a]
Türkiye*	9.0	11.0			20.0	4.24	20.0
United States	5.3	5.3			10.6	2.27	10.6
OECD35, effective at average wage	**6.3**	**9.1**	**1.0**	**1.7**			**18.2**
Ireland**	4.0	10.05			14.1	None	14.1
Spain**	4.7	23.6			28.3	1.75	28.3
United Kingdom**	12 [w]	13.8 [w]	5.0	3.0	33.8 [w]	None / 1.13	30.2

Note: *Contribution rate also finances disability or invalidity benefits. **The indicated rates cover different social security schemes across countries. OECD35 averages are for earners at the average wage and do not represent the average of the nominal rate columns. Ireland: All schemes excluding for sickness and maternity benefits in kind. Spain: All schemes except for unemployment. United Kingdom: Old age, survivor, disability, sickness and maternity, work injury and unemployment. [a] and [w]: rate varies by age and earnings level respectively. In the private occupational schemes of the Netherlands and Switzerland contributions are only paid on the part of individual earnings exceeding 39% and 29% of average earnings respectively. Therefore, the total nominal contribution rate in the Netherlands equals 18% below 39% of average earnings, 40.5% between 39% and 62% of average earnings and 22.5% above. For occupational schemes in Denmark and the Netherlands, contribution rates are fund-specific, so typical rates are shown. In France, Latvia and Sweden, the indicated public contribution rates include contributions to mandatory occupational or personal pension schemes. Flat-rate contributions to the ATP scheme in Denmark are only included in the effective contribution rate. Public pensions in Finland are partly funded and privately managed while national accounts define them as public. For France, the total nominal rate drops from 27.8% to 26.4% at 99% of average earnings and – once the ceiling of the occupational scheme is reached (792% of average earnings for AGIRC-ARRCO) – it drops further to 1.9% without ceiling. For Israel, the public nominal rate for earnings below 44% of average earnings equals 3.95% compared to 14.6% above. For the Slovak Republic the employer contribution is split 14.0% for pensions and 4.75% for a reserve fund which is used to cover the deficit in the basic social insurance funds and so is not pension specific. For Sweden, the nominal rate in the private occupational scheme rises from 4.5% to 30% at 108% of average earnings. The indicated nominal rate in the private occupational scheme in Switzerland is an average of the age-specific rates (7% at ages 25-34, 10% at 35-44, 15% at 45-54 and 18% at 55-64). Likewise for employee contributions to the public scheme in Finland (8.65% between 53 and 62, otherwise 7.15%). For Latvia, contributions are assumed to be equally split between employee and employer as legislation does not make such a split explicit. For Chile, the indicated values include a 1.54%-rate for disability and survivor pensions and a 1.15%-rate for administrative costs. In Hungary employer contributions are levied for pensions and healthcare together of which 71.6% go to the pension budget. For Mexico, contribution rates shown exclude contributions paid by the government to the private individual account in form of both a 0.225%-contribution and the social quota, which is an amount that varies with the wage level. Also, contributions for public survivor and disability benefits of 0.625% (employee) + 1.75% (employer) + 0.125% (government) are not included. In Luxembourg (8%) and Israel (0.25%) the government pays contributions to mandatory pension schemes, which are excluded here.

Source: Country profiles and *OECD Taxing Wages 2023*.

StatLink https://stat.link/pmbyaq

Public expenditure on pensions

Key Results

Public spending on cash old-age pensions and survivors' benefits in the OECD increased from an average of 6.5% of gross domestic product (GDP) to 7.7% between 2000 and 2019. Public pensions are often the largest single item of social expenditure, accounting for 18% of total government spending on average in 2019.

Greece and Italy spent the largest proportion of national income on public pensions among OECD countries in 2019, at around 16% of GDP (Table 8.2). Other countries with high gross public pension spending are in continental Europe, with Austria and France around 13%-13.5% of GDP in 2019 – France increased to 14.5% in 2020 but this is due to a drop in GDP rather than a significant increase in spending levels. Public pensions generally account for between one-quarter and one-third of total public expenditure in these countries.

At the other end of the spectrum, Chile, Iceland, Ireland, Korea and Mexico spent less than 4% of GDP on public pensions. Chile, Ireland and Mexico have relatively young populations. Moreover, in Mexico, low spending also reflects the relatively narrow coverage of pensions (only around 35% of employees). In Iceland, much of retirement income is provided by compulsory occupational schemes (see the next indicator of "Pension-benefit expenditures: Public and private"), leaving a lesser role for public pensions; in addition, the retirement age is high at age 67. Korea's pension system is not mature yet: the public, earnings-related scheme was only established in 1988 and the new targeted basic pension was only introduced in 2014.

Spending also tends to be low in countries with favourable demographics, such as Mexico and New Zealand. However, this is not always the case: Türkiye spends 7.5% of GDP on public pensions despite having the second lowest old-age to working-age ratio among OECD countries (Table 6.2). For Türkiye, expenditure levels can be explained by historically low retirement ages, resulting in longer periods in retirement than in many other countries. Australia, Canada, Chile, Iceland, the Netherlands and the United Kingdom also have relatively low spending on public pensions, but all these countries have large private pension components, as shown in the next indicator.

Trends

Public pension spending increased from an OECD average of 6.5% of gross domestic product (GDP) to 7.7% between 2000 and 2019. It was estimated that population ageing captured by the shift in demographic structures alone would have triggered an increase in pension expenditure of 2.5% of GDP on average, between 2000 and 2017, with higher employment lowering total pension expenditure by 1.1% of GDP on average (Chapter 1, (OECD, 2021)). Spending increased by more than four percentage points of GDP between 2000 and 2019 in Finland, Greece and Portugal, and by between two and four percentage points in France, Italy, Japan, Korea, Mexico, Norway, Spain and Türkiye. Conversely, public spending fell by around two percentage points in Chile and Latvia, while Australia, Germany, Lithuania and Slovenia also recorded a decline. Public pension spending was relatively stable as a proportion of GDP over the period 2000-19 in 18 countries: Australia, Austria, Czechia, Estonia, Germany, Hungary, Iceland, Ireland, Israel, Lithuania, the Netherlands, New Zealand, Poland, the Slovak Republic, Slovenia, Sweden, Switzerland and the United Kingdom where there was less than one percentage point change either way over the period.

Gross and net spending

The penultimate column of the table shows public spending in *net* terms: after taxes and contributions paid on benefits. Net spending is significantly below gross spending in Austria, Belgium, Denmark, Finland, Greece, Italy, Poland and Sweden, due to taxes on pension benefits. Gross and net spending are similar where pensions are not taxable such as in Hungary, the Slovak Republic and Türkiye or where public benefits are generally below basic tax reliefs (Australia, Czechia, Iceland, Ireland and Slovenia).

Non-cash benefits

The final column of the table shows total gross public spending on older people, including non-cash benefits. In Denmark, Finland, Norway and Sweden, non-cash benefits exceed 1.5% of GDP. The most important are housing benefits. These are defined as "non-cash benefits" because they are contingent on particular expenditure by individuals. Australia and Belgium also record high figures for non-cash benefits.

Further reading

Adema, W. and M. Ladaique (2009), "How Expensive is the Welfare State?: Gross and Net Indicators in the OECD Social Expenditure Database (SOCX)", *OECD Social, Employment and Migration Working Papers*, No. 92, OECD Publishing, Paris, https://doi.org/10.1787/220615515052.

OECD (2021), *Pensions at a Glance 2021: OECD and G20 Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/ca401ebd-en.

Table 8.2 Public expenditure on old-age and survivor benefits

	Level (% of total government spending)		Level (% of GDP)							Change of level (p.p.)	Level in net terms (% of GDP)	Total including non-cash (% of GDP)
	2000	2019	1990	2000	2005	2010	2015	2019	Latest	2000-19	2019	2019
Australia	12.8	10.3	3.1	4.7	3.7	3.8	4.3	4.3	4.2	-0.4	4.3	5.4
Austria	23.9	26.8	11.7	12.2	12.1	13.0	13.3	13.0		0.8	10.9	13.7
Belgium	17.8	20.6	9.0	8.8	8.9	9.9	10.5	10.7		1.9	9.1	11.8
Canada*	10.1	11.3	4.2	4.2	4.0	4.3	4.7	5.0	5.3	0.9	4.7	5.0
Chile**		10.3	7.9	5.0	3.7	3.4	2.9	2.8	3.1	-2.1	2.8	2.9
Colombia**		12.7				5.5	5.9	5.7	5.6		5.7	5.7
Costa Rica**		14.7					4.7	5.1	5.4		5.1	5.1
Czechia	16.8	19.2	5.5	6.8	6.6	8.0	8.0	7.9		1.0	7.9	8.2
Denmark	12.0	16.4	6.1	6.3	6.5	7.1	8.1	8.1		1.8	5.8	10.1
Estonia	16.5	16.7		6.0	5.3	7.6	6.9	6.6		0.6	6.4	6.7
Finland	15.5	22.4	7.2	7.4	8.1	9.8	11.5	11.9		4.5	9.6	13.5
France*	22.2	24.3	10.4	11.5	12.0	13.2	13.8	13.4	14.5	2.0	12.0	13.9
Germany	22.8	23.1	9.5	10.9	11.2	10.8	10.2	10.4		-0.5	9.8	10.4
Greece	21.9	32.7	9.5	10.2	11.4	14.3	17.5	15.7		5.5	13.1	15.7
Hungary	15.7	16.6		7.4	8.3	9.5	9.0	7.6		0.2	7.6	8.0
Iceland	4.6	6.6	2.2	2.1	1.9	1.5	2.0	2.9		0.8	2.9	3.3
Ireland	10.3	13.7	4.8	3.1	3.4	5.2	3.8	3.3		0.2	3.2	3.4
Israel**	10.0	12.0		4.4	4.6	4.8	4.8	4.7	4.9	0.2	4.7	5.4
Italy	29.0	32.8	11.3	13.5	13.7	15.4	16.2	15.9		2.4	12.8	16.0
Japan*		23.1	4.6	6.9	8.0	9.5	9.3	9.3	9.7	2.5	8.9	9.6
Korea*	5.6	9.7	0.7	1.3	1.4	2.0	2.8	3.3	3.6	2.0	3.2	3.5
Latvia	23.3	17.9		8.6	5.5	9.2	6.9	6.8		-1.8	6.5	7.2
Lithuania	17.9	18.4		7.1	5.7	7.7	6.7	6.4		-0.7	6.4	6.8
Luxembourg	18.8	20.1	8.1	7.1	7.8	7.5	8.0	8.7		1.5	7.2	8.7
Mexico		11.4	0.4	0.8	1.0	1.6	2.2	3.1		2.3	3.0	3.1
Netherlands	10.9	11.8	6.2	4.6	4.6	4.9	5.3	5.0		0.3	4.6	5.9
New Zealand**	12.3	12.2	7.1	4.6	4.2	4.6	5.0	4.9	5.1	0.3	4.2	5.0
Norway	11.1	13.8	5.5	4.7	4.8	5.3	6.7	7.1		2.4	5.9	9.5
Poland	24.3	26.2	5.0	10.5	11.3	11.0	11.1	10.9		0.5	9.4	11.0
Portugal	18.3	29.3	4.8	7.8	10.0	12.0	13.3	12.4		4.6	12.4	12.5
Slovak Republic	11.8	17.6		6.2	6.0	6.7	7.2	7.1		0.9	7.1	7.4
Slovenia	21.8	23.2		10.4	9.8	10.9	11.1	10.0		-0.3	9.9	10.1
Spain	21.5	26.7	7.7	8.4	8.0	9.2	11.0	11.3		2.9	10.8	11.9
Sweden	12.8	14.2	7.2	6.8	7.2	7.2	7.1	7.0		0.2	5.4	9.3
Switzerland	17.8	19.6	5.0	5.9	6.1	6.0	6.4	6.4		0.5	5.1	6.7
Türkiye		21.3	0.7	3.9	5.9	7.3	7.0	7.5		3.7	7.5	7.6
United Kingdom*	13.4	11.5	4.5	4.8	5.0	6.2	6.1	4.9	5.1	0.2	4.7	5.7
United States*	16.4	18.6	5.8	5.7	5.7	6.6	7.0	7.1	7.5	1.4	6.6	7.1
OECD	**16.2**	**18.1**	**5.8**	**6.5**	**6.6**	**7.5**	**7.9**	**7.7**		**1.2**	**7.0**	**8.2**

Note: * = latest data is for 2020, ** = latest data is for 2021. See Adema, W. and M. Ladaique (2009), "How Expensive is the Welfare State? Gross and Net Indicators in the OECD Social Expenditure Database (SOCX)", http://dx.doi.org/10.1787/220615515052 for more details on the data, sources and methodology.
Source: *OECD Social Expenditures Database (SOCX)*; *OECD Main Economic Indicators Database*.

StatLink https://stat.link/hno6g9

Private expenditure on pensions

Key Results

Payments from private pension schemes were worth 1.5% of gross domestic product (GDP) on average in 2019, representing about one-sixth of total – public and private – spending, and having increased from 0.7% of GDP in 1990 and 1.1% in 2005.

Private pensions are mandatory or achieve near-universal coverage through industrial relations agreements ("quasi-mandatory") in less than one-third of the 38 OECD countries. In others, voluntary private pensions – either individual ("personal") or employer-provided ("occupational") – have broad coverage (see Table 4.2), implying that in total around half of OECD countries have significant private pensions.

