



## Baby Steps: Will Boomers Buy Into Mobile Health?

**H**ealth care's transition from the professional-centric world of the hospital and doctor's office into a technology-enabled connection between providers and care recipients has been gaining momentum. Stakeholders such as providers, payers, and — especially — consumers have much to gain from the potential of technology to support efficient self-care and avoid unnecessary services and costs.

Eager investors and inventors, spurred by the Affordable Care Act, created the digital health market to serve the growing interest in self-care technologies. These include gadgets and tech-enabled services such as sensor-based activity trackers, wearable patches, mobile applications, and personal health devices. Together, these markets have rapidly reached eye-popping numbers — \$4 billion invested in 2014 alone. Some 95 companies were acquired for more than \$20 billion in disclosed transactions that year.

The baby boomer generation, because of its massive size and the looming health costs it represents (see box), is a prime focus of the digital health market. The oldest boomers are now turning 70 and

### Boomers by the Numbers

- ▶ There are more than 76 million baby boomers — people born between 1946 and 1964.
- ▶ By 2029, boomers will account for a 73% increase in the age 65+ population.
- ▶ Medicare spent \$632 billion in 2015. Spending per beneficiary will increase at an average annual rate of 1.5% between 2014 and 2024, according to the Congressional Budget Office.
- ▶ Medicaid programs funded more than \$80 billion worth of care for seniors in 2010.

the youngest are still in their early fifties. Of special interest to developers, the boomer generation has resources. By 2017, they will control 70% of the nation's disposable income. According to AARP, the 50+ population has the greatest concentration of wealth of any generation and half of baby boomers own smartphones.<sup>1</sup> This amounts to 41 million boomers — an increase of 53% in the last two years, according to AARP.

Most significant for the health care system, boomers will account for a 73% increase in the age 65+ population by 2029. The needed services and costs represented by this demographic will “determine how caregivers and policymakers shape the health care system for decades to come,” observed Paul Barr, writing in *Hospitals & Health Networks*.<sup>2</sup>

## Less Healthy and More Costly

Of critical import for all stakeholders, boomers are less healthy and more costly than previous generations. They are living longer, but with more chronic disease such as hypertension, high cholesterol, and diabetes — even as the percentage of deaths per 100,000 from those diseases has dropped 8% in the last decade.<sup>3</sup> The American Hospital Association reported that more than 37 million boomers will be managing more than one chronic condition by 2030. One out of four, or 14 million people, will be living with diabetes; almost half will have arthritis, and more than one-third, or over 21 million, will be classified as obese.

Each of these illnesses presents significant health risks in addition to high expense. According to Annette Brüls of Medtronic, a medical device manufacturer, “In the US, \$245 billion is spent each year on managing diabetes and the consequences of its being poorly controlled.” In fact, industry experts caution that the boomers are forward indicators of looming future costs. As of 2013, total national health expenditures had already reached \$2.9 trillion.

Many consumers want to avoid costs by monitoring their own health, and a \$26 billion projected global market of mobile health apps will be there to help them do so by 2017 according to Research2Guidance. Today there are at least 100,000 self-care health apps available for smartphones/tablets. Well-known ones include apps for diabetes tracking of blood sugar or foods eaten; medication reminders, especially for complex regimens; and activity encouragement. Higher usage to date among the 50+ population has been correlated with greater education and income. Dave Alpert, chief medical officer of AliveCor, noted that “people are becoming engaged in their own care because out-of-pocket medical expenses (deductibles and co-pays) are going up. When you pay more, you clearly care more.” AliveCor enables patients who have had heart attacks to determine if their heart rhythm is normal or not, potentially saving a trip to the doctor.

Mobile technologies include both passive and active formats. Passive sensors worn on the body can be used to monitor change in physical movement and changes in behavior patterns over time, such as walking pace or diabetes blood sugars. Active technologies require a user (provider or patient) to apply the device to a problem, for example heart rhythms, or a tricorder to check multiple vital signs, and even enter data. Both types of technologies are deployed in the evolution toward self-care.

## A Good Fit for Boomers?

However, regardless of the potential benefits of mobile technology, market acceptance of health apps has been limited and buy-in from the boomer generation has been slow. For example, despite

### Designers, Take Note

Boomers often have a youthful attitude, but they may not be as physically adaptable or interested in new, newer, and newest gadgets and apps.

