

Technology for Aging

2024 Market Overview

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Aging and Health Technology Watch

FORWARD

What's new in this version of the report? Most everything. Every line in this Market Overview has been reviewed and updated to reflect the latest available links, trends, demographic data about older adults, policy changes, new products, as well as inclusion of available data about what tech they own and/or prefer.

AI is and will be everywhere – in full view and embedded in devices and software. From the launch of ChatGPT in 2022, throughout 2023 the software industry was full of announcements, all AI, all the time. CES 2024 also offered <u>AI everywhere and in nearly every announcement</u>. In 2024, AI will likely be everywhere and all around, from tech where it is embedded to AI-centric devices and services, including the emergence of AI in professional care work, back office senior care, and the home-based support of older adults. And <u>Parks Associates reports an average number 17 devices in connected homes</u>.

But new tech continues to confound. AARP's <u>latest survey of the 50+</u> confirms that half of the responders are not totally happy with the tech that they own. Only half say that old and new tech work together consistently. Caregivers are still not well-served by technology. And the majority of adults aged 70+ do not feel technology was designed with them in mind.

Moving onward, here's to 2024 – with innovation, learning and growth for all!

Faurie M. Orlow

Laurie M. Orlov January 2024

WHO SHOULD READ THIS REPORT?

This report was revised in January of 2024, updating products, services, websites, and apps – adding 30 entrants, either new to this version or new in the marketplace. It serves as a market overview with a single purpose: it is intended to describe the need for, and the current market of, offerings to help aging adults live full lives in their homes of choice. As such, it is relevant to:

- Vendors and entrepreneurs marketing to baby boomers and seniors
- Government agencies and policy makers
- Venture capital and angel investors interested in the boomer/senior market
- Retailers with a focus on older adults
- Food service companies
- Financial services companies
- Life sciences and medical technology companies
- Telecommunications and network companies
- Retirement communities that serve independent adults
- Senior living communities, and long-term care providers
- Home care and home health agencies
- Physician practices serving older adults
- Hospitals and integrated service delivery networks
- Caregivers, seniors, and family members

MARKET CONTEXT REFLECTS HOME OWNERSHIP AND CARE ECONOMY

<u>Aging in place</u> continues to shape the attitude of older adults about their future. <u>According to one</u> study, nearly 80% of adults age 65+ currently live in their own home. Meanwhile, by the end of 2023, <u>senior living occupancy</u> had recovered to 84% of its pre-pandemic level. The growth of the <u>65+ population is unprecedented in US history</u>, and consider that the <u>fastest growing</u> <u>demographic includes individuals aged 85+</u>.

Older adults continue to live in their own homes. <u>Older adults dominate home ownership</u> <u>rates</u> as well as benefiting from lower interest rates for their mortgages, <u>if they have one</u>. According to the Harvard Joint Center for Housing Studies, "One third of all homeowner households are now headed by someone age 65 or older. And with the oldest baby boomers turning 78 in 2024, the highest rates of growth are shifting to the oldest age groups, who have substantially greater accessibility needs. There has been a parallel increase in smaller households, such as older single-person households and married couples living alone (see **Figure 1**)." As of 2023, <u>44% of women aged 75+ were living alone</u>.

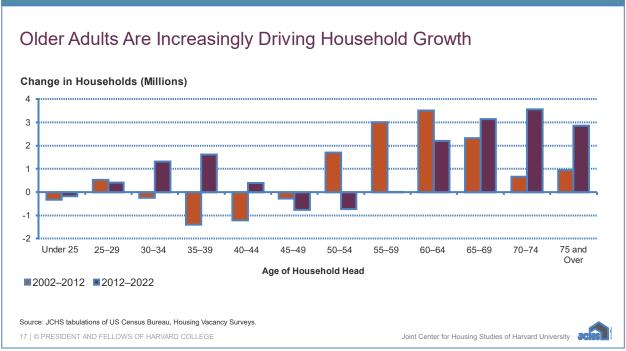


Figure 1 Harvard Joint Center for Housing Studies 2023

Many must renovate to remain safe. Although <u>77% of older adults may want to age at home</u>, four million US households with an adult age 65+ had difficulty living in or using some features of their homes and will need to renovate to stay there. According to the Harvard center, "Nearly 2 million homeowners aged 55 and over pursued projects for accessibility in 2020 and 2021, but many more will need to make these modifications as the number of older adults and multigenerational households increase in the coming decades." Forty-six percent of Americans aged 75+ have a disability, including mobility, cognition, or ability to live independently (see **Figure 2**).

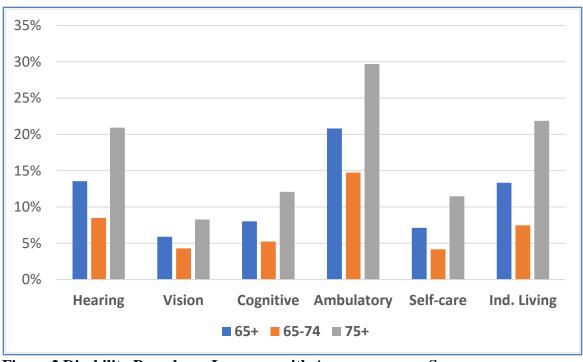


Figure 2 Disability Prevalence Increases with AgeSource: ACS 2022

The cost of care keeps rising. But as calculators <u>of net worth by age indicate</u>, unless a home is sold, the oldest will not afford the likely \$400K of <u>health-related costs</u>. Ironically, private home care can now be <u>equal to or more expensive than assisted living</u> – driven by demand and <u>shortage of home care workers</u>. Reimbursement changes, labor shortages, plus desire for care at home have driven the <u>closure of rural hospitals nationwide</u>. Assisted living's 2024 median cost <u>is</u> projected to be \$4917/month, but the median cost is expected to rise to \$7776 by 2040.

The wave of aging adults impacts both housing and the workforce. As typically defined, aging in place reflects the desire or ability to remain in one's own home. Other options will likely be <u>out of reach for most middle class homeowners</u>. Note that <u>solo agers</u>, those that have no spouse, partner or children, make up as much as 16% of the 55+ population. They will likely make up a key portion of the aging population by 2030, when all baby boomers will be 65+. Recent inflation may make retirement out of reach for <u>many baby boomers</u>. Even today, 9% of adults aged 75+ are working, and that <u>percentage is expected to grow</u>.

Home is still the hub for life and care in the near term. In addition to wanting to remain in their own home, older adults are receiving a growing percentage of their health care there. Telehealth service reimbursement is expected to be <u>extended to the end of 2024</u> and likely to be extended further through other legislation. Reimbursable services include in-home emergency care like <u>Dispatch Health</u> as well as telehealth-based <u>mental health services</u>.

