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Elderly care in Spain: regional inequities and the growing role of foreign-born workers

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Abstract

Spain's ageing population has driven significant changes in the provision of elderly care services over the past 25 years. In this paper, we explore those shifts, focusing on regional disparities in four types of social services for the elderly: *telecare*, *in-home care*, *daycare centres*, and *nursing homes*. To that end, we gather annual data at the regional level compiled by the Institute for the Elderly and Social Services of Spain for the period 1998–2022. Using a clustering algorithm, we uncover significant inequities, with distinct geographical patterns depending on the type of social service. Southern regions generally surpass northern counterparts in telecare and in-home care, while coastal areas have lower nursing home coverage, particularly affecting women and those aged 80 and above. Additionally, a growing presence of foreign-born working-age women correlates with lower telecare and in-home care coverage, highlighting immigrants' critical role in meeting care demands. Our findings underscore the need for targeted policy interventions to promote equitable access to elderly care services across Spain.

Keywords: elderly care, social services, regional disparities, foreign-born workers, spain.

JEL codes: J18, J61, I18, R23

I. Introduction

Amid the United Nations Decade of Healthy Ageing (2021–30), the evolving patterns of elderly care continue to be a global concern, particularly from an economic perspective (Bloom *et al.*, 2010; Bell and Lemmon, 2023). Elderly care encompasses a wide range of services and support designed to assist older adults with daily activities, healthcare, and social needs (Abdi *et al.*, 2019). Historically, elderly care has taken various forms, ranging from family-provided care (informal care) to public or private services (formal care) delivered at home or in specialized institutions. Since the mid-twentieth century, there has been a shift from family-based care to formal care services including an increase in social services, driven by changing family dynamics and economic conditions (Geerts and van den Bosch, 2012).

Social services for the elderly have evolved gradually and in a fragmented manner, adapting to the needs of older adults to promote healthy ageing and enhance quality of life, particularly in developed countries. Nordic European countries, characterized by a classic dual-earner model, integrated elderly care services into their welfare and healthcare systems as early as the 1950s. In contrast, Southern European countries only began addressing elderly care as a significant policy issue in the 1980s (Leichsenring, 2004). These countries follow a familialist model, where elderly care remains primarily the responsibility of families, with minimal state support, leaving households to manage care independently.

An analysis of the estimated number of individuals aged 65 and older receiving public homecare or residential services in 2019 reveals substantial variation across Europe. Northern and Western European countries report the highest coverage rates, while Southern European nations have the lowest. Spain falls below the EU-27 average in both types of care provision, with the gap particularly pronounced in institutional services (European Commission, 2021).[1]

While much of the economic literature focuses on income support for elderly people (pensions) and its funding (Boulhol *et al.*, 2023), less attention has been paid to the evolution of social services and their relationship to alternative care options, such as migrant-provided care (Cangiano, 2014). In this article, we address that gap with an in-depth analysis of the evolution of elder care patterns in Spain—a country with a particularly fast-ageing population (Kotschy and Bloom, 2022), paying close attention to how the provision of social services has responded to changes in the elderly care market over the past 25 years.

Using annual regional data from the Institute for the Elderly and Social Services of Spain (*Instituto de Mayores y Servicios Sociales*, IMSERSO) for the period 1998–2022, we begin by reviewing elderly care services in Spain in light of the rapid ageing of the population and the potential role of growing availability of foreign-born labour in supporting this demographic. Descriptive analyses reveal substantial growth across the main four elderly social services—telecare, in-home care, daycare centres, and nursing homes—over recent decades. Telecare leads in reach. In-home care, while serving a smaller segment, also expanded significantly. Daycare centres show slower growth and more pronounced regional disparities. Finally, nursing home capacity doubled, with interior regions generally displaying greater coverage than coastal areas. Across all services, coverage disparities highlight persistent gaps by gender, age, and geography.

Next, we explore regional inequalities in the coverage of the four social services. Using a clustering algorithm, we uncover significant regional disparities in elderly care services, with limited convergence over time. While telecare and in-home care services are more widely available in southern regions, daycare centres and nursing homes exhibit a marked coast–interior divide, with higher coverage in interior regions such as Castilla y León compared to coastal areas. These patterns show that, rather than converging, regions continue to exhibit unique profiles in service availability, influenced by local demographics and resource allocation. Additionally, clustering indicates that services like telecare, while widely expanded, remain unevenly distributed, emphasizing the need for targeted policy interventions to address these enduring disparities.

Finally, we examine the role of a growing share of foreign-born working-age women in addressing coverage gaps in elderly care amid rising demand. Our analysis reveals a negative correlation between the share of working-age immigrant women and the coverage of telecare and in-home services. This finding suggests that these workers play a crucial role in filling gaps within formal service coverage and underscores the potential for immigration policy to support more equitable access to elderly care services nationwide.

Overall, the findings highlight the need for targeted policy interventions to ensure equitable access to social services across Spain, especially for women and individuals aged 80 and above, who experience notable coverage gaps. Policies might include the creation of specialized visas for health sector workers to support the demand for elderly care services.

The remainder of this paper is organized as follows. Section II examines the demographic trends driving the demand for elderly care in Spain, focusing on the growing elderly population—particularly those aged 80 and above. Section III analyses disparities in the provision of social services for the elderly across regions, focusing on four key services: telecare, in-home care, daycare centres, and nursing homes. Section IV describes the clustering algorithm used to assess whether regions converge or diverge over the period studied. Section V presents the clustering results by type of social service and user characteristics (age and gender), given the greater reliance of women and the oldest elderly on these formal services. Section VI investigates the role of foreign-born working-age women in addressing regional gaps through ordered probit models. Finally, section VII concludes by summarizing the main findings and highlighting the need for targeted interventions to reduce regional disparities and improve access to care.

[1] Note that the lack of standardized legal definitions and consistent classifications for care and domestic services in the EU limits the comparability of service availability and coverage (European Commission, 2021).

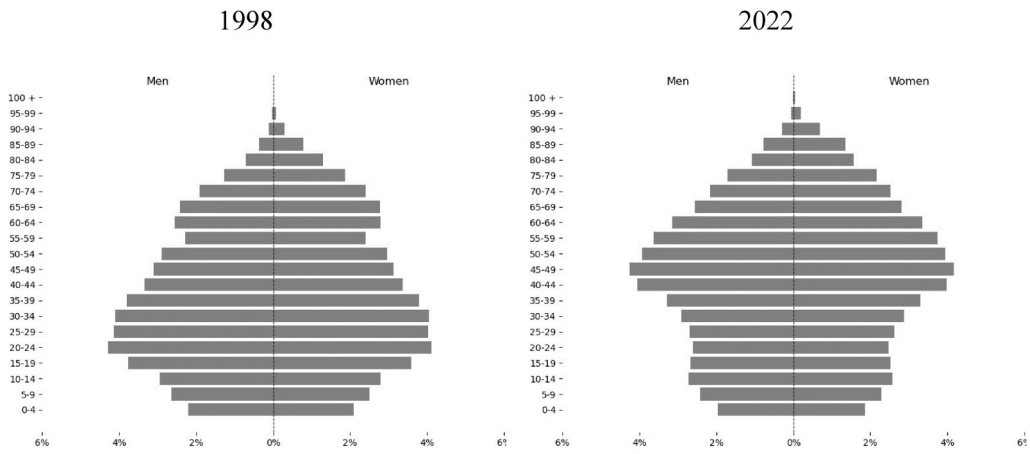

Figure 1.1: Population pyramids.
Notes: Population data are obtained from the Municipal Register (Estadística del Padrón Continuo), with the main series available since 1998 (INE).

II. The demand for elderly care in Spain

The Spanish case is particularly compelling due to its unique demographic trends, social policies, and cultural and economic factors, which have significantly reshaped both the demand and supply sides of elder care. On the demand side, four key factors have shaped the demand for these services: (i) the structural shift in the population, (ii) the increase in the population of older adults (80+), (iii) the living conditions of older adults (whether they live alone), and (iv) the health conditions of older adults. In Figures 1.1 to 1.3 we present the elderly population situation in Spain and its potential care needs.

Spain's population structure has changed dramatically in recent decades, as seen when we compare the population pyramid from the late twentieth century to the one from 2022 (see Figure 1.1). As is the case with other developed nations, Spain's population is rapidly ageing. According to data from the Spanish National Statistical Office (*Instituto Nacional de Estadística*, INE), the population aged 65 years and older increased by nearly 4 percentage points between 1998 and 2022, rising from 16% to almost 20% (6.5 million to 9.5 million) as shown in the upper panel of Figure 1.2. Additionally, during the same period, the population aged 80 and above nearly doubled, increasing from 3.7 to 6%, reaching almost 2.9 million. As a result, the ratio of individuals over 80 over those 65 + peaked in 2017 at 32%, after which it slightly declined to 30% (see the bottom panel of Figure 1.2).

Spain's ageing trend is not unique, but it is worrying. Spain is projected to be the European country with the highest growth in the population aged 65 and over. By 2040, Spain will become the fourth country in the world with the highest percentage of individuals aged 65 and over—a population segment that will surpass 30% of the total population (Kotschy and Bloom, 2022).[2] However, not all elders will require care. According to recent estimates, in 2020, only 3% of those aged 65 and over in Spain were likely to need long-term care (Kotschy and Bloom, 2022). Our data suggest otherwise, with the actual provision of care services to older adults far exceeding the 3% estimate.

The growing number of older adults living alone, particularly women, is another critical factor impacting the demand for care. Using census data from INE (1991–2021), Figure 1.3 shows that the population aged 65 and over living alone—unable to rely on intrafamilial care—has increased by more than 53% since 2001, exceeding two million people. Approximately 71% of that population are women, underscoring important gender dynamics in the demand for care and the cost of loneliness in Spain (Casal *et al.*, 2024).

[2] See Brennan *et al.* (2025) for an in-depth analysis of the ageing process in Australia.

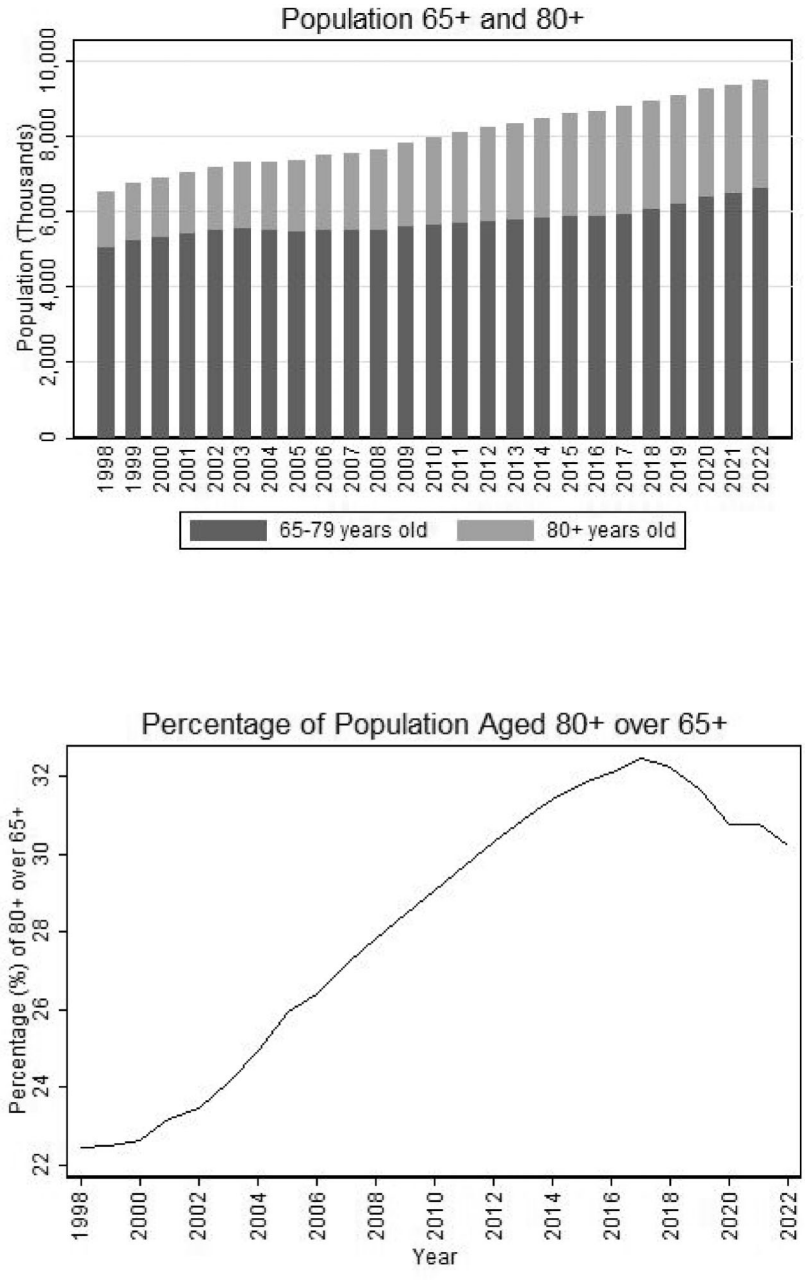

Figure 1.2: Potential care necessities and differences by age group.
Notes: Population data are obtained from the Municipal Register (Estadística del Padrón Continuo), with the main series available since 1998 (INE).

