How do countries compare in their design of long-term care provision? A typology of long-term care systems

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Abstract

Models and approaches to long-term care provision vary greatly across OECD countries. This paper reviews existing classifications in the literature and provides a new, comprehensive typology based on five key dimensions: access, availability, funding, governance, and quality. Using a clustering methodology, countries are grouped according to their score across these dimensions, resulting in four distinct long-term care system types. The first cluster includes countries with comprehensive, well-governed, and decentralised long-term care systems that are affordable, offer broad coverage, support family carers, rely on public providers and ensure high quality standards. The second cluster shares many of these features but tends to be more centralised, slightly less generous, more reliant on the private sector, and less likely to use means-testing to restrict access. The third cluster consists of countries with decentralised long-term care systems, characterised by stricter eligibility criteria, fewer public resources, and greater reliance on informal carers. Finally, the fourth cluster comprises countries where public long-term care systems tend to provide limited access and financial support, rely heavily on families, and show weaker quality standards and outcomes.

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Résumé

Les modèles et approches en matière de prestation de soins de longue durée varient considérablement entre les pays de l'OCDE. Ce document passe en revue les classifications existantes dans la littérature et propose une nouvelle typologie plus complète fondée sur cinq dimensions clés : l'accès, la disponibilité, le financement, la gouvernance et la qualité. À l'aide d'une méthode de regroupement (clustering), les pays sont classés en fonction de leur score sur ces dimensions, ce qui permet d'identifier quatre types distincts de systèmes de soins de longue durée. Le premier groupe comprend des pays dotés de systèmes de soins de longue durée étendus, bien gouvernés et décentralisés, qui sont abordables, offrent une large couverture, soutiennent les aidants familiaux, reposent sur des prestataires publics et garantissent des normes de qualité élevées. Le deuxième groupe partage bon nombre de ces caractéristiques, mais tend à être plus centralisé, légèrement moins généreux, plus dépendant du secteur privé et moins enclin à utiliser des conditions de ressources pour restreindre l'accès. Le troisième groupe est constitué de pays dotés de systèmes de soins de longue durée décentralisés, caractérisés par des critères d'éligibilité plus stricts, des ressources publiques plus limitées et un recours accru aux aidants informels. Enfin, le quatrième groupe comprend des pays dont les systèmes publics de soins de longue durée offrent un accès et un soutien financier limités, reposent fortement sur les familles et présentent des normes de qualité et des résultats en matière de qualité moins bons.

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Executive summary

International comparisons are an important tool for assessing long-term care (LTC) systems and can raise awareness of the systems' relative strengths and shortcomings, facilitating sharing good practices and stimulating policy debates. Previous attempts to make such international comparisons by classifying LTC systems remain scarce, either focus on one dimension, such as the relative role of the family versus formal public provision, or like funding models; they tend to have a restricted set of countries or a restricted set of either qualitative or quantitative indicators. This working paper attempts a comprehensive characterisation of LTC systems providing support for older people (aged 65 and more) who lose independence due to age by reviewing several dimensions, following the features of interest described in the literature, and a mix of quantitative and qualitative data.

The OECD typology of LTC uses five dimensions to classify countries: access to services, availability, funding, governance and quality. The access dimension focuses on eligibility criteria, the degree of coverage within the target population and the reliance on in-kind services or cash benefits. The second dimension is availability which indicates the supply of formal care and how countries rely on and support informal carers. Funding is the third dimension, which captures the degree of public funding, out-of-pocket expenses on LTC services, and the role of LTC social protection mechanisms to reduce poverty risk among older people with LTC needs. The governance dimension captures the degree of fragmentation and centralisation, the importance of public LTC systems as well as the degree of integration within the different parts of the health systems. Finally, quality focuses on quality measures that capture the importance of human resources in terms of staff ratios and skills, quality assurance and quality outcomes.

Looking at this set of variables, LTC systems across 29 OECD countries reveal a few shortcomings across their features. Access remains limited, with only 28% of older people with needs receiving formal care and modest income- and needs-testing. Availability is constrained, with an average of 40 LTC beds and 4.5 workers per 1,000 and 100 older people, respectively. Public funding covers 66% of costs, but out-of-pocket expenses still pose a burden, averaging 72% of median income for those with severe needs. Governance is mixed: 60% of systems are decentralised, and only 40% are fully integrated with health care. On quality, most countries have accreditation and assurance frameworks, but educational requirements for personal care workers vary, and only 36% require a high school diploma or higher.

To make valid and useful comparisons, the paper clusters LTC systems the five dimensions. Clustering is a technique which can be used to form groups of similar LTC systems that share distinct properties. These shared characteristics might not be visible by simply exploring distributions and studying the effect of system features directly on the outcome of choice. The paper uses multiple clustering algorithms to ensure consistency and robustness of the results. At the same time, it is important to note that, while this uses the most comprehensive and up-to-date information, there are limitations in the clustering approach as LTC systems are more nuanced than described in a set of indicators. Boundaries between different groups of LTC policies are rarely clear-cut and the paper also indicates which countries stand out in their cluster.

Four distinct groups of LTC systems are identified through clustering methods, revealing meaningful differences in service provision, funding, governance and quality across OECD countries. Cluster 1 countries combine the most extensive financial support with high-quality, decentralised LTC systems that offer extensive formal care and strong support for informal carers. These countries have the highest formal care coverage - over 50% of older people with needs receive formal services in half of them - and extensive needs- and means-testing mechanisms. Public funding is generous, covering at least 80% of LTC costs for individuals with severe needs in all but one country, keeping out-of-pocket payments low. These systems are mostly unified in legislation, rely heavily on public providers, and demonstrate strong integration with healthcare. Quality assurance frameworks and accreditation are widespread, and educational requirements for LTC workers are generally high, contributing to overall strong quality outcomes.

LTC systems grouped in Cluster 2 offer extensive formal care availability and high staffing levels, while relying heavily on private provision, featuring limited means-testing, and achieving only moderate quality outcomes. While public financial support is relatively generous - covering 80% or more of LTC costs for older people with severe needs in most countries - means-testing is rarely applied, and only about 30% of older people with LTC needs receive formal care. These centralised systems, largely unified in legislation, rely primarily on private providers and show mixed integration with healthcare. Although staffing levels are the highest across all clusters and informal carers receive policy support, educational requirements for LTC workers are relatively low. Despite widespread use of accreditation and quality assurance frameworks, quality outcomes remain below those of Clusters 1 and 3.

Cluster 3 countries combine decentralised governance with strict needs- and means-testing, which limits public provision and contributes to low formal LTC coverage and mixed quality outcomes. In most countries, less than 30% of older people with care needs receive formal LTC, and public funding is often modest, resulting in high out-of-pocket costs and poverty risks - especially in Estonia, Italy, and the US. Although staffing ratios and quality assurance frameworks are common, and education requirements for LTC workers are relatively high, availability of beds and support for informal carers remains limited. Governance is decentralised in nearly all countries, and integration with health services is partial, while legal frameworks remain fragmented across social and health care.

Countries in Cluster 4 provide the lowest public funding for LTC, resulting in limited formal care coverage, high out-of-pocket costs, and fragmented systems with weaker quality outcomes. Despite minimal use of means-testing, only 20% of older people with care needs receive formal services, and public funding often covers less than 25% of care costs. The availability of LTC workers and institutional beds is low, and informal care is widespread but insufficiently supported by policy. Governance structures are mixed, integration with healthcare is rare, and most systems lack unified legislation. While staff ratios and educational requirements are often in place, the absence of quality assurance frameworks in several countries contributes to overall weaker care outcomes.

While Cluster 1 tends to outperform the others across the five dimensions, there are sometimes trade-offs across some dimensions and distinct features that define some clusters which are not necessarily reflecting higher performance if looking at that indicator alone. For instance, there is a clear gradient across clusters in funding with countries in Cluster 1 providing more generous funding and the level of generosity declining for each cluster and the same holds for coverage. On the other hand, countries in Cluster 2 tend to be centralised while countries in Cluster 1 are the most decentralised followed by countries in Cluster 3 and 4 and the same goes for the share of private providers.

1 Introduction

1.   Population ageing is one of the most significant demographic transitions of the 21st century across OECD countries. While this shift presents opportunities - people can live longer in good health - it also poses growing challenges. In particular, a rising number of older people (defined hereinafter as those aged 65 and over) will require various forms of personal care and assistance, commonly referred to as long-term care (LTC, a definition is given in Box 1.1). Publicly funded formal care is usually available across OECD countries but differs widely in terms of its scope, reach and composition of providers. In many countries, an important share of care is indeed provided by so-called informal (or unpaid) carers who can be spouses, children, friends, and neighbours. Meeting the rising demand for LTC in old age is becoming an increasing challenge across OECD countries, as population ageing also leads to shortages of both formal and informal carers, alongside rising expectations about the availability, affordability, and quality of LTC services (Ilinca and Simmons, 2022[1]).

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 to carry out their every-day activities. These include basic self-care activities, such as washing and dressing, known as Activities of Daily Living (**ADLs**), as well as more complex/housekeeping tasks like cleaning and shopping, which are referred to as Instrumental Activities of Daily Living (**IADLs**). As people become more dependent, they may also find it difficult to maintain social relationships and to 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 multiple chronic conditions and to ensure that they remain as healthy as possible.

LTC consists of a range of medical/nursing care, personal care and assistance services aimed at alleviating pain and suffering, or at reducing and managing the health deterioration in patients with long-term dependency (OECD, Eurostat and World Health Organisation, 2017[2]). As the emphasis is on long-term dependency, this working paper focuses on LTC needs and use lasting 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 working paper, 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 working paper focuses on older people (aged 65 or more).

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2.   In response to the growing demand for LTC services, countries have started to reform their health and social protection systems to expand the provision of benefits and services. The design of LTC systems is often complex, shaped by historical developments, resource constraints, and varying arrangements for the organisation and funding of care services. Reforms aimed at addressing rising demand should carefully analyse all aspects of LTC system design and understand how these elements interact with one another. A useful tool for such analysis is a classification of LTC systems, which allows countries to compare their

own system with others sharing similar characteristics, helping to identify both areas of strength and opportunities for improvement.

3.   To support countries in their reform efforts, this working paper presents a classification of LTC systems based on a comprehensive set of characteristics across multiple dimensions. Countries are grouped into clusters according to the governance structure of their LTC system, the ways in which older people can access public support, the funding and availability of LTC services, and the quality of care provided. Most existing typologies have a much narrower geographic scope, typically focusing on European countries, with only a few including key non-EU countries such as Australia, Japan, and New Zealand, alongside England or the United Kingdom. In addition, the classification developed in this working paper draws on a broader range of variables and dimensions than previous studies, enabling more comprehensive analysis and cross-country comparisons.

4.   The rest of this working paper is structured as follows. Chapter 2 reviews existing typologies of LTC systems in the literature. Chapter 3 describes the dataset used for the analysis. Chapter 4 outlines the methodology employed to identify the clusters. Finally, Chapter 5 presents the resulting LTC system typology and discusses the characteristics of the different clusters.

2 Typologies of long-term care systems show different types of classifications

5.   This chapter presents the review of the literature on the typology of long-term care (LTC) systems. It discusses the methods and data used to group countries and summarises the main findings. The typologies discussed in the following paragraphs are organised according to their primary areas of focus.

Many characterisations of LTC systems focus on the responsibility of the family versus public or private provision

6.   One way of classifying LTC systems is by examining the balance between family responsibility and public or private provision of services. This type of classification based on who provides care, stems from the work of Esping-Andersen (1989[3]) on welfare states. Building on this work, Leitner (2003[4]) classified countries based on whether LTC services are provided formally, through paid carers, or informally, by unpaid carers, typically family members, and whether supportive policies exist for family carers. According to Leitner (2003[4]), welfare systems can either strongly or weakly emphasize familialism[1] or not, which are categorized into four models. The first one is the explicit familialism model, which supports the family in the caregiving role but often lacks the provision of formal care. The second one is the optional familialism model, where formal care services as well as supportive policies for family carers are provided. Thus, the state strengthens the family while also providing the option to choose partial formal care. The third model is the implicit familialism model. This one neither offers formal care services nor actively supports the caring role of the family. Finally, the last one is the de-familialism model, which puts emphasis on public or market provision of care services, with minimal support for family caregiving.

7.   Expanding on Leitner's concept of defamilialisation, Saraceno (2016[5]) breaks this concept into two types: "supported defamilialisation through public provision" and "supported defamilialisation through the market". The former is when the state directly provides or funds care services, reducing individuals' reliance on family, such as through minimum income provision. Differently, the second one refers to the provision of income transfers (in the form of cash benefits, vouchers or tax deductions) to help buy services on the market or when the state funds the provision of services via the market.

8.   Ilinca, Leichsenring and Rodrigues (2015[6]) propose another classification by combining the typology of care provision by different actors with the level of care demand. The paper identifies four country clusters: a universal-Nordic one, a standard care one, a family-based one and a transitional one.

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[1] Familialism is the set of ppolicies which actively aim at strengthening the family in its caring function

The criteria for each category consider i) the demand for care (e.g. population in need or at risk of needing long-term care and the role of poverty-driven factors), ii) the provision of informal care (e.g. the share of individuals providing care to a relative and of multigeneration households), iii) the provision of formal care services (e.g. public expenditure on long-term care, share of older people receiving formal care services at home or in institutions) and iv) whether the provision of formal and informal care is considered high, medium, or low.

9.   Similarly, Verbeek-Oudijk et al. (2014[7]) cluster European countries based on the entity that bears responsibility for providing care but also the expenditure on non-residential LTC. The paper identifies three country clusters: a Northern cluster, a Central European cluster and a Southern and Eastern European cluster. Countries in the Northern cluster are characterised by high public spending and low family responsibility for care, the Central European cluster by average expenditure and average family responsibility and the Southern and Eastern European cluster by low public expenditure and high family responsibility. Nonetheless, there is a trend of convergence whereby countries with a large amount of publicly funded care are increasingly shifting the focus towards family or social responsibility, and towards promoting informal care. At the same time, in countries where informal care already dominates, efforts are also being made to improve the quality and access of publicly funded care. In this line, Bihan, Roit and Sopadzhiyan (2019[8]) conclude that countries have changed with cash-for-care schemes with Southern and Continental countries and England reducing the role of families through the market, whereas the Netherlands introduced more family support.

10.   The dichotomy between formal and family-based care has been also disrupted not only using the market but also using foreign-born carers. In this sense, Simonazzi (2009[9]) argues that the way in which LTC is provided and financed results in differences in the creation of a formal care market. At the same time, national employment models also have an impact on the formal provision through the quantity and the quality of supply and the degree of dependence on care provided by migrants. Salaries, working conditions, and training and credential requirements affect whether workers are primarily low-skilled or more professional. Likewise, working conditions and the type of provision, whether it is in-kind or more via contracting out or through cash-allowances can have an impact on the level of migrant workers. In addition, Simonazzi (2009[9]) suggests that systems relying mostly on unconditional cash allowances or monetary transfers (Austria, Germany, and the Mediterranean countries) may have a greater share of an informal or grey economy relying on migrant or foreign-born workers. This is due to the lack of verifications on the use of the cash allowances and the switch of families from providing care to buy care directly from an unregulated labour market, where foreign-born workers are hired at lower prices than hiring in the formal labour market or where there are shortages of local care workers.

11.   More recent studies discuss the challenge of classifying countries according to the concepts of familialism and finding appropriate indicators to capture such concept. Verbakel et al. (2023[10]) argue that different types of policy instruments can be implemented in a country simultaneously. The paper focuses on the construction of a carer support index and the presence of a cash benefit for carers to measure supported familialism. The study measures defamiliasation through the market by employing the potential use of a cash benefit by the recipient and an index on the cash benefit for carers. LTC beds are used to measure defamilialisation through public provision. It finds no significant association between supported familialism and supported defamilialisation through the market or between supported defamilialisation through the market and through public provision. However, a significant positive correlation is found between supported familialism and defamilialisation through public provision.

LTC typologies may be based on coverage and funding of long-term care

12.   The provision of LTC services through different actors is intrinsically linked to the funding of LTC. Halásková, Bednář and Halásková (2017[11]) classify LTC systems with respect to the degree of public

funding for LTC and the settings of care. The paper finds three types of clusters for countries: 1) a cluster with low overall LTC expenditure and a high share of expenditure allocated to institutional care (Australia, Korea), 2) a second cluster which is similar to the first one but has more dispersion and a lower number of recipients (Czechia, Estonia), and 3) a cluster with the lowest share of expenditure allocated to institutional care (Nordic countries). Along similar lines but adding more dimensions to the analysis, Kraus et al. (2010[12]) classify countries according to the importance of public versus private spending, formal versus informal care use, but also access and targeting, the use of cash benefits and support for informal carers. Based on these criteria, countries can be divided into four different clusters. In the first cluster, public spending on LTC is high, private funding is low, the use of formal care is high, and the use of informal care is low. These countries have generous, accessible, and formalised systems of LTC with still a great deal of support for informal carers. The role of cash benefits is modest. In the second cluster, countries combine a low level of private funding with rather low public spending while the use of informal care and the support for informal carers are both high. Their systems can be seen as more oriented towards informal care, with a low level of private funding. The third group is characterised by a high level of private funding combined with moderate public spending. Access to the formal system is rather limited, while the use of and support for informal care are high. These systems might be described as informal care-oriented systems that also use a rather high amount of private funding. The fourth and last cluster includes countries with a high level of private funding, low public spending, high use of informal care; yet support for informal care is low.

