

FORWARD

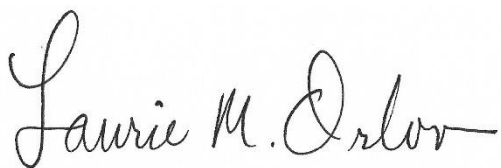
A pandemic crisis is followed by a technology accelerator. Last year's report was initially posted on March 5 – prior to the widespread news of the Covid-19 pandemic and its implications. Consider how the entire country has been homebound and older adults have been without access to face-to-face medical appointments. When no visitors are allowed in senior living and social isolation is extreme, many technologies noted in this report became more useful – and the absence of access became painfully obvious. Vendors have stepped up, and public officials, non-profit organizations, and infrastructure providers saw gaps and began work to address them.

Getting technology into the lives older adults will be top of mind in 2021. It took the aging of the baby boomers, a pandemic emergency, and the sheer size of the aging population to transform a 2009 market niche into this 2021 market category worthy of investment-- less about products specifically designed for older adults as about the marketing of many existing offerings that are useful to them. This includes smartphones, smart speakers and displays, virtual assistants, smart home technology, virtual reality, and in-home sensors. Each of these categories is viable for older adults with more targeted marketing or packaging, enabling software, or bundles into solutions for in-home caregiving and/or healthcare.

The older adult market presents a challenge and an opportunity. Large players like Google, Amazon, and BestBuy increasingly see a market opportunity worth seizing. In addition, Medicare Advantage plans continue to cover some in-home technology to help seniors remain independent. The uses of digital health technologies, including remote patient monitoring and remote consultation, continue to grow. Various government grants and programs were launched during 2020 in order to cope with an aging population and the isolating effects of the Covid-19 pandemic. Many will continue into 2021.

What's new in this version of the report? Most everything. Every line in this Market Overview has been reviewed and updated to reflect current trends, demographic data about older adults where available, policy changes, new products and services as well as inclusion of available data about what tech they own and/or prefer. To make space for interesting new examples, some previous offerings were removed to enable inclusion of more than 30 recent entrants (some of them winners of innovation competitions).

Here's to the year of 2021 – with innovation and growth for all!



Laurie M. Orlov

WHO SHOULD READ THIS REPORT?

This report was revised in January of 2021, updating products, services, websites, and apps – and adding many new entrants. 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
- Social networking sites targeting baby boomers or seniors
- Advocacy and tech training groups
- Retirement Communities that serve independent adults
- Senior living communities, and long-term care providers
- Senior housing developers
- Home care and home health agencies
- Geriatricians
- Hospitals and integrated service delivery networks
- Government agencies and policy makers
- Geriatric care managers (Aging Life Care)
- Naturally Occurring Retirement Communities (NORCs)
- Startup incubators
- Venture capital and angel investors interested in the boomer/senior market
- Caregivers, seniors, and family members

2021 TRENDS ARE DRIVEN BY AGING AT HOME EXPECTATIONS

The Covid-19 pandemic transformed the attitude of older adults about their future. The majority of older adults today [live in their own homes](#) – 76% of those aged 65-69 and 68% of those aged 80 and over. And most (76%) would like to stay there if they can – by the end of 2020, [senior living occupancy](#) had fallen sharply. Consider that the fastest growing demographic over the next 20 years will be households in their 80s (see **Figure 1**). For those who [live in cities](#), after age 80 they want to live in their own home or nearby. However, as the calculators of [net worth by age indicate](#), unless a home is sold, the 80+ population – the fastest growing age group in the next 20 years – will not have enough money to pay their [health-related costs](#).

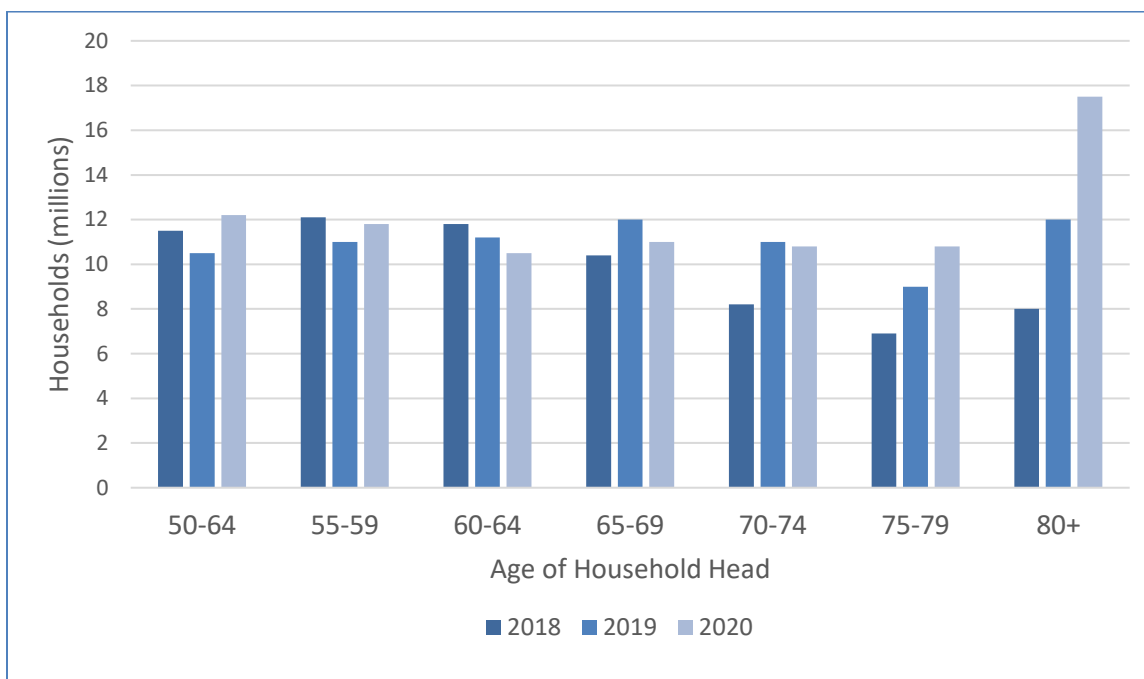


Figure 1 Rising age of households Source: [JCHS Housing America's Older Adults](#)

What do older adults want? Within that context, aging in place reflects the desire or ability to remain in their home of choice, whether it is a private home, condo, apartment, or group settings. These group options includes variants of senior living – which in 2021 has reached [its lowest occupancy level in eight years](#) and costs an average of \$4000/month nationally, it's likely [out of reach by most middle class homeowners](#). And aging at home spurred recent investor interest in the mature market. During 2020, [Rock Health issued its Aging in Place report](#), mixing a plethora of health and caregiving startups. Their focus, along with growth in investment and the launch of VCs like [Primetime Partners](#), typify interest in caregiving and age-related spaces. Why?

Rising health costs and health policy drives care into the home. As Medicare penalties for hospital readmissions grow, hospitals seek to better control their destiny in the [face of closings](#). They are providing outpatient clinics and buying rehab facilities (aka skilled nursing facilities, or SNFs) and managing hospital-to-home care transitions. Insurers try to reduce readmissions with improved care coordination and care transition programs. Not surprisingly, 2020's Medicare reimbursement for [use of telehealth technology](#) was continued and expanded for 2021. And

some [Medicare Advantage plans now cover at least one pair of hearing aids](#). Also during 2020, new categories came into sharper focus – including new areas like [teledentistry](#) and [telefitness](#).

Paid home care picks up where families and senior housing leave off. On average, home care fills a care gap of 20-27 hours per week at a presumed lower cost ([\\$22.50/hour paid to agency](#)) than a move to assisted living. However, non-medical home care work (or personal care aide) has been one of the fastest growing job categories in the US, and costs rose 7.1% in 2019, according to [Genworth](#). Pay averages [around \\$12/hour for the worker](#). And for much of the industry, [median caregiver turnover reached 82% in 2018](#). Staff challenges are [top of mind for home care agencies](#) (see **Figure 2**). As the projected shortage of home care workers worsens – especially in urban areas in which workers cannot afford to live – shortage predictions are dire, as many as [7.8 million unfilled jobs by 2026](#).

