

SOCIOECONOMIC INEQUALITY IN UNMET LONG-TERM CARE NEEDS

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JEL Codes:

Keywords: Long-term care, Care gap, Unmet needs, Inequalities.

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Socio-economic Inequalities in Unmet Long-Term Care Needs

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Abstract

Europe's rapidly ageing population poses critical challenges for long-term care (LTC) systems, particularly guaranteeing equitable access. While socio-economic disparities in LTC utilisation are well documented, inequalities in unmet needs—the gap between required and received care—are less studied. Using the 2019 European Health Interview Survey for Spain, we quantify the care gap in hours and classify unmet needs as full, partial, or none. Employing the concentration index, we assess socio-economic inequalities in unmet needs, stratified by eligibility for publicly funded LTC and by limitation severity (number of ADL limitations).

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Introduction

The rapid ageing of the European population presents a pressing challenge for health and social care systems. Long-term care (LTC) plays a crucial role in supporting older adults with limitations in daily activities, yet demographics and cultural shifts, such as the sharp rise in women's labour-market participation and higher rates of family dissolution, have strained traditional informal care arrangements and increased pressure on welfare systems (Di Novi et al. 2015; Brenna and Di Novi 2015). Unmet needs for LTC are prevalent, affecting around one-quarter of older adults and carrying adverse health and social consequences, including heightened risk of social exclusion (Rahman et al. 2022; Laferrère and Van den Bosch 2015). Unmet LTC needs are associated with increased use of health care services (Sands et al. 2006; DePalma et al. 2013; Hass et al. 2017), declining health and rising mortality (He et al. 2015; Zhen et al. 2015). In this context, ensuring equitable access to LTC for individuals in need of care remains a major policy concern.

While socio-economic disparities in LTC utilization are well documented, inequalities in unmet needs in LTC, defined as the gap between care needs and received assistance, also referred to as the care gap, are less frequently studied. Existing research finds pro-rich inequality in the use of formal care across Europe and pro-poor inequality in informal care, with lower-income individuals more likely to rely on care provided by a spouse or other relatives (Geerlins et al. 2005; Paraponaris et al. 2011; García-Gómez et al. 2015; Carrieri et al. 2017; Lera et al. 2020; Floridi et al. 2021).

Comparative studies have identified a South-to-North gradient in Europe, where Southern countries, characterized by underfunded public LTC programs and heavier reliance on informal care, exhibit greater inequalities in access to paid home care. In contrast, Northern European countries show weaker or no significant disparities (Baks et al. 2015; Carrieri et al. 2017; Albertini and Pavoloni, 2017). Evidence on inequalities in unmet needs is mixed, largely due to variation in definitions and measurement approaches (García-Gómez et al. 2015; Brimblecombe et al. 2022). Additionally, most studies rely on binary measures of unmet needs, which may fail to capture the severity or intensity of the care gap (García-Gómez et al. 2015; Brimblecombe et al. 2022; Szenkurok et al. 2024).

Previous research on LTC inequalities has employed need-adjusted concentration indices (García-Gómez et al. 2015; Carrieri et al. 2017; Vidiella-Martin et al. 2024) and regression-based analyses of disparities in formal and informal care utilisation (Abbing et al. 2023; Szenkurok et al. 2024). Other works have examined health system design features, such as cash-for-care schemes, means-tested benefits (Szenkurok et al. 2024), and regional indicators of LTC de-familization, often proxied by the availability of LTC beds in residential care facilities (Floridi et al. 2021).

Accurate measurement and quantification of the care gap are essential for LTC planning and equitable resource allocation. Yet estimating LTC utilisation and unmet needs is especially challenging when relying on survey data. While analyses using administrative records allow for more precise estimates (Tenand et al 2018; Vidiella-Martinez et al. 2024), such studies are often restricted to individual countries or regions, limiting generalisability of their findings.

Spain provides a compelling setting for regional analysis given its decentralized LTC system. While the national framework, established by the central government, guarantees universal access to LTC services for individuals with functional dependency, the actual organization and delivery of services are delegated to the 17 autonomous regions (García-Armesto et al., 2010). The equity implications of decentralization remain contested. Some argue that decentralization of welfare-state services generates substantial variations in service provision, potentially exacerbating regional disparities (Lago-Peña et al., 2017; Obinger et al. 2005), whereas Costa-Font (2010) provides empirical evidence suggesting a modest reduction in regional inequalities following the decentralization of LTC in Spain.

This study contributes to the existing literature by quantifying the care gap in hours and assessing socio-economic inequalities in unmet LTC needs using harmonized data from the 2019 wave of the European Health Interview Survey (EHIS) for Spain. Specifically, we operationalise unmet need employing a more granular metric. Using EHIS 2019 microdata, we categorize unmet needs into three levels: full gap, partial gap, and no gap. Additionally, drawing on the Austrian care allowance system, we translate individual care limitations into hours of care need, thereby enabling a more precise quantification of the care gap. Similar mappings from (I)ADLs to hours have been documented by Warum et al. (2025a) and applied in microsimulation analyses comparing LCT systems in Austria and Italy (Warum et al., 2025b). To assess socio-economic inequality, we calculate the corrected concentration index (CCI) for the care gap, stratifying results by eligibility status and level of activity (measured by the number of ADLs). Furthermore, we decompose the CCI to identify the contribution of need and non-need factors, and explore regional heterogeneity in inequality across Spain's autonomous regions.

Our findings highlight that the care gap disproportionately affects vulnerable groups, including women, individuals living alone, and the oldest-old, and exhibits a pronounced pro-poor concentration, especially among those with greater care needs. Among individuals below the eligibility threshold for publicly funded LTC services, inequality is statistically significant but of limited relevance.

Decomposition analysis reveals that disparities in unmet LTC needs are driven primarily by health status, income, and living arrangements. These factors consistently contribute to pro-poor inequality, underscoring the disproportionate burden faced by socio-economically disadvantaged groups. While health-related needs play a major role in explaining inequality among individuals with care needs, socio-economic factors, such as income and availability of informal support, are the main drivers of inequality among those with severe limitations.

Finally, we observe considerable regional heterogeneity: Aragon, Extremadura and Andalusia exhibit the largest pro-poor inequality in unmet needs, while Valencia, Asturias and Cantabria display the lowest. These patterns point to opportunities for greater regional policy harmonization aimed at enhancing equity in LTC access nationwide.

By addressing both the magnitude and socio-economic distribution of unmet needs, this study provides policy-relevant insights to improve equity and efficiency of LTC provision.

The remainder of the paper is organized as follows. Section 2 introduces the Spanish LTC system. Section 3 outlines the methodology. Section 4 describes the data and presents descriptive statistics. Section 5 reports the main results; and Section 6 discusses the implications for LTC policy and concludes.

Institutional framework

The Spanish LTC system is based on the Act 39/2006 of 14 December, concerning the Promotion of Personal Autonomy and Care for Dependent Persons, which established the System for Autonomy and Care for Dependency (Sistema para la Autonomía y Atención a la Dependencia, SAAD). This legal framework marked a significant policy shift by recognizing long-term care as a social right and aiming to guarantee universal coverage for all individuals in situations of dependency, regardless of age, gender, or other sociodemographic characteristics. The governance and regulation of the LTC system are decentralized, granting substantial authority to Spain's autonomous regions. While this allows

for adaptation to regional needs and contexts, it also necessitates mechanisms for intergovernmental coordination to ensure equity and a minimum level of standardization across territories (Costa-Font et al., 2023).

