Estimating the Effects of Social Protection for Long-Term Care in Old Age in Europe

Final Report

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Preamble

The present report is a draft report prepared by the OECD in the context of the cooperation between the European Commission (Directorate-General for Employment, Social Affairs and Inclusion or DG EMPL) and the OECD on Measuring the effectiveness of social protection for long-term care in old-age (Agreement Number VS 2020 0076). The main objective of this project is to produce national-level indicators of effective social protection for older people with long-term care (LTC) needs in EU Member States. The project has identified, collected and reviewed surveys of LTC needs, as well as collected national administrative data on LTC needs assessments from as many EU Member States as possible.

This project builds on previous work carried out by the OECD in collaboration with the European Commission, which started in 2014 (Measuring effective social protection in long term care - VS/2013/0431 and VS/2016/0439), focusing on measuring and comparing the generosity of social protection against the costs that people face when they develop LTC needs. The project also builds on work carried out by the European Commission's Social Protection Committee in preparing the reports *Adequate social protection for long-term care needs in an ageing society* (2014) and *Long-term care - Trends, challenges and ways forward in an ageing society* (2021), as well as the projections of LTC spending included in *The 2018 Ageing Report* and *The 2021 Ageing Report*.

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Acronyms, abbreviations and signs

Acronyms and abbreviations

ADLs	Activities of daily living
FRA-APA	French long-term care benefit (Allocation Personalisée d'autonomie)
AROP	At risk of poverty
FRA-ASH	French long-term care benefit (Aide sociale à l'hébergement)
BEL-BEL	Flemish long-term care needs scale (Beoordeling Eerste Lijn)
EU	European Union
GALI	Global Activity Limitation Indicator
GBR-FACS	Fair Access to Care Services (England)
GDP	Gross domestic product
IADLs	Instrumental activities of daily living
IDD	Income Distribution Database
GBR-IFoA	Institute and Faculty of Actuaries (United Kingdom)
ESP-IPREM	Spanish index (Indicador Público de Renta de Efectos Múltiple)
ITA-ISEE	Italian index (Indicatore della situazione economica equivalente)
ISO	International Organization for Standardization
LTC	Long-term care
NCU	National Currency Unit
BEL-NIHDI	Belgian Federal Public Health Insurance ("verpleegzorg")
OECD	Organisation for Economic Co-operation and Development
RMSE	Root mean squared error
WDD	Wealth Distribution Database
NLD-Wlz	Dutch long-term care scheme (Wet landurige Zorg)
NLD-Wmo	Dutch long-term care care scheme (Wet maatschappelijk ondersteuning)
NLD-Zvw	Dutch health insurance act (Zorgverzerkeringen Wet)

Country-specific acronyms are preceded by the country ISO3 code (see ISO codes below).

Conventional signs used in figures throughout the report

(↘) in the legend relates to the variable for which countries are ranked from left to right in decreasing order.

(↗) in the legend relates to the variable for which countries are ranked from left to right in increasing order.

Country ISO code and national currency unit (NCU)

Country	ISO	NCU	Country	ISO	NCU
Australia	AUS	AUD	Korea	KOR	KRW
Austria	AUT	EUR	Latvia	LVA	EUR
Belgium	BEL	EUR	Lithuania	LTU	EUR
Canada	CAN	CAD	Luxembourg	LUX	EUR
Chile	CHL	CLP	Malta	MLT	EUR
Croatia	HRV	HRK	Mexico	MEX	MXN
Czech Republic	CZE	CZK	Netherlands	NLD	EUR
Denmark	DNK	DKK	New Zealand	NZL	NZD
Estonia	EST	EUR	Norway	NOR	NOK
Finland	FIN	EUR	Poland	POL	PLN
France	FRA	EUR	Portugal	PRT	EUR
Germany	DEU	EUR	Slovak Republic	SVK	EUR
Greece	GRC	EUR	Slovenia	SVN	EUR
Hungary	HUN	HUF	Spain	ESP	EUR
Iceland	ISL	ISK	Sweden	SWE	SEK
Ireland	IRL	EUR	Switzerland	CHE	CHF
Israel	ISR	ILS	Turkey	TUR	TRY
Italy	ITA	EUR	United Kingdom	GBR	GBP
Japan	JPN	JPY	United States	USA	USD

Glossary, concepts and definitions

Concepts related to care needs

Long-term care

For the purposes of this report, long-term care encompasses the services that people require to meet three types of needs: activities of daily living (ADLs), instrumental activities of daily living (IADLs) and social activities. In the System of Health Accounts manual, long-term care consists of a range of medical/nursing care services, personal care services and assistance services that are consumed with the primary goal of alleviating pain and suffering or reducing or managing the deterioration in health status in patients with a degree of long-term dependency. Medical/nursing care services are excluded from this report.

Activities of daily living

Activities of daily living, or ADLs, are a set of personal care tasks that healthy people can usually carry out for themselves, such as bathing, dressing and using the toilet. Where people are not able to perform these tasks independently, they will require care services. ADL need is often measured using the Barthel Index of Activities of Daily Living, which gives a score between zero (totally dependent) and 20 (totally independent). The System of Health Accounts manual also provides a definition (OECD, Eurostat, & World Health Organisation, A System of Health Accounts 2011: Revised edition, 2017):

> *Personal care services are provided in response to limitations in self-care primarily due to disability and illness. These services provide help with activities of daily living (ADL) such as: eating, bathing, washing, dressing, getting in and out of bed, getting to and from the toilet and managing incontinence. Most inpatient care as well as some day-care and home-based services will include personal care services as part of the package of services consumed. These services are typically administered directly or under the supervision of nursing staff. These services are included within the health care boundary because the purpose of this type of care is linked to survival and the maintenance of health status. In addition, the need for personal care services is more often than not linked to some underlying medical condition.*

Instrumental activities of daily living

Instrumental activities of daily living, or IADLs, are tasks that are not part of someone's personal care, but are necessary for someone to be able to live independently in the community. They include shopping, housekeeping and preparing food. IADL need is often measured using the Lawton Instrumental Activities of Daily Living Scale, which gives a score between zero (totally dependent) and 8 (totally independent).This type of services is also described in the System of Health Accounts (OECD, Eurostat, & World Health Organisation, A System of Health Accounts 2011: Revised edition, 2017):

> *Assistance services relate to care that enables a person to live independently in a house or apartment. They provide assistance with tasks of household management (i.e. instrumental activities of daily living, IADL), such as shopping, laundry, vacuuming, cooking and performing housework, managing finances, using the telephone, etc. These services are typically provided under home help services, assisted living arrangements, etc.*

Social activities

In addition to ADL and IADL needs, some people are not able to maintain social activity independently (e.g. meeting with friends, going to the movies, etc.). This can lead to social isolation, which can lead to depression and deterioration in physical health. Some people therefore need support to help them maintain

some level of social activity if they are to live independently in the community. This type of services is described in the System of Health Accounts (OECD, Eurostat, & World Health Organisation, A System of Health Accounts 2011: Revised edition, 2017):

> *Other social care services involve community activities and occupational support given on a continuing or recurrent basis to individuals, such as activities whose primary purpose is social and leisure.*

Concepts related to economic variables

Household

A household is either an individual person or a group of persons who live together under the same housing arrangement and who combine to provide themselves with food and possibly with other essentials of living. All persons living in a country belong to one, and only one, household. A person's place of usual residence is the basis for determining household membership.

Disposable income

Disposable income is sourced from different sources depending on the objective of the analysis. Disposable income for older people as a whole is sourced from the OECD Income Distribution Database. For analyses of public support, out-of-pocket costs and poverty risks at individual level, disposable income is sourced from responses in The Irish Longitudinal Study on Ageing (TILDA), for Ireland, and responses in the Survey of Health, Ageing and Retirement in Europe (SHARE) for all other EU Member States.

Disposable income in the OECD Income Distribution Database

The unit of observation of the OECD Income Distribution Database is the household, while the unit of analysis is the individual. Five main components of household disposable income are identified in the OECD questionnaire:

- **E**: employee income, including wages and salaries, cash bonuses and gratuities, commissions and tips, directors' fees, profit sharing bonuses and other forms of profit-related pay, shares offered as part of employee remuneration, free and subsidised goods and services from an employer, severance and termination pay. Sick pay paid by social security should also be included.
- **KI**: capital and property income, including income from financial assets (net of expenses), income from non-financial assets (net of expenses) and royalties. Regular receipts from voluntary individual private pension plans and life insurance schemes should also be included in this income component. In line with the 2011 Canberra Handbook (UNECE, 2011), capital gains should not be included in KI.
- **SEI**: income from self-employment, including profits and losses from unincorporated enterprises, as well as goods produced for own consumption (net of the costs of inputs). The inclusion of this latter variable aims to adjust the OECD income concept to the realities of middle-income countries (such as Brazil, South Africa and others), where subsistence agriculture represents a significant income source for people at the bottom of the distribution. Countries that do not collect information on this income item should indicate so in the metadata sheet of the OECD questionnaire.
- **TRR**: current transfers received, including transfers from social security (including accident and disability benefits, old-age cash benefits, unemployment benefits, maternity allowances, child and/or family allowances, all income-tested and means-tested benefits that are part of social assistance, including quasi-cash transfers given for a specific purpose such as food stamps); transfers from employment related social insurance; as well as cash transfers from both nonprofit institutions and other households.

- **TRP**: current transfers paid, including direct taxes on income and wealth, social security contributions paid by households, contributions to employment-related social insurance, current transfers paid to both other households and non-profit institutions. Taxes on realised capital gains should be excluded from wealth taxes when possible.

The income components defined above can be aggregated into various concepts of equivalised household income: individual primary, market, gross and disposable income per equivalent household member. Equivalised disposable income (**DI**), for each member of a household, can be expressed as the sum of the five main components of household disposable income listed above. Disposable income deducts from gross income the value of taxes on income and wealth paid and of contributions paid by households to public social security schemes.

Disposable income in SHARE and TILDA

The SHARE defines two measures of total household income (MEA, 2020): *thinc* and *thinc2*. The first (*thinc*) is obtained by an aggregation at the household level of all individual income components. The second (*thinc2*) is obtained by a one-shot question on monthly household income (*HH017*). There are no strong arguments in favour of using one measure over the other (De Luca, Celidoni, & Trevisan, 2015). As such, in this report, both are considered when determining the disposable income of each household in the SHARE.

Household income in TILDA is based on a loop (ISSDA, TILDA Derived Variables Codebook: Wave 3): the respondent is asked to estimate the income of each household member aged 16 years or more, including himself/herself. Total household income is then derived as the sum of the income of each household member aged 16 years or older. Disposable income is then derived after taxes and deductions.

Equivalence scale

All income components of each household are adjusted using the square root of the household size. For instance, the income of a household with four persons is divided by two and then attributed to the four members of the household[1]. The equivalence elasticity characterises the amount of scale economies that households can achieve. An equivalence elasticity lower than unity implies the existence of economies of scale in household needs, i.e. any additional household member needs a less than proportionate increase of household income in order to maintain a given level of welfare. Under this assumption, the sum (across the *j* members of the same household *i*) of individual "adjusted" incomes will exceed the total household disposable income by the amount of scale economies.

Wealth (net wealth)

The unit of analysis to be used when compiling estimates on wealth is the household. It should be noted that the unit of analysis used for this data collection differs from the one used by the OECD for its collection on the distribution of household income, which refers to the individual. The concept of "wealth" generally refers to economic resources in the form of assets and liabilities[2]. For micro statistics on household wealth, confining the concept of wealth to assets and liabilities in a narrow economic sense – comprising items that have an economic value and are subject to ownership rights – is generally considered to be the most relevant and useful approach for most purposes as well as the most practical. This concept of wealth is often summarised in a net measure representing assets less liabilities. Wealth, or net worth, is the value

[1] See http://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf for more detail.

[2] See http://www.oecd.org/sdd/OECD-wealth-distribution-database-metadata.pdf for more detail.

of all the assets owned by a household less the value of all its liabilities at a particular point in time, and so it may be positive or negative.

An asset is a store of value representing a benefit, or series of benefits, accruing to the economic owner by holding or using the entity over a period of time; while a liability is established when one unit (the debtor) is obliged, under specific circumstances, to provide a payment or series of payments to another unit (the creditor). Common types of financial assets held by households are currency and deposits, bonds and other types of debt securities, listed and unlisted shares, equity in family trusts and partnerships, investment fund shares and units, and pension entitlements. Common types of liabilities are loans and credit card debt. Examples of non-financial assets held by households are their homes, land, other property and valuables.

In the SHARE and TILDA, household net wealth (or net worth) is derived from responses to multiple asset categories. The SHARE also provides data on household real assets and net financial assets.

Liquid financial assets

The concept of liquid financial assets (i.e. cash, quoted shares, mutual funds and bonds net of liabilities of own unincorporated enterprises) is the main measure used to capture asset-based poverty (see below), as this represents the assets that are relatively accessible by households if needed urgently. When net wealth is used, measures of asset-based poverty are around 2/3 lower than those based on the liquid financial wealth concept.

Poverty (income)

Poverty is defined using relative thresholds. The relative poverty threshold is expressed as a given percentage of the median disposable income, expressed in nominal terms (current prices). Therefore, this threshold changes over time, as the median income changes over time. Two relative poverty thresholds are typically used: the first one is set at 50% of the median equivalised disposable income of the entire population, the second one is set at 60% of that income. This last one is the at risk of poverty threshold which is used by the European Commission. This indicator does not measure wealth or poverty, but low income in comparison to other residents in that country, which does not necessarily imply a low standard of living. The relative income poverty threshold used in this report is the at risk of poverty threshold, set at 60% of the population-wide median disposable income, sourced from the OECD Income Distribution Database (see above).

Poverty (asset-based)

Poverty in OECD countries has traditionally been measured using household income. But what happens when a negative income shock occurs, perhaps due to unemployment, family breakdown or illness? What about unexpected expenses the household needs to deal with? Such events highlight the importance of considering not only whether people have low income now, but also whether their limited financial assets means they are economically vulnerable and could experience significant economic difficulties if their income dropped suddenly.

There is no standard definition of asset-based poverty. The main measure used in this report – and other work by OECD – is whether an individual belongs to a household with liquid financial wealth insufficient to support them at the level of the income poverty line for at least three months. Those asset-poor individuals who are not poor in terms of their income are described here as being economically vulnerable. By construction, this measure provides only a partial view of economic vulnerability, as it does not take into account social transfers (e.g. unemployment benefits) that people may receive in the event of some types of shocks depending on their individual circumstances.

Different reference periods can be used, although most of the literature focuses on three, 6 and 12 months. The relative ranking of countries is insensitive to the reference period used (Spearman's Rho is 0.98 for 3 and 6 month measures, and 0.95 for 3 and 12 month measures). The reference period used in this report is three months.

Poverty (income and asset-based)

Household wealth data is used to consider how long an individual can maintain a minimum way of life by drawing on their accumulated wealth, should their income suddenly fall because of a sudden adverse shock (e.g. loss of employment, disability, family disruption). Taking wealth into consideration makes it possible to distinguish, within the income poor, those who have sufficient wealth to keep them above the poverty line for a period of at least ζ months (the "income poor only") from those who lack this buffer (the "asset and income poor"). Both groups experience low income, but the latter is clearly worse-off than the former. A third, and potentially much larger group, group comprises the "asset poor only", i.e. those individuals who currently have sufficient income to achieve the minimally acceptable standard of living but do not have enough assets to protect them from a sudden drop of their income. This group is described here as being 'economically vulnerable'.

Other concepts

Jurisdiction

Territorial unit within which some government functions and powers can be exercised. In the context of this report, the government functions and powers of interest relate to social protection for long-term care in old age. Depending on the EU Member State, these functions and powers may be exercised by the central government or by administrative regions, i.e. subnational governments (e.g. in states, provinces and municipalities, to name a few). When functions and powers are exercised by the central government, then the jurisdiction is the national territory as a whole. When the administrative regions exercise functions and power, then the jurisdiction normally covers the total area inside the borders of the administrative region. In summary, the term jurisdiction is used here to signify the territorial unit within which government functions and powers related to social protection for long-term care in old age are exercised.

In Brief

Executive Summary

Global demand for long-term care (LTC) in old age is a key policy issue due to population ageing, changing family structures, carer shortages, and rising expectations. Close to one in three people in the European Union (EU) are now in old age (65 years old or older), and by 2050 there could be only one person of working age for every one older person. Despite calls to reform LTC systems and increase funding, it remains unclear how total public spending is helping older individuals meet the out-of-pocket costs of LTC. This report seeks to inform policy discussion, by providing new international comparisons of the prospective effects of public support for LTC in old age in 20 EU Member States (EU20).

The total costs of LTC can be very high compared to an older person's disposable income, and in the absence of public support, most older people would not be able to afford LTC if they relied on their incomes alone. Across the EU20, the total costs of LTC for older people with severe needs represent one to six times median disposable incomes of older individuals, while older people on lower incomes may even struggle to afford care for low needs, if they do not have access, or are not entitled to, social protection.

An estimated 27% of older people in the EU27 have LTC needs, according to new analyses of survey microdata available for all 27 EU Member States. More specifically, weighted EU27 averages are 12.9%, 8.4% and 5.7% for low, moderate and severe needs respectively. **An estimated 16 to 28 million older people in the EU27 could have at least low needs**, of which 8 to 14 million could have low needs, between 5 and 8 million could have moderate needs and 3 to 5 million could have severe needs. Across the EU27, there is wide variation in the estimated relative and absolute prevalence of LTC needs. For example, the size of the older population in the Netherlands is similar to that in Romania, yet there is a 24 percentage point difference between the two countries in the shares of older people estimated to have low, moderate or severe needs. Differences across Member States could reflect true prevalence of LTC needs among older populations, but potentially also cultural factors in the self-assessment of LTC needs, the support structures in place, or the survey methodologies used.

Older people estimated to have long-term care needs are more likely to be 80 years old or older, women, live in single households, earn lower incomes, and report receiving help. The majority of older people with moderate and severe needs are 80 years old or older. In all EU Member States, across all three levels of severity of needs, women make up the majority of older people estimated to have LTC needs, ranging from a low of 56% in the Netherlands for low needs, to a high of 87% in Finland for severe needs. More than two out three older individuals with severe needs live in single households, on average across the EU25, and would not be able to find informal support in their own homes. Close to 41% of older people estimated to have LTC needs earn incomes in the bottom tercile, with important consequences for policies based on the income distribution in the older population as a whole. On average across the EU27, around 28% of older people estimated to have low needs report receiving either professional help with ADLs and IADLs or receiving informal care, compared to close to 48% of older people estimated to have moderate or severe needs. The range across the EU27 is wide, with fewer than 10% of older Romanians estimated to have LTC needs reporting they receive help, compared to 93% of older Dutch individuals with moderate or severe needs who report they receive care.

Public support tends to be greater for older people with more severe needs and fewer means, on average across respondents. In five jurisdictions, the average share of total costs met by public social

protection would be below 50% for moderate needs, while in another five jurisdictions support would be above 90% of total costs of care (figures are similar for severe needs). In most EU20 Member States, average public support for home care for an older person estimated to have severe needs would be as high as, or higher than, public support for institutional care. Average public support is typically higher for older people with more severe needs, but in Latvia, France, Slovenia, Hungary, South Tyrol in Italy, and Germany public coverage for moderate needs is higher than for severe needs. In most EU20 Member States modelled, older people in the bottom terciles of income would receive greater coverage than those in the top terciles, thanks to targeted support.

Even after public support, care for severe needs could be too costly for older people, especially for older people earning incomes in the bottom tercile. Out-of-pocket costs of home care would represent on average 19% of the disposable incomes reported by older people with low needs. In eight countries and subnational areas, average out-of-pocket costs of home care for severe needs could be unaffordable, even with public support. Institutional care could be unaffordable for older people earning incomes in the bottom tercile. In eight countries and subnational areas, an older person estimated to have moderate needs and earning in the bottom income tercile would have to devote, on average, over half of their disposable income to pay for home care, leaving less than half of their already lower income to cover basic living expenses. In a number of EU20 countries and subnational areas, older people on higher incomes would pay a smaller share of their incomes towards the costs of care than older people on lower incomes, even in some countries where public support is higher for those on lower incomes.

Public support reduces poverty risks associated with paying for LTC services, but poverty risks could still be higher than the baseline. If all older people estimated to have LTC needs sought formal care, public social protection systems would reduce poverty risks associated with paying the out-of-pocket costs of institutional care for severe needs by over 75 percentage points, on average across the EU20. With respect to home care, potential reductions would be smaller and fairly similar across different severities of LTC needs, at around 27 percentage points. Despite these potential reductions, in most EU20 Member States, with the exception of Finland, public support for home care would not bring relative income poverty levels back to baseline levels. In some cases, poverty rates could be at least 50 percentage points higher, even after accounting for receipt of public support.

Public social protection systems might not adequately protect the most vulnerable older people. In 15 EU20 countries and subnational areas, public support for home care for older people earning close to the AROP threshold would fall short of covering the total costs of LTC, for all three levels of severity of needs. Furthermore, in a majority of countries and subnational areas, public social protection systems would not cover the total costs of care in full for older people who are both income and asset poor. While public support for women is generally higher due to older women's higher economic vulnerability, in some cases, average potential increases in relative income poverty would be higher for older women. This would make current inequalities in income between older men and women even more marked.

Without public support, the number of older people AROP after out-of-pocket costs of care could double in the EU20, based on a counterfactual analysis that assumes all those estimated to have LTC needs would seek formal care and would pay the total costs of care fully out-of-pocket. An estimated 33% of the old age population in the EU20 would be AROP, compared to the around 18% of older persons that were AROP in 2017 (the same year of the microdata). This could result in an average increase of 12 percentage points in old age AROP rates in the EU20, or an extra ten million more older people with disposable incomes below the AROP threshold. These estimates suggest that public social protection plays a crucial role in protecting older people with LTC needs from the risks of income poverty associated with formal care.

1. Introduction

1.2. Rising demand for long-term care in old age poses challenges

1. Populations across the OECD and the EU are ageing rapidly due to improvements in life expectancy and declines in fertility rates. As people grow older their physical and mental health deteriorate, and they may struggle with everyday activities, such as getting dressed, shopping, or going out for a walk. The range of personal care and assistance services that these older people require is commonly referred to as long-term care or LTC (a definition is given in Box 1.1).Box 1.1). Global demand for LTC in old age (defined here as being aged 65 years or older) is becoming increasingly topical due to population ageing, changing family characteristics, projected shortages of formal and informal carers, and rising expectations of the availability, affordability and quality of LTC services and support.

Box 1.1. Long-term care in old age: personal care, assistance services and social activities

As people grow older, they are increasingly likely to need help from other people to carry out the activities that make up their daily lives. These activities include washing and getting dressed – grouped under what is referred to as personal care, or Activities of Daily Living (ADLs) – as well as housekeeping tasks, like cleaning and shopping – grouped under what are known as Instrumental Activities of Daily Living (IADLs). As people become more dependent, they may also find it difficult to maintain social relationships and participate in their community. They may need help with social activities, for example attending a community club or going out for a walk. Finally, people who are dependent on others often need ongoing medical care to manage often multiple chronic conditions and ensure that they remain as healthy as possible.

LTC consists of a range of medical/nursing care services, personal care services and assistance services that are consumed with the primary goals of alleviating pain and suffering, or reducing or managing the deterioration in health status in patients with a degree of long-term dependency (OECD, Eurostat, & World Health Organisation, A System of Health Accounts 2011: Revised edition, 2017). As the emphasis is on long-term dependency, this report focuses on LTC needs and use that last at least six months. Furthermore, as most OECD countries and EU Member States provide universal or quasi-universal health coverage, this work excludes medical nursing care services. Throughout this report, the term LTC is used to encompass personal care (help with ADLs), assistance services (help with IADLs) and social activities, for periods of over six months (or until end of life).

Although people of any age can become dependent on others through illness or disability, this report focuses on older people who are over 65 years old. Whenever the report refers to people of retirement age, it is assumed that these people are aged 65 years old or more.

2. Many older people who struggle with everyday activities often find informal support in their spouses, children, friends and neighbours. Commonly termed informal care, this is generally the first line of support for older people, and in some cases it is the most prevalent form of support (Colombo, Llena-

Nozal, Mercier, & Tjadens, 2011). While often unpaid, informal care is not without costs. Families and friends that provide support to dependent older individuals may suffer physical and mental stress, and are more likely to drop out of the labour market or reduce working hours. Income levels of family carers are also likely to decline as a result. Furthermore, population ageing coupled with changing social norms and structures (e.g. household composition and female labour market participation) limit the pool of potential informal carers available to older people today and in the coming years. Older people with limitations in everyday activities may not have access to social networks from which to seek informal support. They may also suffer from more severe limitations that require support that is more intensive.

3. There is also a strong gender dimension to LTC needs and use. A larger proportion of women's lives (compared to men's) is spent living with disabilities and limitations in activities of daily living (ADLs, e.g. bathing) and instrumental activities of daily living (IADLs, e.g. shopping). In addition, partly because women live longer, they tend to survive their partners/spouses more often than men. Older women are also likely to have unique needs, as many provided informal care to their spouses or older relatives earlier in life. Smaller, more geographically dispersed family structures will make this issue more acute as help from children could be more difficult to come by in the coming decades.

4. As with health care, older people with LTC needs may seek support from local public institutions and services. Publicly funded and/or provided formal care – delivered by paid professionals such as nurses, personal carers and personal assistants – is usually available, either via in-kind services or through cash benefits. Older individuals – and often the relatives and friends that advocate for them – may find the available public benefits, schemes and services difficult to navigate. Faced with multiple eligibility criteria, numerous stakeholders and intricate rules (Cravo Oliveira Hashiguchi & Llena-Nozal, 2020), they may find it difficult to understand what support services are available to them, and to predict how much care will cost them (i.e. their out-of-pocket costs). They may also find there is limited public formal support in their community. Where older people who struggle with everyday activities do not have access to, or cannot afford, formal care, they may have to rely on informal care from families, friends and neighbours. Where their families and friends cannot or will not support them, LTC needs will go unmet. Besides the personal toll this can take on the wellbeing and quality of life of older people, it can also lead to avoidable high-cost admissions into acute care, should their health further deteriorate (e.g. through falls and poor hygiene).

5. LTC needs are inherently unpredictable. It is very difficult for an individual, even once they reach retirement age, to know whether they will develop an illness or disability in the future that leaves them dependent on others. While many people will never need LTC, others may develop severe needs or cognitive impairments, and may require intensive support or even institutional care. Moreover, LTC needs can persist over many years, with lifetime costs running into potentially catastrophic sums. The private sector provides only limited options for pooling the risk of high LTC costs. In most countries there are few private insurance options available, and even where they do exist, they remain a niche product covering only a small proportion of total LTC costs (Colombo, Llena-Nozal, Mercier, & Tjadens, 2011). There are a number of possible explanations for the lack of private insurance for LTC. Market failures may be important, such as adverse selection. People may not plan sufficiently due to hyperbolic discounting (i.e. valuing immediate smaller rewards much more than larger long-term gains) or a myopic view of risk. It is common for governments to try to address this gap through public schemes (either funded through general taxation or earmarked contributions) or by incentivising or mandating private provision.

1.2.1. Public long-term care expenditures are projected to rise in coming decades

6. As populations grow older and care needs expand, public LTC expenditures are projected to rise in the coming decades in OECD countries. Over half of all users of LTC are over the age of 80, and the proportion of people over 80 years old in the OECD is expected to double from 5% today to 10% in 2050 (OECD, Health at a Glance 2019, 2019). According to recent estimates (DG ECFIN & AWG, 2021), public LTC spending could increase from 1.7% of GDP in the EU to 3.1% of GDP in the base case scenario by

2070 across all EU Member States. With healthy ageing, public expenditure on LTC could reach 2.8% of GDP in 2070 in the EU, while in the "cost and coverage convergence" scenario, public spending on LTC could reach 5.1% of GDP by 2070 (ibid). Close to one in three people in the EU are now over the age of 65, and this number could go up to over one in two by 2050, at which point there will be only one person of working age for every one person over 65 years old. Other demographic changes, such as changes in family formation patterns, raise concerns about the availability of carers and the fiscal sustainability of existing public LTC arrangements.

7. Current public LTC expenditure levels vary greatly across countries but have increased in the past decade. The Netherlands and Scandinavian countries (Denmark, Norway and Sweden) are by far the highest spenders on LTC, with around 3.5% of gross domestic product (GDP) or more dedicated to caring for people with LTC needs. A second group of high-income countries, including Switzerland, France, Belgium, Finland, the United Kingdom, Germany and Japan, allocate between 2% and 2.5% of their GDP to LTC. In some South-Eastern European or Latin American countries – which tend to have younger populations, formal provision of care is less comprehensive and people with LTC needs rely to a greater extent on (predominantly unpaid) family members. The share of LTC spending in total health spending or as a share of GDP has gradually increased over the last 15 years in many OECD countries as demand for care grows with population ageing and the extension of publicly financed services (OECD, Focus On: Spending on Long-term Care, 2020).

8. Population ageing could have significant economic consequences for countries in the coming decades. There are substantial economic and social benefits to promoting healthy ageing in terms of the economy and well-being for societies. Reducing the amount of time people spend in poor health helps to reduce health care costs while delaying the need for LTC services. Good health can also help to extend the working lives of older adults by reducing the time spent out of work in poor health and health-related early retirement. Moreover, by preventing poor health before it begins, healthy ageing strategies can also help to mitigate some of the inequalities that develop and widen over the life course. According to scenario analysis, health promotion policies that encourage healthy ageing and healthier lifestyles could result in the containment of health expenditure as a share of GDP in OECD countries in the order of 0.5% by 2030 relative to a continuation of current trends (OECD, Promoting Healthy Ageing: Background report for the 2019 Japanese G20 Presidency, 2019). Healthy ageing policies, along with other strategies to improve the efficiency of health systems, could help to increase value for money from projected increases in health and LTC spending in the EU.

9. A comprehensive measure of total public expenditures associated with old age dependency is difficult to estimate. It is very likely that national government expenditures on LTC capture just a share of the total economic cost, given that they do not include the opportunity costs of informal care, nor all unplanned admissions associated with LTC needs. Even given information on total government spending on formal LTC services, it remains unclear how much of that spending is helping individuals meet the actual costs of the care they need. This report seeks to fill that gap by providing novel comprehensive estimates of the effects of public social protection for LTC in old age (see below).

Box 1.2. Objectives and structure of the report

The purpose of this report is to provide comparable information on which to base an assessment of the effectiveness of public social protection systems for LTC in old age in EU Member States. The report estimates prospective social protection metrics for a number of scenarios of needs, taking into account individuals' levels of income and net wealth. The analyses focus on the extent to which public social protection systems provide effective coverage for the total costs of LTC across the older population, and especially for the least well off.

The report is organised into six chapters, of which this introductory chapter is the first. The next chapter (Chapter 2) presents a novel approach to estimating the prevalence of low, moderate and severe LTC needs (as defined in typical or stylised cases) in older populations of EU Member States using survey data. The approach relies on testing different methodologies to derive severity of needs from self-reported difficulties with activities of daily living (ADLs), instrumental activities of daily living (IADLs) and physical functioning. Different methods are tested and their results validated, based on which estimates of the number of older individuals with LTC needs are derived. Correlations between demographic, socio-economic indicators and LTC needs are presented and discussed.

Chapter 3 presents findings from analyses of the levels of public social protection for LTC in old age focusing on the share of the total costs of LTC that are covered by public social protection systems and the share of care recipients' incomes that would need to be used to cover the out-of-pocket costs of care. The chapter quantifies the level of public support for LTC and the out-of-pocket costs (the portion of the costs that remains after subtracting public support) to care recipients, for defined levels of need and taking into account self-reported income and net wealth from survey data.

Chapter 4 assesses the prospective effectiveness of social protection for LTC in old age, focussing on affordability and equity, and very briefly on efficiency. The adequacy of LTC benefits is considered by quantifying net incomes of care recipients (after public support and out-of-pocket costs) and identifying any gaps in social protection that result in older people facing substantial out-of-pocket costs. The chapter also considers equity, appraising the impacts of public social protection systems on vulnerable older people, as well as a brief discussion of efficiency.

Chapter 5 highlights the potential of the modelling framework developed to inform this report, and how it could be used for future prospective and retrospective evaluations of public policies related to social protection for LTC in old age. To illustrate, the chapter quantifies the extra spending that would be needed for existing social protection systems to eliminate poverty risks associated with formal LTC.

Chapter 6, the final chapter, gives a brief overview of the analyses and key findings. Further information and details are provided in the Annexes.

1.3. Country comparisons are based on stylised cases of needs

10. Because there is no single internationally accepted and standardised definition of what constitutes LTC needs, it is not possible to make meaningful comparisons across countries and subnational areas using administrative data on LTC recipients and out-of-pocket spending, as differences in eligibility, scope and depth will all be confounded. As such, this report defines a set of typical cases of LTC needs. The typical cases describe an older person in terms of the types and severity of their LTC needs, and the professional services they would require (Muir T. , 2017). Information on household composition and social structures is also included. This approach allows the level of public support in different countries and

subnational areas to be determined for a defined level of LTC needs. The reasons behind differences in public support can then be pinpointed and analysed, and recommendations made.

11. In order to make meaningful national and international comparisons of the level of financial protection afforded by LTC schemes and benefits in different jurisdictions, a set of typical cases of LTC needs was developed. The cases are based on activities described in the number of hours of need for help with ADLs, IADLs, and social activities (see Annex A for detailed descriptions). The typical cases span different levels of care severity (low, moderate and severe) and different ways in which these needs can be met (professional home care, informal care and institutional care). Eight cases are defined. Note that a number of countries have care for individuals with severe needs that encompass 24-hour care and are more generous than the severe cases modelled. The OECD has worked with countries and subnational areas to map their needs assessments to the different typical cases. To do so, detailed descriptions of the abilities and limitations of the person in question, the services they require, and any other relevant assumptions, were given.

Table 1.1. Typical cases of long-term care needs defined for this report

Needs	How needs are met
Low	6.5 hours of professional home care per week
Moderate	22.5 hours of professional home care per week
Moderate	22.5 hours of informal care (spouse) per week
Moderate	22.5 hours of mixed professional/informal care (spouse) per week
Moderate	22.5 hours of informal care (adult child) per week
Moderate	22.5 hours of mixed professional/informal care (adult child) per week
Severe	41.25 hours of professional home care per week
Severe	Institutional care

Note: Detailed descriptions of all typical cases can be found in Annex A.
Source: OECD analysis (Muir T. , 2017).

12. The analyses rely on the construction of models of the social protection systems that exist in each jurisdiction. These models codify the rules that determine the eligibility for, and the levels of, social protection for LTC in each jurisdiction. In some cases, the OECD uses information on the actual distributions of income and wealth for each country from the *OECD Income Distribution Database* and the *OECD Wealth Distribution Database*[3]; in other cases, the OECD uses income and wealth levels reported by respondents to surveys of ageing and retirement (more details below).

13. The models are used to determine the prospective effects of public social protection on out-of-pocket costs and affordability of LTC in old age, under the assumption that people seek care from existing public services, schemes and benefits (no claims are made, or indeed possible, as to effective use or access to public LTC benefits and services). The models can also be used to estimate total government spending associated with certain levels of coverage, under certain assumptions. The analyses can focus on any subgroup of interest (e.g. women, economically vulnerable, asset-poor, etc.), depending on the availability of survey responses. A difference to previous OECD analyses (Cravo Oliveira Hashiguchi & Llena-Nozal, 2020) is that estimates are no longer just based on distributions of income and wealth, but on self-reported needs and means.

14. The analyses focus on the extent to which public social protection systems provide effective coverage for the total costs of LTC across the older population, and especially for the least well off. The

[3] The OECD Income Distribution Database can be accessed in https://www.oecd.org/social/income-distribution-database.htm and the OECD Wealth Distribution Database can be access in https://doi.org/10.1787/socwel-data-en. The OECD does not currently have joint distributions of income and wealth due to a lack of data.

report covers 27 out of 41 OECD countries and EU Member States (20 EU Member States in total) for the information on total costs of care. The analysis on public support and generosity focuses on the 20 EU Member States only. For that part, countries and subnational areas covered include: Austria (Vienna region), Belgium (Flanders), Croatia, Czech Republic, Estonia (Tallinn), Finland, France, Germany, Hungary, Ireland, Italy (South Tyrol), Latvia, Lithuania, Luxembourg, Malta, Slovak Republic, Slovenia, Spain, Sweden, and the Netherlands. As more information and data for other EU Member States becomes available, these will be included in future analyses, depending on country participation.

15. In four countries (Austria, Belgium, Estonia, and Italy), LTC rules and benefits are decentralised, and municipal-, regional- or state-level information has been collected rather than country-level. The Austrian LTC system consists of three pillars. The first pillar is a benefit in cash, the second one consists of measures to support caregiving relatives, and the third pillar consists of services in-kind. The first two pillars are the responsibility of the federal government, while the federal states are responsible for providing the third pillar. In Belgium, competencies are shared between the federal government, the communities (the dutch-speaking or Flemish community, the french-speaking or Walloon community, and the german-speaking community), and the Brussels-Capital region. Belgian LTC consists of "*a mix of different services and measures, funded through different sources and organised at different levels*" (Pacolet & De Wispelaere, 2018). In Estonia, social welfare services are organised at both the state and municipality level, and personal care services are mostly organised by the local government (Paat-Ahi & Masso, 2018). In Italy, the public LTC system is organised around two pillars (Matteo, Emmanuele, Michele, & Natili, 2018): 1) the companion allowance, which is a cash benefit run centrally by the National Institute of Social Security; and 2) home and residential care services, provided by municipalities (personal care) and regions (health and nursing care).

16. It is challenging to determine how representative these subnational areas are of the public LTC benefits and schemes that are available at the country-level. Indeed, the reason why only these subnational areas are included in this analysis is that data and information on other areas were difficult to find and collect. One way to at least get a sense of how representative the subnational areas are is to compare key indicators like total population, population aged 65 years and over, and GDP, as done in Table 1.2 below. These simple comparisons, while certainly not exhaustive, do provide an idea of how significant gaps in data and information at the national level are.

