

>>>> BUILDING A BETTER TRACKER: OLDER CONSUMERS WEIGH IN ON ACTIVITY AND SLEEP MONITORING DEVICES



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MedStar Health



INSIGHT PARTNER



EXECUTIVE SUMMARY	5
ACTIVITY AND SLEEP TRACKERS: AN OVERVIEW	8
ABOUT THE STUDY AND METHODOLOGY	14
RESULTS AND DISCUSSION	18
NEXT STEPS FOR INNOVATION	25





EXECUTIVE SUMMARY

› **Trackers showed promise for improving overall health with older consumers but presented some usability issues.**

Contrary to what you see on TV, wristbands that harness big data to measure steps, calories, heartbeats and more aren't only for the 20-something triathlete or yoga instructor. Consumers 50-plus care about achieving positive health and avoiding illness and see potential in using activity and sleep trackers toward these goals. Yet tapping this market's full potential requires that usability challenges—such as discomfort and perceived inaccuracy of data syncing—be overcome first.

In partnership with AARP's Project Catalyst initiative, Georgia Tech's Home Lab gave 92 older consumers one of seven popular devices to use in their daily lives for six weeks in their daily lives. Their experiences supported research to date and yielded fresh insights to guide future product development, *primarily that, to be valued as useful, activity and sleep trackers must first be effective and easy to use.*

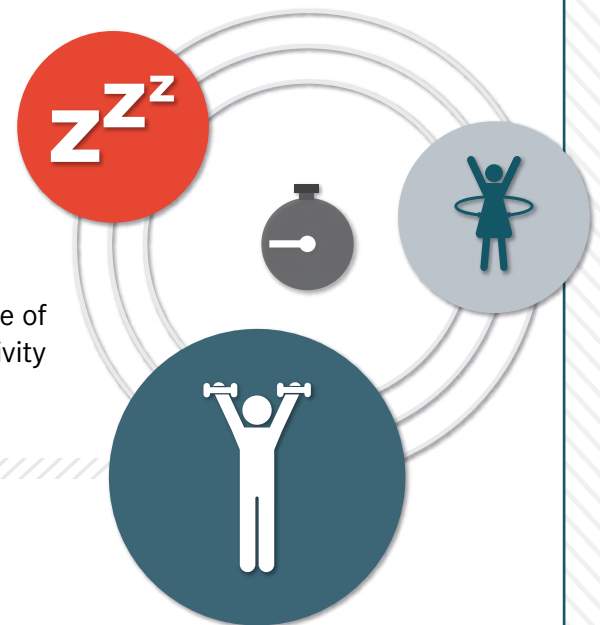
77%

of participants reported activity and sleep trackers to be—or have the potential to be—useful.

For 71 percent of participants, the devices and made them aware of their activity and sleep patterns in general as well as their activity levels at a given moment.

45%

reported increased motivation for healthier living, and 46 percent reported actually being more active, sleeping better or eating more healthfully.



What did participants enjoy most about using the trackers?

- Learning their daily activity and sleep patterns
- Receiving motivation by seeing progress made toward a goal
- Having their current activity levels confirmed
- Finding the device to be easy to use

42%

of participants said they planned to continue to use such a device in the future.

However, many discontinued use before the end of the six-week study. The four top sources of frustration were:

- Perceived inaccuracies in the data reported by the devices
- Challenges in finding and using the instructions
- Perceived device malfunctions, especially related to syncing
- Difficulty putting on and wearing the device, as well as discomfort

How can future trackers be improved for consumers 50-plus?

Make them more targeted toward the health goals of 50-plus consumers; simpler to set up; unobtrusive to wear and maintain; and meaningfully engaging, providing timely alerts and instantaneous access to information. Some specific recommendations included:

- Providing detailed, easy-to-understand instructions
- Providing an explanation of how activity and sleep trackers collect data
- Ensuring robust syncing capabilities
- Ensuring comfort while wearing the tracker
- Enabling timely notifications targeted to 50-plus consumers
- Providing a display for instant information access
- Incorporating additional sensors related to health-specific conditions

WHAT MOTIVATES OLDER USERS OF ACTIVITY AND SLEEP TRACKERS?

The following personas emerged from our research:



THE ACHIEVER

Established in her habits and achievement-oriented, this user just wants the technology to work. Quick access to progress with limited interaction will drive her usage.



THE ENTHUSIAST

This user is empowered by having and sharing new experiences, likes to play with new technology as long as it's fun and not complicated; she's easily distracted. She craves a simple user experience with user interactions that don't require much attention.



THE WHY NOT?

Even though this user is laid-back, he's also inexperienced with technology, so if he can't find good instructions on a device, he'll lose patience and stop using it. Detailed instructions and prompt, positive feedback will keep him engaged.



THE STICKLER

Detail-oriented and health conscious by nature, the one thing that bugs this user most about activity and sleep trackers is inaccuracy. Establishing credibility will be key to giving him the high comfort level he craves.



ACTIVITY AND SLEEP TRACKERS: AN OVERVIEW

What they are

> Fitbit, Jawbone, Flash—activity and sleep trackers go by many names and represent a variety of designs. Yet they all share a common goal: to help consumers achieve wellness and manage chronic conditions through data, awareness and analysis.

How do activity and sleep trackers work? Most are small, wearable electronic devices worn on the wrist, carried in a pocket or clipped onto clothing to measure functions such as motion and heart rate. They usually sync via Bluetooth with a tablet/smartphone app or website to allow users to set goals, share progress and see trends over time.