Although access to services under SAAD is legally universal¹, the actual delivery and financing of LTC are determined by region-specific cost-sharing formulas. These arrangements take into account both the intensity of individual care needs and the beneficiaries' financial capacity, primarily assessed through income and asset evaluations. This represents a departure from the previous model, which was more residual in nature and predominantly focused on providing support to the most vulnerable populations lacking informal care networks.

Despite the normative and institutional advances introduced by SAAD, Spain's public expenditure on LTC remains considerably below that of many Northern and Central European welfare states (OECD, 2024), limiting the system's ability to meet rising care demands. These demands are being driven by population ageing, increased life expectancy, declining family-based care networks, and a higher prevalence of chronic conditions. Consequently, the Spanish LTC system faces ongoing challenges related to financial sustainability, territorial equity, and the adequacy of service provision to meet evolving demographic and social pressures.

Eligibility for publicly funded LTC benefits is determined through a standardized national assessment system, which classifies individuals into one of three officially recognized levels of dependency—moderate (Grado I), severe (Grado II), and major (Grado III)—based on the degree of difficulty experienced in performing essential daily activities. The evaluation considers both basic activities of daily living (ADLs), such as eating, bathing, dressing, toileting, and mobility, and instrumental activities of daily living (IADLs), including cooking, housework, managing finances, and medication adherence.

The assessment is conducted using the *Baremo de Valoración de la Situación de Dependencia* (BVD), a structured instrument that combines self-reported information, caregiver input, and direct observation. Trained professionals, typically social workers or healthcare personnel, administer the evaluation to ensure technical rigor and consistency in determining dependency levels. The BVD generates a score between 0 and 100, which determines eligibility and classification: scores of 0-24 indicate no entitlement to benefits; 25-49 correspond to Grade I (moderate dependency), 50-74 to Grade II (severe dependency), and 75-100 to Grade III (major dependency). The assigned dependency level determines the type, intensity, and mix of support an individual is eligible to receive under the SAAD system, including both cash transfers and in-kind services.

While the Spanish system provides a nationally standardized framework, its three-level classification offers relatively broad categories of dependency, which may limit the ability to finely align service intensity with individual needs. In this regard, Austria's LTC system, regulated under the Federal Care Allowance Act (*Bundespflegegeldgesetz*), offers a useful point of comparison. Austria employs a more granular seven-tiered classification system, enabling a finer differentiation of care needs and a better tailored care support (Trikeschitz et al. 2022). As in Spain, assessments are universal and carried out by trained professionals using standardized criteria to evaluate individuals' limitations in performing (I)ADLs.

¹ The official recognition of dependency status does not necessarily translate into receipt of services or benefits. In practice, there are often considerable delays at multiple stages of the process, including both the initial assessment and recognition of dependency, and the subsequent allocation and provision of benefits. These delays have resulted in substantial waiting lists, which undermine the system's ability to guarantee timely support and may disproportionately affect individuals with urgent care needs.

A distinctive feature of the Austrian model is its explicit linkage between individuals' limitations and an estimated number of monthly care hours. Each limitation is assigned a specific number of care hours, which are aggregated to produce a total estimate of monthly care needs. Eligibility for financial support begins at a threshold of 65 hours per month, with increasing care allowances corresponding to higher levels of assessed need. This approach allows for a direct conversion of limitations into monthly care-hours estimates, offering a more precise quantification of actual care needs and facilitating closer alignment between assessed needs and services and benefits provision. Accordingly, Austria's system provides a valuable reference for standardization and quantification of LTC needs across different institutional or national settings.

Methodology

We build on established literature to assess socio-economic inequalities in access to LTC, employing the concentration index (CI) to assess inequality in the distribution of unmet LTC needs (Wagstaff et al., 1989; Wagstaff and Van Doorslaer, 2000). The concentration index is computed using the following expression:

$$CI = \frac{2}{\bar{y}} cov(y_i, R_i) \quad (1)$$

where $cov(\dots)$ represents the covariance between the estimated unmet LTC needs in hours (y_i) and the relative ranking of individuals based on their economic status (R_i), measured using imputed household income. The term $\bar{y}$ represents the average level of unmet LTC needs. Negative values of the index indicate that unmet LTC needs are disproportionately concentrated among the worse-off, while positive values suggest a concentration among the better-off. A concentration index not significantly different from zero suggests no evidence of socio-economic inequality related to economic status.

Consistent with other studies on inequality of unmet needs or care utilization (Ilinca et al. 2017; Lera et al., 2021), we apply the corrected concentration index proposed by Erreygers (2009), which accounts for the bounded nature of the unmet needs measure.

$$CCI = \frac{4\bar{y}}{b_n - a_n} CI \quad (2)$$

where a_n and b_n represent the minimum and maximum values of the monthly hours of unmet LTC needs.

One of the main advantages of the concentration index approach is that the index can be decomposed into its underlying determinants, which may include both need-related variables and non-need related factors (Wagstaff et al., 2003). Accordingly, inequity reflects the portion of total inequality not explained by need, which is considered a justifiable driver of unmet LTC needs. We first estimate the following linear model:

$$y_i = \alpha \sum_k \beta_k x_{ki} + \sum_p \delta_p z_{pi} + u_i \quad (3)$$

which assumes that y_i is a linear and additively separate function of need (x_k) and non-need (z_p) factors, β_k and δ_p are the irrespective coefficients, and u is the error term. Therefore, the CI may be expressed as a weighted sum of the partial CI for the explanatory factors of inequality, being the weight the elasticity of y with respect to x_k and z_p . Similarly, as shown by van de Poel et al. (2012), the CCI can be rewritten as:

$$CCI = \frac{4}{b_n - a_n} (\sum_k \beta_k \bar{x}_k CI_x + \sum_p \delta_p \bar{z}_p CI_z + GCI_u) \quad (4)$$

where $\bar{x}_k$ and $\bar{z}_p$ are the mean of x_k and z_p , respectively, and CI_x and CI_z are their concentration indices with respect to income. GCI_u is the generalized concentration index of the error term, a residual term that reflects the socio-economic inequality associated to unobserved factors.

In essence, equation (4) shows that the CCI is a weighted sum of the CIs of the determinants of unmet LTC needs with respect to income, where the weights reflect how sensitive the unmet needs are to variations in each variable. Therefore, each determinant's contribution to the overall CCI depends on two components: (1) the estimated regression coefficient evaluated at the mean (i.e., semi-elasticity), and (2) the degree of income-related inequality in that determinant, as captured by its concentration index.

To ensure robustness, we compute bias-corrected bootstrapped confidence intervals for the CCI estimates using 1,000 replications. This technique offers a more reliable framework for statistical inference compared to the standard analytical methods by accommodating bias and skewness in the index estimates, particularly relevant in smaller subsamples, where conventional standard errors may underestimate the true variability.

Data and descriptive statistics

Sample

We use data from the third wave of the EHIS, conducted in 2019 for Spain. The EHIS is a cross-sectional survey carried out across EU countries to collect harmonised information on health status, health care utilisation, health determinants, and socio-demographic characteristics of individuals aged 15 and over residing in private households. Institutionalised population is not included in the survey.

Within the health status module, EHIS includes a set of questions designed to assess individuals' ability to perform activities essential for independent living. These questions are divided into two categories: Activities of the Daily Living (ADLs), which refer to basic personal care tasks (eating, bathing or showering, dressing, using toilets, getting in and out of a bed or chair), and Instrumental Activities of the Daily Living (IADLs), which relate to household tasks (cleaning, shopping, cooking, managing medication, completing paperwork). For each activity, respondents report their level of limitation using four response categories: "No difficulty", "Some difficulty", "A lot of difficulty" or "Cannot do at all".

