NAVER CareCall Social Value Measurement

2026

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Naver Green Impact I Agenda Relations

Contents

Executive Summary

CLOVA CareCall (hereinafter "CareCall") is NAVER's generative AI-based caretaking service that calls recipients to regularly check their health and emotional status through natural conversation, detecting early warning signs in the process. It combines digital technology with the care system in a society facing low birth rates and aging, enhancing administrative efficiency, proactively detecting emergencies, and supporting a shift toward preventive welfare. It also supports integrated care by identifying high-risk individuals early through continuous monitoring and connecting them to welfare and health services, holding public value in structurally reducing social risks such as suicide and solitary death prevention.

This study employed two parallel analytical frameworks to measure and verify the Social Value (SV) of CareCall. PART I is a micro-level analysis that directly measures effects by item—including increased administrative efficiency, increased preventive healthcare use, and reduced emotional isolation—based on field surveys conducted at CareCall-adopting institutions. PART II is a macro-level analysis estimating policy effects at the population level by comparing CareCall-adopting and non-adopting regions using public data at the city/county/district and province levels. Although the two analyses differ methodologically, they are complementary in that they each verify the perceived effects at the service level and empirical changes at the community level, simultaneously validating CareCall's SV at both operational and policy levels.

PART I analysis results show that CareCall's SV estimated for survey-responding institutions was approximately KRW 14.4 billion, and when extrapolated based on total CareCall usage (actual connected and answered calls), it amounts to approximately KRW 34 billion. Suicide and solitary death prevention accounted for the largest share, and significant value was also confirmed in the emergency/health domain, including referral and linkage to support services for patients with serious illness, dementia, and those requiring follow-up support.

PART II analysis found a significant reduction in the incidence of solitary death among those aged 60 and over in CareCall-adopting regions (▼44.2%), and a shift toward preventive healthcare use was observed, including a decrease in emergency room visits (▼9.2%) and an increase in hospital visits (▲1.5%). When converted to economic value, this amounts to approximately KRW 840 million in SV. Furthermore, estimating the potential value under a service expansion scenario, if CareCall is introduced nationwide and 20% of the population aged 60 and over uses it, approximately KRW 417.2 billion in SV could be generated.

Synthesizing the results of both analyses, CareCall's introduction is simultaneously creating multi-layered effects—expanding preventive healthcare use, improving the appropriateness of emergency medical use, and alleviating social isolation—with the direction consistently confirmed. This demonstrates that CareCall is not merely a cost-reduction tool but a policy instrument that elevates the quality of the public safety net and strengthens a prevention-centered welfare system. Based on these findings, the future regional expansion of the service and the gradual extension of its target population are expected to substantially contribute to enhancing the effectiveness of social welfare policy and further consolidating the digital-based public safety net.

1. Introduction: Overview of the CareCall Service and Purpose and Need for Social Value Measurement

CareCall is an AI-based phone call service provided by the NAVER Cloud Platform. The service is designed to conduct natural, context-appropriate conversations with care recipients using natural language processing technology. Through this, it regularly checks the recipient's health status, meal intake, sleep patterns, and emotional state, enabling early detection of abnormal signs and thereby complementing the public care system. Since its pilot launch in May 2022, CareCall has been supporting local governments' care services in regions across the country, including Seoul, Gyeonggi, Daegu, Incheon, Busan, and Ulsan.

CareCall does not simply repeat scripted questions and answers; instead, it combines free-form conversation and task-oriented conversation functionalities to fulfill administrative purposes such as disaster guidance, damage verification, and policy notifications. It also differentiates itself from existing digital care services by serving as an advanced conversational AI system that recalls content from previous conversations and creates personalized interactions based on it.

The public significance of CareCall is as follows. First, combining digital technology with the traditional, labor-centered care system can enhance administrative efficiency. Second, proactively detecting emergencies and intervening early can transform welfare administration from a reactive to a preventive structure. Third, continuously monitoring and identifying high-risk individuals at an early stage to connect them to welfare and health services can structurally reduce social risks. These functions carry policy implications beyond simple cost reduction—namely, qualitative advancement of the public safety net and strengthening of a preventive welfare system.

However, AI-based services introduced in the public sector cannot secure social legitimacy through technological innovation alone. Quantitative verification of whether they created social benefits in practice must accompany them. In particular, social care, healthcare, and mental health sectors often do not show effects immediately, and long-term spillover effects and social loss prevention are key characteristics. Therefore, outcomes cannot be sufficiently explained by simple usage counts or call duration metrics alone.

