Aging and Retirement

Long-Term Services and Supports: A Collection of Essays

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INTRODUCTION

The Society of Actuaries Aging and Retirement Strategic Research issued a call for essays to explore long-term services and supports from a variety of actuarial perspectives as it relates to aging and retirement.

The collection includes three essays that were accepted for publication from all submissions. Two essays were chosen for awards based on their creativity, originality, and promotion of further thought in this area:

Award Winner	**Upcoming Crisis in U.S. Caregiving** Sam Gutterman, FSA, CERA, FCAS, MAAA, FCA, HonFIA
Award Winner	**Understanding the Evolving Financial and Actuarial Challenges of Long-Term Services and Supports** Xinyi (Cindy) Hu

THE CALL FOR ESSAYS

BACKGROUND AND PURPOSE

With increasing life expectancy and medical advances, growing numbers of people require long term services and supports (LTSS) to help them cope with a variety of daily living activities. Support can range from minor assistance such as balancing a checkbook to more personal hands-on help with needs such as toileting and bathing or caring for individuals with severe cognitive limitations. The specific need for services is primarily due to aging, chronic illnesses, disabilities, or a combination of these factors. With the aging of the population, the demand for LTSS services will likely continue to grow steadily and the care needs themselves become more intensive and longer lasting. These services encompass various types of care, including personal care, medical care, and support services, which can be provided at home, in community settings, or in specialized institutions like nursing homes.

While the primary goals of LTSS include helping individuals maintain their independence, providing them support in appropriate home settings and improving their quality of life despite health limitations, the implications of such care can present significant challenges for both individuals and families. The stress of the care needs can be felt in various ways by formal or informal caregivers, with consequences ranging from physical and mental stress on the part of caregivers, burnout and potential loss of caregivers, financial strain and even the eventual exhaustion of all resources. There are several options for financing care needs, each with advantages and disadvantages that fall short of a comprehensive solution for all stakeholders.

Given the current piecemeal state of LTSS services in the U.S., the Society of Actuaries (SOA) Research Institute's Aging and Retirement program is interested in an exploration of these services from a variety of actuarial perspectives. The result of this effort is intended to provide a useful resource for readers to become well-grounded on the issues surrounding the impact of these services and set the stage for future

research. Note: While Medicare, Medicaid, and Veterans' Affairs benefits have an impact on LTSS services, these programs are considered out of scope for this request for research proposals and essays.

RESEARCH OBJECTIVE

The sponsors are seeking essayists to explore actuarial aspects of LTSS. The desired combined end product of this effort is a resource that will aid in the understanding of relevant issues while providing current considerations and potential future dynamics of LTSS.

The intended audience for this effort includes actuaries and other long-term care planning professionals.

The following are illustrative of the topics and questions that might be addressed in an essay or research project. Respondents to this RFP/Call for Essays are not required or expected to address all or even any of these topics/questions. Rather they are encouraged to also consider other question(s) or topic(s) they deem critical to the work done by the Society of Actuaries Research Institute and its members. To maintain a reasonable scope, researchers should be selective in the number of topics/questions they cover.

Possible topics for examination include:

Demographic Trends

- How do current population aging trends impact LTSS demand and costs?
- How do potential changes in family structure impact provision of services? For example, in what ways will caregiving need to change if fewer family members are available to help with these needs?
- What are the financial effects of population growth on LTSS?
- What are differences in the provision of LTSS for young, middle-age and older age individuals?
- What are the gender differences in long-term support services utilization and the financial implications of those differences?
- What are the differences in access to and costs of LTSS between urban and rural areas?
- What is the financial impact of baby boomers having greater LTSS needs as they age in the next decade and beyond?
- How do current and potential future shortages of care workers impact the provision of LTSS?
- What different issues exist for informal care (i.e., family or friends) and paid-for caregivers, either at home or in facilities?

Artificial Intelligence

- What is/will be the role of Artificial Intelligence in providing and managing LTSS and related administrative aspects of caregiving?
- How can Artificial Intelligence prevent fraud and other financial risks that those needing LTSS may encounter?
- What are potential uses of Artificial Intelligence in addressing engagement and companionship needs of people in need of LTSS?
- In what ways can Artificial Intelligence improve the delivery of LTSS services?

Health Outcomes

- How does chronic disease prevalence affect LTSS utilization and costs?

- What are the financial impacts of neurological-related diseases, such as dementia and Alzheimer's disease, on LTSS and how might this change in the future? Which related costs for caregiving and medical treatment may grow the most in the future and which may be reduced?
- What is the cost-benefit of specialized physical rehabilitation and recovery services for LTSS?

Service Delivery

- How can the cost and quality of support services in different settings (home vs institutions vs day programs, etc.) best be assessed?
- What are the cost-benefit implications of technological advancements in LTSS?
- How do workforce challenges impact the provision and costs of LTSS?
- How can medical, personal and other support services be integrated to optimize costs and outcomes?
- What are the financial implications of telehealth and remote monitoring in LTSS?
- What are ways that home care can be expanded to provide more efficiency and cost reduction to LTSS?
- What services and care strategies could help best meet the needs of individuals with memory and cognitive care needs?
- What are the impacts of hospice and palliative care for the delivery of LTSS?