Professional caregiving is a conundrum of high cost, low pay, and demand for workers. <u>The most recent data indicates</u> that 22% of adults aged 85+ need help with personal care. As families and seniors compare the costs of aging at home to aging in a senior living community,

the cost projections begin to look similar – with the nationwide median monthly cost of full-time home care now at \$4917, versus \$4300 per month for senior living, according to <u>Genworth</u> <u>Financial</u>. And there has been <u>an 88% increase in the number of open Certified Nursing Assistant</u> (CNA) jobs. One recent positive development – adding paths to promotion to RN for CNAs.

Paid home care picks up where families and senior housing leave off. Demand for aging at home with home care <u>continued to grow during 2023</u> despite rising costs. Due to scarcity of workers, both senior living and home care still rely largely on the same pool of relatively low-paid workers, and <u>care in many areas is quite difficult to find</u>. On average, home care fills a care gap of 20-27 hours per week at a presumed lower cost (\$30/hour paid to agency, \$14.56/hour to the worker), than a move to assisted living, though annualized costs are approximately the same.

Shortage of workers will worsen in 2024. Also during 2023, non-medical home care work (or personal care aide) contributed to the <u>shortage in the senior care industry</u>. And home care was <u>fastest growing job</u> (see **Figure 3**). Its <u>turnover rate soared to 77.1% in 2022</u>. And staffing challenges are top of mind for home care agencies which are seeing <u>fewer billable hours at higher rates</u>. As the shortage of home care workers worsens – especially in urban areas in which workers cannot afford to live – predictions are dire, amounting to <u>804,600 job openings over the decade 2022-2032</u>, 1 of every 6 new jobs, and by 2032, the largest occupation in the economy.

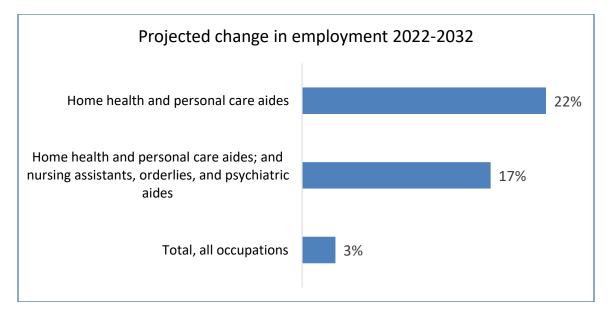


Figure 3 Growth 2022-2032 Personal Care and Home Health Jobs Sources: BLS/PHI

Stark consumer economic realities challenge senior living occupancy. As of 2023, the median net worth of the 75+ is \$335,000. The low level of savings slows moves to assisted living, where move-in age is closer to mid-80s (see **Figure 4**). With more than <u>half of assisted living residents aged 85+</u>, these are frailer residents, many with dementia, who need help with multiple Activities of Daily Living (ADLs). But boomers are right behind them – and given inflation, may be even less able to move in. They have simply not saved enough to be comfortable after retirement and later afford more than a few years at a <u>private assisted living</u>.

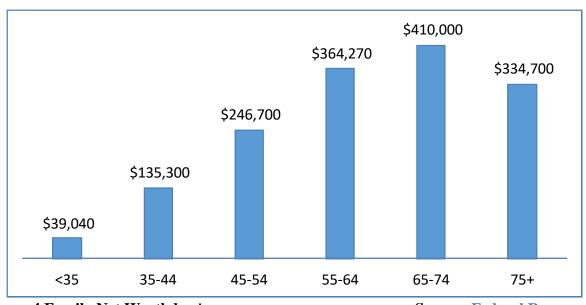


Figure 4 Family Net Worth by Age

Source: <u>Federal Reserve</u>

Meanwhile life expectancy extends 20 years past the so-called retirement age. The

probability of living to age 85 is now 55% for a 65-year-old male, and 65% for a 65-year-old female. Life expectancy at 75, however, is almost another <u>11 years for healthy men</u>, <u>13 years for healthy women</u> – requiring a longer term plan for housing, health care, transportation and other support systems. And older workers are not necessarily retiring – 19% of the 70 to 74-year-olds are working today; <u>that percentage is expected to grow</u>.

POLICY MAKERS FUND CAREGIVING AND AGING INITIATIVES IN 2023, BEYOND

Caregiving and other demands of an aging population gained significant government attention and new initiatives during 2023. While some of the actions below will require further funding action from Congress, as of 2024, all of these represent forward momentum for long-needed changes. It is likely that technology enablement and access will be components of each of the initiatives as they evolve. Example categories include:

Broadband. Recognizing that access to high speed Internet is essential for all age groups, including low income, the elderly and disabled, the Federal Communications Commission (FCC), provided a 2023 update to a <u>government-supported discount on broadband access</u>, which represents a significant effort to improve (and complete) access to broadband for all.

Caregivers. In April, 2023, the White House issued "The <u>Executive Order on Increasing Access</u> to <u>High-Quality Care and Supporting Caregivers</u> (EO) including more than 50 directives to nearly every cabinet-level agency to expand access to affordable, high-quality care, and provide support for care workers and family caregivers." This included caregivers of children, the elderly and the disabled. Also in 2023, AARP updated its report, <u>Valuing the Invaluable: Strengthening Supports for Family Caregivers</u>.

Dementia care. From the White House Fact Sheet: "The Executive Order directs Health and Human Services (HHS) to consider testing a new dementia care model that will include support for respite care (short-term help to give a primary family caregiver a break) and make it easier for family caregivers to access Medicare beneficiary information and provide more support to family caregivers during the hospital discharge planning process."

Medicaid Home Care Services. The President's Budget also includes \$150 billion over the next decade to improve and expand <u>Medicaid home care services</u>—making it easier for seniors and people with disabilities to live, work, and participate in their communities. (Medicaid is partially funded by the Federal government and the states, which may manage home-based services differently.) This funding can improve the quality of jobs for home care workers and support family caregivers. The Administration is also promoting the use of apprenticeship programs and partnering with employers, unions, and others to recruit, train, and keep long-term care workers on the job while also helping them advance their careers as registered and licensed nurses.

Older Americans Act Update 2023. The Older Americans Act has been re-authorized multiple times and includes multiple categories that are further enabled with technology support, as described in detail in the <u>Overview of Older Americans Act Programs</u>. Those mentioned includes self-directed care, information and assistance, statewide programs for access to technology, purchase of technology, and training about the use of technology as part of <u>programs that include</u> training for employment, information and referral, nutrition assistance, and health support.

Telehealth. Although reimbursed access to telehealth has been repeatedly reauthorized, 2024 may be the year in <u>which its role in care delivery is made permanent</u>. The American Telemedicine Association (ATA) recommendations include access to telehealth audio coverage, important for seniors who lack other technology.