Since population ageing can lead to further health expenditure (Breyer *et al.*, 2010), changes in the health conditions of Spain's elderly population can also influence care needs. However, data from the *National Health Survey* indicate that perceived health has improved, particularly among those aged 65–74 (see Figure 1.3). Nevertheless, that is not the case for the oldest age groups, among which nearly 25% describe their health as poor or very poor. This figure highlights the

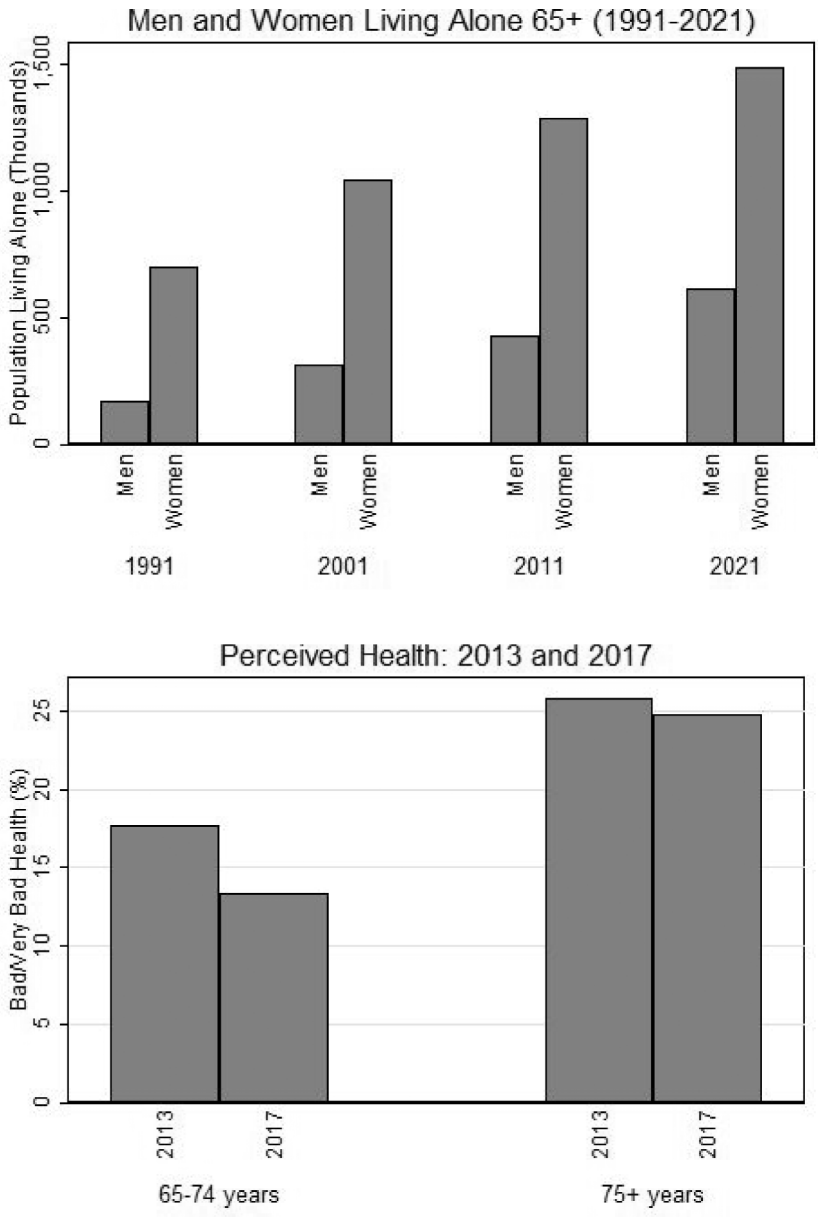

Figure 1.3: Household size and perceived health (aged 65 and over).
Notes: Data on people living alone come from the household size and structure data from the following censuses: Censos de Población y Viviendas 1991, 2001, 2011, and 2021 (INE). Perceived health status data are obtained from the National Health Survey (Encuesta Nacional de Salud) for 2003 and 2017 (INE).

need to understand how social services are changing to address the needs of different age groups (De Meijer *et al.*, 2011).

In summary, the key changes in Spain's elder care demand can be outlined as follows: (i) a potential rise in the number of care recipients due to an increasing elderly population, particularly among those aged 80 and over who are more likely to experience declining health; (ii) a reduction in the role of intrafamily and intergenerational caregiving, partly due to the rise in older adults living alone (22% of those aged 65 and over); (iii) a gender component, as women tend to live

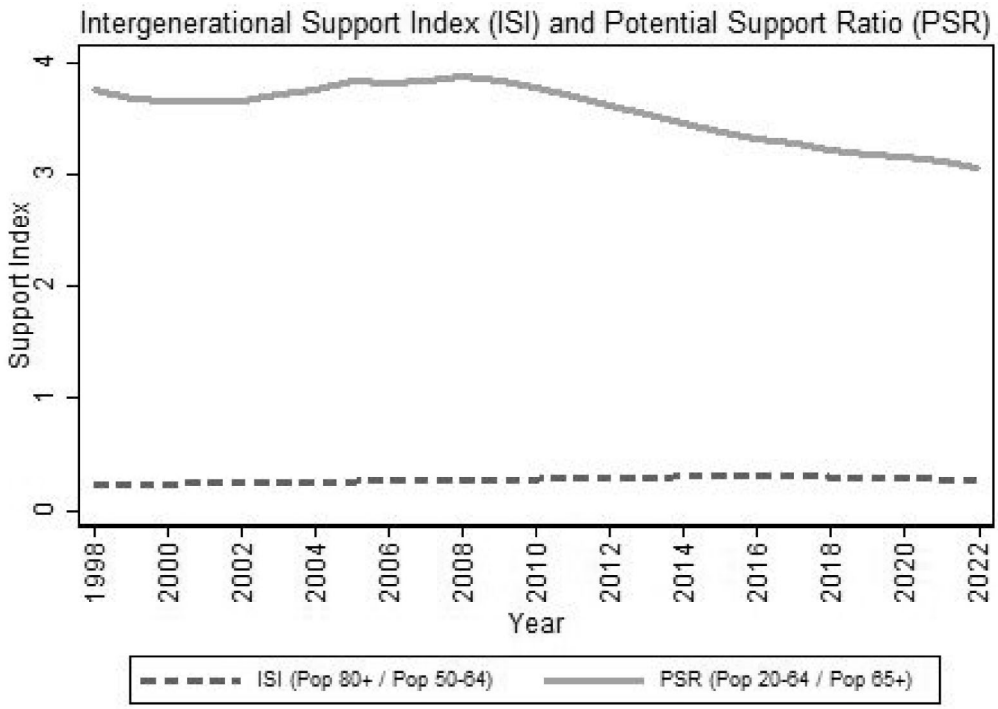

Figure 2.1a: Intergenerational support.
Notes: Population data are obtained from the Municipal Register (Estadística del Padrón Continuo), with the main series available since 1998 (INE).

longer and are more likely to live alone; and (iv) health considerations, as health remains a concern for the oldest groups. Collectively, these four factors shape the growing demand for elderly care services.

III. The supply of elderly care in Spain

In reviewing the supply of elderly care services in Spain, it is helpful to differentiate between *formal* and *informal* care services—both of which play essential roles in supporting the ageing population (Geerts and van den Bosch, 2012; Jiménez-Martín and Prieto, 2012; Marcén and Molina, 2012). In Figures 2.1 and 2.2 we present information pertaining to informal and formal care services, respectively.

(i) Informal elderly care services

Informal elderly care services are typically provided by family members, often without monetary compensation (Jiménez-Martín and Prieto, 2012; Marcén and Molina, 2012). Data on informal care can be limited, as it is largely driven by intergenerational support, i.e. adult children caring for elderly parents. Figure 2.1a illustrates two important indices: the *Intergenerational Support Index* (ISI) and the *Potential Support Ratio* (PSR) (Długosz, 2011; UN, 2015). The ISI is the ratio of the population aged 80 and older to those aged 50–54, capturing the potential care provided by adult children to elderly parents. Interestingly, while the potential workforce available to support the elderly (PSR) has declined due to demographic ageing, the intergenerational support index (ISI) remains stable because the relative proportion of elderly parents to their adult children has not changed significantly. This suggests that while demographic shifts reduce the working-age population relative to retirees, family structures have not yet undergone a dramatic transformation that would significantly alter informal caregiving availability.

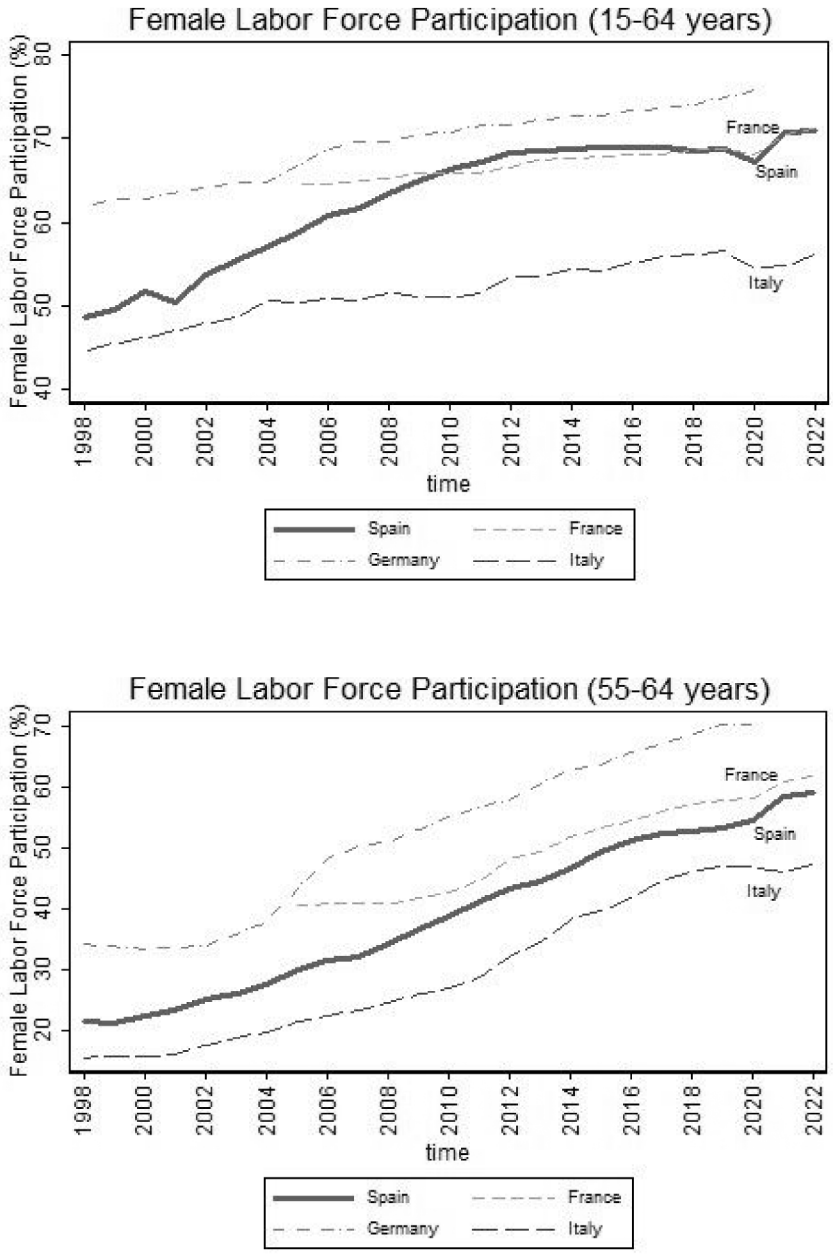

Figure 2.1b: Female labour force participation by age.
Notes: Data are obtained from the International Labour Organization.

In addition, traditionally, non-working women have been essential in the provision of informal elderly care services. Yet, the two graphs in Figure 2.1b highlight the rising female labour force participation, particularly for women in their fifties, who would traditionally take the role of caregivers for elderly family members. The increase in female labour force participation, particularly in Southern European countries like Spain, has put additional pressure on the provision of informal elderly care. As more women join the workforce, there is a growing demand for formal care services to fill the gap left by the diminishing availability of informal, family-based care (Geerts

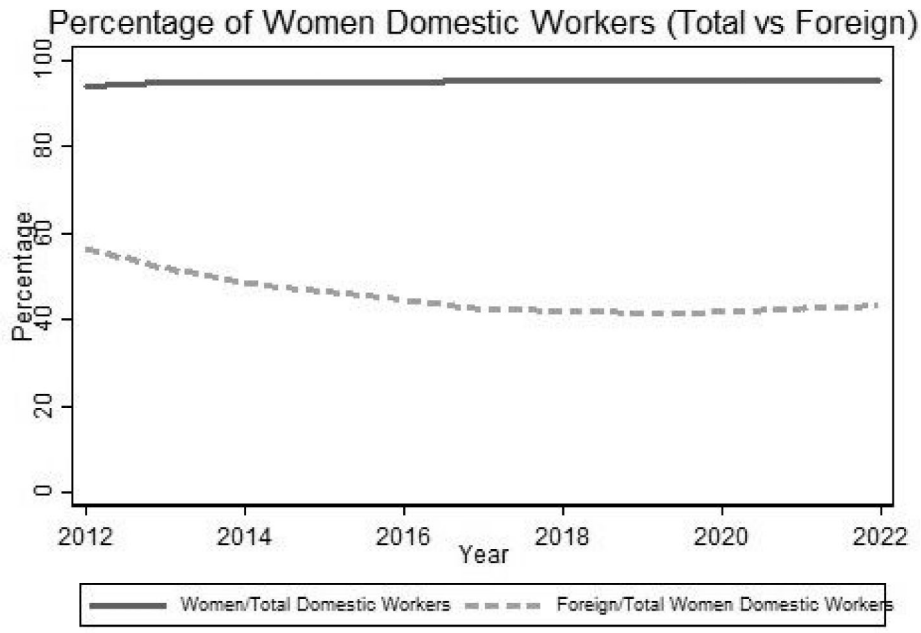

Figure 2.2a: Domestic workers by gender and nationality.
Notes: The data are sourced for all available samples of the Official Social Security Statistics on monthly affiliates. The annual average of affiliates is calculated based on the monthly affiliate data from the last day of each month.

and van den Bosch, 2012). This shift underscores the importance of strengthening formal care services to meet the rising needs of the elderly population.

(ii) Formal elderly care services

A substantial portion of formal elderly care is provided by *domestic workers*. Unlike in Northern Europe, governments in Southern European countries such as Spain have opted to provide subsidies to elderly households for private care services instead of investing in public-sector employment (Hellgren, 2015). Wealthy and middle-class households have long employed unskilled women for domestic work. However, as native-born women attained higher levels of education, the domestic workforce increasingly transitioned to immigrant women, leading to an overrepresentation of foreign-born individuals in the sector (León, 2010). Indeed, as shown in Figure 2.2a, foreign-born women account for more than 40% of all female domestic workers. This trend has been sustained by a consistently growing foreign-born population. For instance, the number of foreign-born women aged 16–64—potential caregivers—rose from roughly 234 000 in 1998 to over 2.1 million by 2022, as illustrated in Figure 2.2b. Much of this growth has been fuelled by immigrants from countries such as Romania and, more recently, Latin American countries like Honduras, as shown in Figure 2.2c. These immigrant workers have become essential to the provision of formal elderly care, especially in light of the decline in traditional family-based informal care due to rising female labour force participation. Compared to other EU states, the literature highlights Spain's historically high tolerance for undocumented migrant domestic workers (Estévez-Abe and Hobson, 2015; Hobson *et al*., 2018). However, the level of informality has steadily declined over the past decade following the implementation of legislation requiring households to provide formal employment contracts (Díaz Gorfinkiel, 2016). Another form of formal care occurs through the provision of *social services* geared towards the elderly. These services can be grouped into care provided at home or in a care facility. *Home care services* aim to help the elderly remain in