Table 1.2. Overview of key indicators in subnational areas included in this report

	AT13: Vienna	BE2: Flemish Region	EE001: Tallinn	ITH1: Province of Bolzano-Bozen
Typology	Large regions (TL2)	Large regions (TL2)	Metropolitan area	Large regions (TL2)
Country	Austria	Belgium	Estonia	Italy
Population, area	1 897 490	6 596 230	589 610	531 178
Population, country	8 858 780	11 455 500	1 324 820	60 359 500
Population, share of country	21%	58%	45%	1%
Population 65+, area	312 445	1 332 140	102 548	104 037
Population 65+, country	1 668 560	2 165 460	261 848	13 783 600
Population 65+, share of country	19%	62%	39%	1%
GDP, area	116 287	319 953	18 942	32 825
GDP, country	461 710	545 671	43 918	2 328 840
GDP, share of country	25%	59%	43%	1%

Note: Data on population is for 2019; data on GDP is for 2018, in million USD, constant prices, constant PPP, base year 2015.
Source: OECD Regional Database and OECD Metropolitan Database.

17. For all population-level estimates, it is assumed that the subnational LTC benefits and schemes apply nationally. In the future, these assumptions can be relaxed through the collection of data and

information on public LTC benefits and schemes from more subnational areas, as these data and information become available. The years that the information refers to are documented in Annex D and span from 2016 to 2020.

1.3.1. Simplifying assumptions to ensure comparability across countries

18. Given the heterogeneity of LTC systems, it is necessary to make certain simplifying assumptions in order to ensure comparability across countries, regions and municipalities, as well as the feasibility of analyses (e.g. burden of data collection on countries and subnational areas, availability of data at the level needed, number and detail of cases analysed, etc.). Firstly, the focus of this report is on the LTC benefits, schemes and services that make up public social protection systems in OECD and EU countries (emphasis on *public*). Private LTC benefits, schemes and services are not considered if they are not mandatory or not supported, in part or in full, by public social protection systems (e.g. non-mandatory purely private LTC insurance policies are not considered).

19. Secondly, all findings and estimates are based on the typical cases of LTC needs described. Consequently, statements on the adequacy and effectiveness of public LTC benefits and schemes apply to groups of older people that have those defined LTC needs. The national and subnational representativeness of the typical cases of LTC needs used in this report will vary from country to country, and region to region, based on how eligibility and levels of public support change as a function of LTC needs. However, it should be noted that the typical cases used in this report cover a wide range of LTC needs and situations. Future work may extend analyses to more combinations of LTC needs. For example, it could be of interest to explore the prevalence of low needs profiles that require support with IADLs but would be able to perform most ADLs. This group could include older people with early dementia (e.g. need help taking medicines and likely help with shopping, etc.).

20. To explore the robustness of estimates, a sensitivity analysis on the unit costs of care is provided in Annex C. This analysis provides insights into how results would change if unit costs of care were slightly higher or lower, thus giving an idea of how intensity of care and slight variations in the typical cases could reflect in the estimates presented here. While this is not a substitute for further work on the representativeness of typical cases, it does provide an idea of the impact variations in the typical cases would have on the findings.

21. Thirdly, the report considers two professional care settings: home and institutions. It does not take into account intermediate care or community care settings (e.g. day care). In some countries, regions and municipalities (e.g. in Finland), intermediate care settings are important.

22. Fourth, the report seeks to make use of as much available information and data as possible. As such, even in countries where LTC policies are devolved, and when it is not possible to model national systems due to a lack of data or information, the OECD models subnational systems. Throughout the report, models for subnational LTC benefits and services are used to estimate the effects of social protection based on data at the national level (e.g. responses to surveys of ageing and retirement, or national distributions of income and wealth). While this is not ideal, subnational models are always clearly indicated[4] as such, so that results can be interpreted in light of any potential regional differences or biases. The models can be updated at any stage to reflect any information and data that become available.

23. Fifth and finally, older people may be able to pay out-of-pocket contributions to the total costs of LTC from their incomes, assets or both. Throughout the report, the affordability and adequacy of public social protection for LTC in old age are discussed in the context of specific types of resources (e.g. income

[4] The EU Member States for which subnational models are used are visible in Figures and in the text as they include in parentheses the subnational area for which models were developed.

alone, or income and wealth). The ways in which different jurisdictions take into account different types of wealth when determining the amount of public support are considered in this report.

2 Estimates of long-term care needs in old age in the European Union

2.1. A novel approach to estimating long-term care needs in old age

24. In the absence of a universally accepted international measure of LTC needs, it is very difficult to compare eligibility thresholds from needs assessments that employ direct measurement across countries, or even regions within the same country. As such, a survey-based approach to producing population-level indicators of LTC needs would be preferable, even if based on self-report and limited by other technical challenges (e.g. sampling). Specifically, the Survey of Health, Ageing and Retirement in Europe (SHARE) and The Irish Longitudinal Study on Ageing (TILDA) are likely the best sources to determine how many older people have LTC needs across EU Member States, and at what level of severity. This judgement is based on the fact that SHARE and TILDA include measures of ADLs, IADLs, social activities, as well as other important factors typically taken into account in assessments of LTC needs, such as income, net worth (the sum of fixed and liquid net assets) and household composition. One alternative would be to use the European Health Interview Survey (EHIS), Wave 3 of which was conducted in 2019, compared to 2017 for SHARE Wave 7 and 2015 for TILDA Wave 3[5]. However, EHIS does not have data on assets and is conducted every six to seven years instead of every two years, like SHARE and TILDA.

25. In this chapter, microdata from surveys of ageing and retirement in Europe are used to estimate the prevalence and intensity of LTC needs in the population aged 65 years and older, stratified by socio-demographic and economic factors. Different approaches to match survey responses to typical cases (e.g. relying on the number and types of difficulties reported, and on the intensity and types of care received) are tested and their outcomes compared. A number of validity, sensitivity and uncertainty analyses are undertaken to increase confidence in the robustness of the results. In parallel, the OECD collected information from representatives in countries (or subnational areas, where necessary) on the LTC needs assessments and instruments in use, providing more context to assess the representativeness of typical cases and the appropriateness of different matching approaches.

2.2. Methods used to match typical cases to survey responses

26. As it is very challenging to determine the severity of older person's LTC needs from self-reported data on difficulties with ADLs, IADLs and physical functioning, a total of eight different methodologies were tested in an effort to pair survey data to the typical cases of LTC needs defined earlier. Table 2.1 shows the different difficulties that each methodology takes into account to define individuals with LTC needs. The different methodologies determine the level and intensity of needs based on difficulties with ADLs, IADLs and physical functioning.

[5] A more recent Wave 4 (2018) for TILDA will be used when available.

27. The methodologies analysed differ in the difficulties each takes into account to determine the level and severity of needs. *Matching methods 1, 6a and 6b* focus on 14 difficulties (see Table 2.1) and only take into account difficulties with ADLs and IADLs. *Matching methods 2 to 5*, also focus on 14 difficulties, however, the specific difficulties differ slightly from the ones used in *matching method 1* by excluding some difficulties with IADLs, such as taking medication, doing work around the house/garden, leaving the house independently and doing personal laundry. In addition, *matching methods 2 to 5* include difficulties with physical functioning in their criteria. The different methodologies – and the specific difficulties that compose them – were designed to allow comparison across different combinations of needs, but also to allow harmonised datasets to be used in the future, thus allowing comparisons across non-EU OECD countries, like the United States, England, Korea and Japan.

Table 2.1. Difficulties used in the definition of the different matching methodologies

Difficulties/limitations		Matching methodologies	
		Matching method 1, 6a &6b	Matching methods 2-5
ADLs	1. Dressing	x	x
	2. Walking across the room	x	x
	3. Bathing/Showering	x	x
	4. Eating	x	x
	5. Getting in/out of bed	x	x
	6. Using the toilet	x	x
IADLs	7. Preparing a hot meal	x	x
	8. Shopping groceries	x	x
	9. Telephone calls	x	x
	10. Taking medications	x	
	11. Doing work around the house/garden	x	
	12. Managing money	x	x
	13. Leaving the house independently	x	
	14. Personal laundry	x	
Physical functioning	15. Stooping, kneeling, crouching		x
	16. Climbing on a flight of stairs		x
	17. Reaching/extending arms above shoulder		x
	18. Walking 100 metres		x

Note: Matching methods 2-5 exclude certain difficulties to increase comparability with other SHARE-like surveys.
Source: Difficulties as described in SHARE (Wave 7).

28. Different methodologies use different rules to categorise survey respondents into typical cases of LTC needs. Table 2.2 describes the criteria that each methodology follows to assign individuals to one of three different levels of needs – low, moderate and severe. Based on the nature of their criteria, the methodologies can be grouped into three categories.

29. The first category of methodologies relies only on difficulty scores, including *matching methods 4a, 4b, 6a and 6b*. These score-based approaches consider that someone with a higher score has a greater level of difficulties than someone with a lower one. The definition of the thresholds between low, moderate and severe needs determines the distribution of older people across these categories. The second category of methodologies allocate respondents to the different levels of needs based on a combination of specific difficulties, including *matching methods 2 and 3*. These methodologies assume that particular combinations of difficulties are associated with different degrees of needs. The last category of methodologies combine scores with specific combinations of difficulties. This category includes *matching methods 1 and 5*.

Table 2.2. Description of matching approaches

Matching methodologies	Typical cases of LTC needs		
	Low needs	Moderate needs	Severe needs
Matching method 1 (M1)	Diff. Score: 1 - 2 **AND** reports at least one of the following difficulties: (3) bathing/showering, (8) shopping groceries, (11) doing work around the house/garden, (12) managing money **OR** (13) leaving the house independently.	Diff. Score: 3 - 6 **AND** meets the criteria for "low needs" **AND** reports at least one of the following difficulties: (1) dressing, (5) getting in/out of bed, (7) preparing a hot meal **OR** (14) personal laundry.	Diff. Score: 7 - 14 **AND** meets the criteria for "moderate needs" **AND** reports at least one of the following difficulties: (2) walking across the room, (4) eating, (6) using the toilet, (9) telephone calls **OR** (10) taking medications.
Matching method 2 (M2)	Reports all the following difficulties at the same time: (3) bathing/showering **AND** (15) stooping, kneeling, crouching.	Reports all the following difficulties at the same time: (1) dressing, (3) bathing/showering, (7) preparing a hot meal, (8) shopping groceries, (15) stooping, kneeling, crouching, (16) climbing one flight of stairs **AND** (18) walking 100 metres.	Reports all the following difficulties at the same time: (1) dressing, (2) walking across the room, (3) bathing/showering, (4) eating, (5) Getting in/out of bed (6) Using the toilet, (7) preparing a hot meal, (8) shopping groceries, (17) reaching/extending arms above shoulder **AND** reports at least one of the following difficulties: (9) Telephone calls **OR** (12) Managing money.
Matching method 3 (M3)	Reports at least one of the following difficulties: (3) bathing/showering **OR** (15) stooping, kneeling, crouching.	Reports at least one of the following difficulties: (3) bathing/showering **OR** (15) stooping, kneeling, crouching. **AND** at least one of the following difficulties: (1) Dressing, (7) Preparing a hot meal, (15) Stooping, kneeling, crouching, (16) Climbing on flight of stairs **OR** (18) Walking 100 metres.	Reports having difficulties: (3) bathing/showering **AND** at least one of the following difficulties: (1) dressing, (7) preparing a hot meal **OR** (8) shopping **AND** at least one of the following difficulties: (2) walking across the room, (4) eating, (5) getting in/out of bed, (6) using the toilet, (9) telephone calls, (12) managing money **OR** (17) reaching/extending arms above shoulder.
Matching method 4a (M4a)	Diff. Score: 1 - 2	Diff. Score: 3 - 6	Diff. Score: 7 - 14
Matching method 4b (M4b)	Diff. Score: 2 - 3	Diff. Score: 4 - 7	Diff. Score: 8 - 14

Matching method 5 (M5)	Diff. Score: 1 - 2 **NOT** meets the criteria for "moderate needs" used in Matching method 3.	Diff. Score: 3 - 6 **AND** (has a Diff.Score: 1 - 2 **AND** meets the criteria for "moderate needs" used in Matching method 3) **NOT** (has a Diff.Score:3 – 6 **AND** meets the criteria for "severe needs" used in Matching method 3)**.**	Diff. Score: 7 - 14 **AND** (has a Diff.Score: 3 - 6 **AND** meets the criteria for "severe needs" used in Matching method 3)
Matching method 6a (M6a)	Diff. Score: 1 - 2	Diff. Score: 3 - 6	Diff. Score: 7 - 14
Matching method 6b (M6b)	Diff. Score: 2 - 4	Diff. Score: 5 - 8	Diff. Score: 9 - 14

Note: Respondents are assigned only to one level of severity. In case a respondent fulfils the specific criteria of more than one severity level (this is only the case with matching methods 2 and 3), they are assigned to the highest severity level.
Source: OECD analysis.

2.3. Assessing the performance of different matching approaches

30. A systematic approach is needed to make meaningful comparisons of different ways to match typical cases of LTC needs and self-reported needs in surveys of ageing and retirement. Such an approach should be easy to understand, and based on the best available knowledge of the structure of the real system, on which the data are based. The objective is to build confidence that each matching approach adequately captures the structure of the real system, given existing knowledge, and produces estimates that are aligned with other comparable sources of data. Based on the results of these different tests, the matching methodologies that best fit the existing understanding are selected for further analysis.

2.3.1. Existing knowledge of the structure of long-term care needs in older populations

31. One set of tests of validity seeks to build confidence each matching approach adequately represents the structure of the real systems, given existing knowledge. Even with limited data on the prevalence of each typical case of LTC needs in individual EU Member States, there are a number of criteria which generally any matching approach should meet. These criteria are derived from existing, typically administrative, data sources from specific EU Member States which have more granular data on the number of older people applying for public LTC support, and the number of older people being assessed as having certain levels of LTC needs. Data from Austria (Vienna), Germany (BMG, 2021), the Czech Republic, and Luxembourg (Weisgerber & Weber, 2019) all support the criteria below.

32. The criteria chosen are:

1. The number of respondents with low needs should be larger than the number of respondents with moderate needs, which in turn should be larger than the number of respondents with severe needs, across the entire sample aged 65 and older, pooled for all EU Member States.
2. The number of respondents with low needs should be larger than the number of respondents with moderate needs, which in turn should be larger than the number of respondents with severe needs, for men and women aged 65 and older separately, pooled for all EU Member States.
3. The prevalence of low needs among people should be higher than the prevalence of moderate needs, which in turn should be higher than the prevalence of severe needs, across the entire population aged 65 and older, pooled for all EU Member States.

4. The prevalence of low needs among people should be higher than the prevalence of moderate needs, which in turn should be higher than the prevalence of severe needs, for men and women aged 65 and older separately, pooled for all EU Member States.
5. The prevalence of low needs among men should be lower than the prevalence of low needs among women, for all aged 65 and older, pooled for all EU Member States.
6. The prevalence of moderate needs among men should be lower than the prevalence of moderate needs among women, for all aged 65 and older, pooled for all EU Member States.
7. The prevalence of severe needs among men should be lower than the prevalence of severe needs among women, for all aged 65 and older, pooled for all EU Member States.
8. The prevalence of any needs among men should be lower than the prevalence of any needs among women, for all aged 65 and older, pooled for all EU Member States.
9. The prevalence of moderate needs among people aged 50-64 years old should be lower than among people aged 65-79, which in turn should be lower than among people aged 80+, for men and women combined, pooled for all EU Member States.
10. The prevalence of severe needs among people aged 50-64 years old should be lower than among people aged 65-79, which in turn should be lower than among people aged 80+, for men and women combined, pooled for all EU Member States.

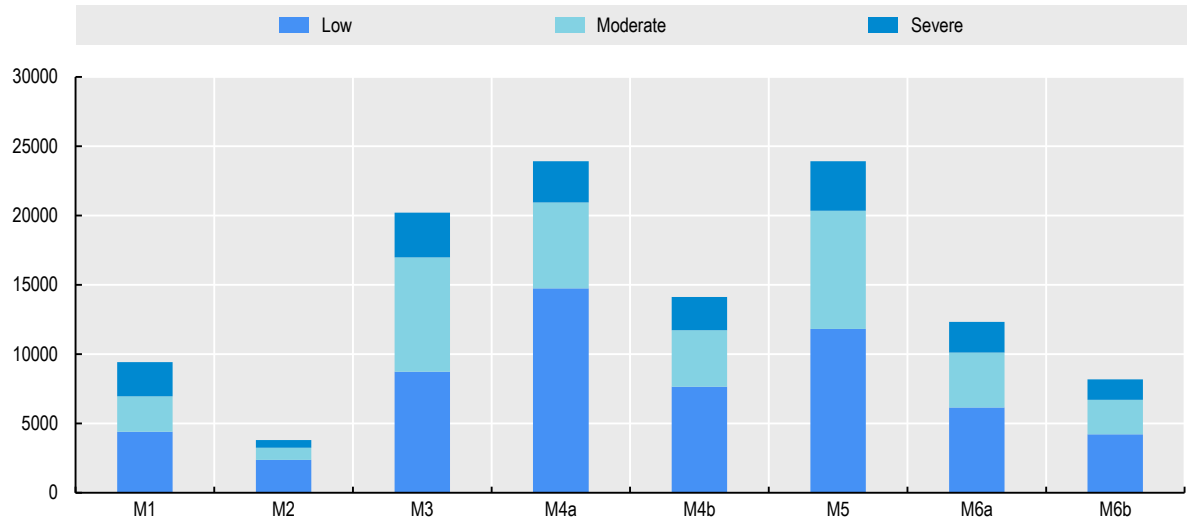
33. Based on the results for each matching approach in these initial tests, it is possible to stratify by country, so that all ten tests can be re-run for each Member State in the EU to further differentiate between matching approaches that pass all ten tests.

Performance of matching approaches against tests of structure

34. As shown in Figure 2.1, in all the methodologies, among people aged 65 years or older, there is a lower number of respondents in each category as the severity of needs rises. While strictly all the methodologies meet the requirements of *test 1*, there are important differences in the total number of respondents presenting any need and in the distribution across severity levels.

35. The matching approaches produce very different total numbers of older respondents of SHARE Wave 7 and TILDA Wave 3 with LTC needs: 23 913 using *matching methods 4a and 5*, 20 202 using *matching method 3*, 14 123 using *matching method 4b*, 12 315 using *matching method 6a*, 9 429 using *matching method 1*, 8 170 using *matching method 6b* and 3 795 using *matching method 2*. On average, across the eight methodologies, around 52.4% of respondents considered to have LTC needs are in the low needs category, 30.5% have moderate needs, and approximately 17.1% have severe needs. Different matching methods do produce distinct proportions. For example, *matching method 1* results in a similar number of respondents with moderate and severe needs, accounting for 27% and 26%, respectively, of the total subsample of people with any level of needs. Similarly, *matching method 3* results in a proportion of respondents assigned to low needs (43%) that does not differ greatly from the proportion of respondents assigned to moderate needs (41%). Notably, in almost all methodologies with the exception of *matching method 2* ─ the methodology that results in the lowest prevalence of LTC needs ─ the number of people categorised as having severe needs is remarkably similar, with an average of 2 620 individuals among the five remaining methodologies.

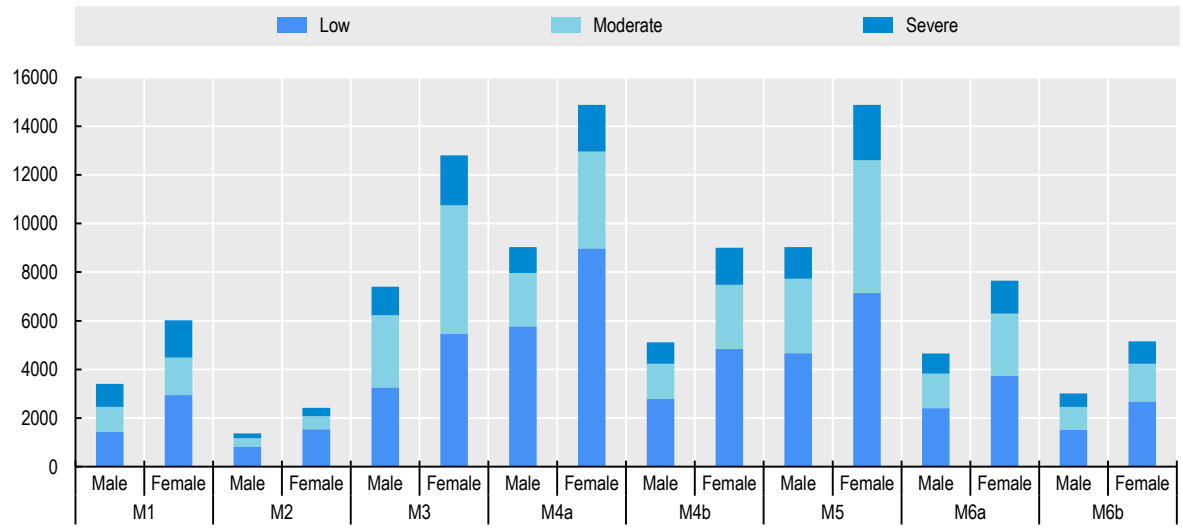
Figure 2.1. Number of survey respondents by level of needs among people aged 65 or older



Note: Numbers are unweighted as they relate to respondents, not populations.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

36. *Test 2* aims to reinforce the logic illustrated in Figure 2.1. It is reasonable to expect that for people 65 years or older, the number of survey respondents in a category would be lower for higher degrees of severity, independent of their gender. Figure 2.2 confirms that the previous pattern is reproduced for women and men in *all matching methodologies*. In addition, although this figure only shows unweighted frequencies of respondents from SHARE and TILDA, it is clear that the number of women reporting needs is higher for each level of needs.

Figure 2.2. Number of survey respondents aged 65 years and older by level of needs and sex



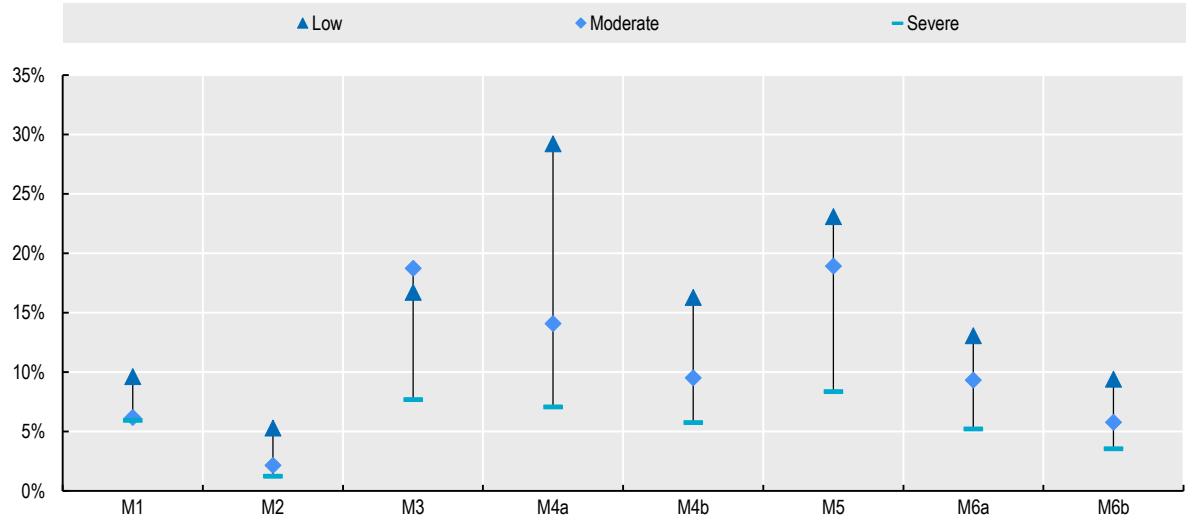
Note: Numbers are unweighted as they relate to respondents, not populations.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

37. When using survey weights to calculate the share of the older population by level of needs, the average share of people reporting any needs varies between methodologies. For example, across all EU

Member States, *matching methods 4a and 5* result in a share of 50.4% of the population having LTC needs (low, moderate or severe needs). Similarly, *matching method 3* gives an average share of people with any need of almost 43.1%. On the other hand, *matching methods 1, 2* and 6b result in lower shares of the population having any kind of need, of 21.7%, 8.7% and 18.8% respectively. *Matching method 4b and 6a* are somewhat in the middle, producing total shares of 31.6% and 27.6%, respectively.

38. Concerning *test 3*, Figure 2.3 confirms the expected pattern (monotonic decrease) of frequencies for low, moderate and severe needs. Seven of the eight matching methodologies analysed fulfil the requirements of *test 3*. However, *matching method 3* does not fulfil the requirements of *test 3*. *Matching method 3* allocates a higher share of the population into moderate needs compared to low needs.

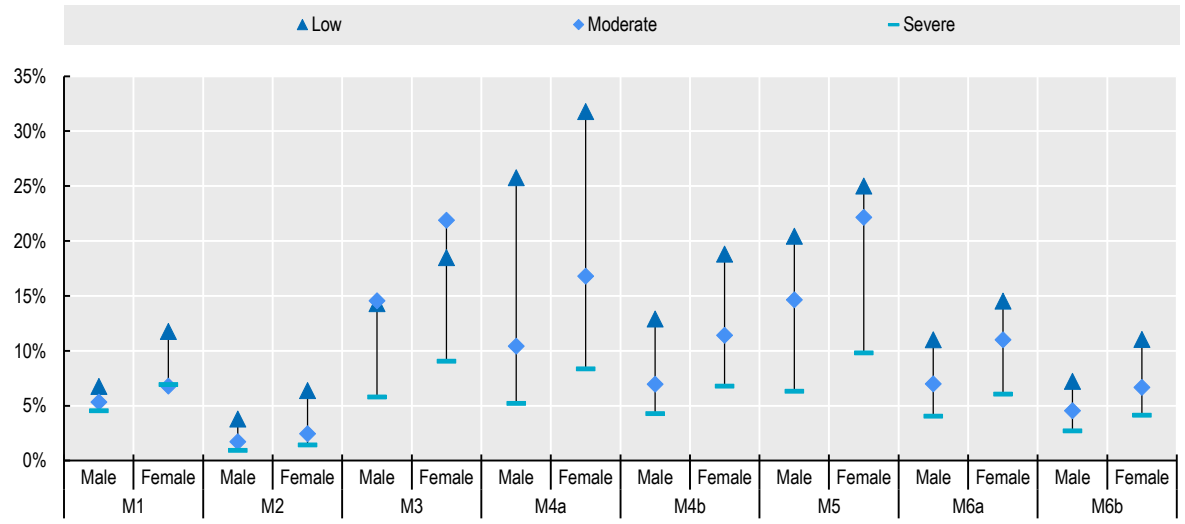
Figure 2.3. Estimated average shares of older population by level of needs



Note: Estimates are unweighted averages of the shares in each country, which in turn are computed using weights, except for the Netherlands where equal weights are used due to lack of official SHARE weights.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

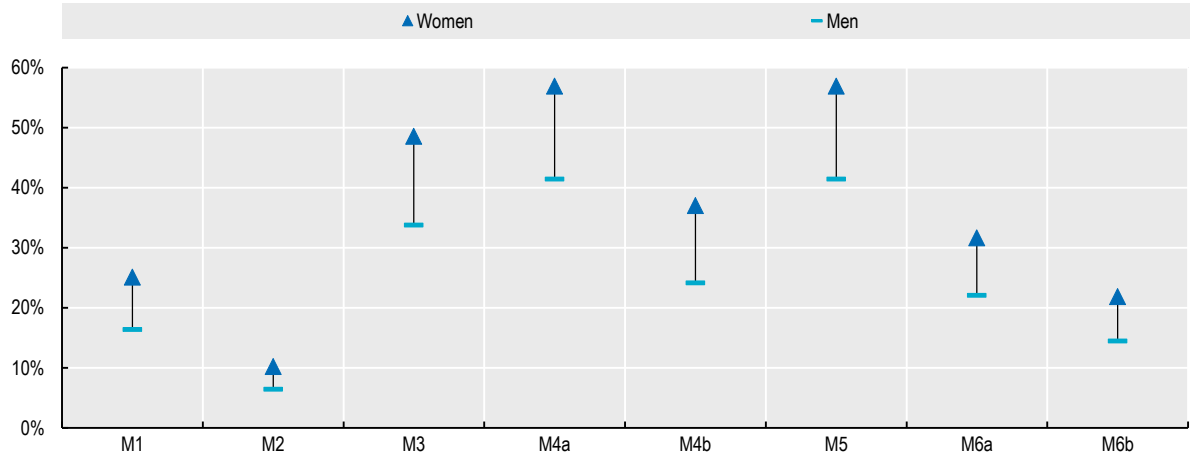
39. As shown in Figure 2.4, for every level of need, particularly low needs, there is a higher proportion of women with LTC needs than there is men, in all the matching approaches analysed (in line with what was discussed in the previous section). Consequently, the average share of the population with any needs is larger among women for the countries analysed. The observed differences in the level of needs between women and men are consistent with a vast literature on morbidity and gender inequalities, where the pattern has been described as "women get sicker, but men die quicker" (Bohácek, Bueren, Crespo, Mira, & Pijoan-Mas, 2018). In summary, all the matching methodologies satisfy the requirements of *tests 5 through 8*. As for *test 4*, Figure 2.5 shows that *matching method 1 does* not fulfil the criteria for women and matching method 3 for both, men and women.

Figure 2.4. Estimated average shares of older population by level of needs and sex



Note: Estimates are unweighted averages of the shares in each country, which in turn are computed using weights, except for the Netherlands where equal weights are used due to lack of official SHARE weights.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

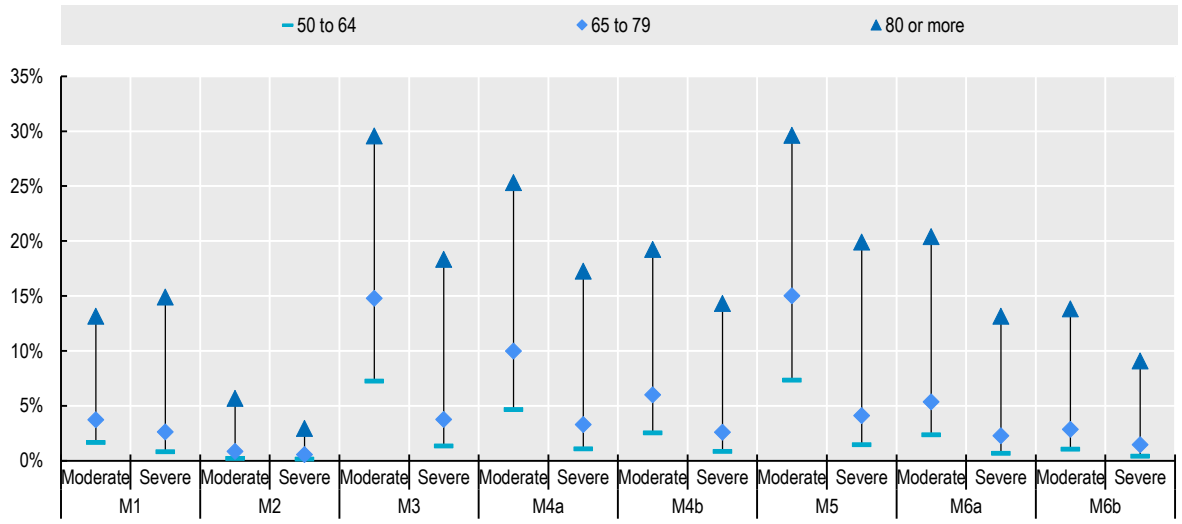
Figure 2.5. Estimated average shares of older population with at least low needs, by sex



Note: Estimates are unweighted averages of the shares in each country, which in turn are computed using weights, except for the Netherlands where equal weights are used due to lack of official SHARE weights.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

40. Finally, *tests 9 and 10* seek to capture the correlation between age and transitions between degrees of LTC needs and dependency. Overall, Figure 2.6 shows that the eight methodologies follow the age and level of needs structure for moderate and severe needs, to different degrees.

Figure 2.6. Estimated average shares of older population by level of needs and age group



Note: Estimates are unweighted averages of the shares in each country, which in turn are computed using weights, except for the Netherlands where equal weights are used due to lack of official SHARE weights.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

41. The results of this first set of tests of knowledge and structure are sufficient to exclude two matching methodologies: *matching methods 1 and 3*. As shown in Table 2.3, these two matching approaches failed at least one of the tests of structure, namely, *test 3 and 4* (i.e. that the prevalence of low needs should be higher than the prevalence of moderate needs, which in turn should be higher than the prevalence of severe needs, for the overall population and for men and women aged 65 and older separately, pooled for all EU Member States).

Table 2.3. Results of validation based on existing knowledge of structure

First stage of the validation framework to select a matching methodology

	Tests of structure									
Matching methodology	1	2	3	4	5	6	7	8	9	10
Matching method 1	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓
Matching method 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Matching method 3	✓	✓	✗	✗	✓	✓	✓	✓	✓	✓
Matching method 4a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Matching method 4b	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Matching method 5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Matching method 6a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Matching method 6b	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note: ✗- did not meet requirements of test; ✓ - met the requirements of test. Conclusion on tests based on round numbers without decimals.
Source: OECD analysis of SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

42. *Matching methods 1, 2, 4a, 4b, 5, 6a and 6b* fulfil the requirements of the ten tests of structure and knowledge. As such, it is necessary to add another level of testing. This is done by running the exact same tests as before but at a country level. In other words, taking for example *test 1*, the number of people with low needs should be larger than the number of people with moderate needs, which in turn should be larger than the number of people with severe needs, across the entire population aged 65 and older, *for each of*

the EU Member States. This stratification by country is added to all ten tests. The number of countries that fulfil the requirements of each test for each matching method is presented in Table 2.4.

Table 2.4. Results of validation based on existing knowledge of structure, at country level

First stage of the validation framework to select a matching methodology, at country level

Matching method	Number of countries that fulfil requirements of test										Sum	%
	Test 1	*Test 2*	*Test 3*	*Test 4*	*Test 5*	*Test 6*	*Test 7*	*Test 8*	*Test 9*	*Test 10*		
M1	19	14	14	8	26	22	26	27	26	27	209	77%
M2	25	18	24	20	27	20	23	27	26	25	235	87%
M3	13	10	11	9	26	27	26	27	27	26	202	75%
M4a	27	27	27	27	26	27	26	27	27	26	267	99%
M4b	25	24	27	23	27	27	25	27	27	26	258	96%
M5	24	18	22	17	26	27	27	27	27	27	242	90%
M6a	26	23	27	20	26	27	25	27	26	27	254	94%
M6b	24	22	26	19	26	27	25	27	25	26	247	91%

Note: % is a measure of how close each method got to a perfect score (100%) across all tests and countries.
Source: OECD analysis of SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

43. The best performing methods, scoring above 90%, are *matching methods 4a, 4b, 6a and 6b* as illustrated in Table 2.4 by the percentages. Out of a perfect score of 270 (27 countries times 10 tests), *matching methods 4a, 4b, 6a and 6b* fulfil the requirements for 99%, 96%, 94% and 91% of the country-test combinations, respectively. All of these matching methods are based on scores – the number of difficulties that older people report. The main difference between the best performing matching methods is the threshold for low needs, with *matching methods 4a and 6a* assuming that having just one limitation is enough to be considered low needs, while *matching methods 4b and 6b* assume a minimum of two difficulties to be considered low needs. Moreover, *matching methods 6a and 6b* consider only difficulties with ADLs and IADLs. To select between these four methods, it is informative to explore how well estimates from either method align with data from other surveys.

2.3.2. Alignment with data from other surveys

44. To build further confidence in the validity of matching methods estimates produced using those matching approaches are compared to figures from surveys other than SHARE and TILDA. The intuition behind this exercise is to capture as much of the information that is currently available, given limited preferences over the use of different sources of data. As previously mentioned, besides SHARE and TILDA, EHIS also captures information on difficulties with ADLs and IADLs. It is thus possible to compare estimates of the prevalence of these difficulties in EHIS to the prevalence of typical cases using the matching methods described above. Given no other basis for choosing one source over another, or one method over another, preference should go to the method that better aligns with information from both SHARE/TILDA and EHIS, while also meeting the requirements of tests of structure already discussed.

45. Table 2.5 shows how well *matching methods 4a, 4b*, *6a and 6b* align with the shares of people aged 65 and over reporting either at least one or at least two difficulties in ADLs and IADLs combined in EHIS. The best match for the share of people with at least one difficulty is achieved with *matching methods 4a*, with 18 countries out of 25, while the best match for the shares with at least two difficulties is *matching method 4b*, with 11 out of 25 countries).

Table 2.5. Alignment between prevalence of needs (low, moderate and severe) using matching approaches in SHARE and TILDA, and prevalence of difficulties with ADLs and IADLs from EHIS

Country	Prevalence of any LTC needs (at least low needs) from SHARE				Share with at least one difficulty in ADLs/IADLs from EHIS		Share with of at least two difficulties in ADLs/IADLs from EHIS	
	M4a	M4b	M6a	M6b	EHIS 1+ difficulties	Best match	EHIS 2+ difficulties	Best match
Austria	50%	32%	30%	19%	32%	M4b	18%	M6b
Belgium	55%	34%	36%	25%	50%	M4a	34%	M4b
Bulgaria	56%	38%	35%	26%	63%	M4a	47%	M4a
Croatia	68%	45%	33%	23%	55%	M4b	36%	M6a
Cyprus	45%	33%	25%	17%	69%	M4a	32%	M4b
Czech Republic	49%	26%	27%	17%	36%	M6a	45%	M4a
Denmark	38%	22%	23%	14%	32%	M4a	20%	M4b
Estonia	58%	38%	32%	24%	58%	M4a	28%	M6b
Finland	36%	20%	20%	11%	48%	M4a	24%	M6a
France	51%	30%	29%	18%	41%	M4a	30%	M4b
Greece	59%	35%	26%	17%	45%	M4b	44%	M4b
Hungary	57%	41%	37%	23%	50%	M4a	43%	M4b
Italy	52%	36%	29%	22%	60%	M4a	35%	M4b
Latvia	51%	29%	30%	20%	49%	M4a	41%	M4a
Lithuania	57%	37%	32%	23%	67%	M4a	48%	M4a
Luxembourg	49%	29%	23%	17%	38%	M4b	23%	M6a
Malta	48%	29%	23%	15%	67%	M4a	13%	M6b
Netherlands*	35%	16%	18%	9%	29%	M4a	39%	M4a
Poland	60%	40%	33%	25%	58%	M4a	45%	M4b
Portugal	37%	28%	20%	12%	60%	M4a	33%	M4a
Romania	60%	45%	40%	29%	52%	M4b	45%	M4b
Slovak Republic	48%	30%	29%	19%	57%	M4a	45%	M4a
Slovenia	51%	34%	28%	20%	39%	M4b	33%	M4b
Spain	50%	35%	29%	22%	51%	M4a	32%	M4b
Sweden	41%	19%	20%	12%	67%	M4a	23%	M6a

Note: Germany and Ireland not in EHIS Wave 2 dataset. * Shares for the Netherlands are unweighted.
Source: SHARE survey (Wave 7, 2017), TILDA survey for Ireland (Wave 3, 2015) and EHIS (Wave 2, 2014)

46. Beyond identifying the matching approach that comes closest to aligning with EHIS, it is important to quantify how close the alignment is. The root mean squared error (RMSE) is a measure of how close the values predicted by a model are to the observed values. Here, it is used to determine how accurate each matching method is when compared to shares of people reporting difficulties derived from EHIS. The RMSEs for *matching method 4a and 4b* are 12.6% and 22.7%, respectively, when focusing on at least one difficulty reported from EHIS and 18.8% and 9.6% when focusing on 2+ difficulties reported in EHIS. Comparatively, the RMSEs for *matching method 6a and 6b* are 25.7% and 33.0% respectively, when focusing on at least one difficulty reported from EHIS, and 10.3% and 17.3% when focusing on 2+ difficulties reported in EHIS.

