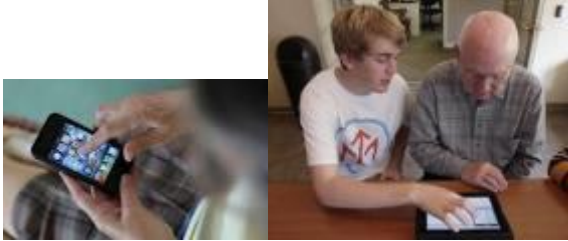


# Technology for Aging in Place



2015 Market Overview

January 2015

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## FOREWORD

**What is the line between a distinct product market and tech customization?** In 2009 when the original Market Overview was published, the search began to identify the small group of entrepreneurs focused on serving seniors – from the AirGuru SV1 Video Phone and Big Screen Live all the way to WellAware and Wellcore. Why note such a market, you might ask? All of those companies and many others had the heart and focus to try to craft something usable by and for an older adult. In many cases these were inventions compensating for a gap in care and oversight, but most often filling a gap in internet access and/or usability of devices and software.

**And the search is still on.** Both heart and innovator enthusiasm have skyrocketed, as you will see by a recent market sizing and also with investor interest in the growing aging demographic numbers. Arguably the most significant device invention for seniors was the introduction of the iPad in 2010 -- which cast a pall on the utility of PCs. Now that very same iPad seems impossibly heavy and awkward. While researching the 36 technology additional entrants into the 2015 Market Overview, it appears that a corner has turned. As this market opportunity has become interesting to investors and inventors, innovators recognize that customization (think Easy Mode), re-purposing, and training on broadly available technologies may be as useful as creating a brand new device from scratch.

**What happened along the path from 2009 to today?** Let us count the ways. Foremost – costs jumped for health care and prescription drugs. The older population aged 65+ ballooned from 39.6 million to 47.9 million projected for 2015. Life expectancy averages moved from the early 80s now up to 88.8 for women. As of 2013, nearly half of women who are aged 75+ lived alone. While Internet access was expanded in some geographic areas, adoption has not kept pace with the pace of change in society. Physical locations like banks, Social Security offices, retail stores and pay phones have disappeared. Wearable technology innovation investment has skyrocketed, particularly in fitness/activity tracking and disease/wellness monitoring – yielding a nearly unlimited variety of fitness and health-related devices that are relatively inexpensive compared to the \$1200 Intel Health Guide so-called portable telehealth unit of 2008.

**Moving from niche market to the way things should work.** In January, 2011, the first baby boomers began turning 65. Surprise -- marketers noticed. One day you look around a pharmacy like CVS and the store has better lighting and more chairs. Then Amazon launches a website that leads with adult diapers. Oops. Make that Active & Healthy Living. AARP introduced the RealPad in 2014, arguably on the late side, as consumer tablets go and have gone. The organization's Health Innovation@50+ team has estimated the opportunity for 100 million people aged 50+ to be \$2.7 trillion and dubbed the related businesses as the Longevity Network. As the pace of tech change inevitably accelerates, the older population will need ever more training on how to use their tablets and smartphones -- just as much as they (still) need affordable broadband access. And as bank branches close, paper checks disappear, the movie theaters empty in favor of Netflix, and visits with doctors move online, that training on new technology needs to be both pervasive and -- let's hope -- persuasive.

Laurie M. Orlov, Founder, Aging in Place Technology Watch



## **WHO SHOULD READ THIS REPORT?**

This report was most recently revised in January, 2015, right after the 2015 Consumer Electronics Show, updating products, services, websites, and apps. 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 within or entrepreneurs considering marketing to baby boomers and seniors
- Social networking sites targeting baby boomers or seniors
- Advocacy and tech training groups like AARP TEK, OATS' Senior Planet
- Retirement Communities that serve independent adults
- Assisted Living Facilities (ALFs)
- Senior housing developers
- Home care agencies
- Home health care agencies
- Geriatricians
- Hospitals and integrated service delivery networks
- Government agencies and policy makers
- Geriatric care managers (NAPGCM)
- Naturally Occurring Retirement Communities (NORCs)
- Virtual Villages and their national network (VTVNetwork.org)
- Intentional Communities and Co-housing advocates
- Startup incubators like Aging 2.0, Startup Health, and Rock Health
- Caregivers, seniors, and family members



## AGING IN PLACE: AN EXPECTATION FUELING A TECHNOLOGY MARKET

*“Before the tech revolution, the village took care of you. Now it is an electronic village.”*

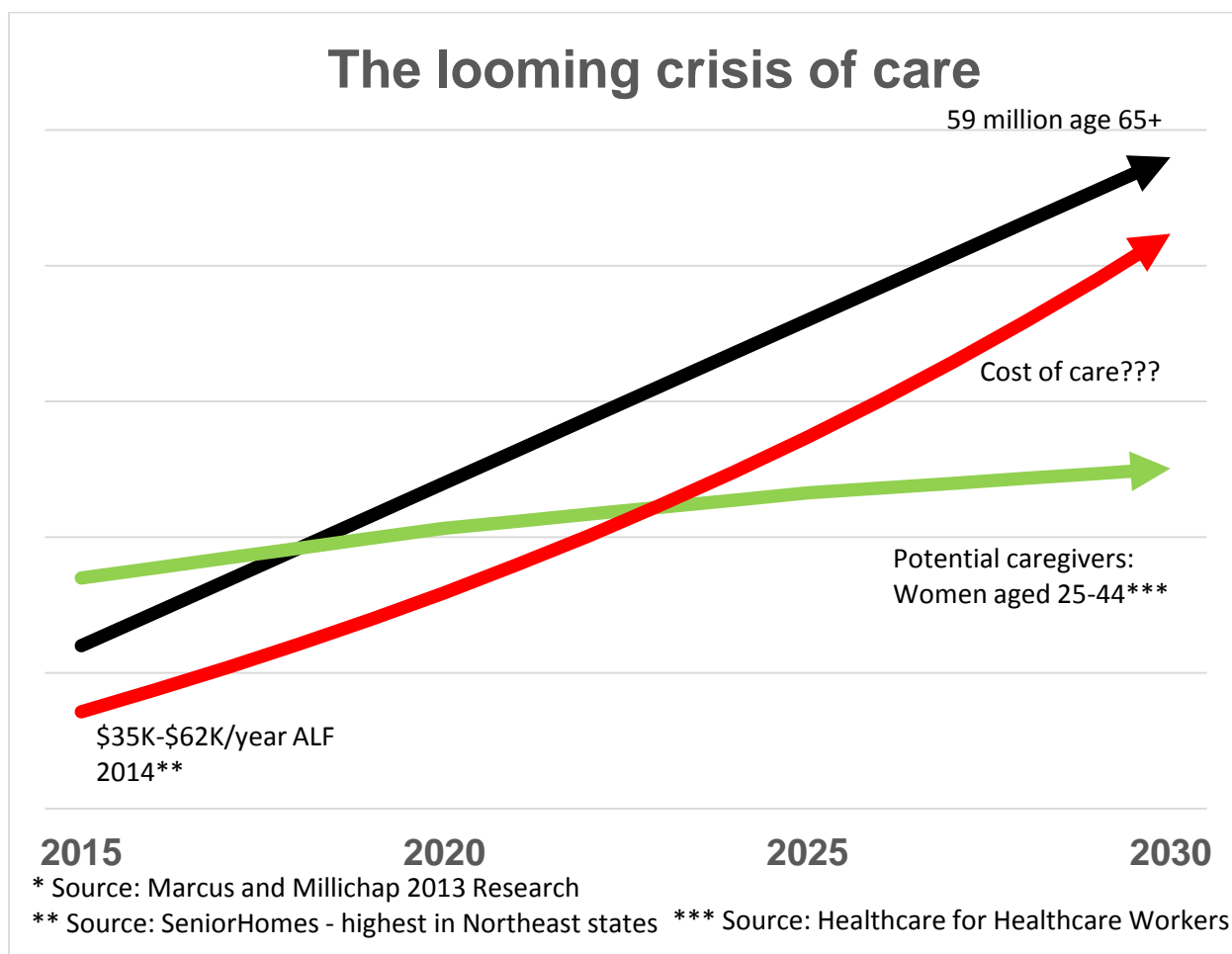
Eighty percent of older people today live in their own homes – with one-third of the 65+ and 46% of those 75+ living alone.<sup>1</sup> Not surprisingly, the majority of them would like to stay in their homes of choice – and if they move, according to AARP, it will be to another private home.<sup>2</sup> The desire to live at home dominates the minds of baby boomers who are becoming seniors (age 65) at a rate anywhere between 8,000 and 10,000 per day, and that desire has reshaped markets that provide products and services to them.<sup>3</sup> Further, after the 2011 housing market crisis, many who would move to more appropriate settings did not, pushing up the average age of assisted living move-in where it is now -- in the mid-80s.<sup>4</sup>

Within that context, aging in place reflects the ability to successfully age and remain in one’s home of choice, whether it is a private home, condo, apartment, or group home. And the opportunity is further underpinned by the very recent growth of incubators and investors in the mature market – like **Aging 2.0**, **Link-age Ventures**, and **StartUp Health**. That’s because:

