



Building a better
working world

By becoming better health consumers, can we change how we age?

Building an engaged aging strategy



The better the question. The better the answer.
The better the world works.



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The world is aging, largely thanks to improvements in life expectancy for those 60 or older. In Japan, for instance, more than a quarter of the population is over the age of 65 and will rise to 31% by 2025.¹ By 2050, the global population of those 60 and older is estimated to be twice what it was in 2015.²

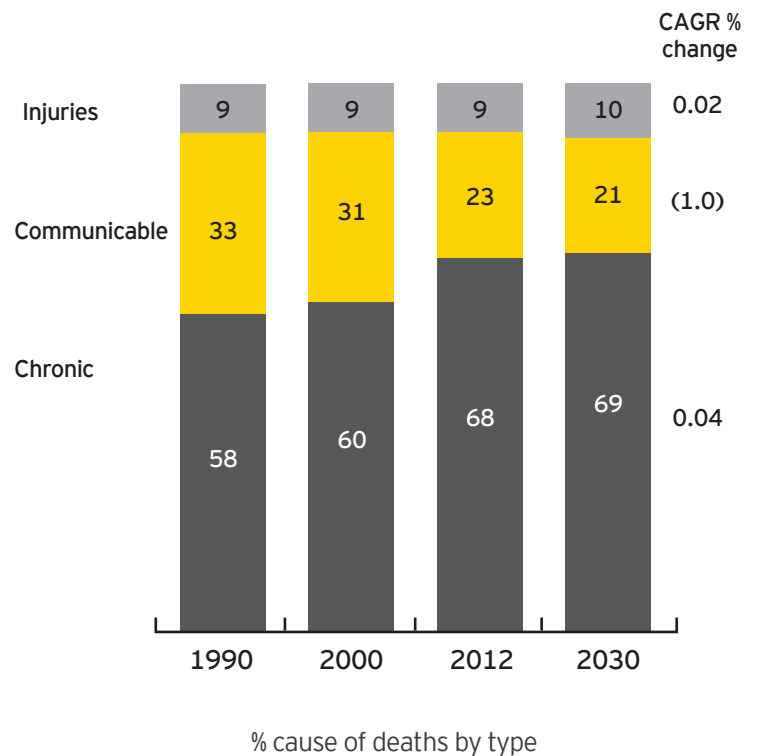
Societies worldwide have made great strides in lengthening life, but struggle to achieve widespread, lifelong health. The diseases of aging take their toll on quality of life for older persons and the friends and family that care for them (see Figure 1). In the United States alone, the AARP Public Policy Institute estimates that businesses lose an estimated US\$33b a year due to full-time workers trying to balance adult caregiving and professional demands.³

Prevention and early access to care are key to controlling costs associated with the diseases of aging. Both require the active participation of individual health consumers and a shift in mindset that emphasizes lifelong wellness, not simply freedom from disease. Technological innovation, behavioral economics and increasing health consumerism will each contribute separately - and in interrelated ways - to this healthy longevity orientation. Emerging technologies offer the promise of engaging with people around their health goals, enabling them to reach their personal best, regardless of health status.



Figure 1: Global change in disease mix⁴

From 2010 to 2030, chronic diseases will cost the global economy US\$47 billion



Plug in, talk on, get out

Across industries, the empowered consumer is now recognized as a disruptive force. Savvy shoppers in developed markets are ready for on-demand services, transparent pricing and increased convenience, driving changes in how retail, banking and consumer products companies do business.

Those same changes are coming to health, albeit more slowly. When coupled with the abundance of available health information, the sector will need to meet the needs of “super consumers,” who want services that provide desired outcomes and are interested in exerting political pressure to shape health policy.

