

# Advancing Healthy Aging Through Equitable Tech: Six Strategic Drivers

KPMG AZSA LLC  
Healthcare & Well-being (HC&WB)



The global population is aging, but longer lives are not always healthier ones. A growing gap between life span and health span<sup>1</sup>—underscores the urgent need to ensure that added years are lived with dignity, autonomy, and well-being.

In response, the World Health Organization (WHO) launched the Decade of Healthy Aging (2021–2030), aligned with the Sustainable Development Goals (SDGs) to drive coordinated action for older adults’ well-being.<sup>2</sup> Yet, shifting political landscapes have weakened efforts to address health disparities, and many policies still fall short of meeting the needs of marginalized older populations.

Given these challenges, promoting healthy aging for all is no longer optional—it is a critical and immediate priority that demands cross-sector collaboration. Digital technologies offer transformative potential to meet this challenge: expanding access to care, enhancing service quality, supporting caregivers, and improving system efficiency. The KPMG Healthcare and Well-being Team (HC&WB), however, believes that without an intentional focus on equity, digital innovations risk reinforcing ageism and other systemic biases in design and delivery, excluding underserved older adults from access and participation, and consequently widening disparities in health outcomes and digital inclusion.

To guide equitable digital health innovation, HC&WB identified the 6 A’s—six strategic drivers for embedding equity into technology design and implementation:

- **Affordability:** Make technologies financially accessible to older adults, especially those with limited income.
- **Acceptability:** Ensure cultural relevance and respect in design and delivery.
- **Accessibility:** Adapt interfaces to meet diverse physical, sensory, and cognitive needs.
- **Availability:** Expand the reach of digital tools to underserved and remote areas.
- **Agency:** Involve older adults, particularly from marginalized communities, in design and decision-making processes.
- **Accountability:** Establish oversight mechanisms to prevent exclusion, bias, and harm.

HC&WB explores the concept of healthy aging for all, the opportunities and challenges of digital technologies, and practical actions for tech developers, policymakers, service providers, and civil society leaders to advance the six strategic drivers of equitable digital innovation.

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1 WHO. (n.d.). Life expectancy and healthy life expectancy.

2 WHO. Decade of Healthy Ageing. <https://www.decadeofhealthyageing.org/about/join-us/partnering>. Accessed April 22, 2025.

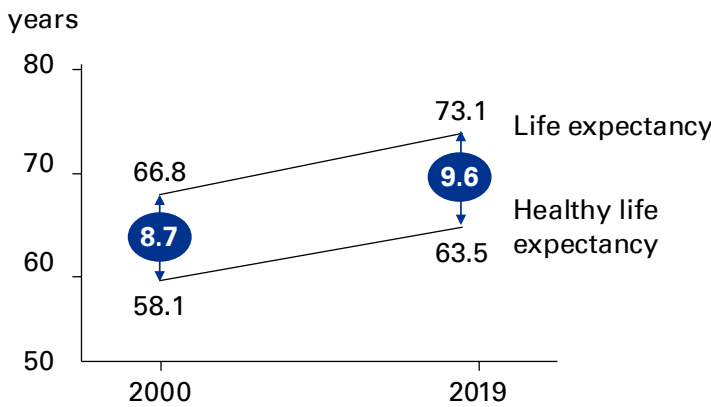
## Healthy aging requires targeted interventions

The world is undergoing a profound demographic shift: in over 60% of countries, average life expectancy now exceeds 70 years.<sup>3</sup> Yet, longer lives don't always mean healthier ones. Many older adults spend nearly a decade living with health limitations, and the gap has been widening (Exhibit 1).<sup>4</sup> This highlights the growing importance of healthy aging, defined by the WHO as "the process of developing and maintaining the functional ability" or the health-related attributes that enable people to be and do what they value.<sup>5</sup>

Exhibit 1

### Health is not keeping pace with longevity.

#### Global gap between life expectancy and healthy life expectancy\*



\*Healthy life expectancy (HALE) represents the average number of years that a person can expect to live in full health, by adjusting for the years lived in less than full health due to disease and/or injury  
Source: WHO. (n.d.). Life expectancy and healthy life expectancy.