- **Successful aging means independence.** Nobody wants to think about becoming old -- but improved medical treatment and growing life expectancy has resulted in the 80-plus becoming the fastest growing demographic.<sup>5</sup> For example, the Society of Actuaries recently updated life expectancy for women aged 65 – on average, they can expect to live until nearly 90.<sup>6</sup> When asked what’s important for successful aging, seniors rank as the most important: ‘being in good health, having the ability to do things for myself, having friends and family there for me, and feeling safe and secure.’<sup>7</sup> And studies have shown that older persons who live independently have more positive self-esteem than those who are institutionalized.<sup>8</sup>
- **Cost of long-term care is ever more daunting.** Even when assisted living would be a good option, price is a barrier. MetLife pegged the average cost of an assisted living facility (ALF) apartment in the US in 2012 as \$43K/year, with nursing homes at \$87K/year.<sup>9</sup> Meanwhile, their cost projections show average ALF cost growing to \$51K by 2015 – but in some states, Massachusetts for example, that number was already exceeded in 2012.<sup>10</sup> Unlike nursing homes, which can be covered under Medicaid, more than 90% of assisted living costs are paid out of pocket, which at least partially explains the rising average age of residents who are deferring move-in. Further, for the very frail, ALF staffing may need to be supplemented by private duty care. According to NPDA, the cost of private duty home care, one of the 10 fastest-growing job categories in the US, has risen to an average of \$20/hour.<sup>11</sup>



- **Care capacity will reach crisis proportions.** As people age, the numbers of chronic conditions and related care requirements grow. Care of the aging population has begun to migrate from nursing homes to assisted living and increasingly to home-based care.<sup>12</sup> But it is clear from age-related trends that there will not be enough caregivers to help seniors age at home if they need substantial care.<sup>13</sup> The care gap results from the convergence of senior population growth, increase in life expectancy to 88 for otherwise healthy 65-year-old women and a flat growth rate among younger women -- still the primary source for home care, assisted living, and nursing home aides (see **Figure 1**).<sup>14</sup>



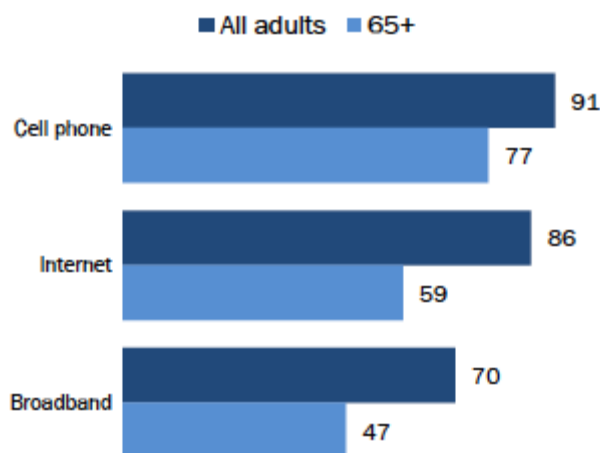
**Figure 1**



- **Brick-and-mortar services and paper are replaced by online and phone.** The Social Security Administration (SSA) eliminated paper checks in 2011, pushing seniors to receive them by direct deposit only. Despite the large baby boomer population reaching Social Security ages, they subsequently closed 64 offices, shut 533 mobile offices and reduced hours – and did so regardless of accessibility of the remaining locations.<sup>15</sup> Meanwhile, banks have shuttered 2,599 branches during 2014 alone, based on the premise that customers are online and banking that way. But only 47% of the 65+ online population also banks online, according to Pew Research in 2013.<sup>16</sup> And following the SSA switch to online banking, debit cards could be obtained through their portal. But by 2013, SSA had to acknowledge widespread scams and fraud.<sup>17</sup>
- **Technology capabilities exist – and seniors are willing, if not all yet connected.** Every year technology to help age at home becomes more available at a lower cost. Platform adoption of cell and smart phones, tablets, high speed Internet and video is enough to merit tentative but steady entrance of new and existing vendors. Next, baby boomers make up the majority of adult children and own more tech than any previous generation. Because of their access, it is the first time we can connect multiple generations of families with each other -- and with their care providers. Baby boomers, the oldest is now 68, are increasingly online and active (See **Figure 2**).<sup>18</sup> But studies show that while older seniors and caregivers are interested, according to Pew, only 21 percent of the 75+ population has broadband.<sup>19</sup> A consolidated look at Pew Research findings from 2013, however, revealed that technology access still eludes older seniors (see **Figure 3**).

### Seniors continue to lag in tech adoption

*Seniors vs. all American adults 18+*



Pew Research Center's Internet Project July 18-September 30, 2013 tracking survey.

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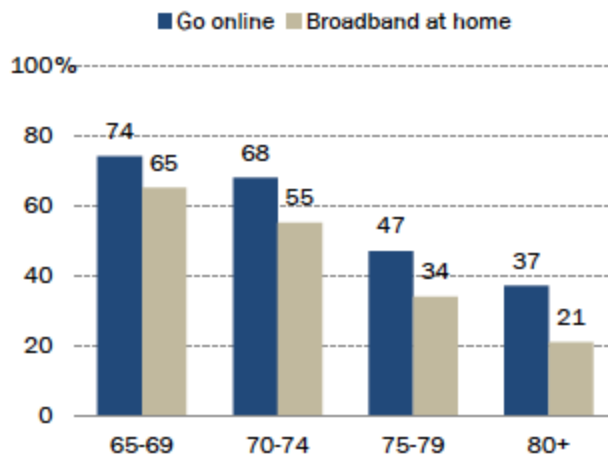
**Figure 2 Adults 65+ compared to population, Pew Research, April, 2014**



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### Among seniors, internet and broadband use drop off around age 75

% within each age group who ...



Pew Research Center's Internet Project July 18-September 30, 2013 tracking survey.

PEW RESEARCH CENTER

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**Figure 3 Adults 75+ compared to population, Pew Research, April, 2014**

### What Will It Take to Successfully Age in Place?

More than a third of those aged 65+ live alone and the percentage rises with age.<sup>20</sup> Many of the adult children of today's oldest seniors worry with good reason about their parents – and struggle with them over whether they should be living on their own. And the National Institute for Nursing Research states that “one third of informal caregiving occurs at a distance with family members coordinating provision of care, maintenance of independence, and socialization for frail elders living at home.”<sup>21</sup> What do these families need?

- **Better communication.** Seniors living alone and away from informal caregivers are at risk of cutting themselves off or being cut off from others – whether due to vision issues, hearing loss, or other inability to leave their homes.<sup>22</sup> Their long-distance family members struggle to know what's going on -- and healthcare providers, focused on their own IT projects, still offer few mechanisms for communication.<sup>23</sup> The result can be frustration, anxiety and unplanned moves closer to family or into senior housing.
- **Improved safety and monitoring.** Many seniors struggle to take care of themselves, to accomplish activities of daily living (ADLs) due to mobility issues or worsening dementia. And many homes are danger zones of stairs, rugs, and bathing and cooking hazards. As a result, 31% of people age 65+ suffer a fall that permanently affects their



mobility – whether it involves adding a cane, walker, or wheelchair to their lives.<sup>24</sup> Even with hazards removed, remaining in the home after a fall can be frightening.

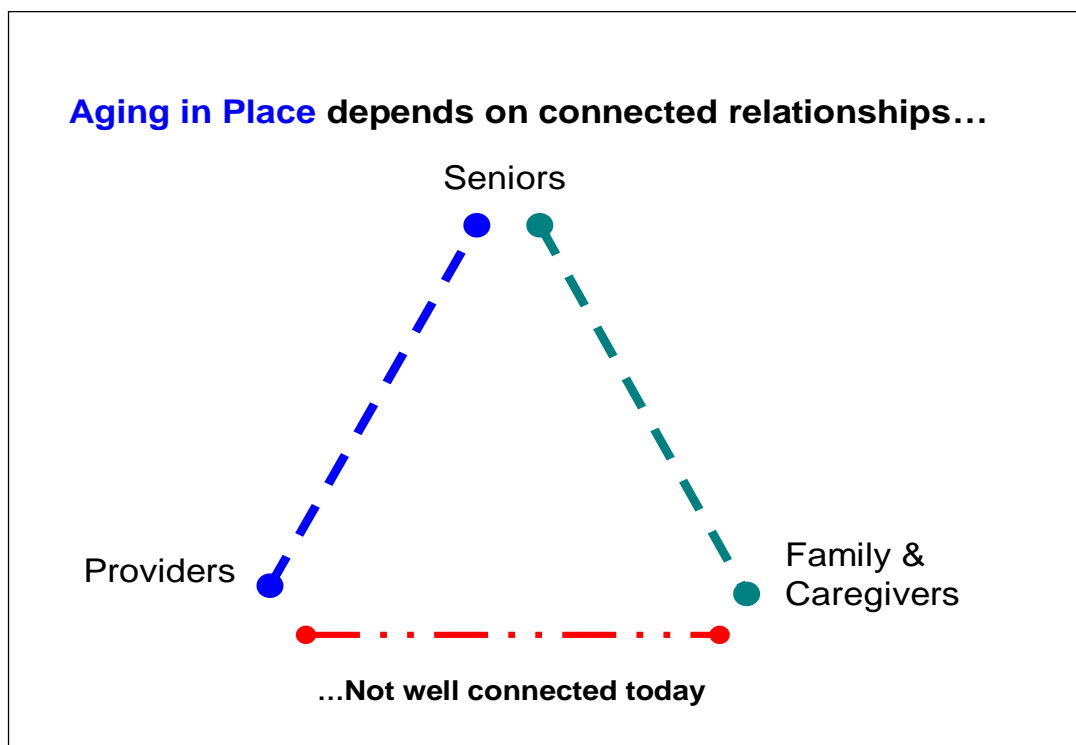
- **Greater focus on wellness and prevention.** Seniors are too often forced out of their homes or into greater levels of care as a result of hospitalizations.<sup>25</sup> Depending on the nature of the resulting illness or complication, doctors may determine if living safely at home is still feasible. And sped-up hospital discharges (“sicker and quicker”) are now complicated by rising readmission penalties, which may push more seniors back into the hospital or into nursing homes, when with proper support they might be able to function at home.<sup>26</sup>
- **More opportunity to participate in society.** According to the Bureau of Labor Statistics, one in five seniors continue to work past the age of 65.<sup>27</sup> And 24% offer their services as volunteers.<sup>28</sup> But even becoming frailer at home shouldn’t imply a hard stop for contributing to life outside the home.<sup>29</sup> One study by AARP noted 34% of senior responders reported limits on basic physical activities, two in five reported low vision or hearing impairments, and fifteen percent reported problems learning, remembering, or concentrating.<sup>30</sup> But at the same time, 66% felt it was very important to stay involved with the world and with people, and 57% said it was very important to continue to learn new things.