Typically, activity trackers record data such as steps taken, distance traveled or elevation climbed and provide estimates of calories burned and time spent active versus inactive. Many activity trackers also use motion, heart rate and other information to estimate a user's amount and quality of sleep. Some also monitor other physical attributes, such as respiration or posture.

THE ACTIVITY AND SLEEP TRACKERS USED IN THIS STUDY



MISFIT



SPIRE



fitbit



LUMO



Withings
Inspire health



JAWBONE



Withings
Inspire health

Why people use them

> Activity trackers help users see how well their lifestyles match recommended levels of activity for fitness and health. For instance, one area vital to health and wellness is sleep. After all, it's how we spend roughly one-third of our lives. Insufficient sleep has been linked to conditions such as diabetes, cardiovascular disease, obesity and depression. How can people 50-plus make sure they're getting the seven to eight hours a night recommended by the American Sleep Foundation? Trackers may provide insights.

By providing tangible data, facilitating goal setting and competition, and turning exercise into a game, these devices can also provide motivation to start, maintain or increase physical activity.



VIGOROUS-INTENSITY AEROBIC ACTIVITY 75 minutes a week	MODERATE-INTENSITY AEROBIC ACTIVITY 150 minutes a week	MUSCLE-STRENGTHENING ACTIVITIES 2+ times a week	SLEEP 7-9 hours - adults 26-64 7-8 hours - adults 65+
Source: U.S. Department of Health and Human Services (HHS) published the 2008 Physical Activity Guidelines for Americans and The National Sleep Foundation			

The market

> Physical activity monitoring is one of the nine frontiers of health technology¹ and innovation identified by Project Catalyst, AARP and the Georgia Tech Research Institute HomeLab. Others include medication management, aging with vitality, caregiving navigation, diet and nutrition, physical fitness, social engagement, behavioral and emotional health, and emergency detection and response. All represent opportunities related to the consumer needs of the 50-plus population.

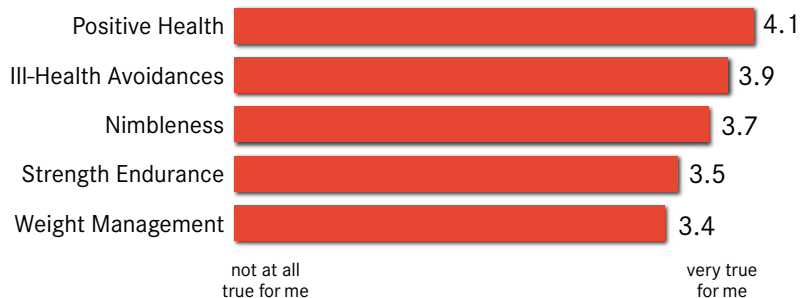
Americans walk an average of 4,903 steps per day,² and the market for devices that monitor physical activities like this has grown substantially in

continued on page 12

WHY DO OLDER CONSUMERS EXERCISE?







To achieve wellness and avoid ill health

RANKINGS FROM 1 to 5



¹ AARP Health Innovation Frontiers, Aug. 2104
² <http://obs.withings.com/us/activity>

CHARACTERISTICS OF THE SEVEN ACTIVITY TRACKERS USED IN THIS STUDY

DEVICE	RETAIL PRICE	FORM FACTOR	DISPLAY	ACTIVITY TRACKING
Fitbit Charge 	\$129.95	Wrist-worn	OLED display shows daily stats, time of day, mode info	Steps, distance, floors, calories, active minutes
Jawbone UP24 	\$129.99	Wrist-worn	2 LEDs indicate power, charge state, status	Steps, distance, calories, active time
Lumo Lift 	\$79.99	Clip-on magnetic clasp	None	Steps, distance, calories
Misfit Flash 	\$49.99	Wrist-worn, Clip-on, pocket	12 LEDs indicate goal progress and time of day	Steps, distance, calories
Spire 	\$149.95	Clip-on	None	Steps, calories
Withings Pulse O2 	\$119.95	Wrist-worn, clip-on, pocket	OLED touch screen display shows daily stats, time of day, heart rate, blood oxygen, run stats	Steps, distance, elevation, calories burned
Withings Activité Pop 	\$149.99	Wrist-worn	Analog display shows time and progress toward goal	Steps, distance, calories

	SLEEP TRACKING	BATTERY LIFE	WATERPROOF?	OTHER FEATURES
	Automatic tracking with silent alarm	Charge every 7-10 days	No: sweat, rain, splash resistant	Caller ID (with compatible phones)
	Manual start/stop tracking with silent alarm	Charge every 14 days	No: splash resistant	Vibrating “idle alerts”
	None	Charge every 5 days	No: sweat water resistant	Tracks posture, vibrating posture reminders
	Automatic tracking	Replace battery every 6 months	Yes: up to 30 meters	Basic remote control of home automation features
	None	Charge every 7 days	No: splash and water resistant	Measures breathing— inhalation and exhalation times, breath rate, deep breaths, apneic events
	Manual start/stop tracking	Charge every 14 days	No	On-demand heart rate and blood oxygen level
	Automatic tracking	Replace battery every 8 months	Yes	Analog watch and alarm

recent years. As of November 2014, one of every 10 Americans owned an activity tracker,³ and more than 70 percent of U.S. consumers knew what they are. Retail sales nearly doubled from 2013 to 2014, reaching \$489.4 million.⁴ According to health analyst firm Parks Associates, digital products, services and programs that support consumers 50-plus in physical fitness endeavors represent a cumulative \$8.5 billion revenue opportunity over the next five years.⁵