As noted in our paper “How will we disrupt aging before aging disrupts economic growth?”, wellness is multidimensional, with physical,

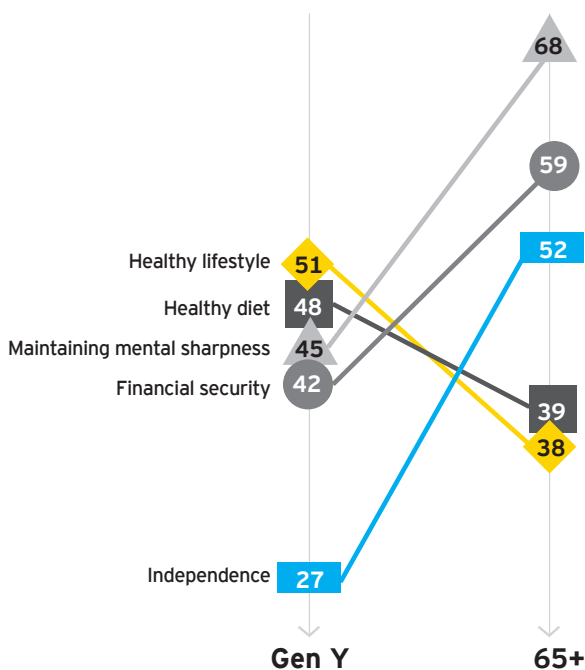
social and material components. A recent survey by EY supports this assessment: when asked to define their highest priorities as they age, adults 18 and older list a number of key parameters, demonstrating that physical health is just one aspect of overall wellness (see Figure 2).

The [second piece](#) of our Engaged Aging series opined that new digital and genetic innovations will one day result in solutions aimed at catching disease before it manifests - and based on individual risk profiles. This switch to P-medicine will harness the data generated by, and interaction between, medical professionals, consumers, established health stakeholders and new entrants. This integration of information and insights will be used to build a prevention mindset into the way people think about, and engage with, health by deepening our understanding of health risks at a personal level.

While exciting, this ability to intercept disease is still temporally distant. In the more immediate term, there are several ways that existing or near-term technologies can contribute to lifelong, personally optimized health. And that is good news: in a survey of attitudes toward aging in adults in the US, UK and Singapore, 70% of respondents expect that technology will play an important role in improving the quality of life as they age.⁶

Figure 2: EY survey - top aging concerns⁵

Maintaining health and independence become more of a priority as we age



% of people indicating factor is important for healthy aging

Health maintenance

Already, medical devices and sensors exist that can monitor health status and gather the data that will fuel predisease intervention tomorrow. Such smart devices create positive feedback loops to nudge individuals with the right piece of information, cue or intervention at the exact right moment in time to maintain health.

These technologies serve a range of functions, from monitoring home environments to connecting consumers to their health care providers to tracking health vitals. A survey of adults in the UK, US and Singapore revealed that 57% of respondents are already using technologies for disease management, while 61% are using them for health maintenance or wellness purposes.⁷ This includes Internet of Things-enabled medical devices and the new services that come with them such as the wearable sensors of today, their nearly “invisible” cousins of tomorrow (sensors embedded within everyday materials like clothing, tattoos and contact lenses), and those that

will be a part of our increasingly “smart” environments (home, office and health care point of service).

But many of these devices are designed with active young people in mind, selling the idea that there is an athlete in all of us. Emphasis on optimal performance, on an individual level, is an underutilized approach to wellness in seniors. Repositioning aging from a condition of debilitation to a discussion of human cognitive, social and physical performance would combat negative stereotypes of aging, could increase market penetration of new products and should encourage a change in mindset to wellness. In a survey of adults 18 or older, EY found that most seniors described healthy aging with a focus on maintenance while the youngest group surveyed (ages 18-30, or Gen Y) were concerned with prevention-related activities.⁸

Chronic disease management

While consumer-generated data will one day present a clearer picture of individualized risk for chronic disease, there are immediate opportunities for technology to improve the lives of those with chronic diseases (e.g., cardiovascular disease, diabetes, cognitive disorders). Existing solutions such as electronic health records that provide clinical decision support and remote monitoring are bending the cost curve even as they increase access and high-touch care delivery (see Figure 3). Similarly, solutions that improve health literacy, taking into account the user and the environment, can provide just-in-time information tailored to the individual's goals, communication style and the particular situation.