Caregiving – a dilemma of high costs and demand for workers. [The most recent data indicates](#) that 22% of adults age 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 median monthly cost of full-time home care now at \$4480, versus \$4300 per month for senior living, according to [Genworth Financial](#). And there has been an [88% increase in the number of open Certified Nursing Assistant \(CNA\) jobs](#).

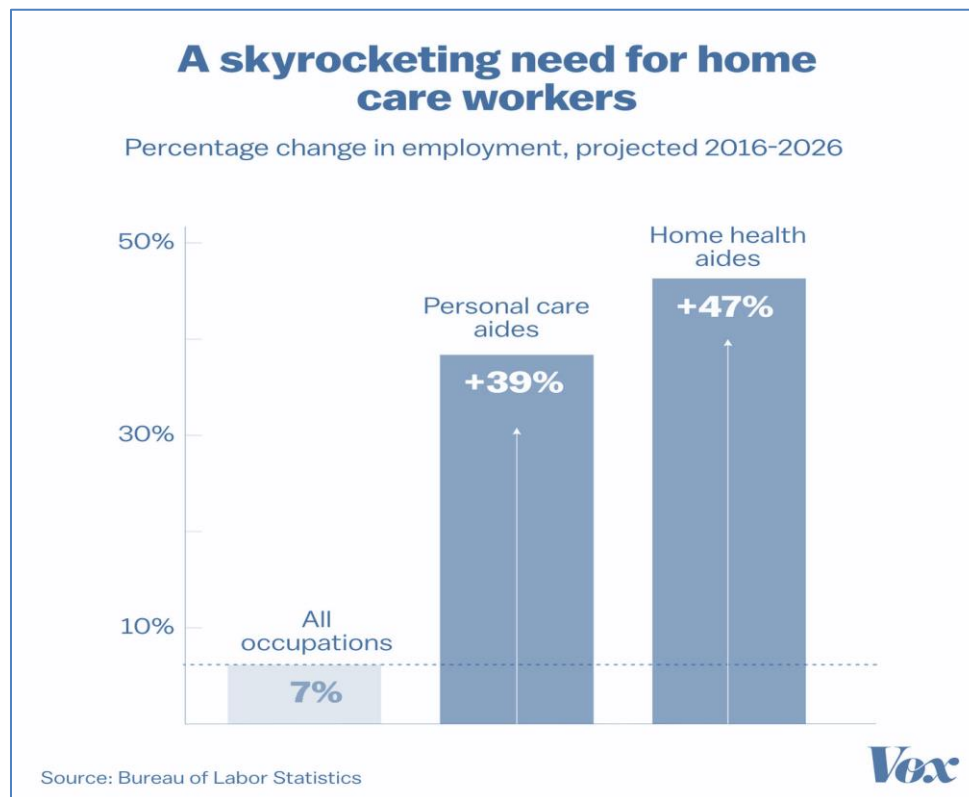


Figure 2 Home care demand

Source: Bureau of Labor Statistics

Stark consumer economic realities challenge senior living occupancy... Average net worth of the 75+ [inclusive of home equity is \\$200,000](#). Low level of savings slows moves to assisted

living, where move-in age is closer to mid-80's (see **Figure 3**). With more than [half of assisted living residents aged 85+](#), this has become a frailer demographic, needing help with multiple ADLs. But boomers are right behind them – and will be even less able to move in. They have simply not saved enough – holding an average retirement savings portfolio in their 70's of [\\$186,800](#). That's not enough to live on after retirement and later afford more than a few years at a [private assisted living](#) community with an [average nationwide monthly now at \\$4091](#).

...And life expectancy at age 65 is still substantial, especially for women. For example, in 2020 updated life expectancy used in [pension fund calculations](#) projects that women aged 65 can expect to live until they are 87.4; men can expect to live on average to be 84.7. But the combination of [limited savings](#) and [longer life expectancy](#) has raised fear of outliving assets. Worried about outliving their savings, for 25% of workers, in 2019, [80 was the new 65](#). But the unemployment rate post Covid-19 exceeded 15%, pushing many older adults into [reverse mortgages](#), as [senior living move-ins dropped](#) and [occupancy fell to 80% in 2021](#).

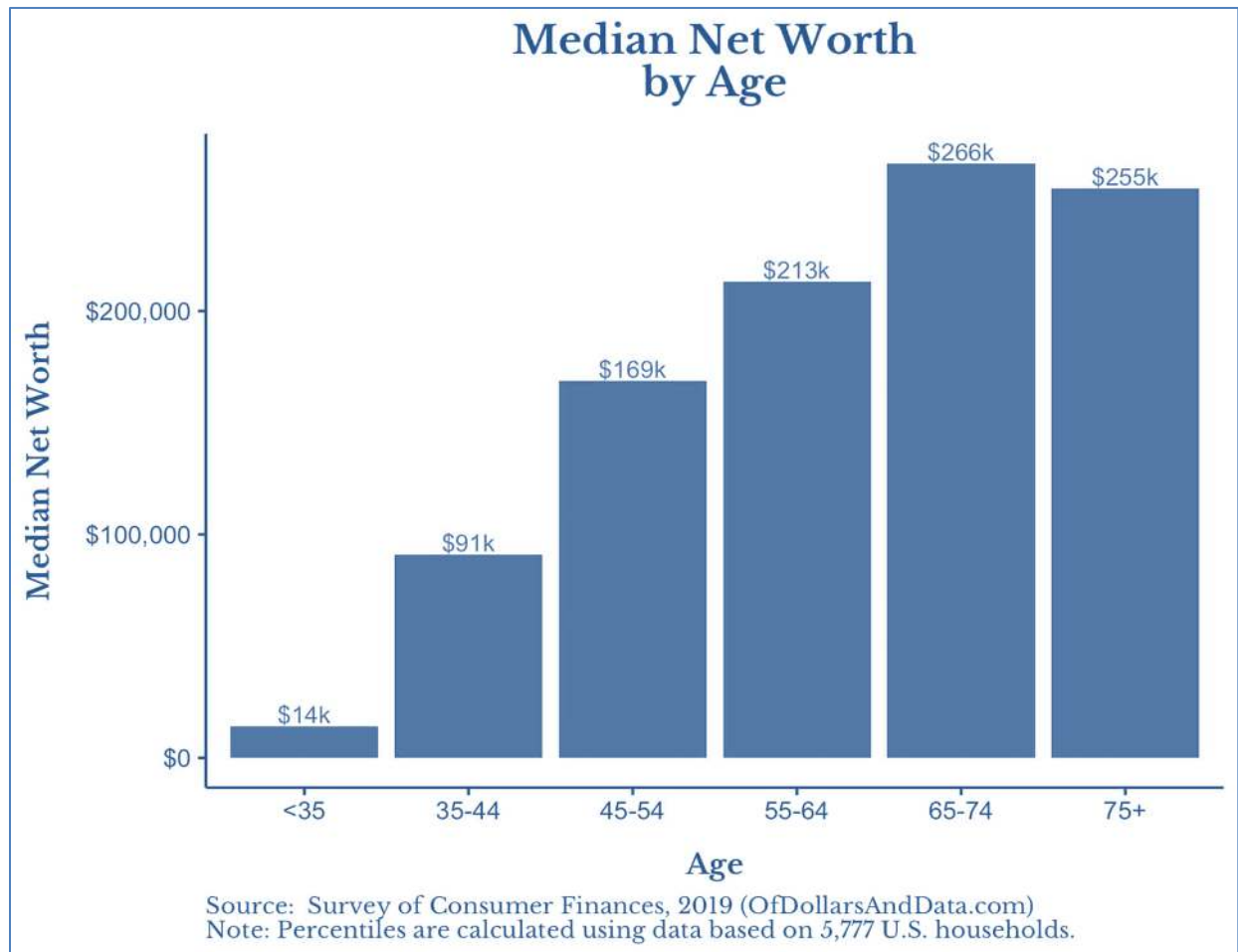


Figure 3 Median Net Worth of Americans by Age Source: OfDollarsAndData.com

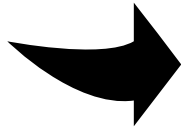
Policy Makers Care More about Aging and Caregiving

Caregiving and other demands of an aging population were highlighted in 2020. AARP and the National Alliance for Caregiving (NAC) published the [2020 Caregiving in the US report](#), identifying 53 million Americans as caregivers, 5 million more than in their 2015 report. The [Older Americans Act was re-authorized](#) in 2020 with a 35% increase in funding. During 2020, a follow-up report was [released detailing progress](#) from the 2019 White House technology innovation initiative, including numerous grants and programs launched nationwide. In addition, the VA launched an [expanded Family Caregiver Assistance program](#).