## Aging in Place Spans a Triangle of Relationships

A critical enabler for aging in place is a functional set of relationships and connections between seniors, their families (both caregiver and long distance) or proxy caregivers, and providers of services to seniors and their families. This triangle of relationships should be reinforced with smart use of technology to enhance communication, but still suffers from one-sided, weak or no connections: these are too ad-hoc, too phone- or paper-based, too labor-intensive, and too narrowly conceived (see **Figure 4**):



**Figure 4**

- **The real seniors – older than 65.** It's true that baby boomers will skew the population distribution and change how we age. This began in 2011 when the oldest began turning 65. Today there are more than 43 million seniors age 65+, exceeding 13% of the US population.<sup>31</sup> And with growing life expectancy for those with more income and education, plus baby boomers' denial of aging and expectations of working longer, the real 'senior' is likely be those 18 million of who are aged 75 and beyond.<sup>32</sup>
- **Family & caregivers.** Family caregivers often take an interest in and provide some sort of oversight for these seniors – either spouse or parents – in fact, as many as twenty-five percent of families today care for someone outside the home.<sup>33</sup> In a survey of caregivers who use technology, two-thirds believe that web-based and mobile technology (see Vendor Appendix in this version) would be helpful to them. In 2014, Parks Associates found that 41% of caregivers in U.S. broadband households currently use a digital health device as part of their caregiving routine (**Figure 5**).<sup>34</sup>



## Appeal of Technology Use As Caregiving Aid

Current and Future Caregivers in U.S. Broadband Households

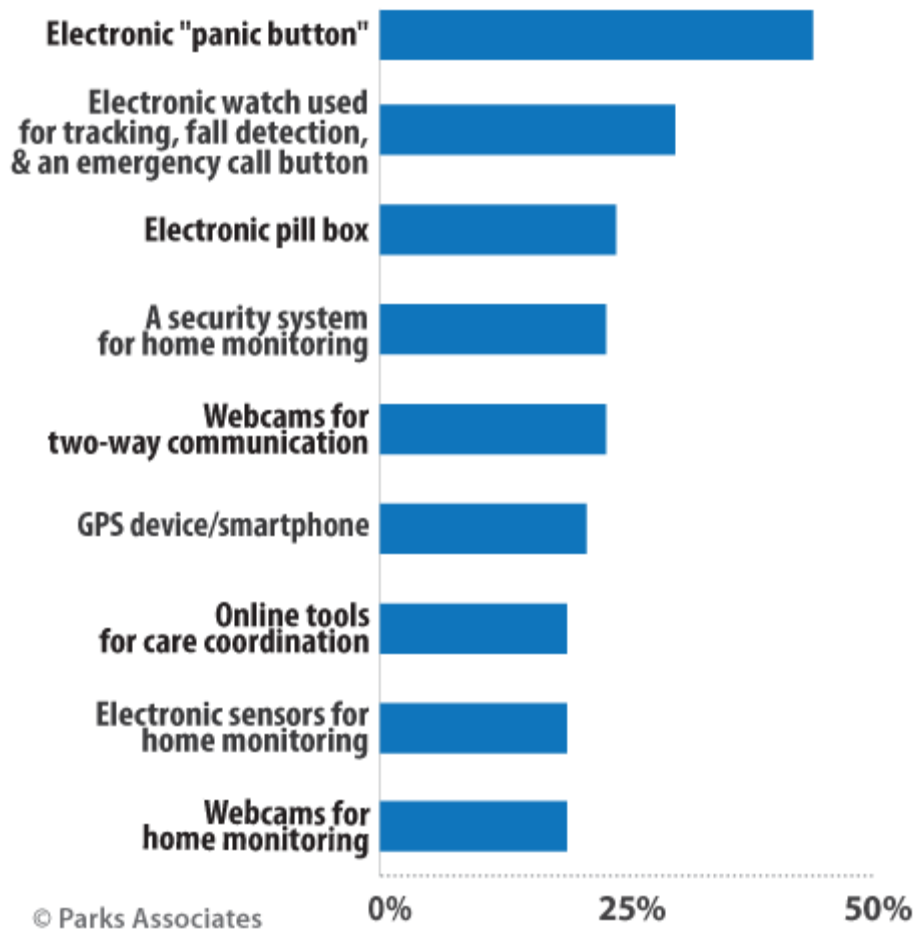


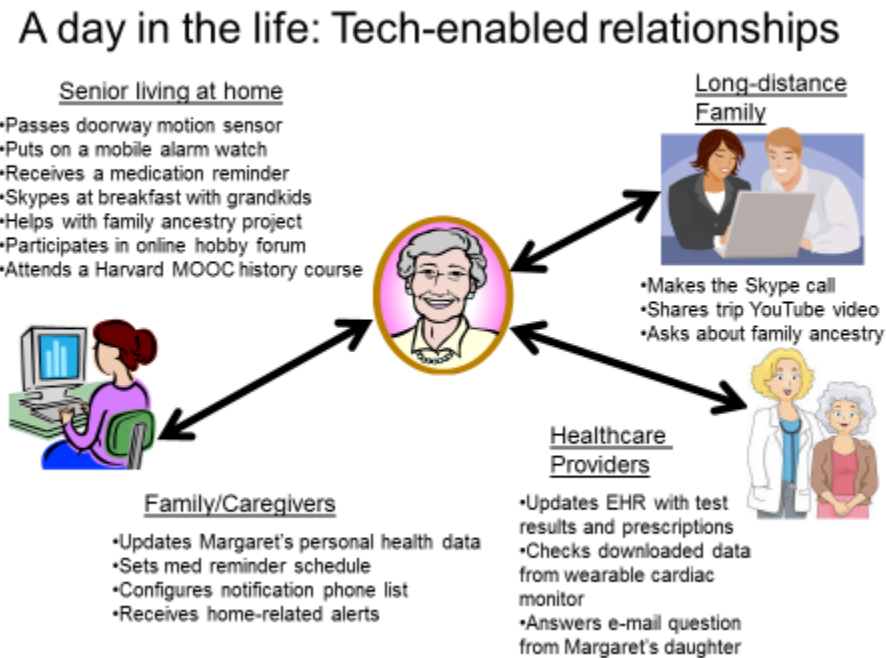
Figure 5 (Parks Associates, December, 2014)

- **Providers of services.** Those with direct contact with seniors and families include: social services, hospitals, doctors, nurses, councils on aging, assisted living, and home care companies. This is the weakest technology link in the triangle. Today 74 percent of doctors, for example, have adopted electronic health record systems (EHR), the basis for sharing personal health information from seniors or with families.<sup>35</sup> EHRs include basic diagnosis and drug information at hospital discharge (often to a nursing home/rehab). As of 2014, the most recent data available, more than 70% of home and hospice care organizations use EHR.<sup>36</sup> But in a senate hearing in June, 2013, industry experts acknowledged that despite deployment, many barriers remain – noting that EHRs are only one aspect of improving healthcare quality.<sup>37</sup> And an EHR does not include any data about the Activities of Daily Living (ADLs) that are basic to preserving quality of life.<sup>38</sup>



## TECHNOLOGY FOR AGING IN PLACE TODAY – ENABLED RELATIONSHIPS

Successful aging and remaining at home can be substantially improved today by simply sharing information and creating linkages between participants. Consider this scenario made possible with technologies that exist and can be mixed, matched, purchased or used *today* (see **Figure 6**):



**Figure 6**

- **Senior living at home.** Margaret, an 88-year-old widow, lives alone in a senior housing development in Florida. She rises in the morning, passes a doorway motion sensor that remotely updates a security system configured to alert caregivers if it is not activated by a specific time. She puts on her mPERS watch, receives a call on her cell phone that reminds her of a morning medication, presses a button on the 7-day pre-loaded pill canister, takes her pills, and a message is sent to caregivers. Later that day, she receives a Skype call from her grandchildren and tells them a bit more about her family history for their online ancestry project. She signs on to request an evening ride, and then settles down with her favorite online hobby forum -- using her new tablet. At the senior center she participates in an exercise session and after dinner, signs on to one of her several online college courses.
- **Family/caregivers.** Margaret's adult daughter Irene lives an hour away and visits weekly to take her to doctor appointments. In consultation with her mom, she configures the medication reminder schedule and through her own tablet, sets automated check-in phone calls while she is at work. Before taking her mom to the doctor, she ensures that her mom's personal health record is up-to-date and sends an e-mail question to the nurse. Irene and her mom have agreed that home care aide Julie and Irene will receive only exception-based alerts about her mom's comings-and-goings and medication use.