Twenty-five percent of activity tracker owners are age 55-plus,⁶ yet attitudes toward these devices have been mixed. At the end of a previously conducted study at Georgia Tech, five of eight participants unclipped and unplugged, citing data inaccuracy, physical discomfort and doubts about the trackers' overall usefulness.⁷ Studies at Georgia Tech the following year also reported ease of use to be a challenge.⁸ However, demonstrating benefits over time may encourage adoption.⁹

Furthermore, data accuracy can vary across individuals, activities, devices and types of data. Research indicates that activity trackers can generally count steps within 10 percent accuracy but vary significantly in accuracy for reporting the number of calories burned, over- or under-predicting by 13 to 60 percent.¹⁰

The need among consumers 50-plus

➤ Approximately one of every three Americans is over 50—and these individuals are living longer than ever before. The quality of their years is just as important as the quantity, and they are searching for tools to help them stay healthy and productive as they age—specifically tools that monitor progress toward wellness goals (steps, distance or elevation walked, for instance) and alert them to negative health developments (such as abnormal glucose or heart rate readings).

Activity and sleep trackers hold great promise for this market. But what features make such a device engaging or annoying for a 50-plus consumer? How do such devices impact daily behavior? How do the consumers themselves rate the trackers in terms of usefulness?

This study aims to answer these questions and more by examining how 92 consumers age 50-plus used seven popular activity and sleep tracking devices over a six-week period. Devices were selected to represent a wide range of forms, capabilities and price points. The study looked at behaviors and usability challenges, asked about experiences and aspirations, and probed for unmet needs, marketplace gaps and latent demands—all working toward a vision for how the industry can better address marketplace gaps and meet latent demands in this lucrative market.

WHAT FACTORS WOULD GUIDE AN UPCOMING ACTIVITY AND SLEEP TRACKER PURCHASE?

Among this study's 92 participants:

74%
(67 participants) would reference user reviews

67%
(61 participants) would compare features

40%
(36 participants) would consult with family and friends

30%
(27 participants) would consult with health professionals



³ <https://www.npd.com/wps/portal/npd/us/news/press-releases/strong-holiday-season-ahead-for-wearables-as-fitness-device-awareness-doubles-according-to-the-npd-group/>
⁴ <http://www.wsj.com/articles/wearable-fitness-gadgets-fall-short-on-accuracy-but-theyre-good-cheerleaders-1420820247>
⁵ AARP Health Innovation Frontiers, Aug 2104
⁶ <https://www.npd.com/wps/portal/npd/us/news/press-releases/strong-holiday-season-ahead-for-wearables-as-fitness-device-awareness-doubles-according-to-the-npd-group/>
⁷ Fausset et al. 2013. Older Adults' Use of and Attitudes toward Activity Monitoring Technologies.
⁸ Preusse et al. 2014. Older Adults' Changes in Intent to Adopt Wellness Management Technologies.
⁹ Preusse et al. 2014. Activity Monitoring Technologies and Older Adult Users: Heuristic Analysis and Usability Assessment.
¹⁰ Stackpool et al. 2015. Are Activity Trackers Accurate?



ABOUT THE STUDY AND METHODOLOGY

> **What encourages consumers 50-plus to use activity and sleep trackers?** What deters them? This study aimed to answer these questions by providing seniors with activity and sleep trackers and measuring participants' experience with, attitudes toward and acceptance of the devices.

Like all HomeLab studies, it took place in participants' homes, allowing researchers to observe "real world" behavior in familiar, comfortable surroundings. The 92 participants—39 men and 53 women—represented a wide range of education, socioeconomic and family backgrounds. They were recruited from several counties in Georgia, with an average age of 65.

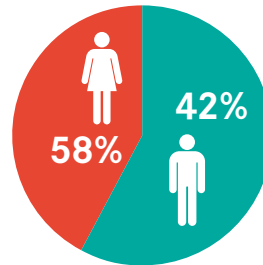
After completing a preliminary questionnaire and assessment for arthritis, participants were randomly assigned one of seven trackers: the Fitbit Charge, the Jawbone UP24, the Lumo Lift, the Misfit Flash, the Spire, the Withings Pulse O2 or the Withings Activité Pop. Then lights, camera and action. Researchers filmed as participants talked about their experience with similar technology, unpacked and set up their devices, and gave their opinions about the process.

For the next six weeks, participants wore their devices in daily activities and recorded their experiences in a diary. Concurrently, the trackers themselves recorded data in areas such as movement/"active time" and heart rate. At the end of the six-week period, participants gave their opinions through a video interview and final questionnaire.

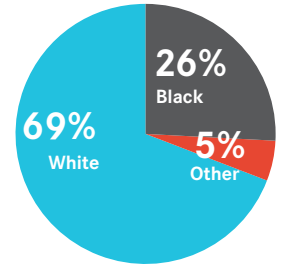
Details about the methodology, the results and next steps for innovation follow. This study aims to neither endorse nor rank any of the products but simply relay the findings to provide invaluable feedback for product designers, investors and the marketplace at large.

