RESEARCH REPORT

The State of Internet of Things in the Home

PART I: HOW BRANDS CAN BE RELEVANT TO THE NEXT WAVE OF SMART HOME IOT BUYERS

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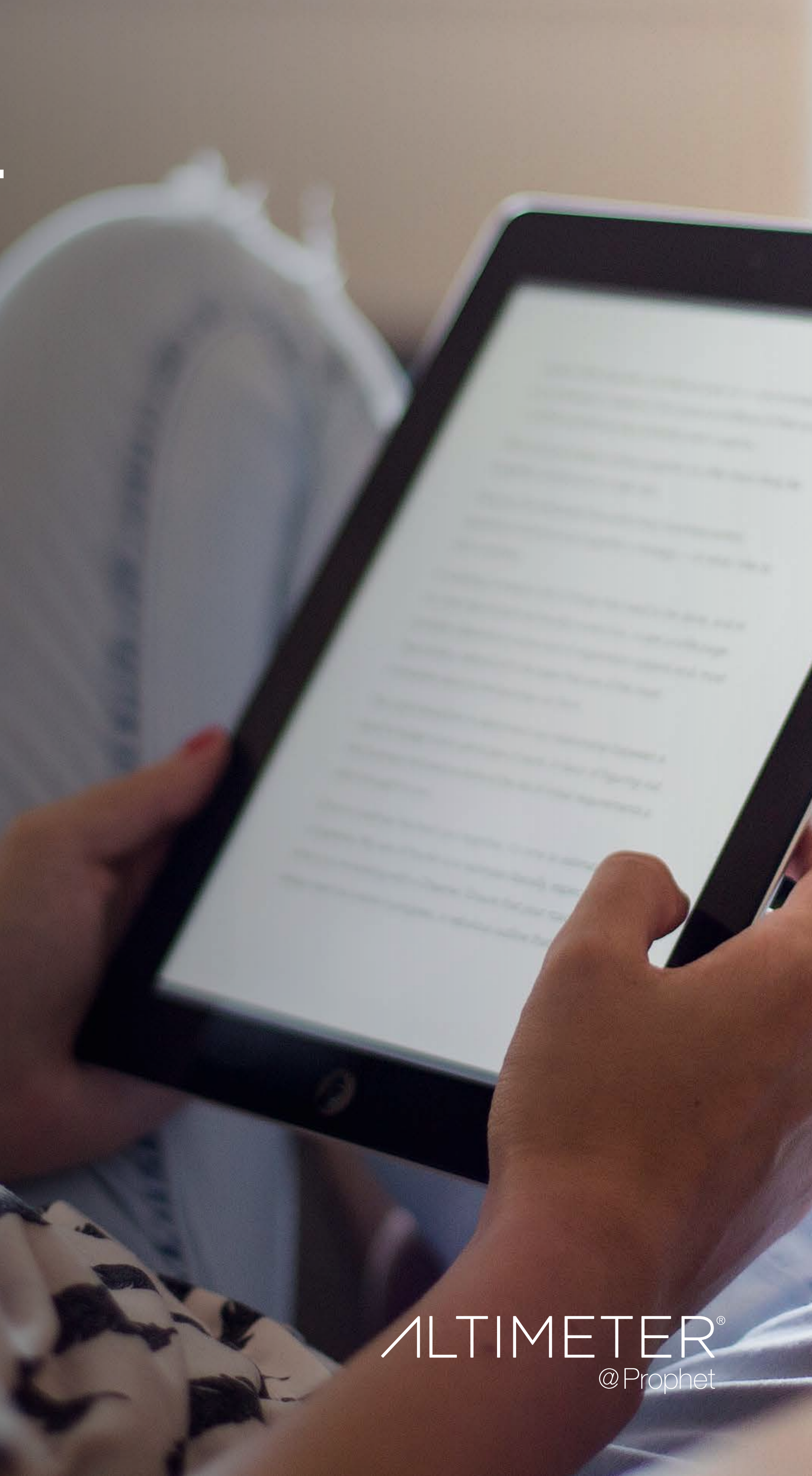

INCLUDES INPUT FROM 18 BRANDS, VENDORS AND THOUGHT LEADERS AND 6,339 GLOBAL SURVEY RESPONDENTS

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Executive Summary

The “Internet of Things” (IoT) market for the home — in which disparate devices work together to create a “smart home” — is in its early days. Some connected devices have long been in use in municipal life, at work, and in our personal lives (e.g., smartphones and “wearables”). But while home security systems and smart utility meters have been around for years, the “digital transformation” of the home is still just getting off the ground.

Today, the technology to support low-power connectivity within a shrinking footprint is getting better and better, creating new opportunities to embed connected intelligence into everyday products. While the smartphone and its apps have helped to create a consumer mindset ready for smart, connected home IoT devices, consumers struggle with the relevance and value of connected products.

Our research shows that while adoption for home IoT products is in the early stages — only 23% of consumers own at least one IoT home product, like a smart TV — purchase intent is very strong. In China, especially, 70% of consumers intend to buy an IoT home product in the next year. Consumers who lag in adopting connected products struggle with their value proposition but are attracted by their health, security, and safety benefits. We anticipate three waves of adoption over the next several years and, if consumer intent is realized, an average global growth of 265% (in units sold) in the next 12 months (see Figure 12).

In this report, we answer questions that help brands position themselves for this market: Who is the smart home IoT product buyer? What does the next wave of buyer look like? What drives consumers to purchase, and what obstacles do they perceive? What products for the home do consumers want to be smarter and connected?

Key Findings

- **“Early Adopters” are frustrated by a lack of automation at home and view connected technology as the solution.** They are young, skew male, and are less price sensitive. Once aware of a new connected product, they are more likely to purchase it. Although they own primarily connected entertainment systems, like smart TVs, their priorities for the connected home are health and safety oriented, exposing opportunities in the market (see Figure 2).

- **“Fast Followers” are more concerned with the ease of use of home IoT products and expect these devices to learn their habits, becoming more useful over time.** Although their incomes are on par with Early Adopters, they are much more price sensitive, less brand conscious, believe connected products shouldn’t cost more, and less likely to value premium products (see Figure 3).

- **Although “Laggards’” awareness of IoT for the home in some product categories is on par with awareness of Early Adopters and Fast Followers, they are much less likely to convert to purchase.** Having the latest technology products is less important to Laggards, who skew older and just slightly more female. They are indifferent to what is “in” right now, are not focused on premium products, and prioritize the money-saving benefits of these products more than any other segment (see Figure 4).

- **Consumer priorities for health and safety — and for product attributes like relevance and value — are leading drivers for the next wave of adoption.** Device aesthetics and prestige of ownership lag in priority. Again, significant cultural differences between China and Western cultures should be studied by brands that target both markets (see Figure 11).

- **The Chinese market for home IoT products is particularly promising, especially when it comes to ownership of connected devices and intent to purchase.** Chinese consumers are the least price sensitive of any region and focus more than consumers in any other region on health benefits when making purchasing decisions (see Figure 11).

- **Our research findings point to three waves of home IoT product adoption.** We believe near-term adoption will focus on the Home Security and the Home Environment Control product categories, followed by the Home Entertainment and the Health & Fitness categories, and, lagging, the Bed, Bath & Kitchen and the Pet, Child & Elderly Care categories (see Figure 13).

What Is the Smart Home?

Home product manufacturers and consumers have wide-ranging perceptions of what defines a “smart home.” Some see a future in which any electrified home product could someday be smart and connected. For this report, we define the smart home as:

“A home of interconnected technology devices whose connection with a remote service provider adds value, customized to the homeowner’s unique use, habits and needs.”

This definition recognizes the need for products not to simply be connected, but to be truly smart by learning users’ habits and minimizing the need for interruptive notifications and interaction.

Understanding IoT for the Home Consumer

To form a clear picture of where the smart home IoT market is headed, we started by researching who's buying connected products today, who is likely to buy in the next phase, and longer-term prospects.

We also looked at the frustrations these consumers experience managing their homes that may be solved by connected home products and what drives them to buy these products. And, finally, we sought to understand their interests as represented by the topics they engage with online, devices they own, their buying behavior, and their life attitudes.