Figure 3: Case studies

Concierge services	Independa is a service that works with a technology most seniors are already familiar with - a television. Through messages, alerts and video chatting, this service can close the care gap following hospital discharge and keep seniors connected to family and caregivers.
Smart monitors	AliveCor makes an at-home EKG monitoring device and app that can detect signs of atrial fibrillation and alert a doctor. The rapid identification of problems using smart algorithms combined with input from a physician provides high-touch services at a low cost, while increasing the chance for early detection.
Voice-activated companions	Touchless technology that processes and responds to natural language is at the center of several emerging offerings. Amazon and Merck have partnered to sponsor a competition to develop applications for Amazon's voice-activated “personal assistant” targeted toward helping those newly diagnosed with diabetes. Elli-Q, an “active aging companion,” from the Israeli start-up Intuition Robotics, is working on a digital assistant with a view screen that responds verbally, and physically, to its owner.
Telemedicine-enabled smart monitors	OPTiM (Tech) and MRT Inc. have launched the “Pocket Doctor” in Japan. It will integrate a suite of health care tools and wearable devices that will relay health data to doctors as part of a remote medical consultation service.

Telecom and insurance companies could both take a more central role in either developing, or driving, the adoption of connection-focused technologies and services.

Connection

The lack of connection to other people, and to the wider world, has huge effects on health and mortality. Dr. Susan Reinhard of AARP framed it this way: “The effects of social isolation on longevity are equivalent to smoking 15 cigarettes a day.” Widely recognized as a problem for older adults, many organizations such as Meals on Wheels have focused supportive efforts on providing opportunities for greater social engagement even as they deliver other, much needed services, such as meals or medications.

There are several examples of technologies which, while not originally designed with seniors in mind, are addressing this opportunity for greater connection. Skype and Facebook, with video chat and instant messaging capabilities, help to maintain strong connections with loved ones and friends. Lyft has partnered with Ascension to provide transportation for non-emergency medical needs, enabling individuals to keep follow-up appointments

with providers, while the more mainstream services from Lyft and Uber support interaction outside the home. Rendeever, a Cambridge, Massachusetts company founded by MIT grads, is using virtual reality to bring immersive experiences to older adults. Their hands-free headsets allow users to take a virtual trip to a beloved and familiar setting or experience locales new to them, with the intention of providing a sense of joy and wonder.

In our view, telecom and insurance companies could both take a more central role in either developing, or driving, the adoption of new connection-focused technologies and services. Players in both industries have important knowledge about their customers, and particularly with telecom, have infrastructure that gives them direct access to the home. Partnerships that match these assets with consumer-friendly technologies seem to hit the sweet spot of customer-centric technology with a transparent value.



The user experience

New technologies have to be used in order to be successful. This means they have to have a user-centric design, a low learning requirement, immediately apparent benefits and the flexibility to address a variety of needs. For example, voice assistive technologies such as Lively or Amazon's virtual assistant Alexa are already making it easier for seniors to age in place by providing interactive reminders, monitoring and communication abilities. Real scalability will be possible when the following criteria are met: first, platforms pair these tools with other low-friction devices with low or no learning curve; second, data are collected passively; third, well-designed interfaces enable communication between stakeholders. Indeed, one major step forward would be the ability to integrate many devices into one user experience. Such integration will likely require a platform created in an open source setting.

There is a clear need for technologies that support caregivers without decreasing the quality of life for the care receiver. AARP

estimates that by 2020, 45 million Americans will provide unpaid care for another adult; just over half of them will spend more than 20 hours a week doing so. While more than 70% of caregivers are interested in technologies that make the activity less time-intensive, only 7% are using solutions currently on the market.⁹

One reason might be that the needs of caregivers and care receivers are different: caregivers want help balancing competing demands on their time, while those receiving care often have an abundance of free time. New solutions, then, must add to the experience or create connection. If the primary purpose is to make caregiving more efficient, careful consideration should be given to the impact on the care receiver: older persons are not necessarily motivated by efficiency and may be negatively affected by solutions that reduce the amount of direct social interaction they have.