For both ADLs and IADLs, individuals reporting difficulties with at least one activity are further asked whether they usually receive help from someone for any of these activities. Independently of whether support is received, they are also asked whether they need help, or more help, with these activities.

Our main socio-economic indicator is disposable household income. Since the EHIS reports income only in quintiles, we apply interval regression to impute continuous income values. This imputation relies on the reported income quintile, the household income distribution from EU statistics on income and living conditions (EU-SILC= 2019 cross-sectional microdata (Eurostat, 2019), and a set of covariates including age, sex, education, labour status, region, area of residence (urban/rural) and family composition. This method is particularly well-suited for computing concentration indices, as

it preserves the full rank ordering of individuals and yields more accurate inequality estimates (Wagstaff et al., 1989).

Additional covariates included in the analyses are age, sex, education, living arrangements, area of residence (urban/rural) and health indicators (self-rated health status, having a long-term health problem, and a number of chronic conditions). Sex is coded as a binary variable, and age is categorized into groups. Education is classified into three levels following the ISCED classification: low (ISCED level 2 or lower), medium (ISCED levels 3 and 4), and high (ISCED levels 5 or higher). Partnership status is defined by whether the respondent lives with a legal or de facto partner, focusing on actual cohabitation rather than formal marital status. Although EHIS does not collect information on whether individuals have children who may provide informal care, it does report the total number of household members. Using this information, along with partnership status, we construct a composite variable, living arrangement, as a proxy for the availability of potential informal caregivers within the household. This variable is categorised as: (i) living with partner only, (ii) living with partner and others (e.g., adult children), (iii) living without a partner but with others, and (iv) living alone.

Estimating hours of LTC needed

We define a binary indicator of care needs that identifies individuals who report at least some difficulty with any personal care activity (ADL) or household task (IADL). Individuals reporting only functional limitations or mental health conditions, without associated (I)ADL difficulties, are excluded from this definition, as EHIS collects self-reported information on unmet needs exclusively from respondents with ADL- and IADL-related limitations.

To determine the hours of care required for personal care and household tasks among individuals identified as having care needs, we follow the approach proposed by Warum et al. (2025a) that maps care needs from a survey data to Austria's LTC assessment system (Table 1). We assume universality of care needs, that is, individuals with identical limitations are assigned the same number of care hours, irrespective of their country of residence (Warum et al., 2025b).

Table 1. Mapping of the Austrian care needs assessment system to EHIS variables

LIMITATIONS	EHIS VARIABLE	MONTHLY HOURS
<i>Personal care activities (ADLs)</i>		
Feeding yourself	pc1a	30
Getting in and out of a bed or chair	pc1b	30
Dressing and undressing	pc1c	20
Using toilets	pc1d	30
Bathing or showering	pc1e	35
<i>Household activities (IADLs)</i>		
Preparing meals	ha1a	30
Using the telephone or managing money	ha1b, ha1g	10
Shopping	h1ac	10
Managing medication	ha1d	3
Doing light housework	ha1e	10
occasional heavy housework	ha1f	10
<i>Additional items (functional limitations and mental health)</i>		
Difficulty walking half a km on level ground without the use of any aid or walking up or down 12 steps	pl6, pl7	5
Visited a psychologist, psychotherapist or psychiatrist in the past 12 months	am6b	45

Source: Authors' own elaboration based on Warum et al. (2025a).

Monthly care needs (in hours) are then obtained by summing the hours associated with each reported limitation. Notably, for the purposes of quantifying care needs, we extend the definition of care needs beyond (I)ADLs to also include selected functional limitations and mental health conditions. For mental health, we rely on the EHIS question on whether the respondent visited a psychologist, psychotherapist or psychiatrist in the past 12 months. Consequently, while individuals without any (I)ADL are excluded from the study sample, to align with the population for whom the unmet needs data are observed, any reported additional functional or mental health limitations are included in the calculation of total monthly care hours needed.

Determining unmet LTC needs

Measuring unmet LTC needs is inherently complex, as it involves both subjective perceptions and objective assessments of care needs and provision. The literature typically distinguishes between two main approaches: (1) subjective measures, based on individuals' self-reported care needs and perceptions of adequacy of support, and (2) objective measures, which allow to assess whether individuals with activity limitations receive the necessary assistance (Gomez-Garcia et al., 2015, Vlachantoni, 2019; Albuquerque 2020).

In this study we propose a more comprehensive approach by integrating both subjective and objective dimensions of unmet needs (Abió et al. 2025). This combined measure accounts for cases in which individuals may not explicitly report unmet needs despite receiving insufficient care, as well as those who perceive a lack of support even when some assistance is provided. By doing so, we aim to offer a more nuanced and accurate measure of unmet LTC needs.

Using the EHIS data, we classify individuals as having fully met needs (no gap) if they report difficulty with at least one personal care or household activity, receive help with the corresponding activities, and state that they do not need help or additional help. Some individuals report difficulty with one or more (I)ADLs, do not receive any help, and nonetheless report not needing assistance. If these individuals report only "some difficulty" for all declared (I)ADLs, we classify them as having no unmet needs, as their limitations are considered mild and do not prevent them from performing daily tasks independently.

Individuals are classified as having fully unmet care needs (full gap) if they report difficulty with at least one personal care or household activity, do not receive any support, and indicate needing help or more help with at least one of these activities. Finally, partially met needs (partial gap) correspond to situations in which individuals report difficulty with at least one personal care or household activity, receive help with the corresponding activities, but still express a need for additional help.

Quantifying unmet LTC needs

The final step in quantifying unmet LTC needs involves translating each individual's care needs classification into an estimate of hours of unmet needs. This is achieved by applying the following rules to the estimated hours of care needed: respondents classified as having fully unmet needs are assigned a care gap equal to the total estimated hours of care needed; those in the no gap category are assigned zero hours; and individuals with partially met needs are assigned a proportion of their estimated care hours based on a sliding-scale adjustment. This adjustment accounts for key contextual factors that are expected to mitigate the level of unmet need, including partnership status, co-residence with other household members, and receipt of formal care in the past 12 months. It follows a structured hierarchy: individuals living with a partner and receiving formal care are assigned the largest downscale adjustment, whereas those living alone and not getting formal care receive the smallest reduction. This approach is consistent with previous evidence showing that

co-residence with a partner or other family member is associated with lower levels of reported unmet need (Zhang et al., 2025; Szenkurök et al., 2024; Bertogg & Strauss, 2020; Ornstein et al., 2019; Pickard, 2015).

To test the robustness of this method and minimize potential bias introduced by the adjustment mechanism, we conduct a sensitivity analysis in which all individuals with partially met needs are assigned 50% of the estimated care hours as unmet need. This alternative specification yields comparable results².

Results

Descriptive statistics

This section presents summary statistics for the study sample. Among 7,194 individuals aged 65 and older, 46.0% report difficulties with at least one (I)ADL and are classified as having LTC needs. Among those with care needs, 53.9% require fewer than 65 hours of care per month³ and are therefore classified as non-eligible, whereas the remaining 46.1% meet the threshold and are classified as eligible. The “eligible” group is further stratified by severity of disability into two categories: individuals reporting fewer than two ADLs and those reporting two or more ADLs.

Table 2 summarizes socio-demographic characteristics and health indicators across the full sample, the subgroup with care needs, and subgroups stratified by eligibility and ADL severity. Statistically significant differences are observed between non-eligible individuals (column 3) and those needing 65 or more hours of care (column 4), as well between those with fewer than two ADLs and those with two or more ADLs (columns 5 and 6).