47. Based on the tests conducted so far, the main conclusions are:

- *Matching methods 1 and 3* do not meet the requirements of all ten tests of structure.
- *Matching methods 4a, 4b, 6a and 6b* are the matching approaches that best fulfil the requirements in the country-test combinations (99%, 96%, 94% and 91% of 270 country-test pairs, respectively).
- *Matching method 4b* has the lowest RMSE (9.6%), providing the best alignment, when matched with the share of people over 65 reporting at least two difficulties with ADLs and IADLs in EHIS.

2.3.3. Alignment with data from administrative sources and other reports

48. Findings from the tests of structure and the alignment with EHIS indicate that *matching method 4b* performs very well, and that *matching methods 4a, 6a and 6b* also perform well. The final step is to compare the total numbers of older people estimated to have LTC needs to official statistics from national administrative bodies. A comparison of the number of LTC recipients reported in *OECD Health Statistics 2020* and the estimated number of people with LTC by matching method is shown in Table 2.6. A comparison (not shown here) was also undertaken with the number of dependents estimated in the 2018 and 2021 Ageing Reports (ECFIN/AWG, 2018; DG ECFIN & AWG, 2021), aligning well with the findings reported below.

Table 2.6. Comparison of the number of long-term care recipients in OECD Health Statistics and the estimated numbers with any care needs by matching method in SHARE and TILDA

Country	Long-term care recipients in OECD Health Statistics 2020 (aged 65+)			Estimated number of people aged 65+ with any LTC needs by matching method			
	In institutions (other than hospitals)	At home	Total	M6b	M6a	M4b	M4a
Belgium	175,960	..	175,960	520,028	765,947	720,758	1,149,071
Czech Republic	53,367	194,698	248,065	332,988	535,447	515,036	969,803
Denmark	40,393	121,671	162,064	151,515	252,289	243,555	417,440
Estonia	12,756	14,040	26,796	61,933	81,710	97,513	147,801
Finland	52,052	73,241	125,293	132,290	229,286	225,269	414,443
France	541,080	768,840	1,309,920	2,315,776	3,685,459	3,868,377	6,632,898
Germany	724,118	2,014,278	2,738,396	3,214,764	4,650,513	5,362,237	9,223,354
Hungary	54,915	163,582	218,497	419,529	670,242	750,990	1,048,475
Ireland	21,874	..	21,874	54,650	90,049	144,347	305,372
Italy	..	849,199	849,199	3,032,151	3,962,113	4,821,152	7,015,869
Latvia	1,731	..	1,731	75,802	114,116	110,475	195,638
Lithuania	57,694	156,415	214,109	127,221	175,128	204,143	311,228
Luxembourg	4,461	5,986	10,447	14,004	19,394	24,763	41,073
Netherlands	133,600	252,310	385,910	290,667	571,135	503,568	1,104,025
Poland	53,571	1,764	55,335	1,545,163	2,072,357	2,485,175	3,754,202
Portugal	27,286	13,111	40,397	251,065	434,017	608,698	799,963
Slovak Republic	34,177	..	34,177	156,199	238,512	248,012	392,798
Slovenia	18,772	26,217	44,989	79,661	107,798	133,684	200,685
Spain	179,470	687,858	867,328	1,962,358	2,543,220	3,055,274	4,470,341
Sweden	85,738	235,687	321,425	238,883	392,989	376,649	812,099

Note: Totals are computed using weights, except for the Netherlands where equal weights (population divided by number of respondents) are used due to lack of official SHARE weights. Data from OECD Health Statistics refer to 2017 or nearest year.
Source: OECD analysis of OECD Health Statistics 2020 (accessible from http://www.oecd.org/els/health-systems/health-data.htm), SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

49. A comparison of the estimates produced using *matching methods 4a, 4b, 6a and 6b* with administrative data on the number of recipients of LTC services suggests that *matching method 4a* produces estimates that are unreasonably high, especially when looking specifically at EU Member States with high-quality data and low barriers to access, like Germany and the Netherlands. Overall, estimates from matching methods produce numbers of older people with LTC needs that are higher than the number of recipients reported in *OECD Health Statistics*. This is not problematic per se, as some older people may choose not to apply for public LTC benefits and schemes, or may not know how to. Some older people will prefer to be cared for by relatives and friends, in which case they will report difficulties in SHARE and

TILDA but will not be counted as recipients of LTC in administrative databases. As such, it could be that estimates of LTC needs based on surveys exceed numbers of recipients.

50. While rare, there might be cases in which estimates of LTC needs using *matching methods 4a, 4b, 6a and 6b* lead to numbers that are lower than the number of recipients of LTC services in administrative databases. This could be because older people with needs that fall below the low needs defined in this report may be eligible for public LTC benefits and schemes. It is likely that these gaps may also be due to sample sizes, and that if SHARE and TILDA were to survey the entire old age population, numbers might be more closely aligned.

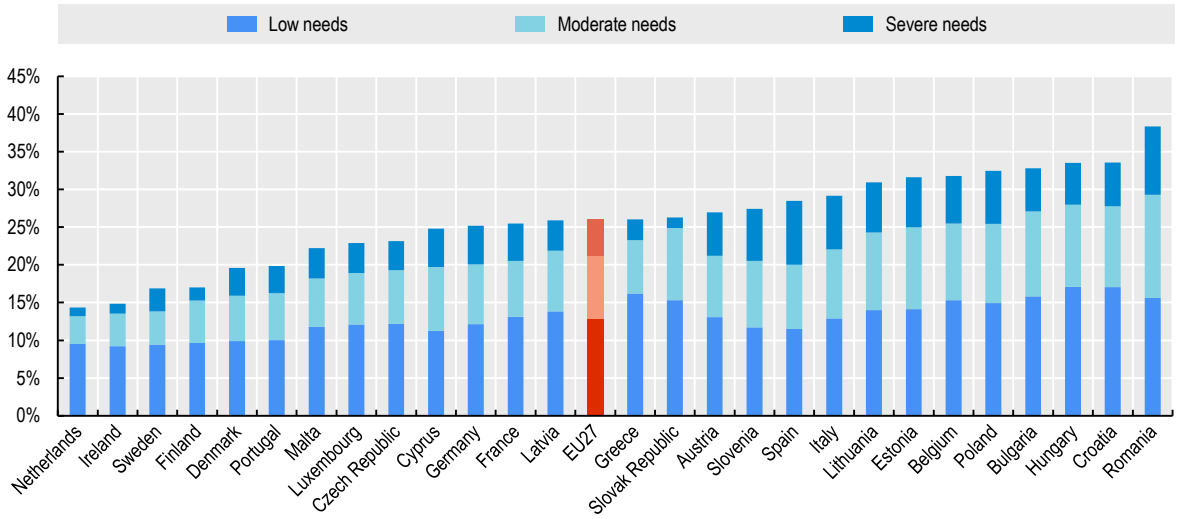
51. Based on this final assessment of the face validity of estimates produced by *matching methods 4a, 4b, 6a and 6b*, it is concluded that *matching method 4a* does not lead to total numbers that are reasonable and thus should be excluded. While more tests can be envisaged, it is clear that *matching methods 4b, 6a and 6b* are the best performers, based on three sets of tests: 1) alignment with what is known of the structure of the system, 2) alignment with other surveys, and 3) alignment with administrative data on number of LTC recipients. The remainder of this report presents the average results of *matching methods 4b, 6a* and *6b* unless stated otherwise.

2.4. Prevalence and characteristics of older people with long-term care needs

2.4.1. An estimated one in four older Europeans have long-term care needs

52. On average across EU Member States, the estimated share of older people with low care needs is 12.9%, 8.2% for moderate needs and 4.8% for severe needs (weighted EU averages are 12.9%, 8.4% and 5.7% for low, moderate and severe needs), as shown in Figure 2.7. Hungary and Croatia are the countries with the highest estimated prevalence of low needs among older people (around 17% each), while Ireland has the lowest estimated prevalence of low needs (9.2%). The share of the older population projected to have severe needs is highest in Romania (9.1%) and lowest in the Netherlands (1.2%).

Figure 2.7. Estimated share of older populations with low, moderate and severe needs

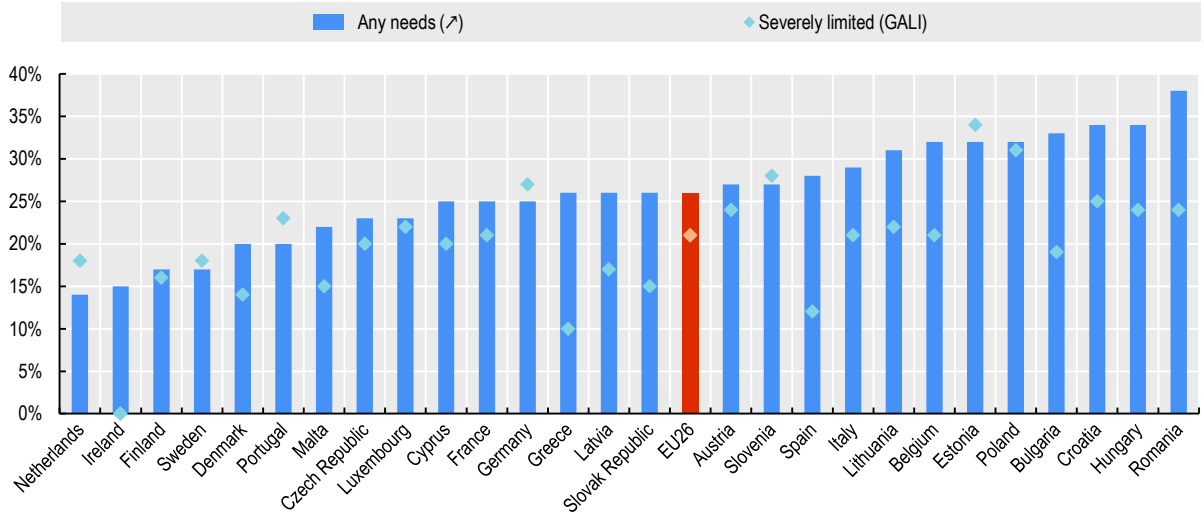


Note: Estimates are averages of three matching methods (4b, 6a and 6b) and are computed using adjusted survey weights (see Annex B). The EU average is the unweighted average of the shares in each country.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

53. Unsurprisingly, the numbers of older people in need are higher in more populous countries (see Table 2.7). In comparison, the share of old people reporting difficulties with ADLs or IADLs in EHIS is relatively high. Across 25 EU Member States, 51% of older people report at least one difficulty in ADLs/IADLs and 34% at least two. The combined shares of older people estimated to have low, moderate or severe needs align well with older people reporting "severe limitations" in the Global Activity Limitation Indicator (GALI) in SHARE (see Figure 2.8). On average across the EU26, 5% fewer older people report being "severely limited" in the GALI (average is 21%) than are estimated to have low, moderate or severe needs (average is 26%). The biggest differences are in Spain and Greece, where 16% people being "severely limited" in the GALI than are estimated to have low, moderate or severe needs.

Figure 2.8. There is good alignment between combined shares of older people reporting low, moderate and severe needs, and shares of older people reporting "severe limitations" in GALI

GALI stands for the Global Activity Limitation Indicator



Note: Estimates are averages of three matching methods (4b, 6a and 6b) and are computed using adjusted survey weights (see Annex B). The EU average is the unweighted average of the shares in each country.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

Table 2.7. Total numbers and shares of older populations estimated to have low, moderate and severe needs, using data for 2017

Country	Population aged 65+	Low needs		Moderate needs		Severe needs		Any needs	
		Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number
Austria	1,627,550	8.9% - 16.2%	144,048 - 263,265	5.7% - 9.6%	93,057 - 156,015	4.7% - 6.6%	76,794 - 106,886	19.3% - 31.9%	313,900 - 519,145
Belgium	2,104,404	11.8% - 17.7%	248,710 - 372,467	8.2% - 11.6%	172,092 - 243,800	4.7% - 7.1%	99,226 - 149,681	24.7% - 36.4%	520,028 - 765,947
Bulgaria	1,464,721	14.2% - 18.3%	208,006 - 267,396	7.3% - 13.6%	106,977 - 199,809	4.3% - 6.9%	63,591 - 100,420	25.8% - 37.8%	378,574 - 554,202
Croatia	809,451	10.6% - 24.8%	86,021 - 200,410	8.4% - 12.9%	67,934 - 104,330	3.9% - 6.9%	31,494 - 56,013	22.9% - 44.6%	185,449 - 360,753
Cyprus	134,085	7.5% - 14.8%	10,058 - 19,883	5.2% - 12.1%	6,979 - 16,173	4% - 5.7%	5,303 - 7,635	16.7% - 32.6%	22,340 - 43,690
Czech Republic	1,991,754	8.6% - 14.5%	170,507 - 288,726	5.4% - 8.1%	106,694 - 161,031	2.8% - 4.4%	55,787 - 88,259	16.7% - 26.9%	332,988 - 535,447
Denmark	1,101,111	6.5% - 12.4%	71,206 - 136,405	4.5% - 6.8%	49,779 - 75,039	2.8% - 4.4%	30,530 - 48,815	13.8% - 22.9%	151,515 - 252,289
Estonia	254,255	11.3% - 18%	28,784 - 45,828	8.4% - 12.2%	21,399 - 30,912	4.6% - 8.2%	11,750 - 20,774	24.4% - 38.4%	61,933 - 97,513
Finland	1,151,217	8% - 11.9%	92,172 - 137,536	2.5% - 8.4%	28,888 - 96,676	1% - 2.1%	11,229 - 24,691	11.5% - 19.9%	132,290 - 229,286
France	12,915,178	9.4% - 15.2%	1,211,595 - 1,963,015	4.7% - 9.2%	602,187 - 1,188,324	3.9% - 5.6%	503,852 - 720,141	17.9% - 30%	2,317,634 - 3,871,481
Germany	17,523,284	8.2% - 16.3%	1,439,566 - 2,857,818	6.1% - 9.1%	1,074,926 - 1,593,727	4% - 5.7%	700,274 - 1,006,867	18.3% - 30.6%	3,214,764 - 5,362,237
Greece	2,312,256	11.9% - 23.1%	275,028 - 534,237	3.6% - 9.4%	82,321 - 217,713	2% - 3.3%	46,763 - 76,014	17.5% - 34.7%	404,112 - 802,158
Hungary	1,830,350	11.3% - 21.9%	206,981 - 401,323	9.3% - 11.7%	169,414 - 214,316	2.4% - 7.4%	43,133 - 135,351	22.9% - 41%	419,529 - 750,990
Ireland	648,997	5% - 14.9%	32,236 - 96,867	2.8% - 5.3%	18,486 - 34,425	0.6% - 2%	3,927 - 13,055	8.4% - 22.2%	54,650 - 144,347
Italy	13,499,686	10.1% - 17.5%	1,360,184 - 2,357,902	6.8% - 10.5%	917,671 - 1,418,137	5.6% - 8.1%	754,296 - 1,099,309	22.5% - 35.7%	3,032,151 - 4,821,152
Latvia	386,507	10.9% - 15.5%	42,145 - 59,908	5.9% - 10.1%	22,829 - 39,136	2.8% - 5%	10,828 - 19,409	19.6% - 29.5%	75,802 - 114,116
Lithuania	545,882	10.3% - 18.7%	56,046 - 102,300	8.1% - 12.1%	44,442 - 66,160	4.9% - 8.1%	26,733 - 44,263	23.3% - 37.4%	127,221 - 204,143
Luxembourg	84,680	8.6% - 17.3%	7,276 - 14,627	4.5% - 8.5%	3,828 - 7,216	3.4% - 4.6%	2,900 - 3,916	16.5% - 29.2%	14,004 - 24,763
Malta	87,984	8.1% - 16.5%	7,162 - 14,499	3.6% - 8.5%	3,195 - 7,514	3.4% - 4.8%	3,022 - 4,205	15.2% - 28.9%	13,380 - 25,439
Netherlands	3,169,290	6.4% - 12.1%	202,702 - 383,731	2% - 4.6%	62,468 - 146,608	0.8% - 1.4%	25,497 - 44,620	9.2% - 18%	290,667 - 571,135
Poland	6,265,846	11.6% - 19.6%	727,044 - 1,225,079	8.5% - 11.7%	530,869 - 730,956	4.6% - 8.7%	287,251 - 547,559	24.7% - 39.7%	1,545,163 - 2,485,175
Portugal	2,173,363	5.4% - 15.2%	116,669 - 331,270	3.4% - 8%	72,909 - 172,976	2.8% - 4.8%	61,487 - 104,451	11.6% - 28%	251,065 - 608,698
Romania	3,486,791	12.9% - 17%	449,467 - 593,978	9.7% - 16.8%	339,812 - 586,575	6.8% - 11.3%	235,987 - 393,166	29.4% - 45.1%	1,025,266 - 1,573,718
Slovak Republic	815,885	13.5% - 17.5%	110,082 - 142,483	4.9% - 13.1%	39,965 - 107,061	0.8% - 2.2%	6,153 - 17,961	19.1% - 30.4%	156,199 - 248,012
Slovenia	390,547	9% - 14.8%	35,049 - 57,638	6.4% - 11.4%	25,010 - 44,628	5% - 8%	19,602 - 31,418	20.4% - 34.2%	79,661 - 133,684
Spain	8,852,715	8.1% - 15.8%	713,976 - 1,399,535	7% - 9.4%	617,570 - 832,942	7.1% - 9.3%	630,813 - 822,796	22.2% - 34.5%	1,962,358 - 3,055,274
Sweden	1,991,424	6.4% - 11%	127,493 - 218,441	3.5% - 5.2%	69,787 - 103,368	2.1% - 3.6%	41,603 - 71,233	12% - 19.7%	238,883 - 392,989
EU27	87,619,214	9.4% - 16.3%	8,252,144 - 14,270,340	5.8% - 9.5%	5,074,949 - 8,344,153	3.5% - 5.8%	3,108,616 - 5,039,726	18.8% - 31.6%	16,435,709 - 27,654,219

Note: Intervals are based on three matching methodologies (4b, 6a and 6b) and percentages are computed using adjusted survey weights (see Annex B). The EU average percentages are the unweighted averages of the percentages in each country. The totals are calculated by multiplying the percentages by the population aged 65 plus. Missing observations are excluded.
Source: Eurostat, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

54. The estimated shares in Figure 2.7, combined with population numbers, would indicate that between 8 and 14 million Europeans aged 65 years and over have low needs, between 5 and 8 million have moderate needs and 3 to 5 million have severe needs. Overall, between 16 and 28 million older people in the EU are estimated to have at least low needs.

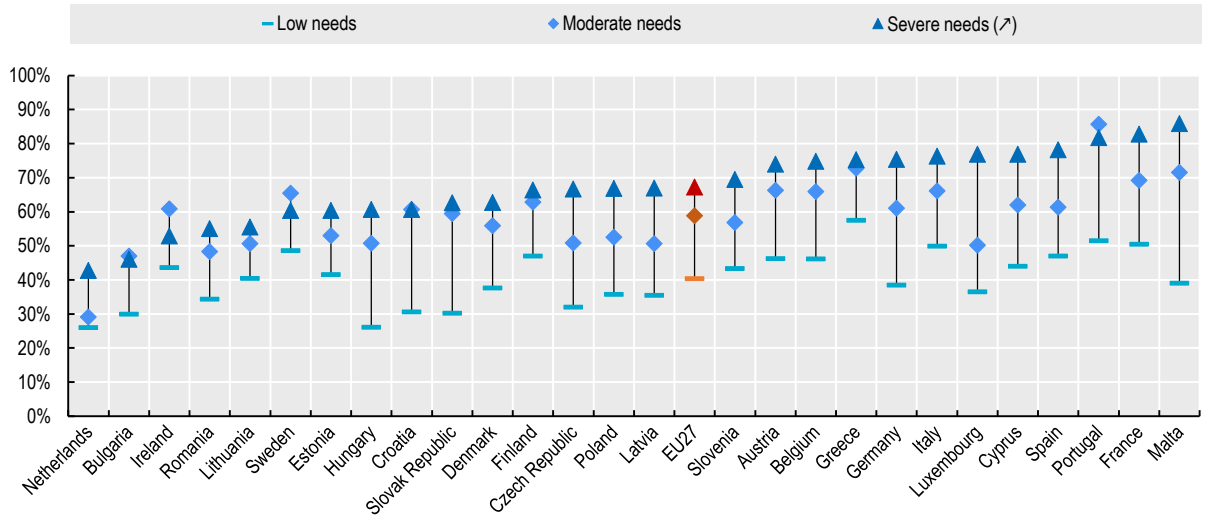
55. The Netherlands have an estimated low prevalence of needs compared to other countries: the size of the population over 65 is similar to Romania yet there is a 24 percentage point difference in the share of older people estimated to have low, moderate or severe needs between the two countries (14% in the Netherlands, and 38% in Romania). This difference could be due to cultural factors in the self-assessment of LTC needs, it could be due to support structures in place, or it could be due to the methodology used (although it is worth pointing out that the estimates presented in this section are from methodologies based on number of difficulties, hence differences in estimated prevalence of older people with LTC needs reflect differences in prevalence of self-reported difficulties).

56. There are also some differences in the numbers of people with specific levels of LTC needs. For instance, the size of the population over 65 is similar in the Slovak Republic and in Croatia (just over 814 000), yet there is over a seven percentage point difference in the estimated share of older people reporting low, moderate or severe needs between the two countries (26% in the Slovak Republic and 34% in Croatia). The estimated percentage of older people with severe LTC needs is very different between the two countries (1.4% in the Slovak Republic and 5.8% in Croatia).

2.4.2. The majority of older people estimated to have long-term care needs are 80 years old or older, women, live in single households and earn lower incomes

57. As shown in Figure 2.9, an estimated 60% of people with low needs are aged 65-79 across the EU (weighted average is 57%). On the other hand, the majority of older people with moderate and severe needs are 80 years old or older, 59% and 67% respectively (weighted averages are 61% and 72% for moderate and severe needs).

Figure 2.9. Shares of people who are 80 years old or older among older people estimated to have long-term care needs

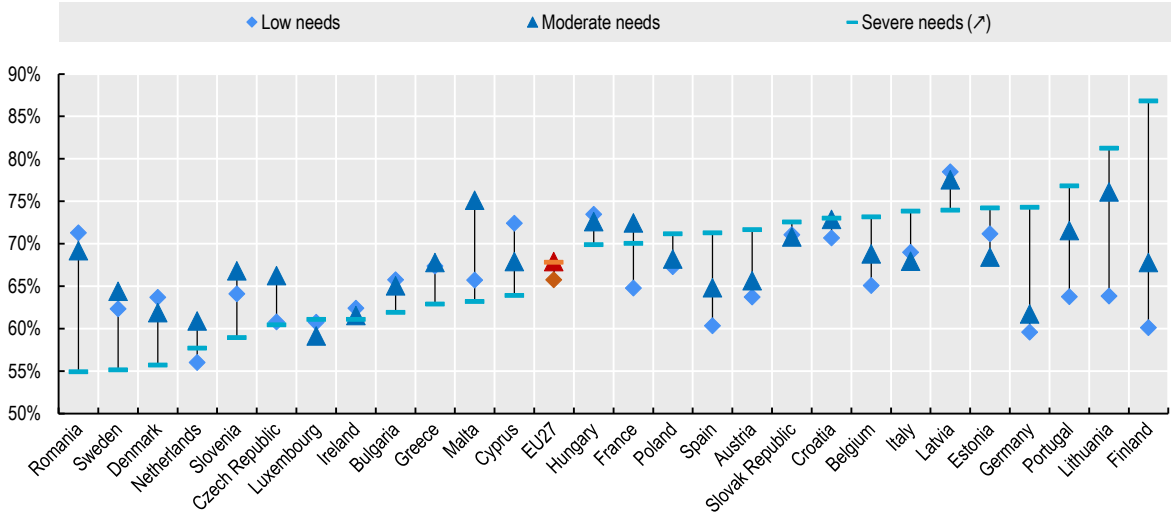


Note: Estimates are the averages of three matching methodologies (4b, 6a and 6b) and are computed using adjusted survey weights (see Annex B). The EU average is the unweighted average of the shares in each country.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

58. In Germany and 10 other EU Member States, more than 70% of people with severe needs are 80 years old or older. Only in Bulgaria, Ireland, Sweden, Croatia and Portugal, the share of people with moderate needs aged 80 years old or older is higher than the share of people with severe needs aged 80 years or older.

59. On average across EU Member States, 66% of the estimated population with low needs are women. The estimated shares rise to 68% each for moderate and severe needs (weighted averages are 64%, 67%, and 70% for low, moderate and severe needs respectively). As illustrated in Figure 2.10, there is no clear relationship across countries between the share of women among older people estimated to have LTC needs and the severity of needs. However, in all countries across all three levels of severity, women make up the majority of those with LTC needs, ranging from a low of 56% in the Netherlands for low needs, to a high of 87% in Finland for severe needs. In Latvia and 2 other EU Member States, more than 70% of older people with LTC needs – at any level of severity – are women.

Figure 2.10. Shares of women among older people estimated to have long-term care needs

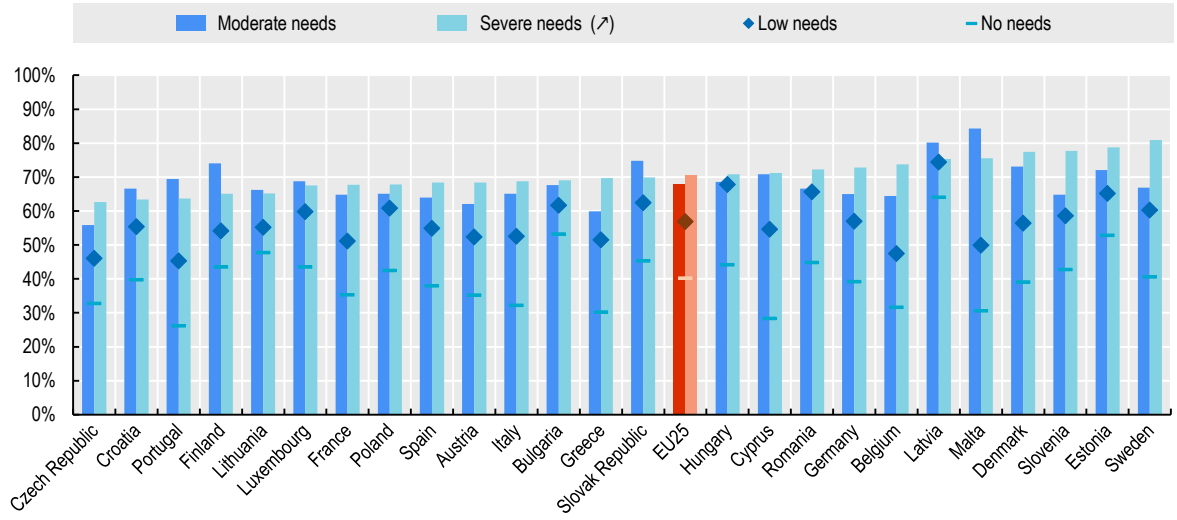


Note: Estimates are averages of three matching methods (4b, 6a and 6b) and are computed using adjusted survey weights (see Annex B). The EU average is the unweighted average of the shares in each country.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

60. Across all countries, older people estimated to have LTC needs (low, moderate or severe) are more likely to live in single households than older people without LTC needs, as seen in Figure 2.11 below. Across the EU25, on average, 40% of older people without LTC needs live in single households, compared to 57% of those with low needs, 68% of those with moderate needs, and 71% of those with severe needs (weigthed averages are 38% for people without LTC needs, 55% for low needs, 65% for moderate needs and 71% for people with severe need).

61. It is unsurprising that higher shares of older people who live alone have LTC needs, especially severe needs, as people with LTC needs are more likely to be older and perhaps widowed. What is noteworthy is that more than two in every three older individuals with severe needs, on average across the EU25, live alone and would thus not be able to find informal support in their own homes, having to either rely on formal care, or help from those outside their household (e.g. relatives, friends and neighbours).

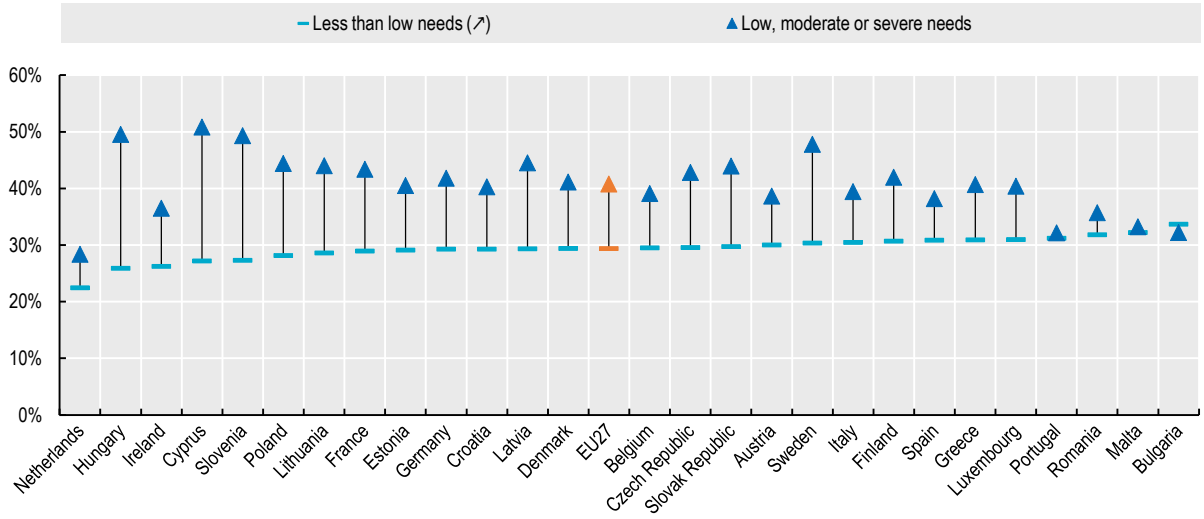
Figure 2.11. Share of older people with and without care needs who live in single households



Note: Estimates are averages of three matching methods (4b, 6a and 6b) and are computed using adjusted survey weights (see Annex B for more details). The EU average is the unweighted average of the shares in each country.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

62. Across the EU, on average across countries, around 29% of older people with less than low needs earn incomes in the bottom tercile, compared to close to 41% of older people earning in the bottom tercile among older people estimated to have low, moderate or severe needs (see Figure 2.12; weighted averages for the EU are the same). The income gradient between older people with less than low needs and older individuals with at least low needs is widest in Hungary, Cyprus and Slovenia, where almost half of older people estimated to have LTC needs earn incomes in the bottom tercile.

Figure 2.12. Shares of older people earning disposable incomes in the bottom tercile among older people, for different levels of estimated care needs



Note: Estimates are the averages of three matching methodologies (4b, 6a and 6b) and are computed using adjusted survey weights (see Annex B for more details). The EU average is the unweighted average of the shares in each country.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

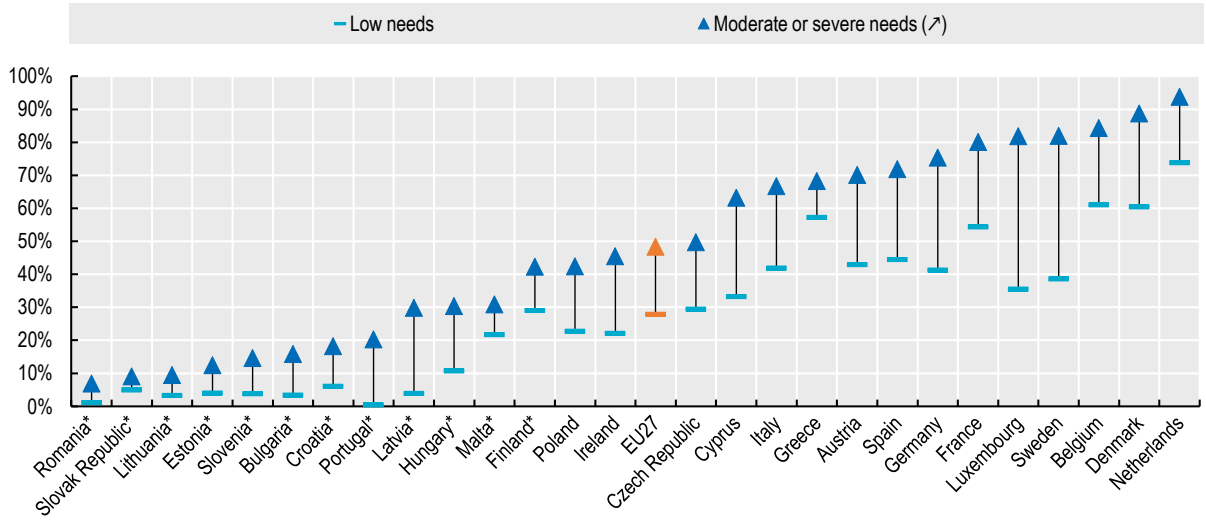
63. Income gradients across LTC needs are smallest in Portugal, Malta and Bulgaria. These numbers indicate that older people estimated to have LTC needs may also have lower incomes from which to pay the potentially large out-of-pocket costs of care. This will have consequences in terms of the affordability of LTC services for older individuals, but also on the projected total spending at government level, since the number of beneficiaries is likely to differ from what would be expected given the income distribution in the older population as a whole.

2.4.3. Older people with more severe long-term care needs more likely to report receiving both formal and informal care

64. Across the EU27, on average across countries, around 28% of older people estimated to have low needs report receiving either professional help with ADLs and IADLs or receiving informal care, compared to 48% of older people estimated to have moderate or severe needs (EU27 weighted averages are 38% and 63% respectively), as shown in Figure 2.13. There are striking differences across EU Member States in the shares of older people estimated to have LTC needs that report receiving help. Some of the differences are explained by the lack of data on recipients of informal care, especially among countries where the use of formal home care is less common, like Romania and Hungary (Spasova, 2018). About 8% of older Romanians estimated to have moderate or severe LTC needs report receiving formal care, while in Hungary, 11% of older individuals estimated to have low needs and 30% of older people with estimated moderate or severe needs report receiving formal home care. Differences across the EU27 remain for countries for which complete data is available. In Denmark, almost 90% of the older people with estimated moderate or severe needs report receiving either formal or informal care, while this share is about 50% in Italy.

Figure 2.13. Share self-reporting receipt of professional and/or informal help among older people estimated to have long-term care needs, for different severities of care needs

Self-reported receipt of professional help with ADLs and/or IADLs, or receipt of informal help



Note: Estimates are the averages of three matching methodologies (4b, 6a and 6b) and are computed using adjusted survey weights (see Annex B for more details). The EU average is the unweighted average of the shares in each country. Countries with asterisks (*) do not include informal help due to a lack of data for that wave.
Source: SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

3 Total costs, prospective public support for, and out-of-pocket costs of long-term care in old age

3.1. Older people could face high care costs if not for public social protection

65. The financial challenges faced by older people with LTC needs who require professional care services can be quantified by looking at the total cost that an individual with defined LTC needs would face if they had to purchase professional care services to meet their needs, *in the absence of any public social protection*. Henceforth this concept is referred to simply as *total costs of LTC*. Looking at the cost relative to a person's income gives an idea of how difficult it is for that person to manage the financial risk associated with developing LTC needs. The total costs of care in this report have been collected directly from representatives of countries and subnational areas using a questionnaire. Costs consist of the monetary amount corresponding to all care, as defined previously, including the value of any in-kind services provided to help with limitations in terms of ADLs, IADLs and social needs.

3.1.1. Total costs of formal long-term care are high, especially for care received at home

66. The total costs of receiving LTC can be very high and absorb a significant amount of an older person's disposable income, *in the absence of public support*. For an individual with severe needs, totalling 41.25 hours of care per week, the total costs of LTC represent one to six times the median disposable income of individuals of retirement age or older (see Figure 3.1), depending on the country or subnational area. Total costs are larger in Sweden, the region of South Tyrol in Italy, and the Czech Republic, compared to the Slovak Republic, Hungary, and Germany. Differences in the costs of living across regions might also explain why some costs are high with respect to median national income, as is the case for South Tyrol in Italy.