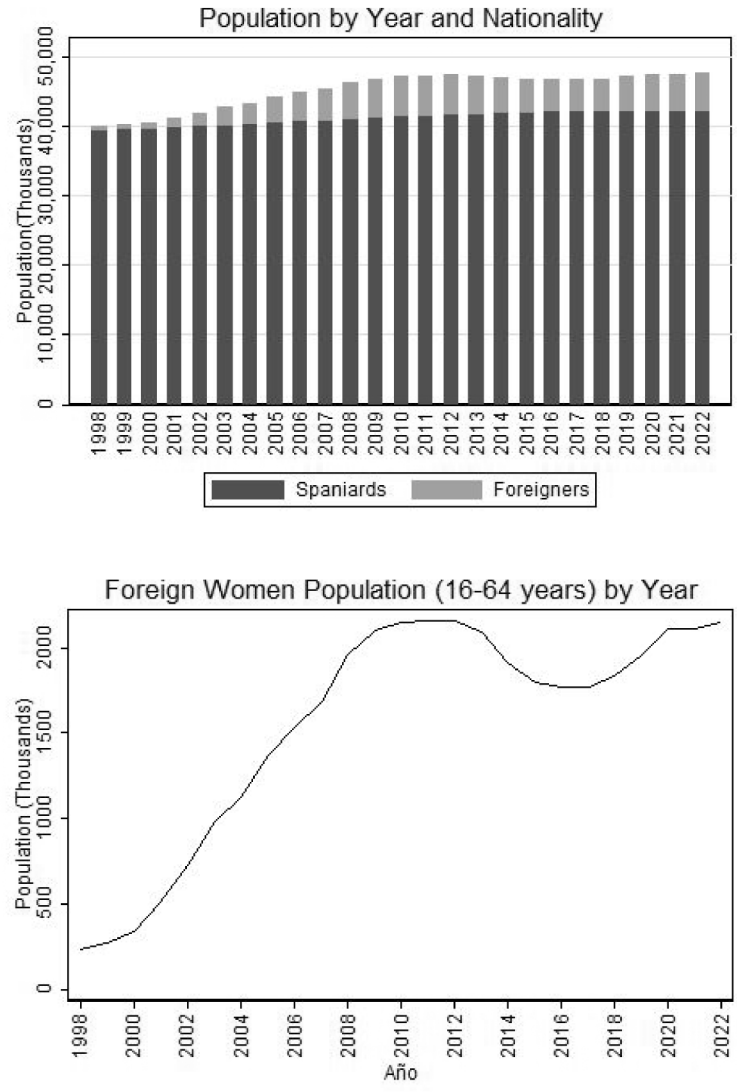

Figure 2.2b: Population by nationality and gender.
Notes: Population data are obtained from the Municipal Register (Estadística del Padrón Continuo), with the main series available since 1998 (INE).

their homes for as long as possible, minimizing disruption to their familiar environment. These services include *telecare* and *in-home care services*. In contrast, care provided in a facility primarily consists of *daycare centres* and *nursing homes*. Daycare centres provide psychosocial care to elderly individuals with dependency needs, while nursing homes offer permanent or temporary accommodation and meals. In what follows, we provide more information about the evolution of these four different types of social services. The data come from the Institute for the Elderly and Social Services of Spain Annual Reports from 1998 to 2022, reporting on the level of coverage by social services (e.g. number of centres, number of users, characteristics of users, etc.) at the

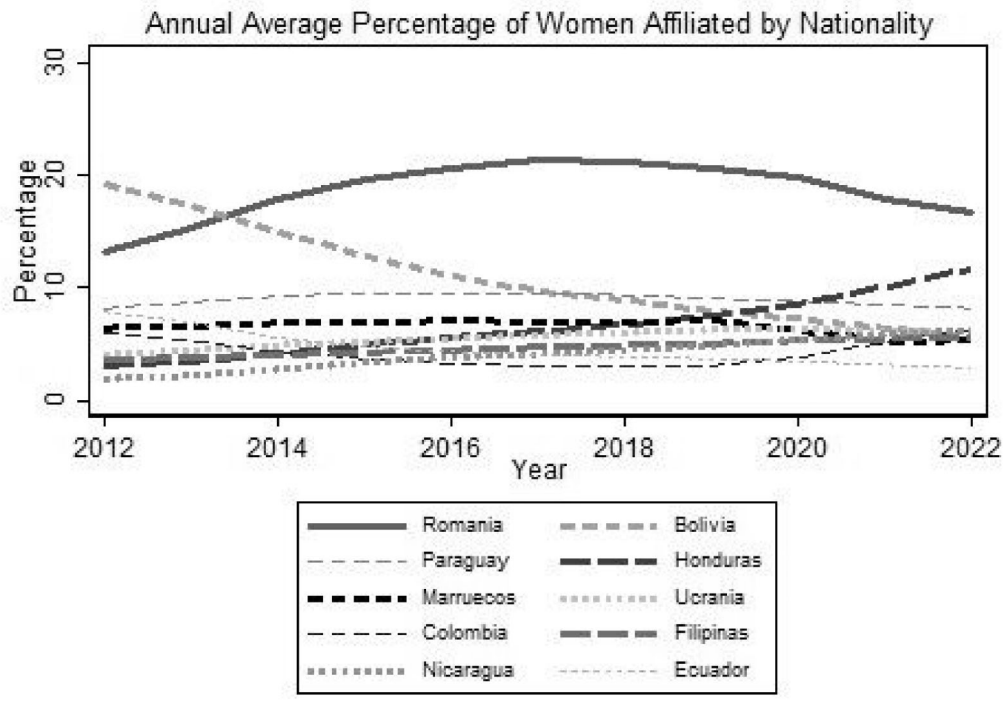

Figure 2.2c: Domestic workers by country of origin.
Notes: Data were obtained from the official social security statistics on monthly affiliates. This represents the entire available sample. The annual average number of affiliates was calculated using the data from the last day of each month. Only countries with an average percentage of at least 4% and over were included.

regional level on an annual basis.[3] Table A2 in the Appendix documents how all these variables are constructed.[4]

Telecare: This remote assistance service is designed to support older adults, promoting their independence and safety while allowing them to remain in their homes. It is particularly beneficial for those living alone or requiring occasional supervision. The service typically involves a two-way communication device, such as a fixed unit connected to a landline or mobile network, paired with a wearable pendant or bracelet equipped with an emergency button. Beyond emergency support, telecare often includes regular check-ins to monitor users' well-being, providing a sense of security and reducing social isolation.

Telecare is the most widely used elderly assistance service in Spain. As shown in Panel A of Table 1, the number of users has increased twentyfold since 1998, reaching 988 623 in 2022. The coverage index has grown ninefold since the late twentieth century (see Panel B of Table 1), with substantial regional variation over time, as depicted in Figure 2.2d.[5] Over the 25-year period being examined, both telecare users and the population aged 65 and over experienced a general increase (see Figure 2.2e). However, the growth rate for telecare users was notably higher, particularly during the early 2000s and between 2010 and 2015, compared to the steadier increase in the population aged 65 and over. During this period, the mean coverage index was 5.14, with significant regional variation, ranging from 1.42 in Galicia to 10.73 in Madrid (see Table A3 in

[3] This includes all 17 Spanish regions and the two autonomous cities (Ceuta and Melilla) located in North Africa. See Table A1 in the Appendix.

[4] We conducted a detailed analysis of all data collected from the IMSERSO reports and identified a few discrepancies in the original data. Specifically, some observations showed significant deviations from data collected in the preceding and following years. To ensure data consistency, we removed these potential errors from the dataset.

[5] The coverage index is defined as the percentage of users in the total population aged 65 and over.

Table 1: Social services in Spain in 1998 and 2022

Period	Telecare	In-home care services	Daycare centres	Nursing homes
Panel A:	**Total number of users**		**Total number of places**	
1998	48,574	112,797	7,103	199,058
2022	988,623	534,321	105,447	398,575
Panel B: Coverage index (CI)				
1998	0.86	2.11	0.10	3.00
2022	7.93	4.70	1.12	4.34
Average (1998–2022)	5.14	3.94	0.81	4.11
Panel C: Share of female users (%)				
Average (1998–2022)	74.9%	70.2%	65.6%	65.8%
Panel D: Share of users aged 80+ (%)				
Average (1998–2022)	63.4%	57.3%	60.5%	67.2%

Notes: Data come from the Institute for the Elderly and Social Services of Spain (IMSERSO).

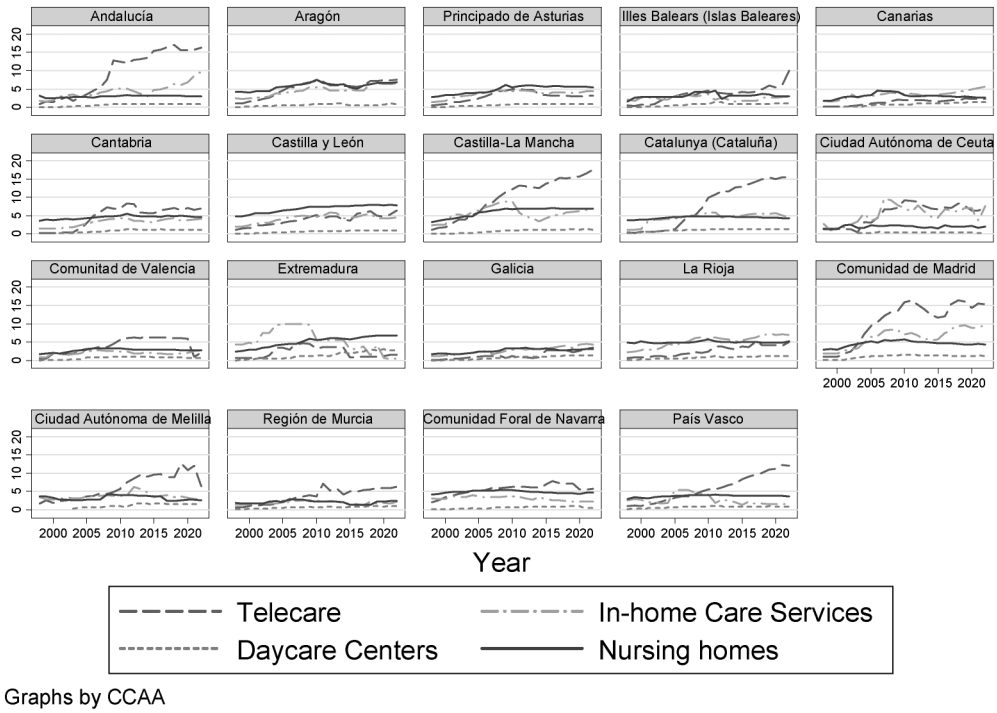

Figure 2.2d: Social services in Spain: coverage index by type of service.
Notes: The telecare and in-home care services coverage index is calculated as: (number of users/population aged 65 and over) x 100. The daycare centre and nursing home coverage index is calculated as: (number of places/population aged 65 and over) x 100. Data are presented in Table A3 in the Appendix.

the Appendix). Differences also emerge based on the age and gender of users. The typical telecare user is a woman (74.9%) aged 80 or older (63.4%) (see Panels C and D of Table 1).

In-home care services: This service provides personalized support to individuals who face challenges performing basic daily activities and household tasks. Its primary goal is to promote autonomy and enable individuals to remain in their homes rather than transitioning to institutional care settings. Although this service reaches about half as many elderly people as telecare, it has experienced significant growth in recent years (see Figures 2.2d and 2.2e).

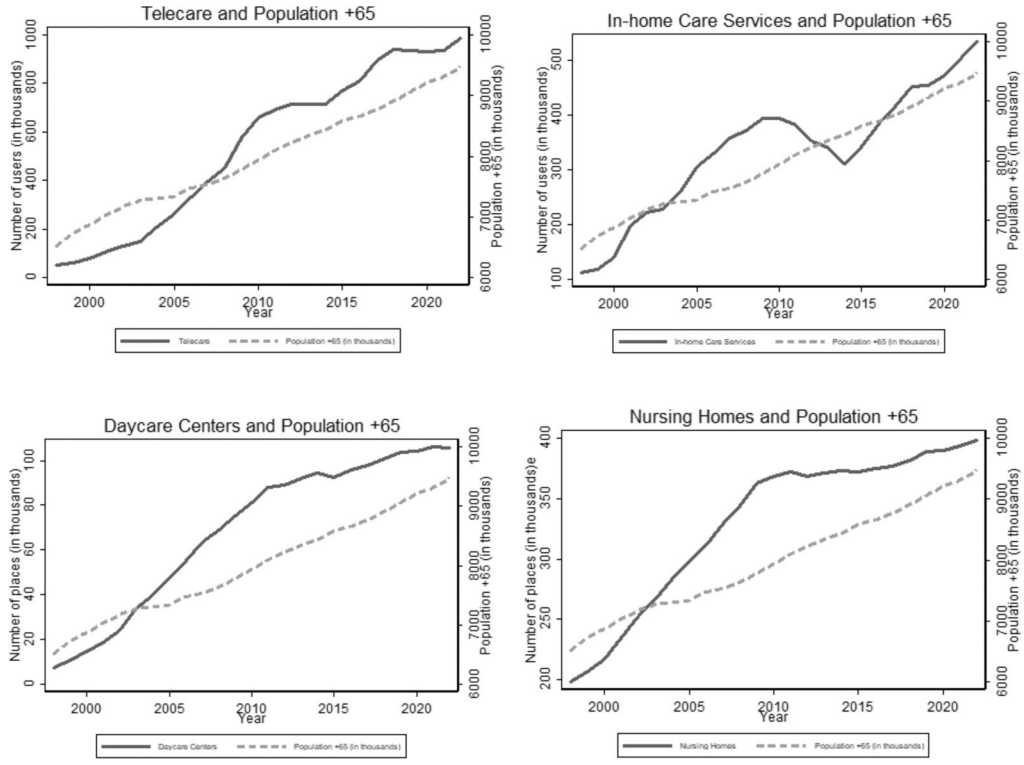

Figure 2.2e: Social services in Spain: users, places, and population over 65 by type of service.
Notes: These figures show the number of users/places and the population aged 65 and over in Spain, categorized by type of social service, for the period from 1998 to 2022. Data on users and places are obtained from IMSERSO, while population data is sourced from the Municipal Register (Estadística del Padrón Continuo).

While the population aged 65 and over steadily increased during the period considered, the number of users of this service showed distinct trends. It grew rapidly until 2008, was followed by a period of decline or stagnation around 2010–15 and has experienced a recovery with continued growth since 2015. The number of users increased from 112 797 in 1998 to 534 321 in 2022, with the coverage index more than doubling during this period (rising from 2.11 to 4.70), as shown in Panels A and B of Table 1.

The mean coverage index across Spain is 3.94, with nine regions exceeding this average. Madrid has the highest values (6.34), while Murcia has the lowest (1.98), as documented in Figure 2.2d and Table A3 in the Appendix. Like telecare, in-home care predominantly serves women (70.2%) and individuals aged 80 or older (57.3%) (see Panels C and D of Table 1).

Daycare centres: These are specialized facilities that provide daytime care and support for older adults, offering services such as personal care, meals, physical activities, and cognitive stimulation programmes. Between 1998 and 2022, 98 344 daycare centre places were created, with an average annual growth of approximately 3 933 places (see Panel A of Table 1). During this period, the coverage rate increased by 1.02 points, rising from 0.10 to 1.12 (see Panel B of Table 1).

A rapid initial expansion in daycare centre places was observed until 2010, growing at a faster rate than the population aged 65 and over (see Figures 2.2d and 2.2e). However, this was followed by a period of stagnation, even as the population aged 65 and over continued to increase steadily. The average coverage index during this time was 0.8, with regional variation ranging from 0.41 in Ceuta to 1.43 in Extremadura and 1.24 in Melilla (see Table A3 in the Appendix). The typical daycare centre user is a woman (65.6%) aged 80 or older (60.5%) (see Panels C and D of Table 1).