But Older Adults are At Risk from More Sophisticated Scams and Fraud

Data breaches and scams have worsened, including Covid-19 and stimulus fraud. Seniors and their families should be cautious, however, as 2023 also turned out to be another memorable year <u>for healthcare data breaches at around 1.54 per day</u> – increasingly due to hacking. Ransomware attacks <u>went up year-over-year in 2023</u>. In 2022, the FTC presented its annual report to Congress, <u>Protecting Older Consumers 2022-2023</u>, indicating that older adults are among those affected in every consumer protection case filed this past year, showing the sharp difference in fraud loss for the oldest. During 2022, older adults, per the FTC (see **Figure 5**):

- "Reported losing more than \$1.6 billion to fraud, compared to about \$1 billion the year before.
- Reported losing big to investment scams: \$404 million in reported losses, with reports often describing fake cryptocurrency investment opportunities that targeted people on social media.
- Reported losing more to business impersonation scams (especially scammers pretending to be Amazon) and romance scams than the previous year.
- Were more than six times more likely than younger adults to report losing money to a tech support scam."

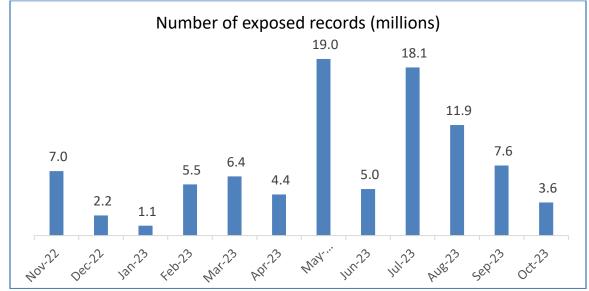


Figure 5 Data breaches reported monthly Nov 2022-Oct 2023 Source: HIPAA Journal



DID YOU KNOW 100 million people had data exposed in healthcare breaches reported to the federal government in as of <u>November 2023</u>

Most older adults are victims of at least one scam attempt. According to a <u>University of Michigan poll</u>, three in four adults age 50–80 (75%) reported that they experienced a scam attempt online or by phone, text, email, or mail in the past two years. Worse, data exposure in healthcare breaches was significantly <u>worse in 2023</u> than <u>2022</u>.

THE PANDEMIC SHARPENED FOCUS ON TECH ADOPTION OF THE OLDEST

Tech adoption for older adults is growing... The surveyed ubiquity of technology has led to a belief that it is everywhere it needs to be, with media assumptions about the benefit of smartphones and online tools, ownership of devices, or access to broadband speeds. The majority of older adults now own <u>smartphones and smart TVs</u>. Why? To connect with families. But it is past time to make smartphone user interfaces usable (accessible even) and make sure if it's the only phone an older adult owns, that it supports sharing tools like FaceTime, text chatting, or YouTube.

...But usability, for older adults? In 2024, not yet. The more things change, the perception is that they are unchanged. <u>Link-Age Connect</u> surveyed tech adoption of the oldest in 2011. This month <u>AARP published</u> its annual tech survey of individuals aged 50+. Only two-thirds of responders expressed comfort with their digital skills – comfort diminishes with age. Devices do not seem to work with other devices in their homes. And especially for 70% of those aged 70+, tech (still) appears not to be designed with them in mind (see Figure 6).

| 2011 Link-Age Survey Comments | 2024 AARP Survey Comments |
|---|---|
| Got along all my life without this technology, so I'll continue without it | Users have to teach themselves platform updates. Online guides are ineffective. |
| Can do if given careful instructions and I write down in a book. | Too many steps to set up a device, too long to learn and memorize options. |
| l am very much interested. My grandchildren make me feel like a dinosaur. | Perhaps tech platforms can have tutorials specifically for the older generation. |
| I read the newspaper and like to get my mail from the mailman. | No printed instructions, everything is online and difficult to follow. |
| I am 90 and can make limited use of the computer. I would like one-on-one help. | Truly designed for young people. Not very intuitive for those that don't understand technology. |
| Cost of services offered is unreasonable. | Too many functions that require a login to obtain help. |
| I like cell phones to call and text. | Assumes lots of previous experiences. |
| Figure 6 Source: <u>Link-age 2011</u> | Source: <u>AARP Tech Trends 2024</u> |

Medicare Advantage features some tech-enabled services in the home. By 2023, 51% of Medicare beneficiaries (28.4 million people) were <u>enrolled in Medicare Advantage plans</u>. Given the growth rate, expect further growth in 2024 – <u>TV marketing expenditure has been staggering</u> and the ads, many viewed as <u>misleading</u>, will be <u>more restricted</u>. Besides further solidifying support for telehealth, Medicare Advantage plans provide some hearing, dental, fitness, and vision health benefits. Some plans in 2024 will offer more mental health options as well as low-income subsidies. Seeing that Medicare Advantage plans may improve post-acute outcomes, some <u>senior housing companies</u> began <u>offering Medicare Advantage plans to residents</u>.

The senior housing industry sees technology as a growing priority. The pandemic placed a spotlight on major gaps in senior housing adoption of technology. As new construction slowed, occupancy loss has been largely recovered. But during 2024, the industry will have to make more technology investments that matter to prospective residents at the same time as overall senior living costs rise. Broadband access, video, telehealth capabilities, and digital access will have growing importance. That will be key to senior-living's wellness-related offerings – as more residents bring in their own devices, some communities are considering the role of tech concierge to assist them, removing pressure from other staff members. Mitigating fall risk is increasingly important for the wellbeing of older adults.

Fall detection moves from the body into the room(s), using sensors enhanced with AI. In senior living settings, new offerings have emerged recently seeking to detect falls and fall risk without a wearable, using a scale, radar, cameras, video recording, sound – leveraging AI in all of these.



DID YOU KNOW that 36 million adults aged 65+ fall each year? According to the CDC, the estimated cost of falls across the U.S. healthcare system is \$50 billion annually.

Voice first technology moves from revolutionary to ho-hum. The downsizing of the Alexa teams at Amazon was a late indicator that what was <u>remarkable in 2018</u> is now necessary but not sufficient. It is just one element of an AI-enabled multi-modal technology infrastructure which understands and reacts to spoken language. But as one of the user interface options, its linguistic understanding still needs work – its major competitors as 2024 begins do a better job.

Investors ramp up more interest in the older adult market. Population demographics matter – and 2023 saw growing investing interest in the older adult market. Primetime Partners, Linkage Ventures, AgeTech Capital, 1843 Capital, Techstars, CABHI, AGE-WELL are all investing in AgeTech startups, and AARP cultivates tech innovators in its AgeTech Collaborative program. With the aging population growing globally, numerous startups in multiple categories are updated annually on a market map viewable at Gerontechnologist.com.