Women represent less than half (46.1%) of individuals without LTC needs but account for approximately 70% of all other groups. The share of women is significantly higher among individuals with two or more ADLs (71.9%) compared to those with zero or one ADL (60.3%) ($p < 0.001$). Age distribution also differs markedly: 43.5% of those requiring 65 or more hours of care per month are aged 85 or older, compared with only 15.8% in the non-eligible group ($p < 0.001$). However, within the eligible group, no significant age differences are observed between those with two or more ADLs and those with fewer ADLs. Educational attainment follows a similar pattern. A greater proportion of individuals in the eligible group has low education levels (88.7%) compared to the non-eligible group (81.2%), whereas no statistically significant differences are found between the ADL subgroups. Living arrangements also differ: non-eligible individuals are more likely to live with a partner only (40.6%) than eligible individuals (31.5%). Within the eligible group, those with two or more ADLs are slightly less likely to live with a partner than those with fewer ADL limitations. Household income is significantly lower among eligible individuals compared to their non-eligible counterparts, while no income differences emerge between the ADL subgroups. Health indicators reveal substantial disparities. As expected, poor self-reported health is significantly more prevalent among eligible individuals (87.4%) than among non-eligible individuals (60.0%), and among those with two or more ADLs (90.5%) compared to those with fewer limitations (81.6%). The prevalence of chronic conditions is also higher in eligible individuals (98.6%) relative to non-eligible individuals (93.9%), although no significant differences are observed between the ADL subgroups.

² Full details are available from the authors upon request.

³ The Austrian long-term care (LTC) model establishes an eligibility threshold of 65 hours of care per month for LTC support. We use this threshold to classify individuals with care needs into eligibility groups.

Taken together, these descriptive findings reveal a clear gradient of vulnerability: greater care needs associated with older age, lower socio-economic status, living alone, and worse health outcomes.

Table 2. Sample descriptive statistics

Variables	With no care needs (N=3,888)	With care needs (N=3,306)	Non-eligible (N=1,783)	Eligible (N=1,523)	Eligible 0-1 ADLs (N=451)	Eligible 2+ ADLs (N=1,072)
	(1)	(2)	(3)	(4)	(5)	(6)
Female	46.05	69.08	69.78	68.30	60.34	71.85***
Age groups						
65-69	36.49	13.99	20.39	6.82***	7.84	6.37
70-74	29.39	18.05	23.24	12.23	11.92	12.37
75-79	19.84	18.78	21.16	16.12	17.56	15.48
80-84	8.43	20.33	19.42	21.36	24.14	20.12
85+	5.85	28.84	15.8	43.46	38.53	45.65
Education						
Low	67.78	84.75	81.20	88.74***	89.77	88.27
Medium	14.78	7.18	9.15	4.97	5.14	4.89
High	17.44	8.07	9.65	6.29	5.09	6.83
Living arrangements						
With partner only	49.17	36.31	40.62	31.48***	33.68	30.5*
With partner and other	23.03	17.88	20.27	15.19	18.74	13.61
No partner but other	11.43	24.72	16.97	33.42	29.13	35.34
Living alone	16.37	21.09	22.15	19.9	18.45	20.55
Income, Mean (SD)	31,566 (14,392)	26,387 (13,207)	27,304 (13,326)	25,262*** (13,001)	25,810 (12,983)	25,161 (13,010)
Area of residence						
Urban	81.21	76.29	77.98	74.41	78.83	72.44**
Rural	18.79	23.71	22.02	25.59	21.17	27.56
Self-reported health						
Less than good health	30.34	70.19	59.97	87.35***	81.55	90.49**
Long term health problem	78.66	96.09	93.87	98.57***	98.34	98.68
Num. of chronic, Mean (SD)				3.85*** (2.22)		3.94*** (2.19)
Num. of ADLs, Mean (SD)	1.83 (1.64) 0 (0)	3.37 (2.13) 1.36 (1.84)	2.93 (1.95) .085 (.29)	(2.22) 2.79*** (1.80)	3.64 (2.25) .51 (.50)	(2.19) 3.8*** (1.10)
Num. of IADLs, Mean (SD)				4.89*** (2.11)		5.09*** (2.18)
	0 (0)	3.09 (2.33)	1.49 (.92)	(2.11)	4.43 (1.86)	(2.18)

Notes: Weighted proportions are reported; Under living arrangement other indicates another household member different from the spouse.

The Pearson's chi-square test and the Student's t-test are respectively used to compare the distribution of characteristic between groups (3 vs.4 and 5 vs.6) for categorical and continuous variables.

***p<0.01; **p<0.05; * p<0.1.

Distribution of unmet LTC needs

Table 3 presents the distribution of care need categories among individuals identified as having LTC needs. Results are shown for the full sample and disaggregated by eligibility status and disability severity (measured by the number of ADLs). Overall, 41.8% report their needs as fully met (no gap), 50.8% receive some help but consider it insufficient (partial gap), and 7.4% experience a full care gap. Marked differences are observed across subgroups. Non-eligible individuals report the highest rate of fully unmet needs (9.4%), underscoring potential shortcomings in access to formal care support among these individuals. In contrast, only 5.2% of eligible individuals report a full care gap. Within the eligible group, a more nuanced pattern emerges by disability severity: individuals with 0-1 ADLs report a particularly low rate of fully unmet needs (3.2%), whereas those with 2 or more ADLs report a considerably higher rate (6.1%).

Partially met care needs are the most prevalent form of care inadequacy. Overall, 50.8% of individuals with LTC needs report receiving some assistance but consider it insufficient. The prevalence of partial gaps is especially high among eligible individuals (74.5%) compared with non-

eligible individuals (less than 30%). Within the eligible group, the burden of partially met needs is greatest among those with 2 or more ADLs, where 78.1% report insufficient support. This finding suggests that current care arrangements may be failing to adequately match the intensity of support to the degree of severity. Even among individuals with 0-1 ADLs, 66.4% report partially met needs, indicating that inadequacy of care is not limited to the most severely disabled population.

Table 3. Distribution of met and unmet care needs by eligibility and disability severity

	With care needs (N=3,306)	Non-eligible (N=1,783)	Eligible (N=1,523)	Eligible 0-1 ADLs (N=451)	Eligible 2+ ADLs (N=1,072)
Fully met needs (no gap)	41.84	61.06	20.29	30.45	15.77
Partially met needs (partial gap)	50.77	29.58	74.52	66.39	78.14
Fully unmet needs (full gap)	7.39	9.35	5.19	3.16	6.09

Socio-economic factors contributing to unmet needs

Table 4 presents the distribution of unmet LTC needs in hours across sociodemographic groups, eligibility status, and disability severity. The results reveal substantial heterogeneity, with consistent gradients by sex, age, education, living arrangement, and income. Women consistently report higher unmet care hours than men, particularly among eligible individuals and those with two or more ADLs, indicating a disproportionate burden. The care gap increases with age, peaking among individuals aged 85+, reflecting the cumulative vulnerability of the oldest-old. Socio-economic gradients are evident: lower education and income are associated with significantly higher unmet needs, suggesting that financial and educational disadvantages remain barriers to adequate care.