13.   Moreover, LTC funding models may be classified according to the degree of cost-sharing and universality of entitlements. According to Colombo et al. (2011[13]) countries could be classified according to two main criteria: first, the scope of entitlement to LTC benefits – meaning whether there is universal or means-tested entitlement to public funding; and second, whether LTC coverage is assured through a single or multiple programmes. A somewhat similar typology was discussed by Joshua (2017[14]) who classified countries according to the funding stream and eligibility criteria highlighting the following models: (1) social insurance models such as Germany, Japan and Korea, (2) universal such as Denmark, Finland and Sweden, (3) means-tested such as England and the United States and (4) hybrid such as France. While in many countries there has been a move towards more universal LTC, countries have also searched for a new balance in cost-saving strategies, blurring the lines across countries in some cases. According to Szebehely and & Meagher (2018[15]) in Nordic countries (particularly in Sweden) there is some initial assessment that LTC is becoming less universal, an increase in for-profit provision of publicly funded care services (via policies promoting service marketisation), an increase of family care and declining coverage, as well as of services paid out-of-pocket. Ranci et al. (2019[16]) argue that countries have found different compromises between universalism and selectivity and between coverage and generosity. Some countries have more generous programmes, but they lack progressivity, and therefore, they do not provide adequate support for the most in need. In contrast, others are more restrictive in access to cash for care but providing comparatively high, progressive support for those most in need. The paper also argues that cash-for-care programmes aimed at providing adequate protection to those most dependent had to strictly limit the eligibility, whereas programmes aimed at providing extensive coverage basically fail to protect people with severe needs.

14.   Complementing these typologies, Pavolini (2021[17]) identifies six models of countries based on the extent of state involvement in providing different in-kind services (residential care and home care), as well as cash benefits, whether delivered directly to the beneficiaries or to their informal carers. The first model is the Limited State Intervention. It offers the lowest coverage rates for all kinds of provision and reaches a very limited share of potential beneficiaries. The second and third are Mild State Intervention models, the second through cash benefits and the third through services. The second model offers a higher coverage rate than the first model, whereas the third one provides an even higher coverage rate of needs, mostly through in-kind services, but also through cash benefits for informal carers in some cases. The fourth and fifth models are the Strong State intervention. The fourth is through cash benefits, and the fifth through services. The fourth shares a similar level of coverage to the third one, thanks partially to service

provision, but mostly to cash transfers. The fifth and the sixth which is Very Strong State intervention through services attain very high coverage rates through services. These last two models also offer cash benefits as a way of integrating rather than replacing the provisions of in-kind services. In the fifth group, countries spend a relatively high share of their GDP on LTC policies, using mostly services as a tool of provision.

Comprehensive typologies are based on a mix of indicators

15.   In the literature, there are also typologies following a wider or more comprehensive approach. Dyer et al. (2019[18]) developed a LTC typology of countries based on several key factors, organised in three broad categories. The first category is about organisation and financing. It included access to care, the degree of public versus private funding as well as quality assurance and coordination. The second category is regulation of quality. The focus was on the responsibility for regulation to understand whether it was a centralised or decentralised system and whether responsibilities were divided across different actors (e.g., health and social care). In addition, the paper reviewed the regulatory approach (inspection, reporting mechanisms) and the public availability of quality information. Finally, the third category is additional information on access which included the sources of funding, out-of-pocket payments and types of care providers. As a result, countries are classified according to these three broad categories into four groups. The first group, low access, high consumer spending countries is characterised by means testing and cost sharing, with an important share of the population relying on private funding. The second group, low access, mid consumer spending countries also employ means testing but the reliance on consumer spending is less pronounced. These countries have some common characteristics: they exhibit mid to high levels of quality regulation and integration, regulate quality of both home and residential care and lastly, show a mid-level coordination of LTC services with the health system. The third group, high access, and reliance on consumer spending countries. Finally, the fourth group is the highest performing countries whereby LTC systems provide consumers with the highest levels of access and the lowest cost sharing, and there is a high level of quality regulation and integration with other services including health.

16.   Following this broad approach, Ariaans, Linden and Wendt (2021[19]) created a LTC typology by analysing quantitative data on supply, public-private mix, health outcomes, as well as institutional information on the access to systems. This results in six clusters, as follows:

- The residual public system. It is characterised by low levels of supply, while access barriers seem low, by applying no means-testing and a low level of choice restrictions. Cash benefits are mainly bound. The share of public LTC expenditure is the highest of all system types. Outcomes of these systems measured by life expectancy and subjective health status are by far the lowest of all system types.

- The private supply system. It has a medium to high level of supply. Yet, this system shows one of the lowest shares of public expenditure, and cash benefits are unbound. Access restrictions are among the lowest of all systems, with no means-testing and limited choice restrictions. Outcomes in terms of health are medium.

- The public supply system. It is defined by high supply and above-average public expenditure. Benefits are mainly available in kind only. Furthermore, choice is limited in these systems; yet no means-tests apply. The performance indicators in terms of health outcomes of this system are above average.

- The evolving public supply system. It is defined as evolving public supply systems, marked by medium to low supply and public funding and provision. Expenditure and the number of recipients in institutions are at a medium level, the supply of residential beds is below average. Public expenditure is medium, and benefits are only provided in kind. Access to the system is granted

without means-testing, but medium to high choice restrictions apply. Performance is highest concerning life expectancy but among the lowest concerning self-perceived health.

- The need-based supply system. Cash benefits tend to be available and are often unbound. Public expenditure is about average. On the other hand, supply is high. In contrast to the private supply type, access is restricted by a high level of means-testing. Like in the private supply countries, choice restrictions rarely apply. Performance in terms of health outcomes is above average.

- The evolving private need-based system. It is labelled evolving private need-based system and shares important characteristics with the need-based supply type. The public-private mix is oriented towards private funding. Performance in terms of health outcomes is rather high. Access is restricted by both means-testing and high choice restrictions. The main difference to the previous system type is low supply, especially low expenditure, but also the provision of beds in residential care and the number of recipients of residential care are at a lower level.

Existing literature is extensive, but it is not comprehensive enough

17. Table 2.1 summarises the wide range of typologies, already discussed, that have been developed to classify LTC systems. Some typologies focus on who provides care, such as Leitner (2003[4])and Saraceno (2016[5]). Others incorporate additional criteria such as the level of care demand (Ilinca, Leichsenring and Rodrigues, 2015[6]) or data on non-residential LTC expenditure (Verbeek-Oudijk et al., 2014[7]). A further set of typologies emphasises funding dimensions. Halásková, Bednář and Halásková ((2017[11])) assess the degree of public funding and care settings, while Joshua (2017[14]) examines funding streams and eligibility. Pavolini (2021[17])offers a broader perspective, addressing the state's role in providing both in-kind services and cash benefits.

18. More recent contributions have adopted a broader approach. Kraus et al. (2010[12]) classify countries based on funding sources, the mix of formal and informal care, access mechanisms, and support for informal carers. Dyer et al. (2019[18]) propose a typology structured around organisation and financing, quality regulation, and access to services. Similarly, Ariaans, Linden and Wendt (2021[19]) use quantitative data to map LTC systems across dimensions such as care supply, public-private mix, health outcomes, and institutional access characteristics.

19. While these typologies provide valuable frameworks, most concentrate on isolated or only address some dimensions without offering a fully integrated perspective. This gap underscores the need for a more holistic classification that captures multiple system features and outcomes. For example, two systems with similar levels of public support for older people with care needs may differ significantly in the use of formal LTC services due to varying eligibility criteria. Likewise, high rates of informal care use in different countries may reflect either limited access to formal services or strong institutional support for informal caregiving. To address these limitations, the next chapter introduces such a typology, aiming to enhance the comparative analysis of LTC systems by combining within a single analytical framework five key dimensions: access, availability, funding, quality, and governance. While each of these dimensions has been explored in previous typologies, they have not yet been systematically integrated to provide a comprehensive picture of LTC systems.

Table 2.1. Existing research use various criteria to classify LTC systems, but there are few comprehensive frameworks

Author/s	Criteria for Classification	Clusters
Leitner, (2003[4])	Provision of LTC services (formal or informal) and presence of supportive policies for family carers	Explicit familialism. Supports the family in caregiving but provides minimal formal care services. Optional familialism. Offers both formal care services and supportive policies for family carers, allowing families to choose partial formal care. Implicit familialism. Neither provides formal care services nor supports family caregiving. De-familialism. Focuses on public or market-provided care services, with little support for family caregiving.
Saraceno, (2016[5])	Source of funding (market-based vs public provision)	Supported Defamilialisation through public provision: when the state directly provides or funds care services, reducing individuals' reliance on family, such as through minimum income provision, unemployment benefits for the young or entitlement to higher education or to receiving care). Supported Defamilialisation through the market: provision of income transfers (in the form of cash benefits, vouchers or tax deductions) to help buy services on the market or when the state funds the provision of services via the market.
Ilinca, Leichsenring and Rodrigues, (2015[6])	Care demand, informal and formal care provision, and overall intensity of care provision (formal and informal).	Universal-Nordic: Medium care demand, low informal care provision, high formal care provision. Standard Care Mix: High care demand, medium-low informal care provision, medium formal care provision. Family-Based: High care demand, high informal care provision, low formal care provision. Transitional Model: Medium care demand, high informal care provision, medium-low formal care provision.
Verbeek-Oudijk et al., (2014[7])	Non-residential LTC expenditure and institution responsible for care provision.	Northern.High public spending and low family responsibility for care, Central European.Average expenditure and average family responsibility Southern/Eastern European.Low public expenditure and high family responsibility
Halskov, Bednr and Halskov, (2017[11])	Degree of public funding for LTC and the settings of care.	Low LTC expenditure, but high share for institutional care (Australia, Korea); Like 1, but more dispersed and fewer recipients (Czechia, Estonia); Lowest share of institutional care (Nordic countries).
Kraus et al., (2010[12])	Public vs. private spending, formal vs. informal care, access/targeting, cash benefits, and support for informal carers.	High public spending, low private funding, high formal care, low informal care, moderate carer support. Low public/private funding, high informal care, strong carer support. High private funding, moderate public spending, limited formal care, high informal care and support. High private funding, low public spending, high informal care, low carer support.
Colombo et al., (2011[20])	Degree of cost-sharing and universality of entitlements.	Universal entitlement, single LTC program. Means-tested entitlement, single LTC program. Universal entitlement, multiple LTC programs. Means-tested entitlement, multiple LTC programs.
Joshua, (2017[14])	Funding stream and eligibility criteria	Social insurance (Germany, Japan, Korea) Universal (Denmark, Finland, Sweden) Means-tested (England, United States) Hybrid (France)
Pavolini, (2021[17])	Importance of state support in providing in-kind services (residential and home care), cash benefits to beneficiaries or informal carers.	Limited State Intervention: Offers the lowest coverage rates across all types of provision, reaching a very limited share of potential beneficiaries. Mild State Intervention (Cash Benefits): Provides higher coverage than the first model, focusing on cash benefits to support beneficiaries. Mild State Intervention (Services): Offers even higher coverage, mainly through in-kind services, and in some cases, cash benefits for informal carers. Strong State Intervention (Cash Benefits): Delivers similar coverage to the "Mild State Intervention (Services)" model, primarily using cash transfers, with partial service provision. Strong State Intervention (Services): Provides very high coverage through in-kind services, with cash benefits used to complement service provision. Very Strong State Intervention (Services): Offers very high coverage primarily through services, with cash benefits integrated to complement services.

Dyer et al., (2019[18])	Access, public vs. private funding, quality, responsibility for regulation (centralized vs. decentralized, regulatory approach (inspection, reporting), public quality information, source of funding, out-of-pocket payments, and type of providers.	Low access, high consumer spending, means testing, cost sharing, significant private funding reliance, mid-high-quality regulation, and LTC-health system integration. Low access, mid consumer spending, means testing, lower reliance on consumer spending, mid-high-quality regulation, and LTC-health system integration. High access, some consumer spending, good quality regulation. Highest level of access, lowest cost sharing, high level of quality regulation and integration.
Ariaans, Linden and Wend (2021[19])	Analysis of quantitative data on care supply, public-private mix, health outcomes, and institutional information regarding system access.	Residual Public System. Low supply, no means-testing, bound cash benefits, highest public LTC spending, lowest health outcomes. Private Supply System. Medium-high supply, low public spending, unbound cash benefits, low access restrictions, medium health outcomes. Public Supply System. High supply and public spending, in-kind benefits only, no means-testing, limited choice, above-average health outcomes. Evolving Public Supply System. Medium-low supply and spending, in-kind benefits, no means-testing, moderate-high choice restrictions, high life expectancy but low subjective health. Need-Based Supply System. High supply, average public spending, unbound cash benefits, strong means-testing, few choice restrictions, above-average outcomes. Evolving Private Need-Based System. Low supply and spending, private-oriented funding, strong means-testing and choice restrictions, relatively high health outcomes

Source: OECD own analyses.

3 The OECD typology of long-term care systems uses cluster analysis to combine various dimensions

20.   To develop a comprehensive typology of long-term care (LTC) systems, a dataset covering multiple dimensions of system design and performance is required. These data serve as indicators that reflect key features and outcomes of LTC systems. For the typology to be meaningful, the indicators must be specific - clearly defined and unambiguous - and measurable, meaning they should be quantifiable or capable of demonstrating clear evidence of achievement.

21.   This chapter describes the information and data collection process used to construct the dataset for the LTC systems typology. The dataset covers five key dimensions of LTC systems and services: access, availability, funding, governance, and quality. For each dimension, a set of variables is selected to reflect the full scope of that area. The selection was informed by previous OECD work as well as variables commonly used in the literature reviewed in Chapter 2. Some variables are continuous, while others are coded on an ordinal scale, with the scale size determined by the relevance and the availability of data. The analysis draws on a range of sources, including existing OECD LTC indicators, past OECD questionnaires, data collected directly from the countries analysed, and relevant literature. In total, the study includes data from 29 OECD countries. An overview of the variables used to construct the dataset is presented in Table B.1 in Annex B.

Access to LTC services is measured through care needs, financial means, coverage scope, and the form of benefits provided

22.   Access dimension focuses on eligibility criteria (means and needs testing), the degree of coverage within the target population and the reliance on in-kind services or cash benefits. This dimension is measured by four variables.

23.   The first two variables capture the degree of targeted access to LTC services based on care needs and income. The first variable focuses on needs-testing. It is calculated by comparing the share of LTC costs covered by public systems across typical cases[2] with varying levels of need. Values range from 0 to 3, representing the number of instances in which public support is higher for individuals with greater care needs[3]. Specifically, the comparisons include: (1) low needs versus moderate needs, (2) moderate needs versus severe needs, and (3) low needs versus severe needs. The second variable reflects income-testing. It measures the extent to which countries prioritise low-income individuals in providing LTC support. A

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[2] In this paper, three typical cases of LTC needs are used: low, moderate and severe. For detail description of typical cases, please see OECD (2024[101]).

[3] Assuming median income and no wealth of compared individuals.

value of one is assigned for each case in which public support for a low-income individual (at the 20th percentile of the income distribution among older people) exceeds that for a high-income individual (at the 80th percentile), assuming the same level of care needs. Given three levels of need - low, moderate, and severe - the means-testing indicator also ranges from 0 to 3.

24.   The third variable calculates the coverage rate of formal LTC services by comparing the number of formal LTC recipients to the population of older people with LTC needs. This calculation is based on the reporting of ADLs and IADLs and using the OECD measure of needs based on typical cases.[4] The number of individuals receiving formal care is also derived from self-reported data. An older person is considered to be receiving formal care if they report accessing such services. This includes cases where individuals receive a combination of both formal and informal care.

25.   Finally, the fourth variable looks at the degree to which a country provides services directly through in-kind services, relies only on cash benefits or provides a choice for both, but with the dominating role of in-cash benefits. In the literature, differing perspectives exist regarding the effectiveness of cash transfers versus in-kind benefits. While cash transfers might be beneficial in terms of choice, they do not guarantee service availability, particularly in less populated areas. Moreover, physical or cognitive impairments among older people may hinder their ability to access appropriate care when relying solely on cash benefits. In addition, if cash benefits are unregulated, they might lead to the development of a grey market.

Availability of LTC systems depends on the supply of formal and informal care

26.   The second dimension is availability which indicates the supply of formal care and how countries rely on and support informal carers.

27.   The supply of formal care is proxied by two variables: the number of beds and the number of LTC workers with respect to the older people population. This is calculated with OECD and country-specific data when it is not available in the OECD database.

28.   The countries' reliance and support for family carers is assessed through two variables. The first variable measures the percentage of older people reporting to receive informal care to assess the extent to which informal carers contribute to the overall care supply. The second variable is on familialism and captures the existence of leave and cash benefits for informal carers. It is coded from zero to four based on the availability of the following benefits: cash benefits for informal carers, cash benefits for care recipients who rely on informal care, paid leave and unpaid leave for informal carers.

Funding measures the generosity of public support and its impact on OOP expenses and poverty rates among LTC recipients

29.   Funding is the third dimension, which captures the degree of public funding, out-of-pocket expenses on LTC services, and the role of LTC social protection mechanisms to reduce poverty risk among older people with LTC needs. It is assessed using three variables. The first variable measures the public share of the costs for LTC for a person with severe needs, a median income and no wealth. The second variable assesses the degree of OOP spending for the same older person, expressed as a share of the median income. And the third variable calculates the percentage point difference between the poverty rate among older people with severe needs with and without social protection.

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[4] A detail description of measure of LTC needs is included in the appendix of the report *Is Care Affordable for Older People?* (OECD, 2024[21]).

30.   These variables capture different elements of the generosity and efficiency of the current funding for LTC. The variable public share of the LTC costs relates to which percentage of the costs is covered by public funding and brings an important precision to the overall LTC expenditure, as it adds the relative importance of spending with respect to the overall costs of LTC. Previous OECD work has shown that unit costs of LTC can vary across countries, particularly in relation to the wages of LTC workers so overall spending does not capture fully the generosity of the system (OECD, 2024[21]). Overall, the total costs of LTC are substantial and represent one to six times the median disposable income of individuals of retirement age or older. The variable OOP costs is complementary as, in some countries, even if public share of costs is generous, because overall costs are high and incomes remain low, the overall burden on users can still be substantial. Finally, the third variable assesses the extent to which social protection mechanisms for LTC reduce poverty risk associated with LTC expenditures. It complements both variables as it shows whether public funding is sufficient to prevent people from falling into poverty.