AI is pervasive as 2024 ushers in a new Consumer Electronics Show (CES). Consider the plethora of AI-related topics and presenters, and wonder, what will have staying power in 2024 and beyond? Most did not see the impact of ChatGPT before November, 2022 and its future gain of more than 1.7 billion users. For that matter, they did not see the anxiety level that AI has generated among government organizations or the impressive uses of AI in medicine, documentation, and care work – consider the rise of the AI caregiver. In 2024, the odds are good that new tech, most of it aided by machine learning and generative AI, will continue to surprise.

TECHNOLOGY AUGMENTS CARE, DOES NOT REPLACE SERVICE OR FAMILY ROLES

The categories of technology offerings help older adults age successfully and include independent market segments – each useful – but together, they complete a puzzle for a fulfilling and interactive life for older adults, enabled with the support of families and caregivers and will include the sub-categories as follows (see **Figure 7**). Examples are offered beginning on page 19.

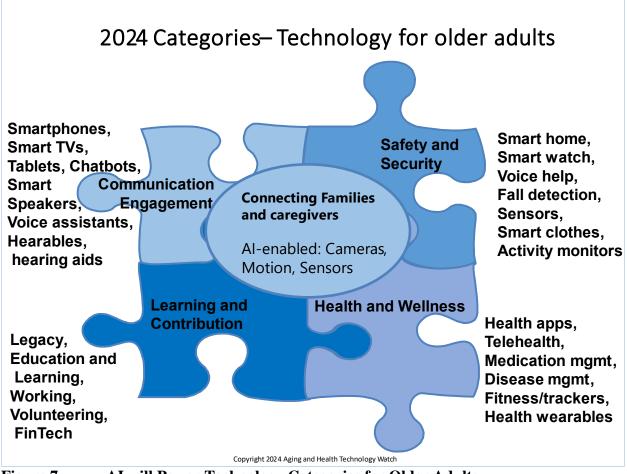


Figure 7 AI will Power Technology Categories for Older Adults

Communication and engagement. For all ages, isolation is increasingly untenable without the technology to connect to others. As 2024 begins, tech vendors used the Consumer Electronics Show in Las Vegas to launch a gaggle of gadgets to mitigate life barriers from hearing loss to limited mobility. In this category, notable change includes:

- The aging of the voice market... The 2023 versions of <u>voice-first interfaces</u> on smart speakers are no longer ground-breaking <u>35% of Americans now own one</u>. Future growth may slow due to market saturation or possible innovation cutbacks from vendors like <u>Amazon</u> and <u>Google</u>.
- **Ubiquity of voice assistants and consumer-focused hearing aids.** Sixty-two percent of US adults are using <u>voice assistants</u> on any device (including in-car, in-

ear, at-drive-thru). And the hearing technology market, first disrupted by <u>hearables</u>, saw its biggest disruption beginning in 2022 – FDA approval of OTC hearing aids, driving the average price downward <u>by as much as \$3000</u>, driving sales online and into <u>retail stores like Walmart</u>. In addition to lower cost, hearing aids will increasingly be at least partially covered by <u>Medicare Advantage plans</u>.

Safety and security. Aging in place requires a home free from obstacles and dangers, especially for the <u>44% of women aged 75+ who live alone</u>. The traditional PERS pendant industry's growth is slowing and vendors are stepping into the reimbursed <u>Remote Patient Monitoring</u> (<u>RPM</u>) market. The pivotal entrance of Apple's fall detection legitimized the market for <u>caregiving smart watch wearables</u> with fall detection. Other vendors are now offering <u>voice-enabled PERS services</u>.

Health and wellness. The abrupt shutdown of health visits during the pandemic triggered frenetic adoption of telehealth – now firmly entrenched as <u>a care option</u> on a smart phone, tablet or <u>even on a TV</u>. Even as patients returned to office visits in 2023, most Medicare Advantage plans offered telehealth as a visit choice, along with hearing, vision, and dental options. Remote patient monitoring (RPM) is also on a growth trajectory, and will likely grow as a service offered by <u>home care agencies</u>.

Learning and contribution. Experts have noted that once the basic needs of communication, safety, and health are addressed people have both the need and capacity for more. This includes learning new job-related skills, staying aware, connected, and active in society and contributing through online <u>volunteering</u>. Older adults also are leaving a <u>legacy of photos</u> and <u>stories</u> for their loved ones. Organizations like AARP and OATS Senior Planet Digital strive to help an older person learn a broad range of new skills.

2023 Technology Trends that Will Drive Adoption in 2024

Across consumer devices today, older adults will find assistive features (for vision and hearing limitations) that are built in. AI will be used to identify behavioral trends and patterns across multiple categories. But older adults would benefit greatly if vendors and stores selling devices (or providing training) spent more time introducing them to those features – considering their documented lack of confidence in technology to manage a chronic health condition use (see **Figure 8**).

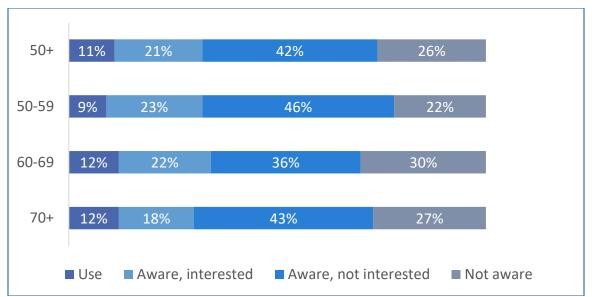


Figure 8 Confidence in use of technology to manage health condition Source: AARP

Wearables became more visible – enabling PERS on the wrist. Wearables have become a growth market. Use by older adults is still limited, though Apple Watch validated use of fall detection in a wrist worn device, and multiple chronic disease wearables will likely be adopted soon enough. At least 30% of PERS usage is mobile, validating the emergence of wearables other than pendants to wear out and about. Caregiver watches provide a less visible safety alternative when living alone, walking the dog, or fearful of falling. And <u>Medical Guardian</u>, Bay Alarm Medical, UnaliWear and <u>Silvertree Reach</u>– all can connect to a response center.

AI in front and behind the scenes – caregiving and smart home. The introduction of <u>ChatGPT</u> in late 2022 could have <u>disrupted the ad model of Google search</u>. Yet Google's <u>own</u> <u>Bard</u> AI tool and media <u>content lawsuits</u> about reuse of content may cause a pause. However, the availability of a growing trove of data about our own behavior will likely enable more useful advice and health-related insights. Accumulation of this data underpins the <u>growing use of AIenabling analytics</u> that will augment simple monitoring and alerts, supporting smarter use of care staff in this time of high turnover. With multiple new entrants, expect within the next few years that the <u>smart home space</u> will offer <u>the home as a participating caregiver</u>, with pattern analysis, detection of change, and prediction of risk in the home.