Healthy aging is shaped across the entire lifespan. By taking a life-course approach and addressing the social determinants of health early and consistently, we lay the foundation for well-being in later years. As individuals age and their needs evolve, timely, stage-specific interventions become essential. By adapting support for older adults, according to their capacity, health systems, communities, and caregivers can help them live longer, and live well (Exhibit 2).

#### Targeted interventions to sustain functional ability based on intrinsic capacity

	High and stable capacity	Declining capacity	Significant loss of capacity
Focus	<ul style="list-style-type: none"> <li>• Health promotion</li> <li>• Prevention</li> </ul>	<ul style="list-style-type: none"> <li>• Independence</li> <li>• Quality of life</li> </ul>	<ul style="list-style-type: none"> <li>• Dignity</li> <li>• Comfort</li> </ul>
Interventions	<ul style="list-style-type: none"> <li>• Promote regular physical activity</li> <li>• Encourage balanced nutrition</li> <li>• Support social engagement</li> <li>• Conduct routine health screenings</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor for early signs of decline</li> <li>• Provide timely medical and rehab support</li> <li>• Create enabling environments</li> <li>• Introduce assistive technologies and home adaptations</li> </ul>	<ul style="list-style-type: none"> <li>• Deliver respectful, person-centered care</li> <li>• Provide palliative care for symptom relief</li> <li>• Support emotional well-being</li> <li>• Adapt living spaces for safety and comfort</li> </ul>

\*Intrinsic capacity is the foundation of functional ability.  
Source: WHO. (2015). World Report on Ageing and Health; KPMG analysis.

3 WHO. (2024, May 21). World Health Statistics 2024: Monitoring Health for the SDGs, Sustainable Development Goals. <https://www.who.int/en/publications/item/9789240094703>. Accessed April 22, 2025.

4 WHO. (n.d.). Life expectancy and healthy life expectancy.

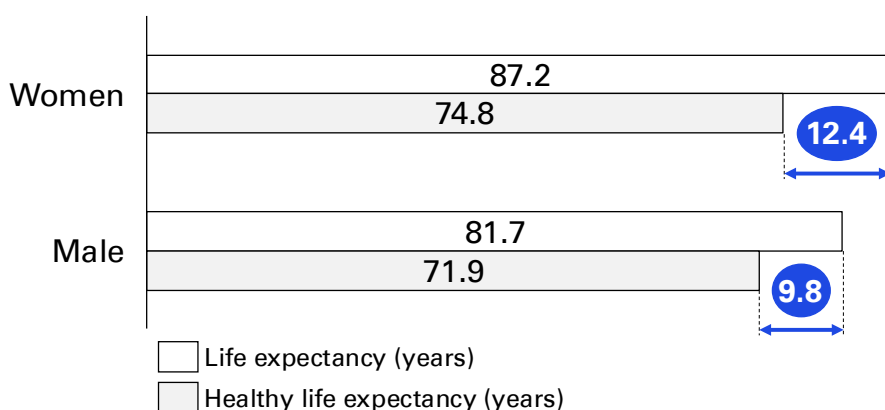
5 WHO. (n.d.). Healthy ageing and functional ability. <https://www.who.int/news-room/questions-and-answers/item/healthy-ageing-and-functional-ability>. Accessed April 22, 2025.

## Equity must be at the heart of healthy aging

In addition to meeting evolving needs, advancing healthy aging must be inclusive. Older adults are not a monolithic group—their experiences are shaped by a lifetime of intersecting identities and inequalities. For example, while women tend to live longer than men, they are also more likely to face chronic illness, dementia, and extended periods of dependency.<sup>6,7</sup> These health challenges are often compounded by systemic disadvantages such as lower lifetime earnings, unpaid caregiving responsibilities, and limited access to pensions.<sup>8</sup> The result is a heightened risk of financial insecurity, social isolation, and barriers to essential care in later life (Exhibit 3).<sup>9</sup>