Governance captures the organisation and legal framework of LTC systems

31.   The overall organisation of public LTC provision is analysed to understand the organisational depth and cohesion of LTC systems. Based on the different typologies presented in Chapter 2, this dimension should capture the importance of public LTC systems as well as the degree of integration within the different parts of the systems. For this end, it describes LTC systems using four variables.

32.   The first variable assesses whether the legal framework for LTC integrates both health and social care components. In many OECD countries, LTC services are delivered through both sectors. Fragmentation in service provision can lead to overlaps and gaps in access and coverage, potential cost shifting between sectors, and increased complexity for users navigating the system. This can make it difficult for individuals to access the support they need in a timely and coordinated manner. Unifying the health and social aspects of LTC legislation is often a first step towards establishing a single-entry point for the provision of cash benefits and services, based on a standardised needs assessment. Such integration can enhance service delivery and overall system efficiency. To assess this aspect, countries are classified as "not integrated" if their LTC legislation is not integrated across health and social care sectors, and "integrated" if the legislation is unified.

33.   The second variable captures the level of decentralisation within LTC systems. The literature and existing typologies highlight decentralisation as a key dimension of governance, based on the assumption that organising care provision closer to recipients can result in more tailored and responsive services. Conversely, centralised systems may be better positioned to ensure equity of access and consistency in service provision across regions. However, highly centralised systems may also apply one-size-fits-all approaches that overlook regional heterogeneity, potentially limiting the effectiveness and fairness of service delivery. In this analysis, decentralisation is assessed across three aspects of governance: benefits, services, and eligibility. A system is classified as decentralised if at least one of these aspects is not centrally managed, and as centralised if all three are governed at the national level.

34.   The third variable captures the ownership of public providers in LTC services, measured by their share among all LTC providers. This continuous variable reflects ongoing debates in the familialism literature about whether countries pursue defamilialisation through public provision or rely on market-based solutions. The role of privatisation in LTC is widely discussed, as it raises questions about quality of care and working conditions. Empirical findings on the impact of provider ownership are mixed. Public and private providers often operate under different incentives and management models. For example, research from Sweden suggests that the privatisation of LTC services may yield efficiency gains. In Denmark, evidence indicates that public and private providers differ across several dimensions of care quality. According to Hjelmar et al (2018[22]) public nursing homes generally offer better structural quality, especially in staffing, whereas private providers, tend to excel in process quality, such as individualised care (i.e. the

times of meals are more flexible). In addition, the paper also shows how although residents' physical health does not differ significantly, public homes often report more adverse events, possibly due to stricter monitoring, In addition, empirical evidence suggests that they contribute to a reduction of care suppliers, and are associated with an increase in some aspects of care quality like for instance choice offered by meals-on-wheels companies (Stolt, Blomqvist and Winblad, 2011[23]), or mortality rates (Bergman et al., 2016[24]). Given its potential implications for other dimensions of the typology, including availability and quality, it is important to include a variable on the extent of public provision in LTC services.

35.   The fourth variable measures the degree of care integration between the LTC sector and the broader health care system, with a particular focus on the use of clinical guidelines, care pathways, and multidisciplinary teams. This indicator, used in previous typologies, aims to capture the organisational depth of care systems, as integration between LTC and health services is associated with improved quality outcomes and greater efficiency from the user's perspective. The variable assesses whether there is meaningful coordination or integration with both primary and acute care, such as through the establishment of joint care pathways or multidisciplinary care teams. Countries are classified as having: (1) integration with both primary and acute care; (2) integration with only one of these healthcare components; or (3) no specific measures in place to support integration with the healthcare system.

LTC quality is analysed through presence of staff ratio, minimum educational requirements and regulatory framework

36.   This LTC system dimension includes variables that measure different aspects of quality. The first two variables capture the structure-based measurement of quality by looking at the quality of the LTC workforce. Structure based assessment of the quality of LTC is based on resources and organisational structure, for example on the facility, equipment and staffing. In recent years, a strong focus is placed on the staffing of LTC due to shortages in the overall level of workers, high turnover rates and a recognition that the quality of staffing is probably related to the quality of care (Mentzakis, McNamee and Ryan, 2008[25]; OECD, 2023[26]). The issues related to staffing stems from, among others, discrepancy of pay between people with the same background in primary healthcare and LTC sector (OECD, 2023[26]).

37.   The first variable examines whether staff-to-resident ratios are in place in each country. This aims to capture the adequacy of staffing in relation to residents' needs. Many studies suggest that during the COVID-19 pandemic facilities with lower numbers of LTC workers were associated with higher infection rates (Sugg et al., 2021[27]; Xu, Intrator and Bowblis, 2020[28]; Li et al., 2020[29]). In many countries, staffing ratios requirements are implemented as indicators of adequate level of LTC workforce, given that appropriate ratios can contribute to reduced burnout, and better outcomes for care recipients. In addition, ratios have a broader impact as they concern different categories of care staff, including distinctions between professional nurses, personal care workers, and the various sub-categories within each occupational group. However, in some countries staff ratios are not feasible or easy to implement due to the shortage of workers.

38.   The second variable aims to capture the quality of staffing by identifying if there are minimum education requirements for LTC workers. Education requirements for LTC workers vary greatly across OECD countries, often with very low requirements for personal care workers. This variable classified countries in two three categories: no minimum requirements in place, high school diploma or higher, and other i.e. mandatory trainings.

39.   The third and fourth variables within this dimension assess the extent of quality assurance and regulation in the LTC sector. The third variable captures whether mandatory accreditation is required for LTC providers, distinguishing between systems where accreditation is required for both institutional and home care services, for only one type of service, or for neither. The fourth variable reflects the existence

of a broader quality assurance framework within the LTC system. Countries are classified based on whether such a framework is in place or absent altogether.

40.   Lastly, the fifth variable in the quality dimension looks at outcomes of care. Outcomes-based assessments focus on the effects of care on the user's health, such as functioning, but also on other indicators related to safety. The OECD has collected indicators on three outcomes: the use of benzodiazepines among the older people, the share of older people with health-related infections in LTC institutions, and the share of older people in LTC institutions with at least one pressure ulcers. Although various indicators exist to assess LTC quality outcomes, these three were selected for this report due to their relatively high degree of international comparability. Since not all countries have data available for all three indicators, countries are ranked on a scale of one (above average) to three (below average) for each indicator available and an average is constructed, although for several countries this measure are based on one indicator alone.

OECD's clusters model provides a comprehensive framework for comparing LTC systems

41.   The contribution of this working paper, considering the different methodologies and data collection existing in the literature (Table 2.1), is its broader scope and increase data coverage. The dataset used in this analysis is more comprehensive compared to those in the LTC typology literature. For example, Kraus et al. (2010[12]) use eight indicators to cluster countries, while Ariaans, Linden, and Wendt (2021[19]) incorporate twelve indicators. In contrast, this working paper includes 20 indicators.

42.   Furthermore, the quality of the typology is determined not only by the number of indicators but also by the breadth and diversity of the dimensions they cover. This working paper categorises its indicators into five key dimensions: access, availability, funding, governance and organisation, and quality. In comparison, Kraus et al. (2010[12]) consider governance, access, funding, and quality, but omit indicators on service availability. Ariaans, Linden, and Wendt (2021[19]) , on the other hand, include governance, funding, and access, but exclude both quality-related indicators and those related to the availability and support of informal care.

43.   The dataset created for this working paper provides a more comprehensive framework for comparing LTC systems across countries, allowing for a nuanced understanding of their structures and performance. While it is acknowledged that each LTC system is shaped by unique cultural, policy, and budget constraints, comparative analysis remains valuable Although the five dimensions used - access, availability, funding, governance, and quality - provide a broad and structured approach, they do not capture all aspects related to ageing and LTC. For example, policies promoting healthy ageing or protecting the rights of care recipients fall outside the scope of this framework. Even within the defined dimensions, some important elements - such as training for carers, policies aimed at increasing the attractiveness of the care profession, denationalisation process, or geographic inequalities in access to LTC services - are excluded due to the lack of internationally comparable data. Furthermore, the dataset reflects the state of LTC systems up to the end of 2025. Given the pace of population ageing, many countries are currently undergoing reforms, and some indicators may become outdated as a result of these dynamic changes.

44.   Clustering serves as an effective analytical tool by grouping systems with similar characteristics. The more comprehensive the clustering framework (in terms of both the number and diversity of indicators) the more robust and meaningful the analysis. This enables the identification of common challenges, emerging patterns, and transferable best practices that can inform policy across different settings.

45.   However, this approach also has limitations. First, cross-country comparisons are complicated by differences in definitions and measurement approaches. Countries may interpret or apply certain indicators differently, which affects data comparability. Second, the use of categorical variables may mask subtle

differences between systems. Countries with distinct characteristics could be assigned to the same category if their values fall within similar ranges. These limitations highlight the importance of careful interpretation when applying clustering techniques to cross-national LTC comparisons.

LTC countries are different across dimensions, but some common challenges emerge

46.   Each dimension of the cluster analysis created for this working paper reveals that LTC systems significantly differ across OECD countries. These cross-country variations become evident when examining the values of each variable within each dimension (see Annex B). At the same time, the average values across each dimension reflect the room for improvement in the LTC systems across the OECD as a whole.

47.   Looking at the first dimension, access, the four variables present potential inequities in access and affordability across OECD countries. Regarding targeting based on needs, the average value of 2.2 out of maximum 3 across all countries suggests that, in most cases, systems provide relatively more financial assistance as needs increase. Moreover, income-testing of public support is limited, with only 1.4 cases out of 3 showing greater generosity for low-income individuals. In terms of coverage, only 28% of older people with LTC needs receive formal LTC services, suggesting limited access and a possible reliance on informal care. Additionally, the type of benefits provided among countries is concentrated in the category only in-kind or predominantly in-kind benefits (72%), while a 27% with predominantly in cash and cash-only benefits.

48.   Regarding the availability dimension, the first two indicators on formal care supply show an average of 40.5 LTC beds per 1 000 older people, and 4.5 LTC workers per 100 older people. These numbers suggest a lack of workforce and bed capacity, indicating that the average LTC system may struggle to meet the growing demand for care. Concerning the other two variables related to informal care, 61% of countries rely on informal carers, but the support provided to them is limited. The average level of support and benefits is 1.96 out of 3, highlighting insufficient resources and assistance for informal carers.

49.   In terms of funding, variables suggest that countries provide moderate public support that helps reduce poverty risk associated with LTC, but significant gaps remain, as OOP expenses remain high for individuals with severe needs. On average, public support covers 66% of total LTC costs, which reflects a moderate level of generosity, but individuals are still responsible for covering around one-third of the costs themselves. Looking at the OOP expenses, they amount on average to 71% of median income for an older person with severe needs and no wealth. In this line, there is a substantial financial burden, and gaps in affordability despite existing public support. Finally, the impact of LTC benefits on poverty, on average, these benefits contribute to a 37.9% reduction in the poverty rate among older people with severe needs.

50.   When it comes to the governance dimension, countries exhibit differences in the structure of their systems, with identifiable groups emerging across most variables. Most countries' LTC systems are decentralised (62%), while the remaining 38% have centralised ones. Moreover, 45% of countries have a unified LTC law that combines health and social aspects, while 55% have more fragmented systems. The average share of public providers is 34%, which indicates that while a fair portion is provided by public entities, there is reliance on private providers. In terms of integration, 41% of countries integrate LTC with both hospitals and primary care, 35% integrate it with only one, and 24% have no integration at all.

51.   Finally, the quality dimension, similarly to the previous one also reveals identifiable groups emerging across some of its variables. The first two workforce-related variables highlight differences between two or three groups of countries. Looking at staff ratios, most countries (72%) have them in place, while 28% do not. When examining educational requirements for personal care workers, most countries have established some minimum standards. About 38% of countries require at least high school education or higher, and 52% of countries education other than high school, i.e. mandatory trainings. Only a 10% of countries have no minimum educational requirements to work as personal care workers. Regarding the next two quality variables, most countries require mandatory accreditation for both home and institutional LTC services (65%) or for just one of these (31%). Only one country does not have mandatory accreditation in place. Similarly, quality assurance frameworks are present in most countries (90%), with only 10% lacking them. Lastly, regarding the final variable on quality outcomes, the average score is 2.11 out of 3, indicating that, overall, the values are like the OECD average.

4 Methodology

52.   This chapter outlines the methodology employed to cluster long-term care (LTC) systems across OECD countries. First, it explains the standardization of the variables and the dimensionality reduction applied to the dataset. Next, it describes the methods used to derive the cluster assignments. Finally, the chapter details the approach taken for the additional analyses conducted post-clustering.

Data dimension reduction is needed to increase efficiency and effectiveness of clustering algorithms

53.   Before applying a clustering algorithm, the dataset is modified through the application of dimensionality reduction techniques. It includes 20 variables, grouped into five dimensions of LTC systems, as described in Chapter 3. Given the relatively small number of observations (29), the dataset can be classified as high-dimensional. In such high-dimensional spaces, the data become sparse, and traditional indexing and algorithmic techniques often struggle in terms of efficiency and effectiveness perspective (Aggarwal, Hinneburg and Keim, 2001[30]). As a result, the literature commonly combines clustering algorithms with dimensionality reduction techniques to improve clustering outcomes (Liu et al., 2020[31]).

54.   The dataset consists of mixed-type data, requiring the use of different dimensionality reduction techniques. Some variables are continuous, while others are categorical. For instance, the generosity of the LTC system is measured as the share of LTC costs covered by public support for an older person with severe needs, making it a continuous variable. In contrast, the classification of whether LTC governance is centralised or not is a categorical variable. The standard dimensionality reduction technique for continuous data is Principal Component Analysis (PCA) (Abdi and Williams, 2010[32]), for categorical variables is Multiple Correspondence Analysis (MCA) (Nenadic and Greenacre, 2005[33]), and for mixed-type data, the appropriate technique is Factor Analysis of Mixed Data (FAMD) (Saporta, 1990[34]).

55.   To preserve the original data structure, the dimensionality reduction is carried out in two stages. Since the data are originally collected within five broad dimensions of LTC systems, the reduction is first performed within each of these five dimensions. The scores obtained are then used for a second round of dimensionality reduction to derive the final score. This approach ensures that common variation is captured first within the dimensions and then across them, preventing from the domination of one dimension in the final score. In the first stage, Principal Component Analysis (PCA) is applied to the Availability and Funding dimensions, while Factor Analysis of Mixed Data (FAMD) is used for the remaining three dimensions. The continuous data are normalised before applying the dimensionality reduction techniques to prevent variables with high variance from dominating the factor loadings.

56.   The number of components retained from the dimensionality reduction varies across the five dimensions of the LTC system. The optimal number of components is determined using the "rule of thumb": only components with eigenvalues greater than one are retained. This rule is commonly used in the literature as it ensures that only components that explain more variance than a single original variable are retained (Girden, 1996[35]). As a result, two components are retained for access, two for availability, one for funding, three for governance, and five for quality. Consequently, the first stage of dimensionality

reduction reduces the number of variables from 20 to a total of 13, highlighting the need for further reduction in the second step.

57.   The second stage of the dimensionality reduction is performed using Uniform Manifold Approximation and Projection (UMAP) (McInnes et al., 2018[36]). As the scores obtained from the first dimensionality reduction are continuous, this allows for the application of a wide range of dimensionality reduction techniques. UMAP is a versatile technique that does not assume a linear relationship between the scores, enabling it to capture nonlinear relationships effectively. The algorithm is applied with the following parameters: two components are retained, a minimum distance of 0.02 is set to control the balance between local and global structure, three neighbourhoods are used to define the local structure, and the cosine metric is employed to measure similarity, which is often effective for high-dimensional data with sparse relationships. These parameters are chosen to optimise the capture of both local and global structures within the data, ensuring that the reduced dimensionality retains as much of the original structure as possible. The scores obtained from this second stage are then normalised.

58.   Analysis of the scores suggests that LTC systems can be clustered into either four or five groups. Figure 4.1 presents the scores obtained from the dimensionality reduction for the 29 analysed countries. Based on this figure, four or five distinct clusters are visually identifiable. This clustering can later be confirmed using appropriate clustering methods. It is important to note that the obtained scores should not be interpreted in terms of their sign or absolute value. Rather, they serve as suggestive evidence of the relative distances between LTC systems - specifically, the smaller the distance between two points, the higher the likelihood that the corresponding LTC systems belong to the same cluster.

Figure 4.1. Distribution of countries across reduced dimensions describing LTC systems

Based on scores obtained from two-stage dimensionality reduction
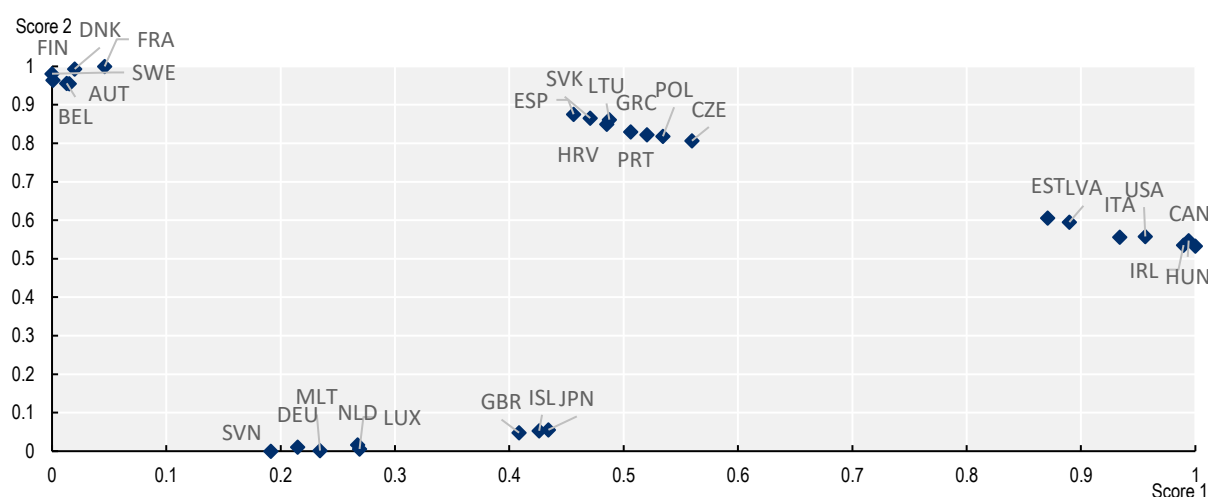
Note: The scores are predicted using the UMAP and normalize to lie between 0 and 1.
Source: OECD own analyses.