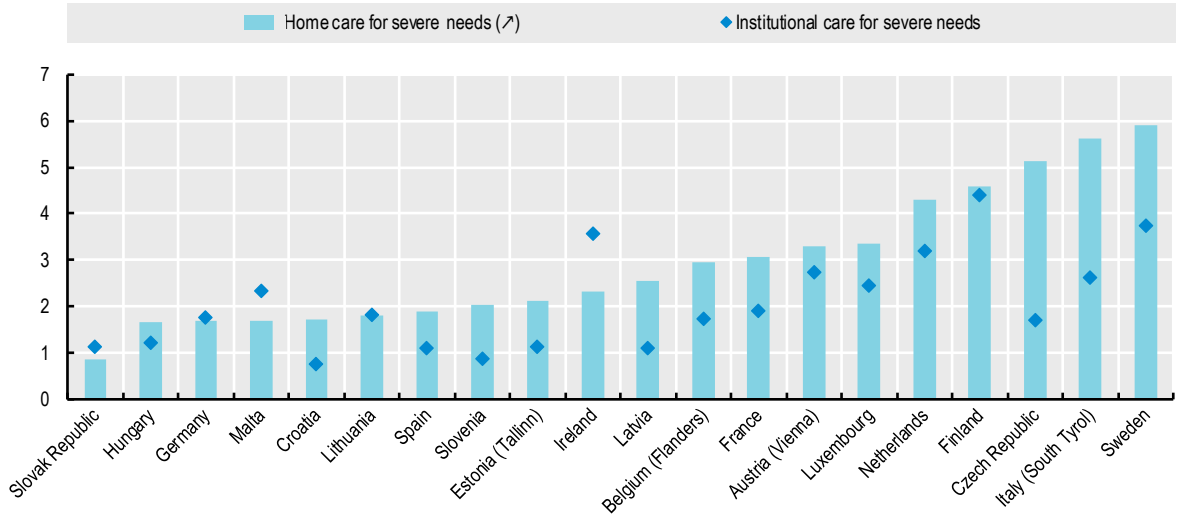
67. In certain EU Member States, formal home care can be an overall more expensive way of managing severe care needs, when professional carers[6] deliver all care. In certain countries (e.g. Croatia, Sweden, Latvia and Slovenia), the total costs of 41.25 hours of home care per week are twice as high as those of institutional care. *Without public social protection*, formal home care can thus be very expensive when needs are severe and involve many hours of care every week. Professional carers have to travel between care recipients' homes, which in some countries, regions and municipalities may take significant amounts of time, during which they are not providing care. This can limit the number of older people that

[6] Professional carers include a mix of professions with different levels of training such as nurses, nurse assistants, personal care workers and social workers, but exclude all unpaid caregivers. The roles and skills of professions vary between countries, even for professions with similar names. For instance, care is delivered mostly by social workers and personal carers in the Czech Republic, but is provided mostly by nurses in Flanders and in the Netherlands.

they can care for at any given time. People living at home may receive some care from family and friends, thus reducing reliance on professional home care. In the absence of informal care arrangements, and if public social protection is inadequate, older people with severe LTC needs may face very high total costs and may have to rely on institutional care as the only affordable option. Even including the costs of board and lodging, as well as 24-hour surveillance, Figure 3.1 illustrates that, in some countries and subnational areas, institutional care may be an overall less costly way to meet more severe LTC needs in old age. However, the total costs of institutional care are high compared to the total costs of home care for less severe needs (i.e. low and moderate care needs).

Figure 3.1. Total costs of care are high compared to median disposable incomes in old age

Total costs as a proportion of national median disposable income for older people (without social protection)



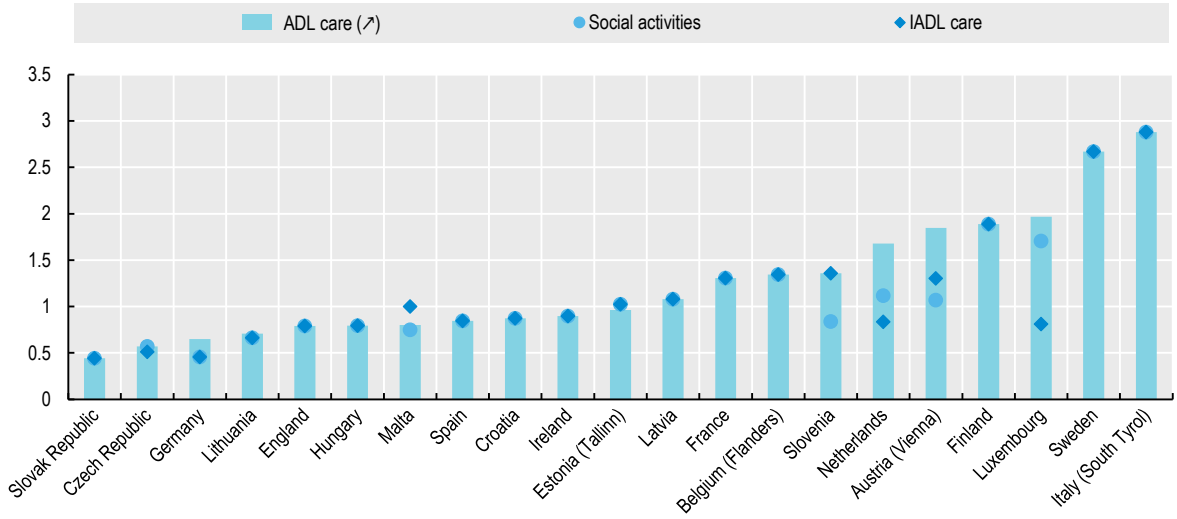
Note: National median disposable incomes are for people of retirement age or older (e.g. the costs of LTC in South Tyrol are compared to the national median disposable incomes in Italy). Severe needs correspond to 41.25 hours of care per week. Detailed descriptions of care recipients' needs are available in Annex A. Older person with severe needs receiving LTC at home is assumed to live with a spouse who can provide 24-hour supervision, help with taking medicines, and manage the finances, but cannot provide any other ADL/IADL care.
Source: OECD analyses based on the OECD Long-Term Care Social Protection questionnaire and the *OECD Income Distribution Database*.

68. Cross-country variation in the total costs of LTC is partly related to labour costs. The cost of one hour of home care varies widely between countries and subnational areas, compared with average earnings per hour actually worked (see Figure 3.2). The hourly cost of help with ADLs ranges from close to half of average earnings in the Slovak Republic and the Czech Republic to more than twice the average earnings in Sweden and the province of South Tyrol in Italy. It is important to note that, for some countries, regional or even municipal costs are being compared to national average wages. For example, according to the *OECD Regional Demography Database*[7], the average disposable income in the Italian province of South Tyrol is higher than the average disposable income in Italy as a whole. In these and other cases where regional costs are used, it is likely that differences between hourly costs of home care and national average earnings in the economy are partly driven by regional variation in average income.

[7] The *OECD Regional Demography Database* can be accessed from *https://doi.org/10.1787/region-data-en*.

Figure 3.2. Total hourly costs of home care vary widely across countries and subnational areas

Total hourly costs as a proportion of national average earnings per hour actually worked in the economy



Note: Some countries, regions and municipalities were unable to provide hourly costs for home care that helps people to maintain social activities (like going for a walk or participating in their community); for these countries and subnational areas, it has been assumed that this type of care costs the same as the cost of help with IADLs in the respective country or subnational area.
Source: OECD analyses based on the Long-Term Care Social Protection questionnaire and the *OECD Income Distribution Database*.

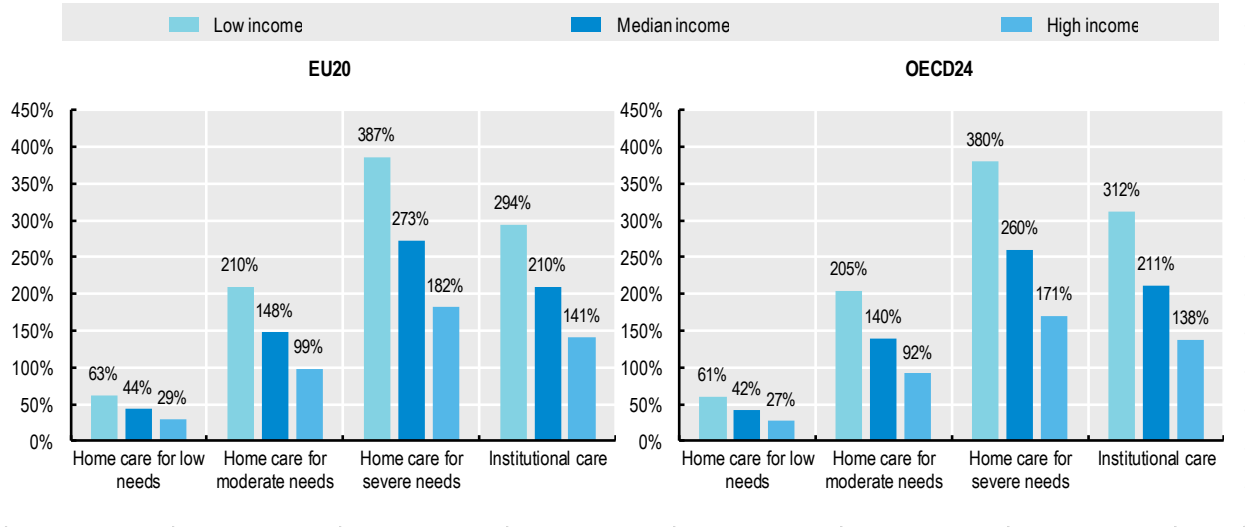
69. Relative differences in hourly costs of home care across countries and subnational areas are also associated with differences in the cost of labour and mean wages in the LTC sector. Cross-country differences in labour and mean wages in the LTC sector are likely due to differences in the training, qualifications, types and division of tasks, and the value that society in general attributes to LTC work. For example, in Ireland, LTC workers earn on average around 67% of the average earnings per hour actually worked in the general economy, and 38% of LTC workers have attained higher education levels (OECD, Ensuring an Adequate Long-Term Care Workforce, 2020).

3.1.2. Without effective social protection, even home care for the lowest needs could be too costly for older people on lower incomes

70. In the absence of effective social protection, lower-income groups unsurprisingly face a higher risk of not being able to afford the total costs of LTC services from their incomes alone (see Figure 3.3). They are also more likely to need LTC compared to their richer counterparts (see the following chapter). Even the total cost incurred by individuals with low needs could be high for those at the lower end of the income distribution. On average across 20 EU countries and subnational areas, the total costs of 6.5 hours of formal home care per week represent over 60% of the income of an older person on a low income, in the 20th percentile of the income distribution (among people of retirement age or older). The total costs of home care for individuals with moderate needs (22.5 hours of formal LTC per week) add up to more than double the disposable income of someone in the lowest quintile of the old age income distribution. Without public social protection for severe LTC needs, not even older people on high incomes (in the 80th percentile of income) would be able to cover the total costs of care by relying on their income alone.

Figure 3.3. Without social protection, the total costs of long-term care could be unaffordable for older people on lower incomes, on average across OECD countries and EU Member States

Total costs of long-term care as a share of over-65s' disposable income, in different settings and for different levels of needs, averaged across 20 EU countries (Left panel) and subnational areas and 24 OECD countries and subnational areas (Right panel).



Note: Bars show unweighted averages for 20 EU countries and subnational areas and 24 OECD countries and subnational areas. Low income refers to the upper boundary of the 20th percentile, and high income to the upper boundary of the 80th percentile. Low, moderate and severe needs correspond to 6.5, 22.5 and 41.25 hours of care per week, respectively. The costs of institutional care include the provision of food and accommodation, so are overestimated relative to home care. Detailed descriptions of care recipients' needs are available in Annex A
Source: OECD analyses based on the Long-Term Care Social Protection questionnaire and the *OECD Income Distribution Database*.

3.2. What is covered by public schemes: support for the costs of long-term care

71. Without social protection, the total costs of LTC for older people could be unaffordable in a large majority of OECD countries and EU Member States and subnational areas, in some cases, across the entire income distribution. To protect older people against these potentially catastrophic costs, public social protection systems may subsidise a share of the total costs. The proportion of the total costs of LTC that public systems cover varies both between and within countries and subnational areas, across levels of care recipient need, income and net wealth.

Box 3.1. How to interpret the figures and estimates in this and the next sections

A key assumption is that older people estimated to have LTC needs will seek formal LTC services

Survey data – like those in SHARE and TILDA – are not exhaustive and do contain missing responses, and limited information on important indicators. This is the case, for example, with data on access to and effective use of public support for formal care. There is also limited information on preferences for formal and informal care, and different combinations of formal and informal care. Because of these and other data gaps, assumptions must be made in order to assess the effects of public social protection for LTC in old age in Europe.

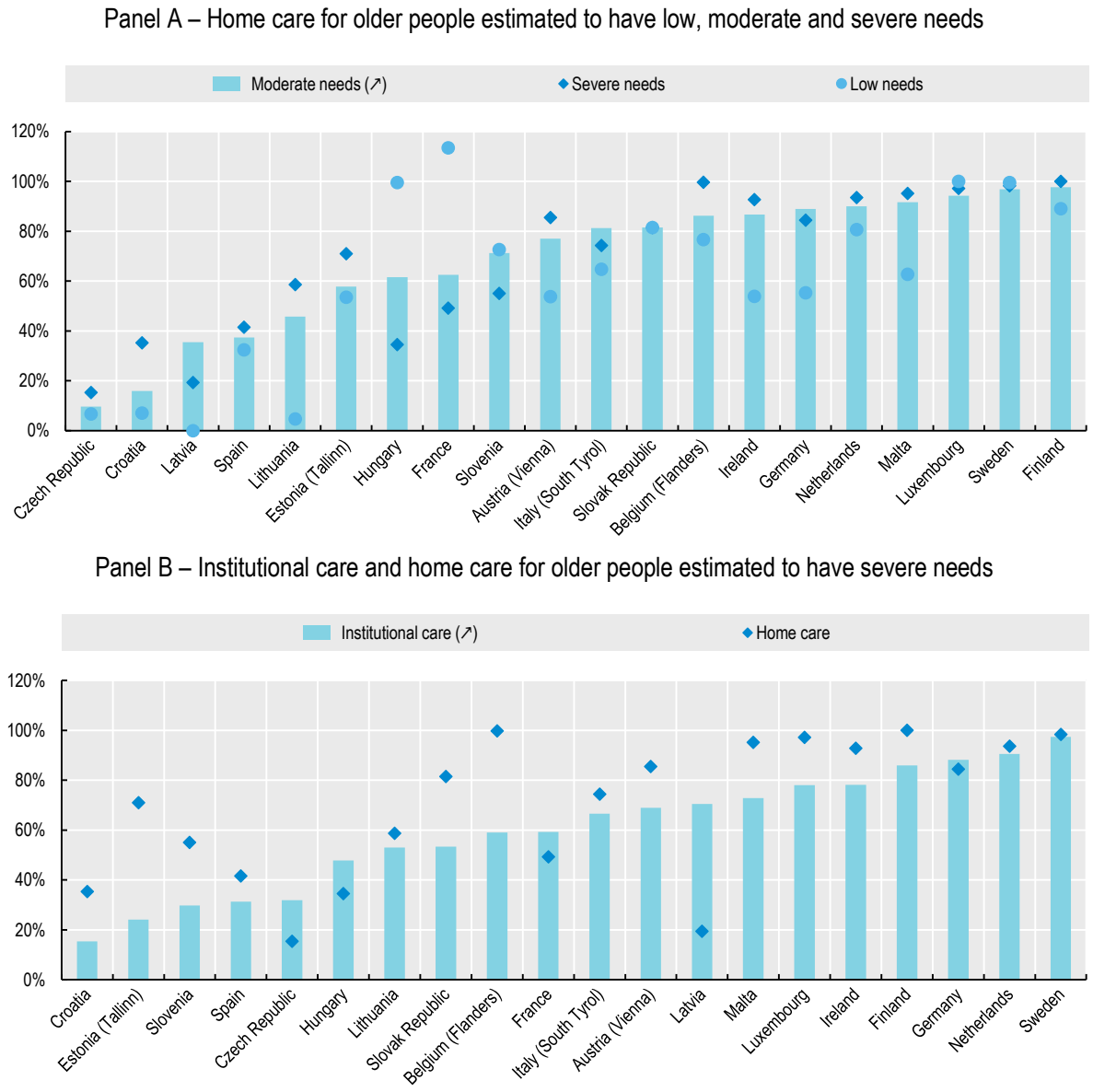
In this and the next sections, *a key assumption is that older people estimated to have LTC needs will seek formal LTC services and support from public social protection systems*. Based on this assumption, it is possible to determine the public support they would be entitled to, the out-of-pocket costs they would face, their net disposable income after LTC costs, and consequently whether they are at risk of income and asset poverty. The graphs and estimates shown in the next sections should thus not be seen as representing the current situation in countries today (e.g. the poverty rates associated with LTC shown in Chapter 4 are not current poverty rates, as many older people with LTC needs do not receive formal care). Rather, the estimates presented in the following sections illustrate what different indicators would look like, if everyone who is estimated to have LTC needs sought formal care.

Furthermore, as previously stated, throughout the report, *models for subnational LTC benefits and services are used to estimate the effects of social protection based on data at national level*. The EU Member States for which subnational models are used are clearly flagged in figures and in the text.

3.2.1. Public support tends to be greater for older people with more severe needs except in five jurisdictions where support is higher for people with low needs

72. The shares of total costs of LTC, averaged across respondents, for different severities and care settings that would be covered by public social protection systems according to the level of need are shown in Panel A of Figure 3.4.

Figure 3.4. Share of total long-term care costs that would be covered by public social protection, averaged across respondents, by estimated severity of needs and care setting



Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015)

73. There is wide variation in public cost shares (share of total costs covered by public social protection systems) across different levels of LTC needs, and different countries and subnational areas. In five jurisdictions, the average share of total costs met by public social protection would be below 50% for moderate needs, while in ten countries and subnational areas average public support would range between 60% and 90%, and in another five jurisdictions, support would be above 90% of total costs of care. For severe needs, in six countries and subnational areas, average public coverage would be below 50%, and in seven countries and subnational areas, support would reach over 90% of the total costs.

74. In a majority of the 20 EU countries and subnational areas modelled here, as a share of the total costs of LTC, public support for home care for an older person estimated to have severe needs is as high as, or higher than, public support for institutional care (see Panel B in Figure 3.4). In Latvia, the Czech Republic, Hungary, France and Germany the average shares of the total costs of care that would be covered by public social protection systems are higher for institutional care than for home care (in some cases only very slightly, while in others differences are marked).

75. A majority of countries and subnational areas would cover a greater share of the total costs of home care for severe needs compared to moderate and, especially, low needs. In fact, the Latvian public LTC benefits and schemes do not cover any of the costs of home care for those older people with incomes above the minimum income. As all Latvian respondents in SHARE estimated to have low needs have income higher than the minimum income, no public support is available (as seen in Panel A of Figure 3.4). Countries and subnational areas that adjust the level of public support to the income and net wealth of care recipients apply what is commonly referred to as means-testing.

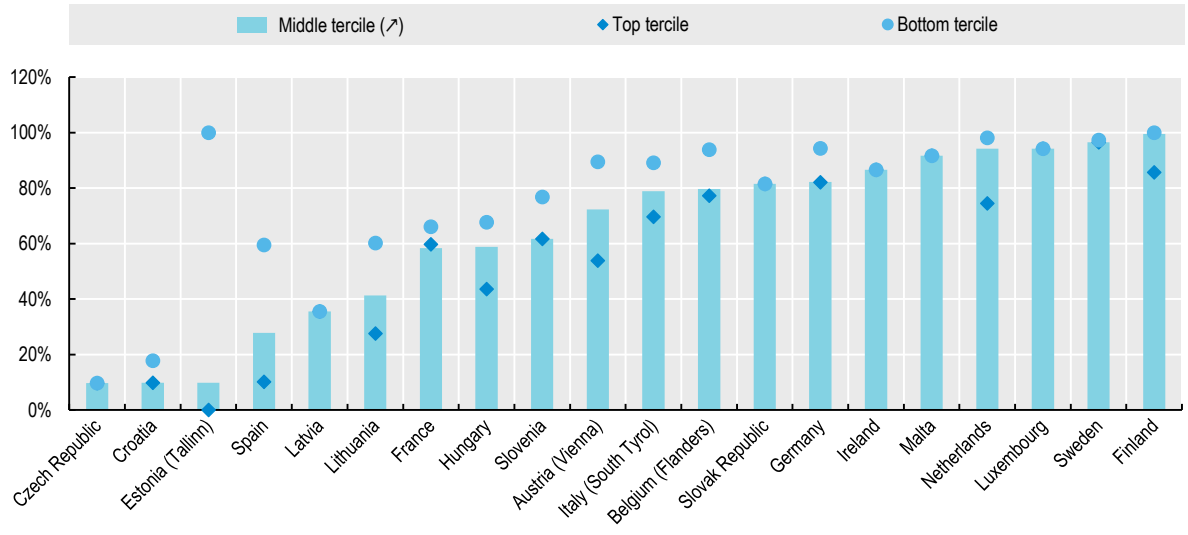
76. While the majority of jurisdictions provide greater public support to care recipients with more severe LTC needs, there are a few exceptions. In Latvia, France, Slovenia, Hungary, South Tyrol in Italy, and Germany, the share of total costs of care that would be covered by the public social protection system for an older person is higher for moderate needs than for severe needs. In France, Slovenia and Hungary, there is actually an inverse relationship between public support and severity of LTC needs, with older people estimated to have lower levels of need receiving more support than those with moderate needs, and those with moderate needs receiving more support than those with severe needs. This pattern is due to the three countries setting limits to the number of hours of care that can be covered through public LTC benefits and schemes.

3.2.2. Public support is generally lower for older people with higher income and wealth

77. Public social protection systems in a number of countries and subnational areas apply means-tests: the share of the total costs that public systems cover depends on the care recipient's income and/or net wealth (including primary residence and other financial and non-financial assets). Figure 3.5 shows the shares of the total costs of *home care for moderate needs* that would be covered by public social protection systems for different levels of care recipient income, averaged across respondents. Most countries and subnational areas do adjust the level of public support for home care to the income of the care recipient. Generally, care recipients with higher incomes receive less public support, while users on lower incomes are typically entitled to greater public support (this pattern is also observed in institutional care – data not shown here). The motivation for income-testing is that people earning more are expected to be able to afford to pay more towards the total costs of care, and thus have less need for public financial support.

Figure 3.5. Share of total home care costs that would be met by public social protection, averaged across respondents, by income

For older people estimated to have moderate needs and receiving care at home



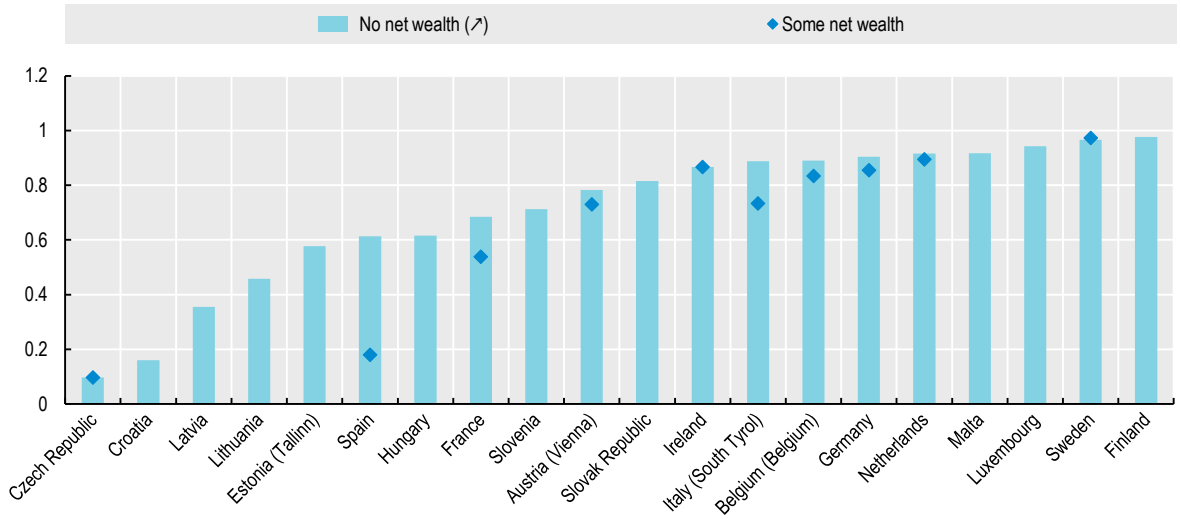
Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Incomes reported in SHARE and TILDA are categorised into terciles. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

78. In a majority of countries, older people on lower incomes (bottom terciles of incomes reported in SHARE and TILDA) would receive a greater degree of public support for the total costs of home care (see Figure 3.5). This extra support can lead to a difference of 100 percentage points in Estonia, where older individuals in the top income tercile do not receive public support while costs are fully covered for those in the bottom income tercile. The range of differences can be 50 to 36 percentage points more in Spain, Austria and Lithuania respectively, but amounts to less than 10 percentage points in France. However, in six jurisdictions, older people estimated to have moderate needs and earning in the bottom and top income terciles would receive the same level of public support for home care. In Latvia and Croatia, older people earning very low incomes would be entitled to greater public support, although this is not visibly clear in Figure 3.5, which is based on terciles of incomes reported in SHARE and TILDA.

79. Out of the 20 jurisdictions modelled in this report, 10 apply assets-tests when determining the share of the total costs of institutional care that public social protection systems cover, as partly shown in Figure 3.6 (in many countries data on net worth in SHARE are completely missing; in these countries public support for older people with *some net wealth* is not shown; analyses using multiple imputation of net worth are provided in Annex C). Flanders, in Belgium, excludes the care recipient's primary residence from assets-tests, as does Ireland but only after three years in institutional care. Whereas for home care, Croatia, Spain and England do not include primary residence in assets-tests, these countries do so for institutional care, since the care recipient (who is considered single in this analysis) is no longer living at home. More countries apply assets-tests in institutional care than in home care, since older people are no longer living in their own homes (and for many older people, their primary residence is their main asset). Moreover, as the total costs of institutional care are high compared to the total costs of home care for less severe needs (i.e. low and moderate care needs), assets-tests may be used as a way to limit public spending on institutional care.

Figure 3.6. Share of total institutional care costs that would be met by public support, averaged across respondents, by net wealth

For an older person estimated to have severe needs and receiving care in an institution



Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Net worth reported in SHARE and TILDA are used; missing and negative net wealth observations are replaced with zeros; for many countries data on net wealth are missing and for these countries no diamond is shown in the graph. Analyses using imputed net wealth are provided in Annex C. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

3.2.3. Financial public support for informal care is limited

80. Informal carers are the backbone of LTC support in many countries, yet they do not always receive adequate public support. For instance, they often receive little training and psychological support, which results in lower quality of care for recipients. A majority of EU countries provide financial support to carers through cash benefits either paid directly to carers through a carer allowance or paid to those in need of care, part of which may be used to compensate formally family carers. At the same time, the benefit rarely constitutes remuneration for carers' full efforts and does not typically come close to the full cost of formal care. It is rather a recognition that providing care involves costs for carers and compensation for the opportunity costs of caring – that is, for reduced working hours. High compensation risks trapping carers in low-paid roles, with few incentives to participate in the formal labour market. In addition, entitlement to such benefits is often limited because of the definition of carers, which in some countries (e.g. France) excludes spouses because of legal obligations, while in others, it is linked to a number of hours of care or co-residence.

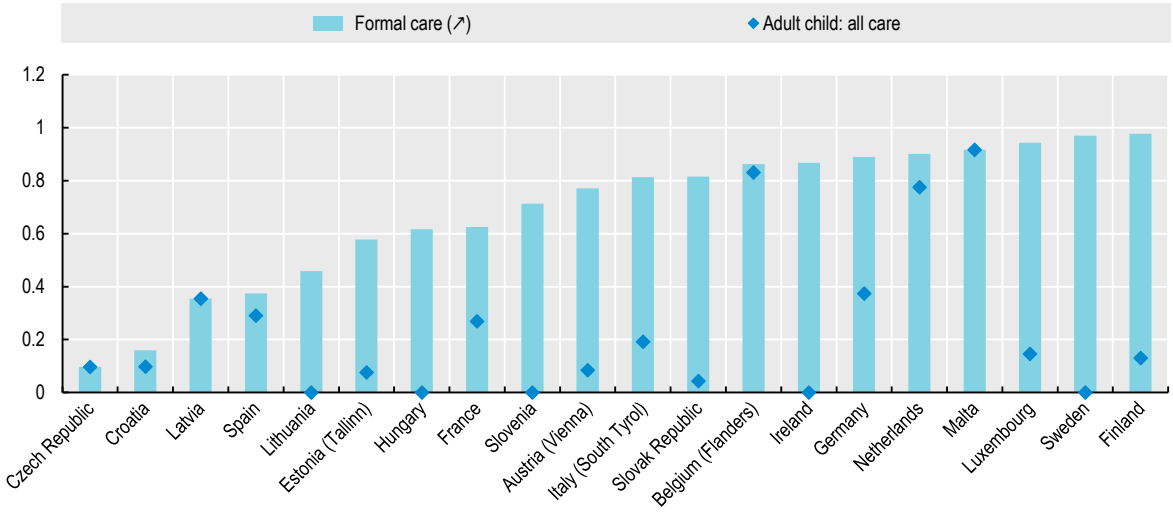
81. There are reasons why public social protection systems would limit the generosity of public support for informal care, provided by either a spouse or an adult child. While public social protection systems can use cash benefits to incentivise the supply of informal care, they are reluctant to make it too attractive as often care would have been provided even without compensation. On the one hand, many older people prefer to be cared for in their own homes by their relatives and friends. On the other hand, informal carers tend to suffer physical and mental stress, and are more likely to drop out of the labour market or reduce working hours, leading to lower income and reduced social contributions (Colombo, Llena-Nozal, Mercier, & Tjadens, 2011). It is difficult to strike a good balance between adequately compensating informal carers, and incentivising labour market participation and reducing resulting gaps in employee contributions.

82. Public support for informal care rarely constitutes a remuneration in line with the average wage that an adult child might be able to receive in the economy. In five countries and subnational areas, an adult child providing 22.5 hours of care to an older parent with moderate needs would receive no public support (either directed to the care recipient or the caregiver), despite the fact that the adult child would have to reduce working hours – or even stop working altogether – to provide care. In Germany, support towards informal carers is not meant to replace wages but is a considered a form of family support. While the large majority of countries and subnational areas do not provide any direct financial support to informal caregivers, a number of countries and subnational areas do give care recipients cash benefits that can be used to compensate informal caregivers (however, often, there is no obligation to use these cash benefits to pay caregivers and care recipients are free to use the cash as they wish). Public social protection systems in Tallinn (Estonia) and Flanders (Belgium) support the caregiver directly, while Finland combines both benefits to the care recipient and benefits to the adult child.

83. Figure 3.7 shows the extent of public support for home care for an older person estimated to have moderate care needs, with care provided by either a formal carer or an adult child providing all of the care (help for ADL, IADL, and social needs), as a share of the total costs of formal care (to facilitate interpretation), averaged across respondents. In five countries (Lithuania, Hungary, Slovenia, Ireland and Sweden) an adult child would not receive any public support whatsoever and in five other jurisdictions, the amount would be lower than 10% of the costs (Czech Republic, Croatia, Tallinn in Estonia, Vienna in Austria, Slovak Republic). In other jurisdictions, public support would amount to between 13% and 92% of the total costs of formal home care. In certain countries and subnational areas, the out-of-pocket costs of formal home care for moderate needs would be lower for care recipients than the compensation for informal care. At the same time, in some countries (e.g. Croatia) entitlement of in-kind formal care relies on the assumption that no informal care is available.

Figure 3.7. Public support for formal and informal home care for older people estimated to have moderate needs, averaged across respondents, as a share of total formal home care costs

For an older person estimated to have moderate needs and receiving care at home



Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015)

3.3. What is not covered by public schemes: out-of-pocket costs of long-term care for older people, after public support

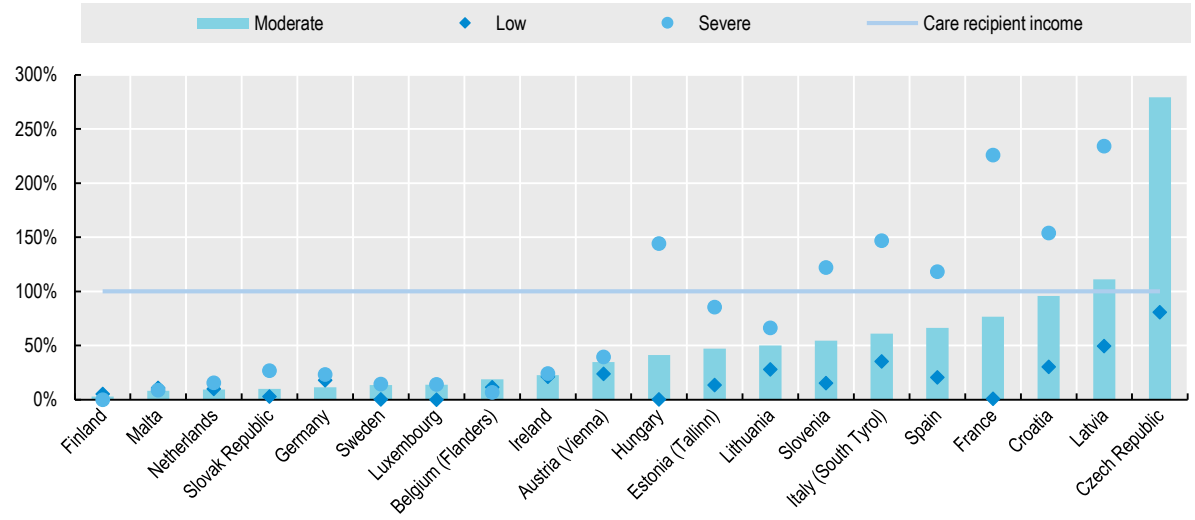
84. As discussed in the previous section, the proportion of the total costs of LTC that public systems would cover varies widely between and within countries and subnational areas, and across levels of care recipient need, income and assets. Depending on the country and subnational area, and the characteristics of the care recipient, some older people could have to cover the total costs of care in full. Moreover, while public social protection systems would tend to provide greater support to those with fewer means (income and net wealth), even small out-of-pocket payments can represent a large proportion of the incomes of older people with limited financial resources. This section shows how the prospective out-of-pocket costs of LTC (the average shares of the total LTC costs that are left for older people to pay, after taking into account public support) compare to older people's disposable incomes.

3.3.1. Even after public support, care for severe needs could be too costly for old people

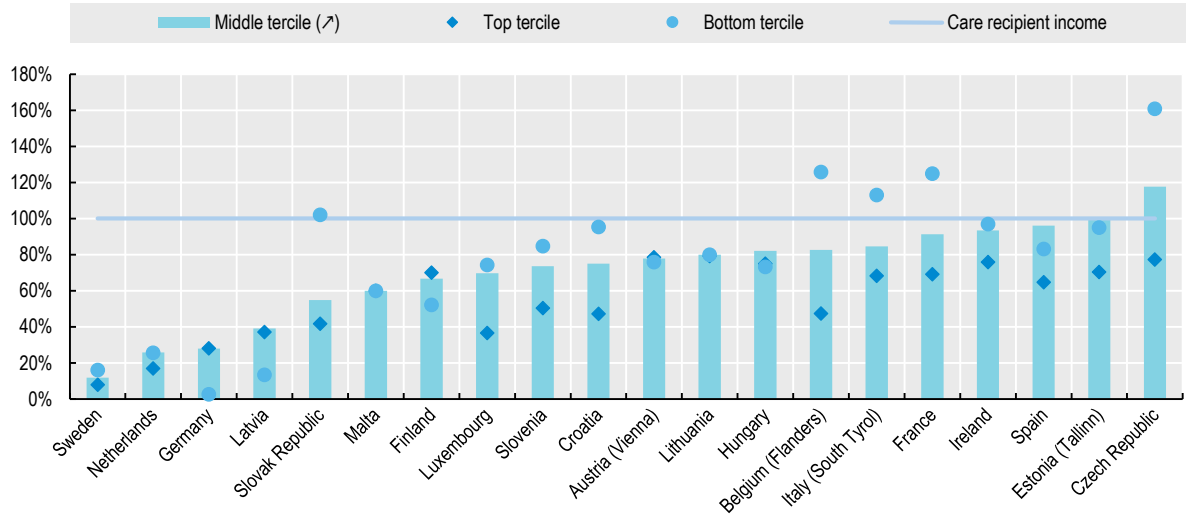
85. The estimated prospective out-of-pocket costs of *home care for different LTC needs*, after receiving public support, as a percentage of an older person's disposable income, averaged across SHARE and TILDA respondents, are shown in Panel A in Figure 3.8 below. Also shown are the estimated out-of-pocket costs of institutional care, after receiving public support, *for different levels of income*, as a percentage of their disposable income (Panel B).

Figure 3.8. Prospective out-of-pocket costs of care as a share of disposable income after public support, averaged across respondents, for home care by severity of estimated needs (Panel A) and for institutional care for severe needs by income (Panel B)

Panel A – Home care for older people by severity (see note below for Czech Republic)



Panel B – institutional care for older people estimated to have severe needs, by income terciles



Note: Value for home care for severe needs in the Czech Republic is 468%, very high compared to other estimates, and thus it is not shown to facilitate interpretation of other estimates in Panel A. Estimates are computed using the averages of three matching methodologies (4b, 6a and 6b) and are computed using adjusted survey weights (see Annex B). Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A. Incomes reported in SHARE and TILDA are categorised into terciles.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015)

86. Across countries and subnational areas, estimated prospective out-of-pocket spending would be lowest for older people with estimated low needs and highest for severe needs. The estimated out-of-pocket costs of home care for low and moderate needs would be lower than the average disposable income among older people after public support in almost all countries and subnational areas modelled here (in Latvia and the Czech Republic average out-of-pocket costs would go above disposable incomes). Out-of-pocket spending on home care would represent on average 19% of the disposable incomes reported by older people with low needs. In eight countries and subnational areas, average out-of-pocket costs of home care for severe needs could be unaffordable, considering incomes reported in SHARE and TILDA (see Panel A in Figure 3.8). Out-of-pocket costs for home care, even with public support and even when they fall below disposable incomes, can become unaffordable when adding the basic costs of living at home, such as food and accommodation (such costs can amount in some cases to 50% of income).