Planning and Financing

- What are ways that LTSS can best be integrated into retirement planning?
- How do financial literacy and education shortfalls about LTSS needs impact younger generations (Gen Z, etc.) when it comes to future planning?
- How can the future cost of LTSS be identified and quantified for planning and savings purposes?
- What are the latest developments in products that combine long-term care (LTC) and other coverages (combination products)?
- What are the implications of using 401(k) and similar plans to finance LTSS and long term care needs?
- What lessons can be learned from other countries to enhance LTSS planning and financing?
- What are the advantages and disadvantages of using home equity to finance LTSS needs?
- How can private-sector LTC insurance and public sector provision (e.g., Medicaid and Medicare) be better coordinated and delivered?
- What is the potential intersection of private and public financing approaches in the provision of LTSS? How do these approaches balance against one another to achieve the desired outcomes?

Prevention

- What types of services and care may prevent or minimize the need for more intensive LTSS services in the future?
- To what extent have preventative services been integrated into the provision of other LTSS services? What services may be well-integrated and which are lacking?

ACKNOWLEDGMENTS

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Cailyn Canty, FSA, CERA, MAAA

John Cutler, J.D.

Annie Gunnlaugsson, FSA, MAAA

Stephanie Moench, FSA, MAAA

Lisa Ullman, FSA, MAAA, FCA

Award Winner

Upcoming Crisis in U.S. Caregiving

Sam Gutterman, FSA, CERA, FCAS, MAAA, FCA, HonFIA

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As our population ages, more attention should be given to members of vulnerable populations, including older adults and their associated risks and support needs. Often, this older population segment is seen as consisting only of the oldest-old, especially those with special physical or cognitive needs. However, many children and disabled or ill adults also have similar needs. Many of these individuals require care and support, as evidenced by the large and growing number of caregivers, with the need for their support and services outstripping available supply.

Powerful demographic, economic, technological, and political forces are shaping the future of caregiving. As a result, its complex landscape is evolving and will continue to evolve. As our population continues to age, the demand for caregiving will continue to grow, primarily, but not exclusively, driven by the needs and composition of caregiving among an increasingly older adult population. This essay discusses both demand and supply issues that will contribute to an upcoming crisis in U.S. caregiving.

WHO NEEDS CARE

By 2030, the oldest baby boomers will reach age 80 (by 2032, those over 80 will exceed 20 million). This population segment is expected to more than double between 2025 and 2050, increasing by a factor of 2.6 by 2075. The population aged 90 years or older is projected to be 2.9 times larger by 2025 and 3.9 times larger by 2075 than it is today.[1]

To provide perspective, Table 1 presents the projected number (in millions) of children through age 17, people aged 80 and older, and those aged 90 and older, at selected years. To summarize, the number of children is expected to stabilize or possibly decline, while the number at older ages is expected to grow significantly.

[1] Data from this paragraph and Table 1 are from Social Security Administration. (n.d.). *Social Security program data: Downloadable files*. Retrieved January 23, 2026, https://www.ssa.gov/OACT/Downloadables/CY/index.html

Table 1
NUMBER OF AMERICANS (MILLIONS) OVER AGE 80 AND 90

Year	Ages 0-17	Age 80 and older	Age 90 and older
2025	69.9	14.6	2.5
2030	73.1	18.7	2.9
2035	73.9	23.0	3.7
2040	76.9	26.9	5.0

Source: Social Security Administration, Office of the Chief Actuaries—estimates underlying the 2025 Trustees Report

Additionally, about 7.3 million disabled workers are beneficiaries of the federal Disability Insurance program. However, not all these individuals require intensive care. In any case, the need for their care will also be considerable. Even for the very young, whose numbers will decrease if the current historically low fertility rates continue, the number of young adults who will need care will not decline.

The caregiver burden is being overwhelmed in several ways—physically, financially, and emotionally. Their time commitment can be immense—in 2021, it was estimated that family caregivers provided about 36 billion hours of unpaid care, a two billion-hour increase from 2017, according to the AARP.[2]

The many senior programs that closed during the COVID-19 pandemic may be contributing to current needs. Spikes in caregiving time are also likely driven by an uptick in caregivers who live with a care recipient with a diagnosis such as a neurocognitive disorder that requires intensive and even 24/7 care. A 2024 report from the Alzheimer's Association[3] indicated that more than 11 million family members and other caregivers were supporting someone with dementia in 2023. As the number of people who have dementia grows with our aging population, this will likely continue increasing. In another study, the hours family members spent on dementia caregiving increased nearly 50% from 2011 to 2022, bringing their weekly average to 31 hours.[4]

The growing number of older adults needing care is accompanied by rising concern regarding possible adverse health outcomes, both mental and physical. Rates of mental distress and depression, as well as of obesity, arthritis, and asthma, are higher among those who provide support to family members or friends with chronic health conditions or disability.[5] Nearly all these adverse health indicators have increased since the same data were collected a decade earlier.