Measuring consumer perceptions of emerging technology products, however, isn't easy without some consumer education. Our research approach, therefore, was to first baseline consumer understanding of IoT products for the home and then introduce detailed scenarios to re-measure consumer interest and intent and purchasing drivers and barriers. This approach reflects the market today, which is focused on driving relevancy and value to educate consumers. (For a more detailed look at our methodology, refer to this report's appendix.)

Who Is Buying Smart Home Products?

Our research focused on three consumer adoption segments for the IoT for home ("smart home") products:

EARLY ADOPTERS
Consumers who are currently buying connected products

FAST FOLLOWERS
Consumers likely to buy in the next wave of product adoption

LAGGARDS
Consumers who lag in technology adoption

Early Adopters, Fast Followers, and Laggards are primarily middle-class consumers, although we found 26% of Laggards belonged to a higher income bracket versus 18% of both Early Adopters and Fast Followers. We also found significant differences in gender among these segments. Although 57% of Early Adopters skew male, the gender gap narrows among Fast Followers and Laggards. We believe the slightly higher proportions of male buyers in this segment is due to their leading purchases of smart TVs (77% male vs. 65% female[1]) and VR headsets (22% male vs. 13% female).

As is typical of technology adoption curves, our research showed that younger consumers — those who are 25 to 34 years old — dominate early adoption, comprising 41% of Early Adopters, whereas 55-to-64-year-olds represent just 5% of this consumer segment. While the age range for early adoption is in line with previous waves of technology adoption (such as social media), the dominance of male buyers was unusual. Here are more details on each segment (see Figure 1):

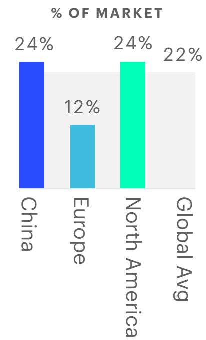
FIGURE 1

EARLY ADOPTERS

4+ Connected home devices owned

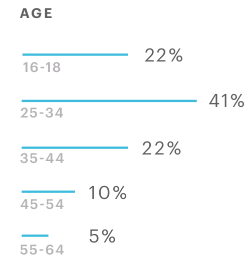
Agree that having the latest technological product is very important

4+ hours spent online on PC, laptop, tablet, *and* mobile per day



57% MALE

43% FEMALE

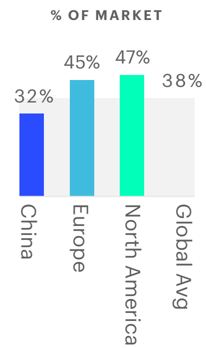


FAST FOLLOWERS

4+ Connected home devices owned

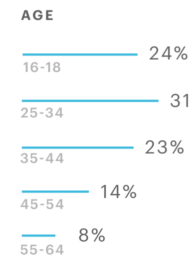
Are neutral about having the latest technological product

1-4 hours spent online on PC, laptop, tablet, *or* mobile per day



55% MALE

45% FEMALE

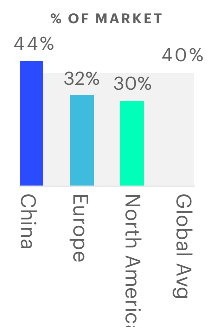


LAGGARDS

<3 Connected home devices owned

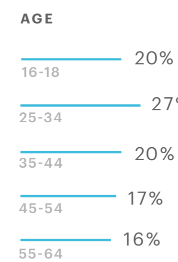
Disagree that having the latest technological product is very important

<4 hours online on PC, laptop, tablet, and/or mobile per day



49% MALE

51% FEMALE



What and Why Consumer Segments Buy

With an understanding of what differentiates each consumer segment, our research dove deeper to find out what IoT for the home products consumers were interested in, what drove their interest and purchases, and what were the barriers to buying them. We divided these products into six categories:

HOME ENTERTAINMENT
Audio/visual entertainment systems, such as Smart TVs and speakers.

HEALTH & FITNESS
Devices in the home to measure and monitor health, such as sleep monitoring, air quality, remote vital health measurement (e.g., blood pressure, heart rate, etc.), and connected fitness equipment.

HOME SECURITY
Home security systems, such as remote door locks, video and monitoring for disturbances such as water leaks, flooding or fire.

BED, BATH & KITCHEN
Connected kitchen appliances (ovens, refrigerators, etc.).

PET, CHILD & ELDERLY CARE
Monitoring dependents/pets, learning toys, and remote chat/monitoring.

HOME ENVIRONMENT & COMFORT
Controlling heating/cooling, home digital assistants, energy use tracking.

Our research shows that, generally, Early Adopters, Fast Followers, and Laggards are interested in similar product categories, but they differ in terms of what drives their interest and especially what prevents them from considering those products in the future. Here is a look at the product categories and purchase drivers and barriers for each consumer segment.

Early Adopters

Early Adopters have started their smart home journey in the Home Entertainment category, with 59% of them reporting owning products in this category.

Early Adopters showed the strongest conversion rates — percentage of consumers who purchase when aware — of all segments in each product category, measuring at 70%. Even though 33% own connected home security systems and 48% own IoT health and fitness products, what drives them to adopt smart home devices is health and safety. The top three drivers for early adopters are “make me feel safer at home” (60%), “help me stay healthy” (59%), and “help me live a healthier lifestyle” (59%).

Like Fast Followers, ease of use and privacy are important, with 36% and 35%, respectively, indicating them as priorities. Early Adopters are the only segment, however, that named “is compatible with my smartphone” (32%) as a priority. They likely own enough home IoT devices to have experienced the pain of incompatibility between device control apps in this early market, which lacks technology standards that enable integration among devices. Interestingly, even though in North America we tend to think of home environment products (like the Nest smart thermostat) as favorites of Early Adopters, only 23% report owning them as opposed to home entertainment products, where we found 68% ownership (see Figure 2).

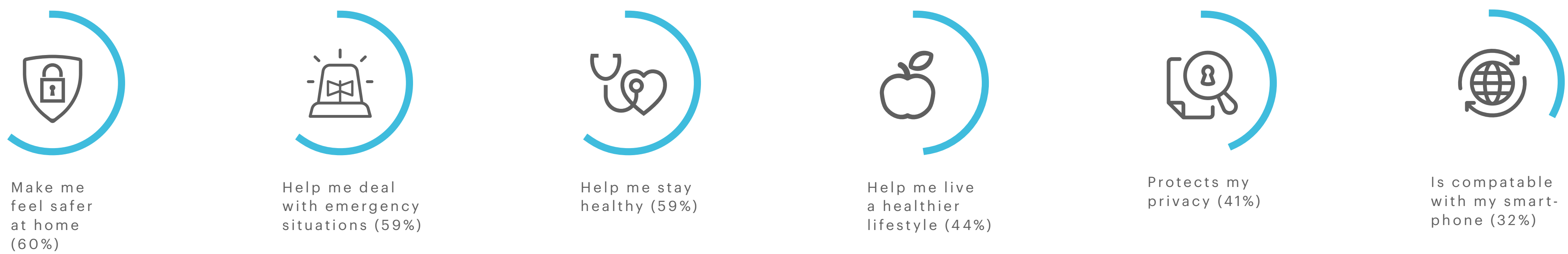
FIGURE 2

Early Adopters

BUYING INTERESTS AND PRIORITIES

SMART HOME PRODUCTS	FUTURE CONSIDERATION	AWARENESS	CONVERSION	OWNERSHIP	SATISFACTION	LIKELY TO REC'D
Home Entertainment	72%	84%	70%	59%	80%	86%
Health & Fitness	68%	82%	58%	48%	81%	80%
Home Security	75%	86%	38%	33%	80%	85%
Bed, Bath, & Kitchen	61%	60%	25%	15%	80%	85%
Pet, Child, & Elderly Care	56%	39%	23%	9%	83%	83%
Home Environment	70%	77%	29%	23%	88%	87%

MOST IMPORTANT FACTOR WHEN CONSIDERING SMART HOME CATEGORY



KEY: **OVER-INDEX** | **UNDER-INDEX**

Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: Early Adopters, n=1,512

Fast Followers

Closely resembling Early Adopters, 70% of Fast Followers report considering buying Home Security products in the future, the highest for any product category.