Amid market disruption, hearables market continues to resonate. The hearing technology market is seeing disruption from multiple angles. <u>Smart hearables are again news at CES 2024</u>, including a range of <u>solar-charged hearing aids</u>, <u>AI-enabled hearing aids</u> with fall detection, <u>smartphone adjustable sound</u> – especially appealing for older adults in noisy restaurants. Add integration with voice capabilities like Siri and Alexa plus the <u>ability to stream audio content</u> <u>directly to in-ear devices</u>. With the introduction of Over-the-Counter Hearing aid sales (and recommended guidelines), coupled with the beginnings of insurance reimbursement, those with mild-to-moderate hearing loss may benefit from many of these changes.

ADVICE TO VENDORS: IT'S TECH-ENABLED SERVICES, NOT PRODUCTS

Probably the biggest issue that keeps technology out of the homes of older seniors is the difficulty of marketing to them ("We are not old!") and to their afraid-to-interfere adult children. Therefore, it's important to sell through channels that reach them at whatever stage of aging they're at, pricing right for resale and white labeling, with a <u>focus on services</u>. Note that:

One go-to-market channel is not enough. Depending on the product or service, it may need a mix of resellers/distributors, face-to-face, and online sales. The <u>2023 FCC broadband progress</u> <u>map</u> revealed remaining geographic areas of the US that still lack high speed Internet access in their region, though <u>satellite access is available in all 50 states</u>. Today most older adults go online to find information, locate a technology or service, or understand access to benefits. Today if looking for assistive tech for older adults, there are multiple options, including <u>Amazon</u>, <u>BestBuy</u> or <u>Walmart</u>. But as <u>usability issues remain</u>, new market entrants should seek focus groups or find local partners to test product effectiveness before going national.

Privacy and security features will be built into design of software and websites. It hasn't happened yet. But scams <u>targeting the elderly</u> have ballooned to a <u>projected cost of \$28 billion</u>, and that includes estimates beyond those self-reported. <u>Voice-cloning phone scams</u> that include an actual voice print of a family member are on the rise. For safety-oriented apps and sites that include the role of the senior, it's critical to verify identity among provider and user roles. Annoying two-factor authentication will increasingly be required as part of all online apps, including financial and health-related services.

Technologies must be well-supported and intuitive. Most people have a laundry list of frustrations with technology, regardless of age. The failure of previous <u>direct-to-consumer</u> approaches underscored the fallacy of inventor-centric thinking that 'if we create it, they will buy it from us' or at least find it on Amazon. However, 70% of responders aged 70+ in the most recent AARP survey do not think technology was designed with them in mind. This complaint persists despite growth in adoption among that age group. So remote configuration and support partners should be a major part of the new service. Firms should <u>at least offer helpful chatbots</u> – or doom the user and family to frustration and eventual tech abandonment.

Device and app vendors must be capable of integration and extension. Despite standards initiatives like <u>Matter in 2022</u>, <u>now viewed by some as a failure</u>, or <u>ONC Interoperability</u> efforts, many of today's gadgets still don't communicate – especially with each other's proprietary systems or data sets (like Electronic Health Records (EHRs). Mobile health devices, apps or medication reminders may be useful, However, with the growing use of <u>patient portals</u>, it is becoming easier to access health data, especially recent medical tests.

Upgrades must be invisible or painless. Consumers already gravitate towards cloud software applications that work with ones they already use, including Gmail, Facebook, FaceTime, Teams, Zoom, Siri, and now <u>Google Bard</u> – with most of these working across multiple devices. Personalized interfaces (like Amazon and Netflix) updated in the cloud, are increasingly expected. Continuous phone and watch patches should be phased out – as 2023 wrapped up, Apple, for example, <u>has delayed some new releases</u> in favor of fixing existing bugs.

Standards could enable users and integrators to cross tech boundaries. Times are changing – as in this – a recognition that, despite intense competition, consumers likely own a variety of devices and software that should be able to work better together – and don't. The most recent <u>Beeper Mini flap about iMessage on Android</u> is one (somewhat silly) example. Broadly accepted new offerings will eventually span multiple platforms and comes in multiple form factors – voice, smartphone, web, watch, and some sort of enabled chat for example. This is particularly appropriate for wellness/healthcare apps and tech.

Access to ongoing training and refreshers – much work needed. To be sure, despite growth in adoption, the oldest are likely to approach smartphones as flip phone upgrades – until they learn of their utility in a store, online, from family, or in community training centers. Automatic updates and software changes force users back for refreshers to avoid considerable frustration. But <u>hackers/scammers are innovating faster than the tech market</u> overall, considering the rapid growth of threats, including hackers' ability to pinpoint location, clone a voice and steal data.

The real user need – a service problem solved. Seniors and their adult children may not imagine on their own what (else) to do with tiny sensor networks, voice assistants, or smart speakers. A home security company could help explain the benefits, for example, of care coordination, when selling tech to a home health agency. Vendors should fit solution descriptions, service provider stories, and senior support processes along the continuum of needed care and socialization. This necessitates a grasp of the decision points over time that spike need and interest, using that understanding as part of websites and marketing.

HOW DOES THE TECHNOLOGY MARKET FOR OLDER ADULTS EVOLVE?

The marketplace of products and services today is still fragmented, with ever-shifting cottage industries comprised largely of startups, challenged by channel complexity and end user resistance. According to AARP's Longevity Economy projections, the 50+ population will control 51% of technology spending by 2030. That market will be dominated by the largest players, who will acquire a plethora of startups. Benefits of new tech will accrue to all but will challenge users at every product introduction. Service providers, caregivers for older adults, and senior living organizations will need to keep up (see **Figure 9**).

As 2024 began, the oldest baby boomer turned 78. The population aged 65+ exceeds 57 million, trends emerge, accelerated by the pandemic. Because of the sheer size of the older adult market, vendors see them as constituents of the market of technology for multiple age and health segments, though in the consumer product category they are still often ignored.

The new, new thing will arrive and be useful. At the very end of 2022, a new offering, ChatGPT, emerged from <u>OpenAI</u>, funded in the billions by Microsoft and others, that puts online access to information in a smart new light – even <u>Google is nervous</u> about its possible future search obsolescence if it can eliminate the need for ad-fueled search, where it makes most of its money. ChatGPT has absorbed a great deal of knowledge and text understanding. Its answers, not always correct, make it sound so expert that it has schools worried about students cheating.

Older adults will adapt to change and adopt new technology. When an 88-year-old neighbor is filming fireworks with his smartphone, it is easy to see that times have changed. If an affordable technology can be found that meets a personal need (or <u>answers a compelling</u> <u>question</u>), people will find it and get it to work. Remember encyclopedias – we now cannot imagine any process that would again make them useful. Could training be more readily found? Will all devices default to 'Accessibility' and security options that you must undo?