Multiple clustering algorithms are applied to ensure the consistency of the results

59.   Cluster analysis is used to classify LTC systems based on their key characteristics. The goal of cluster analysis is to divide a dataset into groups (or clusters) such that the data points within each group are more like each other than to data points in other groups. Cluster analysis can be performed using a variety of algorithms, reflecting the various concepts of what constitutes a cluster and how it should be defined.

60.   Four clustering algorithms have been used in this working paper (see Table 4.1 for comparison) to group LTC systems. They belong to two broad classes of clustering methods: distance-based clustering and probabilistic clustering. Distance-based algorithm groups data points into clusters based on the similarity between them, which is calculated using a distance metric. The fundamental idea is to place data points that are close to each other in the same cluster, reflecting the proximity in the feature space. Probabilistic clustering is a clustering approach that assigns data points to clusters using probabilistic models or probability distributions. These methods assign probabilities to indicate the likelihood of data points belonging to each cluster. This approach is particularly useful when data points can potentially belong to multiple clusters or when there is uncertainty in cluster assignments.

Table 4.1. Comparison of four clustering algorithms used to group LTC systems.

Algorithm name	Algorithm class	Description
K-means	Distance-based algorithms	Assigns data points to clusters such that the distance between a data point and cluster centroid is smallest. Initial centroids of specified number of clusters are randomly selected. While the advantage is its simplicity, the algorithm is sensitive to the initial random selection of cluster centroids. Besides, finding the optimal number of clusters lacks a general theoretical solution.
Hierarchical clustering	Distance-based algorithms	Groups similar data points into clusters that form a hierarchical structure, reflecting the order in which clusters are merged or divided. It does not require to specify the number of clusters beforehand and is not sensitive to the initial selection of cluster centroids. Yet, it can be sensitive to outlier observations and is influenced by the choice of distance metric and linkage method.
Self-Organizing Map	Distance-based algorithms	Is a type of artificial neural network designed to reduce the dimensionality of data while preserving the topological relationships between data points (Kohennen, 1982[37]). The algorithm is robust to noise and outliers in the data but can be sensitive to the initial configuration of neurons. Additionally, its outcome depends on the selection of parameters such as the grid size, learning rate, and neighbourhood size.
Gaussian Maximization Method (GMM)	Probabilistic algorithm algorithms	Assumes data points are generated from a mixture of several Gaussian distributions, each corresponding to one cluster. GMM employs an Expectation-Maximization technique to estimate parameters (the mean and the covariance) for each of these distributions. It allows for the calculation of the probability of belonging to each cluster. This makes GMM a more flexible approach compared to k-means. However, it also lacks a general theoretical framework for determining the optimal number of clusters and is sensitive to initial parameter guesses.

Source: OECD own analyses.

61.   The OECD methodology described in this working paper differs from those described in the literature because it synthesises results of several algorithms. Ariaans, Linden and Wendt (2021[19]) employed a similar approach, but they relied on outcomes of two clustering algorithms only while the methodology used in this working paper uses four different clustering methods. The OECD methodology has several advantages. First, different clustering algorithms have varying assumptions and characteristics. Applying multiple clustering methods helps to assess and validate the robustness of the clusters. Since multiple algorithms produce similar results, it adds confidence in the validity of the clusters. Second, since various clustering algorithms handle outliers differently, running multiple algorithms ensures that identified clusters are not significantly affected by extreme data points. Finally, clustering algorithms might identify patterns based on data noise (e.g. including a lot of variation in the data), leading to overfitting so the identification of clusters that do not exist. Employing multiple algorithms reduces the risk of overfitting since each clustering method has a unique approach to classify data points and it is less likely that all algorithms will result in the same overfitted solution.

5 The results of the OECD typology show four country clusters

62.   This section presents the results of the OECD typology of long-term care (LTC) systems. It begins by outlining the outcomes of the clustering exercise. It then discusses the key characteristics of each cluster, highlighting how they differ from one another. Finally, it examines how individual countries compare to the average profile of their respective clusters.

Clustering algorithms identify four groups of LTC systems

63.   The number of clusters is set to four based on the analysis of silhouette scores (where a higher value indicates better clustering quality), Davies-Bouldin scores (where a lower value is preferable), and the elbow method. The elbow method involves plotting the total within-cluster sum of squares against the number of clusters, helping to identify the point at which adding more clusters results in only marginal improvements - this point, often called the *elbow*, indicates an appropriate number of clusters. Three alternatives are considered: three, four, or five clusters. The allocation into three clusters results in a lower silhouette score and a higher Davies-Bouldin score compared to the four- and five-cluster solutions, indicating a poorer fit. The comparison between four and five clusters is more nuanced. While the elbow method suggests that four clusters provide an optimal balance between model complexity and explanatory power, the silhouette and Davies-Bouldin scores are very similar for both cluster solutions. Given the relatively small number of observations (29 countries), and to avoid overfitting and to ensure meaningful interpretation, the four-cluster solution is selected as the most appropriate.

64.   All four employed clustering algorithms lead to the same allocation of countries into clusters. The clusters are numbered from 1 to 4, and the allocation of countries is shown in Table 5.1. The cluster numbering is arbitrary and does not correspond to any specific feature of the LTC system. The size of the clusters varies, ranging from six countries in Cluster 1 to eight countries in Clusters 2 and 4. Within each cluster, countries are listed in alphabetical order. The fact that all four algorithms grouped countries into the same clusters confirms that the allocation is robust and consistent, despite the differing assumptions and methods underlying each clustering technique.

Table 5.1 Clustering of countries based on their LTC system characteristics

Cluster 1	Cluster 2	Cluster 3	Cluster 4
Austria	Germany	Canada	Czechia
Belgium	Iceland	Estonia	Croatia
Denmark	Japan	Hungary	Greece
Finland	Luxembourg	Ireland	Lithuania
France	Malta	Italy	Spain
Sweden	Netherlands	Latvia	Poland
	Slovenia	USA	Portugal
	United Kingdom		Slovak Republic

Note: All four clustering algorithms: K-means, Hierarchical clustering, Self-Organization Map, and Gaussian Maximization Method yield to the same LTC systems grouping. Countries are ordered alphabetically within the cluster.
Source: OECD analysis based on the data sources listed in the Annex C.

65. The number of LTC workers per older population and the share of total LTC costs covered by public support are among the most important variables influencing group assignment. To assess the importance of each variable in the clustering, a random forest classifier is trained using the original variables and the cluster assignments. For each variable, impurity-based feature importance is calculated. Following the number of LTC workers per older population and the generosity of the LTC system, other influential variables include the share of public providers, the number of LTC beds per older population, out-of-pocket expenditures, and the share of older people with LTC needs receiving informal care. Among the least impactful variables are the presence of a staff ratio requirement, the form of benefits (in-cash versus in-kind), and the existence of a quality assurance framework.

66. Clusters differ across all dimensions of LTC systems, although the degree of variation varies across dimensions. Figures in Annex A present the averages of all variables used in the clustering, disaggregated by cluster. LTC systems show significant variation across clusters in terms of the number of LTC beds and LTC workers per older population, as well as in variables related to funding, the centralisation of governance, and the share of public providers of LTC services. By contrast, patterns are noticeably less distinct when it comes to the type of LTC benefits offered or the presence of a quality assurance framework. These findings are consistent with the earlier analysis of variable importance: variables with greater variation across countries have a stronger influence on the clustering, while variables with lower variation appear to have a smaller impact.

Cluster 1 countries have the highest financial support, high formal public provision yet offer high support to informal carers, and have high-quality, unified but decentralised systems

67. Countries in Cluster 1 are characterised by the highest coverage of formal LTC services, and access to public support is often both needs- and means-tested. In half of the countries in this cluster, the share of older people with care needs who receive formal care exceeds 50%. Only in Sweden is this share below 25%, aligning more closely with the levels observed in Clusters 3 and 4. Needs-testing is widespread: in four countries, the share of LTC costs covered by public support increases with the severity of needs, with the exceptions of France and Denmark. Similarly, some form of means-testing is present in all countries in this cluster, except for Denmark. Lastly, the type of LTC benefits varies across countries—Austria and France rely more heavily on in-cash benefits, whereas the remaining countries predominantly provide LTC services directly.

68.   The availability of formal LTC and support for informal carers is high in LTC systems grouped in Cluster 1 although staffing levels are somewhat lower. The number of beds in LTC institutions per older population is, on average, relatively high compared to other clusters, with Denmark being the only country in the group where this number is significantly lower (more than 20% below the average). The number of LTC workers per older population, on average, is significantly lower than in Cluster 2, largely due to lower staffing levels in Austria, Finland, and France. However, in countries such as Denmark and Finland, the number of LTC workers per older population is significantly above the cluster average, and more comparable to levels observed in Cluster 2. The share of older people with LTC needs receiving informal care is, on average, like that in Clusters 2 and 4, though the prevalence of informal care is particularly low in France and Sweden. Most LTC systems in Cluster 1 offer at least two policy measures supporting informal carers, suggesting relatively strong institutional support for this form of care.

69.   LTC systems grouped in Cluster 1 provide, on average, the highest level of funding for formal home care, resulting in low out-of-pocket expenses and a reduced risk of poverty for individuals receiving formal LTC. In all countries except France, public support covers at least 80% of the LTC costs for older people with severe needs. As a result, out-of-pocket expenses are below 50% in all countries except France, which leads to a significant reduction in poverty associated with LTC expenditures.

70.   LTC laws are mostly unified in the systems within Cluster 1, while all these systems are decentralised and primarily rely on public providers. The only exception in this cluster is Belgium, which does not have a unified LTC law. Public providers account for around 50% or more of all providers in every country, except for Belgium, where this share is significantly lower, at 29%. All countries in Cluster 1 integrate LTC with hospitals and primary care units; however, in Austria and Belgium, integration occurs only with one of these services, not both.

71.   Accreditation for LTC providers and quality assurance frameworks are common instruments used to ensure high-quality outcomes, while some countries opt not to mandate staff ratios. A quality assurance framework is present in all countries within Cluster 1, and accreditation is mandatory for both home and institutional LTC providers in all countries, except Austria, where mandatory accreditation applies only to one type of provider. Educational qualifications for LTC workers are generally high, with at least a high school diploma required in all countries except Denmark and France. This level of educational requirement is much higher than in Clusters 2 and 3 and is comparable to that observed in Cluster 4. However, to provide greater flexibility to LTC providers facing labour shortages, some countries, including Denmark, France, and Finland, have opted to forgo mandatory staff ratios. As a result of these relatively high-quality measures, the quality outcomes are generally high, except for France.

Cluster 2 comprises of LTC systems that offer high financial support, are centralised, rely more on private providers and have less means-testing

72.   Access to LTC services is less frequently needs- and means-tested in countries grouped in Cluster 2 compared to other clusters, and public support is provided predominantly or exclusively in-kind. Public funding as a share of LTC costs is higher for all cases only in the UK, Iceland, and Malta, which is much less common than in the other clusters. Additionally, four countries - Germany, Iceland, Luxembourg, and Malta - do not use means-testing for any typical case, and none of the countries in Cluster 2 apply means-testing to all typical cases. As a result, means-testing is much less prevalent in Cluster 2 than in Clusters 1 and 3, and is more in line with countries in Cluster 4. The share of older people with LTC needs receiving public support is, on average, 31%, with the UK, Malta, and Slovenia having coverage rates below 25%. This is significantly lower than in Cluster 1, but higher than in Clusters 3 and 4.

73.   The availability of formal LTC is very high in Cluster 2, accompanied by a high prevalence of informal care and relatively strong support for informal carers. The number of LTC beds per older

population is the highest among all clusters, with only Germany and Japan having fewer beds per older population. On average, the number of LTC workers per older population is also the highest in Cluster 2 compared to all other clusters, with Slovenia being the only country with several LTC workers significantly below the cluster average. The prevalence of informal care is also high, like Cluster 1 and 4, with more than 60% of older people with LTC needs receiving informal care, except in Iceland. Informal carers receive institutional support in all countries, with policies in place to support them. Only Iceland offers fewer than two policies for informal carers.

74.   LTC systems in Cluster 2 are relatively generous; however, out-of-pocket expenses and the risk of poverty among formal care recipients are, on average, slightly higher than in the LTC systems of Cluster 1. Slovenia is the only country in this cluster that cover around 50% or less of the cost of LTC for an older person with severe needs, while other countries in the cluster cover around 80% or more of the costs. This disparity has implications for out-of-pocket expenses and the poverty risk among care recipients, as these are higher in Slovenia compared to other countries in Cluster 2 and Cluster 1.

75.   Most countries in Cluster 2 have a unified LTC law and centralised LTC governance, while relying primarily on private providers. All countries, except Malta and the Netherlands, have a unified social and health component in their LTC laws. Governance is largely centralised, with the exceptions of Iceland and Japan. All LTC systems in this cluster, except for Slovenia, rely predominantly on private providers. Two out of the three LTC systems are integrated with both primary care and hospitals, with Iceland being the only country lacking integration with both elements of the health sector. Some countries lacking integration with primary care or hospitals recognise the limitations of insufficient coordination. In response to that, for example, France is planning structural reforms to improve coordination between the health, medico-social, and social sectors.

76.   Education requirements for LTC workers are lower in Cluster 2 compared to all other clusters, while LTC systems in this group mostly rely on staff ratios, accreditation for LTC providers, and quality assurance frameworks to ensure high-quality care. The UK and the Netherlands are the only countries in Cluster 2 that do not use staff ratios. Additionally, the UK, along with Iceland and Japan, does not have specific educational requirements for LTC workers, whereas the other countries have some requirements, although none mandate a high school diploma or higher. Accreditation is mandatory for both institutional and home care providers in all countries in Cluster 2, except Iceland. All countries have some form of quality assurance framework; however, the quality outcomes measured in these countries are, on average, lower than those observed in countries grouped in Clusters 1 and 3.

Cluster 3 groups countries with decentralised governance where strict needs- and means-testing limit public provision of LTC

77.   Means- and needs-testing are widely used in countries grouped in Cluster 3, which contributes to lower coverage of formal LTC. In all countries except Italy (for two cases) and Canada (for one case), the share of LTC costs covered by public support increases with the severity of needs. Similarly, means-testing is widespread: only Canada and Ireland do not apply it in any of the typical cases, while all other countries in the cluster apply it in two or more cases. As a result, in all countries in this cluster - except Ireland and Canada - less than 30% of older people with LTC needs receive formal care, a coverage rate lower than in Clusters 1 and 2. Public support is typically delivered through a mix of in-cash benefits (as in Hungary and Italy) and in-kind benefits (in all other countries), with in-kind support being more prevalent overall.

78.   The number of LTC beds and workers per older population is generally slightly below the overall average and the prevalence of informal care is also low, with only one or two policies supporting informal carers and care recipients. The number of LTC beds per older population is particularly low in Italy and Latvia, with around 20 or fewer beds per 1,000 older people. In terms of LTC workers, availability is

especially low in Latvia and Hungary, while Estonia has a relatively high number of LTC workers per older population, comparable to the average in Cluster 1. The relatively low prevalence of informal care in Cluster 3, compared to other clusters, is primarily driven by Canada, Hungary, and Ireland. However, other countries in this cluster also have a prevalence of informal care below the average observed in the other clusters, suggesting a relatively low reliance on informal carers overall. This might be partly due to the limited support for informal carers - four countries have only two policies, and Italy, the USA, and Latvia have just one.

79.   The generosity of public support for LTC is average in Cluster 3, resulting in, on average, higher out-of-pocket expenses and a higher poverty rate among care recipients compared to Clusters 1 and 2. The share of total LTC costs covered by public funding for an older person with severe needs and median income is relatively high in Canada and Hungary, aligning with the average of Cluster 1, which has the highest generosity. In contrast, it is very low in Estonia and the US, where public funding covers around 20% or less. This has implications for out-of-pocket expenses, measured as a share of median income, which are high in Estonia and in Italy who faces a high overall cost of LTC. As a result, only Canada, Ireland, and Hungary effectively limit the risk of poverty among formal care recipients.

80.   Countries in Cluster 3 lack a unified social and health component of LTC law and predominantly have decentralised LTC governance systems. The governance is centralised only in Ireland within this cluster, while the other countries have decentralised systems, like those in Cluster 1. The share of public providers of LTC services varies countries such as Estonia and Latvia rely mostly on public providers, while countries like the US, Italy, and Ireland depend largely on private providers. Most countries integrate their LTC systems with either hospitals or primary care, except for the US, which has integrated both elements of the health sector.

81.   LTC systems in Cluster 3 often use staff ratios, and all have implemented quality assurance frameworks while imposing relatively high educational qualifications for LTC workers to ensure quality care. More than 70% of countries in this cluster have mandatory staff ratios for LTC institutions, with the exceptions of Canada and Ireland. Canada and Estonia also require a high school diploma or higher for LTC workers, while the remaining countries require some other form of qualification. Countries in Cluster 3 typically require accreditation for either LTC institutions or home care providers, with the exceptions of Estonia and Latvia, which require accreditation for both. The quality outcomes of LTC systems in Cluster 3 are, on average, like those in Cluster 1, with Canada, Hungary, and Latvia achieving very high outcomes, while Italy and the US have relatively low outcomes.

Countries in Cluster 4 offer the lowest public funding for LTC, resulting in low formal care coverage and have fragmented systems with lower quality

82.   Even though Cluster 4 comprises LTC systems that rarely use means-testing, the coverage of formal LTC care remains relatively low. Six out of eight countries in this cluster provide higher public funding for more severe needs, while only Poland and Portugal do not employ means-testing. Lithuania, Spain, and Greece are the only countries that use means-testing for some typical cases, while the remaining countries do not apply means-testing for any typical case. Despite the limited reliance on means-testing, only 20% on average of older people with LTC needs receive formal care, with the share exceeding 30% only in Spain and Greece. The form of public support varies considerably: countries like Czechia, Spain, and Croatia provide mostly or entirely cash benefits, while others, such as the Slovak Republic and Portugal, rely primarily on in-kind benefits.