Although people with dementia represent a large proportion of the population with intensive caregiving needs, people with other conditions also require care. As the prevalence of multimorbidities, including diabetes, obesity, immobility, and other mental health conditions, continues to increase, there will inevitably be a growing need for

[2] Social Security Administration and AARP Public Policy Institute. *Valuing the Invaluable: 2015 Update: Undeniable Progress, but Big Gaps Remain* (2015), AARP. Retrieved January 23, 2026, from https://www.aarp.org/pri/topics/ltss/family-caregiving/valuing-the-invaluable-2015-update/
[3] Alzheimer's Association. *2023 Alzheimer's disease facts and figures*. *Alzheimer's & Dementia*, *19*(4), 1598-1695. https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/alz.13016
[4] Johns Hopkins Bloomberg School of Public Health, *Number of family caregivers supporting older adults increased nearly one-third between 2011 and 2022*, Public Health (Feb. 4, 2025), retrieved January 23, 2026, from https://publichealth.jhu.edu/2025/number-of-family-caregivers-supporting-older-adults-increased-nearly-one-third-between-2011-and-2022#:~:text=The%20study%20%2C%20published%20online%20February%203,in%202011%20to%2031.0%20hours%20in%202022.&text=For%20the%20second%20two%20categories%2C%20the%20NSOC,caregivers%20in%202011%20and%202%2C122%20in%202022
[5] A 2024 report from the U.S. Centers for Disease Control and Prevention (CDC). https://www.cdc.gov/mmwr/volumes/73/wr/mm7334a2.htm

assistive care. The number of those most affected, that is, those needing the most and most intensive forms of support, will increase, possibly beyond the ability of caregivers to provide services.

On average, minority and low-income seniors receive relatively poor-quality care. Partly because of higher mortality, the survivor of a couple may face a particularly bleak time in their older age.

As already indicated, not all those who need caregiver support are older adults. According to the National Alliance for Caregiving and AARP, about 14% of caregivers provide care for a child (under 18), and roughly 39.8 million caregivers provide care to adults (18 and older with a disability or illness, equal to about 16.6% of U.S. adults.[6]

WHO ARE THE CAREGIVERS

There are two categories of caregivers: those who are financially reimbursed for the support they provide and those who are not.

1. Formal caregivers include employees providing services in a specially designed facility or institution, or at the care recipient's home. They can provide their service as individuals or, more often, as employees of facilities or agencies. They also include those who provide services in a home or community setting, ranging from occasional visits to the residence to 24/7 care and support.
2. Informal caregivers include family, friends, or community residents and neighbors who may provide a broad range of services and support.

Women are the primary caregivers, with estimates ranging from 75% to 90%, depending on the specific role and setting.

It is important to note that estimates of the number of caregivers vary widely. Nevertheless, it has been estimated that in 2020, approximately 53 million Americans, or one in five adults, provided unpaid care to relatives, friends, or neighbors who needed health or functional support.[7]

However, the pool of available family caregivers is shrinking due to factors such as smaller family sizes, an increase in single-adult households, and a rise in dual-income households. In 25 years, there may be only three family caregivers for every person needing care, compared to seven caregivers for every person in 2010.[8] Higher rates of divorce, more single-parent households and childlessness, and delayed marriage further reduce the availability of family caregivers. Increased labor force participation among women has further complicated traditional caregiving arrangements. Thus, the informal care population is coming under continuing stress.

Family caregivers are predominantly women (61%). Additionally, 61% of family caregivers have a job, with 26% experiencing difficulty coordinating care (up from 19% in 2015).[9] In addition, more Americans are caring for more than one person (24% compared with 18% in 2015). The percentage caring for someone with Alzheimer's or another form of dementia increased from 22% in 2015 to 26% in 2020.

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[6] The Guardian Life Insurance Company of America, *Caregiving in America: Caregiving Trends 2025: Workforce Insights & Support Solutions* (2025), retrieved January 23, 2026, from https://www.guardianlife.com/reports/caregiving-in-america

[7] AARP and National Alliance for Caregiving, *Caregiving in the US 2025: Key Trends, Strains, and Policy Needs* (2025), retrieved January 23, 2026, from https://www.aarp.org/pri/topics/ltss/family-caregiving/caregiving-in-the-united-states/

[8] Caregiving in the US (National Alliance for Caregiving), *Caregiving in the US Report: 2025*, retrieved January 23, 2026, from https://www.caregiving.org/research/caregiving-in-the-us/

[9] AARP & National Alliance for Caregiving. (2020, May 14). *Caregiving in the United States 2020*. AARP. https://www.aarp.org/pri/topics/ltss/family-caregiving/caregiving-in-the-united-states/

In sum, an increasing number of older adults needing care will have to rely on paid caregivers. However, the supply of paid care workers is also under strain, as evidenced by severe labor force shortages and high turnover, with a projected need for at least 1.2 million additional direct care workers by 2030.

As demand for their services increases, caregiver turnover will need to be addressed. Enhanced standards and training will be needed. More home health workers will be particularly needed, along with improved compensation and career structures. As the caregiver supply gap expands, partly due to increased demand, high turnover resulting from low compensation relative to job stresses, and the current undervaluation of the value of caregiving, employers, which range from agencies to health systems, and policymakers, will be compelled to adopt wage increases, benefits, and career development opportunities. Cost pressures will inevitably follow.