THE PROCESS, PARTICIPANTS AND DEVICES

DEMOGRAPHIC INFORMATION



GENDER



RACE

Participants maintained a diary, and usage data was collected via APIs

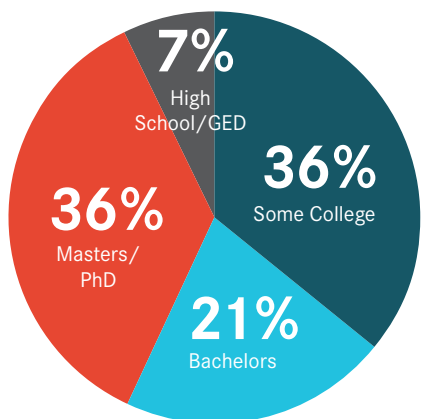


INITIAL INTERVIEW

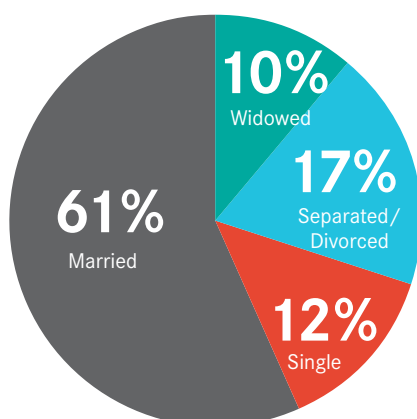
SEVERAL QUESTIONNAIRES WERE ADMINISTERED DURING THE INITIAL INTERVIEW



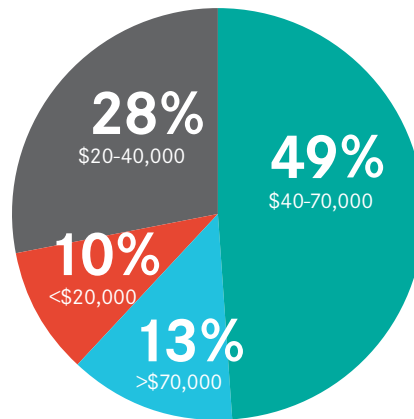
- ✓ DEMOGRAPHIC INFORMATION
- ✓ LEVEL OF ACTIVITY
- ✓ AMOUNT & QUALITY OF SLEEP
- ✓ COMFORT WITH TECHNOLOGY
- ✓ EXERCISE MOTIVATION FACTORS
- ✓ DEVICE SET-UP EXPERIENCE



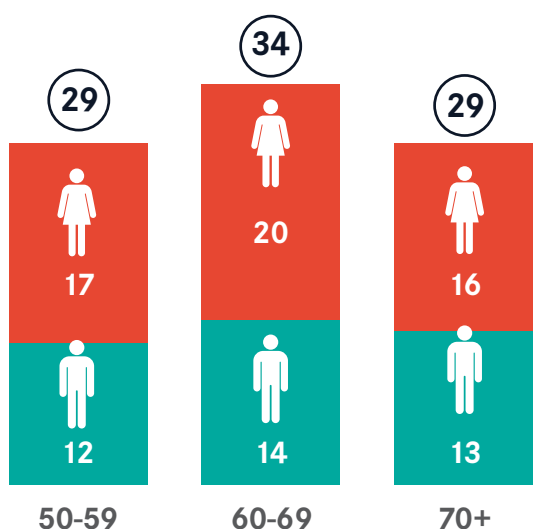
EDUCATION



MARITAL STATUS



INCOME



PARTICIPANTS BY AGE GROUP

SEVERAL QUESTIONNAIRES WERE ADMINISTERED DURING THE FINAL INTERVIEW TO ASSESS

- ✓ DESIRABILITY
- ✓ SATISFACTION
- ✓ EXPERIENCE WITH DEVICE
- ✓ FEELINGS ABOUT VARIOUS USABILITY ATTRIBUTES

➤ **Our empirical research actively involves consumers in the design and development of new products while giving companies a better understanding of the needs and wants of the growing 50-plus demographic.** Our open-insights model enables us to publicly share the outcomes of our consumer product testing, with the aim of fueling wider development of breakthrough products and services.



THE PEOPLE: Participants for this study were recruited from the HomeLab participant database and through word of mouth. All participants were over the age of 50, fluent in English and had an Internet-capable computer, tablet or smartphone in the home. On average, participants rated their health “good” or “very good,” stating that health problems “seldom” or “sometimes” stood in their way.



THE PROCESS: During the initial appointment, participants were administered questionnaires that gathered demographic information and background in areas such as health, technology experience, the amount and quality of their sleep, activity levels and exercise motivations.

Activity trackers were randomly assigned to participants; however, compatibility issues with some participant smartphones, tablets and computers posed restrictions and resulted in uneven distribution.

After setting up the device—a process recorded on video by the researchers—they completed another questionnaire about the set-up process and were interviewed about their feelings and experience during set-up, from opening up the device to charging it up and interacting with it.

During the six-week evaluation period, participants logged their experiences in a diary, with daily entries for the first week and weekly entries for the remainder of the study. For each entry, participants rated user experience from “very frustrating” to “very delightful,” gave the reasons for their ratings and noted new observations and other comments. Information captured by the activity trackers for the participants’ activity levels, device usage and exercise patterns were sent to a database for analysis.

What did participants think about the experience overall? At the end of the evaluation period, they provided feedback in final video-recorded interviews covering cognitive and physical ergonomics, aesthetics and convenience and any suggestions for improvements. Through a series of questionnaires, they rated their device’s desirability, their satisfaction with it and the overall experience wearing it, charging it and using it, based on criteria such as frustration and ease of use.

Participants were compensated \$30 for the initial appointment and \$70 for the final appointment.



THE DEVICES: To represent the diversity of the activity tracker market in terms of form, capabilities and price, HomeLab selected seven off-the-shelf activity trackers. Devices were chosen to represent a variety of form factors, feature sets, alert methods, charging configurations and information displays. All had a price point of \$150 or lower.