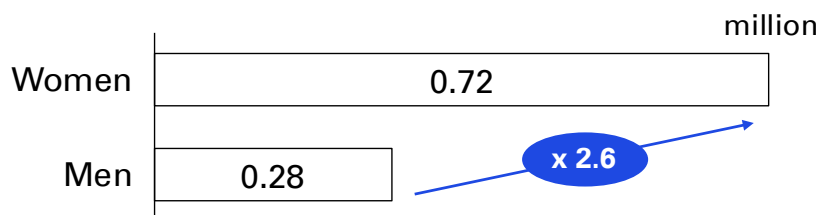
Exhibit 3

### Japanese women live longer but age with more challenges. Gender gap in lifespan and healthspan in Japan (2021)



Source: WHO. (2025). data.who.int, Japan [Country overview]; KPMG analysis

### Number of dementia patients in Japan (2020)



Source: Cabinet Office, Government of Japan. (2024). White Paper on Gender Equality 2024; KPMG analysis

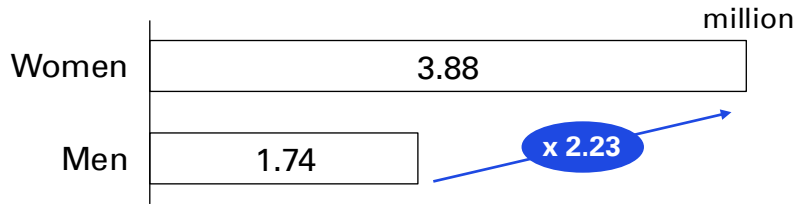
6 Patwardhan, V., Gil, G. F., Arrieta, A., Cagney, J., DeGraw, E., Herbert, M. E., Khalil, M., Mullany, E. C., O’Connell, E. M., Spencer, C. N., Stein, C., Valikhanova, A., Gakidou, E., & Flor, L. S. (2024). Differences across the lifespan between females and males in the top 20 causes of disease burden globally: a systematic analysis of the Global Burden of Disease Study 2021. *The Lancet. Public health*, 9(5), e282–e294. [https://doi.org/10.1016/S2468-2667\(24\)00053-7](https://doi.org/10.1016/S2468-2667(24)00053-7)

7 Taylor L. (2024). Women live longer than men but have more illness throughout life, global study finds. *BMJ (Clinical research ed.)*, 385, q999. <https://doi.org/10.1136/bmj.q999>

8 WHO. (2007, January 17). *Women, Ageing and Health: A Framework for Action*. [https://iris.who.int/bitstream/handle/10665/43810/9789241563529\\_eng.pdf?sequence=1](https://iris.who.int/bitstream/handle/10665/43810/9789241563529_eng.pdf?sequence=1). Accessed April 23, 2025.

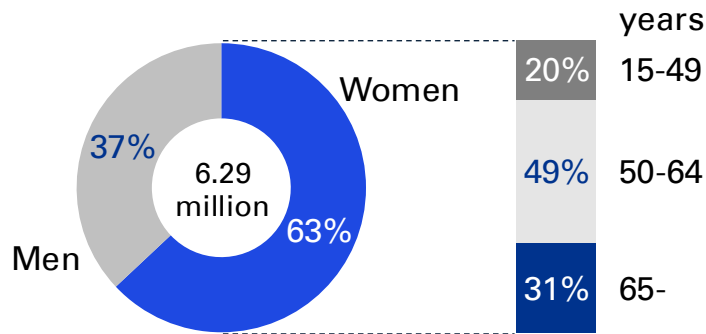
9 Un department of economic and social affairs, Un women, & Un independent expert on the enjoyment of all human rights by older persons with support from AARP. (2022, May 15). *Older Women: Inequality at the Intersection of Age and Gender*. <https://www.un.org/development/desa/ageing/wp-content/uploads/sites/24/2022/03/UN-Advocacy-Brief-Older-Women.pdf>. Accessed April 23, 2025.