Biggest flows of private-pension payments are in Canada, the Netherlands, Switzerland, the United Kingdom and the United States, between 5.3% and 5.6% of GDP in 2019 (Table 8.3). While Swiss occupational plans are compulsory, the data on private-pension payments include benefits from voluntary schemes above the statutory minimum level. The next three countries – Australia, Iceland and Sweden – record private-pension payments of between 2.9% and 4.5% of GDP. Japan (where private pensions are voluntary) also has high levels of expenditure on private pensions, at 2.6% of GDP.

Many countries introduced compulsory private pensions in the 1990s: Australia, Estonia, Mexico, Poland, the Slovak Republic and Sweden. In some cases – particularly in Central and Eastern Europe – these new schemes were mainly taken up by younger workers. Many of the schemes have yet to begin paying benefits and some countries have since reversed the decision with mandatory private schemes removed in Poland and now being voluntary in Estonia. Much of the private benefit pay-outs recorded in Australia and Sweden relate to voluntary and quasi-mandatory (respectively) schemes that were already in place before private pensions were made compulsory.

Total expenditure from both public and private pensions is highest in Italy at 17.0% of GDP, with Greece at 15.8% and both Austria and France at 13.7% of GDP in 2019. The average across countries is 9.2% of GDP with the lowest levels found in Mexico at 3.1% of GDP and in Chile, Ireland, Korea and New Zealand all being between 4% and 5% of GDP.

The importance of private pensions as a proportion of total spending varies considerably by country (Figure 8.1). Iceland is the highest at 61% of total expenditure with Canada, the Netherlands and the United Kingdom also over 50%, and Australia, Switzerland and the United States around 45%. Overall, the average is 21% of total spending, for the 28 countries with recorded spending for private pensions, with eight having a share below 5% with a further five being under 10%.

Trends

The countries that have recorded an increase in private pension spending larger than one percentage point of GDP between 2000 and 2019 are Canada, Iceland, Sweden, Switzerland and the United States (Figure 8.1). In some cases, such as Switzerland, the occupational pension became compulsory in 1985, which extended coverage significantly. This is now being reflected in the rapid growth in private pension entitlements as each successive generation of retirees has contributed for longer, on average, to the private pension scheme.

The average proportion of private spending in total pension spending has been relatively stable over the last two decades, from 22% for 2000 to 23% in 2019, for the 26 countries that have both public and private spending in both years. However, there has been significant change in some countries. In Chile, for example the proportion doubled from 18% in 2000 to 37% in 2019, with increases of +8 or 9 percentage points also found in Australia, Iceland and Sweden. Conversely, the proportion halved from 47% to 24% in Ireland and fell by 10 percentage points. in Japan and Korea.

Tax breaks

Many OECD countries offer favourable tax treatment to retirement savings made through private pension plans. Often, individual contributions are fully or partially deductible from income and investment returns are fully or partially relieved from tax. Some countries offer tax relief on pension payments (see "Tax treatment of pensions and pensioners" in Chapter 4).

The cost of these fiscal incentives is measured in many OECD countries using the concept of "tax expenditures", developed in the 1960s. This attempts to quantify the value of the preferential tax treatment relative to a benchmark tax treatment. The idea is that this is the amount of revenue forgone as a result of the tax incentives.

Data on tax expenditures for retirement savings are available for 2019 in 25 OECD countries. Just under half of these figures are 0.2% of GDP or less. And in only six countries – Australia, Canada, Germany, Israel, the Netherlands and Switzerland – are reported tax expenditures worth 1% of GDP or more.

Tax expenditure figures come with important caveats: they are not comparable between countries because of differences in the benchmark tax system chosen. Despite their name, they are not equivalent to direct expenditures and so should not be added to numbers for public pension spending.

Further reading

OECD (2018), *Financial Incentives and Retirement Savings*, OECD Publishing, Paris, https://doi.org/10.1787/9789264306929-en.

OECD (2010), *Tax Expenditures in OECD Countries*, OECD Publishing, Paris, https://doi.org/10.1787/9789264076907-en.

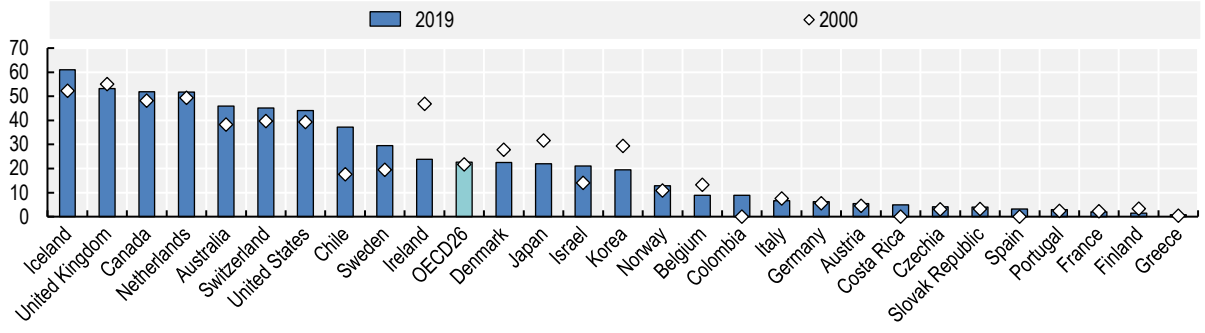
Table 8.3. Private pension-benefit expenditures

	Scheme type	Level (% of GDP)							Change of level	Public and private benefit spending (% of GDP)	Tax breaks (% of GDP)
		1990	2000	2005	2010	2015	2019	2020/21	2000-19	2019	2019
Australia	m		2.9	1.9	3.4	4.7	3.6		0.8	7.9	1.9
Austria	v	0.4	0.6	0.5	0.6	0.7	0.7		0.2	13.7	0.0
Belgium	v	1.0	1.3	1.5	1.1	1.1	1.0		-0.3	11.7	0.1
Canada	v	2.5	3.9	4.1	3.7	4.6	5.4	5.8	1.6	10.5	2.2
Chile	m	0.3	1.1	1.2	1.3	1.4	1.7	1.6	0.6	4.5	0.1
Colombia	m				0.4	0.4	0.6	0.6		6.3	
Costa Rica	m					0.2	0.3			5.3	
Czechia	m		0.2	0.2	0.4	0.3	0.3		0.1	8.2	0.0
Denmark	q/m				1.7	2.2	2.0		2.0	10.5	
	v	1.6	2.4	2.5	1.2	0.8	0.4		-2.0		
Estonia										6.6	
Finland	v	0.1	0.3	0.2	0.2	0.2	0.2		-0.1	12.1	0.0
France	v	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	13.7	0.1
Germany	v	0.7	0.6	0.7	0.7	0.7	0.7		0.1	11.1	1.1
Greece	v	0.3	0.0	0.1	0.1	0.1	0.1		0.1	15.8	
Hungary										7.6	0.1
Iceland	m	1.4	2.3	2.7	3.2	3.9	4.5		2.2	7.3	
Ireland	v	0.9	2.8	1.5	1.8	1.2	1.0		-1.7	4.4	0.4
Israel	v		0.7	1.4	1.3	1.3	1.3	1.3	0.5	5.9	1.2
Italy	v	1.1	1.1	1.1	1.3	1.2	1.1		0.0	17.0	0.1
Japan	m	0.2	0.4	0.4	0.6	0.5	0.3		-0.1	12.0	
	v		2.8	2.1	2.6	2.2	2.3		-0.5		
Korea	m	0.2	0.5	0.3	0.4	0.7	0.8	1.0	0.2	4.1	
Latvia										6.8	0.1
Lithuania										6.4	0.0
Luxembourg										8.7	
Mexico										3.1	0.3
Netherlands	q	3.6	4.5	4.8	5.5	5.8	5.3		0.8	10.3	1.8
New Zealand										4.9	
Norway	v/m	0.6	0.6	0.6	0.6	1.0	1.1		0.5	8.1	0.3
Poland										10.9	
Portugal	v	0.3	0.2	0.3	0.2	0.7	0.4		0.2	12.8	0.0
Slovak Republic	v		0.2	0.4	0.3	0.4	0.3		0.1	7.4	0.0
Slovenia										10.0	0.6
Spain	v				0.5	0.5	0.4			11.7	
Sweden	q/m	1.1	1.7	1.9	2.5	3.1	2.9		1.3	9.9	
Switzerland	m	2.2	3.9	4.3	4.5	4.9	5.3		1.4	11.7	1.2
Türkiye										7.5	0.0
United Kingdom	m	0.1	0.4	0.5	0.6	0.7	0.6	0.6	0.2	10.5	0.9
	v	4.0	5.4	4.3	4.2	4.2	5.0	5.1	-0.5		
United States	v	2.6	3.7	3.6	4.4	5.2	5.6	6.1	1.9	12.7	0.9
OECD		**0.7**	**1.2**	**1.1**	**1.3**	**1.4**	**1.5**	**0.6**	**0.3**	**9.2**	**0.5**

Note: m = mandatory private scheme, q = quasi mandatory; and v = voluntary. Blank cells indicate missing values.
Source: *OECD Social Expenditures Database* (SOCX); *OECD Main Economic Indicators Database*. See Adema, W. and M. Ladaique (2009), "How Expensive is the Welfare State?: Gross and Net Indicators in the OECD Social Expenditure Database (SOCX)", https://doi.org/10.1787/220615515052 for more details on the data, sources and methodology.

StatLink https://stat.link/gr2wsv

Figure 8.1. Private expenditure as a percentage of public and private



Note: Data for 2000 is not available for Colombia and Costa Rica.
Source: *OECD Social Expenditures Database* (SOCX); *OECD Main Economic Indicators Database*. See Adema, W. and M. Ladaique (2009), "How Expensive is the Welfare State?: Gross and Net Indicators in the OECD Social Expenditure Database (SOCX)", https://doi.org/10.1787/220615515052 for more details on the data, sources and methodology.

StatLink https://stat.link/hwl3um

Long-term projections of public pension expenditure

Key Results

Public spending on pensions has been on the rise in most OECD countries for the past decades, as shown in Table 8.2. Long-term projections show that public pension spending is projected to keep growing in 22 OECD countries, for which information is available, and fall in 9. On average across 31 OECD countries, public pension expenditure would increase from 8.9% of GDP in 2020-23 to 10.2% of GDP in 2050.

The main driver of growing pension expenditures is demographic change. The projections shown in Table 8.4 are derived either from the European Commission's *2021 Ageing Report* – which covers the EU27 members plus Norway – or from countries' own estimates. In the main table, data are presented forwards to 2060 for those countries where the figures are available. However, data are only available for 2030 for Switzerland and not available at all in six OECD countries.

Long-term projections are a crucial tool in planning pension policy: there is often a long time-lag between when a pension reform occurs and when it begins to affect expenditure. There are some differences in the range of different programmes covered in the forecasts, reflecting the complexity and diversity of national retirement-income provision. For example, data for a number of countries include special schemes for public-sector workers whilst in others they are not included. Similarly, projections can either include or exclude spending on resource-tested benefits for retirees. The coverage of the data also differs from the *OECD Social Expenditures Database* (SOCX), from which the data on past spending trends in the previous two indicators were drawn. The numbers for 2020-23 may differ between the SOCX database and the sources used here because of the different range of benefits covered and the definitions used.

Public pension spending is projected to grow from 8.9% of GDP to 10.0% of GDP by 2040 on average across all OECD-31 countries. The OECD-31 average only refers to the countries for which data is available across the entire timeframe, so Switzerland is not included. In the EU27 it is projected to increase from 9.9% of GDP in 2020 to 11.3% of GDP in 2050, after which it is projected to stabilise. This would be a significant achievement given the demographic change throughout the period. The indicator of the "Demographic Old-Age to Working-Age Ratio" in Chapter 6 shows a 72% increase in the number of people above age 65 per 100 people aged between 20 and 64 from 2022 until 2052. Legislated cuts in benefits for future retirees at least relative to wages, through lowered indexation and valorisation of benefit formulae, together with increases in the age at which individuals can first claim pension benefits, help limit the future growth in public pension expenditure.

Public pension expenditure is expected to increase in 22 OECD countries by 2050 (Figure 8.2). In Korea, the rapid increase reflects both the ageing process and the still maturing pension system. In Slovenia, public spending is projected to keep rising from above the OECD average at 10.0% of GDP in 2020-22, to 15.7% of GDP by 2050. According to these projections, five other countries would record an increase of about 3 percentage points or more of GDP: Belgium, Czechia, Hungary, Ireland and Luxembourg. Conversely, Denmark, Estonia and Portugal would have a fall of around two percentage points of GDP, and Greece of more than 3 percentage points.

Further reading

European Commission (2021), *2021 Ageing Report; Economic and budgetary projections for the 27 EU Member States (2019-2070)*, https://ec.europa.eu/info/publications/2021-ageing-report-economic-and-budgetary-projections-eu-member-states-2019-2070_en.