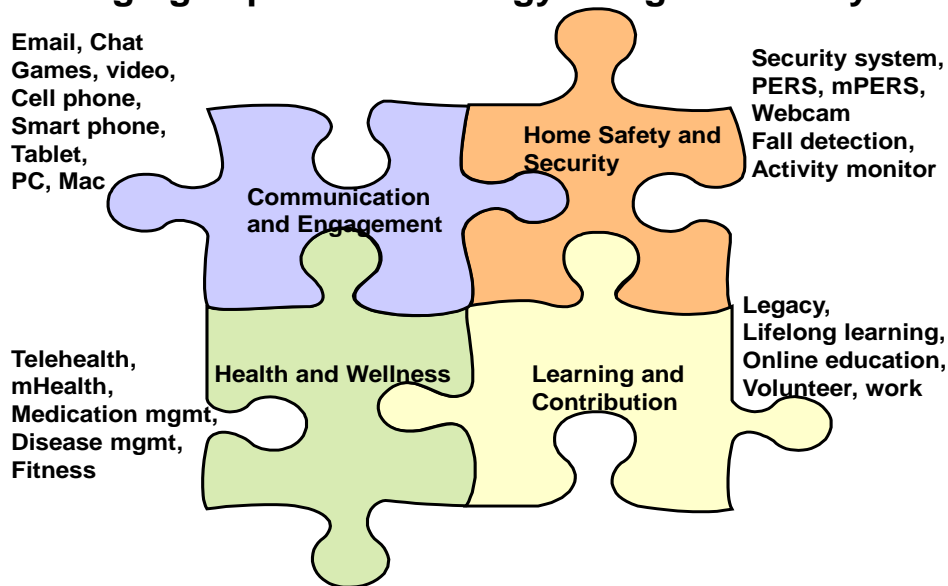


- **Long-distance family.** Other long-distance adult children of Margaret’s are alerted in the event that Irene or Julie is unavailable. These family members use Skype, e-mail, chat, and phone conference calls to stay in touch with Margaret between in-person visits. They post photos and family videos that Margaret views online.
- **Healthcare providers.** Margaret’s primary care nurse practitioner, Suzanne, knows her and her family – and makes sure that referred specialists and her primary care doctor have the most up-to-date electronic health record. The health center where Suzanne works is up to date with the latest EMR systems and online prescriptions, communicating directly with Margaret’s pharmacy. Margaret has a history of cardiac problems and with the help of caregivers she is regularly checked with home-based diagnostic devices whose data is transmitted to the doctor’s office as needed.

### What are the Aging in Place Technology Categories?

The above scenario is **not a vision for the future**. It is feasible with awareness and training to use in-market technology – examples listed separately in the Appendix and discussed at [www.ageinplacetech.com](http://www.ageinplacetech.com). These technologies promise to help tighten and grow care provider relationships, improving the ability to age more successfully, remain at home longer and more safely, and better weather change over time (see **Figure 7**):

#### Four aging in place technology categories today



**Figure 7**

- **Communication and Engagement.** For baby boomers and younger, life is unthinkable without e-mail, chat, web surfing, Facebook, Smartphones, video games, Skype, and texting. Yet the majority of seniors age 75+ are unaware of these 24x7 ways to be in



touch and in the know.<sup>39</sup> And many older people are intimidated by tech like PCs and overly complex smart phones – and rightly worry about data security. Simplified tech – like AARP’s **RealPad** (for baby boomers) or **GrandPad** (for aged 75+) provide modified tablet interfaces. Easier-to-use smart phones like **GreatCall’s Jitterbug Touch 3** or **Samsung Galaxy’s Easy Mode** help make these experiences feasible and gratifying.<sup>40</sup> Training is critical – including refreshers from the carrier or company that provided the device/plan.<sup>41</sup> Once online, seniors and long-distance grandchildren can text, chat, or enjoy reading books together, sharing a project or a visit using Skype on a tablet.

- **Safety and Security.** The ability to remain at home depends first on whether the home is free from obstacles and dangers – and whether those risks are addressed. Homes can be attractively retrofitted to be barrier-free by a Certified Aging in Place specialist (CAPS).<sup>42</sup> Security systems, mobile PERS offerings like **GreatCall Splash** or combined with passive fall detection like **Lifeline with Auto Alert** or **MobileHelp**, sensor-based home health monitors/hubs (from **Independa**, **Healthsense** -- or new entrants like **Onköl** or **Sen.se**) can help monitor and reassure seniors and caregivers.
- **Health and Wellness.** The risks associated with obesity and lack of exercise only worsen with age, so it’s no surprise that **WiiFit** has become popular with boomers and seniors.<sup>43</sup> Today, Microsoft **Kinect** is also finding its way into senior centers.<sup>44</sup> Online tools like **MyFitnessPal** or **Spark People** help guide and motivate exercise and weight loss. For chronic disease management, vendors like **Care Innovations** or **Ideal Life** offer systems for remotely monitoring chronic diseases like diabetes or congestive heart failure.
- **Learning and Contribution.** In 2006, Joseph Coughlin of MIT’s AgeLab applied “Maslow’s Hierarchy of Needs” to Aging in Place.<sup>45</sup> This seminal document noted that once the basic needs of communication, safety, and health are addressed, people have both the need and capacity to continue to learn, stay active in and knowledgeable about society, contribute to it through volunteering and continued work, leaving a legacy of stories, not just money, for those who love them. Seniors can sort among online programs and auditable courses found through sites like **SeniorNet.org** or **edX**, the growing MOOC movement or look for work on **WorkReimagined.AARP.org**.<sup>46</sup>

## Family and Professional Caregiver Links Overlay Categories

Family, professional caregivers and their clients are beginning to expect that they will, along with the senior, participate in the use of technology categories (see **Figure 8**).



## Four aging in place technology categories today

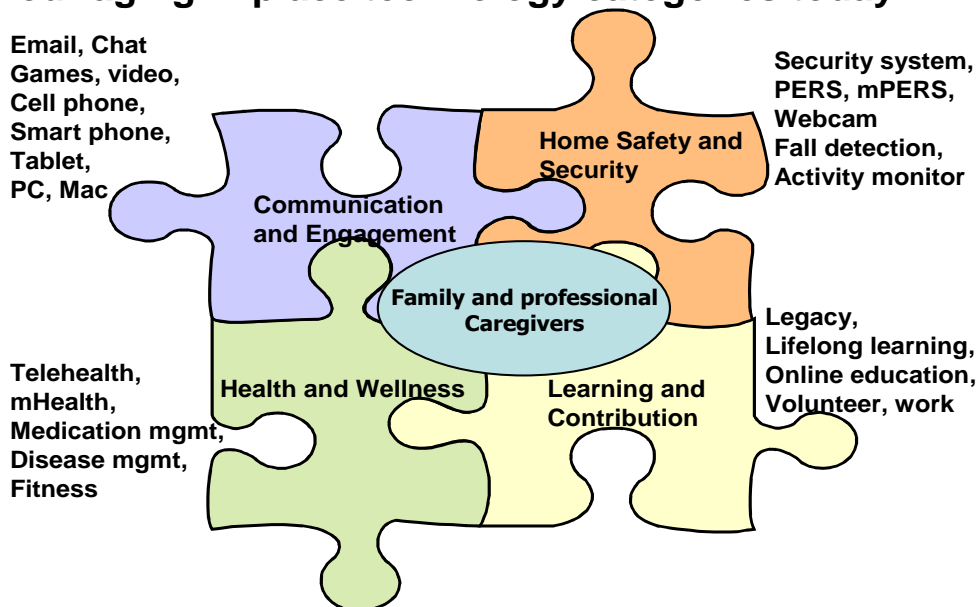


Figure 8

- **Family members have growing expectations for connectedness.** Today, picture sharing, social networks, video chatting, and text messaging are the mainstream mechanics for families – who will succeed at including aging parents in the loop of one or more of them. And when home monitoring and PERS devices are purchased, family members may be both the purchaser and rule configuration administrator for who to notify about what pattern changes or emergency alerts, with or without a call center intermediary. For example, **Caring.com**, **Lotsa Helping Hands**, and **CareLinx.com** provide tools for caregivers to find and/or share care.
- **Professionals, health, GCM, and companion agencies will link in families.** A national Geriatric Care Management organization trains its staff to use Skype to connect clients to families -- that is a signal of hope: professionals believe they must link families into their process.<sup>47</sup> These offerings will likely not be revenue generators, but rather added to standard home health systems to enable providers to update all family members at once, much in the way that **CaringBridge** enables families to provide patient updates on a private website versus spending an hour or more on the phone each day providing status.