Health and safety concerns dominate their purchase drivers as well, along with privacy and ease of use (see Figure 3). Fast Followers are focused on using products to make life more enjoyable (43%) and helping to deal with emergency situations (41%), drivers that didn't appear among Early Adopters. The drivers of Fast Followers are more practical in nature.

Where Fast Followers diverge slightly from other segments is in their desire for these devices to "learn my habits and get more useful over time," at 33% (not shown in Figure 3). This desire reveals that Fast Followers may be particularly aware of the challenge OEMs are having defining the best user experience for connected products. (For example, when you return home and unlock your door through a smartphone app, do you really need to get a notification that your door has just been opened?) In order to get Fast Followers to adopt their products, device makers will need to minimize interaction and notifications for their devices. After all, can you call it "smart" if you need to constantly interact with it? Smart home hubs that control many devices will also need to take into account the current state and capabilities of all the connected products to avoid bombarding users with requests and notifications.

FIGURE 3

Fast Followers

BUYING INTERESTS AND PRIORITIES

SMART HOME PRODUCTS	FUTURE CONSIDERATION	AWARENESS	CONVERSION	OWNERSHIP	SATISFACTION	LIKELY TO REC'D
Home Entertainment	63%	79%	61%	48%	78%	82%
Health & Fitness	62%	74%	51%	38%	74%	79%
Home Security	70%	80%	31%	25%	75%	77%
Bed, Bath, & Kitchen	52%	48%	22%	11%	65%	83%
Pet, Child, & Elderly Care	44%	27%	22%	6%	77%	82%
Home Environment	64%	65%	24%	15%	82%	80%

MOST IMPORTANT FACTOR WHEN CONSIDERING SMART HOME CATEGORY

Make me feel safer at home (61%)

Help me live a healthier lifestyle (55%)

Help me stay healthy (53%)

Make my life enjoyable (43%)

Help me deal with emergency situations (41%)

Protects my privacy (37%)

KEY: **OVER-INDEX** | **UNDER-INDEX**

Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: Fast Followers, n=2,699

Laggards

The most significant difference we measured in our research was the distance between Fast Followers and Laggards, the larger market of late-stage buyers.

Our research shows that Laggards are cautious buyers. Their strongest intent to purchase was only 51% for Home Security products, but their 15% conversion rate has us draw the conclusion that they are years away from adoption, if at all (see Figure 4). For example, this segment led in priorities like “help me save money” and “won’t become outdated soon after purchase.” Although they are also middle-class, they are more price sensitive (see Figure 6 below), less concerned about trends and appearances, and much less likely to engage online (see Figure 7) and therefore less influential in the buying cycle of others. Ownership in product categories like Home Entertainment and Health & Fitness popular with Fast Followers were low among Laggards. For those products they own, they are slightly less satisfied with their purchase than other segments and less likely to recommend.

FIGURE 4

Laggards

BUYING INTERESTS AND PRIORITIES

SMART HOME PRODUCTS	FUTURE CONSIDERATION	AWARENESS	CONVERSION	OWNERSHIP	SATISFACTION	LIKELY TO REC'D
Home Entertainment	45%	68%	44%	30%	76%	76%
Health & Fitness	39%	63%	28%	17%	78%	78%
Home Security	51%	73%	15%	11%	77%	79%
Bed, Bath, & Kitchen	31%	41%	8%	3%	65%	83%
Pet, Child, & Elderly Care	27%	20%	11%	2%	80%	82%
Home Environment	44%	63%	15%	10%	74%	80%

MOST IMPORTANT FACTOR WHEN CONSIDERING SMART HOME CATEGORY

Make me feel safer at home (61%)

Help me deal with emergency situations (48%)

Help me stay healthy (44%)

Help me live a healthier lifestyle (43%)

Make my life enjoyable (43%)

Protects my privacy (39%)

KEY: **OVER-INDEX** | **UNDER-INDEX**

Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: Laggards, n=2,128

Common Frustrations

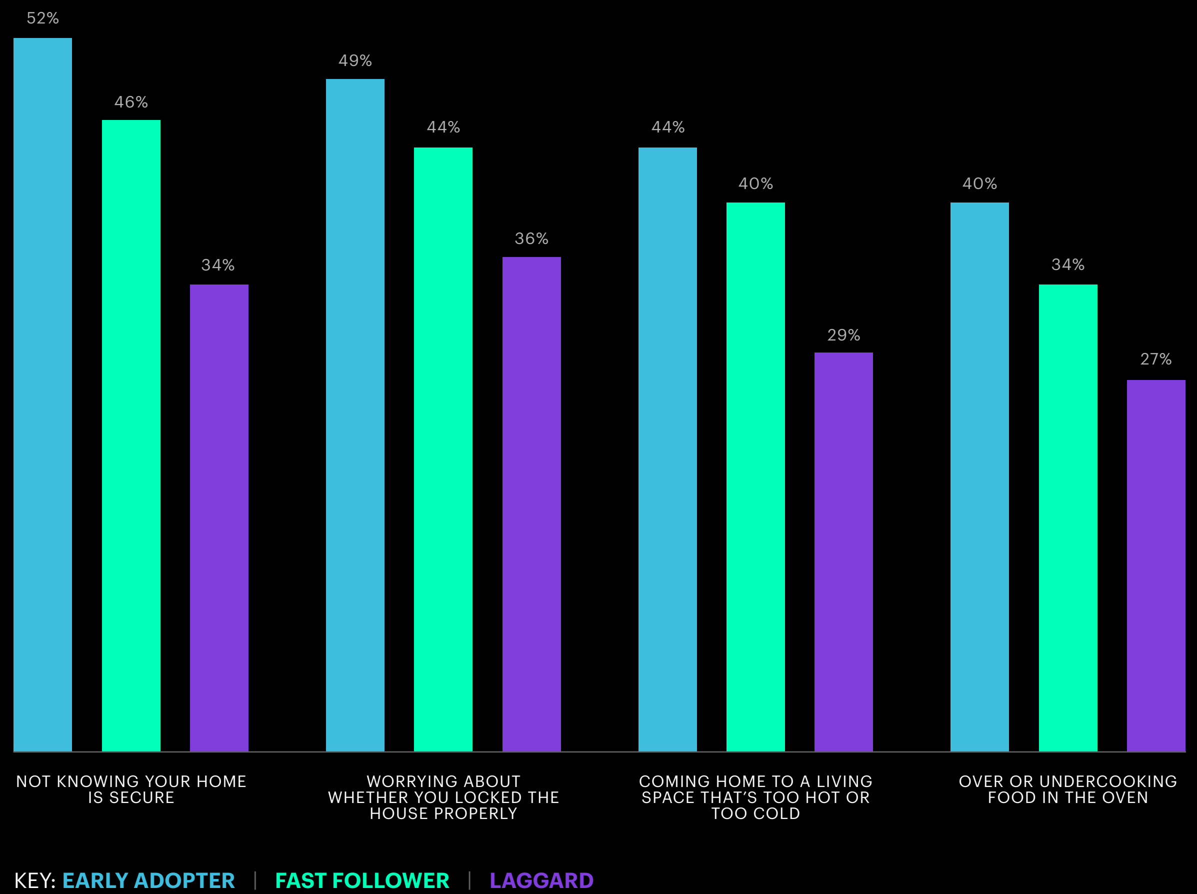
SOLVED BY HOME IOT PRODUCTS

What typical home management frustrations do consumers experience that may be solved by connected home products? Our research indicates consumers in all three segments focus strongly on home security. This focus connects to our predicted adoption horizons for smart home devices (see Figure 13), which shows the strongest conversion from awareness to intent. Even before mentioning IoT products in our survey, Early Adopters reported the highest level of frustrations for common situations, like not knowing whether their home is secure while they are away, and were more motivated to solve frustrations using technology than were other segments (see Figure 5).

The sections following will point out key areas of differentiation in priorities and barriers among consumer segments.