Virtual training, peer networks, and respite options will need to be expanded to meet the growing demand for higher-quality and trained caregivers. As more people choose to age in place, the need for caregivers who can support them in their homes and communities will continue to increase.

Half the family caregivers, primarily working-age adults, provide support services to older adults. That's part of the reason why those in their 30s to 50s have historically been referred to as the "sandwich generation," a term coined in the 1980s to describe the experience of raising children while also caring for one's parents.[10] This has been exacerbated over the past decade as the sizeable baby boom generation has entered their advanced ages. This trend is expected to continue over the foreseeable future. According to the U.S. Census Bureau, adults aged 65 years or older are projected to increase from 17% of the total U.S. population in 2022 to nearly 23% by 2050, resulting in an additional 24 million people who may require caregiver support by mid-century. These family caregivers will continue to juggle their jobs, caregiving responsibilities, and parenting, many relying on remote work and flexible work policies.

People caring for a family member with special needs, such as a disabled child or adult, a convalescing partner, or an aging parent, often feel alone—but they aren't. In fact, before the COVID-19 pandemic, unpaid family caregivers comprised nearly one in five U.S. adults, or more than 50 million people. Some have estimated that this number has grown since then, especially people supporting older adults: between 2011 and 2022, this subset of caregivers increased from 18.2 million to 24.1 million.[11]

21.3% of Americans are caregivers, having provided care to an adult or child with special needs at some point in the past 12 months, while in 2024, approximately 39% of U.S. family households included children under 18 (down from 48% in 2003). A brief discussion of caregivers and care receivers by age group follows:

- According to a 2023 study by Guardian Life, 41% of care recipients are older adults (i.e., primarily parents of the caregivers). According to the Bureau of Labor Statistics' American Time Use Survey, caregivers who look after someone aged 65 or older spend an average of 3.6 hours per day on eldercare.[12] The paid caregiver labor force is estimated to be between two and three million, comprising 1.5 million home health aides and 0.6 million nursing assistants.[13] In 2021-22, approximately 37.1 million individuals (or 14% of the

[10] Approximately 23% of U.S. adults are estimated to be part of the sandwich generation, meaning they are simultaneously providing financial or emotional support to both their children and their aging parents (https://www.pewresearch.org/short-reads/2022/04/08/more-than-half-of-americans-in-their-40s-are-sandwiched-between-an-aging-parent-and-their-own-children/)

[11] Wolf, Jennifer L., Jennifer C. Cornman, and Vicki A. Freeman. (2024). *The Number of Family Caregivers Helping Older U.S. Adults Increased from 18 Million to 24 Million, 2011-22*. *Health Affairs*, Advance online publication. https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2024.00978

[12] U.S. Bureau of Labor Statistics, U.S. Department of Labor. (2023, October 2). *37.1 million people provided unpaid eldercare in 2021–2022*. The Economics Daily. https://www.bls.gov/news.release/elcare.nr0.htm

[13] U.S. Bureau of Labor Statistics, U.S. Department of Labor. (2025, September 25). *Unpaid Eldercare in the United States — 2023–2024: Data from the American Time Use Survey*. https://www.bls.gov/opub/ted/2023/37-1-million-people-provided-unpaid-eldercare-in-2021-2022.htm

civilian population aged 15 and older) provided unpaid care for the elderly.[14] Approximately 20% are between 45 and 54, 21% are between 55 and 64, and 15% are 65 years old or older.

- For care receivers aged 18 to 64, approximately 39.8 million unpaid caregivers (19.2% of adults) were caring for adults with disabilities or illnesses, including 3.6% who cared for both a non-working adult and a child. The paid labor force, including personal care aides and home health aides assisting working-age adults, is likely greater than two million.
- Approximately 14% of adults are unpaid caregivers for children under 18, with about 1.5% providing care beyond normal parenting duties. More than 1.4 million individuals aged 8 to 18 served as caregivers to relatives. Limited information is available regarding the number of paid caregivers in child-focused settings, such as childcare aides or in-home child health aides, but they may number several hundred thousand.

Table 2
SUMMARY OF ESTIMATES OF CAREGIVERS BY AGE OF THOSE THEY PROVIDE CARE FOR

Age Group	Unpaid Caregivers	Paid Caregivers (aides and nursing assistants)
0-17	37 m (14% of adults), with 4 m (1.5%) providing care over and above normal parenting duties	2–3 m
18-64	40 m (16-17% of adults)	2 m
65+	(5-6%)	Several hundred thousand

SUPPLY OF FOREIGN-BORN CAREGIVER LABOR FORCE

In 2023, approximately 28% of the U.S. direct-care labor force in long-term care roles (including home care workers, nursing assistants, and similar roles) is foreign-born. This includes about 21% of those in nursing facilities and around 32% in home care settings (such as home health aides).[15] The share of foreign-born Certified Nursing Assistants increased by about a third, from 13.6% in the early 2000s to approximately 19.1% by 2021, driven in part by a decline in the native-born caregiver population.

The American Immigration Council[16] reported that in 2021, around 6.9% of home health aides and 4.4% of personal care aides were undocumented immigrants. Large-scale surveys, such as the American Community Survey, generally categorize workers as either naturalized citizens or non-citizens, without distinguishing between legal and undocumented status. This suggests that the actual number of unauthorized workers is likely undercounted, particularly in informal ("gray market") care settings.