Accordingly, this study converted the effects of CareCall's introduction into monetary value from the perspective of overall social cost reduction and risk mitigation. This is an attempt to comprehensively evaluate the social value of the service by quantifying various benefits including avoided medical expenses, reduced emergency response needs, and prevention of social losses.

This approach contributes to enhancing the accountability and transparency of public-private partnership projects and to establishing a framework for quantitatively evaluating the sustainability of AI-based public services. Furthermore, it can serve as an objective basis supporting financial and policy decision-making in the process of reviewing future service expansion and policy institutionalization.

2.
Social Value Measurement

The social value of CareCall was measured through two main approaches. First (PART I), based on a survey of organizations using the service, the benefits of individual items were converted into monetary value. This approach quantifies direct and derivative effects—such as reductions in personnel hours, operational cost savings, avoided medical expenses, and prevention of social losses—to calculate the total social value. Second (PART II), public data at the national city/county/district and provincial levels were used to compare and analyze changes before and after the introduction of CareCall. Using the difference-in-differences (DID) method, the causal effects between adopting and non-adopting regions were estimated, and the quantitative effects and economic value of the introduction were calculated.

PART I is a micro-level approach that structures and calculates social value by detailed item using field-based survey data, while PART II is a macro-level approach that estimates causal effects at the population level using public data. Although the two analyses differ methodologically, they are complementary in verifying the effects observed at the service level and empirical changes at the community level, forming a dual structure that simultaneously validates CareCall's social value at both the field level and the regional policy level.

PART I analysis results indicate that CareCall's social value is approximately KRW 14.4 billion, and when extrapolated based on total CareCall usage (actual calls connected and answered), it amounts to approximately KRW 34 billion. Suicide and solitary death prevention accounted for the largest share, and significant value was also confirmed in the emergency/health domain, including referral and linkage to support services for patients with serious illness, dementia, and those requiring follow-up support. PART II analysis found that the increase in solitary death rates among individuals aged 60 and older was smaller in CareCall-adopting regions than in non-adopting regions (▼44.2%), and a shift toward preventive healthcare use including a decrease in emergency room visits (▼9.2%) and an increase in hospital visits (▲1.5%) was observed. When converted to economic value, the current penetration rate basis generates social value equivalent to approximately KRW 840 million. Furthermore, under a service expansion scenario, if CareCall is introduced nationwide and is used by 20% of the population aged 60 and over, an estimated KRW 417.2 billion in social value could be generated. However, these extrapolated estimates are derived by scaling the average effects observed at survey-responding institutions proportionally to total CareCall activity, under the assumption that service quality and effectiveness are maintained at current levels during target expansion and regional rollout, so caution is required in interpretation and application.

[PART I]
Survey-Based Social Value Measurement of CareCall

1 Measurement Concepts and Principles

Measurement Concept

In PART I, the social value created by CareCall was converted into monetary terms using the benefit approach, based on surveys conducted at CareCall-adopting institutions. The benefit approach quantifies economic benefits to beneficiaries—such as income increases, cost savings, and damage prevention—as monetary value, evaluating the performance of public services from the perspective of overall social cost reduction and risk mitigation. In this measurement, the costs and risks that would have occurred without CareCall were set as the baseline, and the social losses avoided or saved through municipal workforce time savings, medical cost avoidance, reduced emergency dispatches, and suicide/solitary death prevention were converted to monetary value and aggregated as total social value.

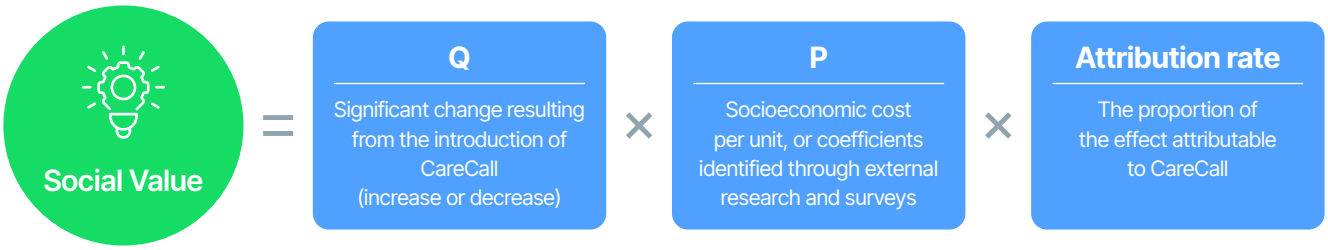
Definition of Beneficiary

In this measurement, beneficiaries were defined as the local governments that directly utilize CareCall services and the individuals receiving case management services (older adults and other vulnerable populations). For some items, the social loss prevention effects such as emergency rescue costs and medical expenses were also reflected, considering the cost burden alleviation effect for society as a whole. This reflects that the effects of CareCall can extend beyond improving operational efficiency at the individual institutional level to broader social burden reduction, including reductions in emergency medical and social loss costs.