Data breaches and scams have worsened, and so has the risk to seniors. The closing of physical locations like Social Security offices or bank branches has yet to accelerate the urgency of helping offline seniors to move online. Seniors and their families should be cautious, however, as 2020 also turned out to be another memorable year [for healthcare data breaches](#). In one ransomware attack, the healthcare organization [paid the ransom](#). In October, 2020, the FTC presented its annual report to Congress, [Protecting Older Consumers](#), showing the sharp difference in fraud loss for the oldest population (see **Figure 4**). In addition, [financial exploitation of the elderly has been on the rise](#), with an especially [long list during Covid-19](#) – creating more opportunity for caregiver, healthcare, and banker involvement.



Figure 4 Rising median loss via scams – worse for 80+ [Source: FTC]



DID YOU KNOW Nearly 4.4 million patients (and donors) had data exposed in healthcare breaches reported to the federal government just in September 2020?

THE PANDEMIC SHARPENED FOCUS ON THE DIGITAL DIVIDE

Despite enablers, tech adoption by the oldest adults has not kept pace. 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. But barriers remain. For example, [smartphone adoption of the 70+ at just 62%](#). The ongoing barriers to adoption range from setup complexity, price, poor usability, forced obsolescence, continuous updates, and lack of standardized professional training (See **Figure 5**). However, the as the pandemic wore on, dependency on technology became more apparent. One recent Pew survey indicated that most older adults would view an outage of either their cellphones or access to the internet as a big problem (See **Figure 6**). And the enablers and barriers to technology adoption have persisted into 2021 (See **Figure 7**).

DEVICE ADOPTION GAPS WILL PERSIST IN 2021

| Device | Age 65+ | Age 70+ | Source |
|------------------------------------|---------------|------------------------|--------------------------|
| Cellphone (not smartphone) | 39% | | Pew 2019 |
| Smartphone | 53% | 62% 40% (age 74-91) | AARP 2019 Pew 2019 |
| Wearable | 17% (age 50+) | 11% | AARP 2019 Pew 2019 |
| Tablet | 49% | 40% | AARP 2019 |
| Computer (Desktop, Laptop) | 71% | 73% | AARP 2019 Census 2017 |
| Use the Internet | 73% | 44-60% | Pew 2019 |
| Home broadband | 59% | N/A | Pew 2019 |
| Smart Speaker | 19% | 12% | AARP 2019 Pew 2019 |
| Need help with setup/tech training | 73% | N/A | Pew 2017 |
| Very confident re: privacy | 12% | 13% | AARP 2019 |

Figure 5 Tech Adoption, Source, age 65+, age 70+

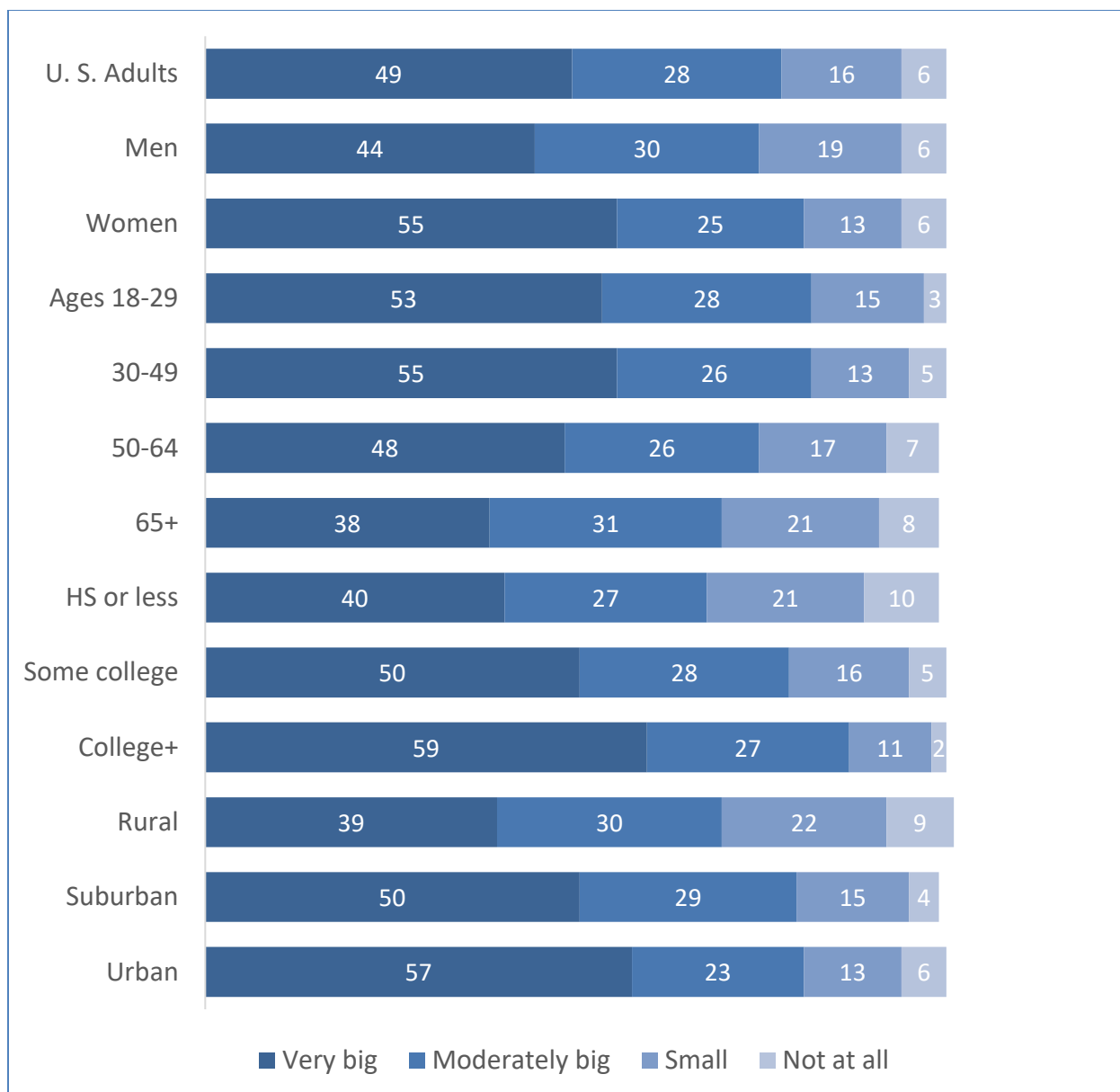


Figure 6 View of problem of a technology outage ([Pew December 2020](#))

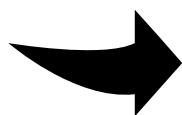
| Key Enablers for Tech Adoption | Key Barriers to Tech Adoption |
|--|--|
| ONC Interoperability – including family, caregivers of patient | Device ownership and trust of technology, especially fraud-related |
| White House recommendations for ‘zero-effort technologies’, specialized training | Availability of standardized training programs across US |
| Smartphone-wearables to track wellness, motivate activity | Perceived value and training among older users |
| Medicare Advantage reimbursement changes to support device use | Device management forced obsolescence, upgrades, software versions |
| Discounts available for broadband (low-income) | Standard price of home broadband |
| Voice First (Amazon speakers, Google Assistant) broad visibility, deployment | Concerns about privacy with always-listening devices |

Figure 7 Tech Adoption – Enablers and Barriers Will Persist into 2021

Medicare Advantage features tech-enabled services in the home. During 2020, [36% of Medicare beneficiaries \(24 million people\) were enrolled in Medicare Advantage plans](#). Given the growth rate, expect further growth in 2021. Besides further solidifying support for telehealth, most Medicare Advantage plans provide hearing, dental, fitness, and vision health benefits. In 2021 some plans will also offer other services during the Covid-19 emergency such as pest control, food and delivery of fresh produce, and non-medical transportation. And senior housing companies are increasingly [offering Medicare Advantage plans to residents](#).