83.   The low number of LTC workers and beds in LTC institutions contributes to the high prevalence of informal care in Cluster 4, despite the limited number of policies supporting informal carers. The number of beds in LTC institutions per older population is below the average of all four clusters in Greece, Croatia,

Poland, and Portugal, with only Spain and Slovakia having numbers closer to the averages observed in Clusters 1 and 2. The number of LTC workers per older population is even lower compared to other clusters, with only Spain having a number close to the Cluster 2 average. As a result, the provision of informal care is very high, exceeding 50%, with Poland and Portugal being the only countries where the prevalence of informal care is below 60%. This high reliance on informal care is not supported by policies, as most countries offer one or no policies to support informal carers, with Spain being the exception, offering a set of four policies.

84.   Countries in Cluster 4 offer relatively low public support for older people with LTC needs, resulting in high out-of-pocket expenses and insufficient reduction of the poverty risk associated with care expenditures. Lithuania is the only country that covers more than 50% of the LTC costs for an older person with severe needs and median income, while Czechia, Croatia, Poland, and Portugal cover less than 25% of the cost. As a result, only in Greece are out-of-pocket expenses for an older person with severe needs and median income below 50%, making care largely unaffordable for most older people with needs in the remaining countries. This is further confirmed by the fact that only Greece, Portugal, and the Slovak Republic reduce the poverty risk associated with LTC expenditures in any meaningful way.

85.   In Cluster 4, the social and health components of the LTC system are mostly not unified, and LTC systems are largely unintegrated with the broader healthcare system. Portugal and Spain are the only countries that have unified the social and health components of their LTC laws. The governance of LTC is mixed: half of the countries have a centralised LTC system, while the others opt for decentralisation. LTC service providers are primarily private, with the exceptions of Czechia, Poland, and the Slovak Republic, where the share of public providers is slightly above 50%. Integration of LTC with hospitals and primary care is absent in most countries, except for Greece (which integrates LTC with one of these services) and Portugal, which has fully integrated its LTC system with both elements of the healthcare system.

86.   Most countries in Cluster 4 rely on staff ratios and have high educational requirements for LTC workers, although some countries lack a LTC quality assurance framework. Mandatory staff ratios are in place in all countries except Czechia. Five out of eight countries require LTC workers to have at least a high school diploma, while the remaining three require some other form of educational qualification – similar values as observed among countries in Cluster 1. All countries in Cluster 4, except Portugal, require accreditation for LTC home and/or institutional service providers. Greece, Poland, and Portugal are the three countries (among all countries) that lack a quality assurance framework, which may impact the quality of care provided. As a result, on average, quality outcomes in Cluster 4 are below those in other clusters, and Lithuania and Slovakia are the only two countries with high quality outcomes.

Annex A. Characteristics of LTC systems across clusters

Figure A.1. Characteristics of access to LTC services by cluster
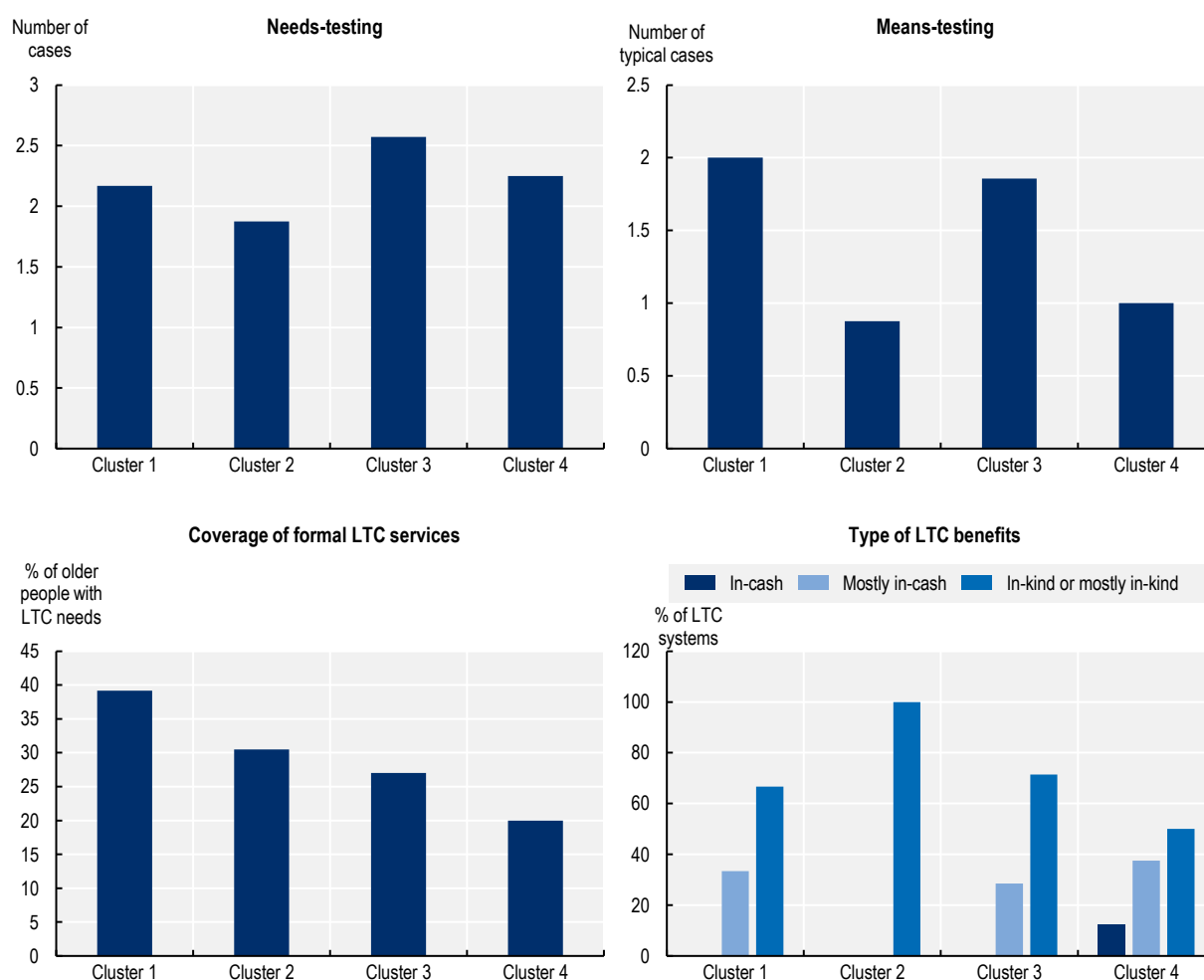
Note: The detail description of variables presented on the figure is included in Chapter 3.
Source: OECD own analyses based on data sources listed in Annex C.

Figure A.2. Characteristics of availability of LTC across clusters
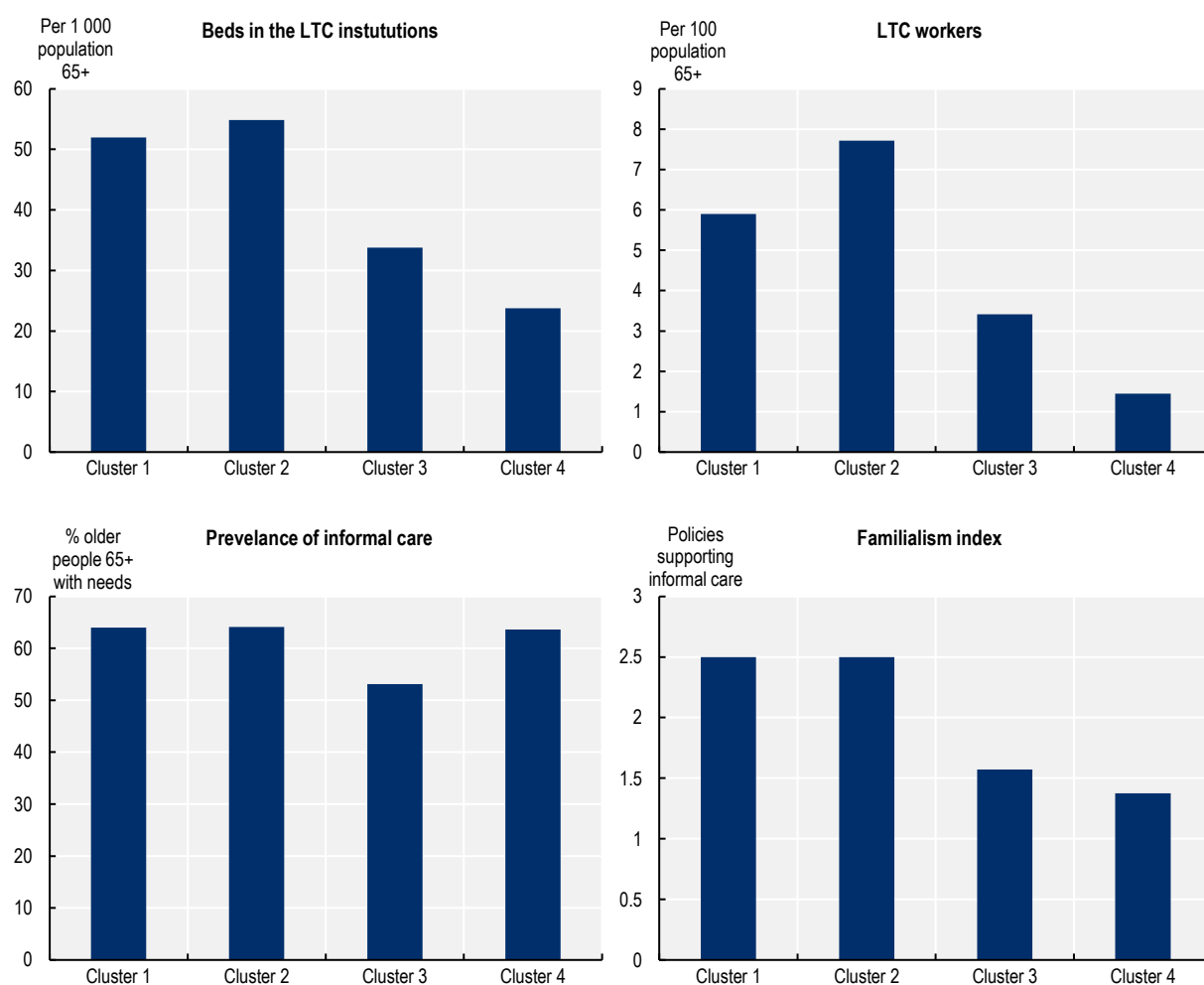
Per 1 000
population
65+

Beds in the LTC instututions

Per 100
population
65+

LTC workers

% older
people 65+
with needs

Prevelance of informal care

Policies
supporting
informal care

Familialism index

Note: The detail description of variables presented on the figure is included in Chapter 3.
Source: OECD own analyses based on data sources listed in Annex C.

Figure A.3. Characteristics of funding of LTC across clusters

Note: The detail description of variables presented on the figure is included in Chapter 3.
Source: OECD own analyses based on data sources listed in Annex C.

Figure A.4. Characteristics of governance of LTC systems across clusters

LTC governance law

■ Fragmented   ■ Unified

% of LTC systems

LTC governance centralisation

■ Decentralised   ■ Centralised

% of LTC systems

Ownership of LTC services

% of public providers

Integration of LTC with primary care and hospitals

■ Not integrated   ■ Integrated with one   ■ Integrated with both

% of LTC systems

Note: The detail description of variables presented on the figure is included in Chapter 3.
Source: OECD own analyses based on data sources listed in Annex C.