Measurement Method

This study used a survey-based approach for social value calculation. This approach has the advantage of capturing field-level changes that are difficult to capture solely through administrative system data, such as changes in work hours before and after CareCall adoption, reductions in visit frequency, and emergency response cases. It is also meaningful in that effects difficult to immediately convert to quantitative indicators—such as reduced emotional labor, fewer complaints, and mental health risk recognition—can be structured, understood, and then combined with external statistical and research coefficients to be quantified in monetary terms. Additionally, by calculating the actual quantity of change (Q) per institution reflecting differences in care structure, recipient characteristics, and operational methods across local governments, more realistic and contextual estimates can be made considering variance at the policy implementation unit level.

As shown in the equation below, the basic estimation framework used in this study calculates the social value of each outcome by multiplying the quantity of change (Q), the unit socioeconomic cost (P), and the attribution rate. The total social value is then obtained by summing the social values estimated for all outcome categories. During this process, responses deemed insufficiently reliable were excluded, while negative values were retained in accordance with the principle of conservatism to produce the final estimate of total social value.



Q was measured through surveys as the change amount before and after introduction. Examples include reduced time spent on telephone outreach, fewer field visits, fewer emergency dispatches, and increased identification of mental health risks.

P applied objective unit costs or socioeconomic loss coefficients using external public data, academic research, and government statistics in addition to survey responses. This was intended to minimize arbitrary estimation and ensure external verifiability.

The attribution rate represents the proportion of the calculated social value that is causally linked to CareCall. Where CareCall's effect is clearly demonstrated, 100% is applied; where the causal relationship cannot be fully established, 50% is applied according to a conservative standard. This is a conservative approach that accounts for the fact that it is difficult to definitively attribute all observed changes solely to CareCall. For some items, overlapping adjustment factors were reflected in the attribution rate to account for the possibility of overlapping effects.[1]

1 For example, since the time for monitoring and identifying high-risk individuals and follow-up support recipients may overlap as effects derived from the same activity, the attribution rate was further adjusted to prevent double-counting.

Definition and Application of Reliability Items

In this study, a reliability check procedure was applied that cross-validates quantitative and qualitative responses to ensure consistency and validity of survey responses. The survey separately asked for quantitative figures such as phone work hours and visit frequency before and after CareCall introduction, while also collecting qualitative assessments of the direction of change after introduction, such as "No Change," "Somewhat Decreased," "Greatly Decreased," "Somewhat Increased," and "Greatly Increased." The alignment between the two responses was then compared, and items that were mutually contradictory—such as cases where the qualitative response was "Greatly Decreased" but the actual quantitative figure showed an increase—were judged as lacking reliability and excluded from the analysis.

Principles for Handling Negative (-) Values

Where negative changes were observed in certain items after CareCall introduction—such as an actual increase in work burden—the effect was calculated as a negative (-) value and included in the social value calculation. For example, if time spent on telephone outreach increased compared to pre-implementation, this was interpreted as an increase in workforce opportunity costs and reflected as a deduction in the calculation of social value. This is to maintain the conservatism and balance of the analysis by including all actually observed negative effects rather than selectively reflecting only positive effects; the final calculated social value is a result that reflects the net effect including such increase factors.

2 Measurement Items and Examples

① Administrative/Operational Efficiency Domain

The Administrative/Operational Efficiency Domain measures operational efficiency improvements created through automated communication. This includes cost savings for municipal workforce from: (1) improved efficiency in telephone outreach, (2) reduced on-site visits, (3) reduced complaint handling, and (4) automated administrative notification delivery.