Based on the above American Immigration Council report and other available information, a reasonable estimate is that between 4% to 7% are likely undocumented, with the remainder being legal non-citizens or naturalized citizens. This includes 21% of those in nursing facilities and 32% in home settings.[17] These percentages, especially for those providing home services, have gradually increased over the prior decades. However, the undocumented share appears to have been relatively stable, although the percentages are somewhat uncertain. Nevertheless, a

[14] U.S. Bureau of Labor Statistics, U.S. Department of Labor. (2025, September 25). *Unpaid Eldercare in the United States — 2023–2024: Data from the American Time Use Survey*. https://www.bls.gov/opub/ted/2023/37-1-million-people-provided-unpaid-eldercare-in-2021-2022.htm
[15] Kaiser Family Foundation. (2025, *April 2*). *What role do immigrants play in the direct long-term care workforce?* https://www.kff.org/medicaid/what-role-do-immigrants-play-in-the-direct-long-term-care-workforce/
[16] American Immigration Council. (n.d.). *Amid a severe shortage of home health aides, immigrants help care for our seniors.* https://www.americanimmigrationcouncil.org/blog/shortage-home-health-aides-immigrants/
[17] Kaiser Family Foundation. (2025, *April 2*). *What role do immigrants play in the direct long-term care workforce?* https://www.kff.org/medicaid/what-role-do-immigrants-play-in-the-direct-long-term-care-workforce/

reduction in the number of undocumented workers may lead to a decrease in the supply of total available caregivers.

According to research from 2017 to 2021 conducted by the Center for American Progress, there were nearly 350,000 undocumented healthcare workers,[18] including personal care aides, home health aides, and nursing assistants.

TECHNIQUES THAT MAY LESSEN THE LOAD

Will technology transform caregiving through artificial intelligence, robotic assistants, telehealth and virtual consultations, and remote monitoring? Digital platforms, combined with smart homes equipped with sensors and IoT devices, will facilitate more effective emergency identification and response. Wearables and voice assistants will enable caregivers and those in need to monitor vital signs, detect falls, track medication use, and utilize easy-to-use tools to summon help. These technologies will certainly expand, but not everyone over a certain age will be able to afford or be willing or able to use these tech support tools. In addition, some individuals may overcome loneliness by using robotic aides, but there may be limits to what such technological advances can achieve.

Although we will undoubtedly see improvements from these developments, an open question is whether they will be enough to overcome the potential shortfall in the supply of caregivers.

Some policies, such as the 2022 HHS National Strategy to Support Family Caregivers, aim to support caregivers, e.g., through respite care, financial security, and labor force development. In addition, efforts will continue to better integrate family caregivers more fully into caregiving teams.

An increase in community-based care and support, whether through community-based care, villages, or shared-housing models, is also occurring, but may be limited in appeal or unaffordable for many. Additionally, as Medicaid faces financial and political pressure, it is uncertain whether this expansion will be able to meet the demand.

CONCLUSIONS

As the baby boom generation enters the age range during which more care and support will be needed, more attention needs to be given to caregivers—who they are, their roles, and the support they need. At the same time, governments are coming under increasing financial and political pressure, already hitting the Medicaid population, which consists of at least a third of lower-income aged individuals.

Private-sector LTC insurance is not expanding. Over forty states are adopting or piloting programs to improve caregiver support. Medicaid and Veterans Affairs funding for home care is helping some. Overall, caregiver support is expanding, with private health insurers, Medicare Advantage, and private insurers funding respite care, remote monitoring, or live-in aides as preventive measures.

As single-person households (solo-agers) increase, traditional family caregiving support is growing less sustainable. This trend, coupled with a higher labor force participation by women and declining fertility rates, will lead to a decline in the availability of unpaid family caregivers. Consequently, support systems will be under pressure to transition from relying on family caregivers to professional home care solutions. This will increase costs if

[18] Mathema, S., et al. (2024, March 14). *Improving the experiences of immigrant women in the health care sector.* Center for American Progress. https://www.americanprogress.org/article/playbook-for-the-advancement-of-women-in-the-economy/improving-the-experiences-of-immigrant-women-in-the-health-care-sector/

professional caregiving replaces unpaid family caregivers; however, in any case, as the demand for such caregiving increases, wages are likely to continue to rise.

Public policies may need to expand to better address long-term care needs and costs, reflecting demographic realities regarding both those needing care and those who provide care, the latter of which has become increasingly non-native born.

Various policy recommendations could include expanding home-based care services, developing further technological solutions (such as the use of telehealth, wearable devices, and other technologies to monitor health and other support needs), encouraging co-housing arrangements or shared caregiving cooperatives for solo agers to pool resources and support, and introducing tax breaks or financial support for retirees needing care or to incentivize the number and quality of caregivers.

While caregiving is deeply personal, it is also a societal issue that requires a collective response. Without better, proactive caregiver support, we risk higher costs for our healthcare and support systems, greater strain on safety-net programs, and higher personal costs, as well as lost economic productivity across many sectors.