Too often devices are designed with small, unlabeled or nearly invisible buttons and user interfaces that they may not perceive as intuitive. As they age, boomers are also impacted by physical changes in:

**Hearing.** Impairment worsens 10% per decade for life; typically it is 7-10 years before someone considers a hearing aid, and only 20%-30% actually purchase them.

**Eyesight.** Vision changes happen in the early 50s. Far-sightedness requires larger print with contrast. Devices must be readable in both bright and dim lighting. Glare is a big issue for people with cataracts.

**Dexterity.** Arthritis in the hands impacts ability to manage small buttons and dials. Essential tremors and Parkinson’s affect ability to swipe, pinch, and touch screens.

Source: Charlotte Yeh, AARP Services.

large growth estimates, the 100,000 existing health apps have produced limited revenue so far (\$2 billion total estimated in 2014).<sup>4</sup> And 82% of the app-makers had fewer than 50,000 downloads across all of their apps. Further, the individuals who downloaded apps are not likely to be in the boomer generation; only half of boomer smartphone owners have downloaded *any* apps, and the top ones are not related to health.<sup>5</sup>

The youngest third of the cohort, born between 1959 and 1964, do not identify with the needs of the oldest. They are more likely to adopt wearables, smartphones, tablets, and to download apps of any type. Nevertheless the overall uptake of these technologies for the boomer generation is low. Experts interviewed for this report offered a number of problems and examples of barriers to adoption. They observed that even though 50% of boomers have smartphones, they may be less comfortable with a design or process than young designers imagine, or the device's information is not compelling enough to sustain interest, either their own or their doctor's.

For example, while fitness wearable sales may be brisk, consumers frequently stop using them. Only half of the 20 million Fitbit users were active with their device in 2015.<sup>6</sup> Even when users persist, the utility if their information depends on linking the sensor-based information to the owner's smartphone and perhaps even passing the data from there to health providers. An AARP/Catalyst usability study showed the difficulty boomers have even figuring out how to use an activity tracker. Participants had a hard time finding the directions or syncing the data — and had little desire to continue using the device.<sup>7</sup>

Much of this is a design issue, noted David Lindeman, director of the Health Initiative at CITRIS, a technology research center that grew out of the University of California.<sup>8</sup> “Innovators often miss the opportunity to verify the utility of designs and services with willing older adults,” he said. “It is very important for tech innovators to consider interested older adult populations, such as large retiree associations of universities like UC Berkeley, as test-beds for concepts and

products.” Likewise, Clarity Life's Jamie van den Burgh noted disconnects between inventors and the boomer market. “The predominant products appear to be step counters, diet apps, networked scales, and cameras — that's all you see at the Consumer Electronics Show,” he said. “These are aimed at 30-50-year olds.”

*“I was an investor in the project that did the work for a wearable. The charging cable was only three inches long. I said I need six feet of cable. The response: ‘You're not our core demographic.’”*

— Scott Smith, Viant Capital

Abandonment has been particularly an issue for insurers; in 2014, Aetna launched CarePass, which unified personal information from multiple apps and devices — but by 2015, acknowledged its failure and shut it down.

Cost may also be a problem. Although wearables for fitness have reached awareness levels among boomers, this population is as skeptical as younger cohorts about the sustained benefits from fitness tracking wearables and may be reluctant or unable to spend the money. Smartphone apps are becoming more important as a patient interface for health providers and payers, but even when apps are “free,” cost can be a factor. For lower income baby boomers, data costs can be prohibitive; without subsidies, data plans in most parts of the country average \$60 per month just for access.

Online access varies widely by income. Among the population age 50-64, Internet adoption has grown from 72% in 2008 to 81% in 2015, according to a Pew Research report. However, “adults from households earning less than \$30,000 a year are roughly eight times more likely than the most affluent adults to not use the Internet.”<sup>9</sup> In May, 2015, the FCC proposed

### Perspectives on Health Data Privacy

The tech industry has boosted its focus on data privacy protection — but it is late in the game.