RESULTS AND DISCUSSION

> **At the beginning of our study, the majority of participants expressed familiarity with and optimism toward sleep and activity trackers.** In the initial interviews, 68 participants said they had heard of trackers or similar devices or technologies. Over half reported having a positive impression of these devices. Women expressed more likelihood than men to purchase a tracker.

After the six-week trial, the perceived value of trackers in general had gone up; however, participants' actual experiences with the devices did not deliver on expectations.

Trackers generated awareness, motivation and behavior change. Overall, 67 percent stated that the activity and sleep tracker was beneficial or of value. The experience made them aware of activity levels and overall activity and sleep patterns and motivated them toward healthy behaviors.

Participants reported the most enjoyable aspects of the experience to be knowledge gained about daily activity and sleep patterns, motivation from seeing progress toward goals, confirmation of current activity levels, and device ease of use. For instance, of the 45 participants who had activity trackers with sleep monitoring capabilities, 40 percent monitored their sleep for the duration of the study. Ten participants identified sleep monitoring as the most enjoyable aspect of using the device, and eight said they actually changed their sleep behavior.

Yet frustrations abounded. For 89 percent, difficulties started during the set-up process; in fact, 81 percent of participants age 70-plus were not able to set up their trackers without assistance. Top frustrations included perceived data inaccuracy, lack of instructions, device malfunctions such as lost data and syncing issues and difficulty putting on the device. Over a third found their device to be uncomfortable.

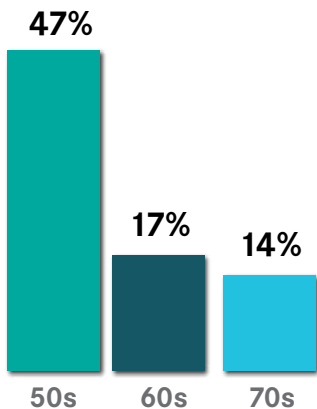
Trackers were abandoned. Many participants didn't wear their trackers for the full duration of the six-week study—the average was 32 days. Those

5 Participants averaged a score of five (on a scale of one to seven) for comfort with technology.

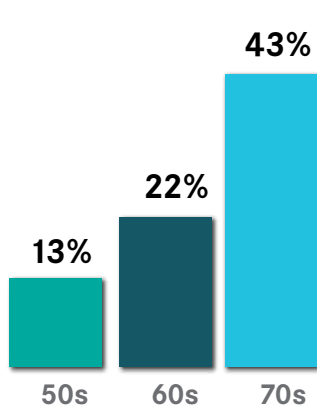
45% of users said they were more motivated toward healthy habits.

46% of users said they were more active, slept better or ate more healthfully.