As the needs continue to grow over the next two decades, the future of caregiving in the United States will need further attention. Caregiving consists of complex, multifaceted dimensions. Human compassion, increased professionalism, and supportive infrastructure encompassing both formal and informal caregiving segments need to continue to be addressed and given high priority.

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Sam Gutterman, FSA, FCAS, MAAA, CERA, FCA, HonFIA. A consulting actuary, he can be reached at sam.gutterman1@gmail.com.

Award Winner

Understanding the Evolving Financial and Actuarial Challenges of Long-Term Services and Support (LTSS)

Xinyi (Cindy) Hu, ASA, MAAA

Any views and ideas expressed in the essay are the author's alone and may not reflect the views and ideas of the Society of Actuaries, the Society of Actuaries Research Institute, Society of Actuaries members, nor the author's employer.

As the demographic structure of the United States continues to shift, with more individuals living longer lives and managing chronic conditions, the importance of long-term services and supports (LTSS) has grown profoundly. LTSS includes a wide range of care and support services required by individuals who, due to aging, chronic illness, or disability, need help with everyday activities such as bathing, dressing, eating, and managing medications. These services can be provided informally by family members or through formal paid caregiving either at home, in community settings, or in institutional environments like nursing homes. With increasing longevity and complex care needs, the demand and financial burden associated with LTSS is set to rise significantly. This essay explores the financial and actuarial implications of LTSS, particularly in the context of neurological-related diseases like Alzheimer's and other forms of dementia and offers a perspective on future dynamics and emerging challenges.

RISING DEMAND AND COST IMPLICATIONS OF NEUROLOGICAL CONDITIONS

Among the most financially burdensome drivers of LTSS are neurological diseases, especially Alzheimer's disease and other dementias. These conditions lead to progressive cognitive decline, requiring years of intensive, hands-on care that becomes more demanding as the disease advances. Unlike many other chronic illnesses, dementia care often involves both constant supervision and personal assistance with basic daily functions, placing it among the costliest long-term conditions.

According to the Alzheimer's Association (2025, p. 97), the total cost of caring for people with Alzheimer's and other dementias in the U.S. exceeds $300 billion annually, and this number is expected to grow as the population ages. A large proportion of these costs are borne not by formal institutions but by families and informal caregivers. Unpaid caregivers, mostly family members, contribute billions of hours in care annually, at great personal financial and emotional cost (Kasper, Freedman, Spillman, & Wolff, 2015). Many reduce their work hours or leave the workforce entirely, forfeiting income and retirement savings. This loss of productivity and income contributes to a broader economic burden that is frequently underestimated.

In the actuarial context, this trend raises fundamental challenges for modeling lifetime financial needs, planning for retirement, and estimating the cost of long-term care insurance (LTCI) products. Actuaries must consider not only the direct costs of care but also indirect costs such as lost productivity, delayed retirement, and increased health expenditures for caregivers themselves.

THE DIVERGENT DYNAMICS OF INFORMAL AND FORMAL CARE

The dichotomy between informal (unpaid) and formal (paid) caregiving also presents distinct cost structures and risk exposures. Informal caregivers often experience emotional distress, health decline, and career setbacks (Roth, Fredman, & Haley, 2015). These "hidden" costs do not appear on balance sheets but are crucial for understanding

the full economic impact of LTSS. On the other hand, formal care—whether through home health aides, adult day care, or nursing homes—imposes significant out-of-pocket expenses on families and insurers.

The actuarial implications are complex. For instance, the value of informal caregiving needs to be imputed and modeled in retirement planning scenarios. Meanwhile, formal caregiving costs are rising due to labor shortages, increased regulation, and higher expectations of care quality (Kople, 2023). Wages for direct care workers must rise to attract talent, yet this exacerbates the affordability crisis already facing many middle-income families.

POTENTIAL SHIFTS IN FUTURE COSTS

As LTSS continues to evolve, different components of its cost structure are likely to experience varied trends. Some areas of expense will likely increase significantly, while others may stabilize or even decline depending on technological, policy, and demographic shifts.

One area poised for growth is home- and community-based services (HCBS). As public policy and personal preference both increasingly favor aging in place over institutional care, the demand for HCBS will continue to rise (Henning-Smith et al., 2021). This trend will necessitate expanded infrastructure and a larger workforce, both of which contribute to rising costs. Additionally, the increasing complexity of patient needs—particularly for those with cognitive impairments—will require specialized services and caregivers with advanced training, further raising expenditures.

Similarly, the financial impact of specialized cognitive care is expected to intensify. As the prevalence of dementia increases, more individuals will need memory care units or services tailored to cognitive decline (Alzheimer's Disease International, n.d). These services are typically more expensive than general care due to higher staff-to-patient ratios and the need for secure environments and enhanced supervision.

Medical advancements may also shift cost dynamics. The introduction of new Alzheimer's treatments, such as monoclonal antibody therapies, while potentially effective in slowing disease progression, are currently high-cost interventions. Additionally, widespread use of advanced diagnostic tools like PET scans and emerging blood biomarkers will add upfront diagnostic costs, though they may ultimately contribute to better care planning and delayed institutionalization.