In-home healthcare services will persist and expand. The dream of <u>reimbursement for remote</u> <u>care</u> became a reality during the pandemic. <u>Telehealth services will remain</u> to replace or supplement in person visits likely throughout 2024. Augmenting homecare staff shortages, startup <u>LifeGuard</u> supports remote monitoring with an overseeing nurse. Dispatch Health's <u>inhome urgent care</u> is now available nationwide. Remote patient monitoring (RPM) also moves more care into the home – and is <u>expected to further evolve in 2023</u> – regulatory changes in the past year <u>have begun to turn the adoption tide</u>. Older people, consumers of a <u>significant portion</u> of healthcare spending, will need and use many of the <u>digital health technology categories</u>.

Smart displays and interfaces will be ubiquitous. For older adults, <u>touchless technologies</u> and voice-enabled interactions are ideal, especially when accompanied by a display of large font text and engaging how-to-cook videos. Why? Because <u>it is easier for them</u> – turning frustration into a valued service world in which what you say should get you what you need. Voice interfaces will migrate to be expected infrastructure in smart displays and apps, added to every feasible appliance, device, and vehicle. They will have widespread use in independent and senior living, since many older adults will bring them along at move-in time.

Sensor technology shrinks – and changes form. Sensor technology failed to meet its promise a decade ago. But <u>the tech has changed</u> – now sensors offer Wi-Fi and <u>room-based fall detection</u> (even in a steam shower). There are wearables that can predict the <u>onset of stroke</u>, <u>track home</u> <u>blood pressure</u>, as well as fit into <u>Air Tags</u> or <u>Smart Tags</u> that can pinpoint the location of a purse, phone (or suitcase) left behind or a person who is lost.

Caregiver shortages boost in-home monitoring. Fifty-three million Americans are <u>providing</u> <u>care</u> to someone with health or functional needs – in short, they are family caregivers. The intersection of three simultaneous trends of <u>aging alone at home</u>, the <u>worsening caregiver</u> <u>shortage and worker turnover</u>, means that interest in monitoring technology in the home will grow, including easier-to-integrate home hubs that can manage web cameras, sensors, smart doorbells or enable voice-first emergency response.

The absence of widely available tech training and support. It's not just seniors who need help. The proliferation of devices, especially <u>smartphones</u>, and their <u>set-up complexity</u> gave birth to Best Buy's Geek Squad's <u>Total Tech Support</u> (any device) and <u>\$10 million of funding</u> for tech learning platform <u>GetSetUp</u>. Today <u>Papa</u> has expanded its role from rides to healthcare to helping older adults with technology. The constant stream of new technology <u>requires training</u> and support – and spells profit for companies that can deliver it cost effectively.

Many tech offerings are still too hard to set up and use. With the aging of baby boomers, newer offerings like <u>Support.com</u> (any connected device) will tailor messages to reach an older adult audience. <u>Cyber-Seniors</u> trains young people to be technology tutors for older adults. National efforts (like the <u>OATS-AARP collaboration</u>) will further attempt to make tech training available for older adults new to a technology in 2023. On the flip side, tech innovators should offer their own <u>Accessibility</u> options or <u>Easy Mode</u> – defaults or a quick set of options that can be expanded, or set up through remote configuration by family for in-home tech.

| Changes beyond 2024 | FROM | ТО |
|---------------------------|---------------------------|-----------------------------|
| Telehealth, Remote | Covid-driven | CMS permanently |
| Patient Monitoring | reimbursement | reimburses |
| Blood pressure tracking | Cuff-based | Multi-format, wrist, finger |
| Voice First technology | Smart speakers, | Part of multi-modal |
| | Voice assistants | interactions |
| Hearing technology | High price hearing aids, | Hearables, low-cost OTC |
| | sold through audiologists | hearing aids, self-service |
| Caregiver technology | Assisting care workers | In care, supplements in- |
| | | home monitoring |
| Fall detection | On body pendant, private | Wrist, in-room and Wi-Fi- |
| | рау | enabled, reimbursed |
| Location technology | GPS device, phone locate, | Smart location sensors |
| | 911 call centers | integrated with 911 |
| Tech training for Seniors | Fragmented, senior center | Nationwide availability |
| Access to information | Driven by search vendors | Enabled by AI chatbots |

Figure 9 Where is the market heading for technology and older adults

WHAT IT MEANS: AI WILL OFFER PERSONALIZED SUPPORT FOR AGING

AI offerings are multiplying like flowers (and weeds) today, but the longer-term utility is not well understood. As the oldest demographic grows, machine learning and embedded AI will be more useful. In the home, tech will monitor day-to-day calendars and tasks, which medications to take at what time and for what purpose. Conversational AI tools will suggest when to renew, when to schedule administrative health appointments. AI tech will be embedded in multiple products, including cars, but also directly accessible through end user offerings, for example Google Bard, OpenAI ChatGPT or Microsoft Copilot.

These services will help make the home safer, noting changes in temperature and motion patterns that may alarm caregivers, conversing with an older person and suggesting activities to reduce social isolation. AI-enabled services will provide cognitive stimulation, diet and nutrition monitoring, and noting important changes.

Over time, as AI-enabled tech becomes ubiquitous, older adults will expect, as with voiceenabled interfaces or streaming services, smarter and more personalized everything. They will expect an answer from both hardware devices and software – and be disappointed when they do not respond or forget previous interactions.

2024 Technology Categories and Vendors (Examples)

For inclusion as an example-only technology to facilitate aging, the vendor meets two of these criteria (those firms listed are only examples, not an exhaustive list). In addition, please note that the "**" entries can be new for this publication of the 2024 Market Overview, though they may have been in business previously but were not included in last year's report. The criteria:

- a) Incorporate messaging to and about boomers and/or seniors or their family or professional caregivers.
- b) Is expected to be broadly available, not just in a single region.
- c) Addresses one or more categories described in this document.