### Number of long-term care service recipients in Japan (2024)



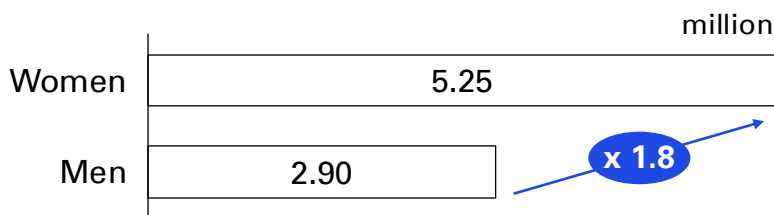
Ministry of Health, Labour and Welfare. (2023). Overview of the Long-Term Care Benefits Expenditure Survey, FY2023; KPMG analysis

### Proportion of informal caregivers for family members (2022)



Source: Cabinet Office, Government of Japan. (2024). White Paper on Gender Equality; KPMG analysis

### Estimates of older adults (65+) living alone in Japan (2025)



Source: Cabinet Office, Government of Japan. (2024). White Paper on Aging Society 2024; KPMG analysis

### Poverty rate\* among older adults (65+) living alone in Japan (2021)



\*The proportion of people belonging to households whose equivalized household disposable income is below the poverty line, which is set at 50% of the median equivalized household income;  
 Source: Aya Abe. (2024). Trends in Relative Poverty Rates (2022 Survey Update); KPMG analysis

To truly advance healthy aging for all, we must go beyond simply extending life. We must ensure that those additional years are lived with dignity, autonomy, and well-being—regardless of gender, income, ethnicity, or other social determinants.

Achieving this vision requires placing health equity at the core of aging policies and practices, involving the following strategies:

1. **Tackling structural inequities**
  - Address socioeconomic disparities and unequal access to healthcare.
  - Reform systems that perpetuate disadvantages across the life course.
2. **Designing inclusive, responsive systems**
  - Develop services that reflect the diverse needs, preferences, and lived experiences of older adults.

## Innovation can advance healthy aging for all

To effectively design services that reflect the diverse needs, preferences, and lived experiences of older adults—especially in resource-constrained settings—innovation becomes essential. Digital technologies — from artificial intelligence (AI) and connected devices to immersive environments and assistive robotics — can play a transformative role in delivering these interventions.

They enable faster, more accurate, and scalable interventions—bringing care to people regardless of location, visualizing previously hidden health patterns, and tailoring support to individual needs. Real-time monitoring, predictive analytics, and data-driven decision-making are helping health and long-term care professionals respond earlier and more effectively, while automation reduces routine burdens and frees up time for more human-centered care.

Digital innovation can:

1. **Broaden access** to medical and long-term care services, especially in remote or underserved areas.
2. **Improve quality of care** through continuous monitoring, personalized treatment, and data-driven decision-making.
3. **Support caregivers** with tools for coordination, education, and respite—enhancing both care quality and caregiver well-being.
4. **Increase efficiency** for health and care professionals by streamlining workflows and reducing administrative load, enabling more quality care.

## Use cases of tech innovative across Japan illustrates how they can better support healthy aging

### VR Rehabilitation Device

**MediVR KAGURA** - Medi VR Inc.

**Overcomes traditional rehabilitation challenges via visual aids**

- The VR rehab device supports patients with complex neurological conditions using non-verbal instructions.
- Gamification makes therapy enjoyable and stress-free, while boosting cognitive and motor functions.

**Implemented in more than 140 hospitals and care facilities**

- VR-guided training improved walking ability in a 90-year-old man at a Kishiwada rehab clinic, after progress had plateaued with conventional therapy.<sup>2</sup>



### AI Gait Analysis Tool

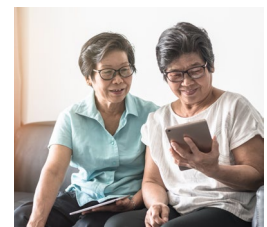
**CareWiz Toruto** - Exawizers Inc.

**Improves efficiency in preventing frailty and functional decline**

- Analyzing and visualizing ambulatory and health data enables personalized exercise plans.
- Tablet-based video/photo capture supports quick diagnosis and timely intervention.

