



Research on the Impact of Long-term Care Insurance on Elderly Medical Service Utilization

—Empirical Analysis Based on CLASS Data from 2014 to 2023

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Abstract. With the intensification of population aging in China and the deepening of long-term care insurance pilot programs, it is crucial to scientifically identify the impact of long-term care insurance on elderly medical service utilization. This study utilizes five phases of data from the China Longitudinal Aging Social Survey (CLASS) 2014-2023 and employs a progressive difference-in-differences model to explore the effects and mechanisms of long-term care insurance on elderly medical service utilization. The results show that long-term care insurance significantly reduces hospitalization rates among the elderly in pilot cities, with policy effects being more pronounced among disadvantaged groups such as those with lower education levels and poverty. Further analysis indicates that it effectively substitutes hospitalization behaviors by improving the utilization of care services such as home-based nursing and rehabilitation training. The study recommends deepening the implementation of the long-term care insurance system, paying attention to the care needs of vulnerable groups, strengthening the connection between care services and medical resources, and providing empirical evidence for improving China's long-term care insurance system.

Keywords: Long-term care insurance; Elderly; Medical services; Care services; Hospitalization behavior

1 Introduction

Population aging has intensified the demand for integrated medical and nursing care, yet the Chinese healthcare system lacks adequate coordination between medical services and care services. This institutional gap has made long-term care insurance a critical policy tool for bridging "treatment" and "care." To address growing disability risks, China launched long-term care insurance pilots in 2016, expanded them to 49 cities in 2020, and by the end of 2025, the program had covered nearly 300 million people. Given this policy context, it is essential to examine how LTCI influences elderly healthcare utilization. While existing research has preliminarily confirmed the inhibitory effect of long-term care insurance on medical service utilization, its under-

lying mechanisms and heterogeneous effects across populations remain underexplored.

This paper uses 2014–2023 CLASS data and a progressive difference-in-differences model to evaluate the impact and mechanisms of long-term care insurance on elderly medical service utilization. The main research questions are: (1) What impact does long-term care insurance have? (2) How heterogeneous is this impact across demographic groups? (3) Through what mechanisms does long-term care insurance influence utilization? The contributions are twofold: (1) using data up to 2023 to capture the deepening phase of long-term care insurance pilots. (2) revealing the mediating role of care services in substituting hospitalization, providing new empirical evidence on policy mechanisms.

2 Literature Review

2.1 Factors Influencing Medical Service Utilization

At the individual level, aging and deteriorating health are core drivers of healthcare utilization. Advancing age is associated with declining self-care ability and increased hospitalization, while comorbid conditions further elevate utilization frequency (Yu et al., 2011) [17]. Disability severity also plays a key role, with severely disabled individuals incurring markedly higher hospitalization costs and admission rates (Liu et al., 2023) [6].

From a familial perspective, intergenerational support exerts a dual influence. Financial support from children enhances seniors' ability to afford medical services, leading to higher hospitalization costs (Liu Chen et al., 2023; Zhou Jian et al., 2019) [6][21]. Conversely, daily care and emotional support from children may substitute for professional medical services (He Hong & Yan Chenyu, 2021; Yu Yangyang & Feng Jin, 2018) [4][18].

From a societal perspective, the healthcare security system and medical resource allocation are key determinants. Medical insurance coverage and benefit levels directly affect financial access to care (Wu Min & Liu Chong, 2024; Liu Xiaoting & Huang Hong, 2015; Du Peng & Xie Lili, 2017) [11][7][3]. Additionally, regional imbalances in medical resource distribution contribute to significant disparities in elderly health status and service utilization across regions and between urban and rural areas (Tan Tao et al., 2015; Du Peng & Xie Lili, 2017) [9][3].

2.2 Study on the Impact of Long-term Care Insurance on the Elderly

At the individual level, long-term care insurance reduces medical expenses and improves health outcomes. It lowers hospitalization rates, length of stay, and associated costs among insured seniors, while alleviating economic pressures (Ma et al., 2019) [8]. International evidence confirms that care service users exhibit reduced hospitalization and lower medical expenses compared to non-users (Li Jia & Che Tiantian, 2022) [5].