Table 4. Average monthly hours of unmet LTC needs by sociodemographic characteristics, eligibility and disability severity

Variables	With care needs (N=3,306)	Non-eligible (N=1,783)	Eligible (N=1,523)	Eligible 0-1 ADLs (N=451)	Eligible 2+ ADLs (N=1,072)
<i>Sex</i>					
Female	41.0 (1.4)***	6.9 (0.6)	80.2 (2.2)***	39.9 (2.2)***	95.3 (2.5)***
Male	32.1 (1.7)	6.7 (0.4)	59.2 (2.9)	30.6 (2.3)	77.1 (3.9)
<i>Age groups</i>					
65-69	18.3 (2.1)***	4.9 (0.8)***	63.0 (6.6)***	32.0 (5.5)	79.9 (8.6)***
70-74	27.0 (2.3)	5.9 (0.6)	71.9 (4.8)	34.6 (5.7)	87.9 (5.6)
75-79	30.2 (2.0)	6.7 (0.6)	64.8 (3.7)	34.7 (3.2)	80.0 (4.7)
80-84	37.7 (2.4)	8.3 (0.8)	67.7 (3.8)	33.1 (3.1)	86.2 (5.1)
85+	60.5 (2.4)	8.3 (0.8)	81.8 (2.7)	40.1 (2.8)	97.5 (3.2)
<i>Education</i>					
Low	40.7 (1.3)***	7.0 (0.4)*	75.3 (1.9)***	36.4 (1.8)	92.9 (2.3)***
Medium	21.6 (2.7)	5.8 (1.0)	54.1 (6.3)	32.5 (6.8)	64.3 (8.1)
High	27.1 (3.5)	5.1 (1.0)	64.9 (7.0)	36.0 (6.3)	74.4 (8.6)
<i>Living arrangement</i>					
with partner only	23.8 (1.2)***	5.8 (0.4)***	49.8 (2.2)***	26.1 (2.2)***	61.4 (2.8)***
with partner and other	24.0 (2.2)	5.6 (0.8)	51.4 (3.7)	33.9 (3.4)	62.3 (5.0)
no partner but other	61.6 (3.1)	7.6 (1.0)	92.4 (3.5)	45.7 (3.7)	109.5 (3.8)
living alone	47.7 (2.0)	8.7 (0.5)	96.4 (3.1)	42.1 (3.1)	118.2 (3.4)
<i>Household income</i>					
1 st quintile (lowest)	46.1 (3.5)***	7.4 (0.9)**	84.5 (4.8)***	35.6 (4.6)	105.5 (5.0)***
2 nd quintile	43.8 (2.1)	7.6 (0.6)	75.7 (3.0)	34.2 (3.0)	92.4 (3.6)
3 rd quintile	35.5 (2.2)	7.1 (0.6)	70.8 (3.6)	39.4 (3.7)	86.3 (4.7)
4 th quintile	34.2 (2.7)	5.7 (0.7)	71.9 (4.5)	37.5 (3.4)	87.8 (5.6)
5 th quintile (highest)	30.5 (2.4)	5.8 (0.8)	63.5 (4.4)	33.7 (3.8)	77.8 (5.7)
Total	38.2 (1.1)	6.7 (0.3)	73.6 (1.8)	36.2 (1.6)	90.2 (2.2)

Notes: Standard errors in parenthesis; weighted results; one way ANOVA used for significance of contributing factors to the care gap; ***p<0.01; **p<0.05; * p<0.1.

Living arrangements show a strong protective effect, with individuals living alone experiencing the highest care gaps and those living with a partner the lowest. A similar table depicting the distribution of care needs hours can be found in the Appendix (Table A1).

Inequalities in unmet needs for long-term care

Overall, our results indicate that unmet LTC needs are disproportionately concentrated among socio-economically disadvantaged individuals aged 65 and over, as reflected by the negative CCI values in Table 5. Inequality is most pronounced among poorer individuals with severe functional limitations (2+ ADLs), suggesting that socio-economic disadvantage and high care needs compound to exacerbate unmet needs. By contrast, little to no inequality is observed among non-eligible individuals and among eligible individuals with only mild limitations, indicating a more even distribution of unmet needs within these groups.

Table 5. Inequalities in unmet LTC needs across different subsamples of individuals aged 65+ with care needs in Spain (Erreygers-corrected Concentration Index)

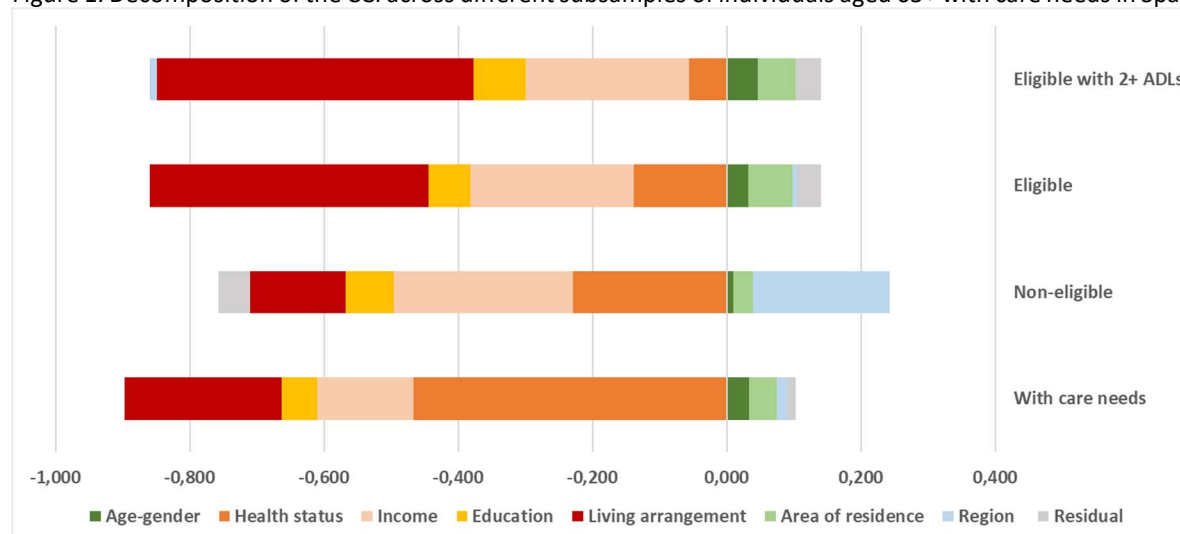
	With care needs (N=3,306)	Non-eligible (N=1,783)	Eligible (N=1,523)	Eligible 0-1 ADLs (N=451)	Eligible 2+ ADLs (N=1,072)
CCI	-0.064*** (-0.082, -0.046)	-0.007*** (-0.012, -0.002)	-0.064*** (-0.094, -0.039)	-0.002 (-0.037, 0.025)	-0.079*** (-0.113, -0.045)

Notes: Bias-corrected bootstrapped 95% confidence intervals in parenthesis.

***p<0.01; **p<0.05; * p<0.1

To better understand the determinants underlying the observed inequalities, we perform a decomposition analysis of the CCI. This method allows to quantify the contribution of each explanatory variable to the overall income-related inequality in unmet needs. Figure 2 presents the results of the decomposition of CCI, showing the absolute contributions of the different groups of determinants. A detailed breakdown of each factor's contribution, reported in terms of its corresponding semi-elasticity and concentration indices (CCI), separately for each subsample, is provided in Tables A2-A5 in the Appendix.