Nursing homes: These residential care facilities are designed to provide comprehensive, long-term care for older adults. There has been a significant increase in the number of nursing home

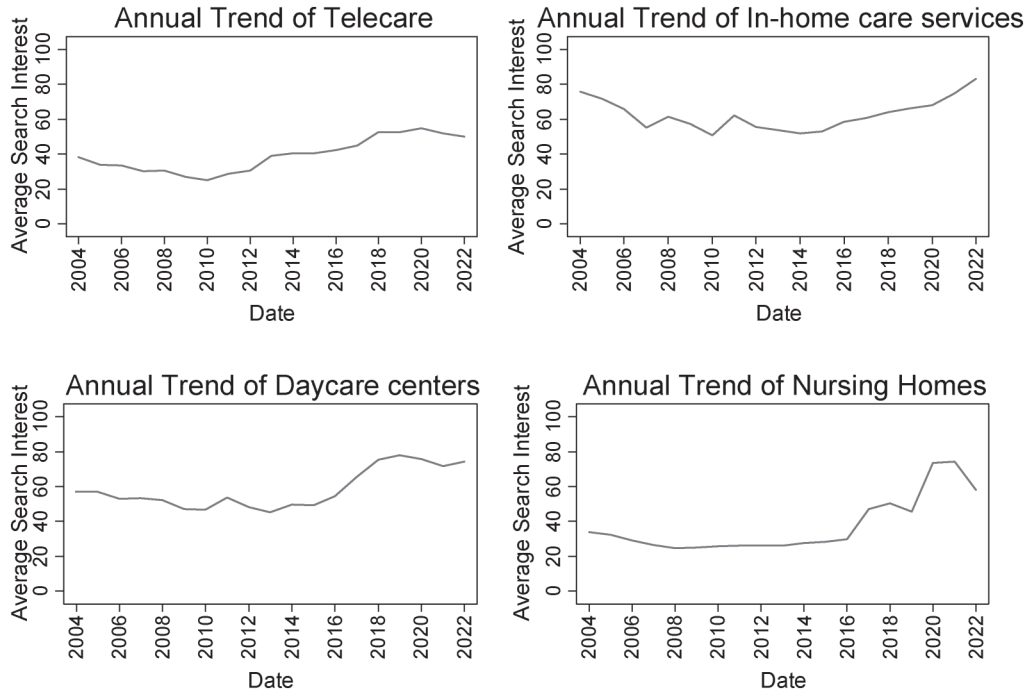

Figure 3: Potential interest in social services: google trends.
Notes: Data were obtained from Google Trends. The annual average of the monthly interest index for Spain was calculated. The search for nursing homes was conducted by topic using 'Residencia de personas mayores' for all categories in Spain. For day centres, the search used 'Centro de día,' and for telecare services, 'Servicio de teleasistencia'. In-home care services could not be searched by topic, so the term 'Ayuda a domicilio' was used. Data were collected from 2004 to October 2024, though only up to 2022 is displayed.

places, rising from 199 058 in 1998 to 398 575 in 2022 (see Panel A of Table 1). Over the last 25 years, the coverage index has increased from 3.0 to 4.34, with an average of 4.11 (see Panel B of Table 1). Daycare centre places experienced a rapid increase until 2010, outpacing the growth of the population aged 65 and over (see Figures 2.2d and 2.2e). However, this growth was followed by a period of stagnation, even as the population aged 65 and over continued to rise steadily. Regional disparities are notable. As shown in Table A3 in the Appendix, Castilla y León and Castilla-La Mancha have the highest coverage (6.89 and 6.02, respectively), while Ceuta has the lowest (1.98). Among the 250 036 average users, 65.8% are women and 67.2% are over 80 years old (see Panels C and D of Table 1).

While Nordic countries continue to have some of the highest rates of long-term care recipients in residential facilities, a significant shift toward home-based care is under way as part of broader deinstitutionalization efforts. In contrast, Southern European countries—such as Spain, Italy, and Portugal—are experiencing the opposite trend, expanding long-term care bed capacity for seniors aged 65 and older in response to structural changes in the labour market (Spasova *et al.*, 2018). The growing popularity of elderly social services is reflected not only in their increased usage but also in rising public interest, as shown in Figure 3. The figure presents data obtained from *Google Trends*, plotting the annual average of daily search interest in Spain for four types of elderly care services: telecare services, in-home care services, daycare centres, and nursing homes.[6] Notably, search interest for all four services intensified, especially after the mid-2010s, indicating

[6] In terms of methodology, the search for nursing homes was conducted using the topic 'Residencia de personas mayores', while for daycare centres, the search term used was 'Centro de día'. Similarly, telecare services were explored through the topic 'Servicio de teleasistencia'. For in-home care services, however, a search by topic was not possible, so the term 'Ayuda a domicilio' was used instead. The data spans from 2004 to October 2024, though the figure only displays data up to 2022.

a heightened awareness and reliance on these services amid Spain's rapidly ageing population. This trend aligns with the growing societal need for formal care services as traditional informal care systems face strain due to demographic changes and rising female labour force participation.

IV. Methodology

In this study, we use the Phillips–Sul methodology to examine inequities in the provision of social services across regions in Spain. We analyse how the coverage of social services has evolved over the study period using data on the coverage index (CI) by type of service. By applying a clustering algorithm, we identify groups of regions with converging CIs for different types of social services, allowing us to detect common patterns and assess whether social services are becoming more equitable across the country.

The Phillips–Sul approach has been widely applied in economics and finance, as well as in health studies (Tomal, 2024). For instance, this methodology has been used to study disparities in healthcare expenditure in countries such as Australia, the US, and Spain (Panopoulou and Pantelidis, 2013; Apergis *et al.*, 2017; Clemente *et al.*, 2019a, 2019b; Ivanovski and Awaworyi Churchill, 2021). While a substantial body of literature addresses inequities in healthcare expenditure and usage across developed countries (Bago d'Uva *et al.*, 2009; Costa-Font and Hernández-Quevedo, 2012; Devaux, 2015), our study is innovative in its analysis of the convergence of social services across regions using this approach.

Specifically, let CI_{it} represent the coverage index of social services in the region i at time t, where $i = 1 \ldots N$ and $t = 1 \ldots T$. These panel data can be decomposed in two components: systematic components, including permanent common components that give rise to cross-section dependence (g_{it}), and transitory components (a_{it}), i.e. $CI_{it} = g_{it} + a_{it}$ (Phillips and Sul, 2007). This expression can be reformulated by separating the common from the so-called idiosyncratic components in the panel, obtaining: $CI_{it} = (\frac{g_{it}+a_{it}}{\mu_t})\mu_t = \delta_{it}\mu_t$ for all i and t, where μ_t is a single common component (e.g. a common trend in the coverage index), and δ_{it} is a time-varying idiosyncratic element. Thus, δ_{it} measures the relative share of μ_t for region i at time t. The common component, μ_t, is assumed to exhibit deterministic or stochastically trending behaviour that dominates the transitory component a_{it} as $t \to \infty$. This formulation allows us to test for convergence by examining whether the factor δ_{it} converges.

Based on this framework, Phillips and Sul (2007, 2009) developed a clustering procedure using a log t-test, which focuses on the evolution of idiosyncratic transitions over time in relation to the common component. The Phillips and Sul method focuses on the evolution of the coverage index relative to the average, rather than on the individual coverage index by region. As such, we are able to identify relative transitions within subgroups and measure them against the common trend (Phillips and Sul, 2009). The regression model of the log t-test is:

$$\log \frac{H_1}{H_t} - 2\log L(t) = \beta_0 + \beta_1 \log t + u_t, \text{ for } t = T_0, \ldots, T \tag{1}$$

where $L(t) = \log(t+1)$. The standard errors are computed using a heteroskedasticity and autocorrelation-consistent estimator for the long-run variance of the residuals. The regression is applied after removing a fraction of the sample. Thus, the first observation in the regression is: $T_0 = [rT]$, where rT is the integer part and $r = 0.3$, as recommended by Phillips and Sul (2007). The ratio: $\frac{H_1}{H_t}$ is the cross-sectional variance ratio, where H_t is the transition distance defined as: $H_t = N^{-1}\sum_{i=1}^{N}(h_{it}-1)^2$ and h_{it} is the relative transition coefficient, defined as $h_{it} = \frac{CI_{it}}{N^{-1}\sum_{i=1}^{N} CI_{it}}$. These relative transition coefficients exclude the common growth path (μ_t), measuring region i's transition relative to the cross-sectional average. Phillips and Sul (2009) refer to h_{it} as the 'relative transition path'. Additionally, h_{it} measures for each region i the departure of the coverage index from the common growth path μ_t in relative terms.

The convergence hypothesis is tested using the β_1 coefficient. Specifically, the null hypothesis tests for convergence across all regions, while the alternative suggests no convergence or partial convergence among subgroups of regions. For example, at the 5% level, the null hypothesis is rejected if $t_{\beta_1} < -1.65$. Since the test refers to the β_1 of the $\log t$ regressor in equation (1), the

test is called the '$\log t$' convergence test. The interpretation of the results depends on whether the estimated parameter is $0 \leq \beta_1 < 2$ or $\beta_1 \geq 2$. The magnitude of that coefficient measures the speed of convergence. *If $\beta_1 \geq 2$ and the common growth component μ_t follows a random walk with drift or a trend-stationary process, large values of β_1 imply convergence in level*. However, *if $0 \leq \beta_1 < 2$, this suggests conditional convergence, where the paths (but not the levels) of the CI converge over time across regions within a club*.[7]

If full-panel convergence is rejected, the clustering algorithm developed by Phillips and Sul (2007) is applied. This procedure performs the log t-test for each group and stops when the remaining regions fail the convergence test.[8]

V. Inequities in social services coverage

(i) Assessing regional disparities and convergence

Table 2 presents the results of applying the clustering algorithm to our sample of regions (including the two autonomous cities) based on the type of social service (telecare, in-home care services, daycare services, and nursing homes). Panel A reports the analysis for the entire period (1998–2022) and each social service separately. Our findings indicate that the Spanish regional CI does not converge into a single convergence club for any of the social services considered. In all cases, the null hypothesis of convergence is rejected ($t_{\beta_1} < -1.65$), raising concerns about the ability of social services to provide similar coverage to individuals aged 65 and over, regardless of where they live.

We then investigate the existence of regional clubs that display similar patterns of behaviour. Panel B of Table 2 shows the presence of distinct clubs of regions. Specifically, the panel reports the number of regions belonging to each group for each social service, along with the distribution of state regions within groups, β_1 coefficients, and standard errors. Since the algorithm requires a balanced panel dataset, we fill some gaps using linear interpolation. Each type of social service is analysed separately.

Telecare: For telecare, the algorithm classifies the regions into three clubs, revealing three distinct patterns of telecare services across Spain. The majority of regions (10) are classified into Club 2. Extremadura and Melilla are not classified into any club. In each group, the estimated coefficient $\hat{\beta}_1$ is significant, supporting the club classification. Furthermore, $\hat{\beta}_1$ is below 2 in all cases, indicating conditional convergence in the path (but not the levels) of CI across regions within each club.

To highlight the differences among the convergence clubs, we have plotted the average CI by club in Figure 4 for the period 1998–2022. Club 1 consists of regions with a high CI throughout the entire period, as the CI for Club 1 is consistently above the CI of all regions. Figure 4 shows that Club 1's CI increased steadily, with the most significant rise occurring before 2010, i.e. before the recession. After 2010, the CI for Club 1 continued to increase, but at a slower pace. The average annual growth rate for Club 1 was 23.7% up to the year 2010, while it was around 2.72% after that. In contrast, the other clubs, which include regions with a CI below average, experienced a peak around 2010, after which the CI remained relatively stable or even decreased. In 1998, the CI for Club 1 was only about twice the size of Club 3. However, by 2022, the value of Club 1 had grown to more than five times the value of Club 3.

[7] Phillips and Sul (2009) interpret as weak convergence those cases in which the β_1 coefficient is negative, but the null hypothesis of convergence is not rejected at the 5% significance level.

[8] The algorithm consists of four steps (Phillips and Sul, 2007, 2009):
- Step 1: Last observation ordering—Orders the regions based on their last observation in the panel.
- Step 2: Core group formation—Selects the first k highest regions in the panel to form the subgroup G_k for some $2 \leq k < N$, runs the log t-regression, and calculates the convergence test statistic: $t_k = t(G_k)$ for this subgroup. The core group size k^* is chosen by maximizing t_k over k under the condition that $\min\{t_k\} > -1.65$.
- Step 3: Club membership—Adds one region at a time to the k^* core group and reruns the log t-test. The region is included if the associated t-statistic exceeds zero (conservative criterion). Ensures that the club satisfies the convergence criterion.
- Step 4: Recursion and stopping rule—The regions not included in the club formed in Step 3 form a complementary group. Log t-regression are estimated for this group. If it converges, these regions form a second club. If not, Steps 1–3 are repeated to obtain sub-converging clubs. If no core group is found (Step 2), there is no evidence of convergence among these regions.

Table 2: Region and autonomous cities convergence clubs

Panel A: Testing for convergence			
Telecare	**In-home care services**	**Daycare centres**	**Nursing homes**
–1.175 (0.009)	–1.411 (0.096)	–2.052 (0.129)	–1.347 (0.024)
Panel B: Estimated clubs			
Telecare	**In-home care services**	**Daycare centres**	**Nursing homes**
Club 1 (5): 1.302 (0.097) *Regions*: AN, CM, CT, MD, PV	**Club 1** (5): –0.123 (0.086) *Regions*: AN, AR, MD, RI, CE	**Club 1** (13): –0.015 (0.044) *Regions*: AN, AS, IB, CN, CB, CL, CM, CT, GA, MD, MC, RI, ML	**Club 1** (4): 0.185 (0.014) *Regions*: AR, CL, CM, EX
Club 2 (10): 0.408 (0.100) *Regions*: AR, IB, CB, CL, VC, GA, MC, NC, RI, CE	**Club 2** (7): 1.204 (0.143) *Regions*: AS, CN, CB, CL, CM, CT, GA	**Club 2** (4): 0.742 (0.208) *Regions*: AR, VC, NC, PV	**Club 2** (2): 2.396 (0.109) *Regions*: CB, RI
Club 3 (2): 1.254 (0.185) *Regions*: AS, CN	**Club 3** (7): 0.546 (0.233) *Regions*: IB, VC, EX, MC, NC, PV, ML	Not convergent (2): –2.434 (0.070) *Regions*: EX, CE	**Club 3** (5): 0.292 (0.044) *Regions*: CT, GA, MD, NC, PV
Not convergent (2): –3.437 (0.030) *Regions*: EX, ML			**Club 4** (2): 2.222 (0.465) *Regions*: AN, IB
			Club 5 (3): 3.968 (1.097) *Regions*: CN, VC, ML
			Club 6 (2): 1.761 (0.512) *Regions*: MC, CE
			Not convergent (1): –3.437 (0.030) *Regions*: AS

Notes: This table presents our findings after applying the Phillips and Sul methodology to the coverage index for each type of social service. *Panel A* shows the estimated coefficient and standard error (in parentheses) and indicates that the null hypothesis of convergence is rejected at the 5% significance level, using data from 1998 to 2022. The coverage index for telecare and in-home care is calculated as the number of users per population aged 65 and over, and for nursing homes and daycare centres, as the number of available places per population aged 65 and over. In *Panel B*, the number in parentheses after each club represents the number of regions in that club. The corresponding t-statistics are constructed using HAC (heteroskedasticity and autocorrelation-consistent) standard errors.