Opportunities and pitfalls in consumer engagement

In order to accommodate the human variables - the variation in levels of commitment, engagement and incentive to have, use and purchase technology, among others - a number of factors must be taken into account to enable positive engagement with consumers.

Understanding our decisions

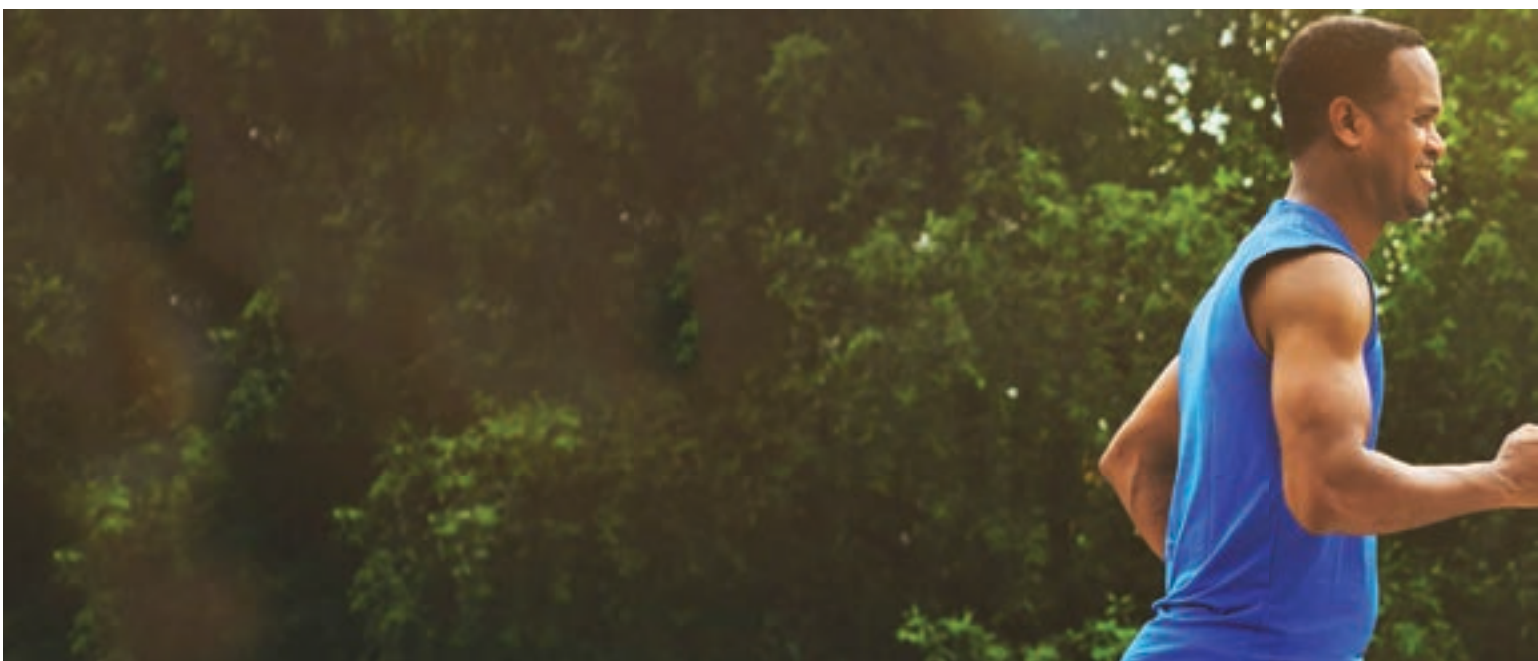
While our decisions are rule based, they aren't always strictly rational. That means we do things like put too much value on the here and now, for instance. In behavioral economics, this is described as hyperbolic discounting - the tendency to choose more immediate rewards over future gains, even when the future gain is larger. In practical terms, that means we are more likely to say "yes" to a confection from the bakery next door than to a training session at the gym, or to discount the health gains of smoking cessation if we are currently a smoker.¹⁰