Figure 1. Decomposition of the CCI across different subsamples of individuals aged 65+ with care needs in Spain

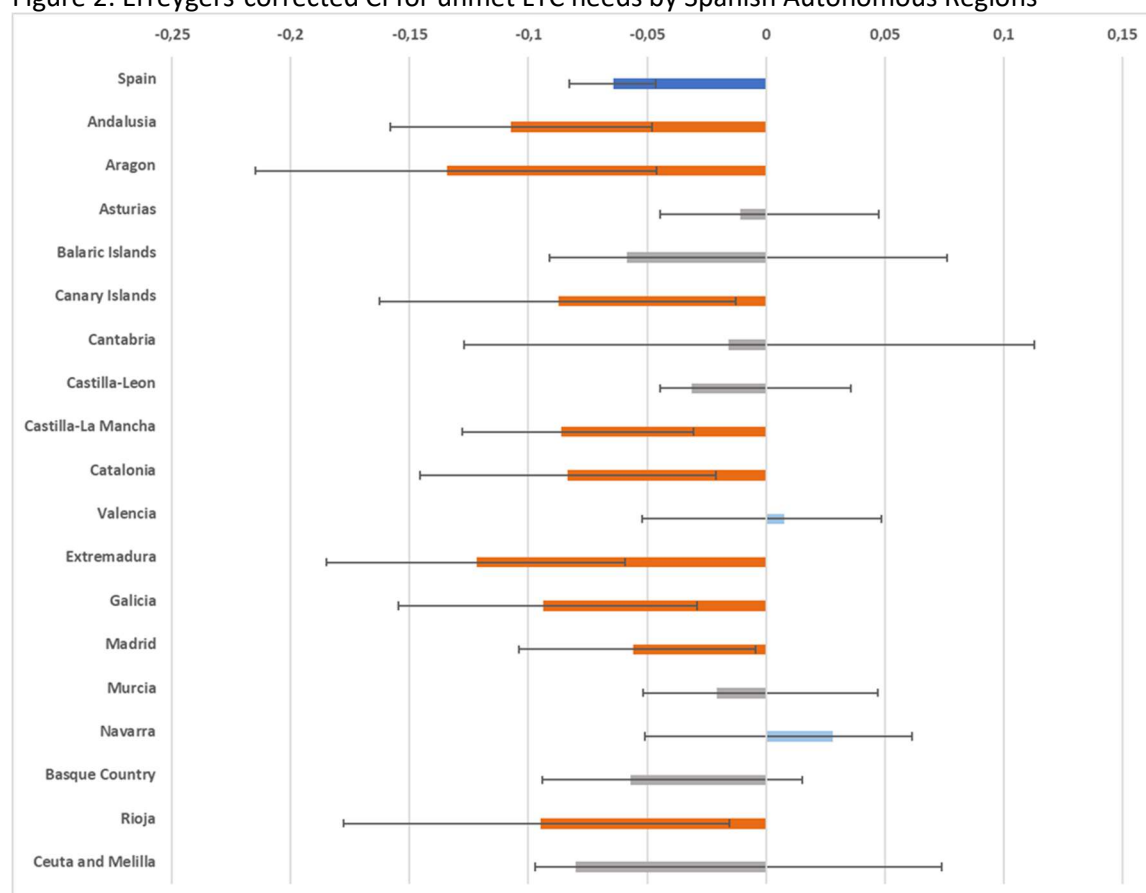


Notes: Health status includes the number of chronic conditions and hours of care needs. Weighted results.

The decomposition results indicate that the main contributors to income-related inequality in unmet LTC needs are health status, income and living arrangement, although their relative influence varies across subpopulations. Education also contributes to the unequal concentration of unmet care needs, albeit to a lesser extent, while regional characteristics play a comparatively minor role.

Household structure and socio-economic characteristics, captured by education and income, are the primary drivers of pro-poor inequalities in unmet LTC needs. Cohabitation with a partner is more common among higher-income individuals (positive CI) and is associated with a smaller care gap, resulting in a negative contribution to inequality. Conversely, living alone or without a partner is more common among the worse off (negative CI) and is associated with increases in unmet LTC needs (positive elasticity), resulting in a substantial negative contribution to overall inequality. This effect is particularly pronounced among the most vulnerable individuals, those with greater care needs and multiple functional limitations. As expected, higher income and educational levels are concentrated among wealthier individuals (positive CI) and are inversely related to unmet LTC needs (negative elasticity of unmet needs to changes in income or education), thereby also contributing negatively to total inequality. These patterns are consistent across all subsamples.

Figure 2. Erreygers-corrected CI for unmet LTC needs by Spanish Autonomous Regions



Notes: Sample of individuals 65 and older with care needs. Weighted results. Error bands correspond to bias-corrected bootstrap 95% confidence intervals. Significance levels: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Legitimate sources of inequality, proxied by health status, age and gender, also contribute to the unequal distribution of unmet LTC needs. Poor health drives pro-poor inequality across all subsamples, with a larger effect observed for individuals with care needs and those non-eligible.

Indicators for poor health, older age and female gender are more concentrated among lower-income individuals (negative CI). Being female or in poor health (except for the number of chronic conditions) is associated with greater unmet LTC needs (positive elasticity). In contrast, unmet needs tend to decline with age (negative elasticity), resulting in a small but positive overall contribution of age and gender to the observed inequality.

Regional variables make a limited contribution to overall inequalities in unmet LTC needs, with the exception of the non-eligible group. This largely reflects the offsetting effects of various indicators within this category, particularly the regional dummy variables, whose opposing contributions tend to cancel each other out. By contrast, area of residence exerts a positive contribution to inequality in LTC needs, as lower income individuals are more likely to reside in rural areas, which are typically characterized by a more limited supply of care services.

Given the decentralised nature of the Spanish LTC system, which confers a high degree of authority to the autonomous regions, we also examined income-related inequalities in unmet needs at the regional level. The main results, presented in Figure 2, reveal significant heterogeneity across regions but generally confirm a pro-poor distribution of unmet needs, consistent with the national-level findings. The magnitude of the CCIs exceeds the national average in several regions, including Andalusia, Aragon, Canary Island, Castilla-La-Mancha, Catalonia, Extremadura, Galicia and Rioja, and is comparable in Madrid. In the remaining regions, no significant income-related inequality in unmet LTC needs is observed.

Discussion and conclusions

The primary objective of this paper was to assess income-related inequality in unmet LTC needs among individuals aged 65 and over in Spain. Our findings reveal significant inequalities in unmet needs, with a disproportionate burden on lower-income individuals, women, and those living alone. The pro-poor concentration of the care gap is strongest among those with major limitations, reinforcing the argument that socio-economic status remains a key determinant of access to LTC services. These results align with previous evidence that wealthier individuals benefit more from formal care services while lower-income groups often rely on informal care, which may not fully meet their care needs (Geerlins et al., 2005; Carrieri et al., 2017; Floridi et al., 2021; Okamoto et al., 2025). While inequities are less pronounced among those with fewer limitations, significant disparities persist for those with greater needs, precisely the groups with the highest risk of adverse outcomes.

Our findings have several important policy implications. The strong contributions of income, education, and living arrangements to pro-poor inequality suggest that financial barriers and limited informal support are key drivers of unmet needs. Expanding financial protection for low-income households, strengthening community-based services for those living alone, and improving outreach to vulnerable groups could help mitigate these disparities. The sizable contribution of health status points to the need to better integrate LTC with preventive and primary care, to address complex health needs and prevent progression to higher levels of dependency.

Regional heterogeneity is marked. Several regions, notably Andalucía and Catalonia, exhibit levels of inequality that exceed the national average, while others display more equitable distributions. These differences underscore the impact of Spain's decentralized LTC system, where regional governance structures shape the availability and accessibility of services. Adopting best practices from better-performing regions, strengthening intergovernmental coordination, setting minimum access and quality benchmarks, and promoting cross-regional learning could advance equity nationwide.