Figure 5 presents a map of the clusters showing the geographic distribution of different clubs for each social service. This helps us identify geographical patterns. Except for Cataluña and País Vasco, a North–South pattern emerges, with regions in the North belonging to clubs with lower CIs (below average), while regions in the South tend to belong to clubs with higher CIs. The North–South pattern is a common pattern observed in the analysis of the per-capita GDP in Spain at least since the 1930s (Tirado *et al.*, 2016). South regions are associated with having low per-capita GDP (Tirado *et al.*, 2016). The exception in Club 1, with those performing well with regards to telecare coverage, is Madrid—a region with traditionally high per-capita GDP.

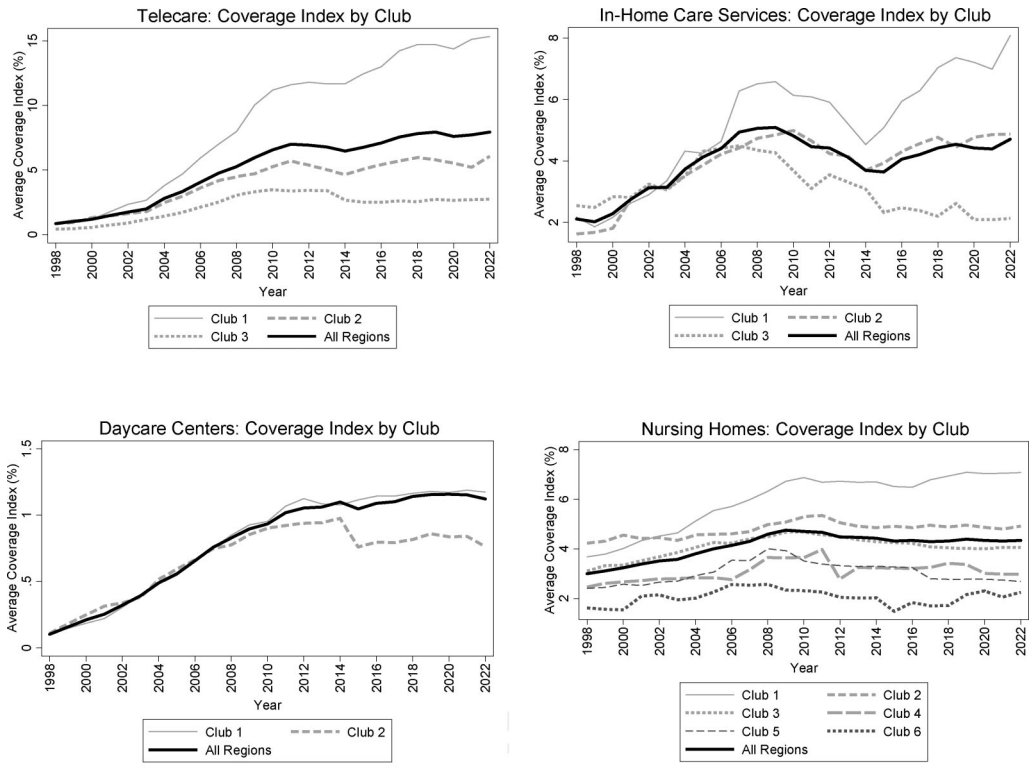

Figure 4: Average coverage index for the estimated clubs by social service.
Notes: This figure presents the average coverage index values for regions and the overall average by type of social service and club from 1998 to 2022. The coverage index for telecare and in-home care services is calculated as the number of users divided by the population aged 65 and over. For nursing homes and daycare centres, coverage is measured as the number of available places divided by the population aged 65 and over. Non-convergent areas are not included separately.

In-home care services: Although less widely used than telecare, in-home care services have experienced significant growth. As depicted in Figure 4, the average coverage index more than doubled from 1998 to 2022, rising from 2.11 to 4.70. As with telecare, Table 2 shows that in-home care services do not converge into a single club, with regions forming three distinct clubs. The estimated coefficients in Panel B of Table 2 indicate the existence of three convergence clubs. Regions such as Andalucía, Madrid, Aragón, La Rioja, and Ceuta constitute a somewhat weaker convergence club. The point estimate is negative, close to zero, but is not statistically significant. For the rest of the clubs, the convergence test suggests conditional convergence.

Figure 4 displays a consistent pattern across all clubs up until 2006. Afterwards, a clear divergence emerges, with Club 3's CI declining to levels reminiscent of the late 2000s. Meanwhile, Club 1's CI peaked in 2022, despite experiencing a slight dip between 2012 and 2014. This fluctuation could be attributed to two factors: the economic crisis or a decrease in the availability of caregivers due to a reduction in the foreign population, as depicted in Figure 2.2b. Figure 5 further illustrates the geographical disparities in the provision of in-home care services, with northern, eastern, and western regions generally lagging behind those in the south. Madrid and Andalucía appear to be the two regions providing the highest levels of home care services, including telecare, for the elderly.

Daycare centres: These centres also expanded during the study period, albeit at a slower rate than other services. While Spanish regional CI for daycare centres does not converge into a single convergence club, there is weak convergence for 13 regions in Club 1 in Panel B of Table 2 and a second club with four regions. Again, Extremadura and Ceuta, in this case, are not classified in any convergence club. Figure 4 illustrates a similar pattern across both clubs up until 2010,

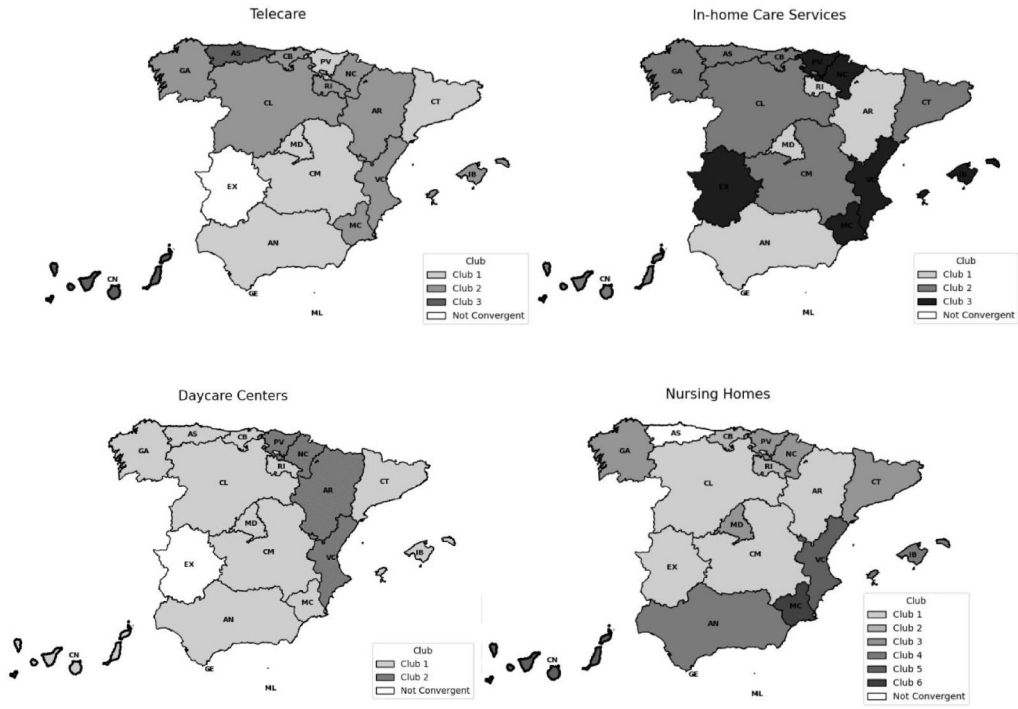

Figure 5: Estimated clubs for the social services coverage index.
Notes: This figure presents the club classification after applying the Phillips and Sul methodology to each coverage index separately, over the period from 1998 to 2022. The coverage index for telecare and in-home care services is calculated as the number of users divided by the population aged 65 and over. For nursing homes and daycare centres, the coverage is measured as the number of available places divided by the population aged 65 and over.

after which coverage declines for Club 2. Figure 5 highlights a geographical pattern, showing that the north-west regions (with the exception of Cataluña) lag significantly behind. Overall, as depicted in Figure 5, daycare services exhibit greater geographical similarity compared to telecare and in-home care services, likely reflecting more consistent regional priorities.

Nursing homes: These homes, which provide long-term accommodation and care for the elderly, experienced substantial growth from 1998 to 2022, although notable regional disparities persist. The convergence analysis in Table 2 indicates that nursing homes fall into up to six different convergence clubs, reflecting varying levels of coverage. In three of those clubs, there is convergence in levels (Club 2, 4, and 5). The point estimate is positive and above 2. Figure 4 shows continued growth in the CI, which is especially pronounced in the regions within Club 1 (all located in the country's interior) until 2008. After this point, no further growth in the CI is observed in any club. The variability in coverage is also evident in Figure 5, which highlights a coast–interior pattern, with interior regions generally offering better coverage than their coastal counterparts (including Madrid). This geographic pattern may be influenced by the availability of foreign individuals who often fulfil caregiving roles, as they tend to be more concentrated along the coast and in Madrid than in Spain's interior regions.

Overall, while all four types of social services for the elderly have expanded significantly, regional disparities persist, with a noticeable North–South pattern in telecare services and a coast–interior pattern in nursing homes. Three regions—Andalucía, Madrid, and Castilla-La Mancha—stand out for excelling in at least three of the four types of services, consistently ranking in the clubs with the highest averages in social service provision. Temporally, the economic crisis of the late 2000s and the availability of foreign workers to fill caregiving roles within social services likely contributed to these regional differences. These divergences highlight the need for targeted policy initiatives to ensure more equitable access to elderly care across all regions.

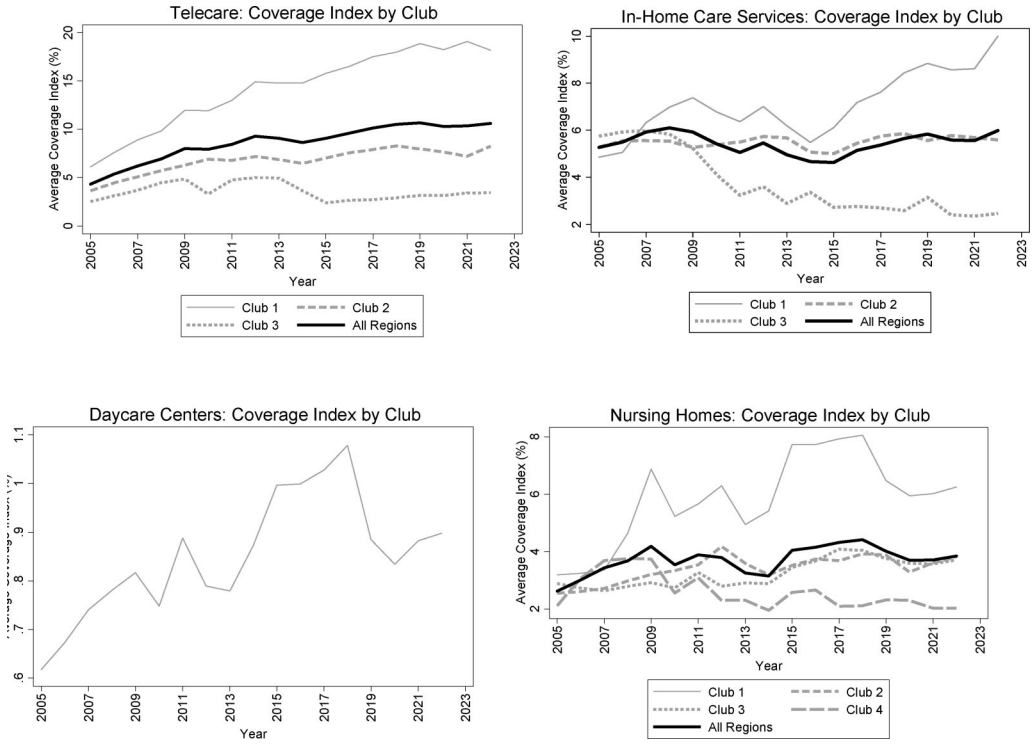

Figure 6: Average female coverage index for the estimated clubs by social service.
Notes: This figure presents the average values of the female coverage index for regions and the overall average by type of social service and club, for the period from 2005 to 2022. The coverage index is calculated as the number of female users divided by the female population aged 65 and over. Non-convergent areas are not included separately.

(ii) Convergence in social services coverage for women and people 80+

We repeat the analysis for women and individuals aged 80 and above, both of whom are key users of formal social services, as highlighted in earlier descriptive statistics.[9] The results, displayed in Figures 6–9 and Tables 3 and 4, reveal significant regional disparities in the provision of care for these two groups, especially for people aged 80 and over.

As noted earlier, *telecare services* are an essential form of care for those wishing to remain at home. As before, Clubs 1 and 2 include similar regions in both the female CI and the 80 and over population CI classifications, indicating no substantial differences in convergence patterns based on user characteristics. The change in CI growth for both groups does not clearly align with the shift observed in Figure 4 following the economic crisis, so we cannot attribute differences in regional convergence directly to this factor. Figures 7 and 9 show that regions like Madrid, Castilla-La Mancha, País Vasco, and Andalucía lead in telecare coverage for women and individuals aged 80 and over. In contrast, northern regions, such as Asturias and Cantabria, consistently fall below the national average. These results suggest that while telecare services are critical for both women and the elderly, access remains highly uneven across regions.

In-home care services follow a similar pattern. There are no substantial differences in the regional classifications among clubs for female CI, as shown in Table 3. However, this is not the case for the CI of individuals aged 80 and over. The number of clubs has increased to five, as

[9] These data are available only from 2005 onwards and contain more gaps than those identified in the previous dataset, as some regions do not report user characteristics for certain years. Notably, in this case, the CI is not defined using the number of places in the numerator; instead, we use the number of users with specific characteristics in their corresponding index. This approach is also challenging, as data on the number of users are even less available than data on the number of places. Therefore, estimates based on user characteristics should be interpreted with caution. Nevertheless, it is reassuring that our findings remain relatively consistent.