FIGURE 5

AMONG CONSUMER SEGMENTS, EARLY ADOPTERS REPORT HIGHER LEVELS OF FRUSTRATION WITH TYPICAL HOME LIVING SCENARIOS



Question: "Do you find any of the following situations frustrating?" [Top 4 frustrations, globally] Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: n=6,339

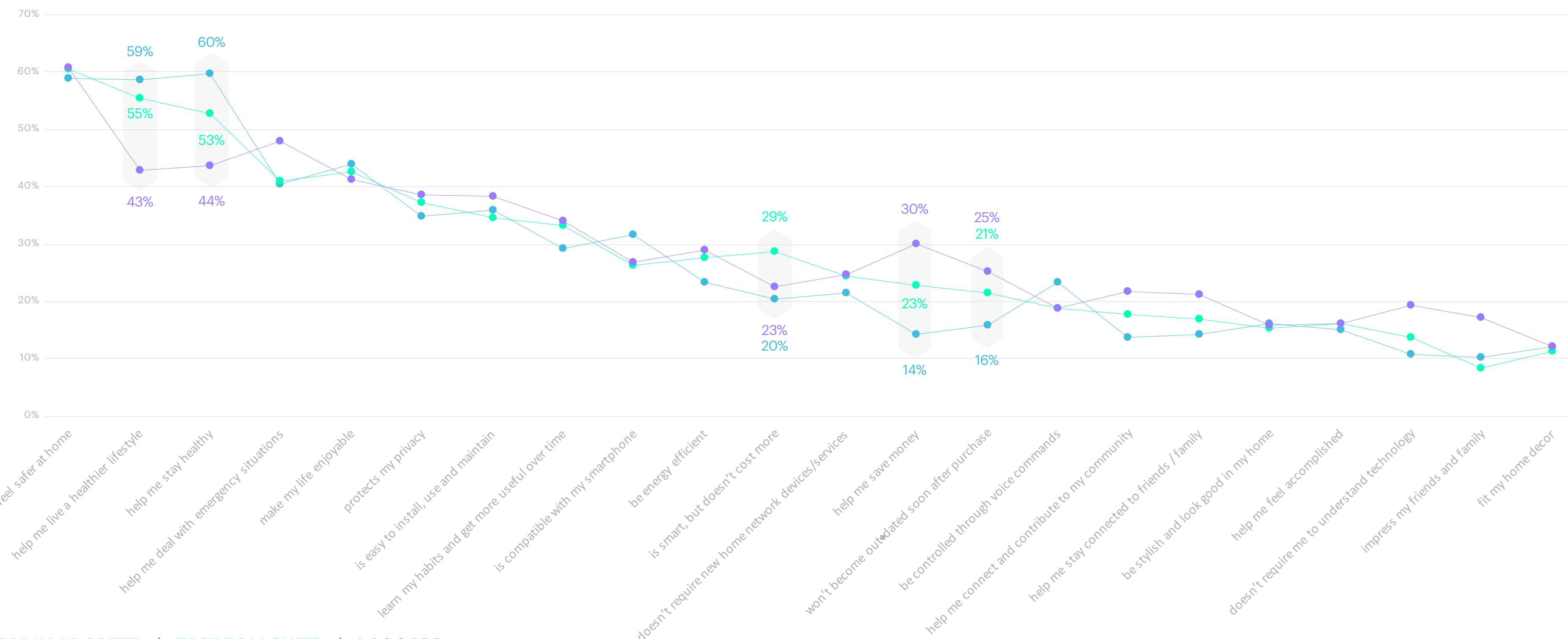
Buyer Priorities by Consumer Segment

How do these frustrations translate into buyer priorities when it comes to IoT for the home? Consumers in all three segments reported similar drivers for their decision to purchase connected home products. On average, 55% of consumers across all segments said feeling safe at home was the main driver for buying home IoT products. The other five priorities that drove consumer purchases were: ease of installation (42%), dealing with emergency situations (41%), protecting privacy (39%), and making life more enjoyable (38%).

We discovered interesting differences in some priorities among consumer segments (see Figure 6).

FIGURE 6

CONSUMER SEGMENTS EXHIBIT SIMILAR PURCHASE PRIORITIES, WITH NOTABLE DIFFERENCES IN HEALTH AND VALUE ATTRIBUTES



KEY: **EARLY ADOPTER** | **FAST FOLLOWER** | **LAGGARD**

Question: "Which factors are the most important and the least important to you when choosing Smart Home products for your home?" Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: n=6,339

How Top Priorities Vary By Segment and Geography

PRODUCT VALUE AND SAVING MONEY

The priorities of Laggards are practical in nature, such as saving money and avoiding products that quickly become obsolete. As price-conscious consumers, Laggards (and to some degree Fast Followers) prioritize value and relevance.

Interestingly, only 9% of Chinese early adopters ranked value as a priority (see Figure 11). The importance of connected products as money-saving devices increases among later-stage consumers (43% of Early Adopters, 48% of Fast Followers, and 54% among Laggards). Among Fast Followers, only 14% of Chinese consumers chose “won’t become outdated soon after purchase” as a priority compared to 43% in Europe and 36% in North America — another indication that Chinese consumers are less concerned about value compared to other regions.

HEALTH & SAFETY

The purchase driver “make me feel safer at home” is the leading priority for all segments and aligns with consumers’ frustrations about safety we uncovered through our research.

Laggards deprioritized health and safety drivers for purchasing connected products compared to Early Adopters. But they strongly agreed with Early Adopters that these products should help them deal with emergency situations, demonstrating their need for clear, immediate value.

At a regional level, Chinese consumers overall placed much greater emphasis on “help me stay healthy” than did consumers in other regions (65% among Chinese Early Adopters but only 34% among North Americans).

TECHNOLOGY COMPATIBILITY

Early Adopters prioritize compatibility with their smartphone when making purchasing decisions for home IoT products, perhaps because they understand the challenges of controlling multiple devices and ensuring they work together. In our interview with Apple, they described how their HomeKit[2] iOS app allows users to define “themes” that prompt devices to operate together to meet user objectives. For example, if a user selects a “Movie Time” theme, HomeKit may simultaneously draw window shades, lower lighting, and open the user’s smart TV with a list of suggested movies to watch — controlling multiple brands of devices together from a single app. Fast Followers and Laggards are likely unaware of the implications of buying multiple devices that lack a unifying home automation platform, like HomeKit, and so therefore are less concerned about compatibility.

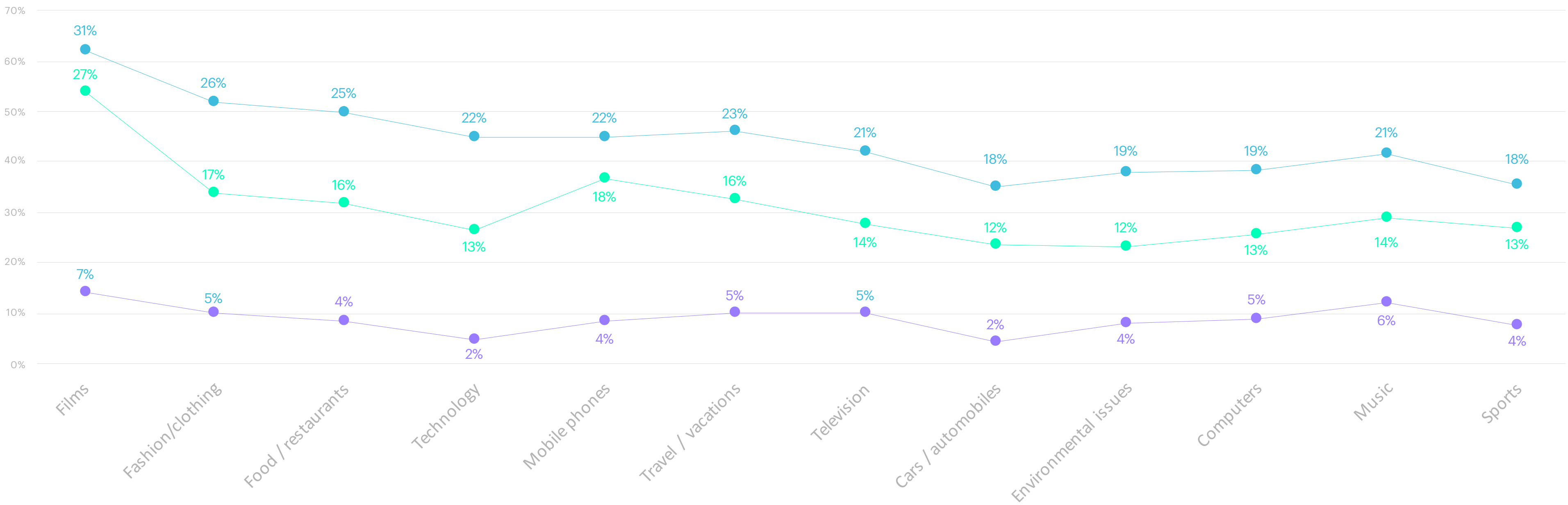
Smart Home IoT Topics Discussed Online by Consumers

We analyzed the topics related to IoT for the home that the various consumer segments talk about online — in their social media posts and other online discussion forums — to better understand their interests and paint a broader picture of who they are (see Figure 7). Understanding what topics consumers talk about might help brands target their marketing by segments more effectively. Our analysis showed that entertainment — and to some degree technology — lead the categories of topics most segments discuss online.