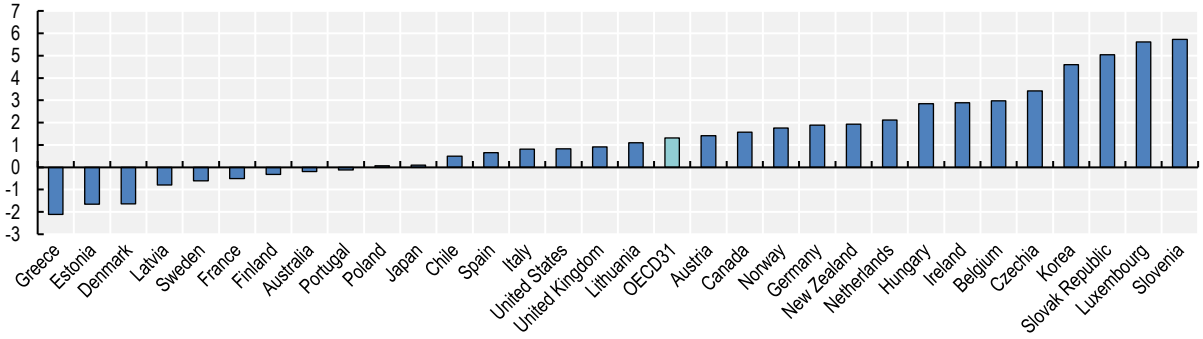
Table 8.4. Projections of public expenditure on pensions, 2020-60, percentage of GDP

	2020-23	2025	2030	2035	2040	2045	2050	2055	2060
Australia	2.3	2.5	2.4	2.3	2.2	2.1	2.1	2.0	2.0
Austria	13.3	14.6	15.1	15.4	15.1	14.9	14.7	14.7	14.6
Belgium	12.2	13.2	14.0	14.6	14.9	15.1	15.2	15.2	15.2
Canada	6.5	7.2	7.8	8.0	8.1	8.1	8.1	8.1	8.3
Chile	3.4	3.8	3.8	3.7	3.7	3.8	3.9	4.1	4.2
Colombia									
Costa Rica									
Czechia	8.0	8.8	8.8	9.1	9.8	10.7	11.4	11.8	11.8
Denmark	9.3	8.9	8.5	8.3	8.1	7.8	7.6	7.4	7.2
Estonia	7.8	7.1	6.9	6.6	6.5	6.3	6.1	6.0	5.8
Finland	13.0	13.6	13.7	13.4	12.8	12.6	12.7	13.0	13.5
France	14.8	15.4	15.6	15.5	15.2	14.6	14.3	13.8	13.4
Germany	10.3	10.9	11.5	12.0	12.0	12.1	12.2	12.4	12.5
Greece	15.7	14.2	13.8	13.7	14.0	13.7	13.6	12.7	12.0
Hungary	8.3	8.6	8.3	8.8	9.7	10.8	11.2	11.5	11.9
Iceland									
Ireland	4.6	5.3	5.9	6.4	6.9	7.2	7.5	7.5	7.5
Israel									
Italy	15.4	16.2	17.3	17.9	17.8	17.3	16.2	15.0	14.1
Japan	9.0	8.7	8.4	8.4	8.6	8.8	9.1	9.3	9.5
Korea	1.3	2.0	2.5	3.2	4.2	5.1	5.9	6.5	7.5
Latvia	7.1	7.1	6.9	6.8	6.6	6.3	6.3	6.4	6.2
Lithuania	7.1	7.5	7.9	8.2	8.4	8.3	8.2	8.2	8.1
Luxembourg	9.2	10.3	11.4	12.3	13.0	13.9	14.8	15.8	16.7
Mexico									
Netherlands	6.8	7.3	8.1	8.8	9.1	9.0	8.9	8.8	8.9
New Zealand	4.9	5.2	5.7	6.1	6.5	6.6	6.8	7.2	7.7
Norway	11.0	11.7	12.3	12.6	12.6	12.6	12.7	13.0	13.2
Poland	10.6	11.4	11.0	10.6	10.5	10.6	10.7	10.8	10.8
Portugal	12.7	13.3	14.2	14.6	14.4	13.7	12.6	11.4	10.5
Slovak Republic*	8.3	9.7	10.2	10.7	11.6	12.5	13.4	14.2	14.5
Slovenia	10.0	10.1	10.8	12.1	13.6	14.8	15.7	16.1	16.1
Spain*	12.3	12.7	12.3	12.5	12.8	13.2	13.0	12.5	11.7
Sweden*	7.6	7.7	7.4	7.2	7.0	7.0	7.0	7.3	7.4
Switzerland	6.5	6.4	6.8						
Türkiye									
United Kingdom	7.2	7.3	7.0	7.4	7.5	7.7	8.1	8.7	9.3
United States	5.2	5.5	5.8	6.0	6.0	6.0	6.1	6.1	6.2
OECD31	**8.9**	**9.3**	**9.5**	**9.8**	**10.0**	**10.1**	**10.2**	**10.2**	**10.3**
Brazil									
EU27	8.5	8.5	8.8	9.4	10.2	11.3	12.3	13.2	13.9

Note: EU27 figure is a simple average of member states. Pension schemes for civil servants and other public-sector workers are generally included in the calculations for EU member states: see European Commission (2021), *2021 Ageing Report*. *: Since the Ageing Report was released, many reforms have been enacted that will affect future spending levels but are not reflected here. For example, both the Index for Pension Revaluation and the Sustainability Factor have been removed in Spain, which, according to the alternative scenarios shown in the 2021 Ageing Report country fiche, would substantially increase spending in 2050. Conversely, both the Slovak Republic and Sweden have enacted legislation to increase their retirement ages which is expected to limit spending increases significantly.
Source: European Commission (2021), *2021 Ageing Report* for all EU countries and Norway; Australia: *2023 Intergenerational Report* (published August 2023), Chart 7.21; Canada: *18th Actuarial Report on the Old Age Security Program*, *31st Actuarial Report of Canada Pension Plan*, *Actuarial Valuation of the Québec Pension Plan* as at 31 December 2021 (QPP data for 2036, 2041 etc. has been used for 2035, 2040 etc.); Chile: Ministry of Finance-Budget Office; Japan: *About future social security reform – Looking ahead to 2040*; Korea: 2018 National Pension Actuarial Valuation Long-Term Actuarial.
Projection for the National Pension Scheme; New Zealand: *Review of retirement income policies 2019 – Facing the future*; Switzerland: *BSV – Financial perspectives of the AHV*; United Kingdom: Office for Budget Responsibility; United States: *The 2023 OASDI Trustees Report*.

StatLink https://stat.link/5dctzh

Figure 8.2. Percentage point change in pension expenditure between 2020-22 and 2050



Note: See Table 8.4.
Source: See Table 8.4.

StatLink https://stat.link/mf3p8a

9 Asset-backed pension systems

This chapter provides eight indicators on asset-backed pension systems in 2022. Asset-backed pension systems include pension plans where individuals accumulate assets and public reserves that social security institutions or governments build up to support pay-as-you-go pension schemes.

The first indicator looks at the proportion of the working-age population participating in pension plans. The second indicator shows legislated contribution rates and the average effective contributions paid by member (or by account) relative to average wages.

The third indicator reports the value of assets earmarked for retirement. The fourth indicator focuses on the way these assets are invested, while the fifth indicator analyses their investment performance in 2022 and over longer periods. The sixth indicator breaks down assets by types of pension plans.

The seventh indicator looks at the fees charged to members in selected defined contribution plans. The final indicator focuses on defined benefit funding ratios, presented over the period 2012-22.

Participation in pension plans

Key results

In the OECD area, 19 countries had mandatory or quasi-mandatory pension plans in 2022, covering over 75% of the working-age population in 12 of them. In 9 OECD countries, voluntary pension plans (occupational and personal) covered more than 40% of the working-age population. Automatic-enrolment programmes now apply to 7 OECD countries at the country level.

In 2022, 19 of the 38 OECD countries had some form of mandatory or quasi-mandatory pension plans in place (Table 3.1). These plans cover over 75% of the working-age population in 12 of these countries, such as in Finland and Switzerland where employers must operate an occupational pension scheme and contribution rates are set by law. In some countries, the obligation is not set out at the national level but the decision is rather left at the industry or branch level. Through industry-wide or collective bargaining agreements, employers establish pension plans that employees must join. As not all sectors may be covered by such agreements, these arrangements are classified as quasi-mandatory (e.g. Denmark, the Netherlands and Sweden). In these countries, the participation rate is close to the one in countries with mandatory occupational arrangements. Mandatory personal accounts are prevalent in Latin America (e.g. Chile, Colombia, Costa Rica and Mexico) and some other OECD countries (e.g. Denmark (ATP) and Sweden (premium pension system)). While participation is over 80% in Chile, Costa Rica, Denmark, Mexico and Sweden, it is not the case in Colombia where people can choose to participate either in the public pay-as-you-go or in the private asset-backed pension systems. A high incidence of informal employment may also account for the relatively lower participation level in Colombia (55%) than in other similar systems.

Participation in voluntary occupational pension plans varies across countries. These plans are voluntary because employers, in some countries jointly with employees, are free to set up a plan. Personal pension plans are voluntary when individuals can freely decide whether to join them or not. The participation rate in voluntary pension plans (occupational or personal) is above 40% in Belgium, Czechia, Germany, Iceland, Ireland, Japan, Poland, the Slovak Republic and Slovenia. By contrast, participation in voluntary pension plans is very low (below 5%) in countries such as Greece.

Six OECD countries had implemented auto-enrolment programmes with an opt out option at the national level by the end of 2022: Italy (since 2007), Lithuania (since 2019), New Zealand (since 2007), Poland (since 2019), Türkiye (since 2017) and the United Kingdom (since 2012). The Slovak Republic introduced a similar programme in 2023. New Zealand has achieved a participation rate above 80% in the "KiwiSaver" scheme. In the United Kingdom, which initiated its auto-enrolment programme more recently than New Zealand, 50% of the working-age population was participating in an employer-sponsored pension plan in 2022. In Italy, since 2007, the severance pay provision (so-called *Trattamento di Fine Rapporto* – TFR) of private-sector employees is automatically paid into an occupational pension plan unless the employee makes an explicit choice to remain in the TFR regime. However, a vast majority of workers has chosen to do so, and only 13% of the working-age population is now participating in an occupational pension plan. Poland and Türkiye also have a relatively low participation rate in plans with automatic enrolment (13% and 15% respectively), potentially due to the recent introduction of the programme and a potential lack of people's trust in it. By contrast, Lithuania has already a relatively high participation in the second pension pillar (over 75%) despite the recent introduction of its auto-enrolment programme in 2019. The second pillar already existed prior to 2019 and employees joining the scheme voluntarily could not leave it afterwards. Automatic enrolment is also encouraged by regulation in Canada and the United States but at the firm level. In Germany, automatic enrolment can be implemented in occupational defined contribution pension plans for private-sector employees in the case of deferred compensation, and it needs to be specified in collective agreements.

Definition and measurement

The term "pension plans" refers to plans that individuals access via their employer or a financial institution, and in which they accumulate rights or assets. Assets belong to plan members and finance their own future retirement. These assets may accumulate in pension funds, through pension insurance contracts or in other savings vehicles offered and managed by banks or investment funds. Employers may set up provisions or reserves in their books to finance the retirement benefits of occupational pension plans.

Several measures of participation in a pension plan coexist. To be a member of a pension plan from the perspective proposed here, an individual must have assets or have accrued rights in a plan. The proportion of individuals having a plan may be higher than the proportion of individuals actively saving for retirement and paying contributions to the plan.

Counting individuals more than once may arise when using administrative data as individuals can be members of both occupational and personal voluntary pension plans. Therefore, the overall participation rate in voluntary pension plans cannot be obtained by summing the participation rates of occupational and personal plans.

Further reading

OECD (2019), *Financial Markets Insurance and Pensions: Inclusiveness and Finance*, OECD, Paris, https://www.oecd.org/finance/Financial-markets-insurance-pensions-inclusiveness-and-finance.pdf.

OECD (2012), *OECD Pensions Outlook 2012*, OECD Publishing, Paris, https://doi.org/10.1787/9789264169401-en.

Table 9.1. Participation rate in pension plans in the OECD and selected other jurisdictions, latest year available

	Mandatory / Quasi-mandatory	Auto-enrolment	Voluntary		
			Occupational	Personal	Total
Australia	78.5	x	x	..	..
Austria	x	x	15.3	15.3	..
Belgium	x	x	56.8	..	..
Canada	x	..	27.3	25.6	..
Chile	85.8	x	..	..	..
Colombia	55.2	x	..	..	..
Costa Rica	86.5	x	x	5.1	5.1
Czechia	x	x	x	64.3	64.3
Denmark	ATP: over 90 QMO: 67.7	x	..	18.4	18.4
Estonia	68.9	x	x	26.6	26.6
Finland	93.0	x	7.0	18.0	25.0
France	x	x	24.5	13.2	..
Germany	x	..	54.0	30.0	66.0
Greece	..	x	3.0	..	..
Hungary	x	x	..	18.5	..
Iceland	83.2	x	x	45.4	45.4
Ireland	x	x	59.4	17.8	66.0
Israel	85.7	x	..	..	..
Italy	x	..	12.6	15.0	24.8
Japan	..	x	52.7	17.6	57.1
Korea	17.0	x	x	..	..
Latvia	~100	x	0.9	25.4	..
Lithuania	x	76.7	x	5.2	5.2
Luxembourg	x	x	4.5	..	..
Mexico	83.2	x	2.0	..	..
Netherlands	94.5	x	..	..	..
New Zealand	x	83.7	..	..	..
Norway	70.5	x	..	24.6	..
Poland	x	13.1	..	65.2	..
Portugal	x	x	5.2	..	18.7
Slovak Republic	x	..	x	47.8	47.8
Slovenia	x	x	..	..	45.1
Spain	x	x	..	..	28.6
Sweden	PPS: 96.4	x	x	..	..
Switzerland	78.8	x	x	..	..
Türkiye	..	14.8	..	13.9	..
United Kingdom	x	50.0	..	5.0	5.0
United States	x	..	37.4	22.9	..
Argentina	..	..	..	..	..
Brazil	x	x	2.0	11.9	..
China (People's Republic of)	x	x	3.1	2.0	..
India	..	..	..	..	..
Indonesia	..	x	0.4	1.5	..
Saudi Arabia	..	..	..	..	..
South Africa	..	..	..	..	..