The senior housing industry sees technology as a growing priority. The pandemic placed a spotlight on the gaps in senior housing use of technology. In 2021, expect the industry to make more investments in broadband access, video, telehealth capabilities. Digital marketing, including virtual tours, [will have growing importance](#).

Fall detection innovations move off body into the room, enhanced with AI. More offerings emerged recently seeking to detect falls without a wearable on the body. These include an AI-enhanced video tool for memory care like **SafelyYou**, or in-room fall detection like **Echo-Care**. Monitoring changes in movement over time will help prevent falls – **UnaliWear** (on the wrist) or changes in balance on a smart scale (**Zibrio**); or through a smartphone app (**Kinisis Balance**).



DID YOU KNOW that one in four of the 54 million adults aged 65+ falls each year? According to the CDC, the estimated cost of falls across the U.S. healthcare system is \$50 billion annually.

Investors ramp up interest in the older adult market. Population demographics matter – and 2020 saw the emergence of new investing interest in the older adult market. Primetime Partners launched a \$32 million fund including opportunities in aging in place, financial security, and care management. They join [Ziegler Linkage](#), [Generator Ventures](#), [Toyota AI Ventures](#) and [Nationwide](#) among investors in offerings for an aging demographic.

TECHNOLOGY UNDERPINS, DOES NOT REPLACE SERVICE OR FAMILY ROLES

The categories of technology required to age successfully include independent market segments – each useful – but together, they complete a puzzle for a fulfilling and interactive life for older adults, enabled as needed with the support of families and caregivers (see **Figure 8**):

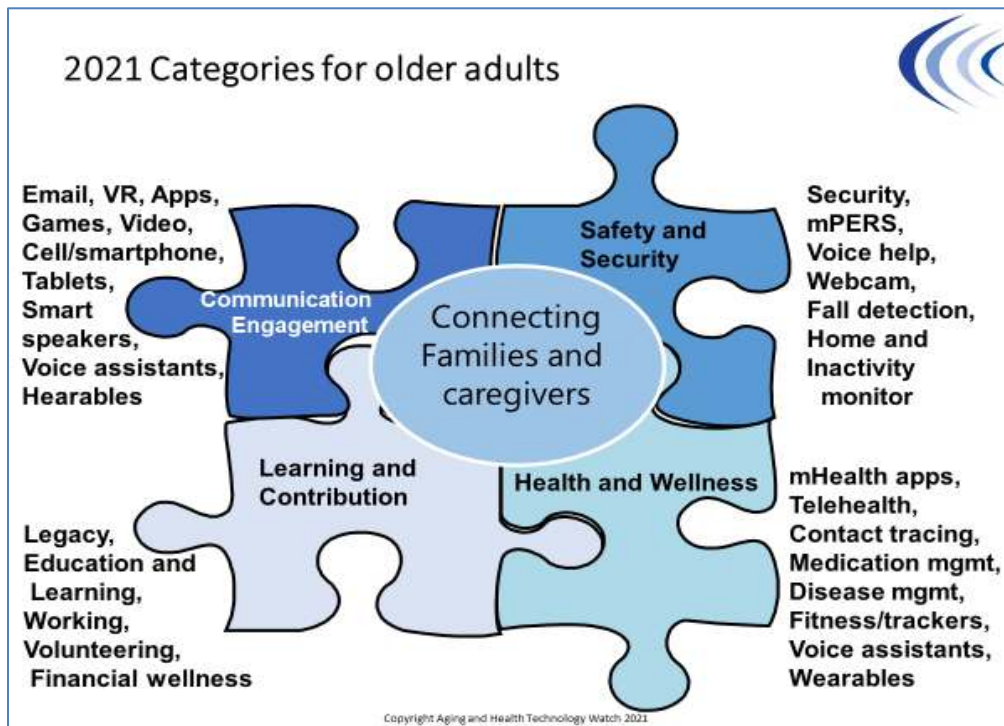


Figure 8 The Interdependency of Technology Categories for Older Adults

Communication and engagement. For all ages, isolation during and after the pandemic is untenable without the technology to connect to others. As 2021 begins, tech vendors will promote a gaggle of gadgets to mitigate all barriers, emphasizing voice and ‘no-touch’ offerings over tablets. The 2021 versions of [voice-first interfaces](#) (like Alexa, Google Assistant, or Siri) raise the bar on in-home tech experiences for the growing numbers of owners, now at least a [quarter of all households](#). The disrupted hearing technology market will see new hearables emerge. Expect hearing aids that are more attractive, lower cost, or more available through direct-to-consumer channels.

Safety and security. The ability to remain at home depends on whether the home is free from obstacles and dangers, especially for the [46% of women aged 75+ who live alone](#). The traditional PERS industry is morphing and expanding. The pivotal entrance of Apple’s fall detection legitimized the market for [caregiving smart watch wearables](#) with fall detection. Other vendors are offering voice-enabled PERS services – **HandsFree Health** launched **Wellbe Emergency Alert Smartwatch** and **Constant Companion** delivers **Alexa for Caregiving**. Other in-room approaches to fall detection are now in-market (like Essence’s radar or **SafelyYou’s AI/Video** offering) .

Health and wellness. The abrupt shutdown of health visits during the pandemic triggered [frenetic adoption of telehealth](#) – now firmly entrenched as a care option. Even 2020's virtual HIMSS, traditionally focused on the enterprise Health IT market, includes a number of [technologies that involve patients \(seniors\) directly](#). 2020 saw growth, but significant challenges persist in the [remote patient monitoring](#) (RPM) market – not the least of which is confusing regulation as to [what type of interaction may be reimbursed](#). And older adults surveyed in June expressed concerns about telehealth visits (see **Figure 9**).