We also seek to protect ourselves from losses even at the expense of making a gain, and experience more satisfaction with a given

choice when our selections are limited. As individuals, we have different tolerances for risk and uncertainty. As any health care provider can tell you, when faced with the same medical decision and facts, people make different choices (including not to decide).

The factors influencing our decision-making change across our lives, too. For starters, attentional biases are altered as we age: in contrast to younger people, older people are drawn to, and motivated by, positive information.¹¹

Engaging and retaining consumer attention to wellness requires solutions that take into account such decision-making variations, and their influence on setting and reaching individual goals. As mentioned above, solutions that can respond or adapt to a wide range of needs, outcomes and decision paths will enjoy broader uptake. And the use of these "compassionate" algorithms can be self-reinforcing: the need to be understood is a common human trait that will sustain positive behaviors generated by a given solution if that solution is designed to "get" the individual.



Wellness as a trajectory

Health isn't absence of disease; it is a lifelong focus on wellness. But a lifetime is too long and wellness is too abstract a goal for us to respond to in a sustained way. As a result, individuals retreat to comforting, habitual behaviors. In fact, we tend to prioritize behaviors that preserve the status quo, partly because any change in our current circumstance could be perceived as a loss - and we abhor losses to the point where we will prioritize not losing over making a similar sized gain.

To promote healthy behaviors, individuals and their care teams (including physicians, coaches and loved ones) can focus on small behavioral changes that are sustainable (unlike crash diets, weekend warrior fitness regimes, etc.).

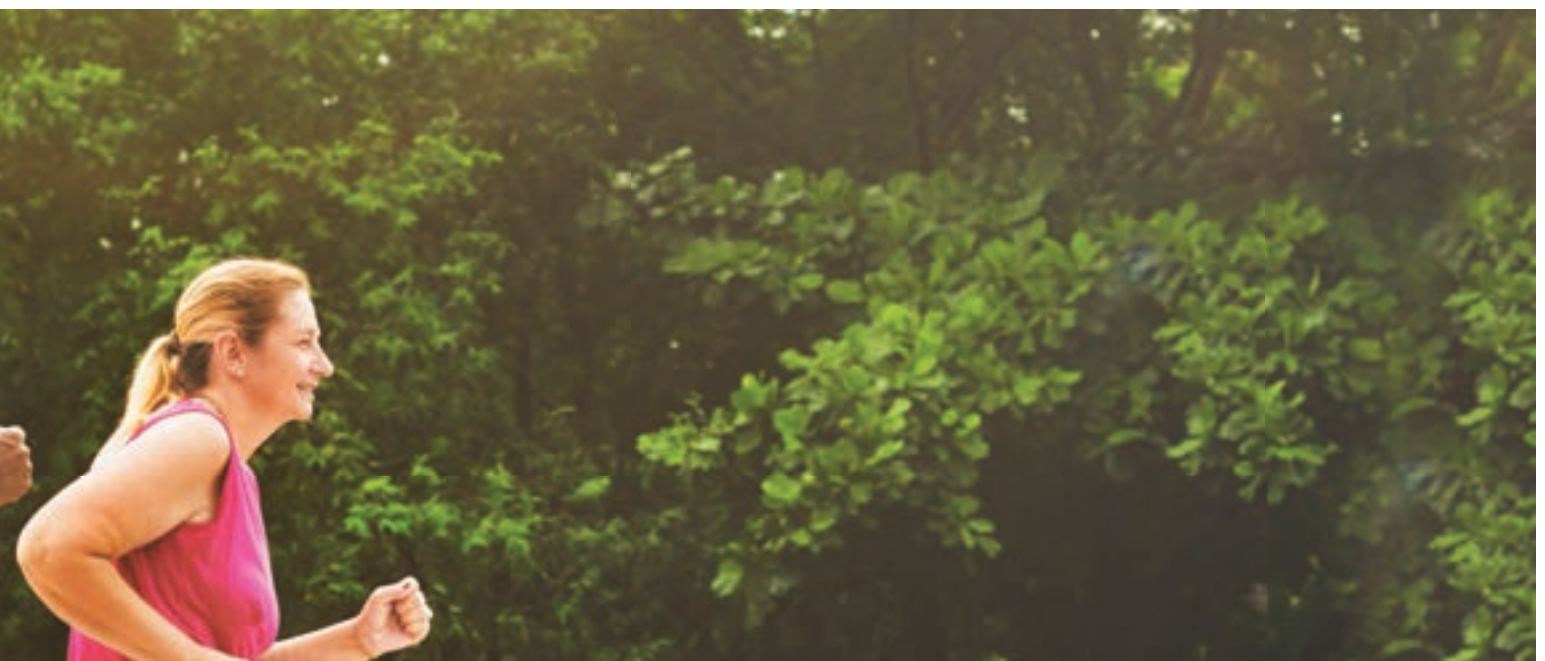
Real-world reference points are also essential for continued motivation. Taken as whole, people are very bad at changing behaviors unless there is a discrete metric or guideline against which to measure.