From a household perspective, long-term care insurance affects labor supply and consumption. It increases employment opportunities for rural women by freeing up caregiving labor, thereby boosting household income (Yu Xinliang et al., 2021; Ai Jingyi & Peng Xizhe, 2024) [16][1]. It also reduces precautionary savings motives related to future disability risks, encouraging greater household consumption (Cheng Qian et al., 2023; Yang Hongyan & Jiang Wenjing, 2023) [2][15].

From a societal perspective, long-term care insurance optimizes medical resource allocation (Wu Min & Liu Chong, 2024; Liu Chen et al., 2023) [11][6]. It also generates redistributive effects—such as “men subsidizing women” and “employees subsidizing residents”—enabling low-income groups to benefit more (Xiao Ying & Zhu Qin, 2024) [12]. These effects help narrow health security disparities and strengthen economic resilience among low-income households (Zhang Weike & Fan Hongxia, 2026) [19].

2.3 Limitations of Existing Research

Existing research has confirmed the impact of long-term care insurance on elderly healthcare utilization. However, most studies focus on policy effects on total healthcare consumption, with limited systematic empirical verification of underlying mechanisms. Although long-term care insurance is widely believed to influence healthcare utilization by providing care services that substitute for hospitalization needs, empirical evidence on this mediating pathway remains scarce. Investigating the mediating role of care services is therefore crucial for understanding policy mechanisms and optimizing service delivery.

3 Theoretical Analysis and Research Hypothesis

3.1 Theoretical Analysis: Social Support Theory

Social support theory originated from the pioneering research of Cobb (1976) and House (1981), defining social support as the emotional, instrumental, informational, and evaluative support individuals receive from social networks. Based on different sources, social support can be categorized into informal and formal support. It influences individual health through two pathways: the “buffering effect,” where social support mitigates the negative impacts of stressors like illness and disability on physical and mental health; and the “primacy effect,” where social support directly enhances health levels and life satisfaction. This theory provides a critical perspective for understanding the effects of long-term care insurance policies.

3.2 Research Hypothesis

Prior to policy implementation, limited family caregiving capacity or high costs of professional care often forced elderly individuals to rely on hospitalization for essential care support. By providing accessible professional care services, long-term care

insurance enables seniors to receive daily care at home or in community settings, thereby reducing unnecessary hospitalizations (Ma Chao et al., 2019; Wang Zhen & Feng Jin, 2021) [8][10].

Based on this, Hypothesis 1 is proposed: Long-term care insurance can significantly reduce the hospitalization probability among the elderly.

Social support theory highlights the interplay between formal and informal support systems (Cobb, 1976; House, 1981) [22][23]. Individuals with weaker family support tend to depend more on formal assistance, making policy interventions more effective for disadvantaged groups. Empirical evidence shows that vulnerable populations—especially those with lower socioeconomic status and limited family resources—benefit more substantially from long-term care insurance (Xue Huiyuan & Zhang Yonggao, 2025) [14].

Based on this, Hypothesis 2 is proposed: The policy effects of long-term care insurance are more pronounced among vulnerable populations.

The policy effects of long-term care insurance on hospitalization are realized through increased utilization of care services. Care services directly meet daily care needs, reducing care-driven hospitalizations, while also improving health status and delaying disability progression, thereby lowering long-term dependence on medical services (Liu Chen et al., 2023; Xie Mingming et al., 2024) [6][13].

Based on this, Hypothesis 3 is proposed: Long-term care insurance reduces hospitalization rates among the elderly by increasing the utilization of care services.

4 Data Sources and Research Methods

4.1 Data Source

The data for this study were sourced from five editions of the China Elderly Social Tracking Survey (CLASS) conducted from 2014 to 2023 and the China Long-term Care Insurance Pilot Policy Database.

4.2 Variable Selection

Dependent variable.

This study uses the presence or absence of hospitalization behavior among elderly individuals as an indicator for healthcare service utilization. Based on the question "How many times have you been hospitalized in the past two years" from the CLASS questionnaire, samples with hospitalization behavior were assigned a value of 1, while those without hospitalization behavior were assigned a value of 0, thereby constructing a binary dependent variable.

Independent variable.