The European Union recently agreed to a consumer data privacy rule that, if implemented by the proposed date in 2016, will impact US companies selling technology to them. It would eliminate profiling that includes “health or personal preference” and enable users to delete their information from online technology data stores like Facebook and Google.

In the US, representatives of the consumer tech industry recently petitioned Congress for a *lighter* regulatory touch, indicating that regulations like HIPAA, for example, are a barrier: “Questions about privacy, security, reimbursement, and government regulation meet to create an environment where companies are worried about making devices more medically relevant, and physicians worry about the impact on their practices.”

KDS Consulting president Kim Slocum, who works with health care IT companies, noted that “My big concern is less about medical identity theft than my doctor killing me because he doesn't have enough information.”

helping low-income consumers with the cost of their broadband bills.<sup>10</sup> According to the FCC, “less than half of households making less than \$25,000 a year have Internet access at home, compared with 95% of households with incomes of more than \$150,000. African-American and Hispanic households are also much less likely to have home Internet access compared with the nation as a whole.”

Finally, the industry experts noted, privacy and security are concerns for users (see sidebar on page 3). Consumers believe their data may be at risk. By mid-2015, one-third of the US population had been impacted by hacking and security breaches, affecting consumer confidence in providers’ or payers’ ability to manage their health data. In well-publicized hacking events, including those of Anthem and UCLA Healthcare, patient information, sometimes including social security numbers, was accidentally exposed or deliberately stolen. According to the Ponemon Institute, criminal attacks are now the leading cause of health data breaches, up 125% as of March 2015 from five years ago.<sup>11</sup>

## Mobile Technologies and Health Care Substitutions

Providers have a powerful role in driving the use of health technologies for self-care, and financial incentives encourage their support of lower cost substitutions for in-person visits to hospitals and physician offices. The transition is spurred by the ACA penalties for providers, efforts to curtail government costs, and discounts and incentives for consumers. In addition, physicians—especially the younger cohorts—appreciate the value of technology in

health care. Rock Health research found that 73% of physicians believe HIT (Health Information Technology) will improve quality of care in the longer term. The percentages are even higher among physicians with 10 or less years in practice and those in larger practices.<sup>12</sup>

Following are several examples of ways that mobile health is enabling lower cost substitutions in health care.

**Substituting remote consultation for ER visits.** Emergency room use in many parts of the US is surging. Along with readmission penalties, ER volume can become a motivator for increasing interest in telehealth on the part of providers and plans. Consumers are open to telehealth as well, as the CVS pharmacy remote consultations program shows.<sup>13</sup> Although telehealth has yet to reach a tipping point, and some question its value, interest is growing. Video consultations are expected to reach 158 million per year by 2020.<sup>14</sup> Some of the well-known programs are DoctorsOnDemand, Teladoc, and American Well. Interestingly, virtual visits result in more prescriptions than face-to-face visits, according to Dr. Karen Rheuban, director of the Office of Telemedicine at the University of Virginia Health System.

**Substituting self-care for remote consultation.** Because technology is moving so fast, experts envision the creation of a device so functional and low-cost that a layman can accurately check his or her own vital signs. What will this mean for providers and patients? Charlotte Yeh of AARP Services speculated that “a device like a tricorder could enable a person to do an exam in the privacy of his or her own house — not letting someone else know yet about

symptoms.” She envisioned that tied to the scoring could be a curated response, advising the consumer: “If this is the case — you might want to do this — or that.”

Albert Baker of Impak Health noted the huge potential for such technology to encompass the subjective nature of medical care from the consumer perspective. He noted that in remote patient management, “you’d think that managing dosages was the most important aspect of dealing with complex medications.” But it turns out, he said, “journaling data adds important context to patients’ care journey, enabling them to provide subjective feedback about how they actually feel.”

**Substituting smartphone apps for remote and in-person consultation.** It is almost a digital health cliché that the future of medicine is in your smartphone and for lower income patients, most with smartphones, this could well become true. In August 2015, United Healthcare launched an app for Medicaid recipients in 17 states.<sup>15</sup> And Health: ELT, a Dallas startup, is targeting the Medicaid population with smartphone apps. Arizona is testing the apps’ deployment.