**Implemented in more than 800 rehabilitation centers, day care services, and local councils**

- The objective feedback via walking scores replaced manual staff assessments, improving evaluation efficiency and increasing time for direct care at care facilities in Fujisawa.



### IoT Urination Monitoring Tool

**Dfree** - DFree Inc.

#### Supports timely and appropriate continence care

- An ultrasonic sensor measures bladder urine volume in real time and predicts urination timing using accumulated data.
- Advance notifications reduce caregiver checks and ease care recipients' anxiety about incontinence.

#### Used in 50 hospitals, nursing care institutions, and home care settings

- In a nursing facility in Saitama, the solution improved toilet success rates by notifying users in advance of their optimal urination timing based on individual patterns.



### QR Code Safety Tool for Dementia Care

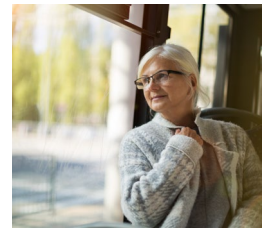
**NailQ** - Orange Links Inc.

#### Supports caregivers and individuals with dementia

- A QR code sticker enables quick identification of care recipients with dementia if they go missing, reducing anxiety of patients and family members.
- It protects privacy by showing only the local district they belong to, without revealing personal information.

#### Distributed in municipalities, care facilities and individual receiving home care

- In Saitama, the municipality distributed the QR code stickers for free to over 300 older adults with dementia.



## Digital health must include every older adult

While digital technologies offer powerful tools to advance healthy aging, without thoughtful and inclusive design, they risk reinforcing inequities—both through ageism and the exclusion of marginalized groups of older adults.

Older adults' experiences with digital health are shaped by intersecting factors such as age, capacity, income, race/ethnicity, gender/sexuality, disability, geography, language, and more. These overlapping identities influence access, usability, and trust in technology—and when ignored, they lead to exclusion.<sup>10</sup>

Ageism, in particular, is a pervasive and often invisible form of bias. It shows up when technologies assume older adults are less capable, ignore their lived realities, or exclude them from innovation processes.<sup>11</sup> Ageism intersects with other forms of marginalization, creating layered barriers. For example:

- Ageist design assumptions may combine with ableism to exclude older adults with disabilities.
- Older adults in rural or low-income settings may face affordability and availability challenges, compounded by age-based deprioritization.
- LGBTQ+ older adults may experience both cultural exclusion and ageist stereotypes that undermine their agency and safety.

Then, how can digital health technologies be designed and implemented to ensure they support healthy aging for all older adults, considering the diverse and intersecting factors such as age, capacity, income, race/ethnicity, gender/sexuality, disability, geography, and language?







<sup>10</sup> Rubeis, G., Fang, M. L., & Sixsmith, A. (2022). Equity in AgeTech for Ageing Well in Technology-Driven Places: The Role of Social Determinants in Designing AI-based Assistive Technologies. *Science and engineering ethics*, 28(6), 49. <https://doi.org/10.1007/s11948-022-00397-y>

<sup>11</sup> WHO. (2022, February 9). Ageism in Artificial Intelligence for Health: WHO Policy Brief. <https://iris.who.int/bitstream/handle/10665/351503/9789240040793-eng.pdf?sequence=1&isAllowed=y>. Accessed April 22, 2025

## The 6 A’s guide innovation for all older adults

HC&WB has identified six strategic drivers for embedding equity into digital health solutions— the 6 A’s of equitable digital health innovation for healthy aging (Exhibit 4). By addressing equity challenges, these drivers maximize the impact of technology while centering the diverse identities, lived experiences, and dignity of older adults.