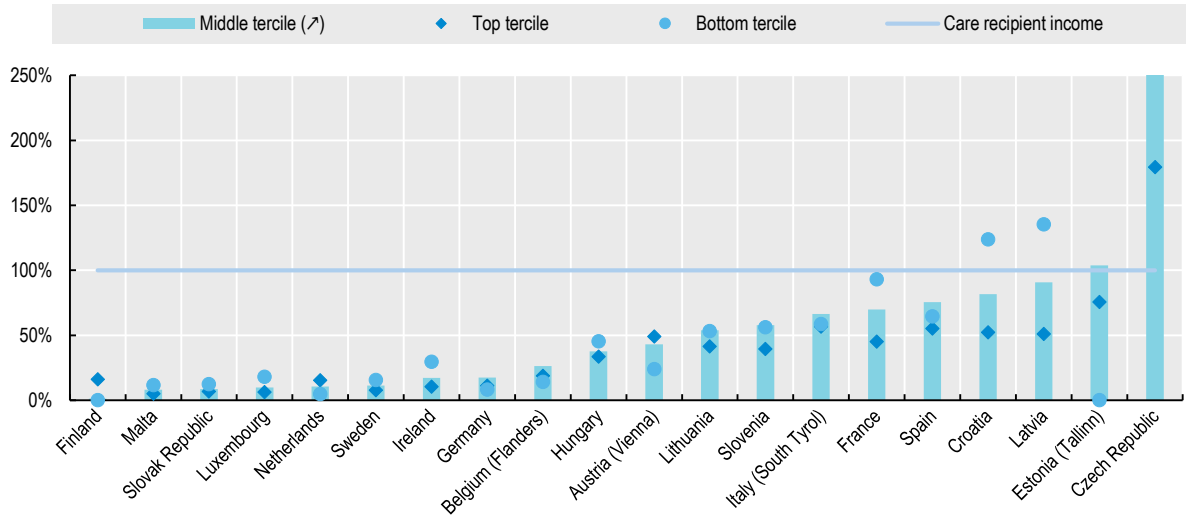
87. Out-of-pocket costs for institutional care could also be significant but vary widely across countries. In most cases (i.e. jurisdictions and levels of need), average out-of-pocket costs would represent less than an older person's disposable income. At the same time, in South Tyrol in Italy, France, Flanders in Belgium, the Slovak Republic and the Czech Republic, out-of-pocket costs would be unaffordable for older people earning incomes in the bottom tercile, as reported in SHARE and TILDA (see Panel B in Figure 3.8). Even when out-of-pocket costs are below disposable income, and even when older people are no longer living in their homes, if they are left with very limited financial resources, older individuals lose some of their independence to spend their income on other things they might like. Several countries, such as France, Luxembourg and the Czech Republic, include rules that explicitly ensure that people in residential care are left with at least a certain amount of income (around 9%-15% of the median pensioner's income), though it would seem this could be insufficient. In addition, such out-of-pocket costs refer to public institutions or institutions where public support can be used at fixed prices and might not reflect the full extent of out-of-pocket costs for some private providers in some countries.

3.3.2. Out-of-pocket costs for older people on lower incomes may be high, even in countries with income-testing

88. The estimated out-of-pocket costs of *home care for moderate needs* after receiving public support, for different levels of income, as a percentage of disposable income, are shown in Figure 3.9. In four countries and subnational areas (Finland, Tallinn in Estonia, Germany and the Netherlands) older people earning a lower income (bottom income tercile) would have to devote under 10% of their disposable incomes to cover the out-of-pocket costs of care, after receiving public support. Conversely, in eight countries and subnational areas, an older person earning in the bottom income tercile would have to devote, on average, over half of their disposable income to pay for care, leaving less than half of their already lower income to cover basic living expenses. In Latvia, Croatia and the Czech Republic, older people on lower incomes might not be able to afford the out-of-pocket costs of home care for moderate needs as, on average, costs would exceed their disposable incomes, even after receiving public support.

Figure 3.9. Prospective out-of-pocket costs of home care as a share of disposable income after public support, averaged across respondents, by income tercile

For an older person estimated to have moderate needs and receiving care at home (see note for Czech Republic)



Note: Value for older people with incomes in the bottom tercile in the Czech Republic is 343%, very high compared to other estimates, and thus it is not shown to facilitate interpretation of other estimates in the figure. Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Incomes reported in SHARE and TILDA are categorised into terciles. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

89. As seen in the previous section, public social protection systems in France, Slovenia and Lithuania would provide greater support to older people on lower incomes than they would for those on higher incomes (top income tercile). Yet, the out-of-pocket costs of care, as a percentage of disposable income, averaged across respondents in these countries, would be higher for older people on lower incomes than for those on higher incomes. In effect, older people on higher incomes would pay a lower proportion of their income towards the costs of care than would those on lower incomes, despite the latter receiving greater public support. In countries and subnational areas that do not adjust public support for home care for moderate needs to care recipients' incomes (Croatia, Latvia, Luxembourg, Slovak Republic, Ireland,

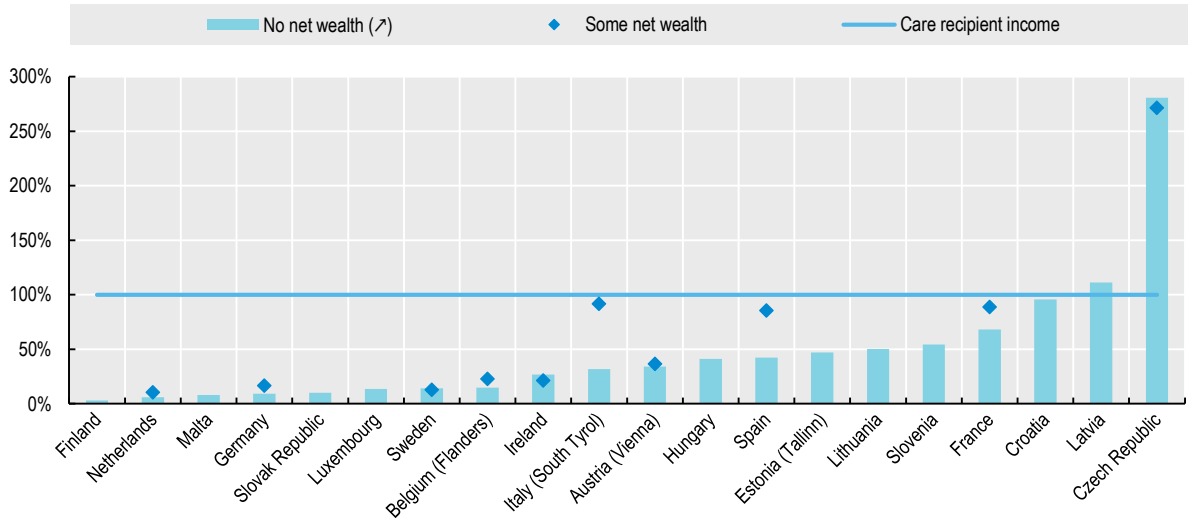
and the Czech Republic), older people with higher incomes would also spend a lower share of their income on care compared to those on lower incomes.

3.3.3. Older people with some net wealth could face very high out-of-pocket costs in nine jurisdictions, especially in institutional care

90. The estimated out-of-pocket costs of *home care for moderate needs* for an older person estimated to have moderate needs, after receiving public support, averaged across respondents, and for different levels of net wealth[8], as a percentage of disposable income, are shown in Figure 3.10 (in many countries data on net worth in SHARE are completely missing; analyses using multiple imputation of net worth are provided in Annex C). In seven jurisdictions, there are no asset-tests for home care and thus no difference in the out-of-pocket costs for different levels of wealth. Because of asset-tests, in Croatia, Spain, France, Flanders in Belgium, South Tyrol in Italy, Germany and the Netherlands, older people without any net wealth would face out-of-pocket costs that are lower than disposable income (this may not be clear in Figure 3.10 due to missing microdata on net worth), although in Croatia there would be very little disposable income left, on average across respondents, after out-of-pocket costs. In Latvia and the Czech Republic, out-of-pocket costs could be higher than disposable incomes, making care unaffordable, even with support from public social protection systems.

Figure 3.10. Prospective out-of-pocket costs of home care as a share of disposable income after public support, averaged across respondents, by net wealth

For an older person estimated to have moderate needs receiving care at home



Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Net worth reported in SHARE and TILDA are used; missing and negative net wealth observations are replaced with zeros; for many countries data on net wealth are missing and for these countries no diamond is shown in the graph. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

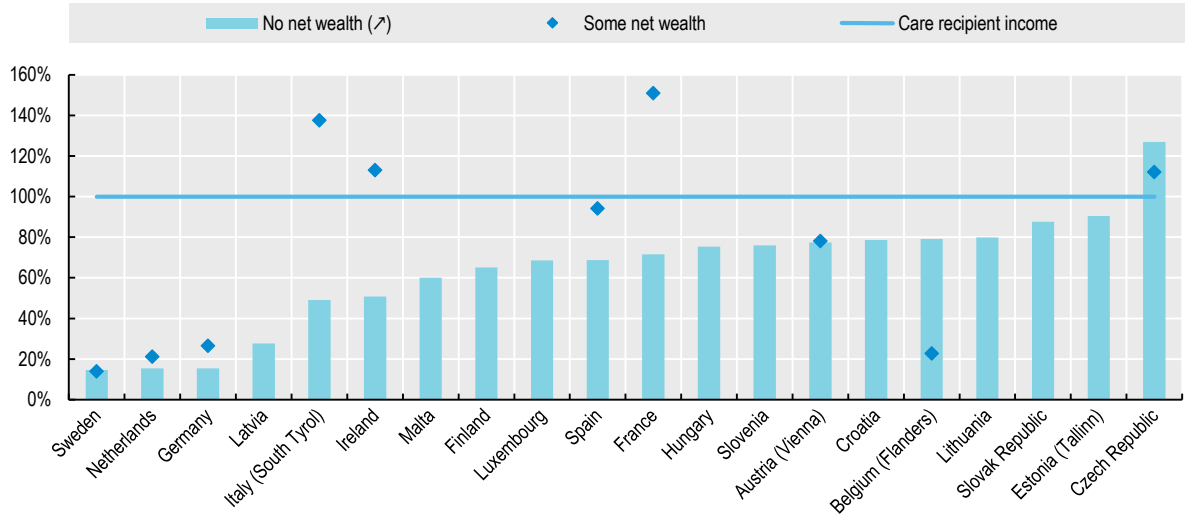
[8] Only two levels of net wealth (no net wealth and mean net wealth) are presented here because means-testing in all jurisdictions do not show differences for higher levels of wealth.

91. In all countries with assets-tests, for which data on net worth are reported in SHARE and TILDA, older people with mean net wealth would face higher out-of-pocket costs than those without net wealth, yet they would still be able to afford out-of-pocket costs from their incomes alone.

92. The estimated out-of-pocket costs of *institutional care for severe needs* after receiving public support, for different levels of net wealth, averaged across respondents, as a percentage of income (both net worth and income reported in SHARE and TILDA) are shown in Figure 3.11 (in many countries data on net worth in SHARE are completely missing; analyses using multiple imputation of net worth are provided in Annex C). In the jurisdictions that apply assets-tests for institutional care, older people with no assets would face out-of-pocket costs that are lower than their incomes. In all of those countries and subnational areas, older people with mean net wealth face higher out-of-pocket costs. Yet they would still be able to afford out-of-pocket costs from their incomes alone, with the exception of Ireland, France and Italy (South Tyrol). In the Czech Republic – a Member State that does not apply assets-tests – older people with no net wealth and some net wealth would both face unaffordable out-of-pocket costs. In almost all jurisdictions that apply assets-tests in institutional care, the care recipient's primary residence would be taken into account (the exceptions are Flanders in Belgium, and Ireland, and in the latter primary residence is excluded only after the first three years of care use).

Figure 3.11. Prospective out-of-pocket costs of institutional care as a share of disposable income after public support, averaged across respondents, by net wealth

For an older person estimated to have severe needs receiving care in an institution



Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Net worth reported in SHARE and TILDA are used; missing and negative net wealth observations are replaced with zeros; for many countries data on net wealth are missing and for these countries no diamond is shown in the graph. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

4 Estimates of the effects of public social protection for long-term care in old age

4.1. Prospective adequacy of public social protection for LTC in old age

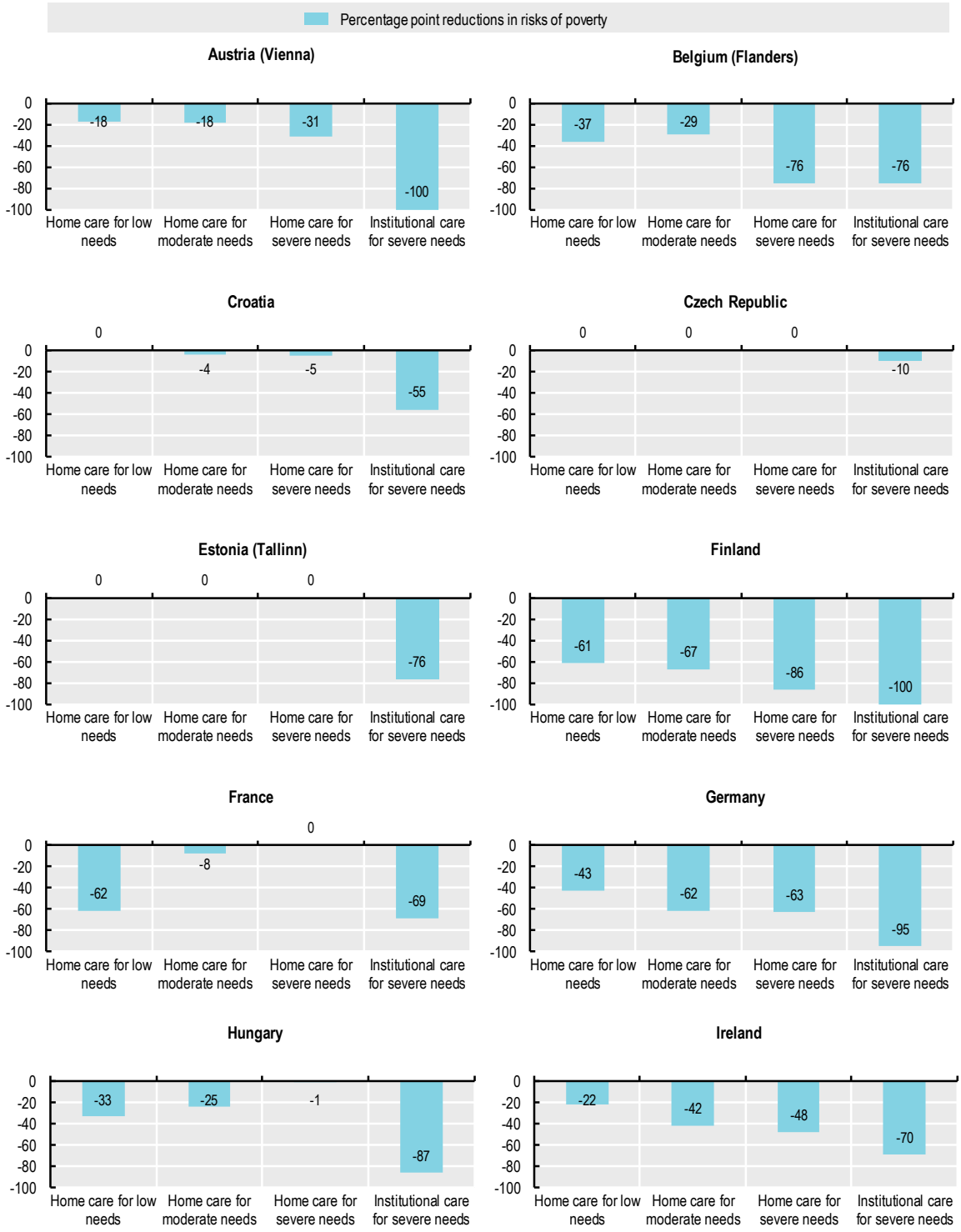
4.1.1. Public support would generally reduce poverty risks but not always sufficiently

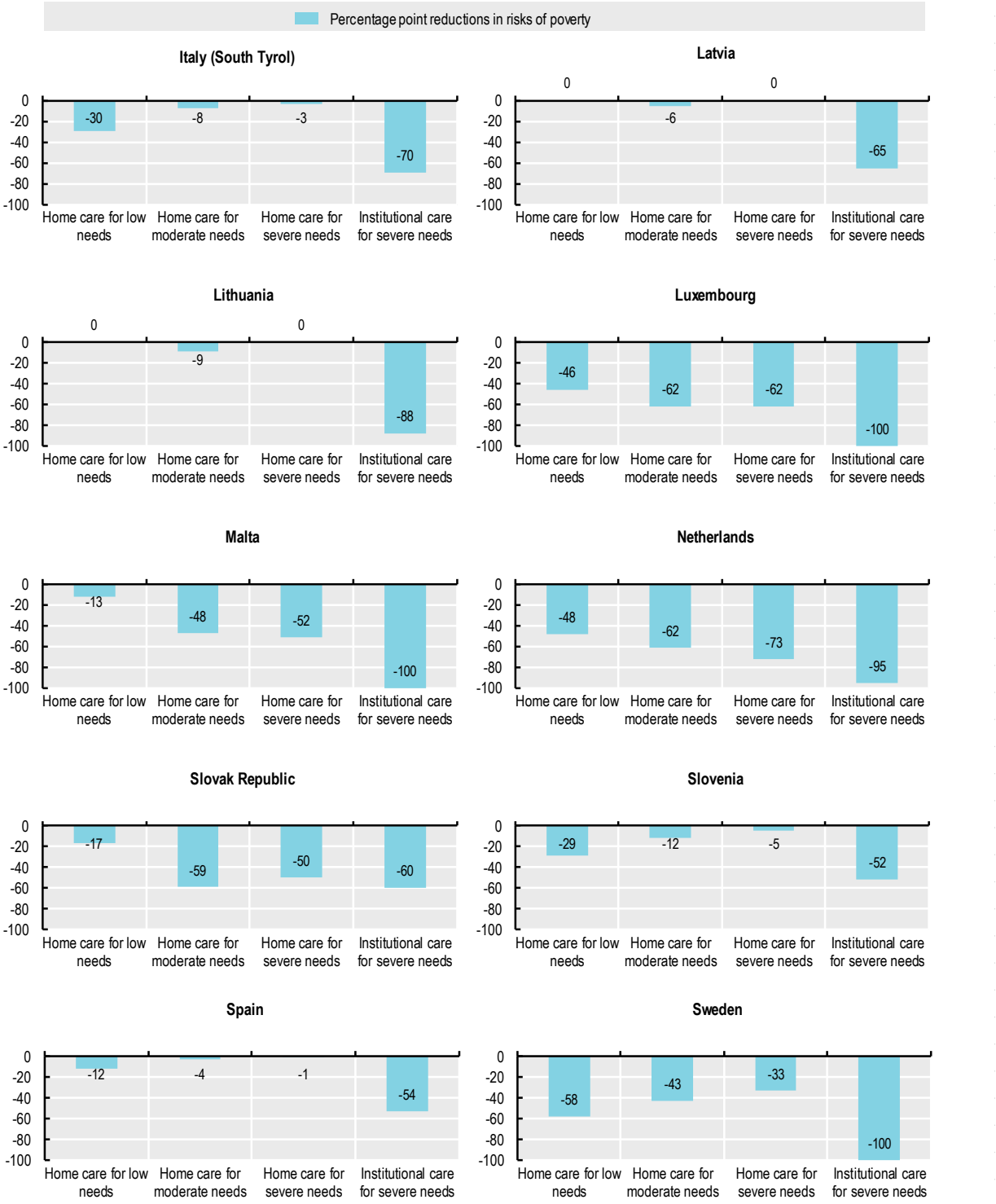
93. If there were no public social protection for LTC in old age, the majority of older people would not be able to pay the out-of-pocket costs of care from their incomes alone without being pushed into relative income poverty (disposable net income after paying out-of-pocket costs below 60% of the population wide median equivalised income). If older people can access, and are eligible for, public social protection for LTC in old age, the risks of poverty associated with paying for LTC may be reduced, in turn leading to fewer older people being at risk of poverty due to the out-of-pocket costs of care. Figure 4.1 (in the next page) shows the potential reductions due to public social protection (compared to a situation where older people have LTC needs but no public social protection) in the proportions of older people with estimated LTC needs that would be at risk of poverty after paying the out-of-pocket costs of home care for low, moderate, and severe needs, and institutional care for severe needs. As previously stated, a key underlying assumption is that all older people estimated to have LTC needs will seek formal care and will have access to public social protection, although they may not be entitled to any support given their specific needs, disposable income and net wealth.

94. The potential reductions in poverty risks due to public social protection are generally highest for institutional care for severe needs, where poverty risks could be reduced by more than 75 percentage points, on average across 20 EU Member States. In eight countries poverty risks are reduced by over 90 percentage points (Austria based on the Vienna model, Finland, Germany, Hungary, Luxembourg, Malta, the Netherlands and Sweden). In the Czech Republic, Spain and the Slovak Republic, potential reductions are below 50 percentage points. In the Czech Republic, in particular, the potential reductions are small in comparison to other countries. However, it is important to note that baseline poverty risks (poverty before LTC spending) affect the estimates discussed in this section, and thus a full picture of the effectiveness of public social protection is only clearer when baseline poverty risks are discussed in the next section. A key assumption in the estimates of poverty risks associated with LTC in institutions is that older people do not need to cover the basic costs of living, as these are already included in the accommodation and hospitality charges of institutions. This assumption greatly reduces poverty risks for older people receiving care in institutions.

Figure 4.1. Potential reductions, due to public social protection, in risks of poverty associated with out-of-pocket costs of care, for different severities of needs and settings

Estimates below assume all older people with estimated long-term care needs would seek formal care





Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A.

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

95. On average across EU Member States, estimated potential reductions in poverty risks associated with out-of-pocket costs of home care are fairly similar across different severities of LTC needs: around 27 percentage points. Yet, in the case of *severe needs* in five countries poverty risks would not be reduced by existing public support (Czech Republic, Estonia based on the Tallinn model, Latvia, Lithuania and France). In five other countries, the prospective reductions are also small, around 5 percentage points or less (Croatia, Spain, Hungary, Italy based on the South Tyrol model, and Slovenia). In these countries and subnational areas, a significant share of older people estimated to have severe needs could see their net disposable incomes drop below relative income poverty lines, even after receiving public support. In contrast, in Belgium (based on Flanders model) and Finland, public support reduces poverty risks by over 75 percentage points. In other countries, such as the Netherlands, Germany, Austria (based on the Vienna model), Ireland, Malta and Luxembourg, prospective reductions are lower but still substantial.

96. Public social protection systems in Croatia, the Czech Republic, Estonia (based on the Tallinn model), Latvia and Lithuania do not cover any of the costs of home care for older people estimated to have *low needs* and earning above a certain income threshold (set nationally). As such, public systems in these six countries and subnational areas might have a limited impact on the risk of income poverty that is associated with paying for home care for low needs. If it were not for public social protection systems, in 10 EU Member States, poverty rates could go up by more than 25 percentage points (in some cases as much as 60 percentage points as in Finland and France) due to the out-of-pocket costs of just 6.5 hours of home care per week. In the Czech Republic, Croatia, Estonia (based on the Tallinn model), Latvia and Lithuania, existing public social protection schemes would not reduce poverty risks for low needs (see Figure 4.1).

97. Older people estimated to have *moderate needs* are at a higher financial risk compared to those estimated to have low needs. In nine EU Member States (Belgium based on the Flemish model, Germany, Ireland, Finland, Luxembourg, Malta, Slovak Republic, Sweden and the Netherlands), social protection coverage would help reduce potential poverty risks by over 25 percentage points. In the remaining 11 EU Member States, even after accounting for public support, reductions in poverty risks are below 25 percentage points. In the Czech Republic and Estonia (based on Tallinn model), public support would not reduce poverty risks.

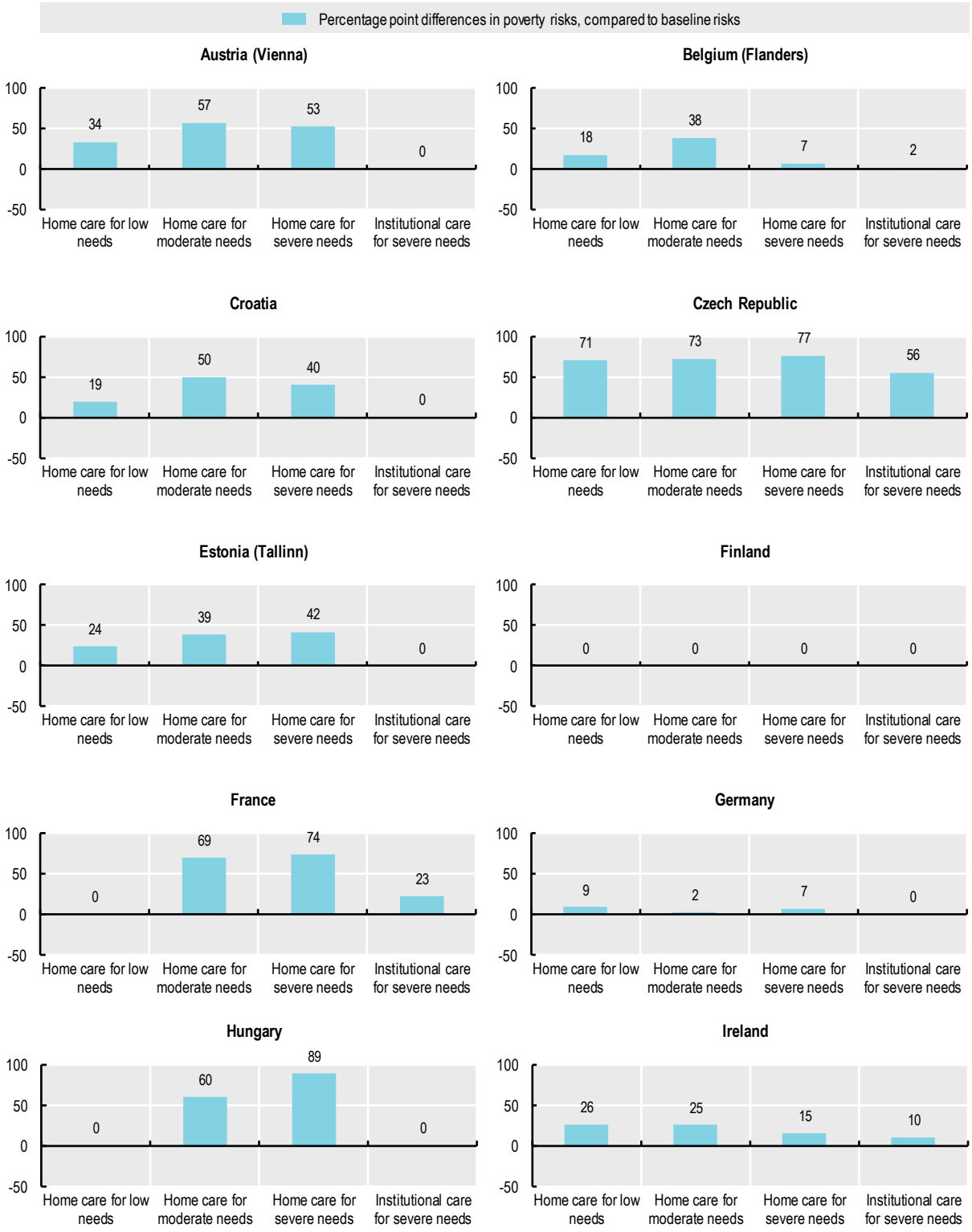
4.1.2. Despite public support, older people with care needs might still risk poverty

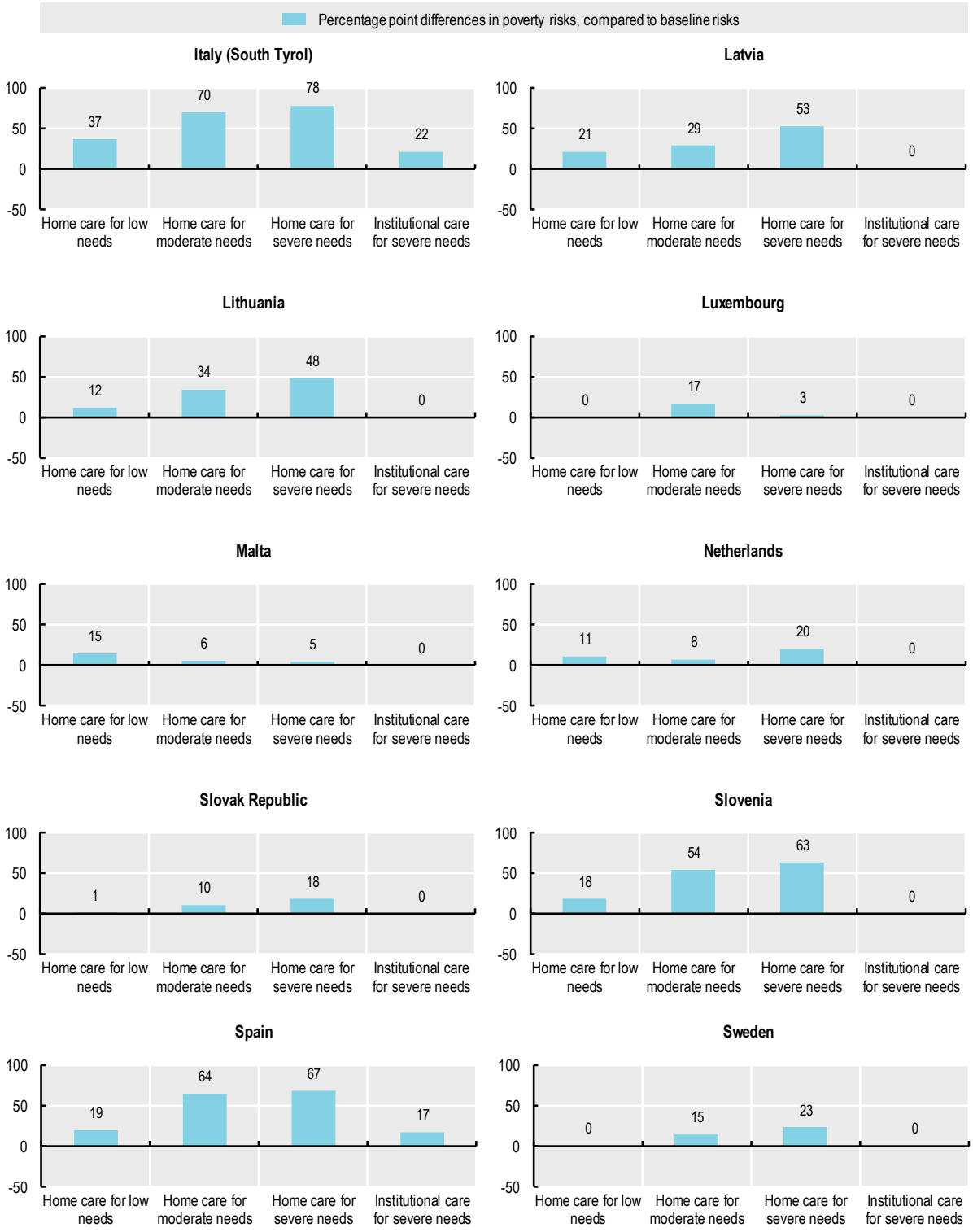
98. Public social protection for LTC is adequate when it guarantees that no older person is at an increased risk of poverty due to developing LTC needs and paying the out-of-pocket costs of care. This means that no older person would have to choose between paying out-of-pocket costs that push them into poverty and going without care. This section shows how public social protection systems in different EU Member States perform against this definition of adequacy, by comparing two metrics. The first metric is the share of the older population that is in relative income poverty for each level of estimated LTC needs. This acts as a baseline poverty risk for comparison (as seen in previous sections, older people estimated to have LTC needs are more likely to be at risk of poverty than those with less than low needs, so the baseline or starting point matters when determining the effect of public social protection). The second metric is the share of the old age population that would be in relative income poverty if they needed LTC and had access to public social protection. This section assesses whether social protection for LTC would reduce the risk of poverty associated with LTC compared to baseline poverty risks among older populations estimated to have LTC needs.

99. The difference between the shares of old age populations in relative income poverty in two different situations (baseline poverty risks among older people estimated to have LTC needs, and poverty risks among those using of LTC and access to social protection) are shown in Figure 4.2, Figure 4.3 and Figure 4.4, for different severities of LTC needs and different care settings.

Figure 4.2. Percentage point differences between baseline poverty risks among older people and among those using long-term care with access to public support, for different severities of needs and settings

Estimates below assume all older people with estimated long-term care needs would seek formal care





Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A.

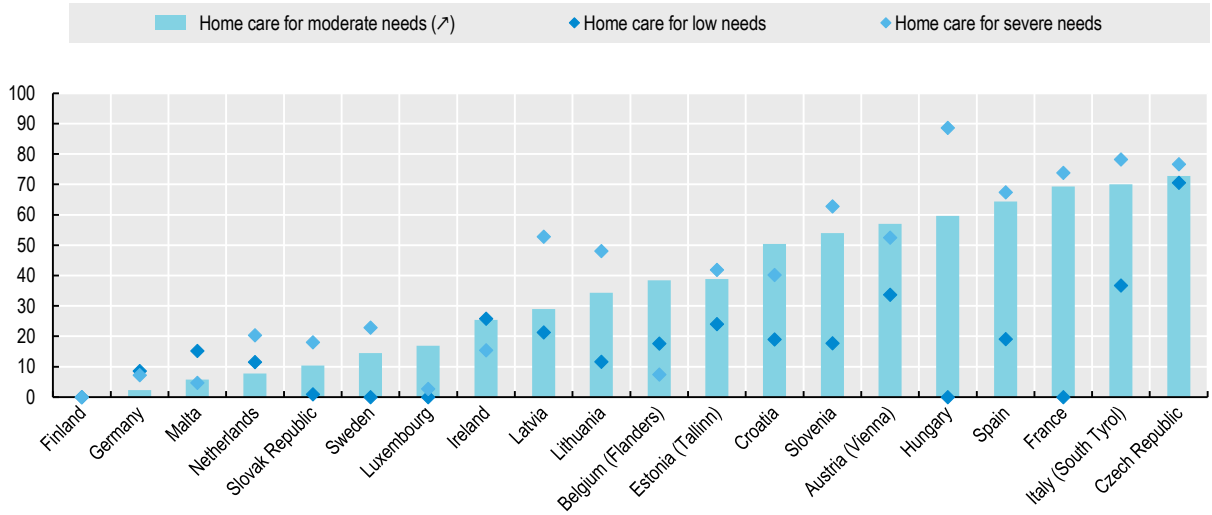
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

100. In 15 EU Member States, public support for *home care for low needs* would not bring relative income poverty levels back to baseline (this is noticeable if the estimate is higher than zero percentage points in Figure 4.2 and in Figure 4.3). In these 15 EU Member States, public social protection might not adequately protect older people with low needs from the added risk of poverty that is associated with the out-of-pocket costs of care. In five countries (Finland, Luxembourg, Hungary, France and Sweden), public support reduces poverty risks completely and in Germany the Slovak Republic risks are virtually the same as at baseline.

101. While in some EU Member States public systems would reduce the risks of poverty associated with paying for the out-of-pocket costs of *home care for moderate needs* (as seen in Figure 4.2 and in Figure 4.3), it is estimated that in all but Finland and Germany, public support would not bring relative income poverty levels back to baseline levels. In eight countries and subnational areas, public support leaves older individuals with a poverty risk that is 50 percentage points higher than baseline poverty risks among those estimated to have LTC needs. In Malta and the Netherlands, differences to baseline poverty risks are lower than 10 percentage points.

Figure 4.3. Percentage point differences between baseline poverty risks among older people and among those using long-term care with access to public support, for home care and different severities of needs

Estimates assume all older people with estimated long-term care needs would seek formal care.

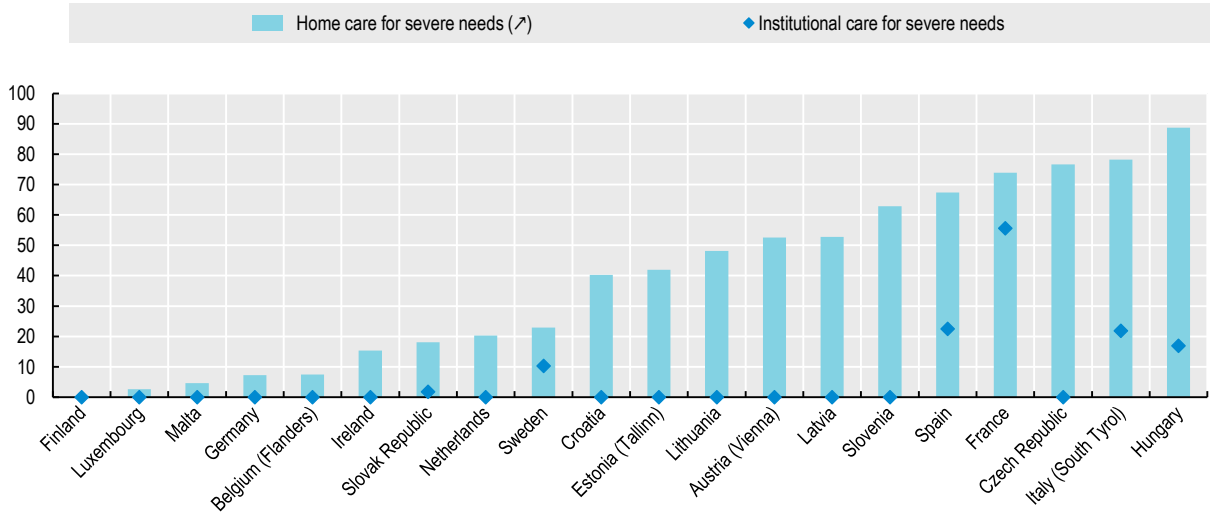


Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

Figure 4.4. Percentage point differences between baseline poverty risks among older people and among those using long-term care with access to public support, for severe needs and different settings

Estimates assume all older people with estimated long-term care needs would seek formal care.



Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

102. In all 20 EU Member States, with the exception of Finland and Luxembourg, public support for *home care for severe needs* would not bring relative income poverty levels back to baseline levels. In another six EU Member States, after public support, the difference to baseline poverty rates would be lower or equal to 20 percentage points (in Germany, Ireland, Malta, the Netherlands, Slovak Republic and Belgium based on the Flemish model). In eight EU Member States, differences to baseline poverty rates are 50 percentage points or more, even after accounting for receipt of public support (e.g. in Austria based on Vienna model, Czech Republic, Italy based on South Tyrol model, Latvia, Slovenia, Hungary, France and Spain). In contrast, in the case of institutional care for severe needs (Figure 4.4), public support would bring relative income poverty levels back to baseline levels in 15 EU Member states.