Laggards are much less likely to discuss any topics online, impeding their influence among buyers and making them more difficult to target as prospects. Early Adopters are the most vocal online and have the strongest tendency to inform friends and family about new products (see Figure 9 below, "I regularly inform friends/family on new products/services"). Brands should pay attention to Early Adopters' posts on home and technology websites or social media sites as a source of market intelligence pre-purchase. Post purchase, brands need stellar product support in social channels where Early Adopters are most likely to post either frustration or praise for their product purchase.

FIGURE 7

TOPICS DISCUSSED ONLINE BY CONSUMER SEGMENT LESS IMPORTANT THAN WILLINGNESS OF TECH ADOPTERS TO ENGAGE IN ONLINE DISCUSSION



KEY: **EARLY ADOPTER** | **FAST FOLLOWER** | **LAGGARD**

Source: Data from GlobalWebIndex, with Altimeter adoption segments

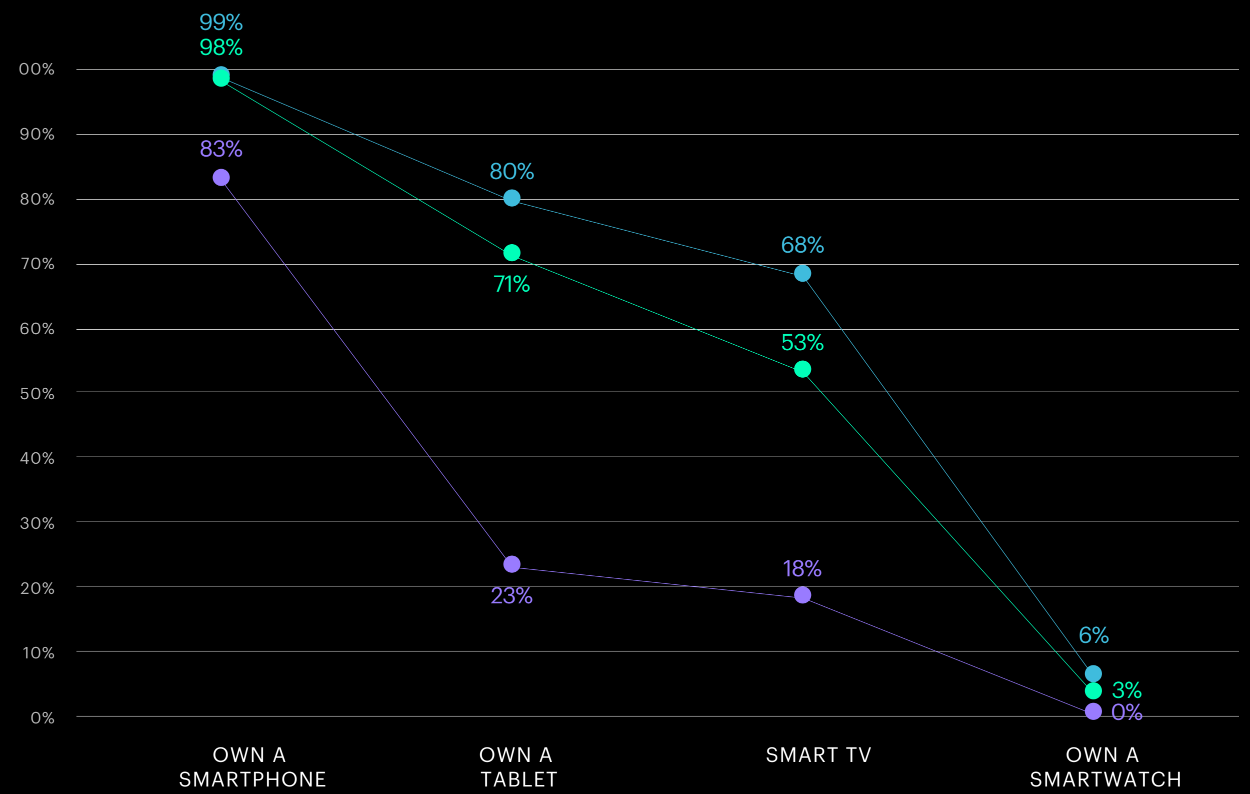
Smart Home Devices Owned by Consumer Segments

When it comes to the types of devices owned by each segment, our analysis shows similarities among Early Adopters and Fast Followers that marketers can use to target the next phase of buyers (see Figure 8). As expected, Laggards tend to own only one or two of the devices listed. Device ownership trends shown in Figure 8 follow the general market maturity of the device; for example, tablet ownership is stronger than ownership of smart TVs because tablets have been on the market longer.

Data we analyzed on device ownership indicates that home IoT device makers can safely select smartphones, tablets, and smart TVs as platforms for smart home control apps when selling to the next adoption wave by Fast Followers. Samsung and Apple have both seized this opportunity by building home IoT control into their televisions. The low adoption rate of smartwatches — even by Early Adopters — means device makers should only consider Smartwatch control as a value-add, but not a mandatory controller for any device features.

FIGURE 8

DEVICES OWNED BY CONSUMER SEGMENTS CONSISTENT WITH DEVICE MARKET MATURITY



KEY: **EARLY ADOPTER** | **FAST FOLLOWER** | **LAGGARD**

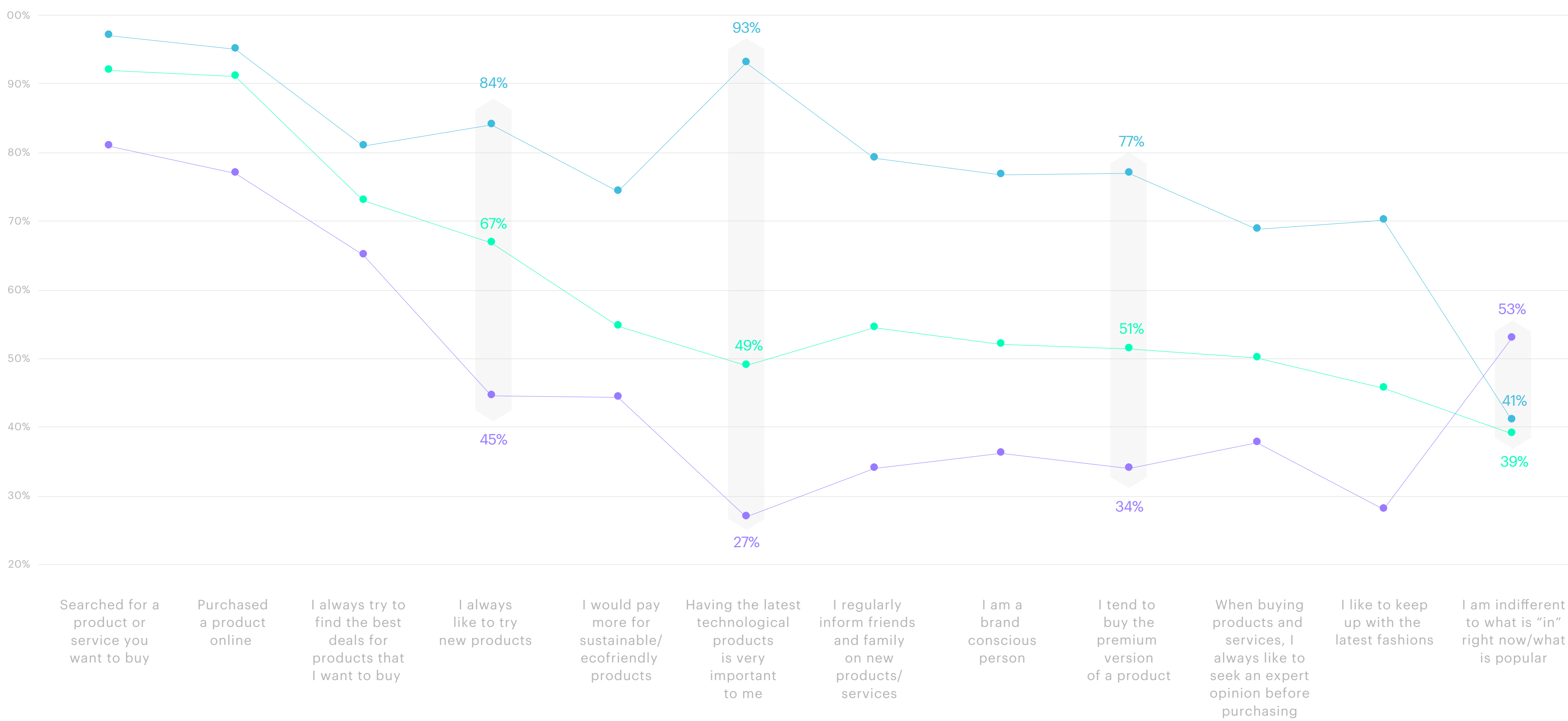
Source: Data from GlobalWebIndex, with Altimeter adoption segments