| | Sub- Category | Purpose | Platform | Contact |
|--------------------------|----------------------|---|--|-------------------------|
| Category: Com | v | | | |
| | | | | |
| Amazon Echo Show 8** | Cloud-based | Screen with voice- enabled AI access | Smart display rotates to face speaker | amazon.com/ echo |
| Botco | Chatbot for | Senior care | Reduce labor, answer | Botco.ai |
| Chatbot** | websites | Semer cure | questions | Dotto.ul |
| Blooming | AI-enabled | For Supportive | Community | Gobloominghealth. |
| Health** | engagement | housing | engagement | <u>com</u> |
| ChatGPT** | Chatbot | Conversational AI | Uses Bing to search | <u>Openai.com</u> |
| Concha Labs** | Hearing Aid | Personalized styles | Self-fitting, OTC | https://conchalabs.com/ |
| ElliQ | Robotic | Mitigate Social isolation | Table top social robot | Intuitionrobotics.com |
| Genie** | Scam detect | Phone-based App | Stops spam, scams | Lifesgenie.com |
| Google Bard** | AI | Conversational AI | ChatGPT competitor | Bard.google.com |
| grandPad | Senior tablet | Simple interface | Android | grandpad.net |
| Jabra Enhance Plus | Hearing Aid | Made for iPhone | Self-fitting, OTC | <u>Amazon.com</u> |
| HeardThat | Hearing | Hearing assistance | Smartphone | <u>heardthat.ai</u> |
| Inspiren** | Remote Monitoring | Resident care | AI platform | Inspiren.com |
| Kinoo Video | Engagement | Family, grandchildren | Animals used as communication tool | Kinoo.com |
| Microsoft CoPilot** | AI-enabled | Conversational AI | Was Bing Chat | Copilot.microsoft.com |
| MyndVR | Virtual reality | Assisted Living, Home | Experience Headset | myndVR.com |
| | Hearables | IQ Buds Boost, Max | Hearing aid, Google, Siri Integration | nuheara.com |
| Onscreen | TV Video calls | Calls, messages on TV | Cellular or Wi-Fi | Onscreeninc.com |
| Raz Mobility** | Cell phone | For dementia care | Remotely managed | Razmobility.com |
| Rendever | Virtual Reality | Senior engagement | Experience Headset | rendever.com |
| SingFit | Music Therapy | Dementia care | Activities, sing-along | singfit.com |
| Senior Planet Digital | Community tool | Older adult tech training | New skills and community site | OATS.org |
| Taproot** | Dementia | Assist caregivers | Offer interventions | Taprootella.com |
| Telecalm | Dementia | Blocks unwanted | Safe phone service | Telecalmprotects.com |
| SaltboxTV | Senior TV | Programming | Multiple categories | Saltboxtv.com |

| Category: Hom Security | | | | |
|---------------------------|---------------------------------|--------------------------------------|--|----------------------|
| Apple AirTags | Finding lost items | Can tag anything that FindMy finds | Will alert to item left in the home | <u>Apple.com</u> |
| CareVoice | Wearable | Senior health monitoring | Predictive analytics | carepredict.com |
| Envoy at Home | Sensors plus iPhone app | Scans environment | Continuous checking of sensors for issues | Envoyathome.com |
| Best Buy Lively App | Mobile PERS | Paired with Lively Wearable 2 | Call center | Bestbuy.com |
| ButlrCare** | Ambient monitoring | Sensors | Tracking change in status | Butlr.com |
| Caspar.ai | Smart home | 'Distributed AI' | Activity patterns, motion | Caspar.ai |
| Care Daily | AI caregiver | People, places, things | Branded virtual assistants | Caredaily.ai |
| Careforth** | Caregivers | Rebrand Seniorlink | Family, prof caregiver | Careforth.com |
| Connect America | Virtual health assistants | PERS, RPM, home monitoring | Platform | Connectamerica.com |
| FallCall | Fall Detect | Apple Watch | Call center | Fallcall.com |
| EchoCare** | Non- wearable | Remote monitoring | Early detection, prevention | EchoCare.ai |
| Grandcare | Remote | HIPAA-compliant | Social engagement, | Grandcare.com |
| Systems | monitoring | telehealth | video calls | I 10 |
| iGuard Stove | Stove shutoff | Activity monitor | Shuts when room is unattended | Iguardfire.com |
| KamiCare | Fall detect | Edge-based camera | Memory care, assisted | Kamivision.com |
| Labrador Systems | Robotic table | Personal control | For caregiving, disabled | Labrador Systems.com |
| Lifeguard** | Nurse- supported | Remote monitoring | Sensors | Joinlifeguard.com |
| Samsung Smart Tags | Finding lost items | Can tag anything, tap ring button | Tagged item issues ring tone | Samsung.com |
| SafelyYou** | AI/Video | Fall Detection | Captures short videos | Safely-you.com |
| SensorsCall | Home monitoring | Smart night lights | Monitor patterns, alert, no call center | Sensorscall.com |
| Silvertree** | MobilePERS | Safety wearable | Call center available | Silvertree Reach |
| TrelaWear | MobilePERS | PERS Jewelry | Paired with Mobile Help response center | mobilehelp.com |
| UnaliWear | Mobile PERS watch | Voice-enabled mobile PERS | Bluetooth low energy | unaliwear.com |
| VirtuSense | AI Fall prevention | Sensor-based monitoring | Health monitoring | <u>Virtusense.ai</u> |
| Vayyar Care | Ambient monitoring | Sensors | Tracking change in status | <u>Vayyar Care</u> |
| Zemplee | AI Remote monitoring | Placed sensors throughout home | Track patterns of older adults | Zemplee.com |

Category: Health Wellness

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|------------------------------------|---------------------------------|---|---|-------------------------|
| Ageless Innovation** | Pet Companion | Pet and Games | Robotic pets | Agelessinnovation.com |
| Apple Watch | Smartwatch | Fall detection, health tools | Fitness, health monitoring | apple.com |
| AppliedVR | Virtual Reality | Pain education & management | Distraction and coping tools for pain | appliedvr.io |
| Bio Intellisense | Remote care, BioButton | Medical grade remote care tech | Multiparameter monitoring at home | biointellisense.com/ |
| Braze Mobility** | Sensors | Blind spots for wheelchairs | Audio, visual, vibration alerts | Brazemobility.com |
| Canary Speech | Digital biomarkers | Detecting health issues by voice | AI speech technology | Canaryspeech.com |
| CoroHealth** | Music | Therapeutics | Reduce agitation | Corohealth.com |
| eSight** | Vision Wearable | Enhances low vision | Improve acuity | eSightwear.com |
| Electronic Caregiver Group** | AI-enabled health hub | Addison Care | 24x7 care support | Electroniccaregiver.com |
| Essence VitalOn | Two-way voice | RPM, uses PERS hub | Voice-enabled | Essence-grp.com |
| GyroGear Glove** | Hand stabilizer | Parkinson's, Essential Tremor | Battery charging | gyrogear.co |
| HandsFree Health | Voice assistant | Voice-enabled, health assistant | HIPAA compliant reminders | handsfreehealth.com |
| Kalagon Orbiter | Smart cushion | Seating pressure relief | Smartphone app for wheelchair cushion | Kalogon.com |
| Independa HealthHub | Senior- focused hub | Smart TV partnered with LG | Health offerings accessible via TV | Independa.com |
| Medminder | Cellular | 7-day, 4-dose per day reminder trays | Prefilled trays from pharmacy | medminder.com |
| MedSign | Set top box | Telehealth | Qortex – TV platform | medsign.com |
| MediSafe | Medication compliance app | Notifies 'Medifriend' if doses are missed | Deployed in partnership with pharma, research | <u>medisafe.com</u> |
| MedWand | Telehealth | Vital signs, any location | Virtual care device, software | Medwand.com |
| Microsoft SeeingAI | Smartphone app | Hold phone up to scene to identify | For blind, low vision | Microsoft.com |
| NextStride** | Movement | Cues to brain | For Parkinson's, other | NextStride.com |
| OneStep** | Physical therapy | Analyzes walk | Smartphone app | <u>Onestep.co</u> |
| OrCam Pro Read | MyEye | Help lowvision | Read text aloud | Orcam.com |
| Posit Science | Brain Train | Games, Software | Improve memory | Brainhq.com |