Methodologically, we contribute a more granular measurement of the care gap, distinguishing full, partial, and no gap rather than relying on binary indicators alone. This approach provides a more nuanced understanding of the severity of unmet needs, offering policymakers a more precise evidence base for targeting interventions. Furthermore, drawing on the Austrian care allowance model, we map (I)ADL limitations to monthly care hours, yielding a quantitative metric suited to comparative research across European LTC systems.

This study offers a cross-sectional snapshot of LTC inequities in Spain. Future work using panel data would better capture dynamics in care provision and evaluate whether recent efforts to expand LTC coverage are narrowing or widening inequities

In conclusion, we found that 58% individuals with LTC needs have unmet needs, with an average monthly care gap of 80 hours among eligible women and 118 hours among individuals living alone and with 2+ ADL limitations. Inequity in unmet needs is driven primarily by living arrangement and socio-economic status. Ensuring equitable access to LTC services remains a pressing challenge. Targeted policies that reduce financial barriers, strengthen community-based supports, and harmonize regional access standards are warranted, specially for those with the greatest needs.

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Appendix

Table A1. Average care need in hours by socio-demographic groups

	With care needs (N=3,306)	W/ care needs, non-eligible (N=1,783)	W/ care needs, eligible (N=1,523)	Eligible 0-1 ADLs (N=451)	Eligible 2+ ADLs (N=1,072)
<i>Sex</i>					
Female	83.5 (2.1)	21.6 (0.5)***	154.5 (2.3)***	87.6 (1.4)*	179.5 (2.1)
Male	80.7 (2.8)	24.6 (0.9)	140.6 (3.3)	84.0 (1.9)	176.1 (3.3)
<i>Age groups</i>					
65-69	46.4 (3.5)***	19.6 (0.9)***	136.3 (7.6)***	84.4 (4.4)**	164.7 (7.4)***
70-74	59.6 (3.7)	19.5 (0.8)	145.0 (5.9)	83.3 (2.9)	171.4 (6.0)
75-79	69.2 (3.3)	22.7 (0.9)	137.5 (4.3)	84.1 (2.4)	164.6 (4.6)
80-84	84.1 (3.5)	25.1 (1.0)	144.4 (4.0)	83.2 (2.5)	177.0 (3.4)
85+	122.4 (3.2)	27.2 (1.2)	161.2 (2.75)	90.3 (1.8)	187.9 (2.2)
<i>Education</i>					
Low	85.7 (1.8)***	22.9 (0.5)*	150.3 (2.0)*	85.9 (1.2)	179.4 (1.8)**
Medium	58.7 (5.3)	20.1 (1.3)	138.3 (8.1)	87.1 (4.8)	162.2 (8.3)
High	71.6 (6.1)	21.7 (1.8)	157.4 (7.8)	90.1 (5.0)	179.7 (8.2)
<i>Living arrangement</i>					
with partner only	72.6 (2.4)***	22.4 (0.7)	145.2 (3.2)***	85.0 (1.8)	174.7 (3.2)***
w/ partner and other	71.2 (4.0)	22.2 (1.2)	144.6 (6.3)	85.4 (3.3)	180.0 (5.7)
no partner but other	109.7 (3.4)	23.1 (1.1)	159.1 (3.5)	89.4 (2.3)	184.6 (3.0)
living alone	77.9.7 (2.3)	22.5 (0.6)	147.1 (2.6)	83.9 (1.5)	172.4 (2.7)
<i>household income</i>					
1 st quintile	91.1 (4.8)***	22.4 (1.2)*	159.1 (5.0)*	85.9 (2.3)	190.6 (3.7)***
2 nd quintile	90.1 (3.1)	23.6 (0.8)	148.6 (3.2)	84.4 (2.2)	174.4 (2.9)
3 rd quintile	77.7 (3.2)	23.4 (0.9)	145.3 (3.8)	90.0 (2.5)	172.5 (3.9)
4 th quintile	76.5 (4.1)	21.6 (0.9)	149.0 (5.0)	83.7 (2.6)	179.2 (4.6)
5 th quintile	77.4 (4.4)	20.9 (1.1)	152.7 (5.6)	86.9 (3.1)	184.5 (4.8)
Total	82.6 (1.7)	22.5 (0.4)	150.1 (1.9)	86.2 (1.1)	178.6 (1.7)

Notes: standard errors in parenthesis; weighted results; one way ANOVA used for significance of contributing factors to the care gap; * p<0.1; **p<0.05; ***p<0.01

Table A2. Contributions to CCI for LTC unmet needs, individuals with care needs.

Factor	Semi-elasticity	CI	Absolute Contribution	Relative Contribution (%)
Need				
Female	1.348	-0.034***	-0.0007	1.06
70-74 years old	0.424	0.125***	0.0008	-1.23
75-79 years old	-0.487	-0.054	0.0004	-0.61
80-84 years old	-0.843**	-0.051*	0.0006	-1.00
85+ years old	-1.519	-0.069***	0.0016	-2.42
Num. of chronic conditions	-1.624	-0.019***	0.0005	-0.70
Care need hours	43.80***	-0.058***	-0.0382	59.37
<i>Total need</i>			-0.0351	54.46
Non-need				
Household income	-2.546**	0.306***	-0.0116	18.09
Medium education	-0.241	0.332***	-0.0012	1.86
High education	-0.347**	0.595***	-0.0031	4.78
Partner and other	0.137	0.226***	0.0005	-0.72
No partner but other	4.677***	-0.039**	-0.0027	4.24
Living alone	4.527***	-0.247***	-0.0167	25.94
Towns and suburban	-0.389	-0.068***	0.0004	-0.61
Rural	-1.054**	-0.187***	0.0029	-4.56
Aragon	0.110	-0.145***	-0.0002	0.37
Asturias	0.007	0.154***	0.0000	-0.03
Balearic Islands	-0.118	0.070	-0.0001	0.19
Canary Islands	-0.220	-0.213***	0.0007	-1.09
Cantabria	-0.028	0.141	-0.0001	0.09
Castilla-Leon	-0.056	-0.058	0.0000	-0.08
Castilla la Mancha	-0.222	-0.118***	0.0004	-0.61
Catalonia	0.515	0.217***	0.0017	-2.60
Valencia	-0.488	-0.026	0.0002	-0.29
Extremadura	0.013	-0.227***	0.0000	0.07
Galicia	0.384	0.111***	0.0006	-0.99
Madrid	-0.833***	0.206***	-0.0026	3.97
Murcia	-0.195	-0.057	0.0002	-0.26
Navarra	-0.061	0.016	0.0000	0.02
Basque Country	0.224	0.189***	0.0006	-0.98
Rioja	-0.037	0.110	-0.0001	0.10
Ceuta y Melilla	-0.016	0.197	0.0000	0.07
<i>Total non-need</i>			-0.0302	46.98
<i>Residual</i>			0.0009	-1.44

Notes: Sample of individuals 65 and older with care needs. Weighted results. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table A3. Contributions to CCI for LTC unmet needs, non-eligible individuals.