The 6A’s: six drivers for equitable digital innovation for healthy aging

					
<b>AFFORDABILITY</b>	<b>ACCEPTABILITY</b>	<b>ACCESSIBILITY</b>	<b>AVAILABILITY</b>	<b>AGENCY</b>	<b>ACCOUNTABILITY</b>
Make technologies financially accessible to low-income older adults	Ensure designs are culturally relevant and respectful	Adapt interfaces to meet diverse physical and cognitive needs	Distribute digital tools in rural, remote, and underserved areas	Involve older adults in design and decision-making processes	Establish oversight mechanisms to monitor and correct exclusion, bias, and harm

Source: KPMG

Equity in digital health innovation must be intentional, systematic, and sustained across the entire product lifecycle. This means going beyond one-time design choices to embed equity into every phase—from research and development to deployment, evaluation, and scaling. It involves:

### From challenge to change: applying the 6 A’s to digital innovation for healthy aging

	Challenges	Strategic changes
<b>1 Affordability</b>	Exclude low-income older adults due to high pricing.	➔ Design with cost sensitivity and ensure public subsidies or coverage.
<b>2 Acceptability</b>	Reflect youth-centric norms and stereotypes.	➔ Co-design with older adults to reflect diverse identities and preferences.
<b>3 Accessibility</b>	Overlook sensory, cognitive, or linguistic needs, creating barriers to use.	➔ Provide user-friendly interfaces, multilingual support, and assistive features.
<b>4 Availability</b>	Limit access to urban or high-income populations.	➔ Reach underserved and low-resource areas via inclusive distribution.
<b>5 Agency</b>	Remove choice from older adults; impose technology without consent.	➔ Enable user control, informed consent, and personalization.
<b>6 Accountability</b>	Ignore equity impacts; lack systems to monitor bias, harm, or exclusion.	➔ Measure equity outcomes, provide redress, and commit to continuous improvement.

Source: KPMG

- Ongoing engagement with diverse older adults
- Application of inclusive design standards
- Collection and analysis of disaggregated data
- Creation of feedback loops to identify and address inequities over time

The KPMG HC&WB is actively developing a framework that operationalizes these principles—embedding equity into each stage of digital health innovation while driving the organizational change needed to uphold that commitment. Equity is not a checkbox or a phase; it is a continuous, guiding principle that shapes how technologies are imagined, built, and sustained.

## Equitable tech demands collective action

HC&WB has identified key, actionable recommendations tailored to four stakeholder groups that play a critical role in advancing equitable digital health innovation for healthy aging: 1) policy makers, 2) technology developers, 3) health and long-term care service providers, and 4) civil society organizations.

### Policy makers

- Subsidize technologies and include them in public insurance schemes.
- Mandate accessibility standards for digital tools.
- Enforce opt-in data policies to protect user autonomy.
- Mandate equity reporting for all publicly funded digital tools.

### Tech developers

- Co-develop with diverse older adults from ideation to launch.
- Implement universal design with assistive tech compatibility.
- Enable user control over data sharing and personalization settings.
- Conduct inclusive impact evaluations and report disaggregated engagement data.

### Health & long-term care providers

- Assign “tech buddies” or digital navigators to support onboarding.
- Integrate tech into home care and mobile units, not just institutions.
- Use shared decision-making to align tech use with individual care goals.
- Evaluate tech outcomes and satisfaction; share findings with users and staff.

### Civil society (NGOs, foundations, community groups)

- Provide seed funding or donations to low-income communities.
- Organize inclusive design labs with marginalized older adults.
- Educate older adults on digital rights and informed tech use.
- Collect and share stories to advocate for user-centered change.

## Let’s build a future of equitable healthy aging

In a time when top-down commitments to DEI are increasingly under pressure, grassroots leadership and community-driven innovation that support healthy aging for all are imperative.

The intersection of aging and technology presents a pivotal opportunity—not only to improve care, health, and independence, but to reshape how society values older adults in a digital era.

To truly unlock the potential of digital health, we must shift from “tech for aging” to “tech with aging,” where older adults are not passive recipients but active co-creators of the tools and systems that shape their lives. Embedding equity throughout the entire product life cycle of technology and infrastructure is not just a matter of fairness; it’s essential to meaningful engagement and lasting impact.

At KPMG HC&WB, we are committed to working alongside governments, technology providers, care institutions, and civil society to turn this vision into reality—building systems that are both smart and just. Through collaborative action and inclusive design, we can ensure that longer lives are lived with dignity, autonomy, and well-being—for everyone.

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