Note: "PPS"= Premium pension system. "QMO" = Quasi-mandatory. ".." = Not available; "x" = Not applicable; "~" = Approximately. Participation rates are provided with respect to the total working-age population (i.e. individuals aged 15 to 64 years old), except for Germany (employees aged 25 to 64 subject to social insurance contributions), Iceland (Icelandic citizens and foreign workers in Iceland aged between 16 and 64) and Ireland (workers aged between 20 and 69).

Data refer to 2022 or to the latest year available. Data refer to 2021 for Belgium, Canada, Denmark, Estonia (3rd pillar), France, Greece, Mexico (occupational plans), the Netherlands, Norway (voluntary personal plans), Sweden, Switzerland and the United States (occupational plans) among OECD countries and Indonesia among other economies. Data refer to 2020 for Australia, Portugal (total voluntary), Spain and the United States (IRAs) among OECD countries and Brazil among other economies. Data refer to 2019 for Germany, Iceland and Korea. Data refer to 2018 for Finland.

Data for Austria refer to Pensionskassen for occupational plans and PZV contracts for personal plans. Data on personal plans mainly refer to PER individuel, PERP and Madelin schemes while data on occupational plans refer to all the other schemes for France. Data for Israel refer to new and general pension funds. For Italy, the coverage rate that is shown under voluntary occupational plans also covers individuals automatically enrolled in a plan. In Korea, the retirement benefit system is mandatory and can take two forms: a severance payment system and an occupational pension plan. The obligation of the employer in Korea is to provide a severance payment system, but, by labour agreement, the company can set up an occupational pension plan instead. Data on occupational plans for Luxembourg refer to pension funds only. Data on occupational plans for Norway refer to private and municipal group pensions.

Source: *OECD Global Pension Statistics*; *ABS Household Income and Wealth 2019-20* (Australia); *FSMA Annual Report 2022* (Belgium); Statistics Canada; Danish Insurance and Pension Association (Denmark); DREES (France); Survey on Pension Provision 2019 of the Federal Ministry of Labour and Social Affairs (Germany); Central Statistical Office (Ireland); Ministry of Health, Labour and Welfare (Japan); Statistics Netherlands; Finance Norway; 2020 edition of the survey "Inquérito à Situação Financeira das Famílias (ISFF)" (Portugal); Spanish Survey of Household Finances (EFF) 2020 of the Bank of Spain; Swedish Pension Agency; DWP's Family Resources Survey (United Kingdom); Current Population Survey (United States); Ministry of Human Resources and Social Security (China (People's Republic of)).

StatLink https://stat.link/64gd3b

Contributions paid into pension plans

Key results

Regulation usually defines a contribution rate for mandatory and auto-enrolment plans, varying across countries. They are fixed at more than 10% of the salary in Australia, Colombia, Denmark, Iceland, Israel and Switzerland. The actual effective amount of contributions per member was sometimes higher than mandatory rates, through additional voluntary contributions, or lower when members were having a plan but not contributing after they left their job.

Regulation usually defines a (minimum) contribution rate for mandatory and auto-enrolment plans. The responsibility to pay the contributions may fall on the employees (e.g. in Chile), on the employers (e.g. in Australia, Korea, Norway, the Slovak Republic) or on both (e.g. in Estonia, Iceland, Israel, Mexico, Switzerland). This obligation may only apply to certain employees or under certain conditions (e.g. employees aged between 22 and the state pension age and earning at least GBP 10 000 a year in the United Kingdom). Contributions may be complemented by state matching contributions (e.g. New Zealand, Türkiye) or subsidies (e.g. social quota in Mexico).

Mandatory contribution rates vary across countries (Figure 9.1). Iceland sets the highest mandatory contribution rate at 15.5% of salary, split between employers (11.5%) and employees (4%). Mandatory contribution rates also represented over 10% of the salary in Australia, Colombia, Denmark (defined in collective agreements), Israel and Switzerland. By contrast, Norway has the lowest mandatory contribution rate (2% paid by the employer). Employers and employees can however agree on whether employees have to contribute on top of employers. Mandatory contribution rates sometimes vary by income (e.g. ITP1 and SAF-LO plans in Sweden) or by type of work (e.g. different contribution rates to the new first pillar pension fund for people in arduous and unhealthy professions in Greece).

On top of the minimum mandatory contributions, individuals or their employers may have the option of making additional voluntary contributions. In New Zealand, the minimum contribution rate for KiwiSaver plans for employees is 3%. Members can however select a higher personal contribution rate of 4%, 6%, 8% or 10% of salary. In Poland, the minimum contribution rate for employee capital plans (PPK) is 2% for employees and 1.5% for employers. Employers and employees have the option of making additional contributions of up to 2.5% (for employers) and 2% (for employees). In Australia, employees have no obligation to contribute to a plan but can make voluntary contributions on top of their employer's contributions.

In voluntary plans, there may be no required nor minimum amount of contributions defined at the national level. Personal plans may however include a ceiling to benefit from tax advantages. Occupational plans may define specific contribution rates for employees and employers in the plan rules. The contribution rates may vary according to the funding of the plan in the case of defined benefit plans.

The average effective annual contributions per member (relative to average annual wages) vary a lot across countries (Figure 9.2). Some of the largest amounts of contributions per member in 2022 were paid in Australia, Iceland and Switzerland where the participation rate in a pension plan and the mandatory contribution rates are relatively high. Additional voluntary contributions from employees into superannuation schemes may also account for the high ratio in Australia, above the mandatory 10.5% contribution rate. Contributions per member (relative to the average wage) are lower in some other countries, and sometimes lower than the minimum mandatory contribution rates such as in Chile and Mexico, which may be due to some people not making contributions in a plan (even if they have one) when they move from the formal to informal sectors or become unemployed.

Definition and measurement

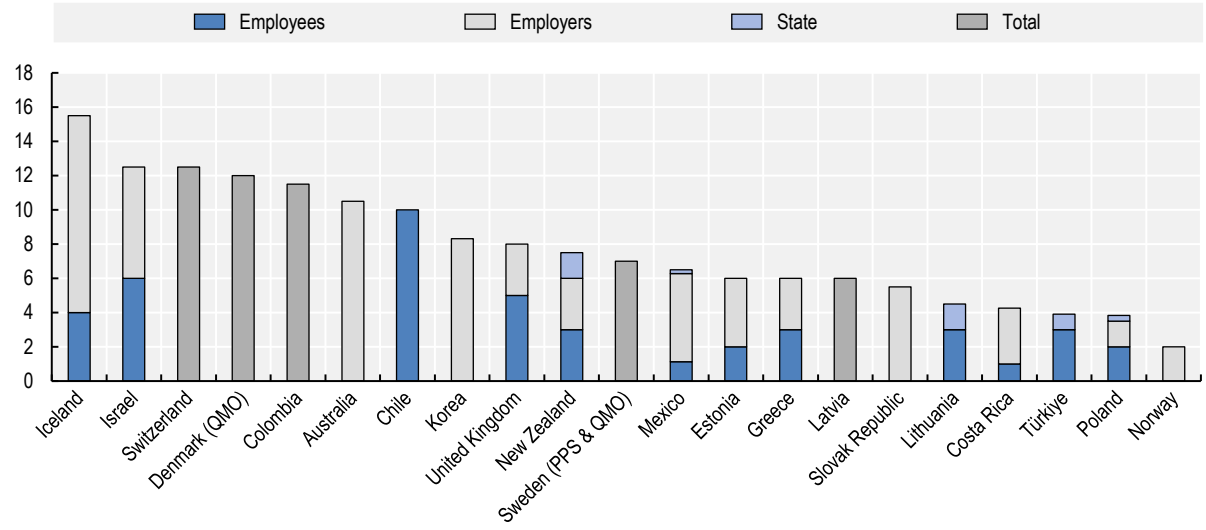
The term "pension plans" refers to plans that individuals access via their employer or a financial institution, and in which they accumulate rights or assets. Assets belong to plan members and finance their own future retirement. These assets may accumulate in pension funds, through pension insurance contracts or in other savings vehicles offered and managed by banks or investment funds. Employers may set up provisions or reserves in their books to finance the retirement benefits of occupational pension plans.

Average effective annual contributions may be expressed per account instead of member, as the exact number of members holding one (or several) pension plans is sometimes unknown. This is the case for instance in France where individuals can have an occupational (e.g. *PER Collectif*) and a personal plan (e.g. *PER Individuel*).

The population holding a pension plan may not be representative of the population on which the average annual wages were calculated and used for the assessment of the average effective annual contributions per member (or account).

Figure 9.1. Minimum or mandatory contribution rates (for an average earner) in mandatory and auto-enrolment plans (unless specified otherwise), 2022 (or latest year available)

As a percentage of earnings



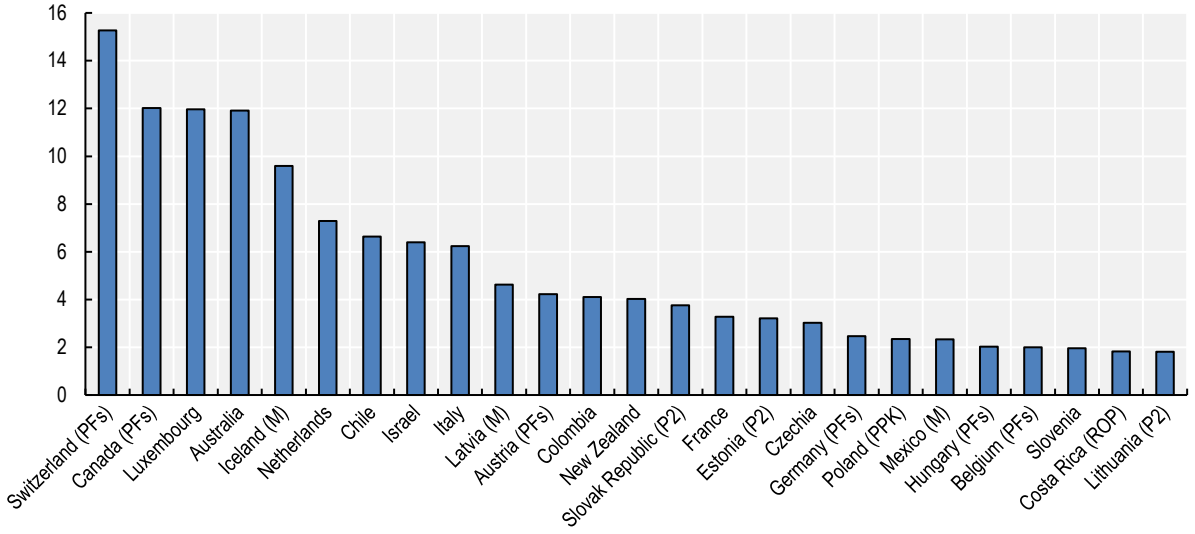
Note: The category "Total" shows the cases where the contribution rates cannot be split precisely between employer, employee (and state). "PPS" means premium pension system. "QMO" means quasi-mandatory occupational plans. Additional country specific details are provided in the statlink.

Source: ISSA Social Security Country Profiles and other sources.

StatLink https://stat.link/cz271s

Figure 9.2. Average annual contribution per active account or member in selected OECD countries, latest year available

As a percentage of average annual wages



Note: "M" means mandatory. "P2" means second pension pillar. "PFs" means pension funds. "PPK" refers to employee capital plans in Poland. "ROP" refers to a mandatory supplementary pension scheme in Costa Rica. Data for New Zealand refer to KiwiSaver plans only and exclude members below 18 and those above 65 from the calculation.

Source: *OECD Global Pension Statistics* and other sources.

StatLink https://stat.link/3obk9v

Assets earmarked for retirement

Key results

Substantial assets earmarked for retirement have been provisioned around the world. Assets in pension plans amount to 87% of the sum of the GDPs of all OECD countries at end-2022, which is less than 100% two years ago. Nearly two-thirds of OECD countries have also built-up public pension reserves to support the operation of their public pay-as-you-go pension arrangements. For these countries, assets in public pension reserve funds (PPRFs) represented 12% of the sum of their GDPs at end-2022 compared with 14% two years ago.

Assets in pension plans amounted to USD 51.5 trillion at end-2022 in the OECD area (Table 3.3). The United States had the largest pension market within the OECD area with assets worth USD 35 trillion, representing 67.9% of the OECD total. Other OECD countries with large pension systems include Canada, with assets worth USD 3.1 trillion and a 6.1% share of the OECD pension market in 2022; the United Kingdom, USD 2.6 trillion and 5.0%; Australia, USD 2.1 trillion and 4.1%; the Netherlands, USD 1.5 trillion and 3.0%; Switzerland, USD 1.3 trillion and 2.5%; and Japan, USD 1.3 trillion and 2.5%.

Pension assets in the OECD amount to 87% of the sum of the GDPs of all OECD countries at end-2022, but their prominence domestically varies across countries. In seven OECD countries, assets exceeded the size of the GDP: Denmark (192.3%), Iceland (186.1%), Canada (152.8%), Switzerland (152.4%), the Netherlands (150.7%), the United States (137.5%) and Australia (131.4%). These countries have pension plans from long ago, and with the exception of Canada and the United States, have mandatory or quasi-mandatory private pension systems. By contrast, the asset-to-GDP ratios were below 20% in 18 OECD countries, including some with relatively recent mandatory or auto-enrolment programmes (such as Latvia, Lithuania and Poland) or with relatively low participation of the working-age population (such as France, Greece, Italy). Greece recorded the lowest amount of assets relative to its GDP among OECD countries (below 1%).