| Daada | Canadiman | Damanalized ages | Danafita findan anna | Des drusstaans aans |
|----------------------------------|------------------------------------|---|--|---|
| Ready SetCare | Caregiver tool | Personalized care plan | Benefits finder, care plan | Readysetcare.com |
| Reemo Health | Health Smartwatch, analytics | Remote mobile health platform | Senior living, senior care, healthcare | reemohealth.com |
| Teledentists | Dental health | Online dental consultations | Virtual visits, prescriptions | theteledentists.com |
| Sensoria Smart Clothing | Plantar pressure readings | Detecting falls, diabetic foot issues | Textile sensor technology | Sensoriahealth.com |
| Valencell | PPG sensors | Continuous heart rate, O2 sensing | Integrated in hearables, wearables | Valencell.com |
| Tapestry Health** | AI-powered care | Remote monitoring | Post-acute communities | Tapestryhealth.com |
| VitalTech | Connected Care | Remote patient monitoring | Patient health, wellness | vitaltech.com |
| Vivo | Online | Strength training for seniors | In-home with trainer | teamvivo.com |
| Withings Body Scale | Smart scale | Body composition Wi-Fi scale | With smartphone app | Withings.com |
| Xander Kardian | Radar monitoring | Remote monitoring, patient recovery | Chronic conditions | Xkcorp.com |
| Zibrio Advantage** | Smart scale | Evaluates weight | Predicts future falls | Zibrio.com |
| Finance/Transp | ortation | | | |
| | | | | |
| Golden Financial | Financial | Account organization, bill paying | Includes financial care specialists | Joingolden.com |
| Рара | Family on demand | Transportation, chores, socializing | Health plan reimbursed service | papa.com |
| EverSafe | Fraud protection | Seniors and families | Detection and alert system | eversafe.com |
| Intuit Mint | Financial | Manage banking accts, finances | Budget for aging parents | mint.intuit.com |
| SilverBills | Financial | Older adult service | Concierge billpaying | Silverbills.com |
| TrueLink Financial | Financial | Protect assets and track payment activity | Payment cards, investment management | <u>truelinkfinancial.com</u> |
| Category: Care (Platform, App | | | | |
| Alexa Call for Help** | Voice-home safety | Activity feed, alerts | Voice-enabled emergency call | <u>Alexa Emergency</u> <u>Assist</u> |
| Aloe Care | Digital care assistant | Voice-activated | Care coordination | get.aloecare.com |
| BrioCare | Care coordination | Voice-activated | Alexa and smartphone app | briocare.us |
| CareLinx | Non-agency home care | Families find workers, rides | Marketplace of registered workers | carelinx.com |

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|-----------------------------|-------------------------|---|---|--------------------|
| Care | Care | GPS tracking, | Care professionals | carepredict.com |
| Predict | management | reporting | | |
| Caring.com | Elder care website | Articles and search tool – all care types | Reviews from users | <u>caring.com</u> |
| Care.coach | Caregiving | Mitigate isolation | Conversational AI | Care.coach |
| CareYaYa** | Care Marketplace | Registry of care providing students | Vetted through interviews | Careyaya.org |
| DME Connected | Voice- accessible | Products, Services for Healthcare use | Marketplace for Durable Medical Equip | dmeconnected.com |
| K4Connect | For resident, operators | Engagement, Wellness | Senior living, smart home, voice interface | k4connect.com |
| PointClick Care | Care management | Cloud platform | Senior living, SNF, home care | pointclickcare.com |
| Tcare | Family caregiving | Medicaid approved | Caregiving support platform | <u>Tcare.ai</u> |
| Category: Learning/Contr | ribution | | | |
| Candoo Tech | Tech training | Online, installation help | Tech training older adults | Candootech.com |
| Cyber- Seniors | Tech training | Trained youth helping seniors | Tech mentoring for seniors | Cyberseniors.org |
| Discover Live** | Travel | Virtual tours | Real-time | Discover.live |
| GetSetUp | Peer training | Online Classes | On demand learning | getsetup.io |
| LifeBio | Life Story | Captures stories | Older adults | Lifebio.org |
| MemoryWell | Storytelling | Digital life stories | Professionally written | memorywell.com |
| My Heritage | Family history | Stories and family tree | online tool | myheritage.com |
| OATS | Training | Tech, job skills | Regional workshops | seniorplanet.org |
| NCOA | Helping | Testing, advice | Hearing aids, medical | ncoa.org/adviser |
| Adviser | older adults | about new offers | alert devices, more | |
| Storii** | Audio book | Storytelling | Phone calls with meaningful questions | <u>Storii.com</u> |
| Support.com | Tech support | Telephone support | Any device | support.com |

About the Author:

Laurie M. Orlov, a tech industry veteran, writer, speaker, and elder care advocate, is the founder of <u>Aging and Health Technology Watch</u> -- market research, trends, blogs and reports that provide thought leadership, analysis and guidance about health and aging-related technologies and services that enable boomers and seniors to sustain and improve their quality of life. In her previous career, Laurie spent many years in the technology industry, including 9 years at analyst firm Forrester Research. She has spoken regularly and delivered keynote speeches at forums, industry consortia, conferences, and symposia, most recently on the business of technology for boomers and seniors. She has a graduate certification in Geriatric Care Management from the University of Florida and a BA in Music from the University of Rochester. Laurie has provided testimony about technology at a Senate Aging Committee hearing. Advisory clients have included AARP, Argentum, Bose, Calix, CDW, Genentech, Microsoft, Novartis, Philips, and many others. Her research reports, beginning with the most recent, include:

The Future of AI and Care Work

The Future of AI and Older Adults

The Future of Sensors and Older Adults

Beyond DIY: The Future of Smart Homes and Older Adults

The Future of Wearables and Older Adults

The Future of Remote Care Technology

The Future of Voice First Technology and Older Adults