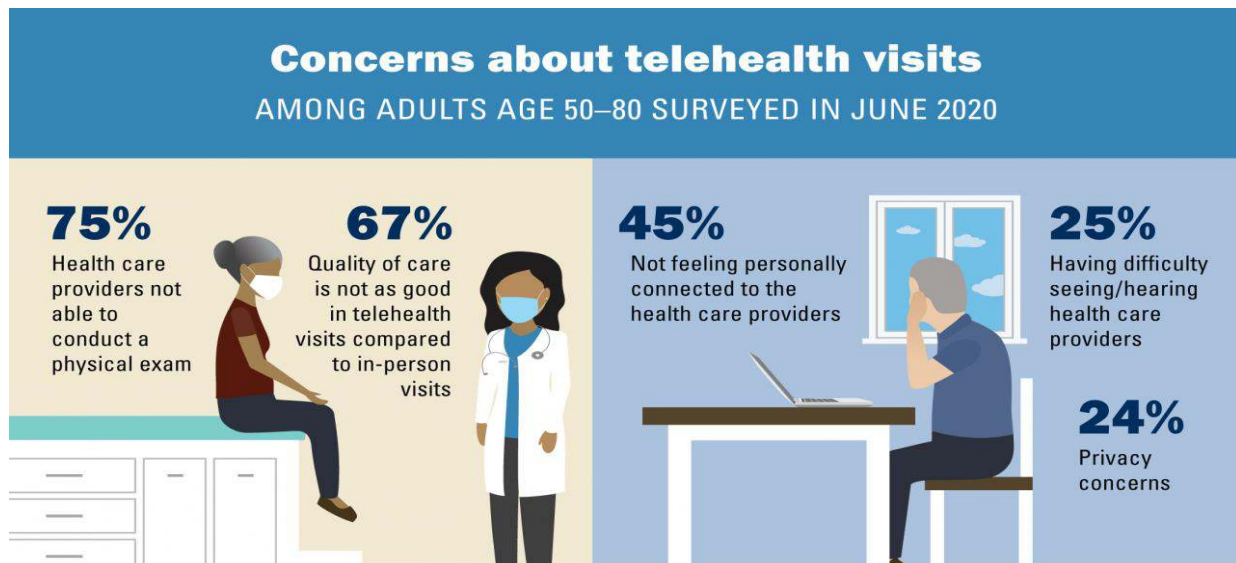


Figure 9 [National Poll on Healthy Aging](#) Source: University of Michigan October 2020

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, staying aware and active in society, and contributing through virtual [volunteering](#). With a growing numbers of [older workers](#), organizations like [AARP](#) and [OATS](#) help an older person obtain job-related skills. Older adults also leave a [legacy of photos](#) and [stories](#) for loved ones.

Caregivers still underutilize technology. According to the May 2020 survey of 1499 caregivers by the [National Alliance for Caregiving and AARP](#), 53% of responders indicated use of any of tools (see **Figure 10**). This is only a modest increase over the 2009 report, in [which 45% reported use of any technology](#). Recognizing that caregivers themselves may be aging, the report surveyed an additional 160 caregivers aged 75+, included in the 1499 total.

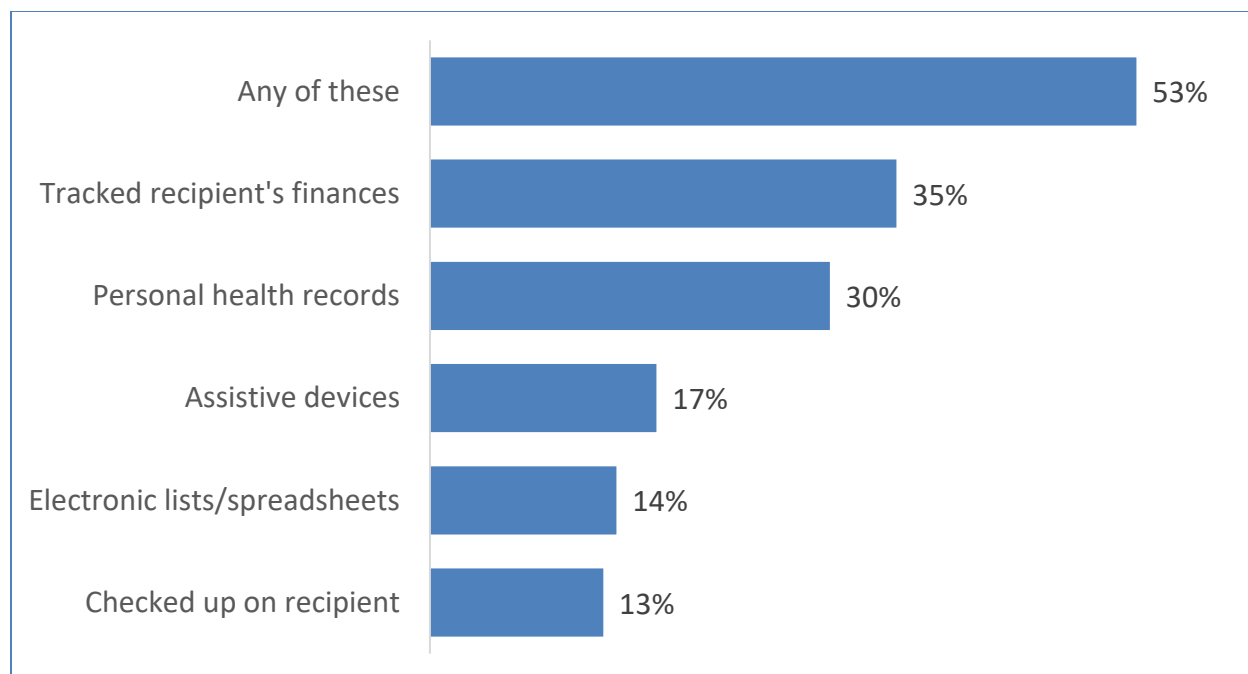


Figure 10 Caregivers' Use of Technology 2020 from [AARP/NAC Caregiving in the US](#)

2021 Technology Trends that Will Help Older Adults

Across all consumer devices, wireless charging pads and stands have made coping with mobile technology easier. Charging plugs are less likely to wear out before the device is retired. Across many devices today, consumers will find assistive features (for vision and hearing limitations) that are built in. Older adults would benefit greatly if vendors and stores selling devices (or providing training) spent time introducing them to those features (See **Figure 10**).

AI is behind the scenes – everywhere. The availability of a growing trove of data about our behavior has enabled the ever-smarter world of voice interactions and sensors. But the accumulation of this behavior information over time enables analytics that will augment simple monitoring and alerts. Pattern analysis, dashboards, and predictive analytics have permeated tech innovation for years, including healthcare, but have been slow to enter the world of caregiving for older adults. That is changing – and new entrants, for example, **StackCare** and **CarePredict**, offer tools that learn patterns to alert about issues that caregivers need to address.

Wearables became more visible – enabling PERS on the wrist. Today, 30% of the PERS industry is mobile, validating the emergence of wearables other than pendants to take out and about. While Philips auctions its innovation-free Lifeline business – others offer caregiver watches that provide a less visible, more useful safety alternative when living alone, walking the dog, or being afraid of falling. **BellPal**, **Freedom Guardian**, **Bay Alarm Medical**, **UnaliWear**, **HandsFree Health**, **FallCall Lite** (Apple) – connect to a required response center.

Voice first technology – in everything. In 2020, Voice First category of technologies moved far beyond smart speakers and voice assistants. Every brand now has an opportunity to have its

[own voice](#) with [voice cloning](#). [Speaking to your car \(Hey Mercedes!\)](#) is a requirement and the brands will make it so, even [without connecting your phone](#). Expect moving forward that older users to be willing to trade concerns about privacy via an always-listening device against ease of interaction with voice assistants everywhere. [2021 will also produce progress in multi-wake word detection](#), even a bit of interoperability across platforms.

Amid market disruption, hearables market continues to resonate. The hearing technology market is seeing disruption from multiple angles. [Smart hearables will again be news at CES 2021](#), including a range of earbuds, AI-enabled hearing aids with fall detection, and smartphone adjustable sound – especially appealing for older adults in noisy restaurants. Add integration with voice capabilities like Siri, Google Assistant, and Alexa plus the [ability to stream audio content directly to in-ear devices](#). 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 are likely to benefit.

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

Probably the biggest issue that keeps more of today's technology out of the homes of seniors is the difficulty of marketing to them ("We are not old!") and their afraid-to-interfere adult children. Therefore, it's important to sell through channels that reach them at whatever stage of aging, pricing right for resale and possible white labeling. Vendors must find:

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 [2020 FCC broadband survey](#) revealed 42 million Americans without high speed Internet access, including [41% of the 65+ market](#). If that population needs a technology or service, caregivers may search online sites on their behalf, depending on need, like [Best Buy's Aging in Place](#) or [DMEConnected](#). New entrants must form partnership early – at the pilot stage with channels like these or [PERS dealers](#) who resell medical alert devices, for example.