In non-OECD G20 economies, the size of pension plan assets also varied widely, from 78.2% in South Africa to 1.7% of GDP in Indonesia (for employer pension funds and financial institution pension funds).

Many countries also decided to accumulate assets in order to support the operation of public pension arrangements, usually financed on a pay-as-you-go basis. Nearly two-thirds of OECD countries hold reserves that are separated and ring-fenced in public pension reserve funds (PPRFs). By the end of 2022, the total amounts of assets in PPRFs were equivalent to USD 6.4 trillion in the OECD area (Table 3.3). The largest reserve was held by the US social security trust fund at USD 2.7 trillion, accounting for 42.6% of total OECD assets in PPRFs, although the assets consist of non-tradable debt instruments issued by the US Treasury to the social security trust. Japan's Government Pension Investment Fund was second at USD 1.4 trillion – 22.7% of the OECD total. Of the remaining countries, Korea, Canada, Sweden and Australia had also accumulated large reserves, respectively accounting for 11.2%, 7.4%, 2.7% and 2.1% of the total.

In terms of total assets relative to the national economy, PPRF assets accounted for 11.7% of the sum of the GDPs of all OECD countries with reserves at end-2022. The highest ratio was observed for Korea's reserves in its National Pension Fund and Government Employees Pension Fund, at 41.9% of GDP. Other countries where the ratio was of a significant size include Japan with 34.4%, Finland with 31.2%, Sweden with 30.5% and Luxembourg with 30.1%. The expansion of these pools of assets is expected to continue over the coming years in some countries (such as Canada, New Zealand) but assets in some other PPRFs have already started to fall or will fall in the near future (such as in France (FRR)). Several countries (e.g. Germany and Spain) are considering setting up a reserve fund or boosting theirs. Germany is building a generational capital fund. Spain made new contributions to the existing reserve fund in 2022 and established a new reserve fund in 2023, the Intergenerational Equity Mechanism, financed by special contributions from employees and employers from 2023 to 2050, to ensure public pensions could continue to be indexed on price increases.

Definition and measurement

The term "pension plans" refers to plans that individuals access via their employer or a financial institution, and in which they accumulate rights or assets. Assets belong to plan members and finance their own future retirement. These assets may accumulate in pension funds, through pension insurance contracts or in other savings vehicles offered and managed by banks or investment funds. Employers may set up provisions or reserves in their books to finance the retirement benefits of occupational pension plans.

PPRFs are reserves established with the primary goal to support unfunded / pay-as-you-go public pension arrangements. These public reserves do not belong to any specific group of individuals. They could act as a short-term liquidity buffer, a temporary buffer against shocks (such as a demographic change) or as a permanent smoothing vehicle between the inflows and outflows of public pension arrangements.

Further reading

OECD (2021), *Pension Markets in Focus 2021*, OECD, Paris, https://www.oecd.org/daf/fin/private-pensions/Pension-Markets-in-Focus-2021.pdf.

Table 9.2. Assets earmarked for retirement in OECD countries and selected other major economies, at the end of 2022 or latest year available

	Pension plans		Public pension reserve funds	
	as a percentage of GDP	USD million	as a percentage of GDP	USD million
Australia	131.4	2 089 041	7.6	132 873
Austria	6.9	32 971	x	x
Belgium	39.6	223 702	x	x
Canada	152.8	3 126 435	23.1	472 376
Chile	57.7	174 792	2.1	6 475
Colombia	24.1	73 282	..	..
Costa Rica	36.1	26 684	7.9	5 873
Czechia	8.8	26 527	x	x
Denmark	192.3	780 913	x	x
Estonia	13.0	5 032	x	x
Finland	59.0	169 119	31.2	89 333
France	10.9	306 276	3.4	94 973
Germany	6.5	267 553	1.1	44 184
Greece	0.9	193 4	x	x
Hungary	4.2	7 468	x	x
Iceland	186.1	49 346	x	x
Ireland	26.7	144 433	x	x
Israel	61.3	307 330	16.6	73 253
Italy	11.3	230 365	6.0	122 218
Japan	30.2	1 266 230	34.4	1 443 503
Korea	32.1	547 214	41.9	714 577
Latvia	16.3	6 794	x	x
Lithuania	8.7	6 231	1.6	959
Luxembourg	2.0	1 688	30.1	25 054
Mexico	20.5	300 755	0.4	6 296
Netherlands	150.7	1 541 194	x	x
New Zealand	32.0	78 423	15.1	36 890
Norway	7.9	44 413	5.7	32 252
Poland	6.7	47 153	1.8	12 882
Portugal	17.1	43 557	9.6	24 523
Slovak Republic	13.7	16 077	x	x
Slovenia	7.0	4 232	..	..
Spain	11.8	166 496	0.2	2 283
Sweden	97.9	561 147	30.5	175 098
Switzerland	152.4	1 272 739	6.1	50 945
Türkiye	2.9	22 915	x	x
United Kingdom	85.2	2 561 509	2.9	90 220
United States	137.5	35 016 907	10.7	2 711 899
Total OECD	**86.7**	**51 548 877**	**11.7**	**6 368 940**
Argentina	..	..	12.7	41 649
Brazil	23.9	454 805	x	x
China (People's Republic of)	2.4	412 854	2.3	407 836
India	10.7	338 159	..	..
Indonesia	1.7	21 200	..	..
Saudi Arabia	..	..	..	..
South Africa	78.2	295 940	x	x

Note: ".." means not available. "x" means not applicable. The line "OECD" shows the total assets in millions of USD and the total assets over the total of the GDPs of all reporting OECD countries. The total amount of investments of pension plans is taken as a proxy of the total amount of assets in these plans. Additional country specific details are provided in the StatLink.
Source: OECD Global Pension Statistics, websites and annual reports of reserve funds or other national authorities.

StatLink https://stat.link/bx8g3r

Allocation of assets

Key results

Assets in pension plans and in public pension reserve funds are invested primarily in bonds and equities. The proportions of equities and bonds in the portfolios vary considerably across countries but there is, generally, a greater preference for bonds.

In most countries, bonds and equities where the two main asset classes in which pension plan assets were invested at the end of 2022, accounting for more than half of investments in 32 out of 38 OECD countries, and in three reporting non-OECD G20 jurisdictions. The combined proportion of bonds and equities was the highest (relatively to the size of the portfolio) in Chile (97.7%), Mexico (96.2%) and Poland (95.2%) (Figure 9.3). Pension plan assets may have been invested in these instruments either directly or indirectly through collective investment schemes (CIS). For some countries, the look-though of CIS investments was not available, such as for the Slovak Republic (where 38.1% of assets were invested in CIS), Slovenia (31.4% of investments), Sweden (67.1% of investments) and the United States (29.5% of investments). Only the direct investments in bonds and equities are available for these countries (e.g. 48.6% for the Slovak Republic, 60.4% for Slovenia, 27.4% for Sweden, 55.4% for the United States). The actual overall exposure of pension plan assets to fixed income securities and equities is probably higher in these countries.

The proportion of equities and bonds varied considerably across countries at end-2022. Although there was in general a greater preference for bonds, the reverse was true in 14 OECD countries and in South Africa where equities outweighed bonds (e.g. by 44.9% to 13.2% in Australia, by 70.7% to 22% in Lithuania).

Within bond investments, public sector bonds, as opposed to corporate bonds, represented a larger share of the combined direct bond holdings (i.e. excluding CIS investment) in a number of countries at end-2022. For example, public sector bonds accounted for 90.9% of total direct bond holdings in Czechia, 90.5% in Israel, but only 17.6% in New Zealand and 20.7% in Norway.

Cash and deposits also accounted for a significant share of pension plan assets in some OECD countries and in Indonesia at end-2022. For example, the proportion of cash and deposits was 26.9% of pension plan assets in Indonesia, 20.4% in Korea, 13.7% in Czechia, 11.7% in Australia and 10.7% in the Slovak Republic. Pension funds in the Slovak Republic needed liquidity and increased their cash holdings by 8 percentage points in 2022 to carry out the transfer of assets from bond funds to the new default life cycle pension funds in 2023.

In most reporting countries, loans, real estate (land and buildings), unallocated insurance contracts and private investment funds (shown as “other” in the chart) only accounted for relatively small shares of the investments of pension plan assets at end-2022 despite some exceptions. Real estate was a significant component of the portfolios of pension providers (directly or indirectly through CIS) in some countries such as Canada (12.4% of total assets) and Switzerland (23.6%).

Bonds and equities were also the predominant asset classes within the portfolios of public pension reserve funds (PPRFs). The reporting PPRFs invested 46.2% of their assets in bonds and 39.4% in listed equities on average (Figure 9.4). There was a stronger appetite for equities in some reserve funds. The Canada Pension Plan Reserve Fund, New Zealand Superannuation Fund and Sweden’s AP Funds invested more than half of their portfolio in equities, while their bond holdings varied between 0.4% of their portfolio (for Sweden’s AP6) to 27.1% (for Sweden’s AP2). By contrast, reserve funds in Chile, Portugal and Poland for instance invested much more in bonds than equities. The extreme case is the one of the U.S. PPRF, which is by law fully invested in government bonds.

Some PPRFs also invested in real estate and non-traditional asset classes like hedge funds or other instruments. For example, New Zealand Superannuation Fund held 5% of its assets in rural and timber, 4% in infrastructure and 3% in property at end-June 2022.

Definition and measurement

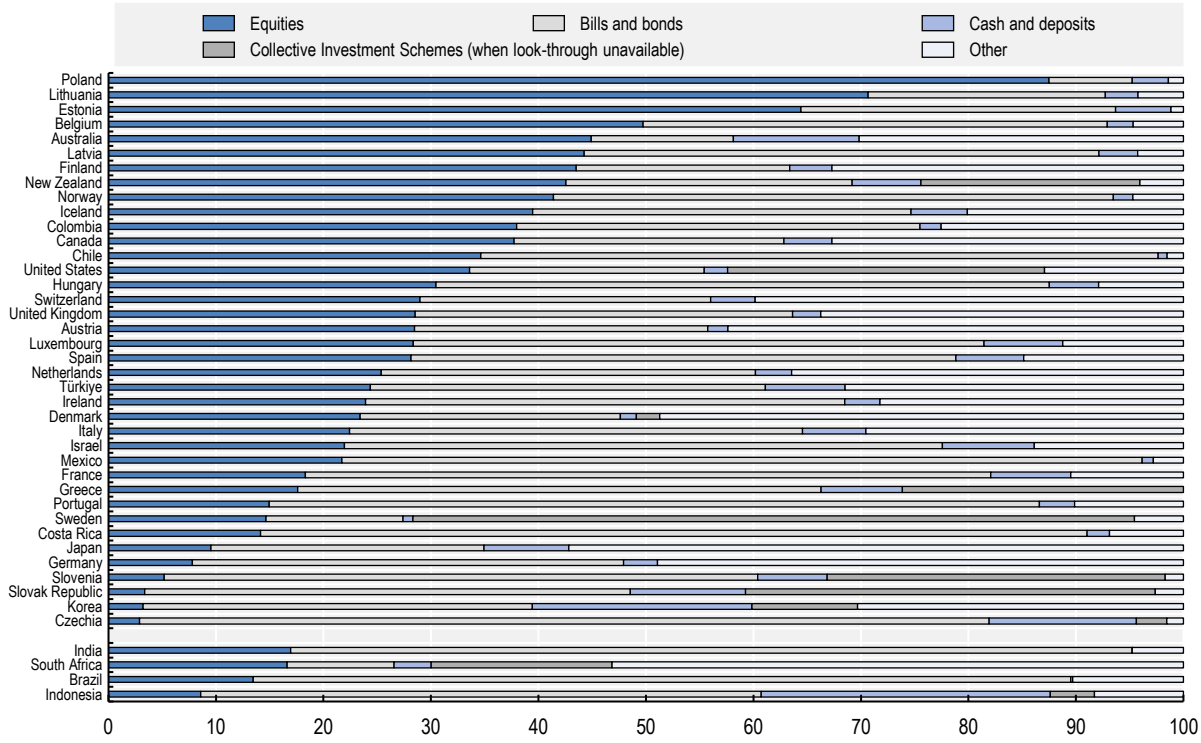
The term “pension plans” refers to plans that individuals access via their employer or a financial institution, and in which they accumulate rights or assets. Assets belong to plan members and finance their own future retirement. These assets may accumulate in pension funds, through pension insurance contracts or in other savings vehicles offered and managed by banks or investment funds. Employers may set up provisions or reserves in their books to finance the retirement benefits of occupational pension plans.

PPRFs are reserves established with the primary goal to support unfunded / pay-as-you-go public pension arrangements.

Data on asset allocation include both direct investment in equities, bills and bonds and cash and deposits, and indirect investment through Collective Investment Schemes (CIS) when possible. The OECD Global Pension Statistics exercise collects data on the investments in CIS, as well as the look-through of these investments in equities, bills and bonds, cash and deposits, and other. When the look-through was not provided by reporting countries, only the direct investments in equities, bills and bonds and cash and deposits are known and shown; investments in CIS are shown separately in that case.