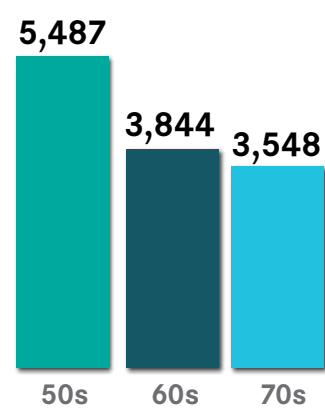
CONSISTENT USERS



EARLY QUITTERS



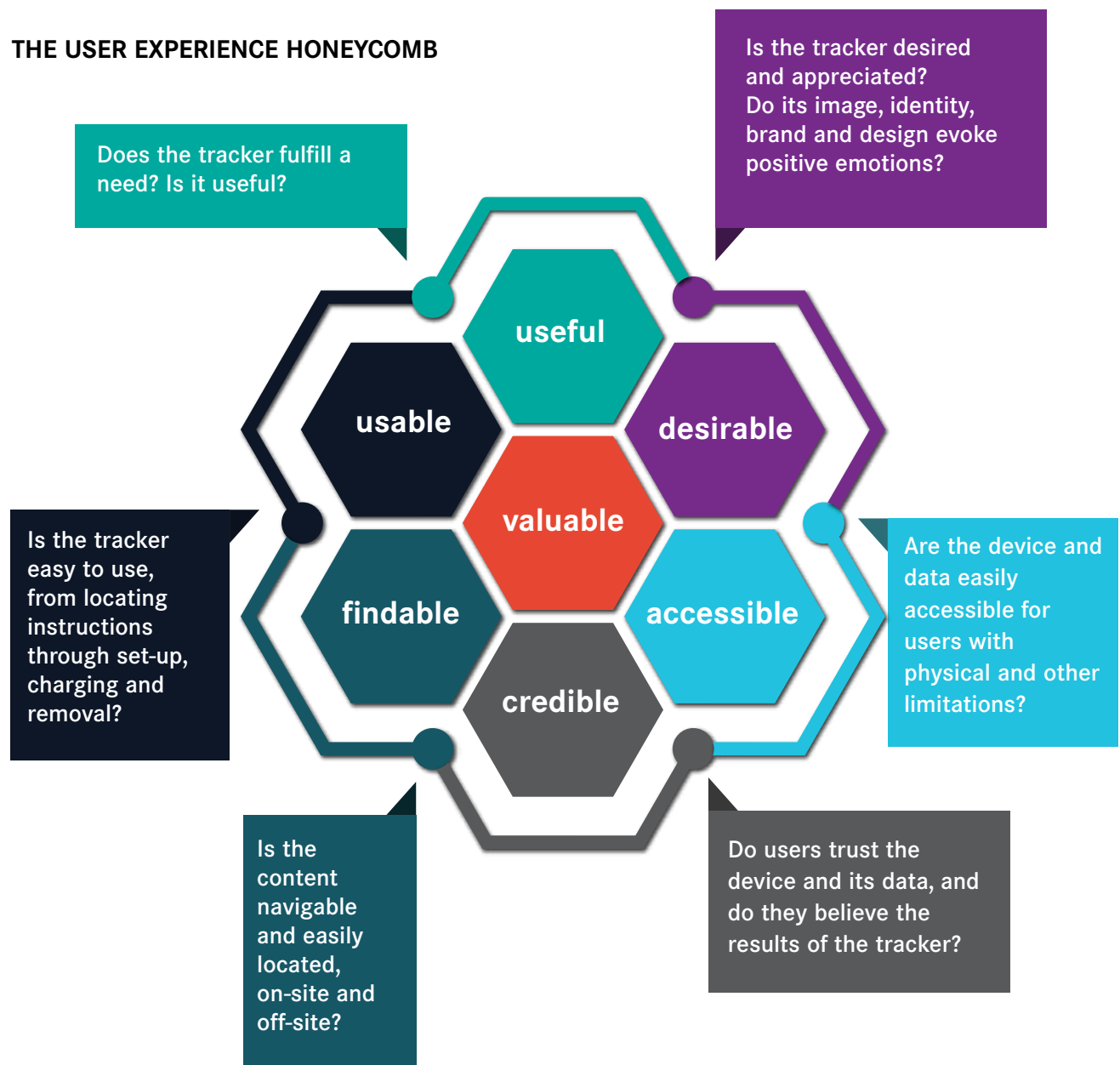
AVERAGE STEPS PER DAY



who wore their trackers consistently tended to be between the ages of 50-59, and those who quit within 14 days tended to be 70 or older.

Those who quit during the first 14 days said it was because the device was not comfortable to wear or did not fulfill a specific need. Many desired more specific health tracking capabilities, and some claimed that the devices were not accurate enough. Those who quit after the first two weeks of the study tended to see activity and sleep trackers as motivational but abandoned theirs due to syncing issues, perceived data inaccuracies, difficulties using the app or the lack of a tracker display that showed their progress.

THE USER EXPERIENCE HONEYCOMB



Quitters used a variety of devices, with no common features among them. No differences were noted between male and female quitters.

Interest waned. Furthermore, despite high levels of perceived value, only 42 percent of respondents expressed interest in using a tracker in the future.

Why was this the case? Ultimately, product adoption depends on perceived value. The User Experience Honeycomb is one way to analyze and express this value.

These criteria, when combined, form the “sweet spot” of value. How did the activity and sleep trackers in this study fare?

◆ Usefulness

Does the tracker fulfill a need? Is it useful?

Trackers increased awareness, motivation and behaviors. At the end of the six-week trial, 71 percent of participants reported increased awareness of activity, sleep or eating habits, 45 percent reported increased motivation and 46 percent said they changed their behavior. Participants said they enjoyed interacting with the technology when it provided them with constructive and usable feedback on their goals.

Yet other participants did not find them useful. Some participants lost interest after figuring out their general activity and sleep patterns. They said that they could see the trackers being beneficial for someone else or if a specific need or goal arose in their own life, such as a doctor’s recommendation to lose weight.

Participants who did not find the devices to be useful said that they wanted more data related to their specific conditions and that they wanted notification if the data indicated something of concern. More sensors relevant to health conditions was the most common suggestion for improvement.

◆ Usability

Is the tracker easy to set up and use?

Only some interactions aligned with expectations. “Like a watch.” “A no-brainer.” Participants considered several aspects of device set-up to be easy, specifically basic functions like charging the device and pressing and holding the power button. They cited the similarities between the tracker’s basic functions and familiar technologies such as cell phones and praised long battery life that necessitated only occasional charging. Nearly all participants reported ease removing their devices, thanks to simple functions for unclipping and device structures that were similar to a watch.

However, several aspects of the products—packaging and putting on the device in particular—did not align with the expectations of these older consumers. Although most participants in the end rated removal of the device

77%
of participants reported activity and sleep trackers to be—or have the potential to be—useful.

“
At the end of the day I can look at my activity tracker, and if it’s low I can go for a walk around the block before I go to bed or I can dance around my living room.”

from its packaging to be easy, some initially anticipated challenges related to theft control. Many retrieved tools such as knives and scissors for the task, even though these tools were not necessary.

In addition, some participants wrongly assumed that the tracker would function in a similar fashion to devices they already knew and used, such as a pedometer or a watch. In several cases, participants simply put on their devices and assumed the set-up process was complete.

Syncing was difficult. Confusing, frustrating, inconvenient—syncing trackers with Bluetooth was a problem. Many participants didn't realize their trackers needed to be connected in the first place. Just under half (47 percent) experienced inconsistent connections between the tracker and their technology, making them unsure as to whether or not data was being recorded. Some participants were not able to troubleshoot syncing issues and simply gave up trying. If the device had a display, they used the activity tracker as a stand-alone device, akin to a pedometer, instead. Those whose trackers lacked data displays often stopped using the devices altogether.

More instructions were needed. In the end, participants needed more support in figuring out how to set up and use their activity and sleep trackers. Eighty-one percent of participants 70-plus could not finish setting up their device without assistance.

89%

of participants had difficulty in device set-up process.