This study constructs a two-dimensional difference-in-differences model for long-term care insurance based on pilot programs, analyzing both urban dimensions and year-specific variations. Given disparities in pilot implementation timelines

across regions, data values may differ within the same area over different years. We systematically compile pilot city data from 2012 to 2023, aligning them with pilot regions covered by CLASS data. Within selected pilot cities, we identify eligible populations for medical insurance coverage types aligned with policy requirements, based on varying long-term care insurance coverage demographics. Individuals residing in regions where long-term care insurance pilots were implemented during the study period and enrolled in basic medical insurance programs are assigned a value of 1; otherwise, they receive a value of 0.

Control variables.

This study selects control variables from four dimensions: demographic characteristics, health characteristics, family characteristics, and social support. The demographic dimension includes gender, age, marital status, education level, household registration status, employment status, and retirement status. Health characteristics are measured by the presence of chronic diseases, while family characteristics encompass number of children, permanent household population, and average monthly household expenditure. Social support is assessed based on participation in pension insurance. Variable assignments and descriptive statistics are presented in Table 1.

Table 1. Assignment method for control variables

variable	Assignment method	mean	standard deviation	least value	crest value
Long-term Care Insurance Pilot Program	Pilot projects conducted during the survey period = 1; no pilot projects conducted = 0	0.162	0.369	0	1
sex	Male=1; Female=0	0.503	0.500	0	1
age	Continuous variable: actual age of respondents	71.044	7.186	57	113
marriage	Married=1; Single=0	0.728	0.445	0	1
educational status	Illiteracy = 0; Private school/literacy class = 3; Primary school = 6; Junior high school = 9; Senior high school/technical secondary school = 12; College degree or above = 16	5.985	4.241	0	16
Household registration type	Agricultural household registration = 1; Non-agricultural household registration, unified resident household registration, others = 0	0.528	0.499	0	1
Is it working?	Yes=1; No=0	0.220	0.414	0	1
Retired status	Yes=1; No=0	0.448	0.497	0	1
chronic disease	Chronic disease = 1; No chronic disease = 0	0.818	0.386	0	1
quantity of children	Continuous variable: total number of living children of the respondent	2.578	1.382	0	12
Family size	Continuous variable: Total number of family members living with the respondent	2.764	1.438	1	19
Monthly household expenditure	Logarithm of average monthly total household expenditure (yuan) over the past year	7.338	0.960	0	11.9184
endowment insurance	With pension insurance = 1; without pension insurance = 0	0.787	0.410	0	1

4.3 Model Construction

Due to the inconsistent timing of long-term care insurance pilot programs across regions in China, and the gradual expansion of pilot coverage in some areas based on policy implementation, this paper employs a stepwise difference-in-differences method to examine the impact of long-term care insurance pilots on elderly healthcare service utilization. The model is specified as follows:

$$Y_{ict} = \beta_0 + \beta_1 \text{treat}_{it} + \beta_2 X_{ict} + \varepsilon_t + \omega_c + \mu_{ict}$$

Here, Y_{ict} represents elderly healthcare service utilization; treat_{it} denotes the long-term care insurance pilot program, assigned a value of 1 if individual i 's region participates in the pilot during period t and individual i is included in the pilot scope, otherwise 0; X_{ict} indicates control variables including demographic characteristics, health characteristics, family characteristics, and social support variables; ε_t represents year fixed effects; ω_c denotes provincial-level fixed effects; μ_{ict} denotes random disturbance terms; β_0 is the constant term, while β_1 and β_2 are estimated coefficients.

5 Empirical Results

5.1 Benchmark Regression Results

This study employs an incremental two-stage difference model to examine the impact of long-term care insurance pilot programs on hospitalization rates among elderly populations, with results presented in Table 2. Regression analysis reveals that the core explanatory variable "long-term care insurance" consistently shows statistically significant negative coefficients at the 1% level, regardless of control variable inclusion, indicating that the implementation of long-term care insurance policies substantially reduces hospitalization rates in pilot regions, thereby confirming Hypothesis 1.

Table 2. Benchmark regression results

	(1)	(2)	(3)	(4)	(5)
Long-term care insurance	-0.041***	-0.039***	-0.035***	-0.036***	-0.036***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
controls	no	yes	yes	yes	yes
fixed effect	yes	yes	yes	yes	yes
sample capacity	39995	39995	39995	39995	39995
R ²	0.065	0.088	0.106	0.112	0.112

5.2 Robustness Test

Parallel Trend Test.