Figure 9.3. Allocation of assets in pension plans in selected asset classes and investment vehicles, at the end of 2022 or latest year available

As a percentage of total investment



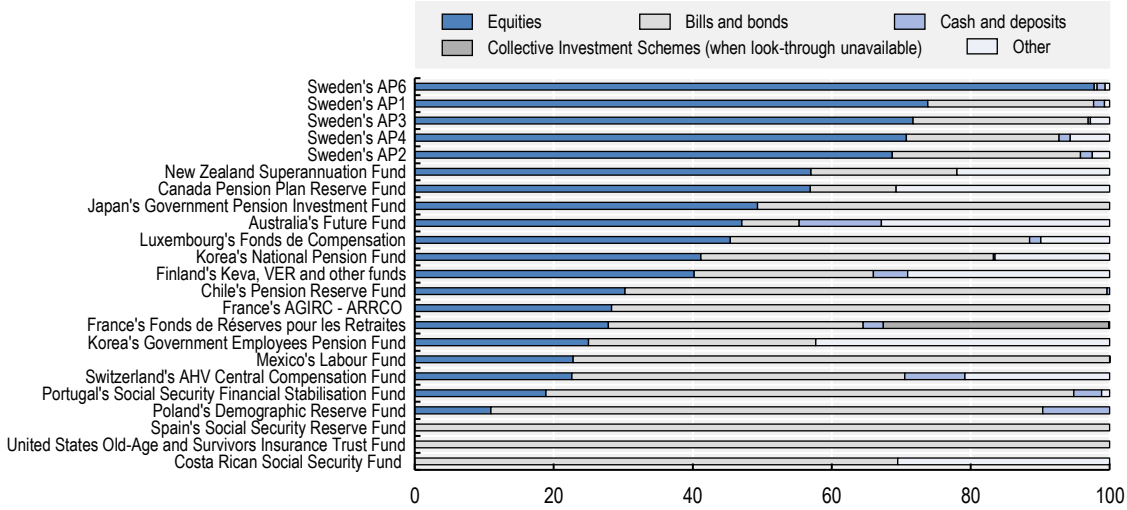
Note: See StatLink.

Source: OECD Global Pension Statistics.

StatLink https://stat.link/2hekps

Figure 9.4. Allocation of assets in selected public pension reserve funds in selected asset classes and investment vehicles, at the end of 2022

As a percentage of total investment



Note: See StatLink.

Source: OECD Global Pension Statistics, websites and annual reports of public pension reserve funds.

StatLink https://stat.link/2mgtxa

Investment performance

Key results

The simultaneous fall in bond prices and equity prices led to widespread nominal investment losses in 2022, with the lowest nominal investment rates of return recorded for pension plans in the Netherlands (-21.1%) and the United Kingdom (-18.5%) among reporting countries. High inflation rates added to the problem by leading to negative real investment rates of return in all reporting countries. Over the long-term, the strong and positive gains achieved in previous years cushioned the impact of these negative rates of return in most reporting countries. All reporting public pension reserve funds have also achieved positive investment performance in real terms over the last 15 or 20 years.

Pension plans recorded negative nominal investment rates of return, net of investment expenses, in most OECD countries in 2022. Given their large bond and equity holdings, pension plans were hit by the simultaneous fall in bond and equity prices in 2022. The rise in interest rates lowered the value of bonds in pension investment portfolios. At the same time, equity markets also fell globally, with prices down by 19% for S&P500, by 9% for Nikkei 225 and by 12% for DAX at

Table 3.5).

High inflation rates added to the problem by making nominal losses even larger in real terms. Real investment rates of return were negative for pension plans in all OECD countries and in India and Indonesia. Real investment rates of return were the lowest in some of the countries where inflation surged the most (e.g. Hungary, Latvia and Lithuania with annual inflation rates over 20% in December 2022).

Over a longer term, investment gains in the previous years helped to compensate for the losses in 2022 in many countries. Average annual returns were positive in real terms in 13 out of 32 reporting countries over the last 5 years, in 21 out of 29 reporting countries over the last 10 years, in 16 out of 25 reporting countries over the last 15 years and in 14 out of 17 reporting countries over the last 20 years. Colombia recorded the strongest average annual investment performance in real terms over the last 20 years (4.8%), followed by Canada (4.1%) and Australia (4%). By contrast, Czechia, Estonia and Latvia failed to generate an investment return above inflation over the last 20 years potentially as a result of a relative conservative asset allocation.

If most public pension reserve funds (PPRFs) also recorded a negative investment rate of return in real terms in 2022, their investment performance was positive in real terms over the last 15 or 20 years in all those for which data are available (Table 9.4). Sweden's AP6 and New Zealand Superannuation Fund recorded the strongest average real performance, over 7% per year over a 20-year period, among all reporting PPRFs.

end-2022 compared to end-2021 for example. Beyond equities and bonds, pension plans incurred losses on other financial instruments, such as interest-rate derivatives hedging against declining interest rates (e.g. in the Netherlands and the United Kingdom). The Netherlands and the United Kingdom recorded the lowest nominal investment rates of return among all reporting jurisdictions (-21.1% and -18.5% respectively) (

Definition and measurement

The term "pension plans" refers to plans that individuals access via their employer or a financial institution, and in which they accumulate rights or assets. Assets belong to plan members and finance their own future retirement. These assets may accumulate in pension funds, through pension insurance contracts or in other savings vehicles offered and managed by banks or investment funds. Employers may set up provisions or reserves in their books to finance the retirement benefits of occupational pension plans.

PPRFs are reserves established with the primary goal to support unfunded / pay-as-you-go public pension arrangements.

Real (after inflation) returns are calculated in local currency before tax but after investment management expenses.

The average nominal net investment returns of pension plans are the results of a calculation using a common formula for all the countries except a few ones (e.g. Ireland, Israel) for which values have been provided by the jurisdictions using their own formula or are from national official publications. The common formula corresponds to the ratio between the net investment income at the end of the year and the average level of assets during the year.

For PPRFs, nominal returns come from annual reports or have been provided by the funds directly, using their own formula and methodology.

Table 9.3. Nominal and real geometric average annual investment rates of return of pension plans in 2022 and over the last 5, 10, 15 and 20 years, in percent

	Nominal					Real				
	2022	5-yr annual average	10-yr annual average	15-yr annual average	20-yr annual average	2022	5-yr annual average	10-yr annual average	15-yr annual average	20-yr annual average
Australia	-1.9	6.0	7.9	5.3	6.6	-7.6	3.3	5.4	2.8	4.0
Austria	-10.2	0.8	2.8	2.2	3.2	-18.4	-2.9	0.2	-0.3	0.8
Canada	-3.1	5.0	6.4	5.7	6.3	-8.9	1.7	3.9	3.6	4.1
Chile	3.0	5.7	6.6	5.3	7.0	-8.6	0.1	2.0	1.4	3.1
Colombia	-4.2	5.6	6.4	8.5	9.8	-15.4	0.2	1.4	3.8	4.8
Costa Rica	-7.7	7.0	7.9	7.8	..	-14.4	3.8	5.1	3.7	..
Czechia	0.4	0.9	1.0	1.4	1.9	-13.3	-4.7	-2.4	-1.7	-1.0
Denmark	-14.2	1.9	3.6	4.5	5.2	-21.1	-0.8	1.9	2.6	3.3
Estonia	-9.2	2.3	2.8	1.5	2.8	-22.8	-4.1	-1.0	-2.2	-1.1
Finland	-5.1	4.6	5.5	..	..	-13.1	1.6	3.6	..	..
Germany	-1.2	2.5	3.2	3.4	3.7	-8.6	-0.6	1.2	1.6	1.9
Greece	-8.8	1.5	..	..	..	-14.9	-0.7	..	..	..
Hungary	-7.1	1.2	4.0	..	..	-25.4	-6.3	-0.3	..	..
Iceland	-3.3	8.5	7.8	6.6	8.2	-11.7	3.6	4.2	1.7	3.3
Ireland	-13.6	4.0	..	..	..	-20.2	1.1	..	..	..
Israel	-3.8	5.3	5.7	5.5	..	-8.6	3.5	4.7	3.8	..
Italy	-7.3	0.7	2.1	2.2	2.9	-17.0	-2.5	0.2	0.3	0.9
Latvia	-15.0	-0.3	1.3	1.6	2.5	-29.7	-6.3	-2.2	-1.8	-1.9
Lithuania	-14.7	2.3	3.5	..	..	-30.0	-4.6	-0.5	..	..
Luxembourg	-14.6	-0.6	1.6	1.7	..	-19.0	-3.2	-0.2	-0.2	..
Mexico	-4.1	5.5	5.1	6.0	..	-11.1	0.3	0.5	1.4	..
Netherlands	-21.1	0.8	3.9	4.2	5.3	-28.0	-3.2	1.3	1.8	3.1
Norway	-5.7	3.7	5.3	4.7	5.9	-11.0	0.2	2.4	2.2	3.5
Poland	-16.1	-1.3	..	..	..	-28.2	-7.2	..	..	..
Portugal	-10.5	0.7	2.4	1.6	3.5	-18.3	-1.8	0.8	0.0	1.6
Slovak Republic	-10.6	0.7	1.4	1.1	..	-22.5	-4.4	-1.4	-1.7	..
Slovenia	-7.3	0.7	3.2	4.1	..	-15.9	-2.6	1.2	2.0	..
Spain	-9.0	0.9	2.6	2.3	..	-13.9	-1.8	1.1	0.6	..
Switzerland	-9.5	1.7	3.3	2.6	3.3	-12.0	0.8	2.9	2.3	2.8
Türkiye	49.6	23.6	15.6	14.3	..	-8.9	-3.5	-2.2	-0.3	..
United Kingdom	-18.5	..	..	..	..	-25.4	..	..	..	..
United States	-12.8	2.4	4.0	2.2	3.5	-18.1	-1.4	1.4	-0.1	1.0
India	3.6	..	..	..	..	-2.1	..	..	..	..
Indonesia	5.5	6.4	7.8	..	..	0.0	3.3	3.6	..	..

Note: ".." means not available. The 2022 and the last 5, 10, 15 and 20-year annual averages are calculated over the periods Dec 2021-Dec 2022, Dec 2017-Dec 2022, Dec 2012-Dec 2022, Dec 2007-Dec 2022 and Dec 2002-Dec 2022 respectively, except for Australia (from June to June instead). Additional country specific details are provided in the StatLink.
Source: OECD Global Pension Statistics.

StatLink https://stat.link/25dycn

Table 9.4. Nominal and real geometric average annual investment rates of return of selected public pension reserve funds in 2022 and over the last 5, 10, 15 and 20 years, in percent

Country	Public Pension Reserve Fund	Nominal					Real				
		2022	5-yr annual average	10-yr annual average	15-yr annual average	20-yr annual average	2022	5-yr annual average	10-yr annual average	15-yr annual average	20-yr annual average
Australia	Future Fund	-3.7	7.1	8.9	7.6	..	-10.7	3.9	6.3	4.9	..
Canada	Canada Pension Plan Reserve Fund	1.3	7.9	10.0	8.0	8.7	-2.9	4.6	7.4	5.7	6.5
Canada	Reserve of the Quebec Pension Plan	-5.6	5.8	8.5	..	..	-11.2	2.5	6.0	..	..
Chile	Pension Reserve Fund	-16.0	7.2	7.6	6.2	..	-25.5	1.5	2.9	2.2	..
Costa Rica	Costa Rican Social Security Fund	8.2	..	..	..	..	0.3	..	..	..	..
Finland	Keva's pension liability fund	-7.0	4.3	5.7	4.9	..	-14.8	1.3	3.9	2.9	..
Finland	State Pension Fund	-6.8	4.1	5.3	4.7	5.6	-14.6	1.1	3.4	2.7	3.8
France	Fonds de Réserves pour les Retraites	-10.3	0.1	2.9	1.9	..	-15.3	-2.1	1.5	0.5	..
Japan	Government Pension Investment Fund	1.5	5.2	5.5	4.4	4.3	-1.7	4.1	4.4	3.9	3.9
Korea	Government Employees Pension Fund	-6.0	4.0	..	..	..	-10.5	1.7	..	..	..
Korea	National Pension Fund	-8.2	4.2	4.7	5.1	..	-12.6	1.9	2.9	2.9	..
Luxembourg	Fonds de Compensation	-11.9	2.9	4.3	4.3	..	-16.4	0.2	2.5	2.3	..
Mexico	Labour Fund	8.5	..	..	..	..	0.6	..	..	..	..
New Zealand	New Zealand Superannuation Fund	11.9	8.0	10.8	9.6	9.7	4.3	4.8	8.6	7.2	7.2
Norway	Government Pension Fund – Norway	-4.4	5.8	8.2	6.9	8.0	-9.7	2.3	5.2	4.3	5.6
Poland	Demographic Reserve Fund	1.5	1.0	2.0	2.7	4.5	-13.1	-5.0	-1.3	-0.6	1.3
Portugal	Social Security Financial Stabilisation Fund	-13.0	..	..	..	..	-20.7	..	..	..	..
Spain	Social Security Reserve Fund	-9.4	-2.2	1.1	2.1	2.4	-14.3	-4.7	-0.4	0.4	0.3
Sweden	AP1	-8.6	6.7	8.2	6.3	..	-18.6	2.6	5.7	4.2	..
Sweden	AP2	-6.7	5.1	7.4	5.8	7.5	-16.9	1.1	5.0	3.7	5.6
Sweden	AP3	-5.8	8.1	9.3	6.8	..	-16.1	3.9	6.8	4.7	..
Sweden	AP4	-11.9	6.9	9.2	7.2	8.2	-21.6	2.8	6.7	5.2	6.3
Sweden	AP6	1.9	16.8	13.0	8.7	9.3	-9.3	12.2	10.4	6.6	7.3
Switzerland	AHV Central Compensation Fund	-12.9	0.0	2.5	..	..	-15.3	-0.8	2.1	..	..
United States	Old-Age and Survivors Insurance Trust Fund	2.3	2.6	3.0	3.5	4.0	-3.9	-1.1	0.4	1.2	1.5

Note: ".." means not available. The 2022 and the last 5, 10, 15 and 20-year annual averages are calculated over the periods Dec 2021-Dec 2022, Dec 2017-Dec 2022, Dec 2012-Dec 2022, Dec 2007-Dec 2022 and Dec 2002-Dec 2022 respectively, except for Canada Pension Plan Reserve Fund and Japan's Government Pension Investment Fund (March 2022-March 2023, March 2018-March 2023, March 2013-March 2023, March 2008-March 2023 and March 2003-March 2023) and New Zealand Superannuation Fund (June 2021-June 2022, June 2017-June 2022, June 2012-June 2022, June 2007-June 2022 and June 2002-June 2022).
Source: OECD Global Pension Statistics.