Privacy and security features will be built into design of software and websites.

Cybercrimes targeting the elderly have ballooned to a cost of [\\$650 million in annual losses](#), and that includes only those that are self-reported. For safety-oriented apps and sites that include the role of the senior, it's critical to verify identity among provider and user roles. Two-factor authentication will be likely as part of online and voice 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 [direct-to-consumer 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. But what if it is a device fitting into a Wi-Fi home network with other devices, a printer, and a webcam? Instead, remote configuration and support partners must be a major part of the offering – or doom the user and family to [frustration](#) and tech abandonment.

Device and app vendors must be capable of integration and extension. Despite standards initiatives, [task force recommendations](#) or [ONC Interoperability](#) (2019), many of today's gadgets

still don't communicate – especially with each other's proprietary systems or data sets (like Electronic Health Records). So mobile health devices, apps or medication reminders may be useful, but touch a tiny aspect of the whole person. Patients still [struggle to get their own records in a transferrable form upon discharge](#).

Upgrades must be invisible or painless. Consumers already gravitate towards software applications that mostly work with ones they already use, including Gmail, Facebook, FaceTime, Teams, Zoom, Siri, and Google Assistant – most working across devices. Personalized interfaces (like Amazon and Netflix) that are updated in the cloud are expected.

The right customer or referral – families and service providers partners. Direct-to-consumer marketing of products and services takes deep pockets just for the advertising – note the growing number of ads for low-cost hearing aids. For early stage companies, start locally – get to know a local home care agency, senior living firm, or home security company. What do they have in common? Entry into the home. What else? Business contacts in the area who can sponsor pilots.

Standards enable users and integrators to cross tech boundaries. Times are changing – as in this [smart home interoperability initiative](#) – a recognition that, despite intense competition, consumers likely own a wide variety of devices and software that should work better together. Amazon launched a [similar initiative for voice offerings](#) like smart speakers and voice assistants. Ensure that the new product or service works across multiple platforms and comes in multiple form factors – voice, smartphone, web, for example.

Access to ongoing training and refreshers – much work needed. The oldest are likely to approach smartphones as just another variation of [flip phones](#) – until they can learn of their utility on TV, online, from family, or in community training centers. Automatic updates and application software changes push users back for refreshers to avoid considerable frustration. Despite the efforts of senior centers and non-profits like NCOA and its [Online Banking](#) training, [these services inevitably lag the pace of tech change](#) and may not keep up with rapid growth of threats, including hackers' ability to pinpoint location and/or steal identifying information.

The real user need – a service problem solved. Seniors and their adult children may not imagine on their own what to do with sensor networks, web cams, or smart speakers. A home security company could help explain the benefits of care coordination, when selling tech to a home health agency. A telecom service provider could partner with local firms that could provide safety services to seniors living alone. Instead of offering point products out of context, 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 that spike need and interest, using these as part of websites and marketing (see **Figure 11**).

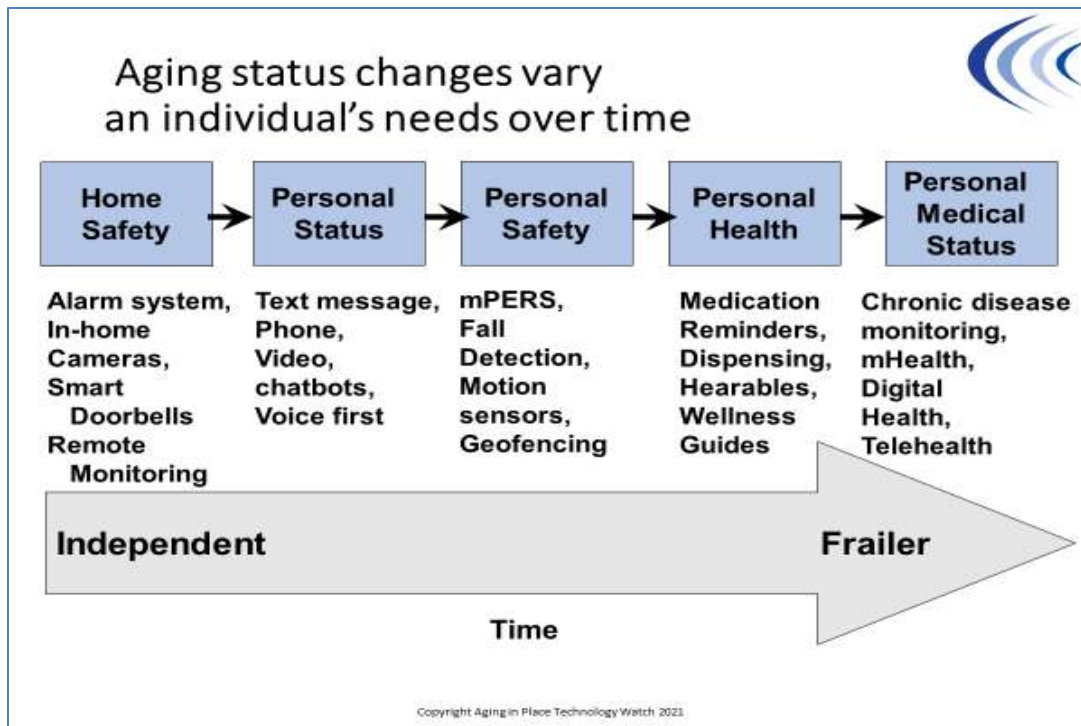


Figure 11 Technology needs of older adults evolve over time

“Every technology is of value to older adults – for example, new technologies like conversational AI and personalization algorithms can help create a customer segments of one with personalized solutions offered to each older adult.” – Saeed Elnaj, CIO, National Council on Aging

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. But 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 technology will accrue to all, but will challenge users at every introduction. Service providers, caregivers for older adults, and senior living organizations will need to keep up (see **Figure 12**).

What are the key trends to watch in 2021?

As 2021 begins and the population aged 65+ exceed 53 million, trends emerge, accelerated by the pandemic. Because of the sheer size of the older adult market, vendors now see them as potential consumers of technology within multiple age and health segments.

In-home healthcare services will persist and expand. The dream of [reimbursement for remote care](#) became a reality during 2020. In 2021, [Telehealth services will remain](#) to replace or supplement in person visits, and [Hospital at Home has emerged](#). Remote patient monitoring

(RPM) is a reimbursed means to move more care into the home. Regulation changes in the past year are [have begun to turn the adoption tide](#) and will likely continue. At CES 2021, consider the forecast for Connected Health Monitoring Devices (see **Figure 12**). Vendors are learning that older people, consumers of a significant portion of healthcare spending, will need many of the 2021 [Digital Health technology categories](#).