Commerce Behaviors of Consumer Segments

To understand how brands may target buyers, we studied the commerce behaviors and attitudes — how people search for and buy products — of consumers in the three segments (see Figure 9). Behavior such as searching and buying online were widespread, as we would expect, but segments differ on the importance of owning the latest technology. Early Adopters favor premium products (77%) by a wide margin. Laggards' need for value as a driver is consistent with their lower tendency to value premium products (34%) over their need to follow trends (53% are indifferent to what is "in" or popular).

FIGURE 9

LESS MATURE CONSUMER SEGMENTS MORE PRICE SENSITIVE THAN EARLY ADOPTERS



KEY: **EARLY ADOPTER** | **FAST FOLLOWER** | **LAGGARD**

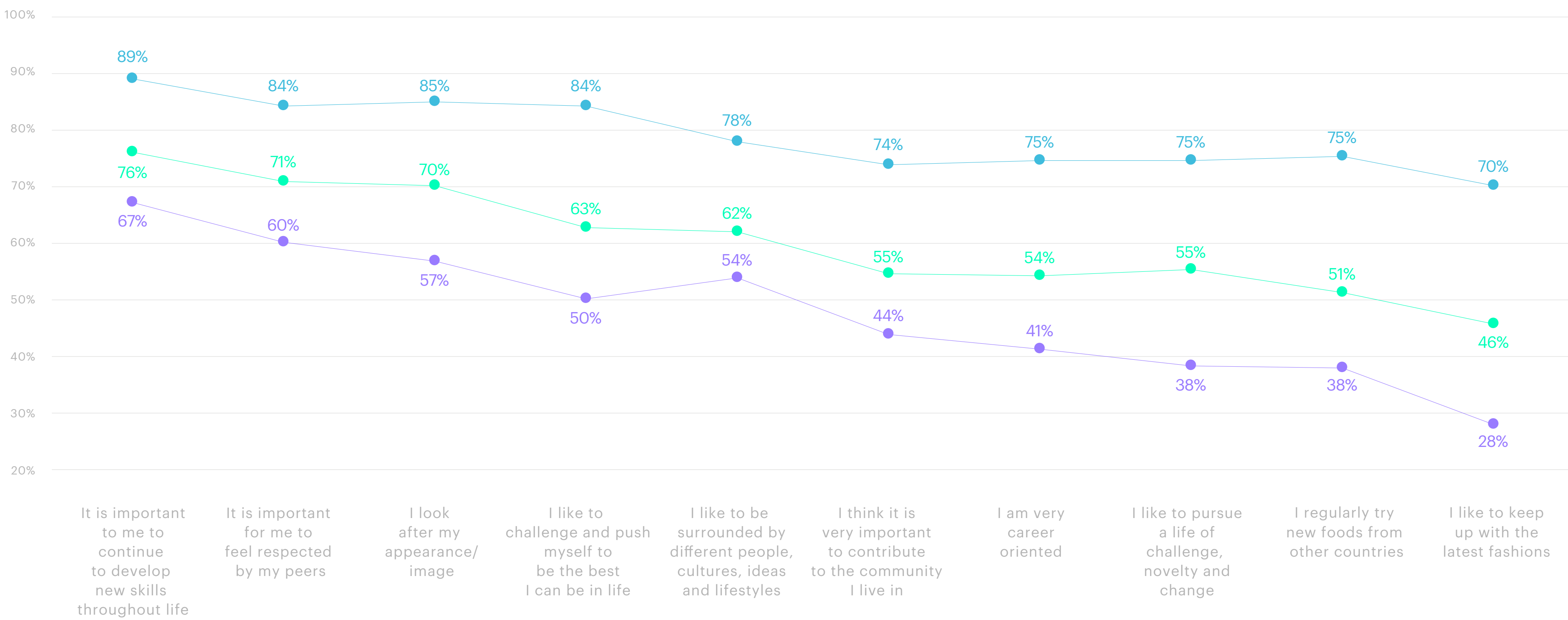
Source: Data from GlobalWebIndex, with Altimeter adoption segments

Life Attitudes of Consumer Segments

Studying consumer attitudes about life, we found a consistent relationship between a consumer segment's readiness to adopt IoT for the home products with life aspirations to learn, feel respected, be challenged, be career-focused, and value cultural diversity. In Figure 10, we quantify those attitudinal differences to help device makers understand buyer attitudes that might inform product design and marketing.

FIGURE 10

EARLY ADOPTERS OF SMART HOME PRODUCTS HAVE MOST ASPIRATIONAL ATTITUDES



KEY: **EARLY ADOPTER** | **FAST FOLLOWER** | **LAGGARD**

Source: Data from GlobalWebIndex, with Altimeter adoption segments

Key Differences of Consumers in China vs. in Western Cultures

As we have found in other consumer research, Chinese and Western consumers exhibit very different attitudes and behavior. Our findings reflect these cultural differences. We measured much higher ownership of and intention to buy connected devices among Chinese consumers, which were almost 2X that of consumers in Western cultures (see Figure 12).

This high ownership and intention to buy is consistent with rates of technology adoption in developing countries that can move quickly for new technology generations. For example, the New York Times recently reported the dominance of mobile payments over cash in urban China. "From a tech standpoint, this is probably one of the single most important innovations that has happened first in China, and at the moment it's only in China," said Richard Lim, Managing Director of venture capital firm GSR Ventures. "In 2016, China's mobile payments hit $5.5 trillion, roughly 50 times the size of America's $112 billion market, according to consulting firm iResearch."[3]

In addition to having strong interest in IoT home technology, Chinese consumers also outpaced Western societies in their interest for other technologies. For example, 47% of Chinese consumers expressed interest in VR headsets vs. 29% in the US; 45% express interest in self-driving cars vs. 31% in the US, and 22% expressed interest in drones vs. 16% in the US.[4]

Overall, our research shows that Chinese consumers are less cost- and privacy-conscious and instead are more focused on health compared to consumers in Western regions. Interesting cultural differences found in this market include (see Figure 11):