A representative example is (1) cost savings from improved efficiency in telephone outreach—the reduction in time spent on telephone outreach observed after CareCall introduction. Previously, civil servants in charge of case management had to regularly call recipients directly to check on their well-being and status, but after CareCall's introduction, a significant portion of this work was automated, resulting in a meaningful decrease in time spent on telephone outreach for those personnel. The reduced workforce input time is interpreted as an opportunity cost savings effect, since the same personnel can be redeployed to other welfare and healthcare tasks. This represents an observable and direct administrative cost reduction. Applying Q (hours reduced), P (average hourly wage for civil servants), and the attribution rate to this item, the total social value was measured at approximately KRW 15 million.

Beneficiary	Beneficiary Value	Measurement Formula
Local Governments	Greater workforce efficiency, lower operating costs, and less wasted admin resources, via staff task reallocation* *Staff shift phone-task time to other welfare and health work	Q (Phone-work hours saved by CareCall) × P (Hourly cost of public sector staff) × Attribution Rate (100%)

Q measurement: pre-adoption phone hours* — post-adoption phone hours*
*phone hours = number of staff × time spent on calls

P coefficient: ₩17,842 per hour
(Source: Ministry of Personnel Management – Hourly conversion of the 2025 Grade-7 Step-3 average monthly civil-servant salary)

② Emergency/Health Domain

The Emergency/Health Domain consists of: (1) social value from proxy monitoring and identification of high-risk individuals; (2) social value from proxy monitoring and identification of follow-up support recipients; and (3) social value from preventing emergency response costs.

The representative item among these is (2) social value from proxy monitoring and identification of follow-up support recipients—specifically, the avoidance of healthcare costs through linkage to health and welfare services for follow-up support recipients. CareCall detects warning signs early through regular monitoring and connects recipients to appropriate medical/welfare services, thereby reducing the likelihood of conditions that could lead to hospitalization or the progression of serious health conditions (e.g., diabetic complications, hypertension worsening) if proper primary care and outpatient management are provided.

In this item, Q was calculated as the number of cases in which the responsible officer judged that CareCall had helped prevent the progression of a serious health condition by connecting follow-up support recipients to health and welfare services. P applied the average medical cost avoided through the prevention of ACSC hospitalization (₩3,360,000), and the attribution rate was 50%. Based on this calculation structure (Q × P × attribution rate), the total social value for this item was measured at approximately KRW 1.3 billion. This demonstrates that CareCall, beyond simple monitoring, creates the effect of preventing unnecessary hospitalizations and alleviating the social medical cost burden by linking follow-up support recipients to care at an early stage.

Beneficiary	Beneficiary Value	Measurement Formula
Case-managed individuals, local governments	Medical costs saved when ACSCs (e.g. diabetes complications, worsening hypertension) are caught early and managed via outpatient and community care, avoiding unnecessary hospitalization	**Q**: (Conditional) Linkage cases that prevented serious illness × **P**: Avg. cost per avoided ACSC hospitalization × **Attribution Rate**: 50%

Q measurement: Linkages to health/welfare services that prevented an illness from worsening
P coefficient: ₩3,360,000 per avoided ACSC hospitalization
ACSC = Ambulatory Care Sensitive Conditions; conditions where timely outpatient care prevents hospitalization
(Source: Kim, S.J., Kim, B.R., & Park, S.J. (2015). Preventable hospitalization and emergency room visits among the chronically ill: Focusing on Medical Aid recipients. Health and Social Welfare Review, 35(2), 405-428.)

③ Mental Health and Suicide/Solitary Death Prevention Domain

The Mental Health and Suicide/Solitary Death Prevention Domain consists of: (1) depression risk recognition and linkage to health and welfare services; and (2) social cost avoidance from the detection of suicide and solitary death risks.

The representative item among these is (2) the avoidance of social costs through the detection of suicide and solitary death risks. CareCall plays a role in mitigating personal and social losses from premature death by recognizing crisis signs early through regular conversations with recipients and enabling timely intervention.

In this item, Q was calculated as the number of cases in which suicide or solitary death risk was detected through CareCall. For P, in the case of suicide, the age-group coefficient for future income loss due to premature death was applied; for solitary death, the social cost per case was calculated by adding the future income loss from premature death to special cleaning and estate clearance costs, as well as the average government funeral support unit cost for unclaimed decedents individuals. The attribution rate was set at 100% as it was judged that the risks had been directly identified through CareCall monitoring. As a result, the suicide prevention effect was measured at approximately KRW 7 billion and the solitary death prevention effect at approximately KRW 4 billion.

This demonstrates that CareCall goes beyond simple periodic monitoring to help structurally reduce the socioeconomic losses associated with suicide and solitary death by enabling early identification of crisis situations and timely intervention.