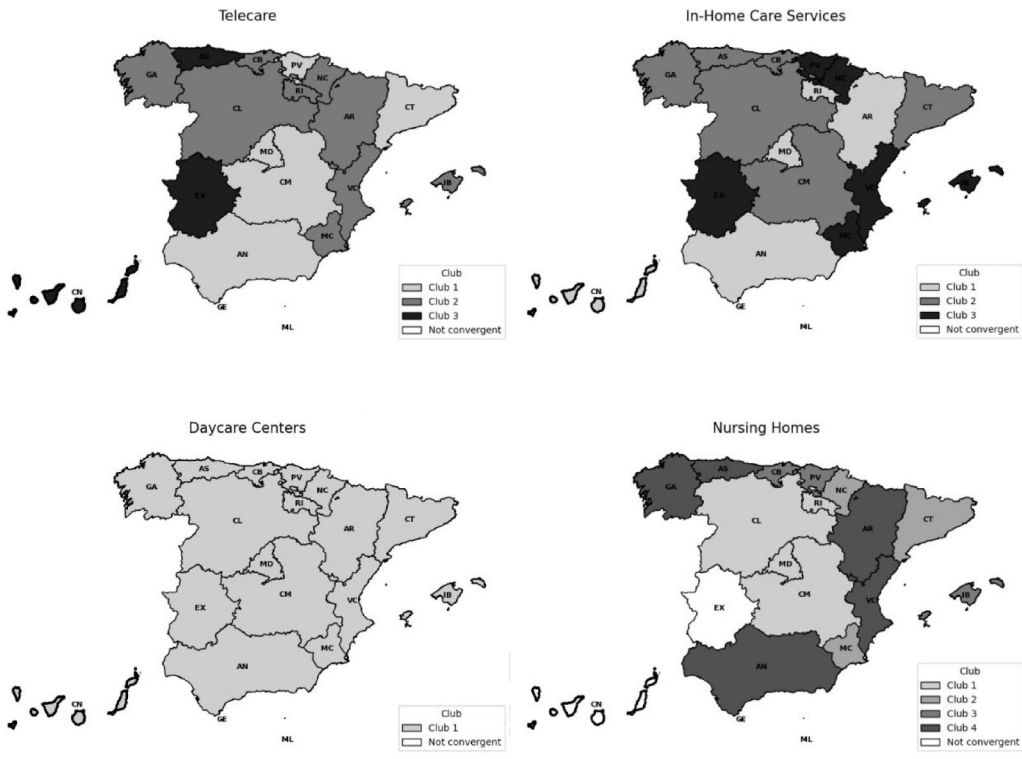

Figure 7: Estimated clubs for the social services female coverage index.
Notes: This figure presents the club classification after applying the Phillips and Sul methodology to each coverage index separately, covering the period from 2005 to 2022. The coverage index is measured as the number of female users divided by the female population aged 65 and over.

revealed in Table 4. The clustering results in Table 4 indicate that high-performing regions form distinct clubs, leaving lower-performing regions struggling to provide adequate in-home care. Differences among regions are more pronounced below the national average CI for those aged 80 and older, as seen in Figure 8. Club 1 remains almost unchanged regardless of users' gender and age. Figures 7 and 9 again highlight geographical disparities, with regions like Andalucía and Madrid leading in coverage and converging over time; the estimated coefficient for Club 1 is positive but remains below 2.

Daycare centres show weak convergence across the country for female CI, as seen in Table 3, with a negative point estimate that is not statistically significant. However, this is not the case for the CI of those aged 80 and over. Table 4 identifies three convergence clubs, although the last club also shows weak convergence. In Clubs 1 and 2, there is convergence over time among regions. Figure 9 confirms that daycare centre coverage for the 80 and over population is unevenly distributed across regions. The weak convergence observed in Table 4 suggests that regional disparities in daycare services are likely to persist without targeted policy interventions.

Finally, *nursing homes* exhibit a consistent coast–interior geographical pattern, regardless of user characteristics. Tables 3 and 4 show that the CI for women and individuals aged 80 and over in regions such as Castilla y León, Castilla-La Mancha, and Madrid converge over time. These regions maintain higher average CI levels than others, as seen in Figures 6 and 8. This geographic pattern may be influenced by the availability of foreign-born labour who concentrate along the coastal regions.

In conclusion, all four social services—telecare, in-home care, daycare centres, and nursing homes—have expanded significantly for both women and the elderly aged 80 and over. However, the results from Figures 6–9 and Tables 3–4 reveal ongoing regional disparities, with southern

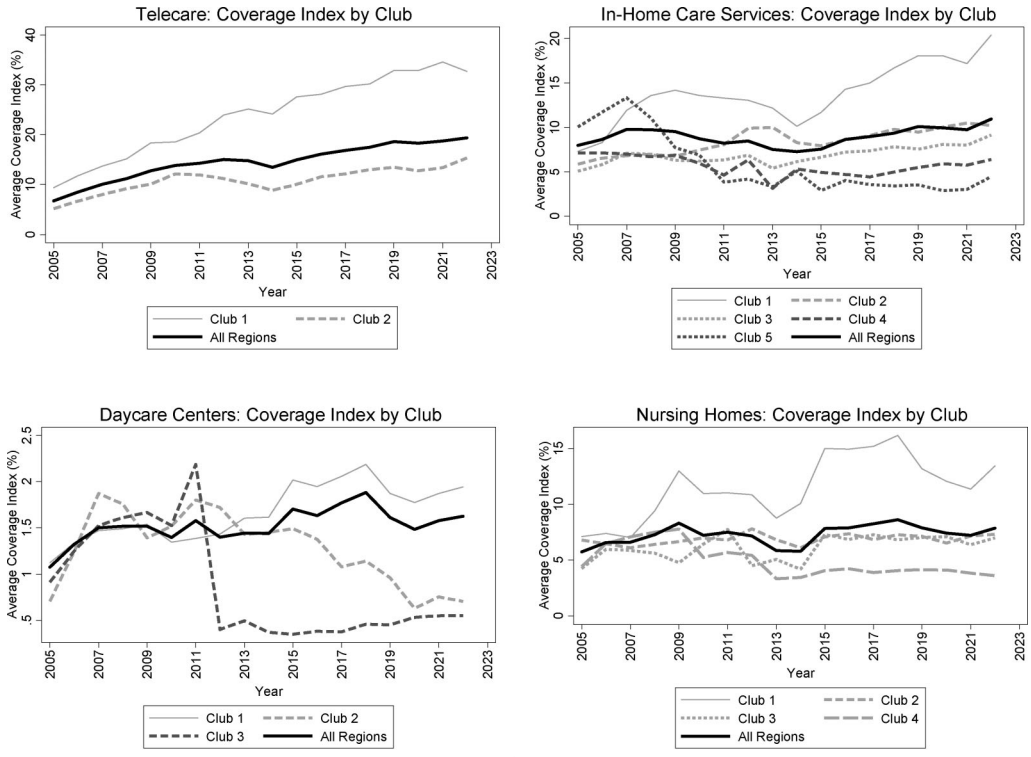

Figure 8: Average 80 + coverage index for the estimated clubs by type of social service.
Notes: This figure presents the average values of the female coverage index for regions and the overall average by type of social service and club, for the period from 2005 to 2022. The coverage index is calculated as the number of users aged 80 and over divided by the population aged 80 and over. Non-convergent areas are not included separately.

regions generally offering better coverage and northern regions consistently lagging. Madrid is the only region standing out in the four types of services for female and older individuals, consistently ranking in the clubs with the highest averages in social service provision. These findings underscore the need for targeted policies to ensure equitable access to social services.

VI. The role of immigrant workers in addressing coverage gaps

The existence of social services may be compensating or substituting for other types of care that elderly individuals may be using. The economic literature includes various theoretical models and empirical evidence that seek to explain the relationship between formal and informal care (Jiménez-Martín and Prieto, 2012). In our case, the focus is not on the trade-off between those two types of care, but on understanding what is happening within formal care. We have noted how informal care is declining and being replaced by formal care. However, within formal care, the elderly may have several alternatives, such as relying on social services or seeking caregivers outside of these services.[10] Given that Spain was a net recipient of immigrants during the period considered, it is important to examine whether the role of these individuals in the elderly care market is associated with any of the social services we have explored here. If a larger number of foreign individuals, who are potential caregivers, correlates with lower social service coverage, then we would be looking at a scenario where these two forms of formal care are substitutive or address persistent inequalities in the provision of these services across different regions and demographic groups.

[10] Relatedly, Furtado and Jolly (2025) provide a comparative analysis of care workers in the US, focusing on differences between native-born and foreign-born workers.

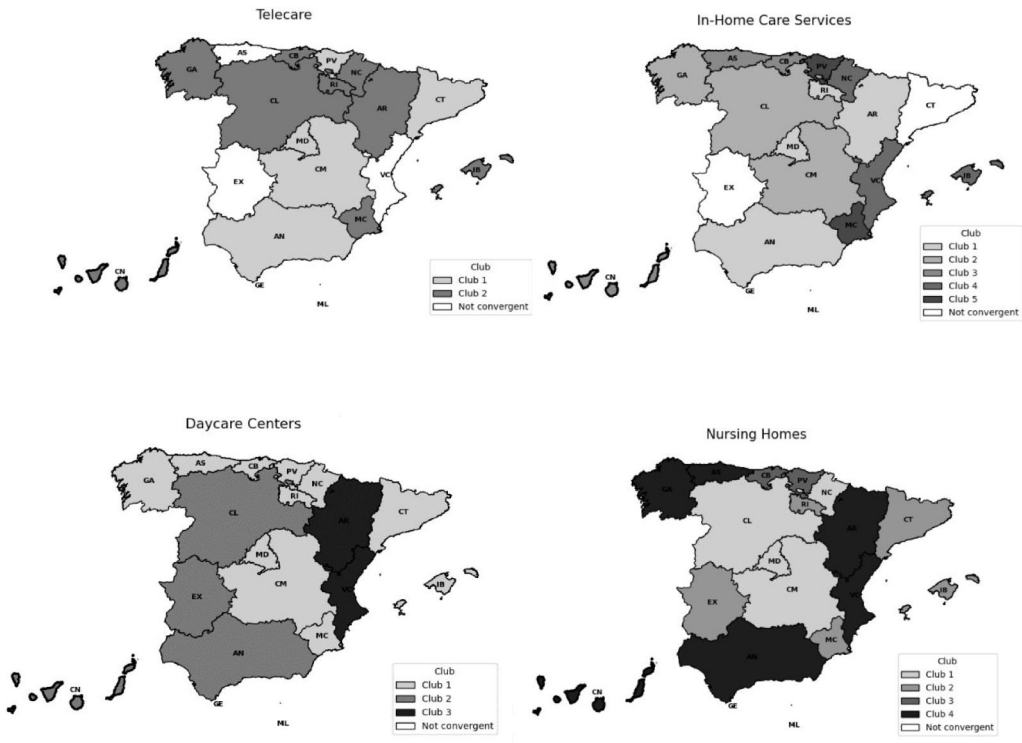

Figure 9: Estimated clubs for the social services + 80 coverage index.
Notes: This figure presents the club classification after applying the Phillips and Sul methodology to each coverage index separately, covering the period from 2005 to 2022. The coverage index is measured as the number of users aged 80 and over divided by the population aged 80 and over.

To better understand the role of foreign-born working-age women, we use ordered probit models to analyse the factors influencing the assignment of regions to specific convergence clubs—an ordinal outcome based on regional performance in social service coverage. Ordered probits are ideal given how clubs are ordered, with higher numbers indicating lower average coverage indices. Our *dependent variable* is the club assignment, which represents different groups of regions with similar patterns of coverage index (CI) evolution for various social services (telecare, in-home care services, daycare centres, and nursing homes). Our main *explanatory variable* is the share of working-age female foreigners.[11] This serves as a proxy for potential care workers. Additionally, we include controls for factors that may influence why a region falls into a particular convergence group, such as demographics, socioeconomic factors, and other regional characteristics. Specifically, we control for regional GDP per capita, the number of municipalities, population density, the share of people over 65 years old, the average pension, the area of each region, the unemployment rate, the political party of the president in each region or autonomous city, and the rural population. Geographical and spatial factors may help explain why certain regions belong to different convergence groups in terms of social service coverage, as geomorphological characteristics can influence the types of social services provided. Similarly, the socioeconomic conditions of residents in each region may affect affordability and accessibility, leading some populations to prefer specific types of formal care.

What are our key findings? According to the results in Table 5, the estimated coefficients for telecare and in-home care services are positive and statistically significant, indicating a relationship

[11] Although data on the number of foreign individuals registered in the Spanish Social Security System as domestic workers are available, they only date to 2012. This limitation stems from a legislative change in 2012 that made the registration of domestic workers mandatory. Consequently, we lack data from prior years and are unable to use this information in our analysis.

Table 3: Region and autonomous cities convergence clubs: female

Panel A: Testing for convergence			
Telecare	**In-home care services**	**Daycare centres**	**Nursing homes**
–1.025 (0.003)	–1.697 (0.110)	–0.174 (0.303)	–1.134 (0.015)
Panel B: Estimated clubs			
Telecare	**In-home care services**	**Daycare centres**	**Nursing homes**
Club 1 (6): 0.049 (0.007) *Regions*: AN, CM, CT, MD, PV, ML	**Club 1** (6): 0.063 (0.049) *Regions*: AN, AR, CN, MD, RI, CE	**Club 1** (19): –0.174 (0.303) *Regions*: AN, AR, AS, IB, CN, CB, CL, CM, CT, VC, EX, GA, MD, MC, NC, PV, RI, CE, ML	**Club 1** (4): 0.155 (0.031) *Regions*: CL, CM, MD, RI
Club 2 (10): 0.288 (0.073) *Regions*: AR, IB, CB, CL, VC, GA, MC, NC, RI, CE	**Club 2** (7): 0.123 (0.096) *Regions*: AS, CB, CL, CM, CT, GA, ML		**Club 2** (4): 0.501 (0.088) *Regions*: CT, MC, NC, ML
Club 3 (3): 0.340 (0.048) *Regions*: AS, CN, EX	**Club 3** (6): 0.666 (0.546) *Regions*: IB, VC, EX, MC, NC, PV		**Club 3** (3): 1.399 (0.286) *Regions*: IB, CB, PV
			Club 4 (6): 0.028 (0.241) *Regions*: AN, AR, AS, VC, GA, CE
			Not convergent (2): –4.647 (0.241) *Regions*: CN, EX

Notes: This table presents our findings after applying the Phillips and Sul methodology to the coverage index for each type of social service. *Panel A* shows the estimated coefficient and standard error (in parentheses), indicating that the null hypothesis of convergence is rejected at a 5% significance level for all services except daycare centres. The period considered is 2005–2022, with the coverage index measured as the number of female users per female population aged 65 and over. In *Panel B*, the number in parentheses after each club represents the number of regions in that club. The corresponding t-statistics are constructed using heteroskedasticity and autocorrelation-consistent (HAC) standard errors.

between the share of foreign-born working-age women and club assignment. If higher-numbered clubs represent lower coverage levels, then these results suggest that labour-intensive services like telecare and in-home care tend to have lower coverage in regions with a higher presence of foreign-born working-age women. This may imply that immigrant workers are being employed to fill existing gaps in service provision. Given that these services rely heavily on direct and personalized care, the contribution of foreign-born workers aligns with expectations.