HEALTH

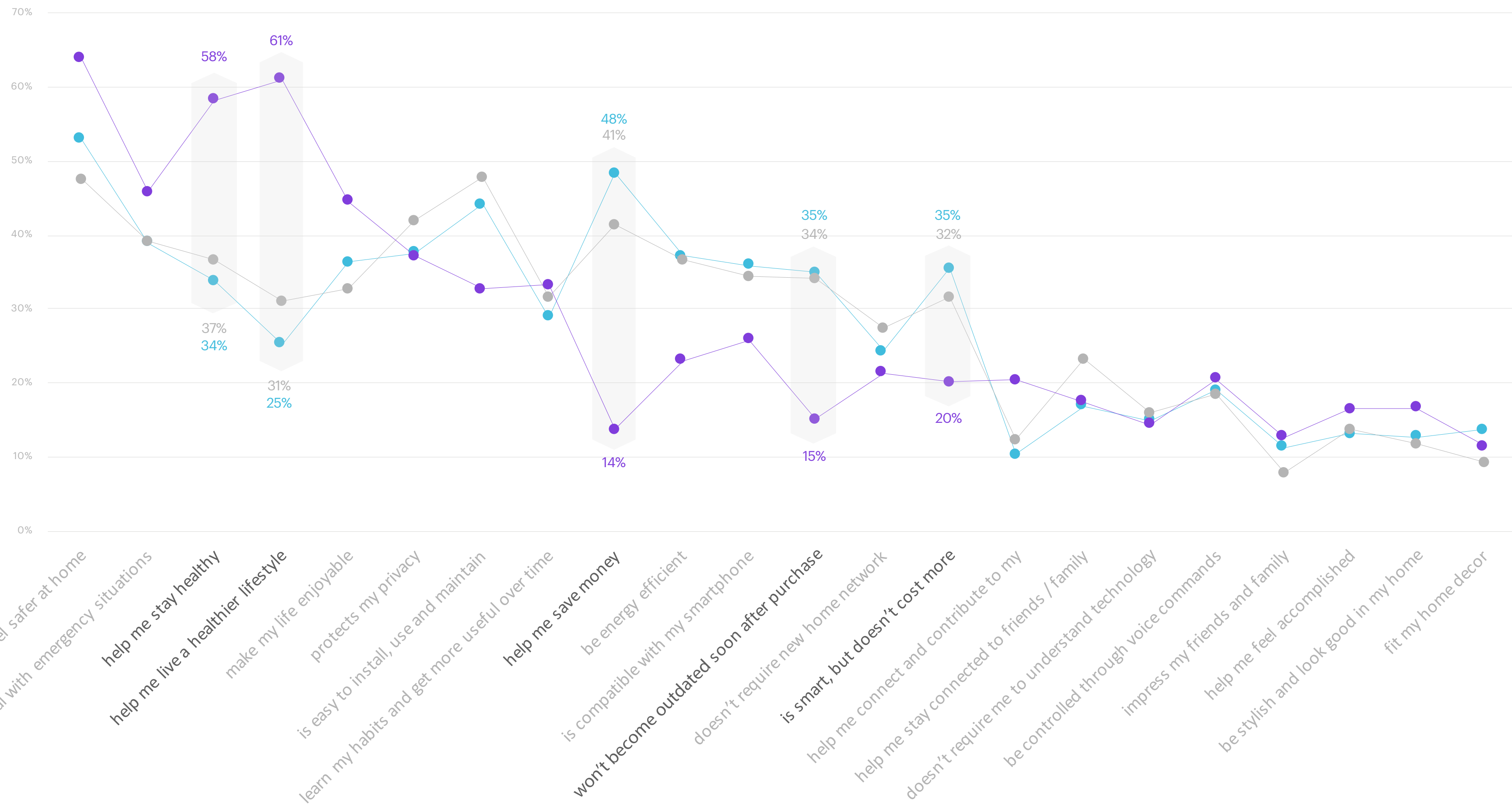
A significant cultural difference between China and Western democracies is the desire for smart home products to help them improve their health. For example, 62% of Chinese consumers named “help me live a healthier lifestyle” as a priority compared to only 25% of consumers in North America and 31% in Europe.

ECONOMIC

Chinese consumers are much less concerned with the money-saving attributes or the cost of connected devices. Only 14% in China reported “help me save money” as important vs. 48% in North America and 41% in Europe. Few consumers need connected products, so as Phillip Raub, Founder/CMO at American tech retailer b8ta, told us, “The product’s relevancy — whether being safer, or saving money, or being entertained — are primary drivers.”

FIGURE 11

REGIONAL PRIORITIES BETWEEN WESTERN AND CHINESE CULTURES FOCUS ON HEALTH AND ECONOMIC VALUE



KEY: **CHINA** | **NORTH AMERICA** | **EUROPE**

Source: Altimeter Smart Home survey, Q2 2017; Base: North America, n=2112; Europe, n=2461; China, n=1766

Product Opportunity Analysis

With an understanding of consumer segment attitudes and behavior, we'll now flip perspective to review our research insights in IoT home product categories and again consider important regional differences.

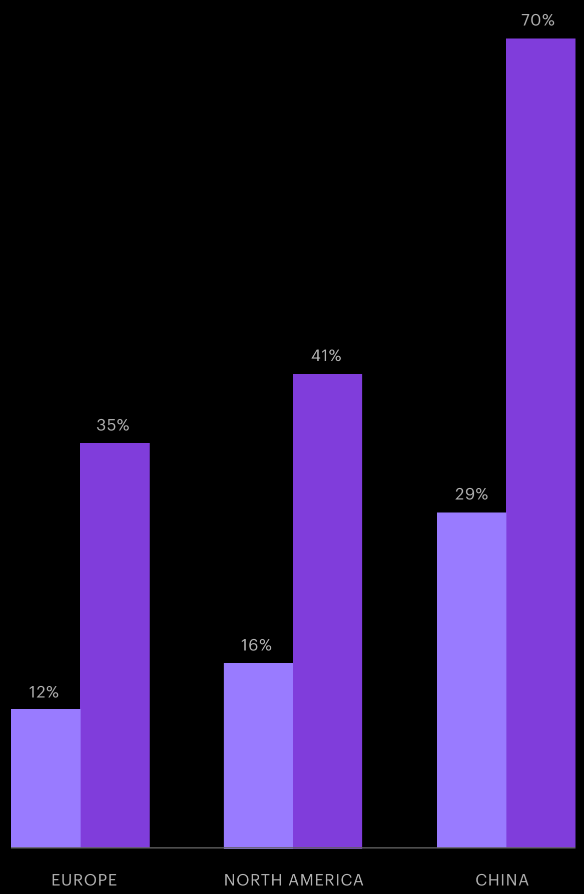
Overall, we measured much higher consideration for all connected home products among Chinese buyers compared to North Americans or Europeans. In many cases, Chinese consumers were more than twice as interested. Chinese consumers reported higher ownership of connected home products in every product category, and they were more than 2X more likely to consider buying them in the future. We found, on average globally, a 265% lift in purchases in the next year, as measured between growth and intent (see Figure 12).

Even though Chinese consumers' stated intent to buy is very high (70%) across all segments, they are the region with the largest percentage of Laggards in the population. This points out the aspirational nature of the Chinese consumer culturally: While intent to buy is high, they otherwise meet the criteria of a Laggard, as we've defined them. Also, even though they are more likely to own, we found them slightly less likely to recommend home IoT products to others. This could indicate that, in terms of the adoption curve, Chinese consumers have enough experience to be caught in the traditional "trough of disillusionment[5]" phase of expectations.

To forecast the next phase of IoT for the home product category adoption, we measured the increase in purchase intent before and after we presented consumers common use cases for products in each category (see Figure 13). Although current ownership of Home Security and Home Environment & Comfort products are lower today than ownership of Home Entertainment products among all segments (due to the popularity of smart TVs), consumer safety priorities are increasingly driving interest in these categories. We expect home IoT products that focus on Home Security and Home Environment & Comfort to lead the next wave of adoption globally, although Chinese consumers' focus on health may lead China to be an outlier in that global trend.