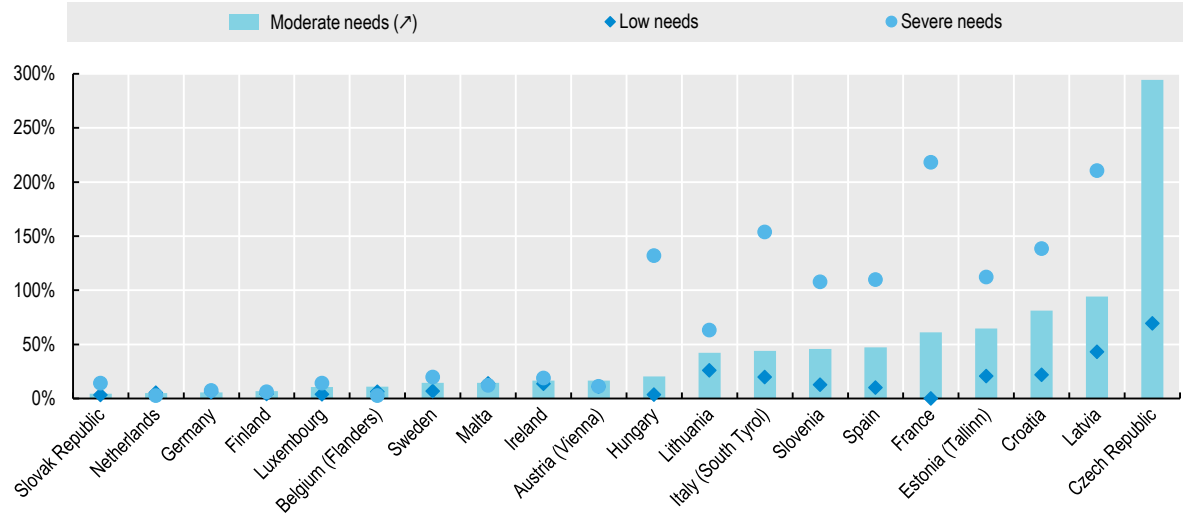
4.1.3. Gaps in support for older people with severe needs could be significant

103. In a number of EU Member States, public social protection systems might not provide sufficient financial support to protect older people from the risk of poverty associated with paying out-of-pocket costs of LTC. These estimated potential gaps in public support mean that older people are left with incomes – after accounting for public support and out-of-pocket costs – that fall below the relative income poverty line. Public social protection systems could bring these older people up to non-poverty levels by increasing public support to cover the difference between their net disposable incomes (after LTC costs and social protection) and the relative income poverty lines in their countries, which would guarantee that no older person would be at an increased risk of poverty due to the out-of-pocket costs of LTC.

104. The differences between an older person's income after paying for home care for different estimated levels of needs and relative income poverty thresholds, for a care recipient as a share of relative income poverty thresholds, averaged across respondents who fall below the poverty line after LTC costs, are shown in Figure 4.5 (estimates for the Czech Republic are significantly different from those in other countries due to a recent change in the calculation of the unit costs of care).

Figure 4.5. Differences between care recipients' incomes after out-of-pocket costs of home care and the relative income poverty thresholds, averaged across respondents, as a share of the relative income poverty thresholds

Estimates below include only older people with net income below relative poverty line. See note for Czech Republic



Note: Value for home case for severe needs in the Czech Republic is 520%, very high compared to other estimates, and thus it is not shown to facilitate interpretation of other estimates in the figure. Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

105. On average across SHARE and TILDA respondents who are income poor after paying the out-of-pocket costs of care, paying out-of-pocket costs of *home care for low needs*, after public support, would reduce the older person's income to 3% (close to EUR 1.96 per week per person) and 70% (around EUR 77 per week per person) less than the AROP thresholds in Hungary and Czech Republic respectively. Bringing older people who cannot afford *home care for moderate needs* up to non-poverty incomes would require additional public support of between around 4% of the relative poverty income in the Slovak Republic to around 94% of the relative poverty income in Latvia (the Czech Republic is an outlier at 294%). Gaps in the adequacy of public social protection for *home care for severe needs* would be the most significant. Increasing public support by between 2% of the relative poverty income in the Netherlands, to 210% of the relative poverty income in Latvia would guarantee no older person is at risk of poverty after paying for the out-of-pocket costs of LTC.

4.1.4. Are different types of LTC benefits and schemes more effective than others at reducing poverty risks associated with needing care in old age?

106. Public social protection systems use a myriad ways to organize their LTC benefits and schemes, mixing different forms of means-testing (including different types of rules) with non-means-tested benefits and schemes. For home care, EU Member States, can be grouped into five different types of systems, characterized in terms of how they combine means-testing and non-means-testing. Table 4.1 illustrates the association between different types of systems and the potential differences in the shares of old age populations in relative income poverty in two different situations (baseline poverty risks among older people estimated to have LTC needs, and poverty risks among those using LTC and having access to social protection) for different severities of LTC needs.

Table 4.1. Use of means-testing in LTC systems and potential poverty risks associated with care

		Percentage point differences between baseline poverty risks among older people estimated to have LTC needs and poverty risks among older people with care needs and use of LTC services with support from public social protection			
Countries	**Type of system**	**Low needs**	**Moderate needs**	**Severe needs**	**Average**
Germany	Income- and assets-tested as well as non-means-tested	9	2	7	
Netherlands		11	8	20	
Belgium (Flanders)		18	38	7	
Slovenia		18	54	63	
Spain		19	64	67	
Italy (South Tyrol)		37	70	78	33
Luxembourg	Non-means-tested	0	17	3	
Slovak Republic		1	10	18	
Malta		15	6	5	
Ireland		26	25	15	
Czech Republic		71	73	77	24
Finland	Income-tested only plus non-means-tested	0	0	0	
Lithuania		12	34	48	
Latvia		21	29	53	
Austria (Vienna)		34	57	53	28
Sweden	Only income-tested	0	15	23	
Hungary		0	60	89	
Estonia (Tallinn)		24	39	42	32
France	Income- and assets-tested	0	69	74	
Croatia		19	50	40	42

Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

107. While there are likely no silver bullets for how to organise LTC benefits and schemes to reduce poverty risks associated with LTC needs, in jurisdictions with systems that are purely means-tested, whether income-tested only or both income-and assets-tested, the risk of poverty associated with paying out-of-pocket costs of LTC is higher than in countries and subnational areas with systems that either rely only on non-means-tested benefits and schemes or combine some form of income-testing (income-testing only or both income-and assets-testing) with non-means-tested benefits and schemes.

108. However, overall, whether a country has means-tested and/or non-means-tested benefits and schemes does not seem, in itself, to determine its adequacy in a significant way. Across all types of systems, there is at least one country or subnational area that would not seem to adequately protect older people with LTC needs from the added risk of poverty that is associated with the out-of-pocket costs of care. Beyond merely combining different types of benefits, it is important to combine them appropriately. Means-tests must be well-designed (e.g. with thresholds that target the most vulnerable) and non-means-tested benefits and schemes should cover all relevant costs (e.g. help with IADLs).

109. Another key question concerning social transfers is whether they are provided in-kind or in the form of cash. Most countries and subnational areas usually combine provision of benefits both in-kind and in cash whereas some public social protection systems rely exclusively on cash benefits or purely on in-kind services. European countries and subnational areas with both cash and in-kind benefits as well as those with only in-kind benefits and schemes seem to be associated with lower risks of poverty from paying the out-of-pocket costs of home care (see Table 4.2). However, among EU Member States, it seems that cash benefits alone may not protect older people with LTC needs from the added risk of poverty that is associated with the out-of-pocket costs of care. A detailed description of the different type of benefits and schemes in each social protection system can be found in Annex E.

Table 4.2. Cash and in-kind LTC benefits and potential poverty risks associated with care

		Percentage point differences between baseline poverty risks among older people estimated to have LTC needs and poverty risks among older people with care needs and use of LTC services with support from public social protection			
Countries	**Type of system**	**Low needs**	**Moderate needs**	**Severe needs**	**Average**
Finland	Has benefits that are both in cash and in-kind	0	0	0	
Luxembourg		0	17	3	
Hungary		0	60	89	
Germany		9	2	7	
Netherlands		11	8	20	
Lithuania		12	34	48	
Malta		15	6	5	
Belgium (Flanders)		18	38	7	
Slovenia		18	54	63	
Croatia		19	50	40	
Spain		19	64	67	
Latvia		21	29	53	
Austria (Vienna)		34	57	53	
Italy (South Tyrol)		37	70	78	29
France	Has benefits that are in cash only	0	69	74	
Slovak Republic		1	10	18	
Czech Republic		71	73	77	44
Sweden	Has benefits that are in-kind only	0	15	23	
Estonia (Tallinn)		24	39	42	
Ireland		26	25	15	23

Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A.

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

4.2. Equity of social protection for long-term care in old age

110. Not only do lower-income groups face a higher risk of not being able to afford LTC services by relying on their incomes alone, but they are also more likely to need LTC compared to their richer counterparts (as seen in Chapter 2). Other researchers have also noted there are clear demographic and socio-economic gradients in the number of self-reported difficulties with ADLs among older individuals (Börsch-Supan, et al., 2013). According to responses in SHARE and TILDA, older women are consistently more likely to report difficulties with ADLs than older men, a gradient along gender that persists after adjusting for income. Across both older men and women, those in the top quintile of income and in the top quintile of assets are less likely to report difficulties with ADLs than those in the bottom quintile of income and bottom quintile of assets.

111. Social protection for LTC is equitable when it contributes to reducing poverty, economic vulnerability and inequities in financial risks associated with care needs. Public benefits and schemes that seek to maximise equity should target those older people that face greater financial risks and support them proportionally to their risks. Consider an older person who is isolated, economically vulnerable, has experienced some cognitive decline, and has limited support from family, friends and neighbors (e.g. lives in a single household and suffers from loneliness). Not only is this person more likely to need some help with ADLs, but they are also more likely to be unable to access and afford help. This person's situation is worsened by developing LTC needs, compounding already existing inequities in health and wellbeing. Public social protection is equitable when support is proportional to financial risk so that older people who are more economically vulnerable are also more protected. The following sections assess how well public social protection for LTC in old age would support the most economically vulnerable groups of older people, should they seek formal care under current conditions.

4.2.1. There could be gaps in public support for economically vulnerable old people

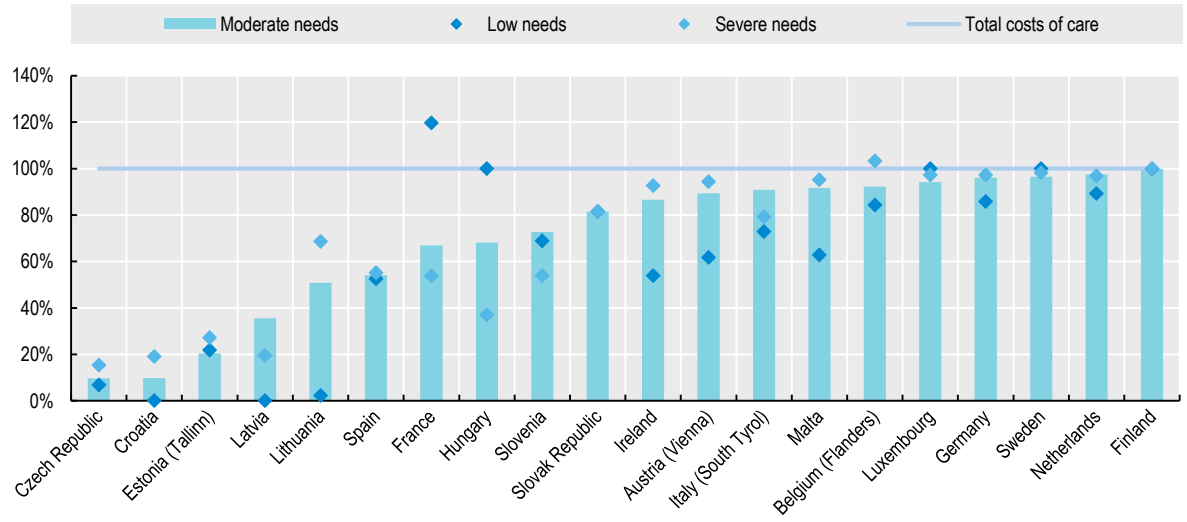
112. As shown in previous sections, public social protection systems tend to provide greater support to older people with fewer financial resources (income and net wealth).

Safety nets for the income poor may be missing or may be insufficient to prevent poverty

113. Older people at risk of income poverty have no ability to pay the out-of-pocket costs of LTC from their incomes alone without being pushed into relative income poverty. The shares of the total costs of home care for different levels of estimated LTC needs, averaged across respondents, that would be covered by public social protection systems for older people earning close to the AROP threshold – older people earning within ± 20% of the AROP threshold – are shown in Figure 4.6 below.

Figure 4.6. Share of home care costs met by public support for older people, averaged across respondents earning incomes the close to the AROP threshold, by level of severity

Estimates below include only older people earning close to the relative income poverty threshold (±20%)



Note: The AROP threshold is 60% of the national population-wide median disposable income. In this graph, the sample is limited to respondents with incomes within ± 20% of the AROP threshold. Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

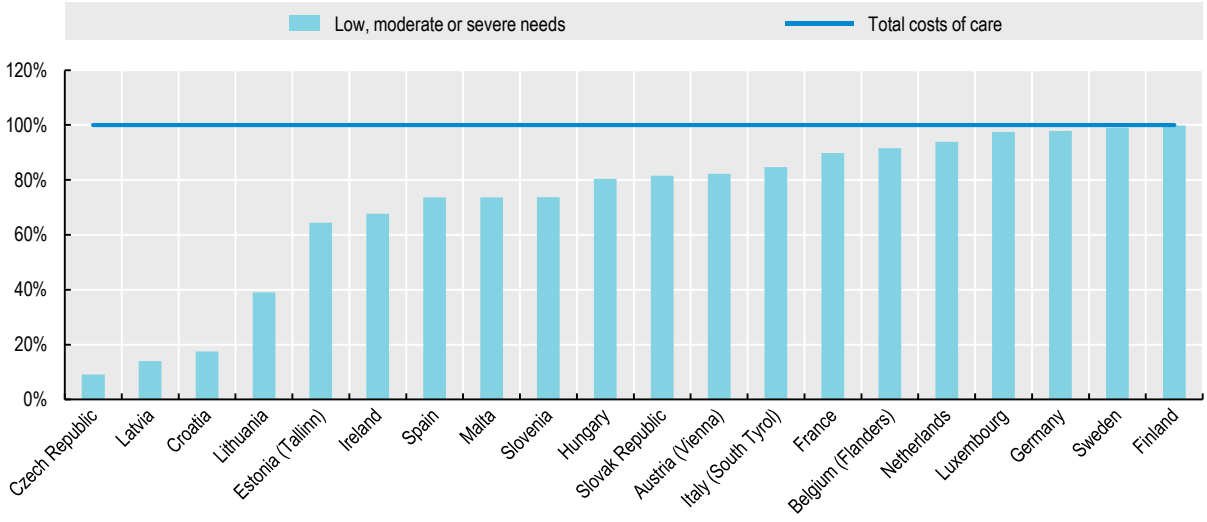
114. Across different levels of severity, and for different countries and subnational areas, public social protection systems might not adequately protect the most financially vulnerable older people should they need LTC services and seek formal care. In 15 countries and subnational areas, public support for home care could fall short of covering the total costs of LTC, for all three levels of severity, with older people earning close to the AROP threshold facing potentially catastrophic out-of-pocket costs. The magnitude of potential social protection gaps varies significantly across countries and subnational areas, from systems that cover around 99% of the total costs to systems that cover none of the costs, depending on the severity of LTC needs. In four countries and subnational areas (the Czech Republic, Croatia, Tallinn in Estonia, and Latvia), older people earning close to the AROP threshold would need to pay for more than half of the total costs of LTC out-of-pocket, regardless of the severity of their needs.

Gaps in public social protection may push older people into asset-based poverty

115. Older people with low incomes may still be able to afford out-of-pocket costs of care, and make up for any potential gaps in social protection, by depleting their assets. This could push them into asset-based poverty (having liquid financial assets that are lower than three times the relative income poverty threshold). To provide effective protection to older people who are income and asset poor, public support would need to cover 100% of the total costs of care, effectively acting as a safety net for the most financially vulnerable older people. The shares of the total costs of home care for older people estimated to have low, moderate or severe needs (combined) that would be covered by public social protection systems, averaged across respondents earning incomes close to the AROP threshold – older people earning within ± 20% of the AROP threshold – and in asset poverty – older people with liquid financial assets that are lower than three times the relative income poverty threshold – are shown in Figure 4.7 below.

Figure 4.7. Share of home care costs met by public support for older people earning the close to the AROP threshold and in asset-poverty, averaged across respondents with LTC needs

Estimates below include only older people earning close to the relative income poverty threshold (±20%) and with liquid financial assets lower than three times the relative income poverty threshold (i.e. asset-poor)



Note: The AROP threshold is 60% of the national population-wide median disposable income. In this graph, the sample is limited to respondents with incomes within ± 20% of the AROP threshold. The sample is further restricted to older people who are asset-poor (before any use of LTC services), that is have liquid financial assets lower than three times the relative income poverty threshold. Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

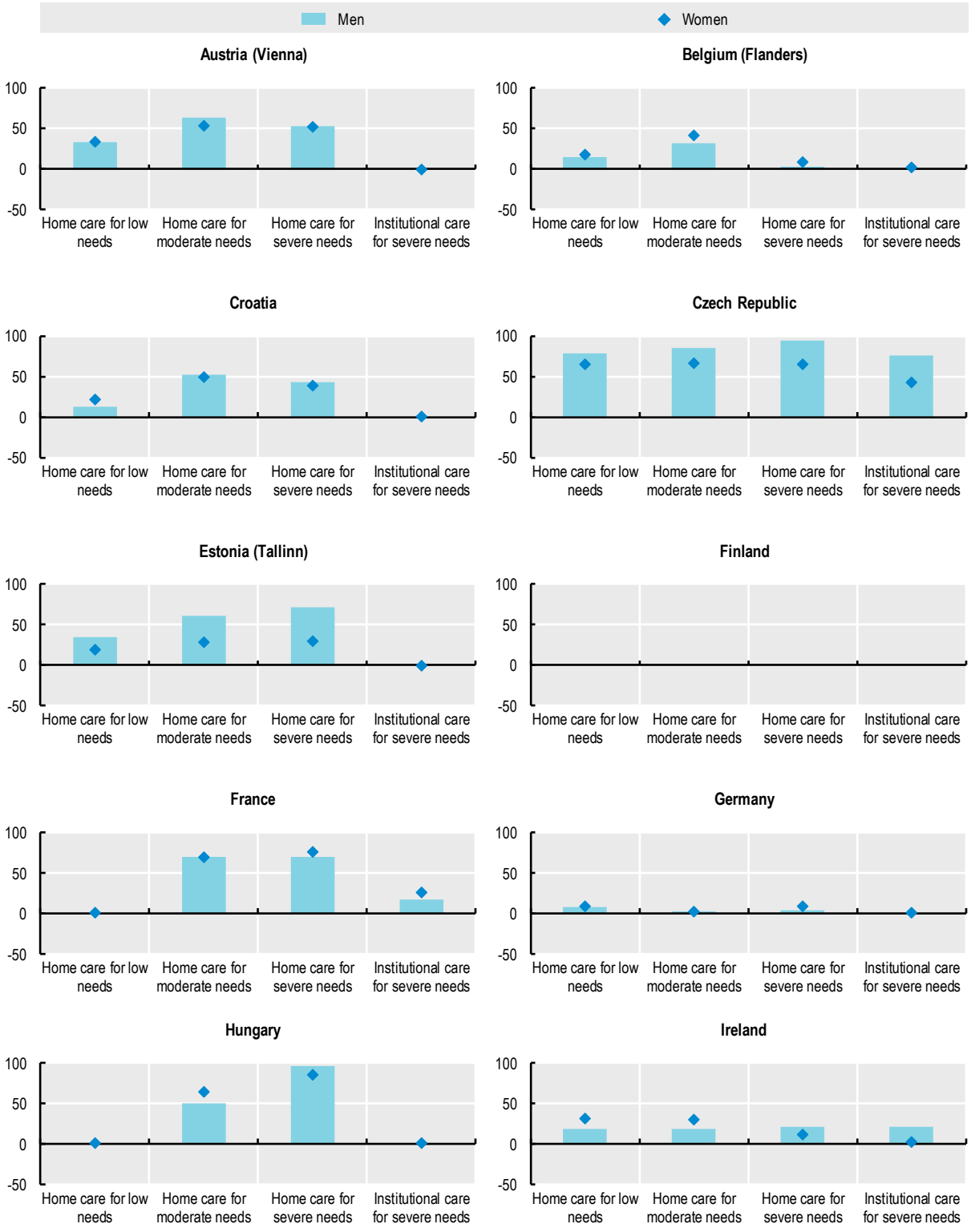
116. In a majority of countries and subnational areas, public social protection systems would not cover the total costs of care in full, leaving some of the costs to be paid out-of-pocket by older people. Older people who are simultaneously income and asset poor, and who have insufficient income to cover the out-of-pocket costs of care, even after social protection, would need to deplete their real assets, including potentially their primary residence, to be able to pay for formal care (due to missing data on net wealth in SHARE, it is difficult to estimate how many older people would be in this situation, and how long their net wealth would allow them to cover potential gaps in social protection).

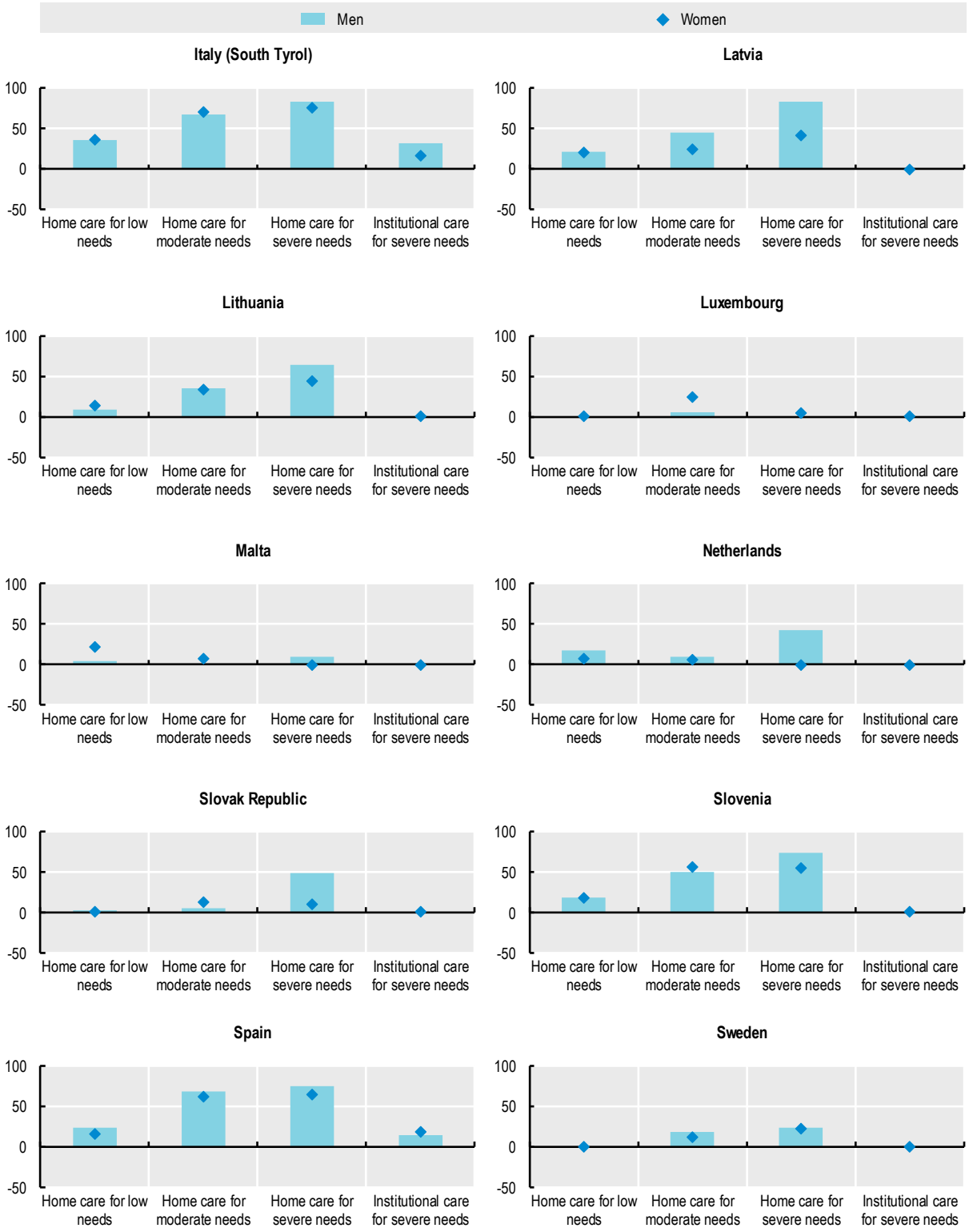
4.2.2. Public support for women can be higher as a consequence of older women's higher economic vulnerability, but not in all countries and subnational areas

117. The difference between the shares of older men and women, separately, in relative income poverty in two different situations (baseline poverty risks among older people estimated to have LTC needs, and potential poverty risks among older people using LTC and with access to social protection) are shown in Figure 4.8, for different severities of LTC needs and different care settings. There is no consistent pattern across countries and subnational areas. In Austria, the Czech Republic, Estonia (Tallinn), Finland, Latvia, the Netherlands and Sweden, average potential percentage point increases in risks of relative income poverty associated with LTC care would be higher for older men than for older women, for all severities of LTC needs. Conversely, in Belgium (Flanders), older women could see large increases in average potential relative income poverty risks, for all levels of needs. In other countries and subnational areas, the effects are more mixed.

Figure 4.8. Percentage point differences between baseline poverty risks among older men and women and among those using long-term care with access to public support, for different severities of needs and settings

Estimates below assume all older men and women with estimated long-term care needs would seek formal care





Note: Average percentage point differences in Finland are all zero. Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

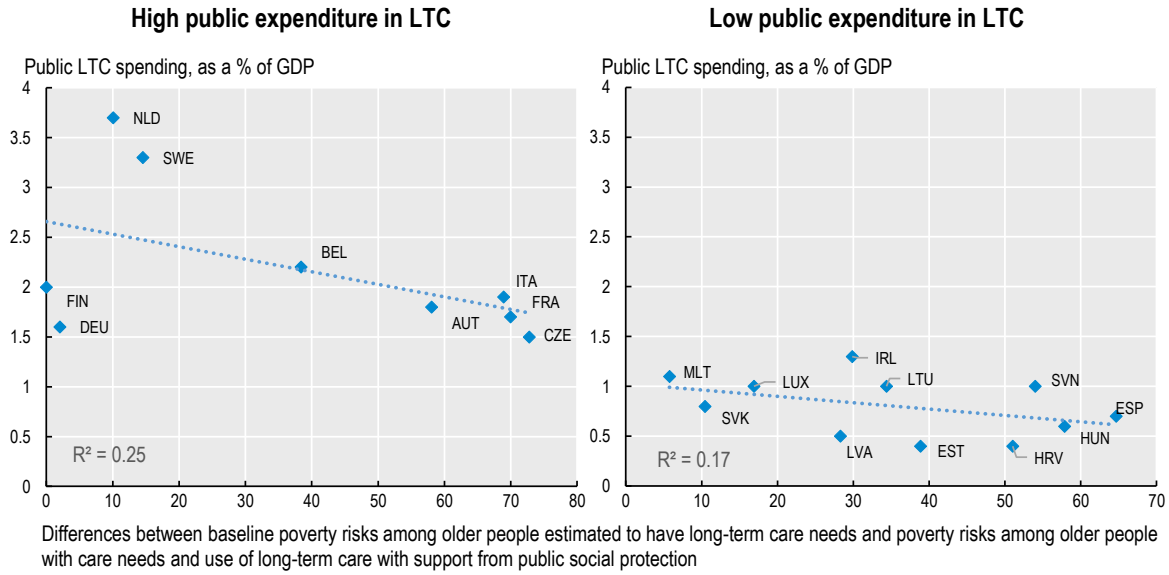
118. In 45% of cases (i.e. jurisdictions and levels of LTC need; there are 80 combinations altogether), public social protection systems would not compound existing income inequalities between older men and women; indeed potential increases in poverty risks would be higher for men than women. However, in 55% of the cases, potential increases in relative income poverty would be higher for older women – who already have a higher risk of relative income poverty. This would make current inequalities in income between older men and women even more marked. As baseline poverty risks are already higher among older women compared to older men in general (even before accounting for LTC spending), similar potential increases in relative income poverty risks associated with out-of-pocket costs of LTC would still lead to higher poverty risks among older women than among older men. While it is not necessarily the role of public social protection system for LTC to reduce income inequalities between older men and women, these estimates suggest that gender divides may be compounded by out-of-pocket costs of LTC services, in some jurisdictions and for some levels of LTC need.

4.3. Efficiency of social protection for long-term care in old age

119. Public social protection is efficient when gains in wellbeing and reductions in poverty and economic vulnerability are achieved at minimum cost to the public purse. Efficiency is established by comparing poverty reductions (the effects) with the total costs of public social protection (the inputs). Such a calculation is not possible for all EU Member States due to gaps in the availability of data on the costs of specific LTC programmes and schemes, the number of beneficiaries of those programmes and schemes, and the beneficiaries' income and net wealth. As such, another option is to compare estimates of poverty reductions from social protection for LTC with total public LTC spending, providing a proxy measure of efficiency. This comparison should be interpreted with caution as poverty reductions are estimates that do not take into account real-world access and utilisation, and total public LTC spending statistics include expenses that go beyond the components of LTC included in this report (e.g. ADLs, IADLs, and social activities). Furthermore, for some countries, subnational public support for LTC is compared to national-level LTC spending. Rather, such a comparison should be seen as a first rough attempt to estimate efficiency, illustrating how it could be determined as more data become available, as well as demonstrating clearly that there is a relationship between overall spending and poverty reductions.

120. Figure 4.9 illustrates how total public LTC spending as a share of GDP compares to average percentage point differences between baseline poverty risks and potential poverty risks among older people with moderate needs and use of home care with access to public support. In countries where total public LTC spending as a share of GDP is higher, potential increases in poverty risks associated with LTC are lower. However, the relationship is less strong among countries with a relatively low public expenditure in LTC as a share of GDP. The relationship is similar for home care for low and severe needs, except for the case of low needs among countries with low public expenditure in LTC (results not shown). While there is significant variation in total public spending as a share of GDP for the same levels of poverty risk differences (e.g. in Luxembourg and Sweden), caution should be taken in interpreting this variation due to the data limitations already mentioned (e.g. not all LTC spending goes towards social protection).

Figure 4.9. Public spending on long-term care as a share of GDP and percentage point differences between baseline poverty risks and poverty risks among older people with moderate needs using home care with access to public support

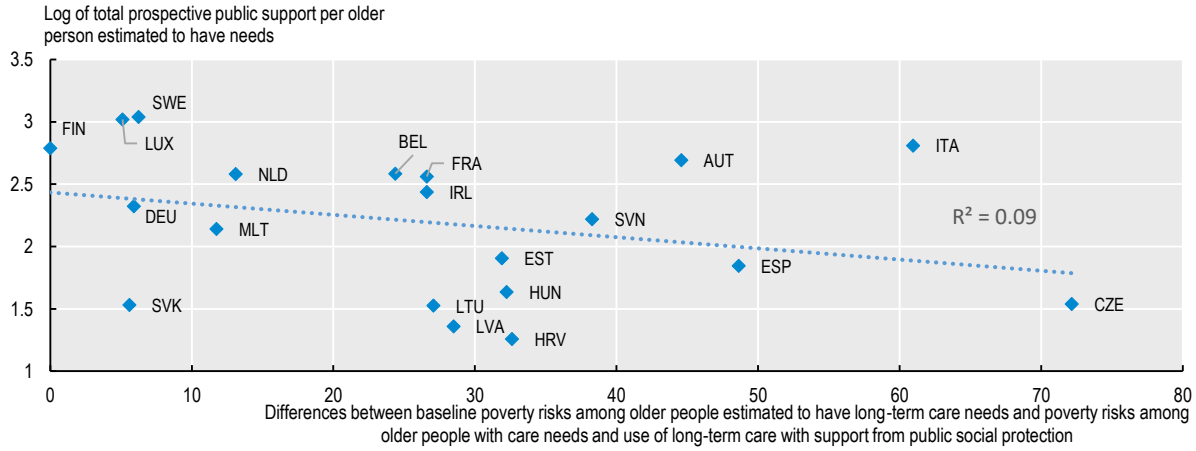


Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Moderate needs correspond to around 22.5 hours of care per week. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, EC Ageing Report (2021), SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

121. Figure 4.10 shows total prospective public support per older person estimated to have LTC needs (low, moderate or severe), and the average percentage point differences between baseline poverty risks and potential poverty risks among older people with any long-term care needs and use of home care with access to public support. While the relationship is less clear, the estimates would suggest that public social protection systems that provide greater financial support for each older person estimated to have LTC needs are also countries where poverty risks increase the least when older people pay for care.

Figure 4.10. Total prospective public support per older person and percentage point differences between baseline poverty risks and among older people using home care with access to public support

Estimates below assume all older people with estimated long-term care needs would seek formal care

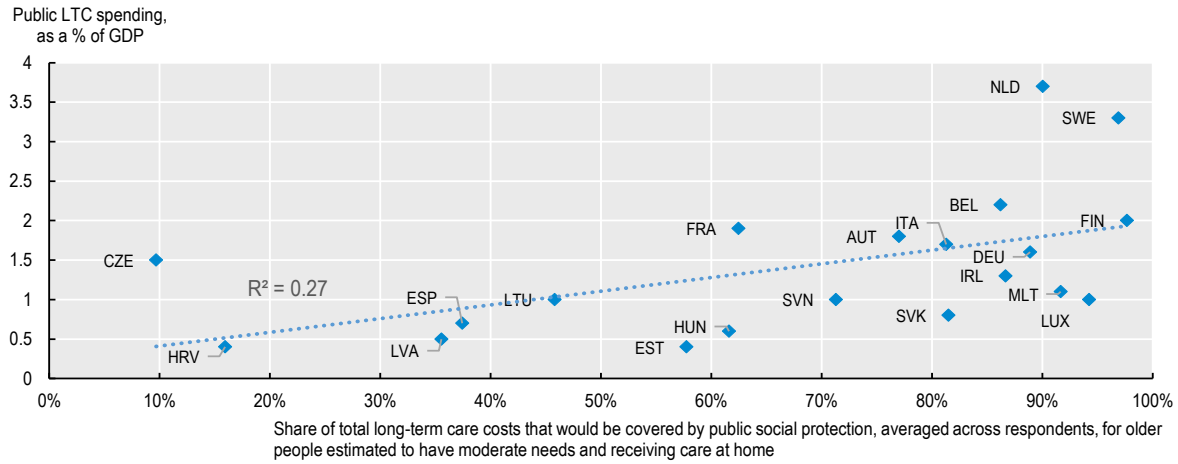


Note: Total prospective public support per older person is log-transformed to improve legibility of graph. Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

122. The efficiency of public social protection systems could not only be analysed from a poverty reduction perspective. Efficiency is also established when the out-of-pocket costs of care that older people with LTC needs face decrease after receiving support from the public social protection systems, at a minimum level of public expenditure. Figure 4.11 shows total public LTC spending as a share of GDP, and the share of total LTC costs that would be covered by public social protection, averaged across respondents, for older people estimated to have moderate needs and receiving care at home. The estimates suggest that countries with higher expenditure in LTC cover a higher portion of the costs of care faced by older people with moderate needs, on average, than countries with a low expenditure in LTC. The relation is similar for low and severe needs (results not shown). As with the previous indicators in this section, caution should be taken in interpreting the estimates due to data limitations.

Figure 4.11. Public spending on long-term care as a share of GDP and percentage decrease in the cost of care after public social protection among older people with moderate needs using home care

Estimates below assume all older people with estimated long-term care needs would seek formal care



Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Moderate needs correspond to around 22.5 hours of care per week. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, EC Ageing Report (2021), SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

5 Policy simulations and counterfactuals: case studies

5.1. A framework for policy simulations and counterfactual analysis

123. The modelling framework employed throughout this report can be used to test the impact of different policies and scenarios, such as the introduction of a new LTC benefit or scheme, or a change of rules used by a specific LTC benefit or scheme, in one or more countries. Not only is it possible to determine the impact of new policies on the risk of poverty associated with LTC but also, importantly, the distributional effects of such policies and reforms can be analysed, highlighting whether policy options are progressive or regressive, and exposing winners and losers across the income and wealth distributions, not to speak of subgroups of the older population like women and the economically vulnerable.

124. While there are undoubtedly important indicators for which data are currently sparse (e.g. access to and effective use of public social protection, as well as preferences for formal and informal care or a combination of the two), the framework used in this report creates new opportunites to test different policy options and run counterfactual analyses in a simulated environment. This could constitute a key first step to informing public policies on social protection of older people in need of LTC. When designing new policies to address poverty risks associated with LTC, it is useful to consider the evaluation criteria by which these policies will be assessed, and to consider the contribution of policy simulations and counterfactual analyses.

5.1.1. Policy simulations and counterfactual analyses can contribute to evaluations

125. Evaluations are a systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation and results (OECD, Glossary of Key Terms in Evaluation and Results Based Management, 2002). Evaluations assess the success of a programme or policy based on different *evaluation criteria*. The OECD evaluation criteria – updated in 2019 following a global consultation process – are commonly accepted as standard guidelines also beyond development assistance. The revised guidelines describe six criteria to evaluate policy interventions (OECD, Better Criteria for Better Evaluation Revised Evaluation Criteria Definitions and Principles for Use, 2020):

- Relevance: is the intervention doing the right things?
- Coherence: how well does the intervention fit?
- Effectiveness: is the intervention achieving its objectives?
- Efficiency: how well are resources being used?
- Impact: what difference does the intervention make?
- Sustainability: will the benefits last?

126. The evaluation criteria are typically the basis to define (more detailed) *evaluation questions* that should be answered by the evaluation. The framework used in this report can prospectively or retrospectively help answer questions related to relevance, effectiveness, efficiency, impact and sustainability. Simulations can help not only assess the total budget and the impact of a possible new policy, but they can help also establish the counterfactual: what would have been the level of outcomes in the absence of the new policy? Comparing the hypothetical outcomes that *would have occurred* without the intervention with *what has occurred or could occur* with the intervention provides an estimate of the impact. While the estimates shown in this report are for a single point in time (i.e. a cross-section), the framework allows for assessment of changes over time.

5.2. Simple case studies of policy simulations and counterfactual analyses

127. The following sections highlight the potential of the modelling framework developed for this report. Three scenarios, for 20 EU Member States, are presented:

- a counterfactual analysis estimating what would be the AROP rates in old age if there were no public social protection, meaning if all older people estimated to have LTC needs sought formal care and paid the total costs of care fully out-of-pocket. This counterfactual highlights the crucial role public social protection plays in limiting poverty risks associated with needing and paying for formal care.
- a scenario where all older people estimated to have LTC needs would seek formal care, and would receive public support according to existing rules and levels of LTC benefits and schemes. This scenario shows how potential gaps in existing public social protection systems may lead to increases in AROP rates among older populations.
- a policy simulation in which, taking the previous scenario where all older people estimated to have LTC needs seek formal care, and receive public support according to existing rules and levels of LTC benefits and schemes, how much would total spending on public support have to increase by to fill the potential gaps in social protection.