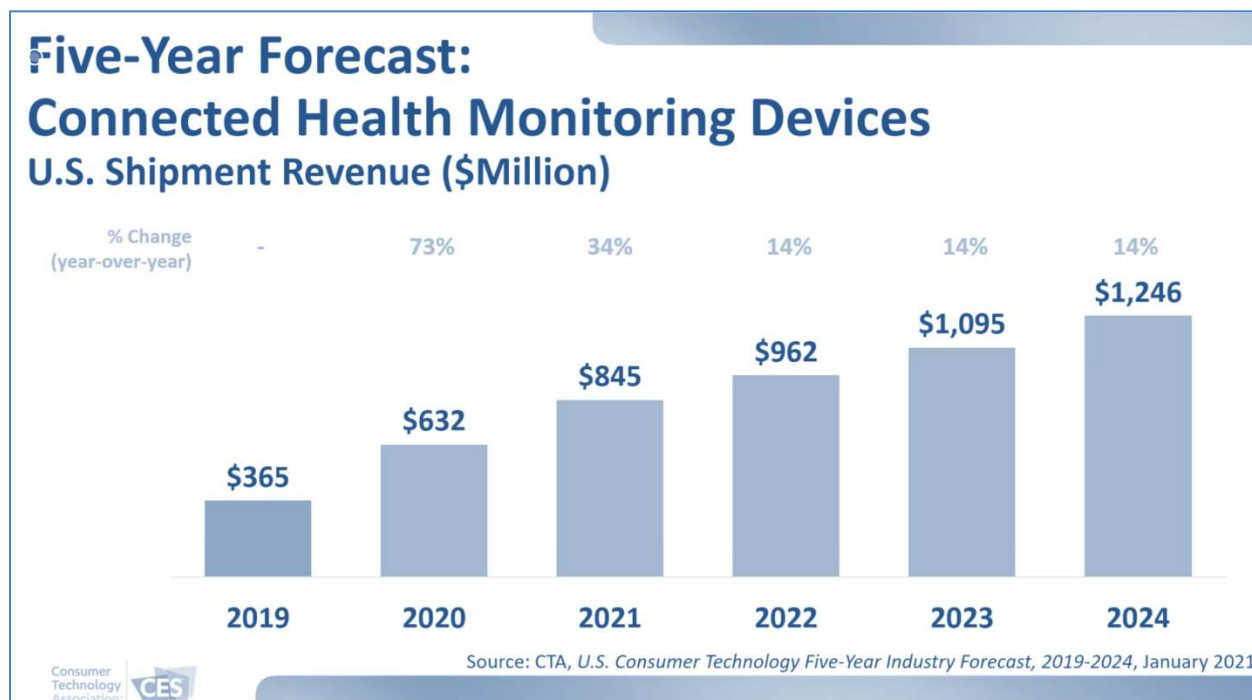


Figure 12 Source: Consumer Technology Association January 2021

Smart displays and voice first interfaces will be ubiquitous. For older adults, [touchless](#) technology and voice-enabled interactions are ideal, especially when accompanied by a display with large font text and [engaging videos](#). Why? Because [it is easier for them](#) – turning frustration into a valued service world in which what you say should get you what you need. Voice interfaces will be expected in smart displays and will be added to every feasible device (and new car) and gain widespread use in independent and senior living.

Hearing technology will be further disrupted in 2021. Widex Moment, [2021 CES Innovations Award winner](#), uses machine learning to enhance the quality of sound for the wearer. [Lower cost hearing aid options](#) including financing alternatives are now part of the mix. Expect hearables to further evolve; over-the-counter hearing aid purchases to be FDA-legitimized; retail [and at-home self-service/self-fitting](#) services expand (further enabled as a result of Covid-19), individuals with hearing loss may want to improve what they can hear in home and when out and about.

Caregiver shortages, prolonged isolation, and aging all boost in-home monitoring. Fifty-three million Americans are [providing care](#) to someone with health or or functional needs – in

short, they are family caregivers. Three simultaneous trends – [aging alone at home](#), [worsening caregiver shortages and turnover](#) – intersect. The percentage of [adult children working](#) and interest in monitoring technology in the home will grow, including in-home hubs that can manage web cameras, sensors, smart doorbells or enable voice-first emergency response (**Amazon CareHub** or **Google’s Nest Hub Max**).

Virtual reality use cases will continue and grow -- slowly. Virtual reality tool possibilities expanded during 2020, particularly in the area of [caregiver training](#) (**Embodied Labs**) and more senior living communities are [deploying virtual reality](#) for resident engagement (**MyndVR**, **Rendever**). In 2021, VR began to be used for [training future doctors](#) and surgeons, and it is also [being used for pain reduction](#). But many senior living initiatives to date were just well-publicized pilots, and it is unclear how quickly engagement deployments will grow given visitation restrictions and budget constraints.

The absence of widely available tech training and support should prompt innovators. It’s not just seniors who need help. The proliferation of devices and their [non-simplicity](#) gave birth to Best Buy’s Geek Squad and now [Total Tech Support](#) (any device) plus [\\$10 million of funding](#) for learning platform **GetSetUp**. New technology requires training and support – and profit for companies that can deliver it cost effectively. With the aging of baby boomers, newer offerings like [Support.com](#) (any connected device) will tailor messages to reach an older adult audience. **Cyber-Seniors** trains young people to be technology tutors for older adults. National efforts will emerge to provide tech training for older adults in 2021.

| Category Changes 2021 and beyond | Current | Moving Forward |
|---------------------------------------|---|---|
| Telehealth, Remote Patient Monitoring | MD resistance, Covid-driven reimbursement | MDs embrace, CMS permanently reimburses |
| Voice First technology | Smart Speakers, Voice assistants | Touchless smart display, branded voice assistants |
| Hearing technology | High price hearing aids, sold by audiologists | DTC, hearables, low cost hearing aids, self-service |
| Caregiver technology | Assisting care workers, time recording, PERS | In-home augmenting care, sensors, voice tech |
| PERS, fall detection | On body pendant, private pay | Add in-room sensing, insurance reimbursed |
| Senior In-home Fitness | New post-Covid category | Telefitness, MD referral |
| Virtual reality for seniors | Experimental | Engagement, pain control, caregiver training |
| Tech training for Seniors | Fragmented, senior center | Nationwide availability |

Figure 12 Where is the market heading for technology and older adults?

About the Author:

Laurie M. Orlov, a tech industry veteran, writer, speaker and elder care advocate, is the founder of [Aging and Health Technology Watch](#), a market research consultancy that provides thought leadership, analysis and guidance about technologies and related services that enable boomers and seniors to remain longer in their home of choice. In addition to her technology background and years as a technology industry analyst, Laurie was a certified long-term care ombudsman and received a graduate certificate in geriatric care management from the University of Florida.

In her previous career in the technology industry, Laurie held senior positions in IT organizations, followed by 9 years as a leading industry analyst at Forrester Research. While there, she was often the first in the industry to identify technology trends and management strategies. 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 advises large organizations as well as non-profits and entrepreneurs about trends and opportunities in the age-related technology market and was a participating expert on the Think Tank for The Philips Center for Health and Well-Being; the Personal Connected Health Alliance Aging Task Force; and the AARP Inclusive Technology Roundtable. She also testified before the US Senate on the role of technology for older adults. Her perspectives have been quoted most recently in The New York Times, Wall Street Journal, Kiplinger, Consumer Reports, and Home Care Magazine. She has a graduate certificate in Geriatric Care Management from the University of Florida and a BA in Music from the University of Rochester. Her other recent [research](#) reports include **The Future of Remote Care Technology and Older Adults 2020**; **Voice, Health and Wellbeing 2020**; **The Future of Voice First Technology and Older Adults (2018)**; and **Tech-Enabled Home Care (2017)** as well as many client white papers.