Beneficiary	Beneficiary Value	Measurement Formula
Case-managed individuals, local governments	Social cost of suicide and solitary deaths averted by CareCall risk detection. Earlier intervention reduces personal and societal loss.	**Q** (Number of suicide / solitary death risks detected) × **P** (Social cost of suicide / solitary death) × **Attribution Rate** (100%)

Q measurement: Survey responses

P coefficient: Suicide — lost future earnings from premature death
Middle-aged ₩443,608,388 / Older adults ₩45,291,411 / Elderly ₩5,642,084
(Source: Hyun, K.R. et al. (2017). Analysis of socioeconomic costs of major diseases for health policy planning. NHIS Research Report, 1-0001. National Data Agency, "Cause of Death Statistics," 2024, retrieved 2025.12.17. Cause of death (104 categories)/sex/age (5-year bands) — deaths and mortality rates.)

P coefficient: Social cost of a solitary death = (1) Lost future earnings from premature death + ₩1,920,982 (=(2)+(3))
(1) Lost future earnings from premature death (same as social cost of suicide)
(2) Specialized cleanup & estate-clearing cost (market minimum) ₩550,000
(Reference : minimum of estate-clearing service range ~~₩~~550,000-~~₩~~3,000,000 by Woowarhan Clean)
(3) Avg. of municipal public-funeral ordinance subsidies for unclaimed decedents: ₩1,370,982
(Reference: [Press release, Rep. Park Hee-seung] 7 of every 10 unclaimed decedents had next of kin who refused or declined to claim the body.)

3 Analysis Results and Recommendations

Excluding responses with reliability issues and including negative (-) values, and applying CareCall's attribution rate at 50% and 100% according to the level of causal relationship, the total social value of CareCall was found to be approximately KRW 14.4 billion (₩14,376,053,357). By item, the social loss prevention cost from suicide risk detection accounted for the largest share at approximately KRW 7 billion (₩7,031,404,911), followed by the social loss prevention cost from solitary death risk detection at approximately KRW 4 billion (₩3,983,654,806). The social value from linkage to health and welfare services for follow-up support recipients was approximately KRW 1.37 billion (₩1,370,880,000), the social value from linkage to dementia-related health and welfare services was approximately KRW 770 million (₩769,504,389), and the depression risk recognition and linkage to health and welfare services was calculated at approximately KRW 766 million (₩766,120,824). The social value of emergency rescue from emergency response was also analyzed to have created approximately KRW 136 million (₩136,000,000) in social value. In contrast, some items in the administrative and operational efficiency domains—such as time spent on telephone outreach, on-site visits, and telephone costs—were relatively small or showed negative (-) values, but positive effects predominated on an aggregate basis. Overall, it can be confirmed that a significant portion of the approximately KRW 14.4 billion in total social value is generated in the social loss avoidance domain, such as suicide and solitary death prevention.

These results are values calculated based on survey-responding institutions, and additional extrapolation was performed to reflect CareCall's total operational scale. When the social value of KRW 14.4 billion calculated from the sample was proportionally extrapolated to total activity based on actual connected and answered call counts, the social value for all institutions is estimated at approximately KRW 34 billion.[2][3] This shows the scale of potential social value that can be expected across the entire operational scope if CareCall maintains a similar operational intensity and effect structure as at present.

2 The reason call counts were used as the basis for social value calculation is that CareCall's social value arises through activities actually performed via connected and answered calls, rather than from the individual number of case management recipients or institutions per se. Therefore, call counts—the actual connected and answered CareCall activity volume—were used as the direct unit of social value generation.

3 The extrapolated estimates are values that simplify differences in call duration and intervention intensity across individual calls to an average effect, and since they are derived from operational data of survey-responding institutions, they need to be interpreted considering differences in utilization characteristics and operating environments by institution.