### Requirements for Aging in Place Technology Market Success

Across all these categories, a number of common requirements are emerging that will grow in importance as the market grows. Customers will demand products that are as attractively designed and easy to use as a game or tablet, ubiquitous as a cell phone, and as extensible as a computer. For this market to further mature and reach its full potential:

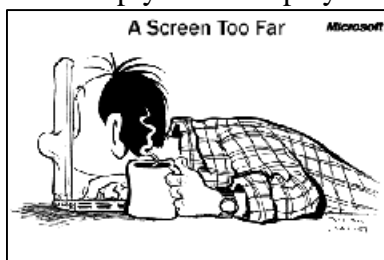
- **Technologies must be intuitive and well-supported.** Most people, at every age, have a laundry list of frustrations with technology. AARP's survey about seniors and technology





asked responders if they were concerned about the availability of customer service reps. No surprise – most said yes. Training and service (online, telephone, remote) is an essential ingredient in a go-to-market strategy. And iPad-like ease of use must mean ease of setup as well as use. Remote configuration must be a major part of the offering – or doom the user and family to frustration and the product to failure. Focus groups and home trials reveal greater technology resistance and concerns than any ‘what-if’ surveys.

- **Device vendors must be capable of integration and extension.** Despite standards initiatives like the Continua Health Alliance, many of today’s gadgets still don’t communicate – into or out of the home, but especially with each other. So mHealth devices, apps or medication reminders are useful, but touch a tiny aspect of the whole person. Those who care about seniors like Margaret must know that she responded to the reminder and -- if she has opted in and is willing to share -- how her mood as well as her behavior changes over time. To provide valuable integrated solutions, device software will create and use common standards to communicate to caregivers and providers and feed analytics and decision tools.
- **Costs to consumers must be affordable.** As tech becomes more usable and useful, consumers will look for ways to acquire it. This may occur through payers, but is more likely through adult children and family. Higher income consumers will come to realize that in-home bandwidth for their aging parents enable Skype/ webcams as well as chronic disease monitors that provide value, just as essential as the cell phone plans, GPS services, cable TV and many other monthly fees that are now part of their technology vocabulary.
- **Products must be available on widely adopted platforms.** A growing number of retirement communities are adopting **Nintendo’s Wii** or **Microsoft’s Kinect**. Up next, stay tuned for more gesture-based interaction from **Microsoft’s Windows 10** and **Intel’s RealSense** platforms that may eventually appeal to senior-focused organizations. What’s a platform anyway? It is software with programming interfaces that thousands of software writers believe will help them get distribution. But too many interfaces are one-off designs -- unique even within a single vendor – like the differences between Apple’s Mac OS and iOS.
- **Upgrades must be more seamless than today.** Consumers already gravitate towards applications that work with ones they already use, including Gmail, Facebook, FaceTime, YouTube or Skype – regardless of device. In the future, hope for upgrade processes less painful than today’s ‘No Going Back, You Must Upgrade or Else!’ approach. Tech vendors will make it easier to use personalized user interfaces (like Amazon and Netflix) that are recognizable across multiple devices, coined in an AARP report as **Design for All**.<sup>48</sup> Perhaps one day a single device like a tablet, smart phone or TV will drive interaction and content, and other devices in the home will simply act as displays.





## COMPETING PLATFORMS FOR AGING IN PLACE TECHNOLOGY

An aging in place technology platform battle is underway – vendors are deploying among:

- **Computer- and tablet-based access to the cloud.** The PC, Mac and now tablets – with unfettered access to the Internet and multiple app formats – offer the broadest device access to help seniors remain in their homes, whether it's searching for health information from **WebMD**, home retrofitting tips from **AARP**, or caregiving tips from **Caring.com**. Furthermore, the closing of physical locations like Social Security offices or bank branches is driving the urgency of helping offline seniors to move online (see **Figure 9**).

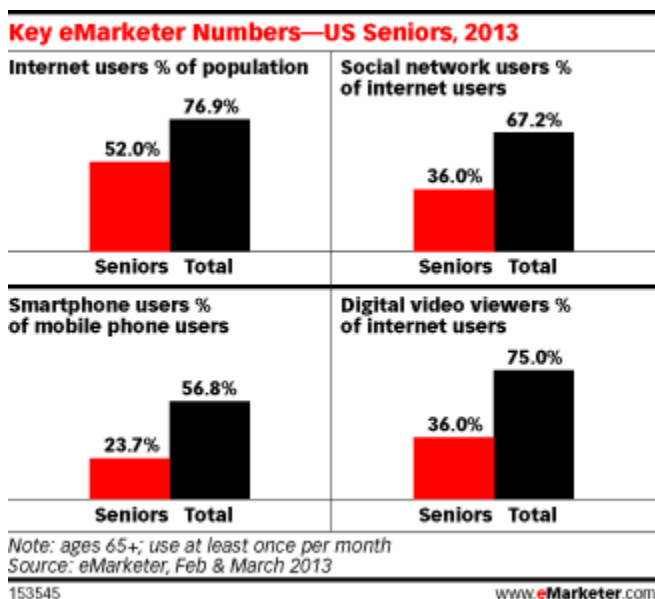


Figure 9

- **Wearables, smart phones and tablets.** In today's market, expect wireless devices to augment or serve both in-home and out-and-about needs. Good market penetration and simple operation is attractive, especially for reminders, alerts, simple Internet search, texting, and even GPS location applications. For baby boomers and their smart phones and tablets, health apps for the iPhone (**SugarTracker** and **BP Buddy**), Android (**MyFitnessPal** and **Absolute Fitness**) are multiplying like weeds. Meanwhile wearables like **Withings Activité Pop** (up to 8 months without recharging) or **Microsoft Band**, smart phones like the iPhone or Samsung's **Galaxy Note 4** and tablet counterparts like the **iPad** or senior-targeted tablets like 2014's **AARP RealPad** or startup **GrandPad** can be information delivery platforms, perhaps eliminating consumer purchases of PCs over the coming decade.<sup>49</sup>
- **Game platforms.** The video game industry, propelled by mobile gaming, is expected to grow to \$102 billion by 2017.<sup>50</sup> **Sony** sold 10 million Playstation consoles in 2014 and while the video game industry is shrinking, the social game industry is booming (\$7.3 billion) and 29% of gamers are over age 50.<sup>51</sup> As Jane McGonigal, author of "Reality is Broken" notes: "Research has shown that games consistently provide us with the four ingredients that make for a happy and meaningful life: satisfying work, real hope for success, strong social connections and the chance to become a part of something bigger than ourselves."<sup>52</sup>





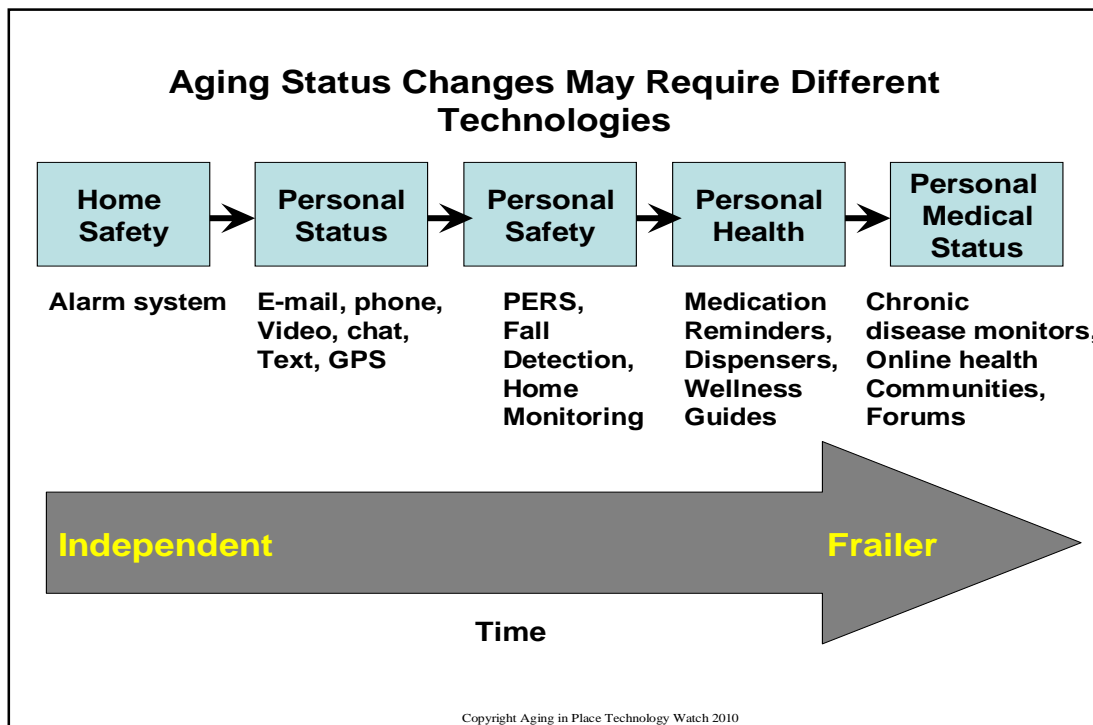
- **Televisions:** CES 2015 brought more Internet-enabled and curved phones and large TVs – and of course their TV set-top boxes brought an explosion in voice and gesture-based controls.<sup>53</sup> Because of the broad base of deployed game controllers, expect a greater number of useful applications (not games) to be introduced, for example, Kinect’s use in rehabilitation settings.<sup>54</sup> DVD players, **Roku** and now **Amazon** provide streaming video-on-demand and new Internet-enabled televisions could become an access point for senior applications like **Independa**’s integration with an **LG TV**.