Conversely, some cost areas may experience moderation or decline. Institutional care expenditures might decrease in relative terms, not necessarily because unit costs fall, but due to reduced reliance on nursing homes as care increasingly shifts to home-based models. Hospitalization rates, too, could drop with improved at-home monitoring technologies and preventive care. Tools like wearable devices, remote health platforms, and smart home technologies offer the potential to detect health changes early and prevent emergencies, thereby lowering the frequency and cost of hospital stays.

Another area of potential cost containment is related to caregiver support. By expanding access to respite care, offering caregiver training programs, and encouraging flexible work arrangements, society may reduce the physical, emotional, and economic toll on informal caregivers. This, in turn, may lower associated healthcare costs and productivity losses, helping to mitigate one of the more hidden yet substantial components of LTSS-related expenses.

FINANCIAL PLANNING AND INSURANCE INNOVATION

Given the growing cost exposure, there is an urgent need for innovations in insurance and financial planning. Traditional LTCI has struggled due to underpricing, low interest rates, and adverse selection (Brewster and Gutterman, 2014). However, hybrid products that combine life insurance or annuities with long-term care benefits

have shown promise (Marquand, 2024). Actuaries can consider new models that reflect updated longevity trends, cognitive disease prevalence, and multi-modal care preferences.

In addition, actuaries should consider modeling the integration of technology in care delivery. Predictive analytics, AI-based monitoring, and telehealth services could extend the duration of at-home care while delaying institutionalization. These innovations could lower costs over time but will require upfront investment and careful evaluation of their actuarial impact.

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Xinyi (Cindy) Hu, ASA, MAAA, is an Actuarial Associate at Mutual of Omaha. She can be reached at xinyihu68@gmail.com.

The Long-Term Care Crisis and You

John Ferrara, FCA, MAAA, and Nathan Nutt, Actuarial Intern

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The long-term care dynamic has taken a dramatic turn for the worse in terms of managing the overall expense for individuals, as well as the overall cost for the economy. Several factors contribute to this significant cost burden. First and foremost, there has been a marked increase in life expectancy. Second, there has been an increase in both the absolute size of the population, as well as the overall percentage of the population at retirement age or older. Third, the cost of medical care for the aging population has increased at a high rate of inflation. Additionally, care workers are also in high demand as there are currently limited care provider resources in the marketplace, as well as a paucity of care facilities, resulting in an inflationary cost/demand pull. Fourth, as the population has aged the incidence of chronic and longer-term illness has increased. The treatments and the quality of care have improved dramatically for chronic illness resulting in better, yet more costly, care. The family dynamic has also changed, and it is less likely that family will live near aging relatives and be able to provide support for individuals in need of long-term care. At-home care by family members is provided at a much lower cost than professional care at nursing homes or assisted living facilities.

Insurers of long-term care have generally provided prefunded insurance for cost benefits of provision of services. The prefunded insurance was typically provided many years before services were utilized. The insurance results for the prefunded insurance model were extremely unprofitable as inflation, and the cost, as well as timeframe, for the benefits increased dramatically beyond insurer expectations. The dynamics of the increased cost of care vary as to whom they may fall on depending upon the wealth of the individual and the ability or desire to pay. The cost can be catastrophic in terms of wealth management for low to middle income households. The cost can be substantial for more wealthy individuals. As the financial burden cannot be borne solely by the patient, the costs will also be incurred by healthcare providers and by potential government subsidies (e.g., Medicare), as well as the individual. The cost of care and available resources also vary significantly depending on geography. Rural areas may not have the same cost, demand, and availability of coverage as high-cost, highly populated urban areas. We detail below information underlying population dynamics driving the state of the long-term care marketplace.

In the year 1880, the United States (U.S.) reached a milestone in its population: "surpassing 50 million Americans living on its soil." In 1880, the median age of the U.S. nation was 20.9 years old. Now, almost a century and half later (145 years), the U.S. has grown nearly seven-fold to 340 million and nearly doubled the median age to 38.8 years old. While this dramatic change represents both the increased prosperity of America and the improvements to healthcare over time, it also reflects a much more serious issue. Our population is aging, and with advancements in healthcare, we are quickly finding ourselves overrun by increasing medical expenses, escalating surgery costs, and a need for assisted living arrangements for our elders. All these issues stem from three notable metrics: time, family dynamics, and money.

First, we need to discuss the modern dynamics, as it concerns long-term care (LTC) for families in the United States, and why these phenomena are posing a serious issue for Long Term Services and Supports (LTSS). Almost 30% of all Americans are over the age of 55 and entering their retirement years. This makes them susceptible to multiple forms of LTSS such as in-home nursing care, medicine, therapy, and surgery, among other healthcare needs. While the avenues for long-term care depend heavily upon the aging individual involved, the brunt of the decisions rest

equally heavily on the person's family. It becomes more difficult if family members do not live in the same household. It is estimated that approximately 20 million U.S. adults over age 55 live alone which suggests increased population health risk due to lack of personal oversight, thereby signaling the need to plan for LTSS. Furthermore, in 2023, the Bureau of Labor Statistics found that Americans spend only 30 minutes a day caring for and helping household members, seemingly suggesting a critical juncture in family management for LTSS. Unfortunately, it does not appear that living with your elderly relatives is a mitigating solution as 25.2 million family households were reported to have at least one 65+ year old living under the same roof, capturing approximately 30% of all family households. Additionally, 59 million family households claim to have at least one dependent under the age of 18 and one 65+. Of households with dependents under 18 years of age, 42.7% have to split their time between child-raising and managing their aging family members. With the passage of time and likely health declines in aging parents, heads of households are going to face a time management crisis if they choose to care for family members themselves.