Figure A.5. Characteristics of quality of LTC across clusters

Staff ratio

Not present   Present

% of LTC systems

Mandatory accredication for home and institutional LTC services

None   Either   Both

% of LTC systems

Educational requirements for LTC workers

None   Other   High school or higher

% of LTC systems

Quality assurance framework in LTC system

Not present   Present

% of LTC systems

Quality outcomes
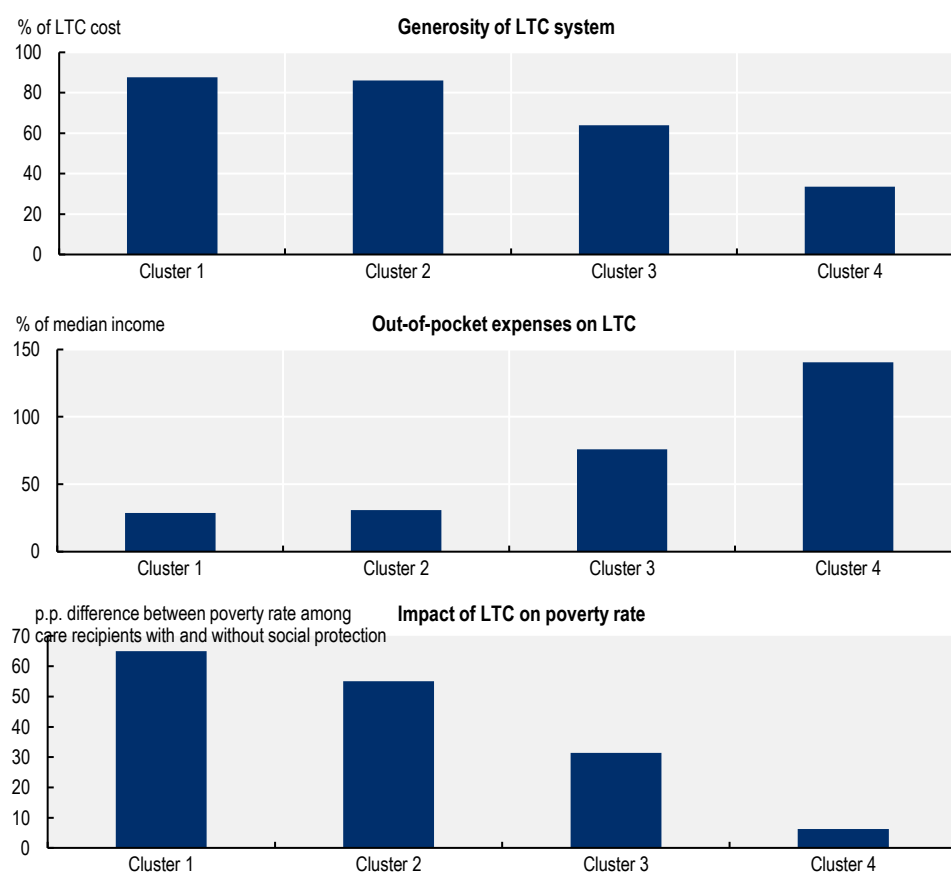
Score

Note: The detail description of variables presented on the figure is included in Chapter 3.
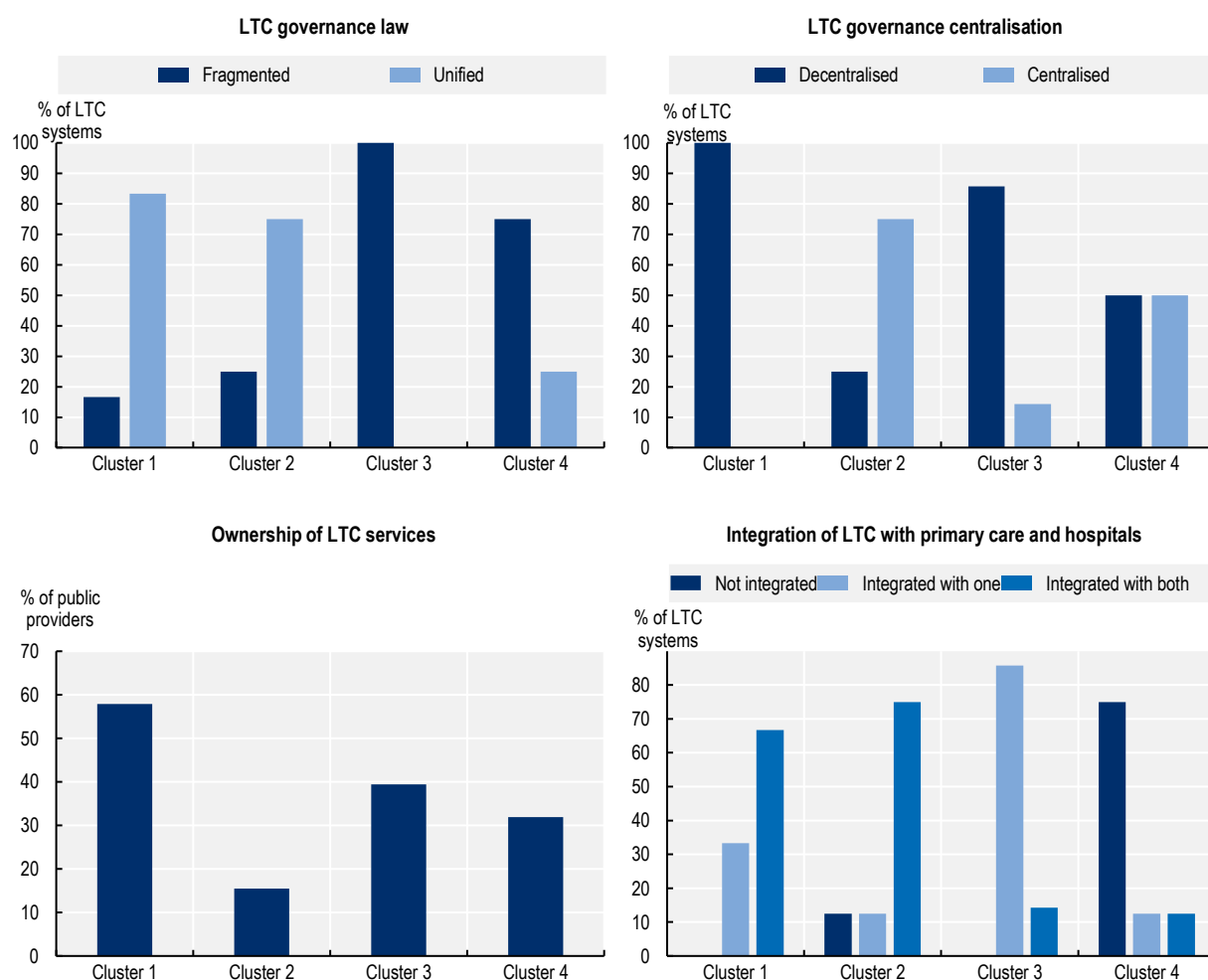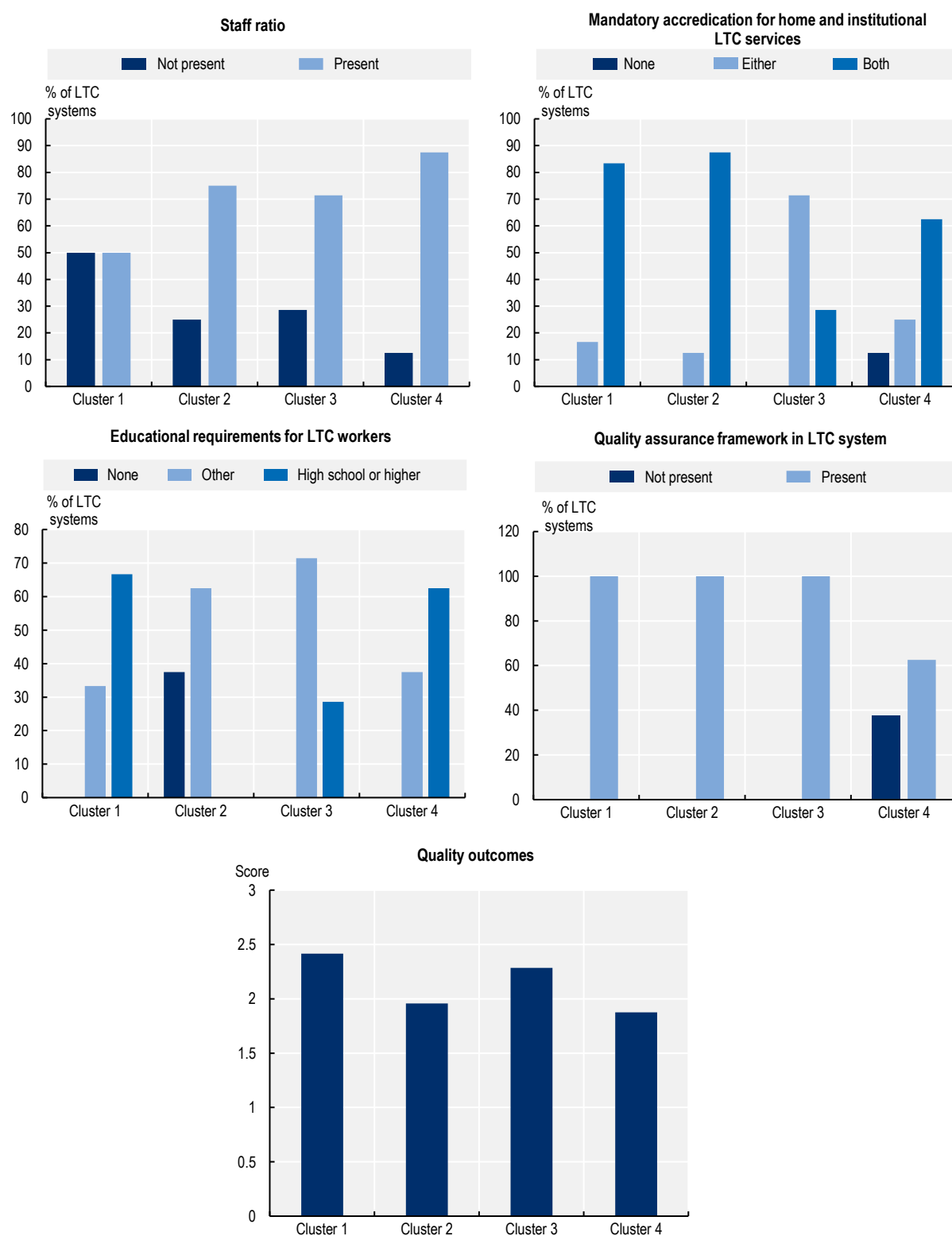Source: OECD own analyses based on data sources listed in Annex C.

Annex B. Data used to cluster long-term care systems across OECD countries

This annex presents data that are used to classify the long-term care (LTC) systems. Data are divided into five dimensions. The sources of the data presented in the tables below are described in Annex C. The detail description of variables presented in the table is included in Chapter 3.

Table B.1. Overview of all indicators used to create typology of LTC systems

Area	Indicator	Measure
Access	Needs-testing: number of comparisons in which support for an older person with more severe needs is higher	Extent to which public support for LTC varies with the level of an older person's care needs.
	Means-testing: number of typical cases for which support for a person with low income (20th percentile of income distribution of older population) is higher than for a person with high income (80th percentile)	Extent to which public support for LTC varies with the income of an older person's care needs.
	Coverage of formal LTC services (% of older people with LTC needs receiving formal care)	Extent to which the LTC needs of the older population are met through formal care provision
	Type of LTC benefits: in-cash vs in-kind	Extent to which the LTC system relies on public support provided in cash versus in kind
Availability	Number of beds in the LTC institutions (per 1 000 older people)	Availability of institutional care
	Number of LTC workers (per 100 older people)	Availability of formal care
	Prevalence of informal care (% of older people with LTC needs receiving informal care)	Extent to which the LTC provision relies on informal care
	Availability of benefits for informal carers (number of available benefits for informal care)	Extent to which countries support for informal carers
Funding	Public support for older person with severe needs, median income and no wealth (as a share of LTC cost)	Generosity of LTC system
	Out-of-pocket expenses of older person with severe needs, median income and no wealth (as a share of median income)	Financial burden of LTC expenditures on care recipients
	Poverty reduction due to the social protection for LTC (percentage point difference between poverty rate among older people with severe needs with and without social protection)	Impact of LTC expenditures on poverty among care recipients
Governance	Unification of health and social components of LTC law	Unification between health and social care laws
	LTC system governance and management centralisation	Extent to which the governance of the LTC system is divided between central and local governments
	Public providers of LTC services (% of LTC providers)	Ownership of LTC facilities
	Integration of LTC with primary care and hospitals	Degree of integration between LTC services, primary care providers and hospitals
Quality	Guidelines for the staff ratio in the institutional LTC	Extent of regulatory oversight of staff in institutional LTC facilities
	Educational requirements for LTC workers (personal care workers)	Qualifications of LTC workers
	Mandatory accreditation for institutional and home LTC services	Extent to which LTC service providers are subject to formal regulation.

	Quality assurance framework in LTC system	Extent to which monitoring of quality of LTC services is regulated
	Quality outcomes in the LTC (average of three quality outcomes): 1) Use of benzodiazepines among older people, 2) Share of older people in LTC institutions with at least one healthcare-associated infection, 3) Share of older people in LTC institutions with at least one pressure ulcer	Quality outcomes of LTC

Note: Older people refer to people aged 65 and more.

Table B.2. Data on access to LTC system

Country	Needs-testing: number of comparisons in which support for an older person with more severe needs is higher as a share of total LTC cost	Means-testing: number of typical cases for which support for a person with low income (20th percentile of income distribution of older population) is higher than for a person with high income (80th percentile)	Coverage of formal LTC services (% of older people with LTC needs receiving formal care)	Type of LTC benefits
Austria	3	3	31	Predominantly in-cash
Belgium	3	3	53	Only in-kind or predominantly in-kind
Canada[1]	1	0	49	Only in-kind or predominantly in-kind
Croatia	3	0	25	Predominantly in-cash
Czechia	3	0	15	Only in-cash
Denmark	1	0	49	Only in-kind or predominantly in-kind
Estonia	3	3	11	Only in-kind or predominantly in-kind
Finland	3	2	28	Only in-kind or predominantly in-kind
France	0	3	51	Predominantly in-cash
Germany	2	0	37	Only in-kind or predominantly in-kind
Greece	3	2	30	Predominantly in-cash
Hungary	3	3	21	Predominantly in-cash
Iceland	3	0	43	Only in-kind or predominantly in-kind
Ireland	3	0	36	Only in-kind or predominantly in-kind
Italy	2	3	28	Predominantly in-cash
Japan	2	2	28	Only in-kind or predominantly in-kind
Latvia	3	2	15	Only in-kind or predominantly in-kind
Lithuania	3	3	13	Only in-kind or predominantly in-kind
Luxembourg[2]	1	0	31	Only in-kind or predominantly in-kind
Malta	3	0	22	Only in-kind or predominantly in-kind
Netherlands	1	1	44	Only in-kind or

				predominantly in-kind
Poland	0	0	18	Only in-kind or predominantly in-kind
Portugal	0	0	16	Only in-kind or predominantly in-kind
Slovakia	3	0	12	Only in-kind or predominantly in-kind
Slovenia	0	2	16	Only in-kind or predominantly in-kind
Spain	3	3	31	Predominantly in-cash
Sweden	3	1	23	Only in-kind or predominantly in-kind
United Kingdom	3	2	23	Only in-kind or predominantly in-kind
United States of America	3	2	29	Only in-kind or predominantly in-kind

Note: The detail description of variables presented in the table is included in Chapter 3. Older people refer to people aged 65 and more. 1. Data for Ontario only for Needs and Mean testing indicators, Types of LTC benefits. The data for Coverage of formal LTC services covers only home care, therefore not including residential long-term care. In addition, the data is drawn from a volunteer population participating in a time-consuming longitudinal study (Canadian Longitudinal Study on Aging), and there is likely a strong self-selection bias. 2. Data for Luxembourg do not include older people in LTC institutions.
Source: OECD own analyses based on data sources listed in Annex C.

Table B.3. Data on availability of LTC services

Country	Number of beds in the LTC institutions (per 1 000 older people)	Number of LTC workers (per 100 older people)	Prevalence of informal care (% of older people with LTC needs receiving informal care)	Availability of benefits for informal carers (number of available benefits for informal care)
Austria	45.7	4.1	73	3
Belgium	66.9	5.5	62	3
Canada[1]	46.7	3.8	40	2
Croatia	10.7	0.2	66	1
Czechia	34.9	2.4	66	1
Denmark	37.1	7.4	69	2
Estonia	41.4	5.2	62	2
Finland	50.8	4.3	65	2
France	47.4	2.4	59	2
Germany	53.9	5.5	63	3
Greece	1.8	0.3	72	0
Hungary	42.6	1.8	47	2
Iceland	51	11.5	44	1
Ireland	43.1	3.6	42	2
Italy	21.3	3.7	61	1
Japan	26.5	6.8	80	2
Latvia	12.4	1.3	59	1
Lithuania	38.5	1.1	64	0
Luxembourg	78.9	7.5	62	3
Malta	63.59	10.5	60	2
Netherlands	73.9	8.2	71	4
Poland	10.7	0.6	53	2
Portugal	4.0	0.8	59	1
Slovakia	46.2	1.3	69	2
Slovenia	49.5	1.7	67	2

Spain	43.4	4.9	60	4
Sweden	63.9	11.7	56	3
United Kingdom	41.3	10.0	66	3
United States of America	28.9	4.5	61	1

Note: The detail description of variables presented in the table is included in Chapter 3. 1. Data for Ontario only for Availability of benefits for informal carers. Older people refer to people aged 65 and more.
Source: OECD own analyses based on data sources listed in Annex C.

Table B.4. Data on funding of LTC

Country	Public support for older person with severe needs, median income and no wealth (as a share of LTC cost)	Out-of-pocket expenses of older person with severe needs, median income and no wealth (as a share of median income)	Poverty reduction due to the social protection for LTC (percentage point difference between poverty rate among older people with severe needs with and without social protection)
Austria	87	45	50
Belgium	95	10	90
Canada (Ontario)	97	6	70
Croatia	23	137	0
Czechia	12	482	0
Denmark	99	3	90
Estonia	0	189	10
Finland	100	0	90
France	47	103	0
Germany	76	39	50
Greece	46	49	20
Hungary	85	25	70
Iceland	99	1	90
Ireland	93	18	70
Italy	75	162	0
Japan	90	37	50
Latvia	75	50	0
Lithuania	60	81	0
Luxembourg	97	9	90
Malta	95	5	70
Netherlands	98	12	80
Poland	6	143	0
Portugal	23	84	10
Slovakia	46	55	20
Slovenia	51	102	10
Spain	52	92	0
Sweden	98	11	70
United Kingdom	83	41	0
United States of America	22	81	0

Note: The detail description of variables presented in the table is included in Chapter 3. Older people refer to people aged 65 and more
Source: OECD own analyses based on data sources listed in Annex C.

Table B.5. Data on governance of LTC

Country	Unification of health and social components of LTC law	LTC system governance and management centralisation	Public providers of LTC services (% of LTC providers)	Integration of LTC with primary care and hospitals
Austria	Unified	Decentralised	55	Either
Belgium	Fragmented	Decentralised	29	Either
Canada [1]	Fragmented	Decentralised	46	Either
Croatia	Fragmented	Centralised	1	None
Czechia	Fragmented	Decentralised	65	None
Denmark	Unified	Decentralised	84	Both
Estonia	Fragmented	Decentralised	51	Either
Finland	Unified	Decentralised	50	Both
France	Unified	Decentralised	48	Both
Germany	Unified	Centralised	5	Both
Greece	Fragmented	Centralised	5	Either
Hungary	Fragmented	Decentralised	39	Either
Iceland	Unified	Decentralised	9	None
Ireland	Fragmented	Centralised	20	Either
Italy	Fragmented	Decentralised	14	Either
Japan	Unified	Decentralised	4	Both
Latvia	Fragmented	Decentralised	100	Either
Lithuania	Fragmented	Centralised	43	None
Luxembourg	Unified	Centralised	29	Both
Malta	Fragmented	Centralised	12.5	Both
Netherlands	Fragmented	Centralised	0	Both
Poland	Fragmented	Decentralised	55	None
Portugal	Unified	Decentralised	2	Both
Slovakia	Fragmented	Centralised	56	None
Slovenia	Unified	Centralised	57	Either
Spain	Unified	Decentralised	28	None
Sweden	Unified	Decentralised	81	Both
United Kingdom [2]	Unified	Centralised[2]	7	Both
United States of America	Fragmented	Decentralised	6	Both

Note: The detail description of variables presented in the table is included in Chapter 3. 1. Data for Ontario only for Integration of LTC with primary care and hospitals. 2. The value is decentralised as Scotland, Wales, Northern Ireland and England have different laws and governance systems, but each is centralised in each region.
Source: OECD own analyses based on data sources listed in Annex C.

Table B.6. Data on quality of LTC

Country	Guidelines for the staff ratio in the institutional LTC	Educational requirements for LTC workers	Mandatory accreditation for institutional and home LTC services	Quality assurance framework in LTC system	Quality outcomes in LTC (average of three quality outcomes)
Austria	Present	High school education or higher	Either	Present	3.0
Belgium	Present	High school education or higher	Both	Present	2.0
Canada [1]	Not present	High school education or higher	Either	Present	3.0
Croatia	Present	High school	Both	Present	2.0

		education or higher			
Czechia	Not present	High school education or higher	Either	Present	2.0
Denmark	Not present	Other	Both	Present	3.0
Estonia	Present	High school education or higher	Both	Present	2.0
Finland	Present	High school education or higher	Both	Present	2.0
France	Not present	Other	Both	Present	1.5
Germany	Present	Other	Both	Present	2.5
Greece	Present	High school education or higher	Either	No present	1.5
Hungary	Present	Other	Either	Present	3.0
Iceland	Present	None	Either	Present	1.5
Ireland	Not present	Other	Either	Present	2.3
Italy	Present	Other	Either	Present	1.7
Japan	Present	None	Both	Present	3.0
Latvia	Present	Other	Both	Present	3.0
Lithuania	Present	Other	Both	Present	3.0
Luxembourg	Present	Other	Both	Present	2.3
Malta	Present	Other	Both	Present	1.0
Netherlands	Not present	Other	Both	Present	2.3
Poland	Present	High school education or higher	None	Not present	1.5
Portugal	Present	High school education or higher	None	Not present	1.0
Slovakia	Present	Other	Both	Present	3.0
Slovenia	Present	Other	Both	Present	1.0
Spain	Present	Other	Both	Present	1.0
Sweden	Not present	High school education or higher	Both	Present	3.0
United Kingdom	Not present	None	Both	Present	2.0
United States of America	Present	Other	Either	Present	1.0

Note: The detail description of variables presented in the table is included in Chapter 3. 1. Data for Ontario only for the Mandatory accreditation for institutional and home LTC services.

Source: OECD own analyses based on data sources listed in Annex C.

Table B.7. Quality outcomes data calculation

Countries	Index (1- above average, 2- around the average, 3- below average)			Average/Result
	Use of benzodiazepines among the older population	Share of older people in LTC institutions with at least one healthcare-associated infection	Share of older people in LTC institutions with at least one pressure ulcer	
Austria	-	3	-	3.0
Belgium	-	1	3	2.0
Canada	3	-	3	3.0
Croatia	-	2	-	2.0
Czechia	-	1	3	2.0
Denmark	3	-	3	3.0
Estonia	1	3	-	2.0
Finland	3	1	2	2.0
France	-	2	1	1.5
Germany	-	3	2	2.5
Greece	-	1	2	1.5
Hungary	-	3	3	3.0
Iceland	2	1	-	1.5
Ireland	2	2	3	2.3
Italy	3	1	1	1.7
Japan	-	-	3	3.0
Latvia	3	3	-	3.0
Lithuania	-	3	3	3.0
Luxembourg	2	2	3	2.3
Malta	-	1	-	1.0
Netherlands	2	3	2	2.3
Poland	-	2	1	1.5
Portugal	1	1	1	1.0
Slovakia	-	3	3	3.0
Slovenia	1	1	-	1.0
Spain	1	1	1	1.0
Sweden	3	-	3	3.0
United Kingdom	-	1	3	2.0
United States of America	-	-	1	1.0

Note: The detail description of variables presented in the table is included in Chapter 3. Older people refer to people aged 65 and more.
Source: OECD own analyses based on data sources listed in Annex C.