StatLink https://stat.link/iv2y7z

Landscape of pension plans

Key results

Various types of pension plans constitute the pension landscape. Occupational and personal plans coexist in most OECD countries and in other jurisdictions. The size of occupational plans in terms of assets and the split between defined benefit and defined contribution plans varied across countries at end-2022. However, personal plans and occupational defined contribution plans have been gaining importance at the expense of occupational defined benefit plans.

The pension landscape includes various types of pension plans worldwide. For example, individuals may access pension plans through employment or directly without any involvement of their employers. When plans are accessed through employment and were established by employers or social partners, these plans are considered as occupational. Plans are classified as personal when access to these plans does not have to be linked to an employment relationship and these plans are established directly by a pension fund or a financial institution acting as pension provider without any intervention of employers.

Occupational and personal plans coexist in most reporting countries: 33 out of the 38 OECD countries, as well as Brazil, India, Indonesia and South Africa, have both occupational and personal plans (Table 9.5). Individuals may be members of several occupational pension plans through different jobs during their career, and several personal pension plans that they have opened directly with a pension provider. The prominence of occupational plans in terms of assets varied greatly across countries at end-2022. Assets in occupational plans represented over 90% of all pension plan assets in Finland and Switzerland, but only 1% in Latvia where the asset-backed pension system is mostly based on personal plans.

Depending on how pension benefits are calculated and who bears the risks, occupational pension plans can be either defined benefit (DB) or defined contribution (DC). In DC plans, participants bear the brunt of risk, while in traditional DB plans sponsoring employers assume all the risks. Employers in some countries have introduced hybrid and mixed DB plans, which come in different forms, but effectively involve some degree of risk sharing between employers and employees. Cash balance plans (one type of hybrid DB plans) provide benefits based on a fixed contribution rate and a guaranteed rate of return (the guarantee is provided by the sponsoring employer, hence these plans are classified as DB). Such plans are part of the pension landscape in Belgium (where employers must provide a minimum return guarantee), Japan and the United States. Mixed plans are those where the plan has two separate DB and DC components that are treated as part of the same plan. There are also DC plans such as those in Denmark that offer guaranteed benefits or returns. They are classified as DC as there is no recourse to the sponsoring employer in case of underfunding.

The proportion of assets in occupational DC plans and in personal plans is higher than in occupational DB plans in most of the reporting countries. More than 50% of assets were held in DC plans or personal plans in 19 out of 21 reporting OECD economies, and in Brazil (Figure 3.8).

DC plans and personal plans have been gaining prominence at the expense of DB plans even in countries with a historically significant proportion of assets in DB plans such as the United States. The drop in the proportion of pension assets in DB plans was especially steep in Israel (91% of pension assets in DB plans at end-2001, 42.5% at end-2022) and Italy (40.1% at end-2001, 2.3% at end-2022) where DB plans have been closed to new members since 1995 (in Israel) and 1993 (in Italy). More recently, Iceland reformed a pension plan for state and municipal employees, converting it from DB to DC. The transition from DB to DC plans is going on in the Netherlands, one of the major pension markets in Europe, with a law taking effect in 2023 and requiring the conversion of DB plans into DC plans by 2028. The first occupational DC plans have also been introduced in Germany recently.

Definition and measurement

The OECD has established a set of guidelines for classifying pension plans (see OECD, 2005) on which this analysis is based.

In most OECD countries, pension funds are the main vehicle to fund occupational pensions. In some countries, pension insurance contracts (e.g. Belgium, Denmark, Korea, Norway and Sweden) or book reserves that are provisions on sponsoring employers' balance sheets (e.g. Austria and Germany) are also used to finance occupational pension plans. Personal pension plans are often funded through pension insurance contracts or financial products provided by banks and asset managers.

Further reading

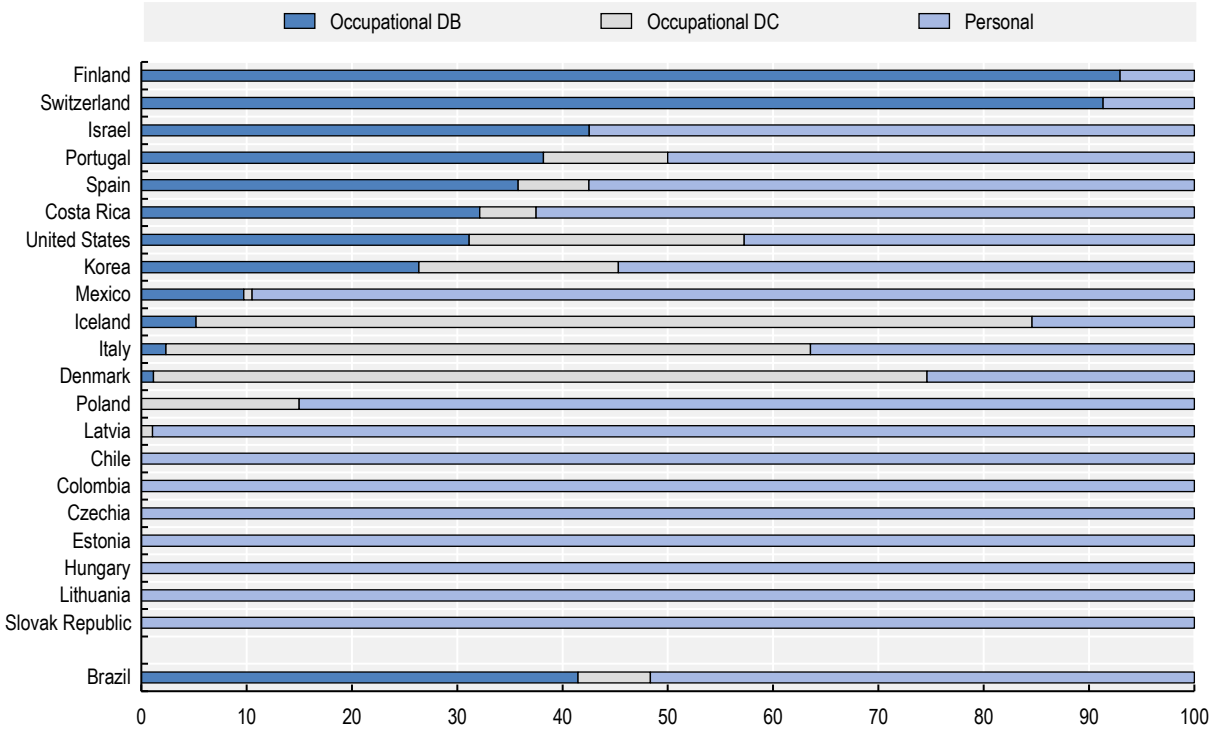
OECD (2005), *Private Pensions: OECD Classification and Glossary,* OECD, Paris. The OECD classification is available at www.oecd.org/finance/private-pensions/38356329.pdf.

Table 9.5. Types of pension plans available in the OECD area and selected other major economies according to the OECD taxonomy, 2022

		Occupational plans			
		DB only	Both DB and DC	DC only	None
Personal plans	Yes	Finland, Israel, Switzerland	Australia, Austria, Belgium, Canada, Costa Rica, Denmark, France, Germany, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Türkiye, the United Kingdom, the United States, Brazil, India, Indonesia, South Africa	Chile, Greece, Hungary, Latvia, Poland, Slovenia	Colombia, Czechia, Estonia, Lithuania, the Slovak Republic
	No				

Figure 9.5. Split of pension assets by type of plan, at the end of 2022 or latest year available

As a percentage of total assets



Note: Data refer to the end of 2022 for all countries except Korea, Mexico, Switzerland and Brazil (end-2021). Data for Chile about Collective Voluntary Pension Savings that are managed by the AFPs are classified together with personal plans, although these plans are occupational.
Source: OECD Global Pension Statistics.

StatLink https://stat.link/5v40dp

Fees charged to members of defined contribution plans

Key results

Pension providers charge fees to members to cover their operating expenses for running pension plans. Most countries cap fees, generally fees on assets, which can be charged to members. In some countries, the actual amount of fees levied on assets is close to this cap (such as Czechia) while in some others, the cap does not seem too binding as pension providers charge less (such as in Hungary). Other initiatives to reduce the fees charged by the industry include auction mechanisms based on fees such as in Chile and in New Zealand (along with other criteria), and heatmaps highlighting underperformance and high fees of pension products such as in Australia.

Pension providers charge fees to their members to cover their operating expenses. Operating expenses include marketing the plan to potential participants, collecting contributions, sending contributions to investment fund managers, keeping records of accounts, sending reports to participants and supervisors, investing the assets, converting account balances to benefit payments, and making these payments.

Pension providers charge fees to members in different ways depending on the country (Table 9.6). Fees can be charged on contributions or on salaries directly (e.g. Colombia), on assets (e.g. Estonia, Spain), on performance, or a combination (e.g. Czechia where pension funds can charge fees on assets and profits). On top of regular fees, members in some countries can be charged fees when they join, switch or leave a pension provider (e.g. Czechia, Hungary).

Most countries – 18 out of 24 reporting OECD countries – capped some of the fees that pension providers could charge to members in 2022. Most of these 18 countries capped fees on assets, which is the most widespread way for pension providers to charge members.

The actual level of fees charged to members, aggregated at the national level and expressed as a percentage of total pension plan assets, can be compared to the cap in the legislation when fees are precisely levied on assets. For instance, pension providers charged fees on assets near or as high as the cap in Czechia (cap at 0.8% for transformed funds that are the main type of funds in the country). The choice of the level of the cap is therefore important but challenging. If the cap is too high, charges may rise to the level of this cap. If the cap is too low, pension providers may try to lower costs and could lower the quality of the services they provide. In some countries, pension providers charge less on assets than the cap (which may not be binding), such as 0.4% in Hungary (Table 9.7) (with a cap at 0.8%).

Some countries have also had other initiatives to reduce the fees charged by the industry or improve value for money. These initiatives include auction mechanisms based on fees such as in Chile and New Zealand (along with other criteria). Pension providers in Chile bid on fees charged to members. The winning pension provider receives all new eligible entrants. In New Zealand, default providers are selected based on a range of selection criteria that include fees. In Australia, the pension supervisor publishes heatmaps highlighting underperformance and high fees of superannuation product offerings, so as to urge trustees to reduce fees and review investment performance.

Definition and measurement

The term “pension plans” refers to plans that individuals access via their employer or a financial institution, and in which they accumulate rights or assets. Assets belong to plan members and finance their own future retirement. These assets may accumulate in pension funds, through pension insurance contracts or in other savings vehicles offered and managed by banks or investment funds. Employers may set up provisions or reserves in their books to finance the retirement benefits of occupational pension plans.

The actual level of fees charged to members, aggregated at the national level, is difficult to compare across countries for multiple reasons. First, the aggregated amounts of fees could be the result of many factors, including the fee structure and the maturity of the system. These aggregated amounts, shown at a given point in time, do not reflect the amount of fees that individuals bear over their lifetime nor how expensive DC plans are from the perspective of members whatsoever. Second, fees may pay for different levels of services across countries and should be examined in light of these services and of the value they generate for plan members. Third, some indirect charges that reduce the pension pot of plan members may also still need to be uncovered and disclosed for some countries and would therefore not be accounted for in the currently available data on fees for these countries.

Further reading

IOPS (2018), “2018 Update on IOPS work on fees and charges”, *IOPS Working Papers on Effective Pensions Supervision*, No. 32, https://www.iopsweb.org/WP-32-2018-Update-on-IOPS-work-on-fees-and-charges.pdf.

OECD (2018), *OECD Pensions Outlook 2018*, OECD Publishing, Paris, https://doi.org/10.1787/pens_outlook-2018-en.

OECD (2023), *Pension Markets in Focus 2022*, OECD, Paris, https://www.oecd.org/daf/fin/private-pensions/Pension-Markets-in-Focus-2022-FINAL.pdf.