## **ADVICE TO VENDORS TODAY: MOVE FROM PRODUCTS TO SERVICES**

Probably the biggest issue that keeps more of today’s technology out of the homes of seniors is the difficulty of marketing to both them (“We are not old!”) and to their afraid-to-interfere adult children, while selling through knowledgeable channels, appropriate websites AND pricing right for resale and white labeling. Vendors and service providers can close that gap of awareness, offering solutions for each stage of independence (see **Figure 10**). Vendors must find:

- **The right customer – baby boomers and their roles.** But some marketers pick a target audience that shares a common role – for example, caregiver role-based boomer sites **Caring.com** (acquired in 2014 by Bankrate.com) offer aging in place vendors a ready audience of baby boomers with shared interest in caring for their aging parents.
- **The real need – a service problem solved.** Seniors and their adult children will not imagine on their own what to do with sensor networks, web cams, or set top boxes. Someone needs to explain benefits. Instead of offering point products out of context, vendors should fit their offerings into solution descriptions, service provider relationships, and senior support processes along the continuum of needed care. This includes a grasp of the decision points that spike interest in a product. Finding an independent living assessment can be a useful tool for boomers and seniors wondering if it is feasible for a parent to remain at home.<sup>55</sup>





**Figure 10**

- **Identify the right channel – it’s about an ecosystem and indirect selling.** The right channel depends on the complexity of the product and the target user. And less is more – remembering that 20% of channel partners typically contribute 80% of revenues. Channel utilization should primarily be indirect, either because of extensive reach, configuration or local service needs. For example, PERS vendors like **Philips** may market through multiple regional service providers at local price points. Others will gravitate to a larger and branded ecosystem selling devices through retail (**AARP RealPad** at **Walmart**), via direct-to-consumer ads (**GreatCall** and **MobileHelp**), home care agencies, pharmacies, senior housing organizations or insurance partnerships.

### **Ten Steps for Vendors and the Aging in Place Technology Market**

Find the channel partners that present products and services in the context that’s appropriate, whether it’s AARP or Walmart – or at an annually occurring event like Life Long Tech at CES (formerly Silver Summit) that focuses on boomers and seniors within this giant consumer product showcase.<sup>56</sup> To those within or contemplating entry into the boomer and senior market – here are 10 steps to consider:

1. **Create a boomer-and-senior aware website.** Make the site useful from a PC screen as well as a phone – too many app vendors today think searches are ONLY done on phones. Mention the target audience by name: “How this product can make seniors feel safer” rather than hoping prospective customers will figure it out. Make the site friendly to those with diminished vision Add a very brief video of a pleased user that is worth 1000 words.



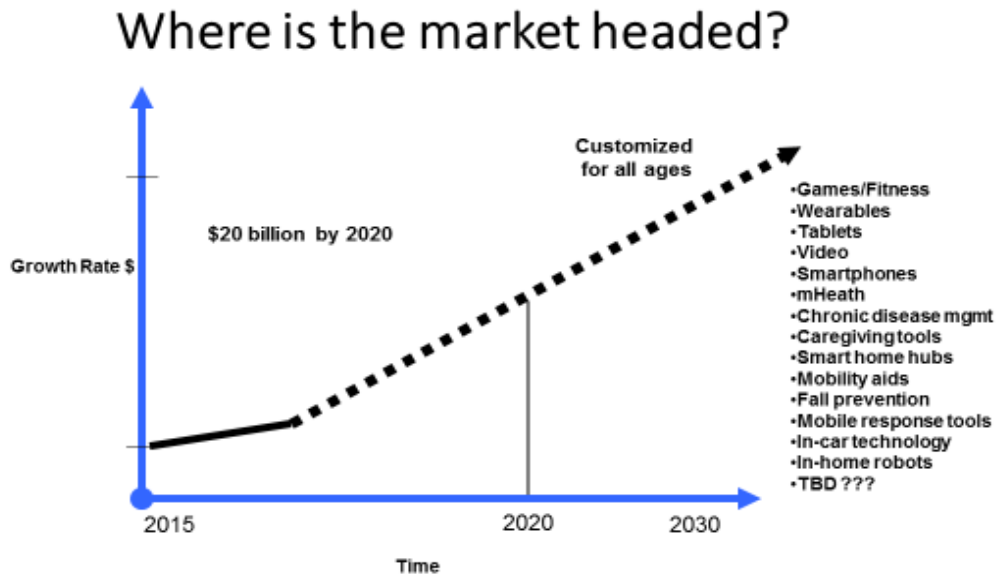
2. **Test usefulness with the target audience.** So much of the R&D effort in university programs fails to produce any useful product. And vendors often jump in with no confirmation beyond the needs of their grandmothers. Consider trials with senior centers, area aging groups, or health centers – halt rollout if response is negative or indifferent.
3. **Narrow scope, but broaden messaging.** Products that serve a narrow purpose can still be described within holistic context (or solution) like a day-in-the-life scenario. Early on, co-market with partners’ products or service messages that deliver more of the scenario.
4. **Be wary of box obsolescence.** Avoid being part of the back-room junk pile of products-gone-by. Recognize the progressive nature of the service needs of the consumers and attempt to pre-engineer or source extensions (a tablet that complements the phone or vice versa), new upgrades, related devices and future feature integration into the product.
5. **Give away the device and sell service.** Device prices are a barrier to lucrative and long-term service to boomers and seniors. Yet many vendors have devices listed for more than \$100, with service fees beyond the price tolerance noted in surveys like AARP’s. Note that AARP’s own RealPad in Walmart at \$189 exceeds their survey price tolerance.<sup>57</sup>
6. **Offer the free trial.** Try with option to buy is such a time-tested strategy -- it is interesting to see how rarely it is used in this market, though it should be popular with low-priced or free smart phone apps that need testers (“Free to the first 100 signups!”).
7. **Add related and useful value.** Offer content -- advice about problems faced by prospective consumers – including links to criteria for assessing needs and services, like a link to ‘20 questions for long-distance caregivers’ from the National Institute on Aging.<sup>58</sup>
8. **Add the community to the product.** E-mailed customer testimonials are nice but they are inadequate to build buzz from early success. Moderated communities (or blogs with comment) can become willing sources of product feedback and ways to grow loyalty.
9. **Monitor reputation on consumer websites.** Vendors should be wary about deteriorating service reputation by regularly checking blogs and forums -- improving their responsiveness accordingly – or closing down defunct sites. It is ridiculous to make the web searcher check dates in ‘News About Us’ to see if the firm is still in business.
10. **Cultivate members of other markets early – before launch.** Be the first in your space to actively seek out healthcare organizations, geriatric care managers, home renovation providers, assistive technology, and assisted living communities.

## HOW DOES THE AGING IN PLACE TECHNOLOGY MARKET EVOLVE?

The marketplace of products today is fragmented into a cottage industry comprised largely of startups, challenged by both channel complexity and end user resistance. But with its fragments assembled into an overall puzzle, this business for boomers and beyond has been estimated by some to grow to \$20 billion by 2020 or even \$30 billion by 2017.<sup>59</sup> Between now and 2020,



based on growing boomer awareness and their own aging, and radically change with the growing availability of in-car technology, mobile PERS, wearable fitness and health devices, in-home hubs and smart phone apps. And by 2020, the broader technology market will increasingly support customizations for all people, regardless of age (see **Figure 11**):<sup>60</sup>



**Figure 11**

- 1. Health and wellbeing hubs will do battle and grow.** Aging in place technologies are beginning to gravitate to hub-and-spoke portals that show how roles (like caregiver, senior, and provider) relate to needs (like social, home monitoring, and medication reminders). As portals and products mature, they will offer services and enable searchers to find targeted solutions (see **Amazon50+**). Consider role-based hubs like **CareZone Senior** or **Caring.com**, and health-specific hubs like **DiabetesMine** and **PatientsLikeMe**. Partner spoke vendors (like **Fitbit with Walgreens** or **Spark People with Pebble**) may advertise or even connect directly to these sites. In the future, some platform vendors may become important as hubs -- like **Mayo Clinic**, **WebMD**, and **Everyday Health** in healthcare. Social networks want to become hubs -- like **Facebook** or LinkedIn, or local hubs like **NextDoor**.
- 2. Aging in place provider silos must overlap (home design, healthcare, services).** In the future, hubs will force associations and/or convergence of aging-related categories. For example, Assistive Technology (part of the healthcare market) overlaps with Healthcare – and those in that market see little link to aging services. Service-based providers – like assisted living, nursing homes, and home care all serve the same senior, but in different and still largely tech-free ways. And markets that should overlap don't: Home care and geriatric care management groups must accelerate their pace in discovering and in deploying technology that could help family members know what's happening with loved ones. The home automation hub and custom installer market – filled with tech experts -- could be an aging in place enabler, but acts like separate niche market (see **Figure 12**).



- 3. New developments and remodels will offer aging-in-place technologies.** Some new senior housing developers are pre-wiring housing with broadband, security monitors, and motion sensors – in addition to wall backing for grab bars, standard wide doorways, and alternative kitchen counter heights. As boomer housing needs grow, other senior housing options will be upgraded or retrofitted with a must-have tech list. Boomers who remain in their homes will add home networks, web cameras, and voice-activated security for personalized emergency response – and aging in place vendors will leverage them to build more sophisticated and connected applications. To reduce energy use, building codes will mandate environmental sensors, users will want smartphone-controlled reset of temperature as the home is entered or exited. Automatically lit paths from bed to bath can be enabled with inexpensive nightlights.