*“In this Medicaid population of 1,000 recipients, the pilot saw patient engagement rates jump from 37% to 73%,” while the number of ER visits per patient dropped from 7.14 to 3.45 per month.*

— Amanda Havard, Health: ELT

Medicaid enrollees, according to Frank Siano, a member of Health: ELT's board of directors, will be able to "avoid an emergency room visit by using an app to look up your primary care doctor or find an urgent care near you, manage chronic illnesses, or conduct your own health screenings using an app." Users can also receive text alerts for an appointment reminder and manage medication. Arizona's studies indicate that the target low-income population has smartphones and is willing to use the app. THINK-Health's Jane Sarasohn-Kahn sees benefit in such apps. "As physician groups also understand value and take on bundled payments," she said, "it will behoove them to give the patient a device like a smartphone."

## What Will Mobile Health Technologies Bring to Boomers?

To obtain the promised benefits of mobile and wearable health technologies for the boomer population, innovators and service providers will need to recognize and accommodate their needs. Because of the cohort size, wealth, and influence of baby boomers, change will happen:

**Apps and gadgets will be better suited to boomers.** In the future, wearable and mobile health technologies will be easier to use for this target market due to a combination of focused laboratories of available and willing users (e.g., CITRIS at UC Berkeley); sponsorship of device access by organizations that support older adults; ad agencies that craft more useful messaging (e.g., AARP's Influent50); and

incubators and funds that educate entrepreneurs about older adults (e.g., Aging 2.0). The next version of health apps and devices will have readable directions, easy-to-use interfaces, customizable health advice, and right-sized buttons. Providers will look closely at tech training programs like AARP TEK, which recently launched an online learning site, AARP TEK Academy.<sup>16</sup> New offerings will treat protecting data privacy as mission critical – hoping to stay out of the increasingly focused laser beam of government officials and regulation.

**Internet service providers will lower the cost of connection.** Following the FCC's May proposal, there are other Internet service providers that have programs to help with the cost of data plans, including Comcast's Internet Essentials, and a proposed plan from AT&T that was announced as part of its merger with DirectTV.<sup>17</sup>

**Governments will further incent adoption through reimbursement.** The introduction of new payment (CPT) codes within Medicare made 2015 a banner year for telehealth reimbursement.<sup>18</sup> The new codes have resulted in a proliferation of apps, although adoption to date has been limited, and apps for diabetes management were not included. State-by-state, parity is required for Medicaid reimbursement of telehealth.<sup>19</sup>

**Devices will be pre-configured, loaded with data, and delivered to the most vulnerable.** In 2015, IBM partnered with Apple to provide iPads to 5 million older adults in Japan, reaching them through the country's postal service. Many of the 22 pre-loaded apps focus on health and other services.<sup>20</sup> In the US, health care providers will consider a similar initiative

for patients with complex health conditions and care regimens. Targeting will be based on age, health status, and ability to use the device.

**Companies with access to people's homes will incorporate sensors.** Some cable, appliance, automotive, and consumer packaged goods (CPG) firms will see opportunities to add home-based features to their offerings. According to Unity Stoakes of StartUp Health: "The lines will blur between 'this is health' and 'this is something I use in my home.' Companies with access to the home – cable, appliance, automotive, and CPG will incorporate sensors – often giving the device for free."

**Watches will eventually replace clip-on wearables – first for the young, later for boomers.** The sales curve for fitness wearables is flattening, but smartwatches, fueled by a year of media hype about Apple's introduction, will begin to take off among the most fashion-conscious, rising to 9% penetration within the next year, according to the NPD Group. Like other technology adoption trends, however, there will be a significant lag in adoption by boomers, especially those with dexterity issues who find the user interface unreadable or buttons too small or difficult to use.

**Predictive analytics will be proven to improve care and avoid costs.** Health tech vendors see promise in both data integration and the resulting ability to predict who might need care and when. Philips' CareSage, introduced in 2015, combines use of a wearable Personal Emergency Response System (PERS) with health status data, enabling an alert to a health provider before the patient has the fall that puts them back into the hospital. Other device

vendors will see an opportunity to avert future admissions by linking information from devices with population health information and profiles of individuals at risk.

Vendors and investors claim that such “big data” approaches can offer up Watson-like insights into what may happen next or has already occurred unnoticed.<sup>21</sup> “We are able to predict and track diseases before they become acute,” said Eric Venn-Watson of Clinical Transformation, AirStrip.