Category	Sub-category	Social Value
① Administrative/ Operational Efficiency Domain	(1) Cost savings from improved efficiency in telephone outreach	
	- Opportunity cost of time saved through telephone outreach	₩15,512,287
	- Telephone outreach cost savings	₩2,845,242
	(2) Cost savings from reduced on-site visits	
	- On-site visit cost savings	₩1,560,000
	- Opportunity cost of saved on-site visit hours	₩13,381,275
	(3) Cost savings from reduced complaint handling	
	- Opportunity cost of saved complaint handling hours	₩27,833,052
	- Psychological counseling cost savings from reduced emotional labor	₩3,836,560
	(4) Cost savings from automated administrative notification delivery	
	- Opportunity cost of saved notification delivery hours	₩133,606,082
	- Direct cost savings from notification delivery	₩1,439,576
② Emergency /Health Domain	(1) Social value from proxy monitoring and identification of high-risk individuals	
	- Opportunity cost of proxy monitoring time for high-risk individuals	₩2,012,767
	- Social value from health/welfare service linkage for serious illness	₩100,359,259
	- Social value from health/welfare service linkage for dementia	₩769,504,389
	(2) Social value from proxy monitoring and identification of follow-up support recipients	
	- Opportunity cost of proxy monitoring time for follow-up support	₩7,627,327
	- Social value from health/welfare service linkage for follow-up support	₩1,370,880,000
	(3) Social loss prevention costs from emergency rescue	
	- Social value of emergency rescue from emergency response	₩136,000,000
	- Social loss prevention effect from reduced non-emergency 119 calls	₩8,475,000
③ Mental Health and Suicide/Solitary Death Prevention Domain	(1) Depression risk recognition and health/welfare service linkage	₩766,120,824
	(2) Social loss prevention costs from detection of suicide and solitary death risks	
	- Social loss prevention costs from suicide risk detection	₩7,031,404,911
	- Social loss prevention costs from solitary death risk detection	₩3,983,654,806
Total		**₩14,376,053,357**

Going forward, more systematic discussions on attribution rate criteria are needed, and in the mid-to-long term, it is necessary to gradually transition to an SROI-based performance management system to advance the structuring of social value measurement. Furthermore, beyond the current civil servant perception-centered analysis, it is necessary to more precisely reflect qualitative effects such as mental health improvement, isolation reduction, and increased sense of safety by conducting parallel surveys of case management recipients (users), and items with negative (-) values can be utilized for service design and operational improvement through in-depth analysis.

[PART II] Impact of CareCall Adoption Confirmed Through Public Data

1 Analysis Overview

PART II reports the results of investigating the impact of the introduction of CareCall on community healthcare at the regional level using public data. This analysis linked and utilized 13 types of public data from 2017 to 2023 (KOSIS, Emergency Medical Statistics Portal, etc.). The analysis consists of hospital and emergency room visit data analysis at the city/county/district level and solitary death data analysis at the provincial level. For the city/county/district-level analysis, CareCall-adopting and non-adopting regions were matched 1:1 among 229 city/county/districts nationwide, with a final comparison of 86 regions (43 CareCall-adopting and 43 non-adopting). The provincial-level analysis also performed 1:1 matching for all 17 provinces and metropolitan cities nationwide, with a final comparison of 4 provinces (2 CareCall-adopting and 2 non-adopting).

The difference-in-differences (DID) method was applied as the analytical approach to identify the net effect of CareCall introduction by simultaneously considering changes before and after introduction and differences between adopting and non-adopting regions. This enabled quantitative estimation of causal effects attributable to policy adoption, rather than simple time-series variations.

The analysis targets healthcare utilization and death-related indicators focused on the elderly population aged 60 and over. Key dependent variables included the number of hospital visitors, emergency room visitors, and solitary death fatalities. In particular, for the solitary death analysis, the total number of solitary death fatalities across all ages was used as a proxy variable to account for data availability, and an additional analysis on the number of unclaimed decedents aged 60 and over was conducted in parallel to ensure the robustness of the analysis.[4]

4 As of 2021, solitary death fatalities aged 60 and over accounted for 47.5% of the total. Accordingly, this analysis used all-age statistics as a proxy indicator for elderly trend analysis, considering that solitary death fatalities aged 60 and over account for approximately half of all solitary deaths. An additional analysis using the number of unclaimed decedents aged 60 and over—another proxy variable for solitary death—confirmed a consistent trend with the solitary death analysis, validating the analytical model.

2 Quantitative Effect Analysis Results

Difference-in-differences analysis using public data found that CareCall introduction brought statistically significant changes in the structure of healthcare utilization and the social safety net domain.

First, the effect of promoting preventive healthcare was confirmed. Hospital visits by the elderly aged 60 and over in 43 CareCall-adopting city/county/districts increased by approximately 1.5%. After reflecting the regional penetration rate and applying a 50% attribution rate, this translates into approximately 431 elderly persons making additional hospital visits annually that can be attributed to CareCall. These results suggest a shift from reactive medical care centered on response after emergency situations to preventive medical care through proactive management and early diagnosis. Further analysis found that these effects were stronger in regions with higher fiscal self-sufficiency or better hospital accessibility.