This study employs event study methodology for parallel trend testing, using the first period before policy implementation as the baseline to estimate differences between

treatment and control groups across periods. Results show that before policy implementation, all estimated coefficients had confidence intervals containing zero, indicating no significant difference in hospitalization probabilities between treatment and control groups among elderly individuals prior to policy adoption, thus satisfying the parallel trends assumption. Post-policy implementation, significantly negative coefficients demonstrate that the long-term care insurance policy substantially reduced healthcare utilization among elderly individuals in the treatment group.

Placebo Testing.

To eliminate false significance in baseline regression results caused by unobservable confounding factors or random noise, this study conducted a placebo test. The kernel density plot from the placebo test reveals that the policy effects identified through baseline regression are not driven by random factors or model biases, confirming the robustness and reliability of the identification results.

Exclusion of 2020 Data Interference.

The COVID-19 pandemic in 2020 may have exogenously impacted elderly individuals' healthcare-seeking behaviors and medical service utilization, potentially confounding the identification of policy effects. The estimation results in Column (1) of Table 4 demonstrate that the findings remain statistically significant even after removing 2020 data, indicating that the pandemic shock did not substantially affect the core conclusions of this study.

Eliminate Policy Interference in Integrated Medical and Elderly Care Services.

During the sample period, several cities simultaneously implemented pilot policies integrating medical care and elderly care services, which may have influenced seniors' utilization of healthcare services. To account for potential interference from this competing policy, this study further incorporates a dummy variable for integrated medical-care elderly services pilot programs into the baseline model. The regression results in Column (2) of Table 4 demonstrate statistical significance, indicating that the core conclusions remain robust even after controlling for the impact of integrated medical-care elderly services policies.

Eliminate Policy Interference in Home-based and Community-based Elderly Care Service Reforms.

Regression results from Column (3) of Table 3 demonstrate that after controlling for the impact of the elderly care service reform policy, the implementation of long-term care insurance still significantly reduces hospitalization probabilities among the elderly. This indicates that the effect of long-term care insurance remains statistically significant even after excluding the confounding influence of the reform policy.

Table 3. Robustness test excluding 2020 data and other policy interference

variable	(1)	(2)	(3)
	Eliminate interference from 2020 data	Eliminate interference from integrated medical and elderly care policies	Eliminate policy interference from home-based and community-based elderly care service reforms
Long-term care insurance	-0.050*** (0.011)	-0.038*** (0.010)	-0.041*** (0.010)
fixed effect	yes	yes	yes
sample capacity	28902	39995	39995
R ²	0.112	0.113	0.113

Expected Effect Test.

To minimize experimental errors, this study selects the year preceding the long-term care insurance pilot program as the hypothetical policy time point for conducting time counterfactual testing. Table 4(1) shows that the interaction term's estimated coefficient before the pilot failed significance testing, while Table 4(2) reveals a significantly negative coefficient post-pilot. These findings indicate that the inhibitory effect of long-term care insurance on elderly hospitalization rates only emerges after policy implementation, showing no significant changes prior to the pilot phase. This further validates the robustness of the conclusion that long-term care insurance significantly reduces hospitalization rates among the elderly.

Table 4. Results of Expected Effect Testing

variable	(1)	(2)
	Before the pilot	After the pilot phase
Long-term care insurance	0.005 (0.010)	-0.036*** (0.010)
fixed effect	yes	yes
sample capacity	39995	39995
R ²	0.112	0.112

6 Heterogeneity Analysis

To examine whether the impact of long-term care insurance on hospitalization rates among the elderly varies with educational attainment and average monthly household expenditure, this study sequentially incorporates interaction terms between long-term care insurance and educational level/family income in the baseline regression model. As shown in Table 5(1), the interaction term between long-term care insurance and high education is significantly positive at the 0.1% level, indicating that education negatively moderates the policy effect—the lower the education level, the greater the reduction in hospitalization probability. Table 5(2) shows a similar pattern for household expenditure: the interaction term is significantly positive, suggesting that the inhibitory effect of long-term care insurance is stronger among economically disadvantaged groups. In conclusion, the inhibitory effect of long-term care insurance on hospitalization probability among the elderly is more pronounced in disadvantaged

groups with lower education levels and lower average monthly household expenditures, thereby confirming Hypothesis 2.