47%

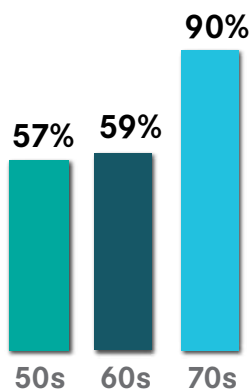
of participants had an issue with syncing the device—16 percent during set-up and 34 percent while using the device during the study.

Credibility

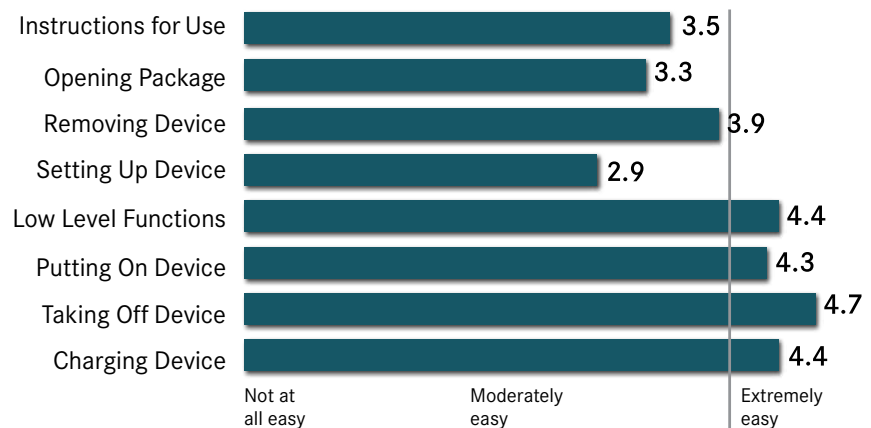
Do users trust the device and believe the data?

Perceived data accuracy was very important. Fifty-five percent of participants did not trust the accuracy of the data the tracker reported and wanted to better understand how it was collected. For some, this lack of credibility contributed to their decision to abandon the device during the

% OF PARTICIPANTS THAT HAD DIFFICULTY DURING SET-UP



PARTICIPANTS RATED SOME SET-UP FUNCTIONS AS EASY, OTHERS AS DIFFICULT | RATINGS FROM 1 TO 5



study. In fact, perceived inaccuracy of the data was the number one frustration among participants.

The data weren't what participants expected. In some cases, the data reflected on a tracker's display or graph did not reflect participants' perceptions of their activity or sleep levels. In particular, if participants looked at graphs on an app and did not see the most up-to-date information, they felt like they were not receiving credit for their current activity. This may have been a result of the app not being synced with the device.

In some situations, sleep or step counts were much lower than expected, which could have been due to the placement of the device on the body or clothing. In other cases, participants expected to get credit for non-walking activities, such as swimming or cycling, that their trackers were not capable of recording.

"Which numbers should I believe?" Participants also perceived inconsistencies in the data, such as different reports for the same activity. For example, one participant noticed a higher step count when wearing the device in certain locations. For another, the device and the smartphone reported different readings.

"How does this thing work?" In the end, participants wanted to know how their devices collected data, but many could not find an easy-to-understand explanation.

◆ Findability

Is the content easy to locate and navigate?

Some instructions were hard to find. Because device instructions are critical to consumers 50-plus, it is very important for these instructions to be easy to find. In our study, 39 percent of participants had some difficulty finding the instructions. Participants had no problems with this when the instructions were positioned in front of or directly underneath the device. However, 29 percent of the time, participants searched for paper instructions first, overlooked "hidden compartments" within the packaging and sometimes never found instructions on their own.

Participants struggled to find answers. Instructions on how to operate features of the tracker or the app were often seen as incomplete, unorganized and unclear. For instance, many devices simply directed participants to a website address or instructed them to get the app rather than include a detailed instruction manual. As a result, participants struggled to find answers to their questions during set-up.

They also had trouble finding information while using their devices, such as explanation about how the tracker collected data. Participants reported difficulty figuring out the layout of the app interface and how to navigate through it to find the information they were looking for. Some discovered

“

I don't know if you have to move your arms, move your hips.

I don't know how it registers movement.”

“

It seemed very inconsistent in collecting data.”

39%

of participants had some difficulty finding the instructions.

app features only by accident and were unable to relocate them after logging out. Other participants were not able to find several app features even after six weeks of use.

◆ Desirability

Do users appreciate the tracker and consider it fun and engaging?

Comfort mattered. Mean ratings for putting on and wearing devices fell into the “moderately easy” and “easy” categories. However, 34 participants reported discomfort due to band inflexibility, incorrect band size and clasps on wrist-worn trackers that irritated the skin. Several participants claimed to have developed a rash after wearing their trackers consistently. Participants whose trackers attached to their clothing reported discomfort from skin irritation and wardrobe constrictions.

Style mattered. Desirability is an inherently subjective experience. In our study, some participants considered their trackers to be attractive while others were reluctant to wear them in public. Ultimately, participants wanted devices that fit their style and fashion sense. Some wanted colorful devices while others preferred their trackers to be inconspicuous.

Alerts and progress updates engaged participants. Participants said they enjoyed using the trackers because the devices helped them become more educated, aware and motivated about their health. They liked having this information on the device display, if their tracker had one. They felt that notifications provided welcome insights or encouragement and that being able to see progress toward health goals generated additional awareness and motivation. Overall, participants wanted up-to-date information, presented on a device display, from their activity and sleep trackers.

◆ Accessibility

Are the device and data easily accessible for users with physical limitations?

Many features were easy to use. Overall, 82 percent of participants reported using the hardware controls to be “easy” or “extremely easy.”