### Market silos will recognize connection opportunities



\* Example services: Home care, transportation, geriatric care management, training

**Figure 12**

- 4. Vendor standalone market entries will morph into solutions, designed for all.** Today's one-off innovations will be replaced with integrated low-cost solutions; and the evolution of hubs (both on- and off-line) will force vendors to find customers through them. Unique functionality may garner adoption by the most technically adept seniors, but for the majority of the aging population, a consistent underlying platform that is designed for all, not simply for the elderly, will be preferred -- and channels of distribution that interact with them will be the preferred sources. Professional caregivers and health providers will use smoothly connected tablet/PC-smart phone platforms to gain visibility, which will propel solution-aware vendor offerings into mainstream usage, facilitated by training offered by national efforts like **AARPTek**.<sup>61</sup> Local integrators, drawn from ex-IT workers, security companies, senior housing, electronics dealers, or remodelers or home care, are the right players to travel the last few feet into the home.



## WHAT CONSUMERS AND SUPPORT SERVICES SHOULD DO TODAY

Although the market is still young, a useful set of offerings exists – and should be explored by seniors and their families, caregivers, and service providers. Helping seniors and the-soon-to-be-senior be safer, connected, healthy and fulfilled is too important to await full market evolution and shakeout – ultimately to combine into the designed-for-all consumer market. Market awareness yields better products and services – and vice versa. It’s time to:

- **Assess the family along a tech literacy continuum.** Not everyone grows older in Silicon Valley -- one newspaper letter quotes a senior subscriber who plaintively noted that advertisers keep mentioning websites, not phone numbers. Even the Social Security Administration introduced statements that can only be viewed online. If your family member sees the Web or smart phone as impenetrable, don’t give up. That’s why there is still a market for one-button answering machines, easy-to-use cell phones, tablets or computer interfaces, as well as an opportunity to create straightforward and easy-to-use applications layered on top of more complex devices.<sup>62</sup> And family caregivers are increasingly online – looking for what they need to provide better care.<sup>63</sup>
- **Research technology for today’s need with an eye to the future.** Family members and providers who observe the absence of technology for loved ones should be energized into asking: why not – where is it?<sup>64</sup> Why are medical alarms so different from wearable fitness bands? Why can’t the latter keep a senior safe? Yes, inquire about the availability of fitness programs and good food in an assisted living facility, but also ask about wireless networks and devices with cameras for long distance family chats – as well as someone available to help with setup. Ask about improving safety or engaging family, and be sure to ask about technology that can improve life quality for those with increasing frailty or dementia.
- **Find a community of interest and support.** Look online first for shared interests in advancing the use of technology and related services for boomers and seniors. Ask what nationwide and visible organizations, like AARP, NCOA, ASA, WebMD or Caring.com are doing. Note less well-known associations like NAPGCM or Village to Village Network mentioned earlier in this report – can they provide more information on recent tech-enabled innovations and solutions? If not, why not? Find technical support communities, local ‘Geek’ squads, training programs and ‘Genius’ bars that will service boomers and seniors where they live as well as online. Negotiate with cable providers to add a local ‘geek squad’ service to their offerings for a small recurring fee – when the phone upgrades on its own, let the service arrangement push out a getting-started video – like the “Read Me First” of yore. If consumers elevate their expectations, eventually vendors and providers will listen.





## About the Author:

Laurie M. Orlov, a leading tech industry veteran, writer, speaker and elder care advocate, is the founder of **Aging in Place Technology Watch**, a market research firm 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 2014, she founded **Boomer Health Tech Watch** to track adoption of Digital Health technologies by baby boomers. In addition to her years of technology background and years as a technology industry analyst, Laurie is certified in geriatric care management from the University of Florida, and has served as a long-term care ombudsman in Florida. She is the author of other market reports, including AARP-sponsored **Challenging Innovators (2014)**, **Next Generation Response Systems (2013)**, **Future of Home Care Technology (2012)**, and the **Link·age Technology Survey Age 65 to 100 (2011)**. She was a member of the Philips Think Tank on Active Aging and speaks regularly on the topic of technology and older adults.

In her career, Laurie Orlov has spent more than 30 years in the technology industry, including 24 years in IT and 9 years as a leading industry analyst at Forrester Research where she was often the first in the industry to identify technology trends and management strategies which have survived the test of time. She speaks regularly and delivers keynote speeches at forums, industry consortia, conferences, and symposia. She has served in an advisory capacity to leading organizations like AARP, J&J, Yahoo!, Microsoft, Novartis and Philips. Her blog posts are featured on numerous websites about topics related to boomers and seniors. Learn more and find all published reports at [www.ageinplacetech.com](http://www.ageinplacetech.com).

## About the Vendor Section:

### Aging in Place 2015 Technology Categories and Vendors (Example vendors)

For inclusion as a technology to facilitate aging in place, the vendor meets two of these criteria (those listed are only examples, not an exhaustive list). In addition, please note that **\*\*** entries are new in this 2015 version of the Market Overview, though not necessarily brand new in the market.

- a) Incorporate messaging to and about boomers and/or seniors or their caregivers.
- b) Boomers and/or seniors have adopted the product.
- c) Is available across the US, not just in a single region.
- d) Be available free or for a fee, not only via insurance reimbursement.



<b>Category</b>	<b>Sub-category</b>	<b>Purpose</b>	<b>Platform</b>	<b>Contact</b>
<b>Communication and Engagement</b>				
	New items shown with **			
<i>Samsung Galaxy S5 with Easy Mode**</i>	Smart phone	Smart phone	Android	<a href="#">Amazon, others</a>
<i>Clarity Life Ensemble**</i>	Tablet-telephone	Hearing assistance	Telephone-tablet	<a href="#">Clarityproducts.com</a>
<i>GreatCall Jitterbug Touch3**</i>	Smart phone	Added services	Android	<a href="#">GreatCall.com</a>
<i>Clarity Pal</i>	Cell phone	Amplified cell phone	cell phone	<a href="#">Clarityproducts.com</a>
<i>ReSound LiNX**</i>	Hearing	Link hearing aid to phone	iPhone	<a href="#">ReSound</a>
<i>Breezie**</i>	Senior Boomer tablet	7. in, multi-touch	Tablet app	<a href="#">Breezie</a>
<i>AARP RealPad**</i>	Senior Boomer tablet	7.85 in, multi-touch	Tablet	<a href="#">Walmart</a>
<i>iPad Air 2**</i>	Wi-Fi Tablet	9.7 in, multi- touch	Tablet	<a href="#">Amazon.com</a>
<i>grandPad**</i>	Senior Boomer tablet	7 in, LTE in USA	Tablet	<a href="#">grandpad.net</a>
<i>ooma Safety Phone**</i>	Wearable phone- pendant	2 speed dial buttons	Pendant	<a href="#">Amazon.com</a>
<i>Sony Xperia Z3**</i>	Smart phone	Water resistant	Android	<a href="#">Verizon</a>
<i>Sprint Active Senior ID Pack**</i>	Apps for seniors	Easy to use applications	Android	<a href="#">Sprint</a>
<i>StartPage**</i>	Search without tracking	Internet	Search engine	<a href="#">startpage.com</a>
<b>Home Safety and Security</b>				
<i>Philips Lifeline GoSafe**</i>	mobile PERS	Waterproof	Pendant	<a href="#">lifelinesys.com</a>
<i>GreatCall 5Star Urgent Response Lively Safety Watch**</i>	mPERS	Multiple add-ons	Health related	<a href="#">GreatCall.com</a>
<i>Blue Star Veterans Network**</i>	PERS	Mobile with phone	Safety	<a href="#">mylively.com</a>
<i>Qmedic**</i>	PERS, health	Reseller for Vets, by Vets	Health related	<a href="#">Bluestarvets.us</a>
<i>Care Innovations Health Harmony**</i>	PERS	Notes inactivity	Wearable	<a href="#">Qmedichealth.com</a>
	Health	Remote monitoring	Monitor platform	<a href="#">Careinnovations.com</a>