For daycare centres, the coefficient for the share of working-age foreign-born women is not statistically significant, suggesting no clear relationship between immigrant labour supply and daycare service convergence. However, for nursing homes, the coefficient is negative and statistically significant, meaning that regions with a higher presence of working-age foreign-born women are less likely to belong to higher-numbered clubs (if these represent lower coverage, then nursing homes are more available in these areas, suggesting substitutability between different types of formal elderly care).

Table 4: Region and autonomous cities convergence clubs: aged 80 +

Panel A: Testing for convergence			
Telecare	**In-home care services**	**Daycare centres**	**Nursing homes**
–1.118 (0.009)	–1.665 (0.083)	–0.581 (0.351)	–1.056 (0.012)
Panel B: Estimated clubs			
Telecare	**In-home care services**	**Daycare centres**	**Nursing homes**
Club 1 (6): 0.380 (0.039) *Regions*: AN, CM, CT, MD, PV, ML	**Club 1** (5): 0.168 (0.086) *Regions*: AN, AR, MD, RI, CE	**Club 1** (12): 0.142 (0.069) *Regions*: AS, IB, CB, CM, CT, GA, MD, MC, NC, PV, RI, ML	**Club 1** (4): 0.154 (0.064) *Regions*: CL, CM, MD, NC
Club 2 (10): 0.104 (0.079) *Regions*: AR, IB, CN, CB, CL, GA, MC, NC, RI, CE	**Club 2** (4): 0.231 (0.234) *Regions*: CL, CM, GA, ML	**Club 2** (5): 0.171 (0.122) *Regions*: AN, CN, CL, EX, CE	**Club 2** (6): 0.975 (0.135) *Regions*: IB, CT, EX, MC, RI, ML
Not Convergent (3): –3.400 (0.137) *Regions*: AS, VC, EX	**Club 3** (3): 0.413 (0.077) *Regions*: AS, CN, CB	**Club 3** (2): –2.052 (1.406) *Regions*: AR, VC	**Club 3** (3): 0.015 (0.065) *Regions*: CB, PV, CE
	Club 4 (3): 1.274 (0.412) *Regions*: IB, VC, NC		**Club 4** (6): –0.297 (0.225) *Regions*: AN, AR, AS, CN, VC, GA
	Club 5 (2): 2.666 (0.991) *Regions*: MC, PV		
	Not Convergent (2): –4.344 (1.725) *Regions*: CT, EX		

Notes: This table presents our findings after applying the Phillips and Sul methodology to the coverage index for each type of social service. *Panel A* displays the estimated coefficient and standard error (in parentheses), showing that the null hypothesis of convergence is rejected at a 5% significance level for all services except daycare centres. The period considered is 2005–22, with the coverage index measured as the number of users aged 80 and over divided by the population aged 80 and over. In *Panel B*, the number in parentheses represents the number of regions in each club. The t-statistics are constructed using heteroskedasticity and autocorrelation-consistent (HAC) standard errors.

Turning to socioeconomic and demographic factors, GDP per capita is negatively associated with club assignment in most cases, implying that higher GDP per capita is linked to higher public formal care coverage—except for daycare centres, where the relationship is reversed. The unemployment rate is negatively associated with telecare and in-home care services but not significant for daycare centres or nursing homes, suggesting that regions with higher unemployment rates are less likely to have strong formal care coverage in these areas.

Regarding political factors, the presence of a left-wing government (Socialist President) is positively associated with higher club assignments for telecare and daycare centres, but not for in-home care or nursing homes. This suggests that left-wing governance may promote expansion in some formal care services but does not necessarily lead to uniform improvements across all elderly care options.

Table 5: Ordered probit model results

Outcome	(1) Telecare club	(2) In-home care services club	(3) Daycare centres club	(4) Nursing homes club
Share of working–age female foreigners	0.059*	0.050**	–0.020	–0.075***
	(0.033)	(0.020)	(0.032)	(0.022)
GDP per capita	–0.001***	–0.0001***	0.0002***	–0.0002***
	(0.001)	(0.00003)	(0.00005)	(0.00004)
Unemployment rate	–0.046**	–0.026*	0.0365	–0.025
	(0.023)	(0.015)	(0.026)	(0.016)
Socialist President	0.752***	0.024	0.820***	–0.154
	(0.222)	(0.155)	(0.239)	(0.179)
% Rural Population	0.031**	0.028***	0.032*	–0.162***
	(0.031)	(0.008)	(0.017)	(0.013)
Observations	289	323	289	306
Pseudo R–squared	0.522	0.100	0.273	0.507
Regional controls	Yes	Yes	Yes	Yes

Notes: The sample in all columns includes regions and autonomous cities from 2005 to 2022. Non-convergent areas are excluded. This table presents the estimated coefficients from the ordered probit models, where the dependent variable is the club assignment for each type of social service. All regressions control for regional GDP per capita, the share of the elderly population, average pension, population density, area (km^2), the number of municipalities, the unemployment rate, socialist president, percentage of rural population. The reduced sample size is due to data unavailability across the entire period considered for GDP per capita (2000–22), average pension (2005–22), rural population (1998–2021). For a detailed description of each variable, please refer to Table A2 in the Data Appendix.
*** Significant at the 1% level,
** significant at the 5% level,
* significant at the 10% level.

Finally, a higher share of the population residing in rural areas is correlated to lower coverage for telecare, in-home care, and daycare centres, reinforcing the idea that these services face accessibility challenges in rural areas. In contrast, for nursing homes, the negative coefficient implies that a higher rural population is associated with membership in a lower club (potentially meaning higher coverage in these regions).

Overall, these findings suggest that foreign-born working-age women play a role in shaping the availability of certain elderly care services, particularly telecare and in-home care. Additionally, structural factors such as income levels, unemployment, political governance, and rural demographics all contribute to regional variations in social service provision.

(i) The role of migrant labour in elderly care: benefits and challenges

Spain, like many European countries, has increasingly relied on an immigrant workforce to sustain its social care sector. This reliance has positive and negative implications. In the case of Spain, an ageing population has created a rising demand for eldercare workers that migrant labour has helped fulfil (Da Roit and Weicht, 2013). Hiring foreign-born workers has also reduced the financial burden on both public and private elder care services (González-Fernández, 2023). Many of these workers operate in home-based settings, allowing elderly individuals to remain in familiar environments rather than moving into institutional care (Instituto de la Mujer y para la Igualdad de Oportunidades, 2024). In many cases, migrants also bring linguistic and cultural skills that improve the quality of care for an increasingly diverse elderly population. These findings align with Furtado and Jolly's (2025) study on the US, which shows that immigrant caregivers often possess higher education and experience levels than their native-born counterparts, reinforcing the essential role of foreign-born labour in sustaining elder care systems.

However, the growing dependence on immigrant labour presents challenges as well. Many migrant care workers face poor working conditions, long hours, and low wages, particularly in informal and unregulated employment settings (International Labour Organization, 2023). Because the care sector is heavily privatized and demand for low-cost labour is high, employment conditions often remain precarious, especially for undocumented workers. Some scholars argue that the reliance on migrant labour has discouraged structural reforms, delaying wage increases and improvements in labour protections for both migrant and native workers (OECD, 2023).

Indeed, as Himmelweit (2025) argues, treating care services as an essential part of economic infrastructure—rather than a low-cost, privately managed sector—would justify greater public investment in workforce training and improved labour conditions. The challenges of financing quality elder care, as highlighted by Brennan *et al.* (2025) in the Australian context, further underscore the need for research and policy interventions that ensure both efficiency and fairness in the long-term care sector. In addition, legal barriers can make it difficult for foreign caregivers to obtain work permits and secure stable employment (Yeates, 2009).

(ii) Immigration policies and the supply of migrant care workers

Spain's approach to labour migration in elder care differs from other European models. Unlike the UK, which introduced the Social Care Visa to attract foreign workers post-Brexit, Spain has relied on bilateral agreements with countries such as Colombia, Ecuador, and Morocco (Ripoll Carulla, 2024). These agreements aim to regulate migrant workers' rights before their arrival, covering living conditions, labour protections, and medical requirements. However, irregular migration remains widespread, and many undocumented workers fill gaps in the care sector without legal protections (International Labour Organization, 2023).

The UK's Social Care Visa has been criticized for fostering exploitative labour conditions. Workers recruited under the visa scheme have faced excessive recruitment fees, poor working conditions, and employer-tied legal status that limits their ability to report abuse (The Guardian, 2025; Financial Times, 2025). In contrast, Germany has implemented certification programmes for migrant caregivers, ensuring that foreign workers meet national care standards before employment (Migration Policy Institute, 2024). These programmes have helped formalize the sector while improving labour conditions.

Scandinavian countries, including Sweden and Denmark, have taken a different approach, prioritizing public investment in elder care services rather than relying on migrant labour. These policies have resulted in better wages, greater job security, and less dependency on low-cost foreign care workers (Da Roit and Weicht, 2013). Spain's more privatized and informal model contrasts sharply with these northern European approaches, which provide stronger labour protections and institutional support for caregivers.

The challenges facing Spain's care sector suggest that improving labour conditions and integrating migrant workers into the formal labour market will require a combination of policy reforms. Strengthening labour protections, expanding pathways to regularization, and increasing state investment could help create a more sustainable and equitable care workforce. Spain may benefit from adopting aspects of the German and Scandinavian models, particularly in terms of certification programmes and enhanced regulatory oversight. A structured approach to labour migration, combined with domestic workforce development, could help balance the need for migrant care workers with fair labour practices and long-term sector sustainability.

VII. Summary and conclusions

This paper investigates the evolving patterns of elderly care in Spain, which have experienced substantial growth over the past 25 years, with a particular focus on the role of formal care services—telecare, in-home care, daycare centres, and nursing homes—and the importance of foreign-born workers in meeting the rising demand for elderly care. Spain, like many other developed nations, faces a rapidly ageing population. As the population of elderly individuals (particularly those aged 80+) continues to grow, formal care services have expanded significantly over the last 25 years. However, this expansion has not occurred uniformly across regions, and substantial disparities in service provision persist, particularly for vulnerable groups such as women and the elderly aged 80 and above.

Our analysis, which applies a clustering algorithm to identify convergence clubs of regions, reveals that while all four types of social services have grown in scope, they have not converged into a single club of regions offering similar levels of care. Instead, regions form distinct clubs based on their coverage indices, indicating significant differences in how elderly care services are distributed across Spain. Regions like Andalucía, Madrid, and Castilla-La Mancha consistently perform better, while northern regions like Asturias, Cantabria, and Galicia lag behind, particularly in telecare and in-home care services. Although there is no common geographical pattern for all social services, the findings also highlight a clear North–South divide, with southern regions

generally offering better care coverage across all services at least in telecare, but not in the case of nursing homes for which a coast–interior pattern is detected.

The similar behaviour of some regions may stem from different reasons. For example, Madrid, in economic terms, is a region with higher per capita income and a lower unemployment rate among women, who are the primary caregivers, compared to the southern region. However, both Castilla-La Mancha and Andalucía have larger municipalities, which may have allowed them to allocate the necessary resources to cover this type of social service compared to other regions in northern Spain, where municipalities are much smaller. In any case, the higher coverage of nursing homes in inland areas could be due to the high level of depopulation and significant ageing in these municipalities, making residential care more necessary. The differences between regions do not appear to be caused by the political parties governing them, as, during the 25 years considered, most regions have shifted between right-wing and left-wing governments, except for Madrid.

For women and the elderly aged 80 and over, the disparities in access to social services are even more pronounced. Women, who represent a majority of care recipients, especially in telecare and nursing homes, face unequal access depending on their region of residence. Similarly, the elderly aged 80 and over, who are more likely to require long-term care, experience significant regional differences in service provision, with regions like Castilla y León and Castilla-La Mancha leading in nursing home coverage, while regions like Andalucía or Galicia remain under-provisioned.

Finally, we examine the role of foreign-born working-age women in filling gaps in elderly care provision given the rapid growth of immigration and the high representation of women in this sector in Spain. Regions with a higher share of foreign-born working-age women are more likely to fall into lower-performing convergence groups, characterized by lower average coverage in telecare and in-home care services. This finding underscores the importance of immigration policies and labour market conditions that impact the availability of foreign-born caregivers in sustaining Spain's formal care system.

Overall, our findings highlight the need for targeted policy interventions to address regional disparities in elderly care provision. Persistent gaps in service coverage, especially for vulnerable populations such as women and individuals aged 80 and above, suggest that national policies should prioritize expanding access to care in underperforming regions. Furthermore, immigration policies that facilitate the entry of foreign-born caregivers could play a critical role in meeting the rising demand for elderly care services, particularly as traditional family-based care structures continue to decline. Ensuring equitable access to elderly care services across Spain is essential to supporting the ageing population and fostering healthy ageing nationwide. It is worth considering whether the heavy reliance on immigrant workers for care tasks is sustainable in the long term or if Spain's care system should be further expanded to ensure its resilience and equity.

Appendix 1

Table A1: Abbreviations and full names for various autonomous communities and cities

Abbreviation	Full Name
AN	Andalucía
AR	Aragón
AS	Principado de Asturias
CN	Canarias
CB	Cantabria
CM	Castilla-La Mancha
CL	Castilla y León
CT	Catalunya (Cataluña)
EX	Extremadura
GA	Galicia

Table A1: Continued

Abbreviation	Full Name
IB	Illes Balears (Islas Baleares)
RI	La Rioja
MD	Comunidad de Madrid
MC	Región de Murcia
NC	Comunidad Foral de Navarra
PV	País Vasco
VC	Comunidad Valenciana
CE	Ciudad Autónoma de Ceuta
ML	Ciudad Autónoma de Melilla

Notes: We follow the ISO 3166–2 standard without the 'ES-' prefix for each region and autonomous city. This system is part of the ISO 3166 standard, published by the International Organization for Standardization (ISO), which defines codes for the names of principal subdivisions within countries, including Spain.