The right incentives

Providing the right guideposts for an individual's health journey necessitates an understanding of their personal goals and an adaptable approach to motivation. Seemingly obvious inducements, like financial rewards for weight loss, may not be enough.¹² Indeed, because humans are generally ill-equipped at both planning for the future and maintaining self-control, appropriately designed incentives that weigh current costs more heavily than future gains are also critical.

Curiosity can encourage the cat - or the person. Consumers may lap up incentives that are shaped by our natural propensities and a particular goal. Getting them wrong, however, can make engagement fall flat.

Take data sharing, for instance. Even early adopters, that portion of the population that rapidly engages with new technologies, appear wary of sharing data. Of the roughly 80,000 people invited to share data from their personal fitness trackers with their providers,



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only 0.8% actually did so.¹³ Changing data sharing to a “win” for the health consumer means using incentives that matter, and harnessing curiosity about our inner workings may be a successful strategy. In one study, at least 85% of people in every age group polled indicated that the return of insights and personal health results was the most attractive incentive for sharing their personal data.¹⁴ In a consumer survey of Australians, only 32% indicated that financial incentives, in the form of cash or insurance premiums discounts, were an appealing inducement to taking a larger role in managing their health.¹⁵

(Robot) Chicken Little

The children’s fable of Chicken Little (also known as Henny Penny or Chicken Licken) tells the story of a canard-creating cockerel that runs around town yelling that “the sky is falling” (when it clearly is not). Much like Chicken Little’s neighbors, we learn to ignore something over time if it purports to warn us of, but actually fails to signal, imminent danger. Many of today’s sensors, apps and other health “nudgers” are designed with the long-term outcome in mind, but need to encourage some kind of change in the immediate term. The seeming urgency of these alerts, coupled with outcomes that are too distant to be appreciated, may actually encourage us to ignore them.

We also run the risk of nudge fatigue. The amusing short film *Uninvited Guests*¹⁶ by Superflux Lab tells the story of an older man rebelling against the constant badgering of the “helpful” smart devices provided by his children after the constant barrage of notifications becomes too much.

In a recent article, Joe Coughlin, Director of the MIT AgeLab warns of nudges that becoming “nooges” - an environment of alerts, reminders and notification that go well beyond what we can reasonably process and respond to.¹⁷

Thinking about sustained behavioral modification requires taking alarm fatigue and our tendency to ignore these warnings into account. As much as sensors are moving to the point where they will be “invisible” - passive data collectors that reside in things we use every day - nudges may be most effective when they are just at or are slightly below the level of our awareness, while still influencing change. This is, in fact, how nudges were originally conceptualized, though current implementation in the technology space has yet to reach the ideal.