Annex C. Data sources

Table C.1. Data sources for all indicators under the access dimension

Countries	Sources	Comments
Needs-testing of LTC benefits		
2022: BEL, CAN, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ITA, JPN, LTU, LUX, LVA, MLT, NLD, POL, PRT, SVN, SWE, USA. **2021**: AUT, SVK	Own calculations based on Is Care Affordable for Older People? (OECD, 2024[21])	BEL: Data for Flanders only CAN: Data for Ontario only EST: Data for Tallinn only GBR: Data for England only ISL: Data for Reykjavik only ITA: Data for South Tyrol only USA: Data for California only
Means-testing of LTC benefits		
2022: BEL, CAN, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ITA, JPN, LTU, LUX, LVA, MLT, NLD, POL, PRT, SVN, SWE, USA. **2021**: AUT, SVK	Own calculations based on Is Care Affordable for Older People? (OECD, 2024[21])	BEL: Data for Flanders only CAN: Data for Ontario only EST: Data for Tallinn only GBR: Data for England only ISL: Data for Reykjavik only ITA: Data for South Tyrol only USA: Data for California only
Coverage of formal LTC benefits		
2019: AUT, BEL, CZE, DEU, DNK, ESP, EST, FIN, GRC, HRV, HUN, IRL, ITA, LTU, LUX, LVA, MLT, NLD, POL, PRT, SVK, SVN, SWE.	European Commission: Eurostat (2020[38]) European Health Interview Survey (EHIS wave 3): methodological manual: 2020 edition (re-edition). Publications Office.	
2010-2015: CAN[1]	Vafaei et al. (2023[39])	
2013: FRA	European Commission: Eurostat. (2013[40]) European Health Interview Survey (EHIS wave 2): methodological manual: 2013 edition. Publications Office	
2019: GBR	Banks et al. (2024[41]) English Longitudinal Study of Ageing (ELSA) Wave 9, [data collection]. 40th Edition. UK Data Service. SN: 5 050	GBR: Data for England only
2008: ISL	Sigurdardottir and Kåreholt, (2014[42])	
2017: JPN	Tokyo Metropolitan Institute of Gerontology, Institute of Gerontology (University of Tokyo) and University of Michigan (2024[43]), Japanese Aging and Health Dynamics Study (JAHEAD), Wave 9, 2017.	
2018: USA	Health and Retirement Study (HRS) (2018[44]) Wave 14, RAND HRS Products public use dataset. Produced and distributed by the University of Michigan with funding from the National Institute on Aging (grant number NIA U01AG009 740). Ann Arbor, MI.	
Types of LTC benefits		
2024: AUT, BEL, CZE, EST, FIN, GBR, GRC, HUN, IRL, ITA, JPN, LUX, MLT, SWE.	OECD (2024[21])	BEL: Data for Flanders only ITA: Data for South Tyrol only EST: Data for Tallinn only GBR: Data for England only
2020: CAN, HRV, ISL, LTU, LVA, NLD, SVN.	Oliveira Hashiguchi and Llena-Nozal (2020[45])	CAN: Data for Ontario only ISL: Data for Reykjavik only
2024: DEU, FRA, POL PRT, USA.	OECD long-term care questionnaire	USA: Data for California only

Note: 1. This source is focussed on home care, therefore not including residential long-term care. In addition, the data is drawn from a volunteer population participating in a time-consuming longitudinal study (Canadian Longitudinal Study on Aging), and there is likely a strong self-selection bias

Table C.2. Data sources for all indicators under the availability dimension

Countries	Sources	Comments
Number of beds in LTC institutions		
2021: AUT, BEL, CAN, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, HRV, HUN, IRL, ISL, ITA, JPN, LTU, LUX, LVA, NLD, POL, SVK, SVN, SWE, USA	OECD (2023[46])	
2019: GRC	OECD (2021[47])	
2020: MLT	European Commission, Eurostat (2014 (updated 2022)[48])	
2015: PRT	Lopes, Mateus and Hernández-Quevedo (2018[49])	
Number of LTC workers		
2021: AUT, CAN, CZE, DEU, DNK, ESP, EST, FIN, HRV, HUN, IRL, JPN, LUX, NLD, SVK, SVN, SWE, USA	OECD (2023[46])	
2019: BEL, FRA, GRC, ISL, ITA, LTU, LVA, POL 2012: PRT	OECD (2021[47])	
GBR	Banks, French and McCauley (2023[50])	GBR: Data for England only
2019: MLT	Eurofound (2020[51])	
Prevalence of informal care		
2021/22: AUT, BEL, CZE, DEU, DNK, ESP, EST, FIN, FRA, GRC, HRV, HUN, ITA, LTU, LUX, LVA, MLT, NLD, POL, PRT, SVK, SVN, SWE.	SHARE-ERIC (2024[52]) Survey of Health, Ageing and Retirement in Europe (SHARE) Wave 8. Release version: 9.0.0. SHARE-ERIC. Data set	
2010-2015: CAN[1]	Vafaei et al. (2023[39])	
2019: GBR	Banks et al. (2024[41]) English Longitudinal Study of Ageing (ELSA) Wave 9, [data collection]. 40th Edition. UK Data Service. SN: 5 050	GBR: Data for England only
2003: IRL	McGee et al. (2008[53])	
2008: ISL	Sigurdardottir and Kåreholt (2014[42])	
2017: JPN	Tokyo Metropolitan Institute of Gerontology, Institute of Gerontology (University of Tokyo) and University of Michigan (2024[43]), Japanese Aging and Health Dynamics Study (JAHEAD), Wave 9, 2017.	
2018: USA	Health and Retirement Study (HRS) (2018[44]) Wave 14, RAND HRS Products public use dataset. Produced and distributed by the University of Michigan with funding from the National Institute on Aging (grant number NIA U01AG009 740). Ann Arbor, MI.	
Availability of benefits for informal carers		
2020: AUT, BEL, CAN, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ITA, JPN, LTU, LUX, LVA, MLT, NLD, POL, PRT, SVK, SVN, SWE, USA	Rocard and Llena-Nozal (2022[54])	BEL: Data for Flanders only CAN: Data is for Ontario only (some of the benefits are nationwide) GBR: Data for England only ISL: Data for Reykjavik only
2023: MLT, LVA	EuroCarers (2023[55])	

Note: 1. This source is focussed on home care, therefore not including residential long-term care. In addition, the data is drawn from a volunteer population participating in a time-consuming longitudinal study (Canadian Longitudinal Study on Aging), and there is likely a strong self-selection bias

Table C.3. Data sources for all indicators under the funding dimension

Countries	Sources	Comments
Public support for older person with severe needs, median income and no wealth		
2022: BEL, CAN, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ITA, JPN, LTU, LUX, LVA, MLT, NLD, POL, PRT, SVN, SWE, USA 2021: AUT, SVK	OECD data published in Is Care Affordable for Older People? (OECD, 2024[21])	BEL: Data for Flanders only CAN: Data for Ontario only EST: Data for Tallinn only GBR: Data for England only ISL: Data for Reykjavik only ITA: Data for South Tyrol only USA: Data for California only
Out-of-pocket expenses of older person with severe needs, median income and no wealth		
2022: BEL, CAN, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ITA, JPN, LTU, LUX, LVA, MLT, NLD, POL, PRT, SVN, SWE, USA 2021: AUT, SVK	OECD data published in Is Care Affordable for Older People? (OECD, 2024[21])	BEL: Data for Flanders only CAN: Data for Ontario only EST: Data for Tallinn only GBR: Data for England only ISL: Data for Reykjavik only ITA: Data for South Tyrol only USA: Data for California only
Poverty reduction due to the social protection for LTC		
2022: BEL, CAN, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ITA, JPN, LTU, LUX, LVA, MLT, NLD, POL, PRT, SVN, SWE, USA 2021: AUT, SVK	OECD data published in Is Care Affordable for Older People? (OECD, 2024[21])	BEL: Data for Flanders only CAN: Data for Ontario only EST: Data for Tallinn only GBR: Data for England only ISL: Data for Reykjavik only ITA: Data for South Tyrol only USA: Data for California only

Table C.4. Data sources for all indicators under the governance dimension

Countries	Sources	Comments
Unification of health and social components of LTC law		
2022: DEU, DNK, EST, FIN, FRA, GBR, LTU, LVA, MLT, NLD, PRT, SVN, SWE	OECD (2022[56])	GBR: Data for Scotland
2018: AUT, BEL, CZE, GRC, HRV, HUN, ISL, ITA, LUX, POL, SVK	Spasova et al. (2018[57])	
2023: CAN	Sullivan-Taylor et al (2022[58])	
2019: ESP	Marban Gallego (2019[59])	
2024: IRL	OECD long-term care questionnaire	
2020: JPN	Yamada and Arai (2020[60])	
2015: USA	Kaiser Family Foundation (KFF) (2015[61])	
LTC system governance and management centralisation		
2022 : AUT, BEL, DNK, ESP, EST, FIN, GBR, LTU, NLD, SWE	OECD (OECD, 2022[56])	
2024: DEU, FRA, IRL, MLT, PRT	OECD long-term care questionnaire	
2020: CAN	Royal Commission into Aged Care Quality and Safety (2020[62])	
2018: CZE, SVK	Spasova et al. (2018[57])	
2022: JPN	Jin et al., (2022[63])	
2019: POL	European Commission: Directorate-General for Employment, Zigante and King (2019[64])	
2023: SVN	Health Systems and Policy Monitor (HSPM)	

	(2024[65])	
2023: USA	Colello and Sorenson (2023[66])	

Public providers of LTC services (% of LTC providers)		
2022: ISL, PRT, SWE 2021: CZE, DEU, DNK, ESP, EST, FIN, HRV, HUN, IRL, JPN, LUX, LVA, NLD, SVK, SVN, 2020: ITA, USA 2019: FRA	OECD data collection on ownership of LTC facilities	
2022: AUT, BEL, GBR, LTU	OECD (2022[56])	
2021: CAN	Canadian Institute for Health Information (2021[67])	
2024: GRC	OECD data acquired during Greek SG REFORM project	
2020: MLT	Fenech, Vella and Calleja (2020[68])	
2024: POL	Rejestr Domów Pomocy Społecznej (Urzędy Wojewódzkie, 2025[69])	POL: data collected from regional offices and aggregated.

Integration of LTC with primary care and hospitals		
2020: BEL, CAN, CZE, EST, FIN, FRA, GBR, GRC, HUN, IRL, LTU, LVA, POL, SVN, USA	OECD long-term care COVID-19 questionnaire	CAN: Data for Ontario only
2024: DEU, DNK, JPN, LUX, MLT, NLD, PRT	OECD long-term care questionnaire	
2016: ISL, SWE	Iversen et al. (2016[70])	ISL: Data for Reykjavik only
2010: AUT	Riedel and Kraus, (2010[71])	
2019: ESP	European Commission (2019[72])	
2020: HRV	The World Bank (2020[73])	
2020: ITA	Notarnicola et al. (2020[74])	
2010: SVK	Radvanský and Páleník (2010[75])	

Table C.5. Data sources for all indicators under the quality dimension

Countries	Sources	Comments
Guidelines for the staff ratio in the institutional LTC		
2020: BEL, CAN, CZE, DEU, FIN, GBR, GRC, HUN, IRL, JPN, LTU, LUX, LVA, POL, PRT, SVN, USA	OECD long-term care COVID-19 questionnaire	
2024: DNK, EST, NLD, SVK	OECD long-term care questionnaire	
2019: AUT, MLT	Eurofound (2020[51])	AUT: Data for Vienna only
2022: ESP	Ministerio de Derechos Sociales y Agenda 2030, (2022[76])	
2019: FRA	Libault (2019[77])	
2023: HRV	OECD (2023[78])	
2016: ISL	Sigurdardottir, Kristmundsson and Hrafnsdottir (2016[79])	ISL: Data For Reykjavik City only
2023: ITA	Brugiavini, Carrino and Pasini (2023[80])	
2012: SWE	Harrington et al. (2012[81])	
Educational requirements for LTC workers		
2020: BEL, CAN, CZE, DEU, EST, FIN, FRA, GBR, HUN, IRL, JPN, LUX, LVA, NLD, PRT	OECD long-term care COVID-19 questionnaire	

2024: DNK, GRC, LTU, MLT, SVK, SVN, USA	OECD long-term care questionnaire	
2016: AUT, HRV, SWE 2020: ISL 2023: ITA	OECD (2020[82])	
2022: ESP	Costa-Font et al (2022[83])	
2014: POL	Golinowska, Sowa and Kocot (2014[84])	
Mandatory accreditation for institutional and home LTC services		
2024: DNK, HRV, LVA, MLT, POL, PRT	OECD long-term care questionnaire	
2013: ISL, DEU, JPN	OECD/European Union (2013[85])	ISL: Data for city of Reykjavik only
2017: SWE	OECD (2017[86])	
2019: AUT, BEL, CZE, FIN, , GBR, IRL, ITA, LTU, LUX, NLD	Cès and Coster (2019[87])	
2019: FRA	European Commission: Directorate-General for Employment, Zigante and King (2019[64])	
2019: CAN	Royal Commission into Aged Care Quality and Safety, (2020[62])	Data for Ontario only.
2023 EST	Kasekamp et al. (2023[88])	
2024 GRC	Global Observatory of LTC (2024[89])	
2016 HUN	Gaál et al. (2011[90])	
2004 SVK	National Council of the Slovak Republic (2004[91])	
2021 SVN	Republika Slovenija (2021[92])	
Quality assurance framework in LTC system		
2010. CZE, EST, SVK, SVN	Kraus et al. (2010[12])	
2012 LTV	Plakane (2012[93])	
2013: FIN, IRL, ISL, ITA	OECD/European Union (2013[85])	ISL: Data For city of Reykjavik only
2019: DEU, DNK, JPN, LUX, NLD, SWE, USA	Royal Commission into Aged Care Quality and Safety (2020[62])	
2019: FRA, POL	European Commission: Directorate-General for Employment, Zigante and King (2019[64])	
2021: AUT, BEL, HRV, HUN	Comas-Herrera A, (2022[94])	
2022: ESP	Ministerio de Derechos Sociales y Agenda 2030 (2022[76])	
2024: MLT, PRT	OECD long-term care questionnaire	
2024: GRC	Karagiannidou (2024[95])	
2024: CAN	Government of Ontario. (2021[96]), British Columbia Ministry of Health. (2024[97])	Data for Ontario and British Columbia
2024: GBR	NHS England Digital (2024[98]), Care Quality Commission (2025[99])	
Quality outcomes in LTC (average of three quality outcomes)		
Use of benzodiazepines among the older population		
2019: CAN, ESP, IRL, ITA, LUX, NLD, SVN, SWE, 2020: DNK, EST, FIN, ISL, LVA, PRT	OECD (2021[47])	
Share of older people in LTC institutions with at least one healthcare-associated infection		
2016-17: AUT, BEL, CZE, DEU, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ISL, ITA, LTU, LUX, LVA, MLT, NLD, POL, PRT, SVK, SVN	European Centre for Disease Prevention and Control (2023[100])	
Share of older people in LTC institutions with at least one pressure ulcer		

2016-17: BEL, CZE, DEU, DNK, ESP, FIN, FRA, GBR, GRC, HUN, IRL, ITA, LTU, LUX, NLD, POL, PRT, SVK, SWE, USA	OECD (2019[101])	
2016: JPN	Ishizawa (2023[102])	

References

Abdi, H. and L. Williams (2010), "Principal component analysis", *WIREs Computational Statistics*, Vol. 2/4, pp. 433-459, https://doi.org/10.1002/wics.101. [32]

Aggarwal, C., A. Hinneburg and D. Keim (2001), "On the Surprising Behavior of Distance Metrics in High Dimensional Space", in *Lecture Notes in Computer Science, Database Theory — ICDT 2001*, Springer Berlin Heidelberg, Berlin, Heidelberg, https://doi.org/10.1007/3-540-44503-x_27. [30]

Ariaans, M., P. Linden and C. Wendt (2021), "Worlds of long-term care: A typology of OECD countries", *Health Policy*, pp. 609–617. [19]

Banks, J. et al. (2024), *English Longitudinal Study of Ageing: Waves 0 10, 1998 2023*, https://doi.org/10.5255/UKDA-SN-5050-27. [41]

Banks, J., E. French and J. McCauley (2023), *Long-term Care in England*, National Bureau of Economic Research, Cambridge, MA, https://doi.org/10.3386/w31826. [50]

Bergman, M. et al. (2016), "Privatization and quality: Evidence from elderly care in Sweden", *Journal of Health Economics*, https://doi.org/10.1016/j.jhealeco.2016.06.010. [24]

Bihan, B., B. Roit and A. Sopadzhiyan (2019), "The turn to optional familialism through the market: Long-term care, cash-for-care, and caregiving policies in Europe", *Social Policy Administration*. [8]

British Columbia Ministry of Health. (2024), *Long-Term Care Quality Framework Policy Directive.*, https://www2.gov.bc.ca/gov/content/health/accessing-health-care/home-community-care/accountability/policy-and-standards. [97]

Brugiavini, A., L. Carrino and G. Pasini (2023), *Long-term Care in Italy*, National Bureau of Economic Research, Cambridge, MA, https://doi.org/10.3386/w31861. [80]

Canadian Institute for Health Information (2021), *Long-term care homes in Canada: How many and who owns them?*, https://www.cihi.ca/en/long-term-care-homes-in-canada-how-many-and-who-owns-them (accessed on 16 June 2025). [67]

Care Quality Commission. (2025), *Care Quality Commission.*, https://www.cqc.org.uk/. [99]

CASE Network Studies & Analyses (ed.) (2014), *Employment in long-term care: Report on Poland*, Center for Social and Economic Research (CASE),, https://www.econstor.eu/bitstream/10419/128271/1/787343366.pdf. [84]