Second, a reduction in emergency medical utilization was observed. Emergency room visits by those aged 60 and over decreased by approximately 9.2%. After reflecting the proportion of actual CareCall users among the local population aged 60 and over (penetration rate), this 9.2% reduction is equivalent to preventing approximately 48 people from visiting the emergency room annually. This result suggests that CareCall's regular monitoring and early referral function suppressed progression to acute deterioration and that intervention may have occurred before conditions became severe.

Additionally, the increase in solitary death rates was estimated to be approximately 44.2% lower in CareCall-adopting regions than in non-adopting regions. This result suggests that CareCall can function as a digital safety net that goes beyond simple well-being checks to enable early recognition of isolation and crisis situations and increase intervention capability. However, since death-related indicators can be influenced by various exogenous factors, it is appropriate to interpret these results as estimates showing CareCall's contribution potential.

Quantitative Effect Formula

Dependent Variable × CareCall Effect × Attribution Rate × Penetration Rate = Quantitative Effect

Category	Dependent Variable	CareCall Introduction Effect	Attribution Rate	Penetration Rate	Quantitative Effect at Current Penetration Rate
Hospital Visit	Number of hospital visitors aged 60+ by region	+1.51%	50%	Among the population aged 60+ in the region, Actual CareCall user ratio*	431 persons
Emergency Room Visit	Number of emergency room visitors aged 60+ by region	-9.2%			48 persons

* As of 2021

3 Economic Effect Conversion

The economic effect of CareCall introduction is measured by multiplying the quantitative effect by the economic value based on the performance of CareCall-adopting regions considered in this analysis. In terms of preventive care, the annual increase in hospital visits by the elderly aged 60 and over shows approximately 431 persons, but since increased hospital visits can be a factor for increased medical costs in the short term, this was excluded from the economic savings calculation. In contrast, since a decrease of approximately 48 annual emergency room visits was observed in the emergency medical domain, applying the emergency medical cost unit price estimated an annual social cost savings of approximately KRW 27.02 million. Additionally, reflecting the social loss prevention value (effect of preventing severe disease and emergency exacerbation), an additional economic effect of approximately KRW 816 million per year was calculated.

As an additional scenario regarding CareCall introduction effects, if CareCall services are introduced nationwide and 20%[5] of the population aged 60 and over in each region uses them, the potential economic value generated is estimated at approximately KRW 417.2 billion.[6]

Economic Effect Formula

Economic Value × Quantitative Effect = Economic Effect

Category	Economic Value	Based on current penetration rate*	
		Quantitative Effect	Economic Effect
Hospital Visit	-	431 persons	-
Emergency Room Visit	See details below	48 persons	-
first aid and emergency medical expenses	KRW 565 K		KRW 27.02 M
social loss prevention value	KRW 17M		KRW 816 M
Total	**-**	**-**	**KRW 843.02 M**

* Proportion of actual CareCall users among the population aged 60 and over in CareCall-adopting regions considered in this analysis (Sources: Park Hee-seung (2024), Lee & Jo (2007), Woowarhan Clean (n.d.), Jeong Jae-hwan (2014), Hong & Park (2020))

5 Considering that CareCall's main beneficiaries are elderly people living alone, and that the proportion of elderly living alone was 22.1% as of 2024 according to national statistics (Index Nuri), the penetration rate for the expansion scenario was set at 20% (National Data Agency, n.d.).

6 However, these figures are extrapolated estimates based on several key assumptions and should therefore be interpreted with caution. First, under the assumption of homogeneous treatment effects, the high intervention effects observed among socially vulnerable groups with poor initial conditions were assumed to apply equally to the general elderly population. Furthermore, due to data limitations, statistics on solitary deaths across all age groups were used as a proxy variable, which introduces the analytical limitation that effects observed across all age groups were applied to a specific age group. In addition, these estimates assume linear scalability, whereby service quality and operational efficiency are maintained at their current levels even as the program expands. They also assume regional homogeneity, meaning that the effects observed in the regions and time periods examined in this study would be reproduced in other regions and under different social and institutional conditions.