Table A2: Data appendix

Name	Definition	Source and notes
Social service variables		
Telecare CI	Coverage index = (number of users in the region or autonomous city *i* in year *t*/population aged 65 and over in region *i* in year *t*) × 100. Female coverage index = (number of female users in region or autonomous city *i* in year *t*/female population aged 65 and over in region *i* in year *t*) × 100. 80 + coverage index = (number of users aged 80 and over in region or autonomous city *i* in year *t*/population aged 80 and over in region *i* in year *t*) × 100	Data on the number of users and available places come from the Institute for the Elderly and Social Services of Spain (IMSERSO). From 1999 to 2010, user data were collected on 1 January. From 2010 onward, data have been collected on 31 December. In 2010, data were collected twice, on 1 January and 31 December. For consistency, we treated the January data as representing December of the previous year. Thus, January 1999 is considered here as 31 December 1998, and so on until 2009. Missing data for the percentage of female users and users aged 80 and over were interpolated. Information on user characteristics is available from 2005 onward. Population data are obtained from the Municipal Register (Estadística del Padrón Continuo) as of 1 January of each year
In-home care CI	See the definition for the Telecare Services coverage index Coverage index = (number of places in region or autonomous city *i* in year *t*/population aged 65 and over in region or autonomous city *i* in year *t*) × 100	See notes for the telecare coverage index
Daycare centres CI	Female coverage index = (number of female users in region or autonomous city *i* in year *t*/female population aged 65 and over in region *i* in year *t*) × 100 80 + coverage index = (number of users aged 80 and over in region or autonomous city *i* in year *t*/population aged 80 and over in region *i* in year *t*) × 100	See notes for the telecare coverage index

Table A2: Continued

Name	Definition	Source and notes
Nursing homes CI	See the definition for the daycare centres coverage index	See notes for the telecare coverage index
Main explanatory variable		
Share of working-age female foreigners	Share of female working age foreign = (female foreign population aged 16 to 64 in region or autonomous city *i* in year *t*/total female population aged 16 to 64 × 100	Foreign population data are obtained from the Municipal Register (Estadística del Padrón Continuo) as of 1 January of each year
Other controls		
GDP per capita	GDP per capita in region or autonomous city *i* in year *t*	Data come from the Spanish Statistical Office (INE)
Share of older population	Share of older population = (population aged 65 + in the region or autonomous city *i* in year *t*/total population in the region or autonomous city *i* in year *t*) × 100	
Average pension	The average pension in euros in region or autonomous city *i* in December of year *t*	Ministry of Employment and Social Security
Number of municipalities	Number of municipalities in region *i*.	Data are obtained from the INE
Area	Area (km^2) in region or autonomous city *i*	National Geographic Institute
Density	Density = total population in the region or autonomous city *i* in year *t*/area (km^2) in the region or autonomous city *i*	Population data come from the Municipal Register (Estadística del Padrón Continuo) as of January 1 of each year. See the source mentioned above for area data
Unemployment rate	It is the ratio between the number of unemployed individuals and the active population, multiplied by 100	Data come from the Spanish Statistical Office (INE)
Socialist President	It takes the value 1 if region *j* has a president from the Spanish Socialist Party (PSOE) in year *t* (or for the majority of days in year *t*), and 0 otherwise	Data are sourced from the Spanish Senate website (Senado)
Share of rural population	It is the ratio between the number of individuals living in a municipality with fewer than 5 000 inhabitants in region *j* (or autonomous city) and the total population of region *j* (or autonomous city, multiplied by 100	Data come from the Spanish Statistical Office (INE). Population data are obtained from the Municipal Register (Estadística del Padrón Continuo) as of January 1 of each year

Table A3: Social services in Spain by autonomous communities and cities

Autonomous community	Telecare CI	In-home care services CI	Daycare centres CI	Nursing homes CI
Andalucía	9.59	4.50	0.66	3.00
Aragón	5.19	4.53	0.63	5.79
Principado de Asturias	3.02	3.72	0.64	4.90
Illes Balears (Islas Baleares)	3.65	2.55	0.74	3.19
Canarias	1.46	3.51	0.90	3.12
Cantabria	4.78	3.19	0.93	4.57
Castilla y León	3.93	4.21	0.65	6.89
Castilla La-Mancha	10.07	5.63	0.78	6.03
Catalunya (Cataluña)	7.98	4.44	1.08	4.47

Table A3: Continued

Autonomous community	Telecare CI	In-home care services CI	Daycare centres CI	Nursing homes CI
Comunidad Valenciana	3.98	2.04	0.67	2.78
Extremadura	2.20	5.48	1.43	5.12
Galicia	1.42	2.74	0.75	2.66
Madrid	10.73	6.34	1.07	4.58
Murcia	3.85	1.98	0.70	2.14
Navarra	5.58	3.13	0.61	4.92
País Vasco	5.90	2.76	0.79	3.80
La Rioja	2.65	5.18	0.76	4.99
Ciudad Autónoma de Ceuta	5.48	5.37	0.41	1.98
Ciudad Autónoma de Melilla	6.37	3.74	1.24	3.26
Mean	5.14	3.94	0.81	4.11
Standard Deviation	4.21	1.94	0.47	1.52

Notes: This Table presents the average coverage index for each type of service by region and autonomous city for the period 1998–2022.

References

Abdi, S., Spann, A., Borilovic, J., De Witte, L., and Hawley, M. (2019), 'Understanding the Care and Support Needs of Older People: A Scoping Review and Categorisation Using the WHO International Classification of Functioning, Disability and Health Framework (ICF)', *BMC Geriatrics*, 19(1), 1–15, https://doi.org/10.1186/S12877-019-1189-9/FIGURES/1

Apergis, N., Chang, T., Christou, C., and Gupta, R. (2017), 'Convergence of Health Care Expenditures Across the US States: A Reconsideration', *Social Indicators Research*, 133(1), 303–16, https://doi.org/10.1007/s11205-016-1357-7

Bago d'Uva, T., Jones, A. M., and van Doorslaer, E. (2009), 'Measurement of Horizontal Inequity in Health Care Utilisation Using European Panel Data', *Journal of Health Economics*, 28(2), 280–89, https://doi.org/10.1016/J.JHEALECO.2008.09.008

Bell, D. N. F., and Lemmon, E. (2023), 'The Economics of Long-term Care', in *The Routledge Handbook of the Economics of Ageing*, 139–57, https://doi.org/10.4324/9781003150398-9/ECONOMICS-LONG-TERM-CARE-DAVID-BELL-ELIZABETH-LEMMON

Bloom, D. E., Canning, D., and Fink, G. (2010), 'Implications of Population Ageing for Economic Growth', *Oxford Review of Economic Policy*, 26(4), 583–612, https://doi.org/10.1093/oxrep/grq038

Boulhol, H., Lis, M., and Queisser, M. (2023), 'Trends in Pension Reforms in OECD Countries', in *The Routledge Handbook of the Economics of Ageing*, 262–84, https://doi.org/10.4324/9781003150398-16/TRENDS-PENSION-REFORMS-OECD-COUNTRIES-1-HERV

Brennan, K. H., McCormack, B., and Jackson, A. (2025), 'Investing in Aged Care R&D in Australia', *Oxford Review of Economic Policy*, 41(3–4), 1002–19.

Breyer, F., Costa-Font, J., and Felder, S. (2010), 'Ageing, Health, and Health Care', *Oxford Review of Economic Policy*, 26(4), 674–90, https://doi.org/10.1093/oxrep/grq032

Cangiano, A. (2014), 'Elder Care and Migrant Labor in Europe: A Demographic Outlook', *Population and Development Review*, 40(1), 131–54, https://doi.org/10.1111/J.1728-4457.2014.00653.X

Casal, B., Rodríguez-Miguez, E., and Rivera, B. (2024), 'The Societal Cost of "Unwanted" Loneliness in Spain', *European Journal of Health Economics*, 1–13, https://doi.org/10.1007/S10198-024-01724-9/TABLES/3

Clemente, J., Lázaro-Alquézar, A., and Montañés, A. (2019), 'Convergence in Spanish Public Health Expenditure: Has the Decentralization Process Generated Disparities?', *Health Policy*, 123(5), 503–7, https://doi.org/10.1016/j.healthpol.2019.03.003

— — — (2019), 'US State Health Expenditure Convergence: A Revisited Analysis', *Economic Modelling*, 83, 210–20, https://doi.org/10.1016/J.ECONMOD.2019.02.011

Costa-Font, J., and Hernández-Quevedo, C. (2012), 'Measuring Inequalities in Health: What Do We Know? What Do We Need to Know?', *Health Policy*, 106(2), 195–206, https://doi.org/10.1016/j.healthpol.2012.04.007

Da Roit, B., and Weicht, B. (2013), 'Migrant Care Work and Care Migration: Employment and Welfare Regimes in European Comparative Perspective', *Journal of European Social Policy*, 23(4), 400–16.

De Meijer, C., Koopmanschap, M., d'Uva, T. B., and van Doorslaer, E. (2011), 'Determinants of Long-term Care Spending: Age, Time to Death or Disability?', *Journal of Health Economics*, 30(2), 425–38, https://doi.org/10.1016/J.JHEALECO.2010.12.010

Devaux, M. (2015), 'Income-related Inequalities and Inequities in Health Care Services Utilisation in 18 Selected OECD Countries', *The European Journal of Health Economics*, 16(1), 21–33, https://doi.org/10.1007/S10198-013-0546-4

Díaz Gorfinkiel, M. (2016), 'La Reconfiguración del Empleo Doméstico en España', *Revista Española de Investigaciones Sociológicas*, 155, 97–112, Centro de Investigaciones Sociológicas (CIS), http://www.reis.cis.es/REIS/PDF/REIS_155_061467966440098.pdf

Długosz, Z. (2011), 'Population Ageing in Europe', *Procedia—Social and Behavioral Sciences*, 19, 47–55, https://doi.org/10.1016/J.SBSPRO.2011.05.106

Estévez-Abe, M., and Hobson, B. (2015), 'Outsourcing Domestic (Care) Work: The Politics, Policies, and Political Economy', *Social Politics: International Studies in Gender, State & Society*, 22(2), 133–46. https://doi.org/10.1093/sp/jxv011

European Commission (2021), *Long-Term Care Report: Trends, Challenges and Opportunities in an Ageing Society*. Volume I, Luxembourg: Publications Office of the European Union, https://data.europa.eu/doi/10.2767/677726

Financial Times (2025), 'UK Migrant Care Staff Underpaid and Vulnerable to Exploitation, Report Finds', 11 February, https://www.ft.com/content/703f6e77-27c7-4ad2-952a-6e3bfbc0016e

Furtado, D., and Jolly, N. (2025), 'Addressing US Care Worker Shortages: The Role of Immigrant Labour', *Oxford Review of Economic Policy, Oxford Review of Economic Policy*, 41(3–4), 887–901.

Geerts, J., and van den Bosch, K. (2012), 'Transitions in Formal and Informal Care Utilisation Amongst Older Europeans: The Impact of National Contexts', *European Journal of Ageing*, 9(1), 27–37, https://doi.org/10.1007/s10433-011-0199-z

González-Fernández, C. (2023), 'Migrant Women in Spain's Domestic and Care Sector: Challenges and Policies', *Social Policy and Society*, 22(1), 78–96.

Hellgren, Z. (2015), 'Markets, Regimes and the Role of Stakeholders: Explaining Precariousness of Migrant Care/Domestic Workers in Different Institutional Frameworks', *Social Politics: International Studies in Gender, State & Society*, 22(2), 220–41. https://doi.org/10.1093/sp/jxv010

Himmelweit, S. (2025), 'Care as Investment in Infrastructure', *Oxford Review of Economic Policy*, 41(3–4), 688–701.

Hobson, B., Hellgren, Z., and Serrano, I. (2018), 'Migrants, Markets and Domestic Work: Do Institutional Contexts Matter in the Personal Household Service Sector?' *Journal of European Social Policy*, 28(4), 386–401, https://doi.org/10.1177/09589287177535

Instituto de la Mujer y para la Igualdad de Oportunidades (2024), *Domestic and Care Workers: Policies, Rights, and Working Conditions in Spain*, Government of Spain, https://www.inmujeres.gob.es/areasTematicas/Internacional/docs/Domestic_care_workers_.pdf

International Labour Organization (2023), *Working Conditions of Migrant Care Workers in Southern Europe*, Geneva: International Labour Organization.

Ivanovski, K., and Awaworyi Churchill, S. (2021), 'Has Healthcare Expenditure Converged Across Australian States and Territories?', *Empirical Economics*, 61(6), 3401–17, https://doi.org/10.1007/s00181-021-02016-4

Jiménez-Martín, S., and Prieto, C. V. (2012), 'The Trade-off Between Formal and Informal Care in Spain', *The European Journal of Health Economics*, 13(4), 461–90, https://doi.org/10.1007/s10198-011-0317-z

Kotschy, R., and Bloom, D. E. (2022), 'A Comparative Perspective on Long-term Care Systems', *International Social Security Review*, 75(3–4), 47–69, https://doi.org/10.1111/issr.12307

Leichsenring, K. (2004), 'Developing Integrated Health and Social Care Services for Older Persons in Europe', *International Journal of Integrated Care*, 4(3), https://doi.org/10.5334/ijic.107

León, M. (2010), 'Migration and Care Work in Spain: The Domestic Sector Revisited', *Social Policy and Society*, 9(3), 409–18, https://doi.org/10.1017/S1474746410000126

Marcén, M., and Molina, J. A. (2012), 'Informal Caring-time and Caregiver Satisfaction', *The European Journal of Health Economics*, 13(6), 683–705, https://doi.org/10.1007/s10198-011-0322-2

Migration Policy Institute (2024), 'Spain's Immigration System: Evolution and Challenges', https://www.migrationpolicy.org/article/spain-immigration-system-evolution

OECD (2023), *The Future of Care Work: Migration and Workforce Sustainability*, Paris: Organization for Economic Cooperation and Development.

Panopoulou, E., and Pantelidis, T. (2013), 'Cross-state Disparities in US Health Care Expenditures', *Health Economics*, 22(4), 451–65, https://doi.org/10.1002/HEC.2816

Phillips, P. C. B., and Sul, D. (2007), 'Transition Modeling and Econometric Convergence Tests', *Econometrica*, 75(6), 1771–855, https://doi.org/10.1111/j.1468-0262.2007.00811.x

— — (2009), 'Economic Transition and Growth', *Journal of Applied Econometrics*, 24(7), 1153–85, https://doi.org/10.1002/jae.1080

Ripoll Carulla, S. (2024), 'Spain's Bilateral Agreements on Foreign Workers: A New Instrument of Spanish Immigration and Development Policy', Universitat Pompeu Fabra.

Spasova, S., Baeten, R., Coster, S., Ghailani, D., Peña-Casas, R., and Vanhercke, B. (2018), 'Challenges in Long-term Care in Europe: A Study of National Policies', European Social Policy Network (ESPN), European Commission.

The Guardian (2025), 'Migrant Workers in UK to Fill Care Roles Charged up to £20,000 in Fees', 11 February, https://www.theguardian.com/uk-news/2025/feb/11/migrant-workers-in-uk-to-fill-care-roles-charged-up-to-20000-in-fees

Tirado, D. A., Díez-Minguela, A., and Martinez-Galarraga, J. (2016), 'Regional Inequality and Economic Development in Spain, 1860–2010', *Journal of Historical Geography*, 54, 87–98, https://doi.org/10.1016/J.JHG.2016.09.005

Tomal, M. (2024), 'A Review of Phillips–Sul Approach-based Club Convergence Tests', *Journal of Economic Surveys*, 38(3), 899–930, https://doi.org/10.1111/joes.12563

UN (2015), *World Population Ageing*, New York: United Nations.

Yeates, N. (2009), *Globalizing Care Economies and Migrant Workers: Explorations in Global Care Chains*, London: Palgrave Macmillan.