Table 5. Results of heterogeneity analysis

variable	Hospitalization status	
	(1)	(2)
Long-term Care Insurance × Elderly with Advanced Education	0.030*** (0.011)	
Long-term Care Insurance × Families with High Average Monthly Expenditure		0.036*** (0.012)
fixed effect	yes	yes
observed value	39995	39995
R ²	0.113	0.113

7 Mechanism Analysis

According to previous theoretical analysis, the implementation of long-term care insurance is typically accompanied by increased utilization of elderly care services. To verify this hypothesis, this study examined respondents' usage of three types of care services: home-based nursing, rehabilitation training, and day care facilities or senior care centers. Results from Table 6 demonstrate that long-term care insurance significantly increases the probability of elderly individuals utilizing home-based nursing, rehabilitation training, and day care services. In conclusion, long-term care insurance reduces hospitalization rates among the elderly by enhancing care service utilization, validating Hypothesis 3.

Table 6. Mechanism Test Results

variable	(1) Home-based nursing care	(2) Rehabilitation training	(3) Daycare center or senior care facility
Long-term care insurance	0.019*** (0.003)	0.012*** (0.002)	0.010*** (0.003)
fixed effect	yes	yes	yes
sample capacity	39995	39995	39995
R ²	0.072	0.048	0.044

8 Scalability Analysis

To further investigate the underlying impact of long-term care insurance on healthcare service utilization among older adults, this study conducts an extended analysis across four dimensions: medical expenditure, rehabilitation and nursing service expenditure, number of hospitalizations, and length of hospital stays. Tables 7(1) and 7(2) demonstrate the impact of long-term care insurance on elderly healthcare expenditure and rehabilitation nursing service spending. Regression analysis reveals that long-term care insurance significantly reduces medical cost burdens for enrolled seniors while

effectively increasing their rehabilitation service expenditures. Tables 7 columns (3) and (4) demonstrate the impact of long-term care insurance on hospitalization frequency and length among elderly populations. The results indicate that long-term care insurance significantly reduces both the number of hospitalizations and the duration of hospital stays among insured seniors. In conclusion, the policy not only significantly reduces the burden of medical costs and increases expenditures on rehabilitation nursing services, but also effectively decreases hospitalization frequency and length, demonstrating the policy efficacy of long-term care insurance in alleviating medical resource shortages and improving allocation efficiency.

Table 7. Results of scalability analysis

variable	(1) Medical expense ex- penditure	(2) Expenditure on rehabilitation nursing services	(3) Number of hospitalizations	(4) Length of hospital stay
Long-term care insurance	-0.061** (0.029)	0.136*** (0.044)	-0.131*** (0.024)	-1.451 (0.986)
fixed effect	yes	yes	yes	yes
sample capacity	39995	39995	38592	39995
R ²	0.276	0.175	0.069	0.035

9 Conclusion

9.1 Research Findings

The findings indicate that long-term care insurance significantly reduces hospitalization rates among insured elderly individuals, a result that remains valid after multiple robustness tests. Elderly individuals with lower education levels and poorer family economic conditions are more susceptible to the influence of long-term care insurance on hospitalization rates. Long-term care insurance effectively reduces medical service utilization by promoting elderly use of care services such as home care, rehabilitation training, day care centers, or senior care facilities, with care services playing a significant mediating role. These conclusions provide important policy insights for deepening the implementation of long-term care insurance systems, addressing the care needs of vulnerable groups, and strengthening the linkage between care services and medical resources.

9.2 Policy Recommendations

Based on the findings, this paper proposes three policy recommendations. First, establish a unified national long-term care insurance system by synthesizing pilot experiences to avoid institutional fragmentation. Second, prioritize vulnerable groups—particularly the economically disadvantaged and less-educated elderly—by incorporating them into priority coverage, increasing subsidies and reimbursement rates, and establishing dynamic adjustment mechanisms based on changes in financial status. Third, strengthen integration between care services and medical resources by establishing coordination mechanisms, clarifying functional boundaries, promoting

information sharing between healthcare institutions and care providers, and guiding eligible elderly individuals to shift from hospitalization to home- and community-based care. These measures aim to fulfill care needs, achieve rational allocation of medical resources, and reduce reliance on hospitalization services at the source.

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