Table 9.6. Fee structure in selected OECD and other major economies

	Fees on salaries	Fees on contributions	Fees on assets	Fees on returns / performance	Other fees (e.g. exit fees, entry fees, switching fees)
Australia (except MySuper)	No cap	No cap	No cap except for low balances	No cap	x
Chile	No cap	x	Capped	x	x
Colombia	3% (including insurance)	x	x	x	Capped
Costa Rica – ROP	x	x	0.35%	x	x
Czechia – transformed funds	x	x	0.8% of mean annual fund value	10% of profit	Capped
Czechia – participation funds	x	x	Capped	Capped	Capped
Denmark	No cap	No cap	No cap	No cap	No cap
Estonia – 2nd pension pillar	x	x	Capped	Capped	x
Estonia – 3rd pension pillar	x	x	No cap	x	No cap
Germany – DC schemes managed by pension funds	No cap	No cap	No cap	No cap	No cap
Hungary – voluntary personal pension funds	x	6%	0.8%	Included in the 0.8% fee cap on assets	Capped
Ireland	No cap	No cap	No cap	No cap	No cap
Israel	x	6%	0.5%	x	x
Italy	x	No cap	No cap	Possible but rare	Capped
Korea – occupational DC	x	x	No cap	x	x
Latvia – state funded scheme	x	2.5%	Capped	Capped	x
Latvia – private pension funds	x	No cap	No cap	No cap	x
Lithuania – 2nd pillar	x	x	Capped	x	Capped
Lithuania – 3rd pillar	x	No cap	No cap	No cap	Capped
Mexico – personal plans	x	x	Capped	x	x
Poland – open pension funds	x	1.75%	Capped	Capped	x
Poland – PPK	x	x	Capped	Capped	No cap
Portugal	No cap	No cap	No cap	No cap	Capped
Slovak Republic – 2nd pillar	x	0.25% + 1%	0.3% of mean annual fund value	Capped	x
Slovak Republic – 3rd pillar	x	x	Capped	Capped	Capped
Slovenia	x	3%	1% of mean assets	x	Capped
Spain	x	x	Capped	No cap	x
Türkiye – personal plans	x	No cap	No cap	x	No cap
United Kingdom – default funds	x	x	0.75%	x	x
United States	No cap	No cap	No cap	No cap	No cap
Brazil – open pension entities	x	5%	No cap	No cap	Capped

Note: "x" means that the type of fee does not exist or is not allowed in the country. "No cap" means that this type of fees exists and there is no limit in the amount that can be charged to members. For Latvia, the 2.5% cap is for fees paid to the social security. In Portugal, in the specific case of personal retirement saving schemes, transfer fees are subject to a maximum of 0.5% of the transferred amount if there is a capital or return guarantee and cannot be charged otherwise. For the Slovak Republic, the 0.25% cap is for fees paid to the social security institute and the 1% cap is for fees for maintaining the account.
Source: OECD Global Pension Statistics.

StatLink https://stat.link/5ra0zl

Table 9.7. Annual fees charged to members of defined contribution plans by type of fees, 2022

As a percentage of total assets

	Fees on salaries	Fees on contributions	Fees on assets	Fees on returns / performance	Other fees
Australia			0.4		
Chile	0.6	x	0.3	x	x
Colombia	0.3	x	x	x	0.2
Costa Rica	x	x	0.4	x	x
Czechia	x	x	0.8	0.1	0.0
Estonia	x	x	0.6	0.0	0.0
Hungary	x	0.4	0.4	..	..
Lithuania	x	..	0.5	..	0.0
Mexico	x	x	0.5	x	x
Poland	x	0.0	0.5	0.0	x
Slovak Republic	x	0.1	0.4	0.0	0.0
Slovenia	x	..	0.8	x	..
Spain	x	x	1.1	..	x
Türkiye	x	0.1	1.4	x	0.4

Note: "x" means that the type of fee does not exist or is not allowed in the country. All the fees are expressed in this Table as a percentage of total assets, even when fees are levied on salaries, contributions or investment income. These percentages are therefore not comparable with the maximum set by law when this maximum is expressed as a percentage of salaries, contributions or investment income. Data for Australia refer to June 2022 for entities with more than six members and come from APRA Annual Superannuation Bulletin. For Colombia, fees are charged on qualifying income, and severance fund management fees are not included. Data for Costa Rica refer to the ROP only. Data for Hungary refer to voluntary private pension funds only. Data for Mexico and Spain refer to personal plans only. Data for Poland refer to open pension funds only.
Source: OECD Global Pension Statistics.

StatLink https://stat.link/y75213

Funding ratios of defined benefit plans

Key results

Funding ratios, which measure the amount of liabilities that available assets cover in defined benefit (DB) pension plans, have evolved differently over the years across countries but tended to improve over the last decade in most cases. Despite a fall in the value of assets in 2022, the funding ratio of DB plans improved in 2022 in Luxembourg, the Netherlands, Norway and the United Kingdom as the liabilities of DB plans fell more than assets. Funding levels of DB plans were above 100% at the end of 2022 (or latest available date) in all reporting countries but four: Iceland, Mexico, the United States among OECD countries, and Indonesia. Funding levels are calculated using national (regulatory) valuation methodologies of liabilities that differ across countries and affect the comparability across countries.

Funding ratios of DB plans, which measure the amount of liabilities that available assets cover, have evolved differently over the years across countries, but tended to improve in most of them. Among the 12 reporting countries, 9 recorded a stronger funding ratio than a decade or so before, with the largest improvement occurring in the United Kingdom (30 percentage points more between end-2012 and end-2022), Ireland (20 percentage points more between end-2015 and end-2022) and the Netherlands (12 percentage points more between end-2012 and end-2022) (Figure 9.6). The funding ratio of DB plans also improved but to a lesser extent in Finland, Germany, Luxembourg, Norway, Switzerland, and the United States. By contrast, the funding ratio deteriorated in Iceland (by 29 percentage points between end-2012 and end-2022), Mexico (by 13 percentage points between end-2012 and end-2021) and Indonesia (by 6 percentage points between end-2012 and end-2021).

Despite a fall in the value of assets in 2022, the funding ratio of DB plans improved in 2022 in Luxembourg, the Netherlands, Norway and the United Kingdom as the liabilities of DB plans fell more than assets. The United Kingdom saw the largest improvement in the funding ratio of DB plans in 2022 (10 pp more between end-2021 and end-2022). By contrast, the funding ratio of DB plans worsened in jurisdictions where the liabilities remained broadly the same or slightly increased (e.g. Germany, Iceland, Finland, Switzerland and the United States).

Funding levels of DB plans were above 100% at the end of 2022 (or latest available year) in all reporting countries but four: Iceland (28%), Mexico (67%), the United States (64%) among OECD countries, and Indonesia (97%).

Funding levels are calculated using national (regulatory) valuation methodologies of liabilities and hence cannot be compared across countries. Some countries like Finland, Iceland and Luxembourg use fixed discount rates (at 3%, 3.5% and 5% respectively), while others like the Netherlands and the United Kingdom use market rates as a discount rate. In the Netherlands, pension funds can use an Ultimate Forward Rate (UFR) for the valuation of liabilities. The UFR is an extrapolation of the observable term structure to take into account the very long duration of pension liabilities. The Pension Protection Fund in the United Kingdom uses conventional and index-linked gilt yields to calculate the liabilities of the DB plans in the scope of its index (PPF 7 800). The choice of the discount rate that is used to express in today's terms the stream of future benefit payments can have a major impact on funding levels. The recent increase in interest rates led to a decline in the value of the liabilities in countries using a market-based discount rate while it had little impact on those using a fixed discount rate.

Definition and measurement

The funding position of DB plans is assessed in this publication as the ratio between investments and technical provisions (net of reinsurance). Investments of DB plans may be a low estimate of assets of DB plans as they would not include receivables and claims against the plan sponsor to cover the funding shortfall. Technical provisions represent the amount that needs to be held to pay the actuarial valuation of benefits that members are entitled to. This is the minimum obligation (liability) for all DB pension plans.

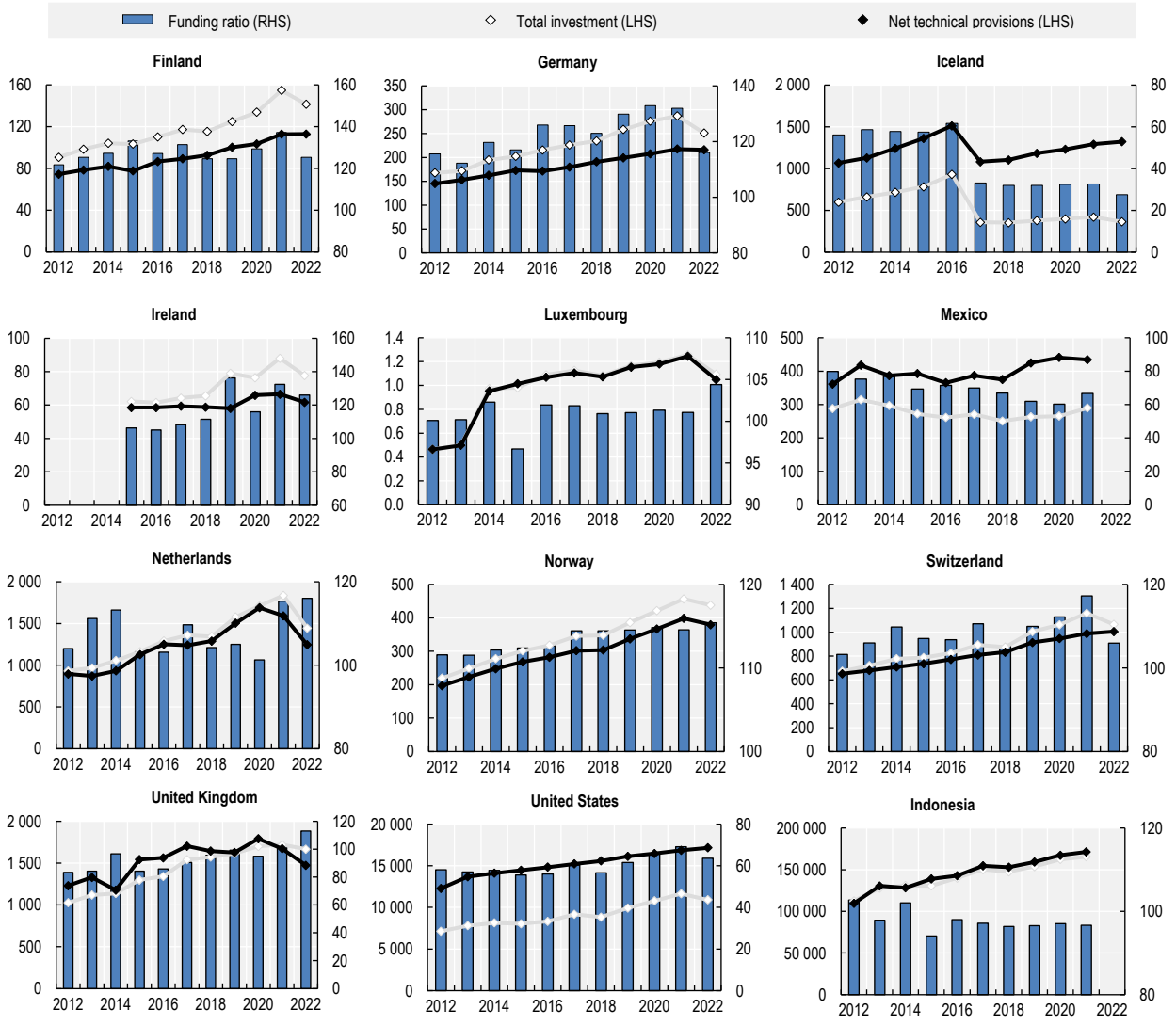
Liabilities are estimated using country-specific methodologies. Methodologies differ across countries with respect to the formula used, the discount rate (e.g. a market discount rate, or a fixed discount rate), or with the way future salaries are accounted for (e.g. liabilities can be based on current salaries or on salaries projected to the future date that participants are expected to retire) for example.

The evolution of the number of DB plans for which the aggregated funding ratio is calculated may influence the trends. In Iceland, the funding ratio dropped between 2016 and 2017 as a public-sector scheme for state and municipal employees (one of the most highly funded) was converted into a DC plan and therefore not included anymore in the aggregated funding ratio from 2017 onwards.

Further reading

OECD (2020), *OECD Pensions Outlook 2020*, OECD Publishing, Paris, https://doi.org/10.1787/67ede41b-en.

Figure 9.6. Assets and liabilities of defined benefit plans (in billions of national currency) and their ratio (in percent) in selected jurisdictions, 2012-22



Note: LHS: left-hand side axis. RHS: right-hand side axis. The funding ratio has been calculated as the ratio of total investment and net technical provisions for occupational DB plans managed by pension funds using values reported by national authorities in the OECD questionnaire. Data for Finland refer to DB plans in pension funds only. All liabilities of DB plans (instead of technical provisions only) are considered for Ireland, Mexico (occupational DB plans in pension funds only) and the United States. Data for Luxembourg refer to DB traditional plans under the supervision of the CSSF. Data for the Netherlands and Switzerland include all types of pension funds. Data for the United Kingdom come from the Purple Book 2022 published by the Pension Protection Fund and show assets, liabilities valued on an s179 basis (instead of net technical provisions) and the ratio of the two. Data for Indonesia refer to EPF DB funds and come from OJK Pension Fund Statistics reports before 2016.
Source: *OECD Global Pension Statistics*.

StatLink https://stat.link/ov05te

Pensions at a Glance 2023

OECD AND G20 INDICATORS

The 2023 edition of *Pensions at a Glance* highlights the pension reforms undertaken by OECD countries over the last two years. It includes a special chapter focusing on pension provisions for hazardous or arduous work. It describes existing rules, characterises recent policy trends and assesses the design and functioning of early-retirement rules for hazardous or arduous jobs given changing working conditions and ageing pressure on pension systems.

This edition also updates information on the key features of pension provision in OECD and G20 countries and provides projections of retirement income for today's workers. It offers indicators covering the design of pension systems, pension entitlements, the demographic and economic context in which pension systems operate, incomes and poverty of older people, the finances of retirement income systems and private pensions.

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