Potential Value Estimation by Expansion Scenario

CareCall Introduction Effects Confirmed Through Public Data

[Based on 50% Attribution Rate]	CareCall Introduction Effects	Based on current penetration rate		20% national introduction and penetration rate assumption
		Quantitative Effect	Economic Value	Economic Value
Activating preventive care (hospital visit)	Number of hospital visitors aged 60 or older 1.51% increase	431 persons	-	-
Reduce emergency healthcare costs	Number of emergency room visitors aged 60 or older 9.2% decrease	48 persons	-	-
[detail item] first aid and emergency medical expenses			KRW 27.02 M	KRW 13.5 B
[detail item] social loss prevention value			KRW 816 M	KRW 403.7 B
Total		**-**	**KRW 843.02 M**	**KRW 417.2 B**

4 Analysis Results and Recommendations

Difference-in-differences analysis based on public data found that CareCall introduction brought statistically significant changes in the structure of healthcare utilization and the social safety net domain. First, the number of hospital visit patients aged 60 and over increased by approximately 1.5%, demonstrating the possibility of a shift toward preventive-centered healthcare use; this is interpreted as a structural effect that can alleviate the long-term healthcare financial burden through early symptom detection and proactive treatment. Additional analysis found that this effect tends to be stronger in regions with higher fiscal self-sufficiency or better hospital accessibility. In contrast, the number of emergency room visitors aged 60 and over decreased by approximately 9.2%, confirming the effects of strengthened intervention before conditions became severe and reducing the burden on emergency medical services. Converting these quantitative effects to economic value, the annual socioeconomic effect for adopting regions is estimated at approximately KRW 840 million. Furthermore, under a service expansion scenario, if CareCall is introduced nationwide and 20% of the population aged 60 and over uses it, the potential economic value is estimated at KRW 417.2 billion. Additionally, the increase in solitary death rates was analyzed to have decreased by approximately 44.2% compared to non-adopting regions, suggesting that CareCall is functioning as a digital social safety net for protecting lives.

Analysis Results

① Preventive Care

Earlier symptom detection and clinic visits

+1.51%

Number of hospital visitors aged 60 or older increase

approx.431 additional hospital visits per year

② Emergency-Care Efficiency

Preventing escalation and ER overcrowding

-9.2%

Number of emergency room visitors aged 60 or older decrease

approx.48 emergency cases averted per year
(Economic value: ₩843.02M saved)

③ Reducing Social Isolation

Life protection and social safety net

-44.2%

Solitary-death incidence rate

Overall, the findings suggest that CareCall simultaneously generates multi-layered effects by promoting preventive healthcare utilization, alleviating the burden on emergency medical services, and reducing social isolation. Accordingly, it is necessary to consider prioritizing introduction in regions with high fiscal self-sufficiency and excellent hospital accessibility so that preventive medical effects can be maximized. At the same time, to expand the social safety net strengthening effect, a strategy of gradually extending the target scope beyond the existing elderly-centered beneficiary range to broader populations at risk of social isolation—including single-person households, youth (unemployment/psychological stress exposure groups), and low-income groups—should also be examined. This policy direction suggests that CareCall has the potential to evolve into a prevention-centered digital public safety net rather than a simple care service.

3. Conclusion

This study sought to empirically measure the social value of CLOVA CareCall, a generative AI-based telephone care service, and to examine its policy implications. AI-based services introduced in the public sector do not derive their social legitimacy from technological innovation alone; rather, they require quantitative verification of the actual social benefits they create. In particular, the domains of care, health, and mental health are characterized by effects that are difficult to observe in the short term, while long-term risk prevention and the reduction of social losses are of central importance. Accordingly, this study evaluated the effects of CareCall not in terms of operational indicators such as the number of service uses or call duration, but by converting into monetary value the society-wide cost savings and risk mitigation effects—including reductions in medical expenses, improvements in the structure of emergency medical care utilization, and the prevention of social losses.

In this study, micro-level analysis based on field surveys and macro-level analysis using public data were conducted in parallel to more comprehensively verify CareCall's social value. The analysis results showed that CareCall introduction generated positive effects in various domains including expanded preventive healthcare use, increased appropriateness of emergency medical use, and alleviated social isolation. In particular, results such as the reduction in solitary death rates demonstrate that digitally enabled care services can substantively contribute to strengthening community safety nets.

These results suggest that CareCall can become a policy instrument that supports both the establishment of a prevention-centered welfare system and the advancement of the public safety net, beyond being a simple technology service or cost-reduction tool. If the service expands regionally and its target population is gradually extended in the future, it is expected to play an important role in enhancing the sustainability of the digitally enabled public care system and proactively mitigating social risks.

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