Factor	Semi-elasticity	CI	Absolute Contribution	Relative Contribution (%)
Need				
Female	0.218	-0.021**	-0.0001	0.96
70-74 years old	0.200	0.110***	0.0003	-4.59
75-79 years old	0.006	-0.096***	0.0000	0.12
80-84 years old	0.150	-0.064**	-0.0001	1.99
85+ years old	-0.028	-0.057*	0.0000	-0.33
Num. of chronic conditions	1.152**	-0.027***	-0.0005	6.57
Care need hours	7.816***	-0.023***	-0.0027	37.86
<i>Total need</i>			<i>-0.0031</i>	<i>42.58</i>
Non-need				
Household income	-0.836	0.299***	-0.0037	51.90
Medium education	0.002	0.326***	0.0000	-0.16
High education	-0.119	0.568***	-0.0010	14.04
Partner and other	0.064	0.204***	0.0002	-2.72
No partner but other	0.279*	-0.063**	-0.0003	3.63
Living alone	0.598***	-0.215***	-0.0019	26.69
Towns and suburban	-0.178	-0.109***	0.0003	-4.04
Rural	-0.052	-0.154***	0.0001	-1.66
Aragon	0.111**	-0.098	-0.0002	2.26
Asturias	0.086*	0.096	0.0001	-1.72
Balearic Islands	-0.029	-0.160	0.0001	-0.96
Canary Islands	-0.091	-0.174***	0.0002	-3.30
Cantabria	-0.005	0.026	0.0000	0.03
Castilla-Leon	-0.039	-0.159***	0.0001	-1.30
Castilla la Mancha	0.045	-0.047	0.0000	0.44
Catalonia	0.309	0.216***	0.0010	-13.84
Valencia	0.003	-0.074*	0.0000	0.05
Extremadura	0.024	-0.171**	-0.0001	0.87
Galicia	0.334***	0.118***	0.0006	-8.23
Madrid	0.073	0.184***	0.0002	-2.80
Murcia	-0.016	-0.101	0.0000	-0.33
Navarra	-0.002	-0.196	0.0000	-0.07
Basque Country	0.242**	0.186***	0.0007	-9.38
Rioja	0.023**	0.186	0.0001	-0.90
Ceuta y Melilla	0.006*	0.292	0.0000	-0.39
<i>Total non-need</i>			<i>-0.0035</i>	<i>48.13</i>
<i>Residual</i>			<i>-0.0007</i>	<i>9.29</i>

Notes: Sample of individuals 65 and older with care needs but needing < 65 hours. Weighted results. Significance levels:

*p<0.1; **p<0.05; ***p<0.01

Table A4. Contributions to CCI for LTC unmet needs, eligible individuals.

Factor	Semi-elasticity	CI	Absolute Contribution	Relative Contribution (%)
Need				
Female	0.594	-0.051***	-0.0005	0.70
70-74 years old	0.752	0.092**	0.0010	-1.60
75-79 years old	-0.536	-0.018	0.0001	-0.22
80-84 years old	-1.123	-0.032	0.0005	-0.85
85+ years old	-3.447	-0.031*	0.0016	-2.45
Num. of chronic conditions	-2.797	0.005	-0.0002	0.31
Care need hours	84.40***	-0.010*	-0.0123	19.04
<i>Total need</i>			<i>-0.0096</i>	<i>14.93</i>
Non-need				
Household income	-4.651***	0.313***	-0.0218	33.81
Medium education	-0.267	0.303***	-0.0012	1.87
High education	-0.476	0.618***	-0.0044	6.81
Partner and other	0.339	0.239***	0.0012	-1.88
No partner but other	11.939***	0.009	0.0017	-2.58
Living alone	9.061***	-0.296***	-0.0401	62.23
Towns and suburban	-0.567	-0.023	0.0002	-0.30
Rural	-1.808**	-0.212***	0.0057	-8.87
Aragon	0.084	-0.202**	-0.0003	0.39
Asturias	0.020	0.220**	0.0001	-0.10
Balearic Islands	-0.240	0.224**	-0.0008	1.25
Canary Islands	-0.421	-0.314***	0.0020	-3.07
Cantabria	-0.060	0.256	-0.0002	0.36
Castilla-Leon	-0.074	0.059	-0.0001	0.10
Castilla la Mancha	-0.487*	-0.259***	0.0019	-2.93
Catalonia	0.707	0.209***	0.0022	-3.43
Valencia	-0.869	0.025	-0.0003	0.50
Extremadura	-0.025	-0.265***	0.0001	-0.15
Galicia	0.417	0.123***	0.0008	-1.19
Madrid	-1.370**	0.234***	-0.0048	7.43
Murcia	-0.358*	-0.004	0.0000	-0.03
Navarra	-0.045	0.224	-0.0001	0.23
Basque Country	0.229	0.149**	0.0005	-0.79
Rioja	-0.082	0.055	-0.0001	0.11
Ceuta y Melilla	-0.054	0.181	-0.0001	0.23
<i>Total non-need</i>			<i>-0.0579</i>	<i>89.98</i>
<i>Residual</i>			<i>0.0032</i>	<i>-4.91</i>

Notes: Sample of individuals 65 and older with care needs of 65 hours of more. Weighted results. Significance levels:

*p<0.1; **p<0.05; ***p<0.01

Table A5. Contributions to CCI for LTC unmet needs, eligible individuals with 2+ADLs.

Factor	Semi-elasticity	CI	Absolute Contribution	Relative Contribution (%)
Need				
Female	-0.272	-0.045***	0.0002	-0.23
70-74 years old	1.916**	0.142***	0.0040	-5.12
75-79 years old	-0.167	-0.050	0.0001	-0.16
80-84 years old	-0.543	-0.055	0.0004	-0.57
85+ years old	-2.768	-0.008	0.0003	-0.41
Num. of chronic conditions	-5.710*	0.004	-0.0003	0.44
Care need hours	101.840***	-0.004	-0.0058	7.36
<i>Total need</i>			<i>-0.0010</i>	<i>1.32</i>
Non-need				
Household income	-5.670*	0.317***	-0.0268	33.88
Medium education	-0.451	0.265***	-0.0018	2.26
High education	-0.719*	0.621***	-0.0067	8.42
Partner and other	-0.205	0.212***	-0.0006	0.82
No partner but other	15.948***	0.013	0.0031	-3.95
Living alone	12.035***	-0.302***	-0.0543	68.72
Towns and suburban	-0.079	0.025	0.0000	0.04
Rural	-2.018*	-0.204***	0.0061	-7.77
Aragon	0.064	-0.225**	-0.0002	0.27
Asturias	0.075	0.173	0.0002	-0.24
Balearic Islands	-0.413	0.426***	-0.0026	3.33
Canary Islands	-0.423	-0.334***	0.0021	-2.67
Cantabria	-0.109	0.291*	-0.0005	0.60
Castilla-Leon	-0.012	0.034	0.0000	0.01
Castilla la Mancha	-0.387	-0.209**	0.0012	-1.52
Catalonia	0.368	0.189***	0.0010	-1.31
Valencia	-0.816	0.039	-0.0005	0.61
Extremadura	-0.173	-0.234***	0.0006	-0.76
Galicia	0.356	0.108**	0.0006	-0.73
Madrid	-0.993	0.239***	-0.0035	4.48
Murcia	-0.639	0.030	-0.0003	0.36
Navarra	-0.073	0.135	-0.0001	0.19
Basque Country	0.322	0.275***	0.0013	-1.68
Rioja	-0.103	0.186	-0.0003	0.36
Ceuta y Melilla	-0.085	0.166	-0.0002	0.27
<i>Total non-need</i>			<i>-0.0822</i>	<i>103.96</i>
<i>Residual</i>			<i>0.0042</i>	<i>-5.27</i>

Notes: Sample of individuals 65 and older with care needs of 65 hours of more and reporting 2+ ADLs. Weighted results.

Significance levels: *p<0.1; **p<0.05; ***p<0.01