5.2.1. Counterfactual analysis: what would at-risk-of-poverty rates be in the absence of public social protection systems for long-term care?

128. On average across the 20 EU Member States modelled here, and according to Eurostat figures on AROP rates and old age populations, around 18% of older persons were ‘at-risk-of-poverty’ in 2017 (the same year that the latest wave of SHARE was conducted), corresponding to just over 10 million people (see Table 5.1; the average AROP rate would be 21% based on respondents’ incomes reported in SHARE Wave 7 and TILDA Wave 3).

Table 5.1. Estimated impact on AROP rates in the absence of public social protection, combining poverty risks among older people estimated to have low, moderate and severe needs

Estimates assume all older people with estimated long-term care needs would seek formal care

Country	Eurostat		Microdata				Difference between baseline AROP and AROP after LTC	
	Baseline AROP		Baseline AROP		AROP after LTC			
	%	Number	%	Number	%	Number	% points	Number
Austria (Vienna model)	13%	209 954	14%	226 229	29%	476 872	15.4	250 643
Belgium (Flemish model)	16%	332 496	18%	374 584	34%	723 915	16.6	349 331
Croatia	29%	231 503	31%	248 501	41%	335 113	10.7	86 611
Czech Republic	11%	213 118	17%	334 615	33%	655 287	16.1	320 672
Estonia (Tallinn model)	41%	104 753	46%	117 466	55%	139 840	8.8	22 374
Finland	12%	141 600	18%	207 219	28%	323 492	10.1	116 273
France	8%	1 020 299	8%	1 071 960	23%	2 970 491	14.7	1 898 531
Germany	17%	2 978 958	17%	2 978 958	31%	5 362 125	13.6	2 383 167
Hungary	9%	166 562	10%	179 374	29%	536 293	19.5	356 918
Ireland	15%	96 052	17%	108 382	23%	150 567	6.5	42 185
Italy (South Tyrol model)	16%	2 105 951	16%	2 105 951	36%	4 900 386	20.7	2 794 435
Latvia	40%	154 216	44%	171 223	52%	201 370	7.8	30 148
Lithuania	33%	182 325	38%	207 981	48%	259 294	9.4	51 313
Luxembourg	12%	9 908	10%	8 807	22%	18 545	11.5	9 738
Malta	25%	21 908	34%	29 739	40%	35 546	6.6	5 807
Netherlands	10%	316 929	10%	301 083	16%	500 748	6.3	199 665
Slovak Republic	7%	56 296	13%	109 329	24%	191 733	10.1	82 404
Slovenia	16%	64 050	19%	74 594	32%	125 366	13	50 771
Spain	15%	1 310 202	20%	1 735 132	34%	3 001 070	14.3	1 265 938
Sweden	16%	314 645	27%	535 693	35%	691 024	7.8	155 331
EU20	18%	10 031 723	21%	11 126 820	33%	21 599 076	12.0	10 472 256

Note: Estimates for AROP rates after LTC assume a situation in which there is no public social protection. The percentages and percentage points for EU20 are unweighted averages, while the numbers are sums. Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, Eurostat, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

129. In the absence of public social protection systems for LTC, and if all older people estimated to have LTC needs sought formal care and paid the total costs fully out-of-pocket, it is estimated that 33% of the old age population in 20 EU Member States would be AROP. This would result in an average increase of 12 percentage points in old age AROP rates in these 20 EU Member States, or an extra ten million more older people with disposable incomes below the AROP threshold. This counterfactual analyses illustrates just how essential public social protection systems for LTC in the EU are.

5.2.2. Scenario: what would be the impact of existing public social protection systems on poverty risks if all older people with needs sought formal care?

130. Under current existing rules and levels of public social protection for LTC in 20 EU Member States, and if all older people estimated to have LTC needs sought formal care and access to public social protection systems, it is estimated that the AROP rates in these 20 Member States would increase on average by 7 percentage points (see Table 5.2). This would mean that social protection for LTC would approximately halve poverty risks (see Table 5.1).

Table 5.2. Impact of potential gaps in public social protection on AROP rates, combining poverty risks among older people estimated to have low, moderate and severe needs

Estimates assume all older people with estimated long-term care needs would seek formal care

Country	Eurostat		Microdata				Difference between baseline AROP and AROP after LTC	
	Baseline AROP		Baseline AROP		AROP after LTC			
	%	Number	%	Number	%	Number	% points	Number
Austria (Vienna model)	13%	209 954	14%	226 229	24%	397 122	10.5	170 893
Belgium (Flemish model)	16%	332 496	18%	374 584	23%	490 326	5.5	115 742
Croatia	29%	231 503	31%	248 501	41%	331 065	10.2	82 564
Czech Republic	11%	213 118	17%	334 615	33%	655 287	16.1	320 672
Estonia (Tallinn model)	41%	104 753	46%	117 466	55%	139 840	8.8	22 374
Finland	12%	141 600	18%	207 219	18%	207 219	0	0
France	8%	1 020 299	8%	1 071 960	15%	1 885 616	6.3	813 656
Germany	17%	2 978 958	17%	2 978 958	19%	3 241 808	1.5	262 849
Hungary	9%	166 562	10%	179 374	20%	362 409	10	183 035
Ireland	15%	96 052	17%	108 382	20%	127 203	2.9	18 821
Italy (South Tyrol model)	16%	2 105 951	16%	2 105 951	32%	4 252 401	15.9	2 146 450
Latvia	40%	154 216	44%	171 223	52%	199 824	7.4	28 602
Lithuania	33%	182 325	38%	207 981	47%	253 835	8.4	45 854
Luxembourg	12%	9 908	10%	8 807	11%	9 654	1.0	847
Malta	25%	21 908	34%	29 739	36%	31 586	2.1	1 848
Netherlands	10%	316 929	10%	301 083	11%	335 945	1.1	34 862
Slovak Republic	7%	56 296	13%	109 329	15%	123 199	1.7	13 870
Slovenia	16%	64 050	19%	74 594	28%	109 353	8.9	34 759
Spain	15%	1 310 202	20%	1 735 132	33%	2 877 132	12.9	1 142 000
Sweden	16%	314 645	27%	535 693	28%	553 616	0.9	17 923
EU20	18%	10 031 723	21%	11 126 820	28%	16 584 441	7.0	5 457 621

Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, Eurostat, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

131. Even with public social protection, if every older person estimated to have LTC needs sought care in these 20 EU Member States, there could still be an increase in the number of people AROP. Potential gaps in social protection identified earlier could push around five million older people with LTC needs into relative income poverty.

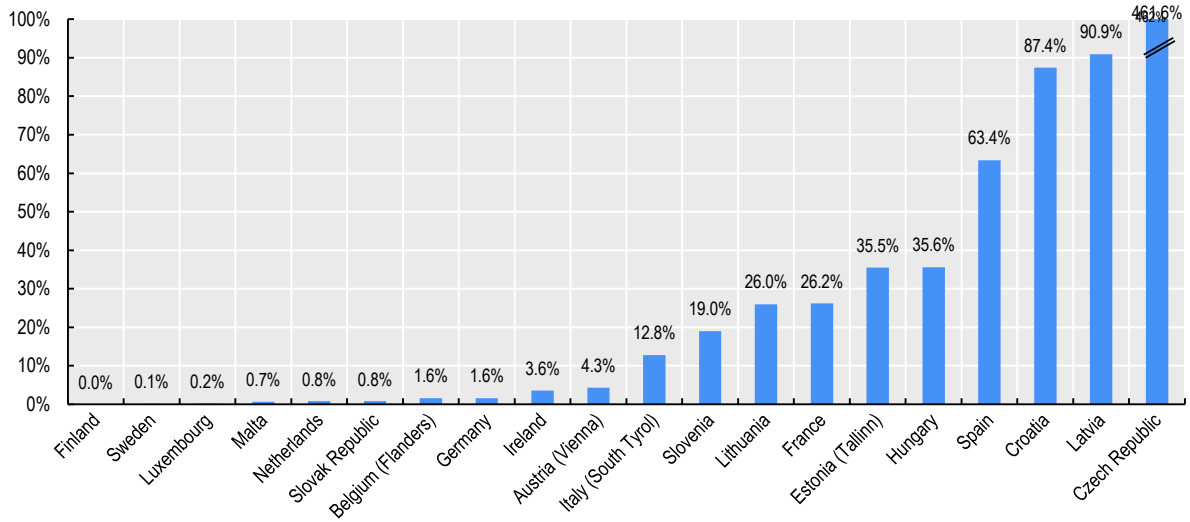
132. *But why do Eurostat AROP rates not reflect these poverty levels, given these poverty risks are due to potential gaps in existing social protection systems?* There are at least two possible explanations. The first potential explanation is that self-reported difficulties with ADLs, IADLs and physical functioning – which inform the estimates of LTC needs in this report – are not accurately matching the criteria for needs assessment in the countries and that if these respondents were assessed formally they would not qualify for social protection. A second explanation is that many older people estimated to have LTC needs may choose not, or not be able, to access formal care, for example due to barriers in access to public social protection (e.g. applications for formal assessments, access to public offices, awareness and understanding of public schemes and benefits, etc.). Many older people estimated to have LTC needs may prefer to be cared for by informal carers, and especially those with lower needs may choose not to apply for public support. The estimates in Table 5.1 and Table 5.2 highlight the value of this exercise in creating new questions and discussion, based on simulation of counterfactuals.

5.2.3. Policy simulation: what would it cost to eliminate potential gaps in public support?

133. As previously shown, in certain EU Member States, there would be substantial differences between the baseline poverty risks among older people estimated to have LTC needs and the potential poverty risks among older people estimated to have LTC needs, if all of them chose to seek formal LTC with support from public social protection systems (as seen in Figure 4.2). While public social protection systems would reduce the risks of poverty associated with paying for the out-of-pocket costs of home care for LTC needs (as seen in Figure 4.1), it is estimated that in many EU Member States public support would not bring relative income poverty levels back to baseline levels. Figure 5.1 shows estimates of the extra spending needed to eliminate poverty risks associated with paying for formal LTC, as a share of prospective total public spending, based on existing public social protection systems, and under the assumption that all older people estimated to have LTC needs would seek formal care.

Figure 5.1. Extra public spending needed to eliminate poverty risks associated with paying for formal long-term care, as a share of prospective total public spending based on existing public social protection systems

Estimates below assume all older people with estimated long-term care needs would seek formal care



Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A.

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

134. Some countries would need to increase total public support substantially in order to maintain baseline poverty risks among older people with LTC needs. This would mean that people with LTC needs would still be more likely to earn less and have less net wealth, compared to their peers that do not have LTC needs, but they would not be at increased risk of poverty due to paying for the LTC services they require. For example, to illustrate, in Spain total public support for older people estimated to have LTC needs – should they all seek formal care – would need to increase by 63% to maintain baseline poverty risks among older Spanish individuals with LTC needs (low, moderate or severe). As stated, these estimates assume that all older people estimated to have LTC needs would seek formal care. Other assumptions can be made in other policy scenarios.

6 Conclusion

135. As populations around the world rapidly age, growing numbers of older people will struggle with everyday activities that were once second nature, such as getting dressed, shopping, or going out for a walk. Global demand for LTC in old age is thus becoming increasingly topical, not just due to population ageing, but also due to changing family characteristics, projected shortages of formal and informal carers, and rising expectations of the availability, affordability and quality of LTC services and support. The share of LTC spending in total health spending or as a share of GDP has gradually increased over the last 15 years in many countries as demand for care grows (OECD, Focus On: Spending on Long-term Care, 2020). Indeed, public LTC spending could increase from 1.7% of GDP in the EU in 2019 to 3.1% of GDP in the base case scenario by 2070 across all EU Member States (DG ECFIN & AWG, 2021).

136. These trends could have significant economic consequences for countries in the coming decades, challenging the sustainability of public spending but also creating new economic opportunities. There are substantial economic and social benefits to promoting healthy ageing in terms of the economy and well-being for societies. With healthy ageing, the Ageing Report 2021 projects public expenditure on LTC could reach 2.8% of GDP in 2070 in the EU, compared to the base case 3.1% (DG ECFIN & AWG, 2021). Good health can also help to extend the working lives of older adults by reducing the time spent out of work in poor health and health-related early retirement. Preventing poor health before it begins could also help to mitigate some of the inequalities that develop and widen over the life course. Healthy ageing policies, along with other strategies to improve the efficiency of health systems, could help to increase value for money from projected increases in health and LTC spending in the EU, they could lead to the creation of jobs, and to a thriving silver economy.

137. There have been multiple recent calls to reform and reinforce LTC systems (The Lancet, 2020), including their funding, but a comprehensive measure of the societal costs associated with old age dependency is difficult to estimate, and even with information on total government spending on formal LTC services, it remains unclear how much of that spending is helping older people meet the out-of-pocket costs of LTC. This report, and the estimates contained herein, provide a comprehensive international comparison of the effectiveness (adequacy, equity and efficiency) of public social protection systems for LTC in old age in 20 EU Member States, as well as first estimates of the prevalence of LTC needs in all 27 EU Member States.

138. It is clear that public social protection for LTC is absolutely essential from an individual and social point of view. In the EU, there is a political commitment enshrined in the European Pillar of Social Rights to ensure access to quality and affordable long-term care. Care needs are inherently unpredictable, and it is very difficult for any given individual, even once they reach retirement age, to know whether they will develop an illness or disability in the future that leaves them dependent on others. While many people will never need LTC, others may develop severe needs or cognitive impairments, and may require intensive support or even institutional care. Moreover, LTC needs can persist over many years, with lifetime costs running into potentially catastrophic sums. In the absence of public support, the total costs of LTC would amount to between one and six times the median disposable income of individuals of retirement age or older in 20 EU Member States. Lower-income groups unsurprisingly face a higher risk of not being able to afford the total costs of LTC services from their incomes alone, and what is worse is they are also more

likely to need LTC compared to their richer counterparts. Even the total cost incurred by individuals with low needs could be high for those at the lower end of the income distribution.

139. The numbers of older people that could potentially benefit from public social protection in the EU are significant. On average across EU Member States, the estimated share of older people with low care needs is 12.9%, 8.2% for moderate needs and 4.8% for severe needs (weighted EU averages are 12.9%, 8.4% and 5.7% for low, moderate and severe needs). These estimated shares, combined with population numbers, indicate that between 8 and 14 million Europeans aged 65 years and over have low needs, between 5 and 8 million have moderate needs and 3 to 5 million have severe needs. Overall, between 16 and 28 million older people in the EU are estimated to have at least low needs. Prevalence estimates vary widely across EU Member States, even for countries with similar old age populations. Differences could be due to overall healthier ageing, cultural factors in the self-assessment of LTC needs, support structures in place, or due to the methodology used to survey populations.

140. Among those older people estimated to have LTC needs, the majority are aged 80 years or older, women, live in single households, earn lower incomes and are more likely to report receiving help. An estimated 60% of people with low needs are aged 65-79 across the EU (weighted average is 57%). On the other hand, the majority of older people with moderate and severe needs are 80 years old or older, 59% and 67% respectively (weighted averages are 61% and 72% for moderate and severe needs). On average across EU Member States, 66% of the estimated population with low needs are women. The estimated shares rise to 68% each for moderate and severe needs (weighted averages are 64%, 67%, and 70% for low, moderate and severe needs respectively). Across the EU25, on average, 40% of older people without LTC needs live in single households, compared to 57% of those with low needs, 68% of those with moderate needs, and 71% of those with severe needs (weigthed averages are 38% for people without LTC needs, 55% for low needs, 65% for moderate needs and 71% for people with severe need).

141. Across the EU, on average across countries, around 29% of older people estimated to have less than low needs earn incomes in the bottom tercile, compared to close to 41% of older people earning in the bottom tercile among older people estimated to have low, moderate or severe needs. Finally, across the EU, on average across countries, around 28% of older people estimated to have low needs report receiving either professional help with ADLs and IADLs or receiving informal care, compared to 48% of older people estimated to have moderate or severe needs (EU weighted averages are 38% and 63% respectively). About 60% of older people estimated to have any type of care needs (low, moderate or severe) report not receiving formal or informal care, on average across countries in the EU (EU weighted average is 49%).

142. To protect older people against the potentially catastrophic costs of LTC, public social protection systems subsidise a share of the total costs. The proportion of the total costs of LTC that public systems cover varies widely both between and within countries and subnational areas, across levels of care recipient need, income and net wealth. For example, in five countries and subnational areas, the average share of total costs met by public social protection would be below 50% for *moderate needs*, while in ten countries and subnational areas average public support would range between 60% and 90%, and in another five jurisdictions, support would be above 90% of total costs of care. A majority of countries and subnational areas would cover a greater share of the total costs of home care for severe needs compared to moderate and, especially, low needs. Most countries and subnational areas also adjust the level of public support for home care to the income of the care recipient, so that those with higher incomes receive less public support, while users on lower incomes are typically entitled to greater public support.

143. While public support is higher for older people with more severe needs and lower incomes, across countries and subnational areas, estimated prospective out-of-pocket spending would be lowest for older people with estimated low needs and highest for severe needs and lower incomes. In eight countries and subnational areas, an older person earning in the bottom income tercile would have to devote, on average, over half of their disposable income to pay for *home care for moderate needs*, leaving less than half of

their already lower income to cover basic living expenses. In all countries and subnational areas that apply assets-tests, for which data on net wealth are reported in SHARE and TILDA, older people with mean net wealth would face higher out-of-pocket costs than those without net wealth.

144. If all older people estimated to have LTC needs sought formal care and had access to public social protection (they may not be entitled to any support given their specific needs, disposable income and net wealth), public social protection would lead to significant reductions in poverty risks compared to a situation where older people have LTC needs but no public social protection. The potential reductions in poverty risks due to public social protection are generally highest for *institutional care for severe needs*, where poverty risks could be reduced by more than 75 percentage points, on average across 20 EU Member States. In eight countries poverty risks could be reduced by over 90 percentage points (Austria based on the Vienna model, Finland, Germany, Hungary, Luxembourg, Malta, the Netherlands and Sweden). On average across EU Member States, estimated potential reductions in poverty risks associated with out-of-pocket costs of home care are fairly similar across different severities of LTC needs: around 27 percentage points.

145. While these reductions in poverty risks are welcome, it is important to compare final poverty risks, after out-of-pocket costs of LTC and receipt of public support, to baseline poverty risks before LTC spending, as one dimension of effectiveness. In most EU Member States, with the exception of Finland, public support for home care would not bring relative income poverty levels back to baseline levels. In some cases, differences to baseline poverty rates would be as high as 50 percentage points or more, even after accounting for receipt of public support. For example, in eight EU Member States, for *home care for severe needs*, differences to baseline poverty rates would be 50 percentage points or more, even after accounting for receipt of public support (e.g. in Austria based on Vienna model, Czech Republic, Italy based on South Tyrol model, Latvia, Slovenia, Hungary, France and Spain).

146. While there are no silver bullets for how to organise LTC benefits and schemes to reduce poverty risks associated with LTC needs, the best performing groups of systems either rely only on non-means-tested benefits and schemes (such as Luxembourg or Ireland) or combine some form of income-testing (income-testing only or both income-and assets-testing) with non-means-tested benefits and schemes (like in Finland or in Germany). Furthermore, it would seem that having only in cash benefits may not be the most effective way to protect older people with LTC needs from the added risk of poverty that is associated with the out-of-pocket costs of care. However, overall, whether a country has means-tested and/or non-means-tested benefits and schemes does not seem, in itself, to determine its adequacy in a significant way. Beyond merely combining different types of benefits, it is important to combine them appropriately. Means-tests must be well-designed (e.g. with thresholds that target the most vulnerable) and non-means-tested benefits and schemes should cover all relevant costs (e.g. help with IADLs).

147. Social protection for LTC is equitable when it contributes to reducing poverty, economic vulnerability and inequities in financial risks associated with care needs. In 15 countries and subnational areas, public support for home care for older people earning close to the AROP threshold would fall short of covering the total costs of LTC, for all three levels of severity of needs. Moreover, in most countries and subnational areas, public social protection systems would not cover the total costs of care in full for older people who are both income and asset poor, leaving some of the costs to be paid out-of-pocket, which could lead income and asset poor older people to deplete their real assets, including potentially their primary residence, to be able to pay for formal care. While public support for women is generally higher as a consequence of older women's higher economic vulnerability, in some cases, average potential increases in relative income poverty would be higher for older women. This would make current inequalities in income between older men and women even more marked.

148. A new counterfactual analysis shows that in the absence of public support the number of older people AROP could double in 20 EU Member States, if all older people estimated to have LTC needs sought formal care. On average across the 20 EU Member States modelled here, and according to

Eurostat figures on AROP rates and old age populations, around 18% of older persons were AROP in 2017, corresponding to just over 10 million people (the AROP rate implied in SHARE/TILDA is slightly higher at 21%). Without public social protection, an estimated 33% of the old age population in 20 EU Member States would be AROP, an average increase of 12 percentage points in old age AROP rates in these 20 EU Member States. Even with public social protection, if every older person estimated to have LTC needs sought formal care in these 20 EU Member States, there could still be an increase in the number of people AROP. Potential gaps in existing social protection systems could push around five million older people with LTC needs into relative income poverty, if they sought formal care.

149. This report contributes both new methods and new implications for policy makers. To estimate the prevalence of LTC needs in 27 EU Member States, this report presents a novel method for deriving estimates from microdata, building on an ensemble of multiple tested and validated approaches that ensure maximum alignment with what is known of the structure of LTC needs from high-quality data, alignment with multiple distinct surveys, and alignment with data from administrative sources on needs assessments and beneficiaries. The modelling framework employed throughout this report can be used to not only determine the impact of new policies on the risk of poverty associated with LTC but also, importantly, the distributional effects of such policies and reforms, highlighting whether policy options are progressive or regressive, and allowing focused analyses of subgroups of the older population like women and the economically vulnerable.

150. The framework used in this report creates new opportunites to test different policy options and run counterfactual analyses in a simulated environment. This could constitute a key first step to informing public policies on social protection of older people in need of LTC. As population ageing continues and even accelerates, countries will increasingly face difficult choices in trying to balance an adequate level of social protection for LTC with a sustainable level of total public spending. A simulated environment could be a much needed learning device, highlighting data gaps that are likely to be crucial in understanding the problems and the possible solutions.

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Annex A. Typical cases of long-term care needs

151. The typical cases of LTC needs used in this report were developed from a number of sources, including: a set of LTC scenarios that were developed as part of a 2006 review of the United Kingdom's social care system; the service specifications in social insurance systems, particularly the German system; consultation with academic and government experts from OECD countries and EU Member States; and consultation with a geriatrician to ensure clinical plausibility. This process aimed to define scenarios that are realistic, but they might not be representative of the populations of OECD countries and EU Member States, in that the numbers of people whose situations correspond to each case in each country are not yet known. Moreover, they do not take into account new models of care such as reablement and assisted living and as such may not represent what is considered best practice in all countries.

152. In phase 1, five typical cases of LTC need were defined, spanning different levels of severity (low, moderate and severe) and different ways in which needs can be met (professional home care, informal care and institutional care). In phase 2, in response to calls for a more realistic representation of the boundaries between formal and informal home care, the OECD extended the informal care case used in phase 1 to four new cases, which have been developed and tested with countries in the project's steering group. All eight cases are described below.

Typical case 1 | Home care for low needs

Description of low needs

Activities of daily living | Barthel Index score: 17/20	
Mobility	Can get in and out of bed independently.
	Has limited movement of the torso and problems bending down.
	Can walk slowly in the home without a mobility aid and stand without the risk of falling.
	Can leave the house without help and go for short walks using a walking frame.
	Can travel independently to see a doctor.
Hygiene	Can dress and undress independently, although this is slow and requires significant effort, especially for dressing the bottom half of the body.
	Needs help to get in and out of the bathtub.
	Can wash face and upper part of the body with assistance, but back and lower part of the body need to be washed by caregiver.
	Can comb hair and brush teeth under supervision.
	Has full bladder and bowel control, can use toilet independently and can clean self after defaecation.
Food intake	Can cut food into pieces and independently consume food and drinks.
Instrumental activities of daily living | Lawton IADL score: 6/8	
Shopping	Can go to supermarket independently but cannot carry heavy shopping bags.
Cooking	Can prepare simple meals and arrange delivery of meals-on-wheels (the cost of these meals should not be included in your answers).
Cleaning	Can do simple housework (e.g. cleaning surfaces) but nothing that requires lifting or bending (e.g. vacuuming the floor).
Laundry	Cannot do any laundry.
Social needs	
This person is able to maintain social activities independently.	
Other details	
None of the above needs can be met through informal care. If relevant, assume that this person lives alone.	

Description of home care services for low needs

	Services provided by professional caregiver 6 hours and 30 minutes per week Except where support or supervise is specified, the caregiver must completely take over the activity
Activities of daily living | 2 hours and 30 minutes per week	
Washing and dressing 20 minutes, six times a week	Supervise patient to undress and dress again
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Bathing and dressing 30 minutes, once a week	Support patient to undress and dress again
	Support patient to get into the bathtub
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Instrumental activities of daily living | 4 hours per week	
Shopping	1 hour of support, twice a week
Cleaning	1 hour, once a week
Laundry	1 hour, once a week
Social needs | None	
None	

Typical case 2 | Home care for moderate needs

Description of moderate needs

Activities of daily living | Barthel Index score: 11/20	
Mobility	Can get in and out of bed independently.
	Has limited movement of the torso and problems bending down.
	Can walk slowly in the home with the use of a mobility aid, but is unable to climb stairs unaided.
	Can transfer independently in and out of bed, chairs and toilets using grab rails, which are installed in the home (the cost of these adaptations was not considered in questionnaires of phase 1)
	Can leave the house without help and go for short walks only with assistance and the use of a walking frame. Needs a wheelchair to travel longer distances or remain out of the house for a long time.
	Can travel to see a doctor if accompanied by caregiver.
Hygiene	Requires assistance to dress and undress.
	Needs help to get in and out of the bathtub.
	Can wash face with assistance, but back and upper and lower parts of the body need to be washed by caregiver.
	Can comb hair and brush teeth under supervision.
	Has bowel control, can use toilet independently using grab rails which are installed, and can clean self after defaecation.
	Has limited bladder control and wears pads, which need to be changed twice a day.
Food intake	Can cut food into pieces and independently consume food and drinks.
Instrumental activities of daily living | Lawton IADL score: 6/8	
Shopping	Can go to local shops with assistance but cannot carry shopping bags.
Cooking	Cannot prepare food.
Cleaning	Cannot do any housework or cleaning.
Laundry	Cannot do any laundry.
Social needs	
Unable to maintain any social activities without assistance.	
Other details	
None of the above needs can be met through informal care. All necessary home adaptations have been installed and the cost of these adaptations is not in scope for this project. If relevant, assume that this person lives alone.	

Description of home care services for moderate needs

	Services provided by professional caregiver 22 hours and 30 minutes per week Except where support or supervise is specified, the caregiver must completely take over the activity
Activities of daily living | 6 hours per week	
Washing and dressing 20 minutes, six times a week	Supervise patient to undress and dress again
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Bathing and dressing 30 minutes, once a week	Support patient to undress and dress again
	Support patient to get into the bathtub
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Incontinence management 15 minutes, twice a day	Application of new sanitary pads
	Removal and disposal of used ones
Instrumental activities of daily living | 14 hours and 30 minutes per week	
Shopping	1 hour of support, twice a week
Cleaning	1 hour, once a week
Prepare meals	1 hour and 30 minutes, per day, in total
Laundry	1 hour, once a week
Social needs | 2 hours per week	
For example, being taken out for a walk twice a week.	

Typical case 3 | Home care for severe needs

Description of severe needs

Activities of daily living | Barthel Index score: 4/20	
Mobility	Cannot get up or go to bed independently. Needs to be lifted manually into/out of bed and positioned in bed.
	Can sit independently and has limited use of arms.
	Can stand when holding onto a person or object only for short periods before losing balance and falling.
	Can only make one or two steps before losing balance even when holding onto a person or object, so is put in a wheelchair for most of the day. Cannot move the wheelchair but needs to be moved everywhere within the apartment or outside the apartment by a caregiver.
	Can travel as a passenger when lifted into a car/taxi when accompanied by a caregiver.
	Cannot travel regularly to see the doctor, so requires home visits (the cost of these adaptations was not considered in questionnaires).
Hygiene	Cannot dress or undress independently. This needs to be completely done by the caregiver with the patient sitting on the bed or bathtub.
	Needs to be lifted in and out of the bathtub that is done manually.
	Can only wash face with some difficulties and some assistance. Upper part, back and lower part of the body need to be washed by the caregiver.
	Needs support when combing hair and brushing teeth.
	Has bowel control but needs to be lifted from wheelchair to toilet and cleaned after defaecation; has limited bladder control and wears pads that need to be changed twice a day.
	Cannot cut food into pieces but can move food and drink (with straw) to own mouth under supervision.
Food intake	Can cut food into pieces and independently consume food and drinks.
Instrumental activities of daily living | Lawton IADL score: 0/8	
Shopping	Cannot do any shopping.
Cooking	Cannot prepare food.
Cleaning	Cannot do any housework or cleaning.
Laundry	Cannot do any laundry.
Other	Unable to use the telephone or manage money without assistance.
Social needs	
Unable to maintain any social activities without assistance.	
Other details	
Also requires significant health care, but this is outside the scope of the project. Has advanced dementia and displays hoarding behaviours and agitated or aggressive behaviours, such as shouting or hitting out. Lives with a spouse, who can provide 24-hour supervision, help with taking medicines, and manage the finances but cannot provide any other ADL/IADL care.	

Description of home care services for severe needs

	Services provided by professional caregiver 41 hours and 15 minutes per week Except where support or supervise is specified, the caregiver must completely take over the activity
Activities of daily living | 24 hours and 45 per week	
Washing and dressing 30 minutes, six times a week	Transfer out of bed, lifting patient into wheelchair
	Support patient to undress and dress again
	Support patient in washing face
	Support patient in hair care, combing
	Washing the patient's upper body, back and lower body
	Support to use toilet (lifting patient from wheelchair to toilet and cleaning after defaecation)
	Application of new sanitary pads, removal and disposal of used ones
	Cleaning of care area
Bathing and dressing 45 minutes, once a week	Transfer out of bed, lifting patient into wheelchair
	Support patient to undress and dress again
	Lifting patient in bathtub
	Support patient in washing face
	Support patient in hair care, combing
	Washing the patient's upper body, back and lower body
	Support to use toilet (lifting patient from wheelchair to toilet and cleaning after defaecation)
	Application of new sanitary pads, removal and disposal of used ones
	Cleaning of care area
Help with feeding 50 minutes daily, three times a day	Cutting of food to mouth pieces
	Supervise food intake
	Moving patient to table
	Providing drinks
	Disposal of material
	Cleaning of work space
Going to bed 30 minutes daily	Support patient to undress and dress again
	Helping patient to transfer into bed and positioning of person in bed
	Support to use toilet (lifting patient from wheelchair to toilet and cleaning after defaecation)
	Application of new sanitary pads, removal and disposal of used ones
Instrumental activities of daily living | 14 hours and 30 minutes per week	
Shopping	1 hour of support, twice a week
Cleaning	1 hour, once a week
Prepare meals	1 hour and 30 minutes, per day, in total
Laundry	1 hour, once a week

Social needs | 2 hours per week
For example, being taken out for a walk twice a week.

Typical cases 4A – 4D | Informal care for moderate needs

Description of moderate needs

Activities of daily living | Barthel Index score: 11/20	
Mobility	Can get in and out of bed independently.
	Has limited movement of the torso and problems bending down.
	Can walk slowly in the home with the use of a mobility aid, but is unable to climb stairs unaided.
	Can transfer independently in and out of bed, chairs and toilets using grab rails, which are installed in the home (the cost of these adaptations was not considered in questionnaires of phase 1)
	Can leave the house without help and go for short walks only with assistance and the use of a walking frame. Needs a wheelchair to travel longer distances or remain out of the house for a long time.
	Can travel to see a doctor if accompanied by caregiver.
Hygiene	Requires assistance to dress and undress.
	Needs help to get in and out of the bathtub.
	Can wash face with assistance, but back and upper and lower parts of the body need to be washed by caregiver.
	Can comb hair and brush teeth under supervision.
	Has bowel control, can use toilet independently using grab rails which are installed, and can clean self after defaecation.
	Has limited bladder control and wears pads, which need to be changed twice a day.
Food intake	Can cut food into pieces and independently consume food and drinks.
Instrumental activities of daily living | Lawton IADL score: 6/8	
Shopping	Can go to local shops with assistance but cannot carry shopping bags.
Cooking	Cannot prepare food.
Cleaning	Cannot do any housework or cleaning.
Laundry	Cannot do any laundry.
Social needs	
Unable to maintain any social activities without assistance.	
Other details	
None of the above needs can be met through informal care. All necessary home adaptations have been installed and the cost of these adaptations is not in scope for this project. If relevant, assume that this person lives alone.	

Description of care provided by spouse | Typical case 4A

The informal carer is an 80-year old spouse, retired (no lost income as consequence of caring), residing with the care recipient, with fair health and no LTC needs, and with all relevant contributions to social insurance paid.

	Services provided by spouse 22 hours and 30 minutes per week Except where support or supervise is specified, the caregiver must completely take over the activity
Activities of daily living | 6 hours per week	
Washing and dressing 20 minutes, six times a week	Supervise patient to undress and dress again
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Bathing and dressing 30 minutes, once a week	Support patient to undress and dress again
	Support patient to get into the bathtub
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Incontinence management 15 minutes, twice a day	Application of new sanitary pads
	Removal and disposal of used ones
Instrumental activities of daily living | 14 hours and 30 minutes per week	
Shopping	1 hour of support, twice a week
Cleaning	1 hour, once a week
Prepare meals	1 hour and 30 minutes, per day, in total
Laundry	1 hour, once a week
Social needs | 2 hours per week	
For example, being taken out for a walk twice a week.	

Description of care provided by spouse and professional caregiver | Typical case 4B

The informal carer is an 80-year old spouse, retired (no lost income as consequence of caring), residing with the care recipient, with fair health and no LTC needs, and with all relevant contributions to social insurance paid. The informal carer provides 12 hours and 30 minutes of the 22 hours and 30 minutes of care.

	Services provided by spouse and professional caregiver 22 hours and 30 minutes per week Except where support or supervise is specified, the caregiver must completely take over the activity
Activities of daily living | 6 hours per week provided by professional caregiver	
Washing and dressing 20 minutes, six times a week	Supervise patient to undress and dress again
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Bathing and dressing 30 minutes, once a week	Support patient to undress and dress again
	Support patient to get into the bathtub
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Incontinence management 15 minutes, twice a day	Application of new sanitary pads
	Removal and disposal of used ones
Instrumental activities of daily living | 14 hours and 30 minutes per week	
Shopping	1 hour of support, twice a week provided by professional caregiver
Cleaning	1 hour, once a week provided by professional caregiver
Prepare meals	1 hour and 30 minutes, per day, in total provided by spouse
Laundry	1 hour, once a week provided by professional caregiver
Social needs | 2 hours per week provided by spouse	
For example, being taken out for a walk twice a week.	

Description of care provided by adult child | Typical case 4C

The carer is the care recipient's adult child, 55 years old, gave up or reduced work to provide care (losing what they would have earned in number of hours spent caring), residing within 5 km of the care recipient, with good health, and with all relevant contributions to social insurance paid.

	Services provided by adult child 22 hours and 30 minutes per week Except where support or supervise is specified, the caregiver must completely take over the activity
Activities of daily living | 6 hours per week	
Washing and dressing 20 minutes, six times a week	Supervise patient to undress and dress again
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Bathing and dressing 30 minutes, once a week	Support patient to undress and dress again
	Support patient to get into the bathtub
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Incontinence management 15 minutes, twice a day	Application of new sanitary pads
	Removal and disposal of used ones
Instrumental activities of daily living | 14 hours and 30 minutes per week	
Shopping	1 hour of support, twice a week
Cleaning	1 hour, once a week
Prepare meals	1 hour and 30 minutes, per day, in total
Laundry	1 hour, once a week
Social needs | 2 hours per week	
For example, being taken out for a walk twice a week.	

Description of care provided by adult child and professional caregiver | Typical case 4D

The carer is the care recipient's adult child, 55 years old, gave up or reduced work to provide care (losing what they would have earned in number of hours spent caring), residing within 5 km of the care recipient, with good health, and with all relevant contributions to social insurance paid. The informal carer provides 12 hours and 30 minutes of the 22 hours and 30 minutes of care.

	Services provided by spouse and professional caregiver 22 hours and 30 minutes per week Except where support or supervise is specified, the caregiver must completely take over the activity
Activities of daily living | 6 hours per week provided by professional caregiver	
Washing and dressing 20 minutes, six times a week	Supervise patient to undress and dress again
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Bathing and dressing 30 minutes, once a week	Support patient to undress and dress again
	Support patient to get into the bathtub
	Support patient to wash the upper part of the body
	Supervise hair care, combing
	Wash the lower part of the patient's body and back
	Cleaning of care area
Incontinence management 15 minutes, twice a day	Application of new sanitary pads
	Removal and disposal of used ones
Instrumental activities of daily living | 14 hours and 30 minutes per week	
Shopping	1 hour of support, twice a week provided by professional caregiver
Cleaning	1 hour, once a week provided by professional caregiver
Prepare meals	1 hour and 30 minutes, per day, in total provided by adult child
Laundry	1 hour, once a week provided by professional caregiver
Social needs | 2 hours per week provided by adult child	
For example, being taken out for a walk twice a week.	