2021 Technology Categories and Vendors (Examples)

For inclusion as an example-only technology to facilitate aging in place, the vendor meets two of these criteria (those firms listed are only examples, not an exhaustive list). Because of growth of relevant technology announcements during 2020 and into 2021, more startups, including pre-launch and innovation award winners are included than previous versions. In addition, please note that the “**” entries can be new for this publication of the 2021 Market Overview, though they may have been in business previously but were not included in the 2020 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: Communication | | | | |
| Alango Hearables** | Hearables | All around hearing enhancement | Headsets and earbuds | Alango.com |
| Amazon Echo Show | Cloud-based | Screen with voice-enabled AI access | Smart display | amazon.com/echo |
| Embodied Labs | Virtual Reality | Caregiver training | Experience Headset | embodiedlabs.com |
| Connected Living | Senior Living | Engagement of residents | Suite of software | connectedLiving.com |
| Google Nest Hub Max** | Cloud-based voice hub | | Smart Display | store.google.com |
| grandPad | Senior tablet | Simple interface | Android | grandpad.net |
| iN2L | Engagement System | Games, health, movies, spiritual content | PC Workstation, Tablet | in2l.com |
| Consumer Cellular** | Smartphone | Moto G Power | 3-day battery life | consumercellular.com |
| HeardThat** | Hearing | Hearing assistance | Smartphone | heardthatapp.com |
| JoyforAll | Robotics | React and respond to touch | Toy | joyforall.com |
| Starkey Livio AI | Hearing aid | Activity tracking, personalized | Hearing aid with AI fall detection | starkey.com |
| MyndVR | Virtual reality | Assisted Living, Home | Experience Headset | myndVR.com |
| Nuheara | Hearables | IQ Buds Boost, Max | Hearing aid, Google, Siri Integration | nuheara.com |
| Rendever | Virtual Reality | Senior engagement | Experience Headset | rendever.com |
| SingFit | Music Therapy | Dementia care | Activities, sing-along | singfit.com |
| Sundial** | Engagement | Care circle communication | Echo Show 5, mobile app | sundial-labs.com |
| VoCo** | Engagement | Senior living | Alexa made easy | sayvoco.com |
| Volara** | Voice-first Engagement | Senior living | Alexa, Google Nest | volara.io |
| Widex Hearing Aid** | Hearing Aid | Widex Moment | Machine Learning auto adjustments | Widex.pro |
| Category: Home Safety, Security | | | | |
| Care Predict Home | Wearable | Senior health monitoring | Predictive analytics | carepredict.com |
| Domalys** | Fall Prevention | Temperature, lighting, fall detect | Records nighttime activity – senior living | Domalys.com |
| Smart Lamp | Sensors plus iPhone app | Scans environment | Continuous checking of sensors for issues | Envoyathome.com |
| Envoy at Home | IoT/PERS | In-home IoT devices | Alerting platform | essence-grp.com |
| Essence PERS 5G** | | | | |

| | Sub-Category | Purpose | Platform | Contact |
|------------------------------------|---------------------------|---|--|--|
| Best Buy Lively App | Mobile PERS | Paired with Lively Wearable 2 | Call center | greatcall.com |
| Caregiver Smart Solutions** | Sensor Home Monitoring | Core Monitoring Kit | Motion sensing | Caregiversmart solutions.com |
| FallCall Detect** | Fall detection | Apple Watch, Android App | Call center | Fallcall.com |
| LiveFreely** | Safety Wearable | Fall detection | Call center | buddylife.com |
| Locate Motion Speak2 | Wander management | Pattern tracking for Dementia, Autism | Sensights dashboard | locatemotion.com |
| TrelaWear | Engagement platform | Voice First for Senior Living | Daily schedule, care plan alerts | speak2software.com |
| TruSense | MobilePERS | PERS Jewelry | Paired with Mobile Help response center | mobilehelp.com |
| UnaliWear | IoT Monitoring | Voice-enabled passive monitoring; GPS tracker | Amazon Echo interface | mytrusense.com |
| Verizon Care Smart Watch** | Mobile PERS watch | Voice-enabled mobile PERS | Bluetooth low energy | unaliwear.com |
| | Mobile PERS Watch | Mobile PERS Watch | No call center | Verizon Care Smart Watch |
| Category: Health Wellness | | | | |
| AppliedVR | Virtual Reality | Pain education & management | Distraction and coping tools for pain | appliedvr.io |
| CareHero** | Telehealth | Senior Living | Virtual visits | sanvishealth.com/carehero |
| CollabCare** | Telehealth | Virtual care platform | Integration to existing workflows | collabcare.com |
| HandsFree Health | Voice assistant | Voice-enabled, health assistant | HIPAA compliant reminders | handsfreehealth.com |
| Kinisis Balance** | In-home assess risk | Smartphone app | Falls risk, rehabilitation | kinisis.ie |
| 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 | medisafe.com |
| Ōmcare | Medication compliance hub | Home health | Verification of dose taken | Ōmcare.com |
| Orbita | Voice-enabled healthcare | HIPAA-compliant Conversational platform | Enterprise software for healthcare systems, groups | orbita.ai |
| Pillo Health | Robot | Pill-Dispensing | Companion | Pillohealth.com |

| | Sub-Category | Purpose | Platform | Contact |
|-------------------------------|---------------------------------------|--|--|-----------------------------|
| 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 |
| Toothpic** | Dental health | Low cost dental assessment | Based on smartphone photo of teeth | Toothpick.com |
| VitalTech | Connected Care | Remote patient monitoring | Patient health, wellness | vitaltech.com |
| Vivo** | Online | Strength training for seniors | In-home with trainer | teamvivo.com |
| Zibrio Smart Scale | Smart Scale | Measures and tracks balance | AARP Innovation Award 2020 | zibrio.com |
| Finance/Transportation | | | | |
| Golden Financial | Financial services for older adults | Account organization, bill paying | Includes financial care specialists | Joingolden.com |
| Papa | Family on demand | Transportation, chores, socializing | College students | joinpapa.com |
| LifeSite | Family records | Caregiving financial records | Store, manage family care documents | lifesite.co |
| EverSafe | Fraud protection | Seniors and families | Detection and alert system | eversafe.com |
| Uber Health | Healthcare appt rides | With uberAssist, door-to-help for disabled | Ride-hailing service paid by organizations | uberhealth.com |
| Intuit Mint | Finance | Manage banking accts, finances | Budget for aging parents | mint.com |
| Lyft Concierge | Includes healthcare appointment rides | Flexible ride scheduling by sponsor organization | Ride-hailing service paid by organizations | lyftbusiness.com/healthcare |
| TrueLink Financial | Financial services for older adults | Protect assets and track payment activity | Payment cards, investment management | truelinkfinancial.Com |

Category: Caregiving (Platform, Apps)

| | | | | |
|------------------------|----------------------------------|---|-----------------------------------|--|
| Alexa CareHub** | Voice-home monitoring | Activity feed, alerts | Voice-activated help | amazon.com Alexa-care-hub |
| 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 marketplace | Families, organizations find workers, rides | Marketplace of registered workers | carelinx.com |
| Care Predict | Care management | GPS tracking, reporting | Care professionals | carepredict.com |

| | | | | |
|------------------------------------|-----------------------------|---|--|------------------------------|
| Caring.com | Elder care website | Articles and search tool – all care types | Reviews from users | caring.com |
| Caregiver Smart Solutions** | Motion sensors, app | Package of sensors | Core Monitoring Kit | Caregiver smartsolutions.com |
| Caremerge | EHR and Engagement Platform | Resident engagement, Calendar | Senior living | caremerge.com |
| Constant Companion** | Voice-emergency | Safety for seniors | Family, home care, senior living | constantcompanion.com |
| 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 |
| Nooie** | Cameras, pet monitor | Design-focused | Smart home devices | Nooie.com |
| Outpatient | Smartphone app | Caregiver collaboration | Share calendar, status | Getoutpatient.com |
| PointClick Care | Care management | Cloud platform | Senior living, SNF, home care | pointclickcare.com |
| StackCare** | Home monitoring | AI-Enabled Activity Monitor | Senior living, home care | stack.care |

Category:

Learning/Contribution

| | | | | |
|--------------------------------|-------------------|--------------------------------|-------------------------------|----------------------|
| 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 |
| GetSetup** | Peer training | Online Classes | On demand learning | getsetup.io |
| HelpHerd** | Tech training hub | Online tools, classes | Senior living | helpherd.com/helphub |
| learn@50+ | Training | Tech, caregiving, work, skills | Online and workshop Education | learn.aarp.org |
| Memory Well | Storytelling | Digital life stories | Professionally written | memorywell.com |
| My Heritage | Family history | Stories and family tree | online tool | myheritage.com |
| MyHello** | Life story | Reminiscence | Live phone visit | myhello.com |
| OATS | Training | Tech, job skills | Regional workshops | seniorplanet.org |
| Osher Lifelong Learning | Lifelong learning | Senior-focused courses | Nationwide network | osherfoundation.org |
| Support.Com | Tech support | Telephone support | Any device | support.com |