Venture Valkyrie’s Lisa Suennen emphasized that value must be provided to physicians: “Providers must be given actionable direction – only receiving data alerts about people who really need attention,” she said. “There will be an algorithm that doctors will believe, telling them to react right now.”

## Conclusion

Baby boomers are poised to bring on a wave of health costs, and inventors are eager to find ways to meet their needs, ultimately averting unneeded medical services and expense. The experts interviewed for this report acknowledged that the fitness wearable market is still in its infancy. It is too early to determine if providers are willing to accommodate data that can now be transmitted to them. Further, smartphone apps to monitor calories and tricorder technologies to measure vital signs produce data that will eventually need to augment established patient data. Electronic Health Records are not yet portable between physicians who are based in separate medical practices. And expansion of access, subsidized cost of insurance, or doctor availability

may stymie care of lower income boomers, leaving the ER as their only ready access to care.

Further, there is uncertainty for innovators, providers, and consumers. A 2015 report from Accenture indicated that 51% of digital health startups fail within their first two years.<sup>22</sup> Experts acknowledged that part of the dilemma is sorting out useful from useless apps. From the consumer perspective, AARP notes that while health apps can help improve everything from balance to breathing, today’s mobile health world is at the “wild, wild west” stage.<sup>23</sup> THINK-Health’s Jane Sarasohn-Kahn concurs: “We don’t need any more apps. For a prescriber with a do-no-harm ethic, how do they curate best of breed?”

The boomers themselves will be responsible for much of the utility of existing and new mobile health inventions. They will need to use the apps and gadgets consistently and pay attention to the results. Bill Novelli, professor at Georgetown University, recalled his tenure as head of AARP. “We spent five years trying to increase the physical activity of the 50+ population,” he said. Although 17,000 people were helped, “We were stymied by lack of scale and continuity of use.” Charlotte Yeh of AARP Services agreed that apps can only do so much. “If you think about health outcomes,” she said, “20% is genetics, 20% is the health care delivery system, and 60% is lifestyle.”

## Interviewees

David Alpert, AliveCor

Albert Baker, Impak Health

Liz Boehm, Vocera

Annette Bröls, Global Diabetes Service & Solutions, Medtronic

Alan Bugos, Philips Home Healthcare

Elliott Cohen, PillPack

An Denny, PlanWellFinishWell

Jill Gilbert, Digital Health Summit at CES

Jody Holtzman, AARP Thought Leadership

Sachin Jain, CareMore

David Lindeman, CITRIS, University of California, Berkeley

James Murphy, Optum unit of United Healthcare

Bill Novelli, Georgetown University, C-TAC

Jane Sarasohn-Kahn, THINK-Health

Kim Slocum, KDS Consulting (HIMSS)

Scott Smith, Viant Capital

Unity Stoakes, StartUp Health

Lisa Suennen, VentureValkyrie

Jamie van den Burgh, Clarity Life, a Unit of Plantronics

Blaine Warkentine, VIMTY

Charlotte Yeh, AARP Services

## About the Author

Laurie M. Orlov, a tech industry veteran, writer, speaker, and elder care advocate, is the founder of Aging in Place Technology Watch and Boomer Health Tech Watch, market research that provides analysis and guidance about technologies and services that enable boomers and seniors to remain longer in their home of choice. She has frequently consulted for AARP, and served on a think tank on aging well for the Philips Center for Health & Well-being. Her perspectives have been quoted in *Business Week*, *Forbes*, *Kiplinger*, the *Toronto Star*, and *The New York Times*. See [www.ageinplacetech.com](http://www.ageinplacetech.com) and [www.xhealthtech.com](http://www.xhealthtech.com).

## About the Foundation

The California HealthCare Foundation (CHCF) is leading the way to better health care for all Californians, particularly those whose needs are not well served by the status quo. We work to ensure that people have access to the care they need, when they need it, at a price they can afford.

CHCF informs policymakers and industry leaders, invests in ideas and innovations, and connects with changemakers to create a more responsive, patient-centered health care system.

For more information, visit [www.chcf.org](http://www.chcf.org).

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