<b>Category</b>	<b>Sub-category</b>	<b>Purpose</b>	<b>Platform</b>	<b>Contact</b>
<i>MobileHelp Fall Button</i>	mobile PERS	Consumer	Wearable	<a href="http://MobileHelp.com">MobileHelp.com</a>
<i>BioSensics</i>	Safety, health	Gait analysis	Multiple sensors	<a href="http://Biosensics.com">Biosensics.com</a>
<i>Independa AnyTV Companion**</i>	Safety, health	Remote monitoring	Monitor platform	<a href="http://Independa.com">Independa.com</a>
<i>Lert.ly**</i>	Emergency	Campus-wide, voice	Low-power Wifi	<a href="http://Lertly.com">Lertly.com</a>
<i>grandCARE Systems</i>	Safety, health	Remote monitoring	Monitor Platform	<a href="http://Grandcare.com">Grandcare.com</a>
<i>Evermind**</i>	Safety, health	Remote appliance monitoring	Monitor platform	<a href="http://evermind.us">evermind.us</a>
<i>Mother**</i>	Family home hub	Sensors	Hub and sensors	<a href="http://sen.se">sen.se</a>
<i>Honeywell Life Care Solutions**</i>	Seymour	Digital Health/analytics	Health platform	<a href="http://Honeywelllifecare.com">Honeywelllifecare.com</a>
<i>Healthsense</i>	Safety, health	Remote monitoring	Wifi sensors	<a href="http://Healthsense.com">Healthsense.com</a>
<b>Health and Wellness</b>				
<i>Dakim Brain Trac**</i>	Cognitive fitness	Monitor users of Dakim	PC-installed	<a href="http://Dakim.com">Dakim.com</a>
<i>Lumosity</i>	Cognitive fitness	Brain fitness program	Mobile device	<a href="http://Lumosity.com">Lumosity.com</a>
<i>FitBrains Trainer**</i>	Cognitive fitness	Brain fitness program	Mobile device	<a href="http://Fitbrains.com">Fitbrains.com</a>
<i>PositScience Nonin**</i>	Cognitive Fitness	Brain fitness programs	PC	<a href="http://Brainhq.com">Brainhq.com</a>
	GO <sub>2</sub>	Monitor oxygen level	clip	<a href="http://Nonin.com">Nonin.com</a>
<i>MyFitnessPal</i>	Track food and exercise	Portal plus app	Integrates trackers	<a href="http://Myfitnesspal.com">Myfitnesspal.com</a>
<i>SparkPeople</i>	Track food and exercise	Portal plus app	Integrates trackers	<a href="http://Sparkpeople.com">Sparkpeople.com</a>
<i>Loselt**</i>	Track food and exercise	Portal plus app	Integrates trackers	<a href="http://Loselt.com">Loselt.com</a>
<i>Microsoft Band**</i>	Fitness tracking device	Wearable on wrist	Email, UV	<a href="http://Microsoft.com">Microsoft.com</a>
<i>MedMinder</i>	Medication management	Consumer	Pillbox, Internet	<a href="http://Medminder.com">Medminder.com</a>
<i>AdhereTech**</i>	Medication adherence	Pharma-consumer	Appliance	<a href="http://Adheretech.com">Adheretech.com</a>
<i>MediSafe**</i>	Medication management	Consumer	Appliance	<a href="http://Medisafe.com">Medisafe.com</a>
<i>MedFolio Wireless pillbox</i>	Medication dispenser	Consumer: dispensing	Appliance	<a href="http://Medfoliopillbox.com">Medfoliopillbox.com</a>



<b>Category</b>	<b>Sub-category</b>	<b>Purpose</b>	<b>Platform</b>	<b>Contact</b>
<b>Learning and Contribution</b>				
<i>AARP TEK**</i>	Train on tech tools	Regional classes	In-person, online	<a href="#">AARP Tek</a>
<i>Grandparents.com</i>	Portal	Discounts	Internet	<a href="#">Grandparents.com</a>
<i>Stage of Life/Grandparents</i>	Portal	Discounts	Internet	<a href="#">Stageoflife.com</a>
<i>After Steps</i>	End of life documents	Checklist and doc storage	Internet	<a href="#">Aftersteps.com</a>
<i>Ancestry</i>	Legacy	Family tree, history	Internet	<a href="#">Ancestry.com</a>
<i>LifeBio</i>	Legacy	Produce a book based on template	Internet	<a href="#">Lifebio.com</a>
<i>MyHeritage**</i>	Legacy	Family tree, history	iOs, Android	<a href="#">MyHeritage.com</a>
<i>FirstStreet Online</i>	Product Catalog	Multiple products	Internet	<a href="#">Firststreetonline.com</a>
<i>CourseTalk</i>	Directory	MOOC reviews/ranking	Internet	<a href="#">Coursetalk.org</a>
<i>SeniorNet.org</i>	Education and Learning	Technology training	Internet	<a href="#">Seniornet.org</a>
<i>edX**</i>	Education and Learning	Download courses	Internet	<a href="#">edx.org</a>
<i>RetiredBrains.com</i>	Education and Learning	Directory of online courses	Internet	<a href="#">Retiredbrains.com</a>
<i>Senior Center Without Walls (California)</i>	Education and Learning	Telephone-based courses	Internet	<a href="#">Seniorcenterwithoutwalls.org</a>
<i>OATS (Older Adult Technology Services)</i>	Education and Learning	Senior Planet Technology Center in NYC	Center/Service	<a href="#">Oats.org</a>
<b>Caregiving Tools</b>				
<i>CareLinx</i>	Non-agency home care	Family caregivers	Portal, directory	<a href="#">CareLinx.com</a>
<i>Lotsa Helping Hands</i>	Schedule sharing care	Shared caregiving	Portal	<a href="#">Lotsahelpinghands.com</a>
<i>LindyCare**</i>	Careplan, find care	For caregivers	Portal	<a href="#">Lindycare.com</a>
<i>Caring.com</i>	Caregiver portal and directory	Family caregivers	Portal, directory	<a href="#">Caring.com</a>
<i>Care.com</i>	Find home care	Support to caregivers	Portal, directory	<a href="#">Care.com</a>
<i>Caremerge</i>	Care management	For senior care	EHR	<a href="#">CareMerge.com</a>
<i>Open Placement</i>	Care Transitions	For discharge	Tools to find care	<a href="#">OpenPlacement.com</a>
<i>CareTreeMe</i>	Home Care Management system	For care professionals	Care mgmt	<a href="#">Caretree.me</a>



<b>Category</b>	<b>Sub-category</b>	<b>Purpose</b>	<b>Platform</b>	<b>Contact</b>
<i>eCaring</i>	Home care management system	Professional caregivers	Family, workers	<a href="http://eCaring.com">eCaring.com</a>
<b>Caregiving apps</b>				
<i>Caregiver's Touch**</i>	Share caregiver info	Sync web info to iPhone	Web + phone	<a href="http://Caregiverstouch.com">Caregiverstouch.com</a>
<i>Balance: for Alzheimer's Caregivers</i>	Caregiving coordination	National Alzheimer Center, Inc.	iPad, iPhone	<a href="http://Apple iTunes">Apple iTunes</a>
<i>Clevermind**</i>	Alzheimer's	Consumer, Alzheimer's	iPad	<a href="http://myclevermind.com">myclevermind.com</a>
<i>CoroHealth Faith Mobile</i>	Music, Faith	Customized content	iTunes	<a href="http://Corohealth.com">Corohealth.com</a>
<i>Healthspek PHR</i>	Personal health record	Opt-in sharing health info with doctors	iPad with iPhone viewer	<a href="http://Healthspek.com">Healthspek.com</a>
<i>Comfort Zone Check-in</i>	Track Cell phone or wearable device	Alzheimer's Association	iPad, iPhone	<a href="http://Alz.org">Alz.org</a>
<i>Care Partners Mobile**</i>	Task organizer	Shared calendar	Multi-device	<a href="http://lifelinesys.com">lifelinesys.com</a>
<i>Gerijoy</i>	Talking pets	Dementia care service	Tablet	<a href="http://Gerijoy.com">Gerijoy.com</a>
<i>Personal Caregiver</i>	Caregiver coordination	Medication & refill reminders	iTunes	<a href="http://Personalcaregiver.com">Personalcaregiver.com</a>
<i>MedCoach</i>	Health and Wellness	GreatCall	Android	<a href="http://GreatCall.com">GreatCall.com</a>
<i>SingFit for Seniors</i>	Engagement	Music care recipients	iTunes	<a href="http://Singfit.com">Singfit.com</a>
<i>CareZone Senior**</i>	Care Coordination	Share tasks, manage meds	Android	<a href="http://Carezone.com">Carezone.com</a>



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- <sup>29</sup> <http://www.ncoa.org/national-institute-of-senior-centers/nisc-news/senior-centers-reach-the.html>
- <sup>30</sup> [http://assets.aarp.org/rgcenter/il/healthy\\_home.pdf](http://assets.aarp.org/rgcenter/il/healthy_home.pdf)
- <sup>31</sup> <http://www.cdc.gov/nchs/fastats/older-american-health.htm>
- <sup>32</sup> [http://www.nytimes.com/2012/09/21/us/life-expectancy-for-less-educated-whites-in-us-is-shrinking.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2012/09/21/us/life-expectancy-for-less-educated-whites-in-us-is-shrinking.html?pagewanted=all&_r=0)
- <sup>33</sup> <http://www.caregiving.org/data/04finalreport.pdf>
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- <sup>37</sup> <http://www.healthcareitnews.com/news/senate-hearing-underscores-healthcare-quality-health-it-woes>
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- <sup>39</sup> Internet adoption falls to 47% and broadband adoption falls to 34% among 75-79 year olds.
- <sup>40</sup> <http://www.foxbusiness.com/personal-finance/2014/08/11/what-seniors-should-look-for-in-phone>
- <sup>41</sup> <http://aarp.geeksquad.com/tech-tips>
- <sup>42</sup> CAPS, National Association of Home Builders, <http://www.nahb.org/page.aspx/category/sectionID=686>
- <sup>43</sup> Eight-six percent of the American population is predicted to be overweight or obese by 2030.  
<http://www.newsweek.com/id/153309>
- <sup>44</sup> <http://www.aarp.org/home-family/personal-technology/info-10-2012/microsoft-aims-to-kinect-with-seniors-gaming.html>
- <sup>45</sup> Cathedral Builders Wanted, Coughlin & Lau 2006  
[http://agingsociety.org/agingsociety/publications/public\\_policy/previous.html](http://agingsociety.org/agingsociety/publications/public_policy/previous.html)
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<sup>59</sup> <http://www.ereleases.com/pr/revenues-aging-place-market-surpass-30-billion-2017-semico-research-173467>

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