Small pieces caused problems. However, participants had difficulty fastening clasps on wrist-worn devices and manipulating small pieces during assembly. Several participants said they would have preferred pre-assembled devices.

Instructions and displays were tough to see and understand. For 78 percent of participants, the font size of the instruction manual was too small. The presentation of unfamiliar icons and words and symbols on small screens, often with low contrast, also presented problems.

“

It was bothersome wearing it. ... I found myself moving it from one position to the next.”

“

{The device} doesn't go in {to the band} very easily.”



NEXT STEPS FOR INNOVATION

> What did participants enjoy most about using the trackers?

The top four things were:

- Learning their daily activity and sleep patterns
- Receiving motivation by seeing progress made toward a goal
- Having their current activity levels confirmed
- Finding the device to be easy to use

And the top frustrations included:

- Perceived inaccuracies in the data
- Lack of instructions
- Device malfunctions, lost data and devices that did not sync in a timely manner
- Devices that were too difficult to put on

What needs to be improved for greater adoption and usefulness? What will the next generation of activity trackers for consumers 50-plus look like?

Based on our interpretation of the research, the ideal tracker for the 50-plus consumer would be:

Informative, instilling confidence with materials that explain how activity and sleep trackers work and how they support health and wellness goals. This includes a brief explanation of how the device records information and gathers feedback, to ensure optimal use.

Simple, with a straightforward set-up process that includes better indicators for opening the package and removing the device as well as more detailed, step-by-step instructions for syncing. Because participants rely so much on instructions for the app and device, we recommend that this guidance be systematic, well organized and thorough.

Accessible, with packaging and support materials that are easy to open and product instructions that are clear and easy to find. Features should accommodate the functional limitations associated with aging, such as lower visual acuity, lower contrast sensitivity and lower capacity for sequence-based memorization activities.

Invisible, unobtrusively monitoring activity and sleep without discomfort or annoyance and with little intervention needed on the part of the user. Participants said that a waterproof product that requires no charging or manual syncing should be standard and that comfort and style are important for preventing tracker abandonment.

Instantaneous, giving users a view of progress that is up to date. According to participants, a display is a must, and the user interface on the tracker's app should be uncluttered and clearly focused on the key information they are looking for.

“

I enjoyed using it when I didn't get so frustrated by its inability to work”

Targeted to consumers 50-plus and their activities, with information tailored to their health and wellness goals of achieving positive health and avoiding ill health. Participants suggested adding biometric data—such as blood pressure, blood sugar, heart rate and caloric intake—to address their age-related health conditions and give them credit for other kinds of activities.

Meaningfully engaging, with timely notifications of progress, such as when a user is near or at a milestone. Participants also said they would like to receive alerts that spur them to take action if the data indicate a particular health concern. To be meaningful, these alerts must be timely, and the data must be perceived as accurate.

Participants' top 10 specific recommendations for device design follow, suggesting that an ideal activity and sleep tracker would:

1. Be able to detect more biometric data (such as blood sugar, heart rate and caloric intake)
2. Feature a more comfortable band
3. Explain how tracking works, so users could feel confident in the accuracy of the data
4. Include a display
5. Be accompanied by better, more detailed instructions
6. Have a nicer-looking design
7. Leverage data monitoring to provide more alerts, such as progress toward goals and identification of a health situation
8. Display time like a watch
9. Be waterproof
10. Report non-health functions



Project Catalyst: Galvanizing the longevity economy

People over 50 are online, connected and using technology that is intuitive and consumer-friendly. But not enough of this technology exists to meet their needs, especially in the categories of health and wellness and digital health.

Project Catalyst aims to change this scenario.

We recognize the huge opportunity—a digital health market forecast to generate \$30 billion in revenues over the next five years and \$70 billion already spent across nine categories of health and wellness products and services. And we see the potential for developers to achieve a double bottom line: increasing revenue while providing Americans with products that improve their lives as they age.

To support this effort, AARP's Project Catalyst has convened health care's most innovative leaders in a pioneering program. The mission: to collect valuable insights into 50-plus consumer behavior and share these insights with developers and investors at the front end of product ideation and development.



GTRI HomeLab: User feedback that leads to innovation

Project Catalyst's Insight Partner, Georgia Tech Research Institute HomeLab, designs and executes pilot programs with selected startups and members of the 50-plus community.

Working through a multidisciplinary team of scientists, engineers and older adults, HomeLab delivers in-home ethnographic studies aimed at providing the most accurate, actionable data of everyday product usage.

Through this research, consumers provide valuable feedback on the functionality and design of products. The ultimate mission: development of innovative technologies promoting health, wellness and independence for older adults.

AARP is a nonprofit, nonpartisan organization, with a membership of nearly 38 million, that helps people turn their goals and dreams into real possibilities, strengthens communities and fights for the issues that matter most to families such as health-care, employment, income security and retirement planning.

AARP Innovation@50+ Vision

AARP's vision is to catalyze innovation and entrepreneurship in the market place around breakthrough products, experiences, and business models for health technologies benefiting the 50+.

At AARP we are collaborating with the industry in the following areas:

- **MARKET AWARENESS:** Raising awareness of the market opportunity, needs, and wants of the 50+
- **MARKET DEVELOPMENT:** Influencing ecosystem development for consumer centric health tech for the 50+
- **INNOVATION SHOWCASE:** Creating platforms for showcasing innovative technologies
- **MEMBER INVOLVEMENT:** Engaging AARP members in providing early feedback on emerging trends and innovation