Influencing behaviors by setting up distinct choice architectures that bias us toward healthy behavior is one example of an approach to low-awareness, high-impact nudges. Similarly, creating societal messages and strong social networks that position lifelong wellness as a norm can shape our mental framework, and ultimately behavior (see for example, the success of anti-smoking campaigns on smoking rates in pregnant women). What is clear is that if sustained consumer engagement is the goal, the path to lifelong wellness cannot be cluttered with annoying billboards.

This is the third installment in a series that discusses opportunities for seizing the upsides of aging. The fourth paper will explore the creative partnerships that will develop and scale solutions for healthy aging. Go to ey.com/engagedaging for more on Engaged Aging.



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Sources

- 1 Naohiro Ogawa and Matsukura Rikiya, "Ageing in Japan: The Health and Wealth of Older Persons," *United Nations expert group meeting on social and economic implications of changing population age structures*, Vol. 31, 2007.
- 2 "World Population Ageing 2015," United Nations, Department of Economic and Social Affairs, Population Division, 2015.
- 3 Fact Sheet 271, October, 2012. AARP Public Policy Institute, Washington, DC.
- 4 EY analysis of data from "World Population Ageing 2015," United Nations, Department of Economic and Social Affairs, Population Division, 2015, and World Health Organization mortality data.
- 5 EY original research conducted in cooperation with EY Sweeney, April, 2017.
- 6 Ibid.
- 7 Ibid.
- 8 Ibid.
- 9 "Caregivers & Technology: What They Want and Need," AARP and Healthcare Innovation Technology Lab, April 2016.
- 10 Jonathan Friedel, William B. DeHart, Charles Frye, Jillian Rung and Amy Odum, "Discounting of qualitatively different delayed health outcomes in current and never smokers," *Experimental and clinical psychopharmacology*, 2016, 24, no. 1.
- 11 Andrew Reed, Larry Chan, and Joseph Mikels. "Meta-analysis of the age-related positivity effect: age differences in preferences for positive over negative information," *Psychology and Aging*, 2014, 29(1), 1-15.
- 12 Mitesh Patel, et al, "Premium-based financial incentives did not promote workplace weight loss in a 2013-15 study," *Health Affairs*, 2016, 35:1, 71-79.
- 13 Joshua Pevnick, Garth Fuller, Ray Duncan, and Brennan Spiegel, "A Large-Scale Initiative Inviting Patients to Share Personal Fitness Tracker Data with Their Providers: Initial Results," *PLOS ONE*, 2016, 11(11).
- 14 David Kaufman, Rebecca Baker, Lauren Milner, Stephanie Devaney, and Kathy Hudson, "A Survey of US Adults' Opinions about Conduct of a Nationwide Precision Medicine Initiative: A Cohort Study of Genes and Environment," *PLOS ONE*, 2016, 11(8).
- 15 "Health reimaged: a new participatory health paradigm," EY, 2016. Available at [http://www.ey.com/Publication/vwLUAssets/EY_-_Health_reimagined:_a_new_participatory_health_paradigm/\\$FILE/ey-health-reimagined-2016.pdf](http://www.ey.com/Publication/vwLUAssets/EY_-_Health_reimagined:_a_new_participatory_health_paradigm/$FILE/ey-health-reimagined-2016.pdf)
- 16 "Uninvited Guests," Superflux, <https://vimeo.com/128873380>, accessed 11 April 2017.
- 17 http://bigthink.com/disruptive-demographics/the-internet-of-things-big-data-when-a-nudge-becomes-a-noodge?utm_campaign=Echobox&utm_medium=Social&utm_source=Twitter#link_time=1490823558, accessed 11 April, 2017.

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