There appears to be mounting issues related to less hands-on oversight of our elders, whether because of heads-of-households juggling younger families and aging parents with other tasks (the "sandwich" generation) or that elders are living on their own. If these trends continue, it is highly likely that we'll see a continued increase in demand for LTSS. Furthermore, if providers are not prepared for this increase in demand, they are not going to have an adequate supply to match market needs. Increased demand and (at best) fixed supply is a recipe for increased prices and, factoring inflation into the equation, suggests that the entire scope of caring for aging family members becomes financially infeasible without advanced planning.

The fact pattern prompts the following questions:

- What are Americans capable of affording?
- What are strategies for individuals seeking to provide the financial means for LTSS in America today?

In 2022, a person over the age of 65 spent approximately $120,000 annually over the remainder of their life for LTSS care. While insurance and additional public programs may help with some of these costs, families, on average, are paying approximately 40% of this cost out of pocket. With an average monthly cost ranging between $8,500 to $10,000 for nursing home arrangements, families are expected to cover roughly $4,000/month on basic expenses alone (presuming that families are receiving coverage from insurance companies and public programs as financial supplements). JRC Insurance Group, as well as AHIP, report that only seven million people over the age of 65 have some form of Long-Term Care Insurance (LTCI). This constitutes approximately 15% of all Americans over the age of 65, meaning that a vast majority of people aren't going to be receiving full benefits to cover LTSS costs.

For the sake of illustration, we can construct a reasonable, hypothetical LTSS care situation:

- A monthly cost of elder care at $9,000, out of pocket, for a standard nursing home arrangement for one resident.
- The average family median household income of $75,000 in 2025, according to the U.S. Census Bureau.
- After tax, the average family's monthly income is $5,000 (assuming an average blended U.S. Federal/State tax rate of ~20%).

Excluding costs of monthly family necessities, such as housing, food, utilities, etc., the average U.S. household is $4,000 short of private pay for elder care creating an untenable LTSS circumstance.

Given this fact pattern, how might the average U.S. family manage LTSS spending in a more viable fashion? To begin, purchasing LTCI plans or even life insurance policies with accelerated death benefits provide options. The accelerated death benefits (ADBs) may provide additional financial support if an elderly family member's health rapidly declines, or they have a chronic condition/are terminally ill. ADBs may provide a certain stipend of their

death benefit in regular intervals to cover medical costs and treatment, thereby relieving some financial strain. Additionally, purchasing annuities, managing investments, or seeking other incremental payment plan options might further alleviate the burden; however, investment strategies require advance planning to allow for appropriate future financial support. According to an article on www.schwab.com regarding long-term care cost management, investing in a Health Savings Account (HSA) provides a way to have a dedicated account for health expenses. HSA accounts are also tax-advantaged, if used accordingly, and allow you to maximize the benefits of the savings plan.

Currently, Americans are at a crossroads in relation to financial planning around LTSS: costs are escalating, the population is aging, and socioeconomic trends make finding and retaining quality care difficult. Improvements in medical technology, improved standards of living, and even average life expectancy are all driving this sharp uptick in costs. While there are planning strategies to employ, such as purchasing insurance plans and investing in HSAs, these solutions require years of forethought and planning and will not alleviate short-term challenges. Many families must, unfortunately, contend with the fact that the costs of LTSS are simply growing too quickly for their budgets, and our aging population is at risk in managing LTSS.

In conclusion, to best drive optimal outcomes for LTSS, Americans need to carefully consider how time, shifting family dynamics, and proper financial pre-planning can inform decision-making in caring for our aging population.

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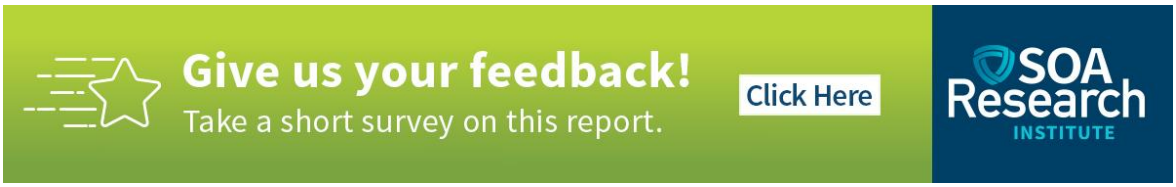
John Ferrara, FCA, MAAA, is Managing Director of Actuarial Practices at Crowe. He can be reached at john.ferrara@crowe.com.

Nathan Nutt is a student at Purdue University pursuing a Major in Actuarial Science and Statistics and a Minor in Business Management.



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Society of Actuaries Research Institute
8770 W Bryn Mawr Ave, Suite 1000
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