Typical case 5 | Institutional care for severe needs

Description of severe needs

Activities of daily living | Barthel Index score: 4/20	
Mobility	Cannot get up or go to bed independently. Needs to be lifted manually into/out of bed and positioned in bed.
	Can sit independently and has limited use of arms.
	Can stand when holding onto a person or object only for short periods before losing balance and falling.
	Can only make one or two steps before losing balance even when holding onto a person or object, so is put in a wheelchair for most of the day. Cannot move the wheelchair but needs to be moved everywhere within the apartment or outside the apartment by a caregiver.
	Can travel as a passenger when lifted into a car/taxi when accompanied by a caregiver.
	Cannot travel regularly to see the doctor, so requires home visits (the cost of these adaptations was not considered in questionnaires).
Hygiene	Cannot dress or undress independently. This needs to be completely done by the caregiver with the patient sitting on the bed or bathtub.
	Needs to be lifted in and out of the bathtub that is done manually.
	Can only wash face with some difficulties and some assistance. Upper part, back and lower part of the body need to be washed by the caregiver.
	Needs support when combing hair and brushing teeth.
	Has bowel control but needs to be lifted from wheelchair to toilet and cleaned after defaecation; has limited bladder control and wears pads that need to be changed twice a day.
	Cannot cut food into pieces but can move food and drink (with straw) to own mouth under supervision.
Food intake	Can cut food into pieces and independently consume food and drinks.
Instrumental activities of daily living | Lawton IADL score: 0/8	
Shopping	Cannot do any shopping.
Cooking	Cannot prepare food.
Cleaning	Cannot do any housework or cleaning.
Laundry	Cannot do any laundry.
Other	Unable to use the telephone or manage money without assistance.
Social needs	
Unable to maintain any social activities without assistance.	
Other details	
Also requires significant health care, but this is outside the scope of the project. Has advanced dementia and displays hoarding behaviours and agitated or aggressive behaviours, such as shouting or hitting out.	

Description of institutional care services for severe needs

	Services provided by professional caregiver 41 hours and 15 minutes per week Except where support or supervise is specified, the caregiver must completely take over the activity
Activities of daily living | 24 hours and 45 per week	
Washing and dressing 30 minutes, six times a week	Transfer out of bed, lifting patient into wheelchair
	Support patient to undress and dress again
	Support patient in washing face
	Support patient in hair care, combing
	Washing the patient's upper body, back and lower body
	Support to use toilet (lifting patient from wheelchair to toilet and cleaning after defaecation)
	Application of new sanitary pads, removal and disposal of used ones
	Cleaning of care area
Bathing and dressing 45 minutes, once a week	Transfer out of bed, lifting patient into wheelchair
	Support patient to undress and dress again
	Lifting patient in bathtub
	Support patient in washing face
	Support patient in hair care, combing
	Washing the patient's upper body, back and lower body
	Support to use toilet (lifting patient from wheelchair to toilet and cleaning after defaecation)
	Application of new sanitary pads, removal and disposal of used ones
	Cleaning of care area
Help with feeding 50 minutes daily, three times a day	Cutting of food to mouth pieces
	Supervise food intake
	Moving patient to table
	Providing drinks
	Disposal of material
	Cleaning of work space
Going to bed 30 minutes daily	Support patient to undress and dress again
	Helping patient to transfer into bed and positioning of person in bed
	Support to use toilet (lifting patient from wheelchair to toilet and cleaning after defaecation)
	Application of new sanitary pads, removal and disposal of used ones
Instrumental activities of daily living	
Whole institution	Laundry, cleaning, preparing and serving meals. Services are provided to all residents, so it is not possible to assign an amount of professional caregiver time for a single care recipient.
Individual level	Help with finances, 20 minutes, once a week
	Help taking medications, 15 minutes daily

Social needs
The institution organises regular social activities for all residents.

Annex B. Modelling framework and process

Adjusted weights to correct for the underrepresentation of people living in residence and nursing homes in the SHARE

153. Most countries in the SHARE typically under-sample people living in retirement and nursing homes, as they do not use specific sampling methodologies to achieve representativeness of these groups. While in most countries the SHARE sampling frame includes persons living in nursing homes and residential care facilities, people living in institutions have a lower probability of being included in the survey (Bergmann, Scherpenzeel, & Börsch-Supan, 2019). According to De Luca and colleagues, Belgium, the Czech Republic and Italy excluded people living in retirement and nursing homes from their population registers for sampling purposes (De Luca, Celidoni, & Trevisan, 2015). The heterogeneity in the sampling frames used across countries may also lead to country-specific differences in representation (Bergmann, Scherpenzeel, & Börsch-Supan, 2019).

154. In this report, the underrepresentation in the SHARE sample of people living in residential care and nursing homes are adjusted *ex-post*, for the countries for which it is possible, using adjusted sample weights. Based on the methodology used by Barczyk and Kredler (Long-Term Care Across Europe and the United States: The Role of Informal and Formal Care, 2019), and in collaboration with researchers from the Center for Economic and Social Research of the University of Southern California, individual-level weights were constructed to align the shares of nursing home residents in the SHARE with the shares in OECD Health Statistics 2020. Even so, there is no representation of people living in nursing homes for Greece, Ireland, Lithuania, Netherlands, Romania and the Slovak Republic. Table B.1 shows the results of adjustments to weights.

Table B.1. Share of population age 65+ living in a nursing home, by sample weights

Country	Using SHARE weights	Using adjusted weights
Austria	2.7%	4.6%
Belgium	4.8%	8.8%
Bulgaria	0.5%	0.8%
Croatia	1.6%	2.7%
Cyprus	0.5%	0.8%
Czech Republic	2.2%	2.2%
Denmark	3.1%	3.9%
Estonia	2.2%	5.0%
Finland	2.5%	4.5%
France	3.0%	4.1%
Germany	2.6%	4.1%
Greece	0.0%	-
Hungary	0.7%	3.0%
Ireland	0.0%	-
Italy	0.8%	1.4%
Latvia	0.3%	0.4%
Lithuania	0.0%	-
Luxembourg	4.7%	5.3%
Malta	3.5%	6.0%
Netherlands*	0.0%	-
Poland	0.0%	0.9%
Portugal	6.9%	1.3%
Romania	0.0%	-
Slovak Republic	0.0%	-
Slovenia	1.6%	4.8%
Spain	2.6%	2.0%
Sweden	2.5%	4.3%

Note: *For the Netherlands, adjusted weights are not possible due to a lack of sampling weights..
Source: SHARE survey (Wave 7, 2017).

Adjustments to income variables in the SHARE and TILDA

155. The SHARE collects data on two alternative measures of total household income (Bergmann, Scherpenzeel, & Börsch-Supan, 2019). The first measure, named *thinc*, is obtained from the aggregation at the household level of all individual income components, while the second measure, named *thinc2*, is obtained by a one-shot question on monthly household income (the variable name is *HH017*). De Luca and colleagues (Item nonresponse and imputation strategies in SHARE Wave 5, 2015) suggest that there is no particular reason to favour one income measure over the other. As such, in this report, the maximum of both measures is used as total household income. This value is then equivalised using the square root of the household size, as described in the section titled “Glossary, concepts and definitions”.

156. A comparison of means and upper bounds of deciles of equivalised household income in the SHARE and TILDA with the same metrics derived from the OECD *Income Distribution Database* (IDD) shows that incomes reported, or imputed, in the SHARE/TILDA are frequently lower than those in the IDD (see Table B.2 for means; upper bounds not shown although the patterns are similar; similar patterns are also observed when income responses are winsorized, using 90%). Reasons for these discrepancies are unclear. Previous research into income measurement errors suggest there could be multiple drivers for differences across surveys and between surveys and administrative sources, and that these drivers could lead to both overreporting and underreporting of income (Angel, Disslbacher, Humer, & Schnetzer, 2019;

Moore, Stinson, & Welniak, 1997). Indeed, there does not seem to be a common pattern of over or underreporting of income. However, Moore and colleagues (Income Measurement Error in Surveys: A Review, 1997) do find that survey respondents typically underreport their incomes, with the authors noting that the "consistency with which the survey estimates fall below the benchmarks is striking." Researchers from ISSDA have also noted lower reported income values in TILDA Wave 1 compared to those in EU-SILC (Barrett, Savva, Timonen, & Kenny, 2011).

Table B.2. Incomes in the OECD IDD are almost always higher than those reported in surveys

Ratio of mean household income in the SHARE/TILDA and in the OECD IDD database, per income decile. A value over 1 indicates mean incomes in the OECD IDD database are higher than in the SHARE/TILDA.

Country	Income deciles among people aged 65 years and older									
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Austria	1.02	1.2	1.2	1.24	1.24	1.24	1.22	1.23	1.24	1.11
Belgium	1.04	0.97	0.94	0.95	0.96	0.97	0.93	0.93	0.92	0.48
Bulgaria	1.27	1.31	1.35	1.33	1.36	1.37	1.39	1.37	1.45	1.95
Croatia	1.03	1.12	1.12	1.18	1.18	1.17	1.22	1.27	1.28	1.28
Cyprus	1.46	1.25	1.18	1.17	1.17	1.1	1.01	0.87	0.54	0.31
Czech Republic	1.22	1.12	1.11	1.08	1.08	1.08	1.08	1.11	1.17	1.35
Denmark	1.17	1.08	1.04	0.99	0.94	0.9	0.89	0.87	0.87	0.66
Estonia	1.18	1.07	1.04	1.07	1.14	1.12	1.1	1.23	1.31	1.33
Finland	1.19	1.08	1.04	1.05	1.02	1.04	1.03	1.01	1.01	1.09
France	1.14	1.11	1.06	1.06	1.05	1.04	1.01	0.97	0.94	0.9
Germany	1.01	1.05	1.04	1.01	1.01	1.01	0.99	0.99	1.01	1.08
Greece	0.76	0.9	0.92	0.94	0.95	0.95	0.95	0.93	0.88	0.42
Hungary	0.89	1.07	1.07	1.07	1.06	1.07	1.13	1.17	1.17	1.42
Ireland	2.83	2.08	2.36	2.24	1.74	1.99	1.77	1.89	1.79	1.78
Italy	0.96	1.16	1.21	1.21	1.24	1.27	1.28	1.29	1.26	0.84
Latvia	1.19	1.15	1.16	1.26	1.32	1.37	1.4	1.52	1.72	2.19
Lithuania	1.13	1.13	1.13	1.14	1.16	1.21	1.29	1.38	1.48	1.93
Luxembourg	0.87	1.05	1.07	1.07	1.08	1.1	1.13	1.18	1.25	1.3
Malta	1.43	1.45	1.4	1.38	1.35	1.41	1.41	1.41	1.36	1.17
Netherlands	1.42	1.14	1.03	0.95	0.91	0.89	0.88	0.86	0.94	0.33
Poland	1.32	1.29	1.28	1.28	1.26	1.25	1.26	1.25	1.27	1.27
Portugal	1.22	1.18	1.17	1.16	1.23	1.33	1.45	1.45	1.63	1.96
Romania	1.42	1.23	1.22	1.16	1.12	1.14	1.14	1.14	1.17	1.14
Slovak Republic	1.12	1.14	1.12	1.08	1.07	1.09	1.14	1.16	1.15	0.73
Slovenia	1.38	1.45	1.48	1.4	1.38	1.39	1.4	1.38	1.39	1.52
Spain	1.07	1.27	1.3	1.35	1.37	1.4	1.41	1.42	1.44	1.43
Sweden	1.02	1.01	0.99	1	1	1.01	1.02	1.04	1.08	1.43
EU27	1.21	1.19	1.19	1.18	1.16	1.18	1.18	1.20	1.21	1.20

Note: EU27 average is the unweighted average of country ratios per income decile.
Source: OECD *Income Distribution Database*, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

157. Due to lower reported incomes in SHARE and TILDA, compared to incomes in IDD, the median income in IDD is typically higher than in SHARE/TILDA, as seen in Table B.3 (the exceptions are Belgium, Denmark, Greece and Sweden, where the median incomes are higher in SHARE than in IDD). Lower reported incomes across all deciles lead to a situation where at-risk-of-poverty (AROP) rates calculated using equivalised household incomes in SHARE/TILDA can be significantly higher than AROP rates reported by Eurostat (see Table B.3). Naturally, these baseline AROP rates will influence the results of the

analyses of poverty risks associated with needing, and paying for, LTC services. If the baseline rates are high, then the effects of public social protection system on poverty risks may appear less significant.

158. To adjust for underreporting of income in SHARE/TILDA, and thus ensure that baseline poverty risks derived from SHARE/TILDA are comparable to those reported by Eurostat and in the OECD IDD, a stepwise approach is employed. First, for each country separately, calibrated weights (adjusted for nursing home representation, see previous section) are used to create an array of household incomes, based on incomes reported in SHARE and TILDA, where each individual income is repeated a number of times equal to the respondent's weight. The number of elements in this array will be roughly the same as the number of people aged 65 and over in the respective country. Second, deciles of household income are determined based on this array. Third, means and upper bounds are calculated for each decile. Fourth, the ratios between the means (or upper bounds) calculated from SHARE/TILDA and those reported in the OECD IDD are calculated. Fifth, and finally, multiply original incomes in SHARE/TILDA by the respective ratios of means (or upper bounds), for each decile. This stepwise approach creates two new adjusted incomes: one adjusted by the ratios of means, and one adjusted by the ratios of upper bounds. The whole process is then repeated but with winsorized incomes (using 90%). The end result is four new income variables, two for non-winsorized incomes and two for winsorized incomes.

159. The differences between the AROP rates in Eurostat and those in SHARE/TILDA, as well as those derived from the four new adjusted income variables, are then calculated. These differences are used to select the income manipulation (including keeping the original income variable, i.e. no adjustment) that minimises differences to the AROP rates in Eurostat. Table B.3 shows the AROP rates after adjustments, which for most countries, are closer to the AROP rates in Eurostat. All subsequent analyses of public support, out-of-pocket costs, net incomes, and risk of poverty, are based on the income variables that minimise differences in AROP rates between SHARE/TILDA and Eurostat.

Table B.3. Comparisons of median incomes and AROP rates in databases and surveys

Lower median incomes in SHARE/TILDA compared to median incomes in the OECD IDD, mean that AROP rates implicit in SHARE/TILDA are much higher than AROP rates in Eurostat.

Country	Median in IDD	Median in SHARE/TILDA	AROP in Eurostat	AROP in SHARE/TILDA	AROP after adjustments
Austria*	25 833	21 000	12.9	27.3	14.6
Belgium*	19 641	20 637	15.8	19.2	19.2
Bulgaria	2 940	2 256	32.0	61.5	30.0
Croatia*	5 815	5 145	28.6	41.8	31.5
Cyprus	12 670	10 392	21.6	44.3	26.1
Czech Republic*	7 446	6 769	10.7	27.5	16.9
Denmark	24 148	27 369	8.8	24.3	16.7
Estonia*	6 501	5 961	41.2	59.7	48.5
Finland*	21 867	21 213	12.3	24.6	18.9
France*	22 570	21 213	7.9	14.1	8.3
Germany*	20 048	21 213	17.0	20.8	17.8
Greece	8 440	9 008	12.4	9.5	12.6
Hungary*	5 304	5 167	9.1	15.5	10.1
Ireland*	20 810	11 188	14.8	64.2	20.0
Italy*	17 768	14 425	15.6	28.4	15.5
Latvia*	4 785	3 818	39.9	70.5	44.5
Lithuania*	4 822	3 988	33.4	49.2	38.1
Luxembourg*	43 120	39 032	11.7	13.4	10.9
Malta*	11 251	8 078	24.9	69.0	35.6
Netherlands*	21 300	23 976	10.0	20.3	12.9
Poland	6 487	5 578	13.8	37.0	16.8
Portugal	9 349	7 637	17.0	29.8	22.8
Romania	2 760	2 600	20.0	33.6	20.0
Slovak Republic*	7 074	6 788	6.9	23.1	13.4
Slovenia*	12 381	9 334	16.4	48.2	20.0
Spain*	15 059	11 031	14.8	38.0	19.7
Sweden*	23 180	23 705	15.8	28.0	28.0

Note: Median incomes are in EUR. Eurostat AROP rates are for 2017. Countries with asterisks (*) are countries for which models of public social protection for LTC have been developed and results are presented in this report. AROP rates calculated using adjusted weights.
Source: OECD Income Distribution Database, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

Imputation for missing data on net worth in the SHARE

160. Multiple imputation was used to derive a complete dataset with previously missing observations for net wealth and real assets filled in using relevant information from observed relationships with covariates. The multiple imputation algorithm Amelia II (written for the statistical software R) was used (Honaker, King, & Blackwell, 2011). This algorithm assumes all variables are jointly distributed according to a multivariate normal distribution and that observations are missing at random. Amelia II imputes multiple values for each missing observation, taking into account prediction uncertainty. Before running the imputation algorithm, and in order to achieve a joint distribution of the data as close as possible to a multivariate normal distribution, the data was Box-Cox-transformed.

161. The covariates used to predict net wealth were the age and gender of the respondent, whether the respondent is in a couple, the size of the household, the respondent's real assets (when also not missing), the total population in the country, the human development index in the country and the GDP in the country. These variables were chosen based on pairwise correlations with net wealth, so that a

correlation over 0.1 justified inclusion. The algorithm was executed 100 times to incorporate uncertainty, and the average of the 100 multiple imputations for each missing observations was used in the analyses in this report. The algorithm was executer with the following settings: gender and couple effects, and a ridge prior of 5% of the number of observations to improve stability (as suggested in Amelia II documentation).

162. It is important to note that imputing net wealth is extremely challenging, and that other methods – such as k-nearest neighbours – were also tested with very poor results. It is thus essential to interpret simulations using imputed net wealth shown in the next section with caution.

Annex C. Sensitivity and robustness checks

Sensitivity to unit costs of care and intensity of care needs

163. The estimates presented in this report depend on typical cases of needs that assume an equal amount of hours of home care within each typical case. This exercise serves as a robustness check to assess the sensitivity of the final estimates to different specifications of care intensity. The estimates below provide plausible ranges for the main indicators on public support, out-of-pocket expenditure and poverty reduction, allowing for some heterogeneity within different levels of need. The sensitivity analysis changes unit costs as a proxy for changing intensity of care.

164. The simulation was run using unit costs of care 20% lower (C -20%) and 20% higher (C +20%) than the actual cost of care reported by countries and regions. These changes in the costs are on average equivalent to +/- 1.3 hours of care for home care for low needs, +/- 4 hours of care for home care for moderate needs, and +/- 8 hours of care for home care for severe needs. The impacts of this sensitivity analysis are shown in tables below: Table C.1 for public support, Table C.2 for out-of-pocket costs, and Table C.3 for reductions in poverty risks).

165. For most countries, the differences to the baseline estimates of public support – when using C-20% or C+20% – are below 15 percentage points except in Luxembourg for low needs, Hungary for moderate needs and Malta for every level of needs (see Table C.1). For Malta, for a unit cost of care 20% higher than the baseline costs, the share of total long-term home care costs that would be covered by public social protection would decrease from 63% to 52% for low needs, from 92% to 76% for moderate needs and from 95% to 79% for severe needs. On average, across 20 EU Member States, the effect of reducing the costs of care by 20% is larger than the one of increasing it by an equal amount.

Table C.1. Share of total long-term home care costs that would be covered by public social protection, averaged across respondents, by estimated severity of needs, and different unit costs

Home care for older people estimated to have low, moderate and severe needs

Country	Low needs			Moderate needs			Severe needs		
	C -20%	Baseline cost	C +20%	C -20%	Baseline cost	C +20%	C -20%	Baseline cost	C +20%
Austria (Vienna)	42%	54%	61%	71%	77%	81%	82%	85%	88%
Belgium (Flanders)	71%	77%	81%	83%	86%	89%	100%	100%	100%
Croatia	9%	7%	6%	20%	16%	13%	44%	35%	29%
Czech Republic	8%	7%	6%	12%	10%	8%	19%	15%	13%
Estonia (Tallinn)	54%	54%	54%	58%	58%	58%	71%	71%	71%
Finland	87%	89%	90%	97%	98%	98%	100%	100%	100%
France	121%	113%	101%	71%	62%	57%	54%	49%	46%
Germany	56%	55%	56%	103%	89%	84%	90%	84%	83%
Hungary	100%	100%	99%	77%	62%	51%	43%	34%	29%
Ireland	42%	54%	62%	83%	87%	89%	91%	93%	94%
Italy (South Tyrol)	56%	65%	71%	77%	81%	84%	68%	74%	79%
Latvia	0%	0%	0%	44%	36%	30%	24%	19%	16%
Lithuania	1%	5%	10%	37%	46%	52%	50%	59%	65%
Luxembourg	125%	100%	83%	93%	94%	95%	97%	97%	98%
Malta	78%	63%	52%	115%	92%	76%	119%	95%	79%
Netherlands	78%	81%	83%	89%	90%	91%	92%	94%	94%
Slovak Republic	81%	82%	82%	82%	82%	82%	82%	82%	82%
Slovenia	72%	73%	73%	67%	71%	74%	49%	55%	60%
Spain	32%	32%	33%	37%	37%	37%	37%	42%	45%
Sweden	99%	100%	100%	96%	97%	97%	98%	98%	99%

Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, Eurostat, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

166. The estimates of the prospective out-of-pocket costs of care as a share of disposable income after public support vary to changes in the unitary of care (see Table C.2). The size of the changes in the estimates, relative to an increase/decrease of 20% to the baseline cost of care, increase for higher levels of severity of needs. On average across 20 EU Member States, a 20% change in the unitary cost of care for low needs represents a 3 percentage point difference in the prospective out-of-pocket costs of care as a share of disposable income after public support for low needs, 11 percentage point for moderate needs and 20 percentage points for severe needs. The estimates of only three countries vary by more than 50 percentage points (i.e. Latvia and France for severe needs, and the Czech Republic for moderate and severe needs).

Table C.2. Prospective out-of-pocket costs of care as a share of disposable income after public support, averaged across respondents, for home care by severity of estimated needs, and different unit costs

Home care for older people estimated to have low, moderate and severe needs

Country	Low needs			Moderate needs			Severe needs		
	C -20%	Baseline cost	C +20%	C -20%	Baseline cost	C +20%	C -20%	Baseline cost	C +20%
Austria (Vienna)	23.8%	23.8%	23.8%	34.8%	34.8%	34.8%	39.4%	39.4%	39.4%
Belgium (Flanders)	11.5%	11.5%	11.5%	18.7%	18.7%	18.7%	6.6%	6.6%	6.6%
Croatia	23.4%	30.1%	36.8%	72.9%	95.9%	118.8%	108.0%	153.8%	199.7%
Czech Republic	63.5%	80.8%	98.2%	217.3%	279.1%	340.9%	357.7%	468.4%	579.1%
Estonia (Tallinn)	10.9%	13.6%	16.3%	37.6%	47.0%	56.5%	68.3%	85.4%	102.4%
Finland	5.0%	5.1%	5.3%	2.9%	2.9%	2.9%	0.0%	0.0%	0.0%
France	0.4%	0.7%	3.2%	46.5%	76.6%	106.8%	161.1%	226.0%	290.8%
Germany	14.2%	17.8%	21.0%	0.0%	11.3%	19.0%	12.7%	23.1%	29.2%
Hungary	0.0%	0.0%	0.1%	17.8%	41.2%	64.7%	99.1%	144.1%	189.0%
Ireland	21.2%	21.2%	21.2%	22.7%	22.7%	22.7%	24.0%	24.0%	24.0%
Italy (South Tyrol)	35.4%	35.4%	35.4%	61.0%	61.0%	61.0%	146.8%	146.8%	146.8%
Latvia	39.6%	49.5%	59.4%	76.7%	111.2%	145.7%	176.1%	234.2%	292.3%
Lithuania	23.6%	27.9%	31.1%	47.4%	50.1%	52.8%	65.5%	66.4%	66.5%
Luxembourg	0.0%	0.0%	9.7%	13.7%	13.7%	13.7%	14.0%	14.0%	14.0%
Malta	5.0%	10.8%	16.6%	0.0%	8.1%	27.4%	0.0%	8.6%	44.4%
Netherlands	9.1%	9.8%	10.2%	9.2%	9.3%	9.4%	15.4%	15.5%	15.7%
Slovak Republic	2.3%	2.9%	3.5%	8.0%	10.0%	12.0%	21.4%	26.8%	32.2%
Slovenia	12.4%	15.1%	17.6%	50.6%	54.5%	57.1%	112.9%	122.0%	128.8%
Spain	16.7%	20.6%	24.7%	53.0%	66.2%	79.4%	101.8%	118.2%	133.4%
Sweden	0.2%	0.2%	0.2%	13.4%	13.4%	13.4%	14.2%	14.2%	14.2%

Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, Eurostat, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

For most EU member countries, the estimates in poverty reduction are robust to 20% changes in the baseline cost of care (see Table C.3). Only Malta, Hungary and France produce estimates on poverty reduction that vary more than 20 percentage points to the baseline estimations, for at least one of the different needs' levels when increasing or reducing care costs by 20%.

On average, across 20 countries and regions, the differences to the baseline estimates when reducing the cots of care 20% range from -4 percentage points for low needs, to +3 percentage points for moderate and severe needs. Oppositely, a rise of 20% in the cost of care leads to differences to the baseline estimates on poverty reduction that range from +3 percentage points for low needs, to -2 percentage points for moderate and severe needs.

Table C.3. Estimated reductions, due to public social protection, in risks of poverty associated with out-of-pocket costs of long-term care

Home care for older people estimated to have low, moderate and severe needs; assumption is that all older people estimated to have long-term care needs seek formal care

Country	Low needs			Moderate needs			Severe needs		
	C -20%	Baseline cost	C +20%	C -20%	Baseline cost	C +20%	C -20%	Baseline cost	C +20%
Austria (Vienna)	-11	-18	-25	-17	-18	-18	-31	-31	-31
Belgium (Flanders)	-30	-37	-42	-27	-29	-30	-75	-76	-76
Croatia	0	0	0	-1	-4	-4	-1	-5	0
Czech Republic	-2	0	0	0	0	0	0	0	0
Estonia (Tallinn)	0	0	0	0	0	0	0	0	0
Finland	-61	-61	-68	-67	-67	-67	-86	-86	-86
France	-52	-62	-64	-25	-8	-5	0	0	-1
Germany	-36	-43	-47	-64	-62	-58	-70	-63	-61
Hungary	-36	-42	-47	-58	-24	-11	-1	0	-2
Ireland	-10	-22	-24	-40	-40	-41	-42	-42	-42
Italy (South Tyrol)	-26	-30	-34	-8	-8	-8	-2	-3	-3
Latvia	0	0	0	-10	-6	-3	0	0	0
Lithuania	0	0	0	-8	-9	-8	0	0	0
Luxembourg	-35	-46	-42	-62	-62	-63	-62	-62	-62
Malta	-8	-13	-16	-59	-48	-34	-88	-52	-22
Netherlands	-44	-48	-57	-59	-62	-62	-73	-73	-73
Slovak Republic	-19	-21	-22	-47	-55	-47	-37	-27	-27
Slovenia	-23	-27	-31	-14	-10	-7	-6	-3	-2
Spain	-9	-9	-9	-5	-4	-1	-1	-1	0
Sweden	-51	-53	-54	-40	-40	-40	-25	-25	-25

Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). For Member States with subnational models, these are applied to national-level survey data to produce the estimates shown. Low, moderate and severe needs correspond to around 6.5, 22.5 and 41.25 hours of care per week, respectively. Detailed descriptions of care recipients' needs are available in Annex A

Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, Eurostat, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

Impact of missing net wealth responses

167. As previously stated, there are many observations in SHARE with missing data on net wealth, and for some countries (Bulgaria, Cyprus, Finland, Hungary, Latvia, Lithuania, Malta, Romania, and the Slovak Republic) data on net wealth is completely missing. As described in the previous section, in order to understand the impact of net wealth on public support and out-of-pocket costs, missing net wealth was imputed using multiple imputation. The impact of using multiple imputed net wealth can be seen in Figure C.1 for public support for institutional care for severe needs, in Figure C.2 for prospective out-of-pocket costs of home care for moderate needs, and in Figure C.3 for prospective prospective out-of-pocket costs of institutional care for severe needs. In some countries, there are no respondents with zero net wealth. This is because observations were missing and were imputed to non-zero values.

168. As previously stated, it is important to note that imputing net wealth is extremely challenging, and it is essential to interpret the results below using imputed net wealth with caution.

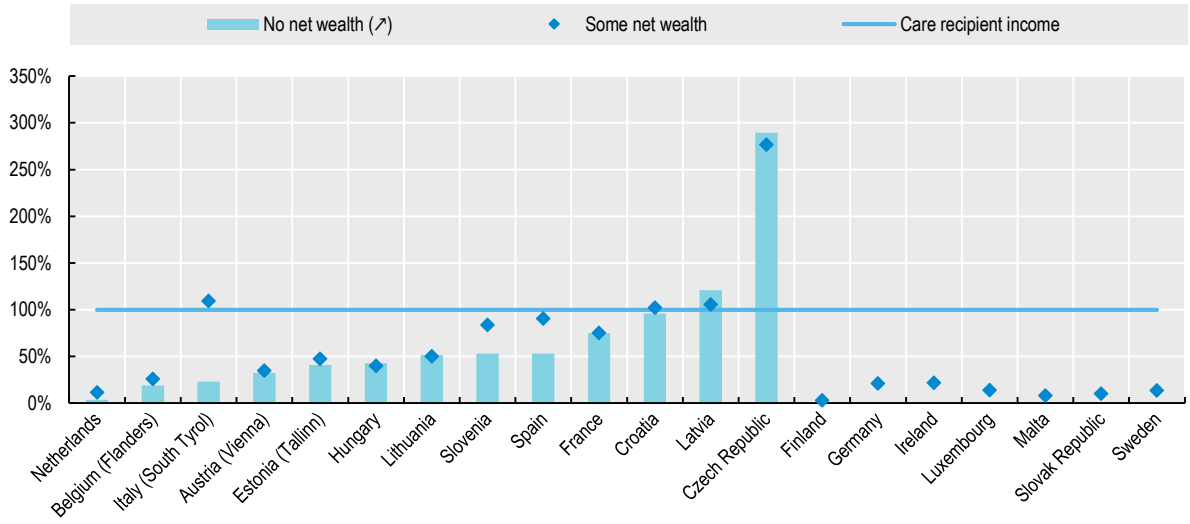
Figure C.1. Share of total institutional care costs that would be met by public support, averaged across respondents, by net wealth, using imputed net wealth

For an older person estimated to have severe needs and receiving care in an institution

Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Net worth reported in SHARE and TILDA are used; negative net wealth observations are replaced with zeros; missing net wealth were imputed. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

Figure C.2. Prospective out-of-pocket costs of home care as a share of disposable income after public support, averaged across respondents, by net wealth, with imputed net wealth

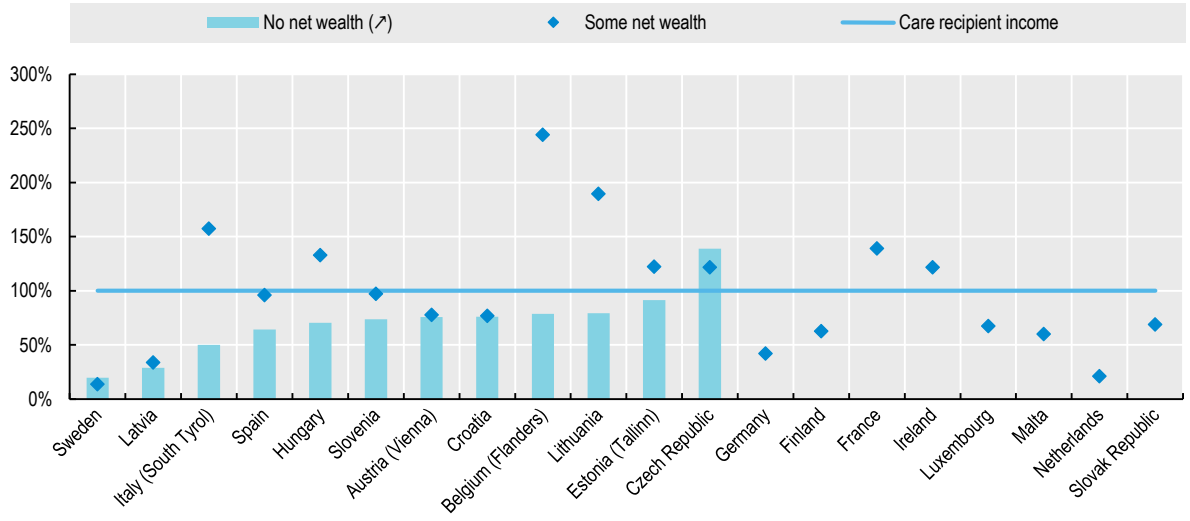
For an older person estimated to have moderate needs receiving care at home



Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Net worth reported in SHARE and TILDA are used; negative net wealth observations are replaced with zeros; missing net wealth were imputed. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

Figure C.3. Prospective out-of-pocket costs of institutional care as a share of disposable income after public support, averaged across respondents, by net wealth, with imputed net wealth

For an older person estimated to have severe needs receiving care in an institution



Note: Estimates computed using the averages of three matching methods (4b, 6a and 6b) and using adjusted survey weights (see Annex B). Net worth reported in SHARE and TILDA are used; negative net wealth observations are replaced with zeros; missing net wealth were imputed. Detailed descriptions of care recipients' needs are available in Annex A.
Source: OECD analysis based on the OECD Long-Term Care Social Protection questionnaire, SHARE survey (Wave 7, 2017) and TILDA survey for Ireland (Wave 3, 2015).

Annex D. Reference years used in the report

Table D.1. Reference years for models of social protection for long-term care and input data

Country	Models	Surveys (SHARE/TILDA)	OECD IDD	OECD WDD
Austria (Vienna)	2017	2017	2016	2014
Belgium (Flanders)	2020	2017	2016	2014
Croatia	2016	2017	2016	-
Czech Republic	2020	2017	2016	-
Estonia (Tallinn)	2020	2017	2016	2013
Finland	2017	2017	2017	2013
France	2020	2017	2016	2014
Germany	2020	2017	2016	2014
Hungary	2020	2017	2016	2014
Ireland	2016	2015	2016	2013
Italy (South Tyrol)	2018	2017	2016	2014
Latvia	2018	2017	2016	2014
Lithuania	2017	2017	2016	-
Luxembourg	2020	2017	2016	2014
Malta	2019	2017	2016	-
Netherlands	2019	2017	2016	2015
Slovak Republic	2016	2017	2016	2014
Slovenia	2020	2017	2016	2014
Spain	2016	2017	2016	2012
Sweden	2020	2017	2017	-

Note: IDD – Income Distribution Database; WDD – Wealth Distribution Database; for regions and municipalities (e.g. Tallinn in Estonia), the national figures in IDD and WDD are used.

Annex E. Detailed description of means testing

Table E.1. Overview of formal LTC benefits and schemes in the EU

Countries and subnational areas	Benefits and schemes	In cash or in-kind?	Income-tested?	Assets-tested?
Vienna (Austria)	Pflegegeld	In cash	No	No
	Fonds Soziales Wien	In-kind	Yes	No
Flanders (Belgium)	Federal Public Health Insurance (NIHDI)	In-kind	Yes	No
	Home care organisations	In-kind	Yes	No
	Service vouchers	In-kind	No	No
	Allowance for the assistance of the elderly	In cash	Yes	Yes
	Incontinence allowance	In cash	No	No
	Flemish care insurance	In cash	No	No
	Allowance for the chronically ill	In cash	Yes	Yes
Croatia	Subsidized home care for low income	In-kind	Yes	No
	Allowance for assistance and care	In cash	No	Yes
	Personal disability allowance	In cash	Yes	No
Czech Republic	Care allowance	In cash	No	No
England	Attendance allowance	In cash	No	No
	Social care	In-kind	Yes	Yes
Tallinn (Estonia)	Domestic care service	In-kind	Yes	No
	Institutional care	In-kind	Yes	Yes
Finland	Social care services	In-kind	Yes	No
	Care allowance	In cash	No	No
France	Allocation Personnalisée d'Autonomie	In cash	Yes	Yes
	Aide Ménagère	In cash	Yes	No
	Aide sociale à l'hébergement	In cash	Yes	Yes
	Targeted tax reductions	In cash	Yes[1]	No
Germany	Pflegegeld	In cash	No	No
	Pflegesachleistungen	In-kind	No	No
	Social assistance (Sozialhilfe)	In cash	Yes	Yes
Hungary	Assistance at home	Both	Yes	No
	Homes for the elderly	Both	Yes	Yes
Reykjavik (Iceland)	Social home service	In-kind	Yes	No
	Home nursing	In-kind	No	No
	Institutional care	In-kind	Yes	No
Ireland	Home support service	In-kind	No	No
	Nursing home support scheme	In-kind	Yes	Yes
South Tyrol (Italy)	Care allowance	Both	No	No
	Home care services	In-kind	Yes	Yes
	Residential services	In-kind	Yes	Yes
Latvia	Home care services	In-kind	Yes	No
	Care allowance	In cash	Yes	No
	Institutional care	In-kind	Yes	No
	State social maintenance benefit	In cash	No	No
Lithuania	Social care	Both	Yes	No
	Social assistance	Both	Yes	No
	Institutional care	In-kind	Yes	Yes
	Municipal support	In cash	No	No
Luxembourg	Long-term care insurance	Both	No	No

Countries and subnational areas	Benefits and schemes	In cash or in-kind?	Income-tested?	Assets-tested?
	Complément accueil gérontologique	In cash	Yes	No[2]
Malta	Commcare	In-kind	No	No
	HomeHelp	In-cash	No	No
	Carer at home	In-cash	No	No
	Institutional care	In-kind	No	No
Netherlands	Wet langdurige zorg (Wlz)	Both	Yes	Yes
	Zorgverzekeringswet (Zvw)	Both	No	No
	Wet Maatschappelijke Ondersteuning (Wmo)	Both	Yes	Yes
Slovak Republic	Compensation allowances	In cash	Yes	No
	Institutional care	In-kind	Yes	No
Slovenia	Municipality-subsidized care	In-kind	Yes	Yes
	Attendance allowance	In cash	No	No
Spain	Ayuda al domicilio	In-kind	Yes	Yes
	Antención Residencial	In-kind	Yes	Yes
	Prestación económica vinculada al servicio	In cash	Yes	Yes
	Prestación económica de asistencia personal	Both	No	No
Sweden	Home care	Both	Yes	No
	Institutional care	In-kind	Yes	No

Note: [1]tax reductions depend on income; [2]although the benefit is not asset-tested when it is given, all sums paid through this benefit can be recovered from the care recipient's estate upon death; Benefits and schemes that are not applicable to the typical cases of LTC needs used in this report are not included in this table. Benefits that are marked as income- or assets-tested if they are income- and/or assets-tested for at least one of the typical cases of LTC needs used in this report. Countries and subnational areas are sorted top to bottom alphabetically by the name of the country.
Source: OECD compilation based on the Long-Term Care Social Protection questionnaire.