Cès, S. and S. Coster (2019), "Mapping long-term care quality assurance practices in the EU", Vol. Summary Report. [87]

Colello, K. and I. Sorenson (2023), *Who Pays for Long-Term Services and Supports?*, https://www.congress.gov/crs-product/IF10343. [66]

Colombo, F. et al. (2011), *Help Wanted?: Providing and Paying for Long-Term Care*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264097759-en. [20]

Colombo, A. et al. (2011), *Help Wanted. Providing and Paying for Long-term care*, OECD. [13]

Comas-Herrera A, M. (2022), "LTCcovid International living report on COVID-19 and Long-Term Care.", *LTCcovid, Care Policy & Evaluation Centre, London School of Economics and Political Science*, https://ltccovid.org/questions/1-05/. [94]

Costa-Font, J. et al. (2022), "Long-term Care in Spain", *Estudios sobre la Economía Española 2022/23*, https://documentos.fedea.net/pubs/eee/2022/eee2022-23.pdf. [83]

Dyer, S. et al. (2019), *Review of International Systems for Long term care for older people*, Flinders University. [18]

Esping-Andersen, G. (1989), *The three worlds of welfare capitalism*, Polity Press. [3]

EuroCarers (2023), *Eurocarers country profiles*, https://eurocarers.org/country-profiles/. [55]

Eurofound (2020), *Long-term care workforce: Employment and working conditions*, Publications Office of the European Union, https://www.eurofound.europa.eu/system/files/2020-12/ef20028en.pdf. [51]

European Centre for Disease Prevention and Control (2023), "Point prevalence survey of healthcare associated infections and antimicrobial use in European acute care hospitals 2016-17", Vol. Surveillance Report, https://doi.org/10.2807/1560-7917.es.23.46.1800393. [100]

European Commission (2019), *Spain. Health Care & Long-Term Care Systems*, https://economy-finance.ec.europa.eu/document/download/cf06a319-1d6c-417c-bca1-15a997646147_en?filename=joint-report_es_en.pdf&prefLang=el. [72]

European Commission, Eurostat (2014 (updated 2022)), *Long-term care beds in nursing and residential care facilities by NUTS 2 region - historical data (1980-2021)*, https://ec.europa.eu/eurostat/databrowser/product/page/hlth_rs_bdsns. [48]

European Commission: Directorate-General for Employment, S., V. Zigante and D. King (2019), *Quality assurance practices in Long-Term Care in Europe Emerging evidence on care market management*. [64]

European Commission: Eurostat (2020), *European Health Interview Survey (EHIS wave 3)*, https://data.europa.eu/doi/10.2785/135920. [38]

European Commission: Eurostat (2013), *European Health Interview Survey (EHIS wave 2)*, https://data.europa.eu/doi/10.2785/43280. [40]

Fenech, M., M. Vella and N. Calleja (2020), *COVID-19 Outbreak in Malta and Gozo*, https://ltccovid.org/wp-content/uploads/2020/06/LTC-covid-situation-in-Malta-6-June-2025.pdf (accessed on 9 May 2025). [68]

Gaál, P. et al. (2011), "Hungary Health System Review. Health Systems in Transition", *Hungary Health system review*, Vol. 13/5.

[90]

Girden, E. (1996), *Evaluating Research Articles from Start to Finish*, SAGE Publications, Inc, https://eric.ed.gov/?id=ED409805.

[35]

Global Observatory of LTC (2024), "Long Term Care System Profile: Greece", https://goltc.org/system-profile/greece/.

[89]

Government of Ontario. (2021), *Fixing Long-Term Care Act 2021, S.O. 2021, c. 39, Sched. 1.*, https://www.ontario.ca/laws/statute/21f39,.

[96]

Halásková, R., P. Bednář and M. Halásková (2017), "Forms of Providing and Financing Long-Term Care in OECD Countries", *Review of Economic Perspectives, vol.17, no.2,*, pp. pp.159-178. https://doi.org/10.1515/revecp-2017-0008.

[11]

Harrington, C. et al. (2012), "Nursing Home Staffing Standards and Staffing Levels in Six Countries", *Journal of Nursing Scholarship*, Vol. 44/1, pp. 88-98, https://doi.org/10.1111/j.1547-5069.2011.01430.x.

[81]

Health and Retirement Study (HRS) (2018), *Wave 14,*.

[44]

Health Systems and Policy Monitor (HSPM) (2024), *Adoption of a new Long-Term Care Act (2023)*, https://eurohealthobservatory.who.int/monitors/health-systems-monitor/analyses/hspm/slovenia-2022/adoption-of-a-new-long-term-care-act-(2023).

[65]

Hjelmar, U. et al. (2018), "Public/private ownership and quality of care: Evidence from Danish nursing homes", *Social Science & Medicine*, Vol. 216, pp. 41-49, https://doi.org/10.1016/j.socscimed.2018.09.029.

[22]

Idler, E. (ed.) (2023), "Inequities in home care use among older Canadian adults: Are they corrected by public funding?", *PLOS ONE*, Vol. 18/2, p. e0280961, https://doi.org/10.1371/journal.pone.0280961.

[39]

Ilinca, S., K. Leichsenring and R. Rodrigues (2015), *From care in homes to care at home: European experiences with (de)institutionalisation in long-term care*, European Centre for Social Welfare Policy and Research.

[6]

Ilinca, S. and C. Simmons (2022), "The time to care about care: Responding to changing attitudes, expectations and preferences on long-term care in Europe", *InCARE Porlicy Brief No. 2*, https://incare.euro.centre.org/wp-content/uploads/2023/10/InCARE-Policy-Brief-2_The-time-to-care-about-care_261023_WP1.pdf.

[1]

Ishizawa, M. (2023), "療養場所別自重関連褥瘡と医療関連機器圧迫創傷を併せた「褥瘡」の有病率、有病者の特徴、部位・重症度: 第 5 回 (2021 年度) 日本褥瘡学会実態調査委員会報告", *Japanese Journal of Pressure Ulcers*, Vol. 25/2, https://www.jspu.org/medical/investigation/docs/survey4-1.pdf.

[102]

Iversen, T. et al. (2016), "Coordination of health care in the Nordic countries", *Nordic Journal of Health Economics*, Vol. 4/1, pp. 41-55, https://doi.org/10.5617/njhe.2846.

[70]

Jin, X. et al. (2022), "Regional variation in long-term care spending in Japan", *BMC Public Health*, Vol. 22/1, https://doi.org/10.1186/s12889-022-14194-6.

[63]

Joshua, L. (2017), *Aging and Long Term Care Systems: A Review of Finance and Governance Arrangements in*.

[14]

Kaiser Family Foundation (KFF) (2015), *Long-Term Care in the United States: A Timeline*, https://www.kff.org/medicaid/timeline/long-term-care-in-the-united-states-a-timeline/.

[61]

Karagiannidou, M. (2024), "Long Term Care System Profile: Greece", *Global Observatory of LT*, https://goltc.org/system-profile/greece/.

[95]

Kasekamp, K. et al. (2023), "Health system review Estonia", *Health Systems in Transition: Estonia*, Vol. 25/5, http://www.healthobservatory.eu.

[88]

Kohennen, T. (1982), "Self-Organized Formation of Topologically Correct Feature Maps", *Biological Cybernetics*, pp. 59-69.

[37]

Kraus, M. et al. (2010), *A typology of long-term care systems in Europe*, ENEPRI.

[12]

Leitner, S. (2003), "Varieties of familialism: The caring function of the family in comparative perspective", *European Societies, volume 5*.

[4]

Libault, D. (2019), *CONCERTATION Grand âge et autonomie*, Ministere des Solidarites et de la Sante.

[77]

Liu, L. et al. (2020), "Application of K-Means ++ Algorithm Based on t-SNE Dimension Reduction in Transformer District Clustering", *2020 Asia Energy and Electrical Engineering Symposium (AEEES)*, pp. 74-78, https://doi.org/10.1109/aeees48850.2020.9121438.

[31]

Li, Y. et al. (2020), "COVID -19 Infections and Deaths among Connecticut Nursing Home Residents: Facility Correlates", *Journal of the American Geriatrics Society*, Vol. 68/9, pp. 1899-1906, https://doi.org/10.1111/jgs.16689.

[29]

Lopes, H., C. Mateus and C. Hernández-Quevedo (2018), "Ten Years after the Creation of the Portuguese National Network for Long-Term Care in 2006: Achievements and Challenges", *Health Policy*, Vol. 122/3, pp. 210-216, https://doi.org/10.1016/j.healthpol.2018.01.001.

[49]

Marban Gallego, V. (2019), *El sistema español de atención a la dependencia*, https://www.foessa.es/main-files/uploads/sites/16/2019/06/paper-4.9.pdf.

[59]

McGee, H. et al. (2008), "Older people - recipients but also providers of informal care: an analysis among community samples in the Republic of Ireland and Northern Ireland", *Health & Social Care in the Community*, Vol. 16/5, pp. 548-553, https://doi.org/10.1111/j.1365-2524.2008.00806.x.

[53]

McInnes, L. et al. (2018), "UMAP: Uniform Manifold Approximation and Projection", *Journal of Open Source Software*, Vol. 3/29, p. 861, https://doi.org/10.21105/joss.00861.

[36]

Mentzakis, E., P. McNamee and M. Ryan (2008), "Who cares and how much: exploring the determinants of co-residential informal care", *Review of Economics of the Household*, Vol. 7/3, pp. 283-303, https://doi.org/10.1007/s11150-008-9047-0.

[25]

Ministerio de Derechos Sociales y Agenda 2030 (2022), "Resolución de 28 de julio de 2022,de la Secretaría de Estado de Derechos Sociales, por la que se publica el Acuerdo del Consejo Territorial de Servicios Sociales y del Sistema para la Autonomía y Atención a la Dependencia", *Boletin Oficial del Estado*, https://www.boe.es/buscar/doc.php?id=BOE-A-2022-13580. [76]

National Council of the Slovak Republic (2004), "Act No. 576/2004 on health care and on services related to health care.", *Slov-Lex*, https://natlex.ilo.org/dyn/natlex2/natlex2/files/download/71012/SVK-71012.pdf. [91]

Nenadic, O. and M. Greenacre (2005), "Computation of Multiple Correspondence Analysis, with Code in R", *SSRN Electronic Journal*, https://doi.org/10.2139/ssrn.847698. [33]

NHS England Digital. ((2024), *Measures from the Adult Social Care Outcomes Framework, England, 2023-24.*, https://digital.nhs.uk/data-and-information/publications/statistical/adult-social-care-outcomes-framework-ascof/england-2023-24. [98]

Notarnicola, E. et al. (2020), "Long-term care coverage and its relationship with hospital care: Lessons from Italy on coordination among care-settings", *Health Services Management Research*, Vol. 33/4, pp. 186-199, https://doi.org/10.1177/0951484820928308. [74]

OECD (2024), *Is Care Affordable for Older People?*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/450ea778-en. [21]

OECD (2023), *Beyond Applause? Improving Working Conditions in Long-Term Care*, OECD Publishing, Paris, https://doi.org/10.1787/27d33ab3-en. [26]

OECD (2023), *Health at a Glance 2023: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/7a7afb35-en. [46]

OECD (2023), *Improving Long-Term Care in Croatia*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/9de55222-en. [78]

OECD (2022), *Integrating Services for Older People in Lithuania*, OECD Publishing, Paris, https://doi.org/10.1787/c74c44be-en. [56]

OECD (2021), *Health at a Glance 2021: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/ae3016b9-en. [47]

OECD (2020), *Who Cares? Attracting and Retaining Care Workers for the Elderly*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/92c0ef68-en. [82]

OECD (2019), *Health at a Glance 2019: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/4dd50c09-en. [101]

OECD (2017), *Caring for Quality in Health: Lessons Learnt from 15 Reviews of Health Care Quality*, OECD Reviews of Health Care Quality, OECD Publishing, Paris, https://doi.org/10.1787/9789264267787-en. [86]

OECD/European Union (2013), *A Good Life in Old Age?: Monitoring and Improving Quality in Long-term Care*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264194564-en. [85]

OECD, Eurostat and World Health Organisation (2017), *A System of Health Accounts 2011: Revised edition*, OECD. [2]

Oliveira Hashiguchi, T. and A. Llena-Nozal (2020), "The effectiveness of social protection for long-term care in old age: Is social protection reducing the risk of poverty associated with care needs?", *OECD Health Working Papers*, No. 117, OECD Publishing, Paris, https://doi.org/10.1787/2592f06e-en. [45]

Pavolini, E. (2021), *Long-term care social protection models*, European Union. [17]

Plakane, B. (2012), "Quality Assurance Policies and Indicators for Long-Term Care in the European Union. Country Report: Latvia", *ENEPRI Research Reports*, https://www.europeansources.info/record/quality-assurance-policies-and-indicators-for-long-term-care-in-the-european-union-country-report-latvia/?print. [93]

Radvanský, M. and V. Páleník (2010), *The Slovakian long term care system*, https://www.files.ethz.ch/isn/122421/Slovakia.pdf. [75]

Ranci, C. et al. (2019), *Coverage versus generosity: Comparing eligibility and need assessment in six cash-for-care programmes*, Social Policy and Administration. [16]

Republika Slovenija. (2021), "Zakon o dolgotrajni oskrbi (ZDOsk-1)", *Official Gazette of the Republic of Slovenia* 196/21, https://pisrs.si/pregledPredpisa?id=ZAKO8819. [92]

Riedel, M. and M. Kraus (2010), *The Austrian long-term care system*, https://www.files.ethz.ch/isn/122381/Austria.pdf. [71]

Rocard, E. and A. Llena-Nozal (2022), "Supporting informal carers of older people: Policies to leave no carer behind", *OECD Health Working Papers*, No. 140, OECD Publishing, Paris, https://doi.org/10.1787/0f0c0d52-en. [54]

Royal Commission into Aged Care Quality and Safety (2020), "Review of International Systems for Long-Term Care of Older People", Vol. Research Paper 2, https://researchnow-admin.flinders.edu.au/ws/portalfiles/portal/29779404/Dyer_Review2_P2019.pdf. [62]

Saporta, G. (1990), "Simultaneous Analysis of Qualitative and Quantitative Data", *Societa Italiana di Statistica. XXXV riunione scientifica.*, pp. 62-72, https://cnam.hal.science/hal-02513970/document. [34]

Saraceno, C. (2016), "Varieties of familialism: Comparing four southern European and East Asian welfare regimes", *Journal of european social policy, vol 26, issue 4*, pp. 314–326. [5]

SHARE-ERIC (2024), *Survey of Health, Ageing and Retirement in Europe (SHARE), Wave 8*. [52]

Sigurdardottir, S. and I. Kåreholt (2014), "Informal and formal care of older people in Iceland", *Scandinavian Journal of Caring Sciences*, Vol. 28/4, pp. 802-811, https://doi.org/10.1111/scs.12114. [42]

Sigurdardottir, S., O. Kristmundsson and S. Hrafnsdottir (2016), "Care of Older Adults in Iceland: Policy Objectives and Reality", *Journal of Social Service Research*, Vol. 42/2, pp. 233-245, https://doi.org/10.1080/01488376.2015.1137535. [79]

Simonazzi, A. (2009), "Care regimes and national employment models", *Cambridge Journal of Economics, Volume 33, Issue 2,*, pp. Pages 211–232, https://doi.org/10.1093/cje/ben043. [9]

Spasova, S. et al. (2018), *Challenges in long-term care in Europe. A study of national policies*, European Commission. [57]

Stolt, R., P. Blomqvist and U. Winblad (2011), "Privatization of social services: Quality differences in Swedish elderly care", *Social Science and Medicine*, https://doi.org/10.1016/j.socscimed.2010.11.012. [23]

Sugg, M. et al. (2021), "Mapping community-level determinants of COVID-19 transmission in nursing homes: A multi-scale approach", *Science of The Total Environment*, Vol. 752, p. 141946, https://doi.org/10.1016/j.scitotenv.2020.141946. [27]

Sullivan-Taylor, P. et al. (2022), "Integrated People-Centred Care in Canada – Policies, Standards, and Implementation Tools to Improve Outcomes", *International Journal of Integrated Care*, Vol. 22/1, https://doi.org/10.5334/ijic.5943. [58]

Szebehely, M. and G. & Meagher (2018), *Nordic eldercare – Weak universalism becoming weaker?*, Journal of European Social Policy, vol 28, issue 3. [15]

The World Bank (2020), *Successfully adapting health*, https://documents1.worldbank.org/curated/en/333531592972673248/pdf/Successfully-Adapting-Health-and-Social-Care-to-an-Older-Population-in-Croatia-Policy-Note.pdf. [73]

Tokyo Metropolitan Institute of Gerontology, Institute of Gerontology (University of Tokyo) and Universtiy of Michingan (2024), *Japanese Aging and Health Dynamics Study (JAHEAD), Wave 9, 2017*. [43]

Urzędy Wojewódzkie (2025), *Rejestr Domów Pomocy Społecznej*, https://www.gov.pl/web/uw-mazowiecki/rejest-domow-pomocy-spolecznej. [69]

Verbakel, E. et al. (2023), "Indicators of familialism and defamilialization in long-term care", *Journal of European Social Policy, 33(1)*, pp. 34–51. [10]

Verbeek-Oudijk, D. et al. (2014), "Who Cares in Europe? A Comparison of Long-Term Care for the Over-50s in Sixteen European Countrie", *Nwesletter Health and Ageing Geneva Association*. [7]

Xu, H., O. Intrator and J. Bowblis (2020), "Shortages of Staff in Nursing Homes During the COVID-19 Pandemic: What are the Driving Factors?", *Journal of the American Medical Directors Association*, Vol. 21/10, pp. 1371-1377, https://doi.org/10.1016/j.jamda.2020.08.002. [28]

Yamada, M. and H. Arai (2020), "Long-Term Care System in Japan", *Annals of Geriatric Medicine and Research*, Vol. 24/3, pp. 174-180, https://doi.org/10.4235/agmr.20.0037. [60]

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