FIGURE 12

CHINA LEADS SMART HOME IOT DEVICE OWNERSHIP AND FUTURE CONSIDERATION



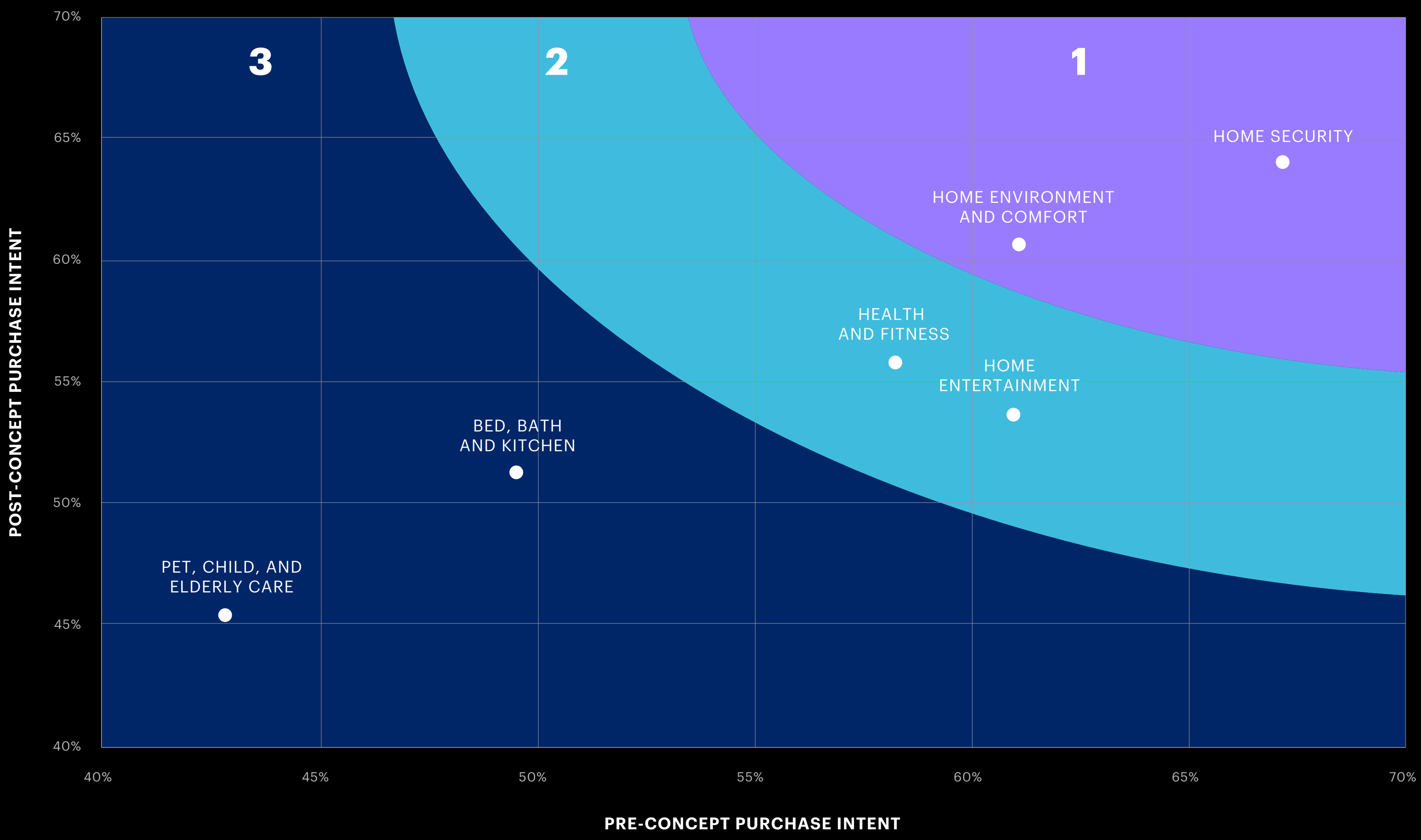
KEY: **OWN** | **FUTURE CONSIDERATION**

Questions: Own: Average for all product categories for "Which of the following smart home products (if any) do you own?"; Future Consideration: Average for all product categories: "Regardless of whether you are currently using 'Smart Home' products today, how interested are you in purchasing them in the next year?"

Source: Altimeter Smart Home survey, Q2 2017; Base: North America, n=2112; Europe, n=2461; China, n=1766

FIGURE 13

THREE HORIZONS OF HOME IOT ADOPTION ANTICIPATED



Questions: Pre-concept Purchase Intent: “Which of the following Smart Home product categories are you aware of?”
Post-concept Purchase Intent: Respondents were presented with an illustrative product category usage scenario, then asked, “How interested are you in <product category> of Smart Home products?”

Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: n=5,911

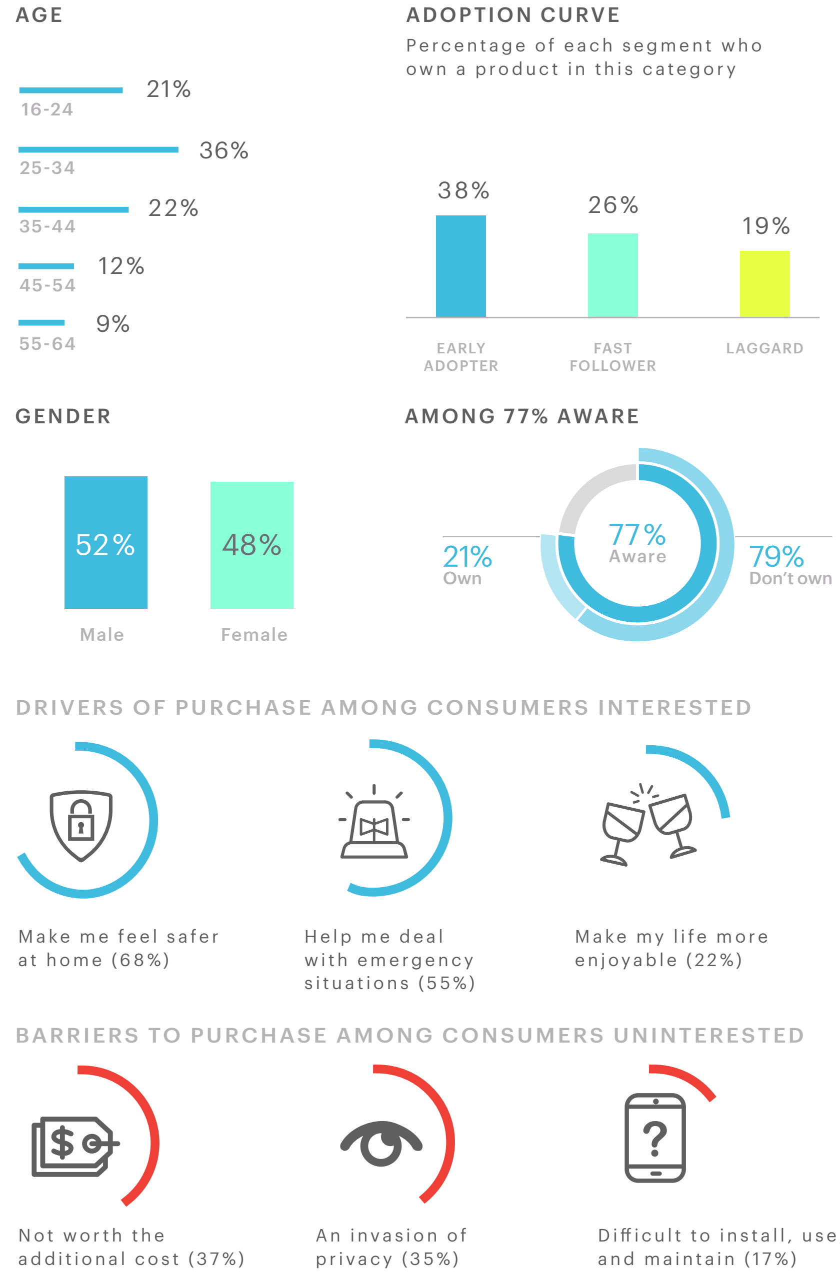
Next, we'll take a closer look at each smart home product category, starting with products most likely in the next wave of adoption out to longer-term opportunities.

HOME SECURITY

Products in the home security category show the most promise globally, as measured by purchase intent both before and after we explained the category to consumers (see Figure 14). Those who expressed strong interest in this category reported that "make me feel safer at home" (68%) and "help me deal with emergency situations" (55%) were the leading drivers of purchase. Like for most other product categories, value and relevance to consumers and privacy concerns were reported as the biggest barriers. Of those 77% of consumers who were aware of the Home Security product category, only 21% own. But with high purchase intent, this category is ready for growth. Of those not interested in this category, the leading reasons for their disinterest were value (37% said they were "not worth the additional cost") and concerns that the products might be "an invasion of privacy" (35%).

FIGURE 14

HOME SECURITY CATEGORY PROFILE



Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: n=6,339

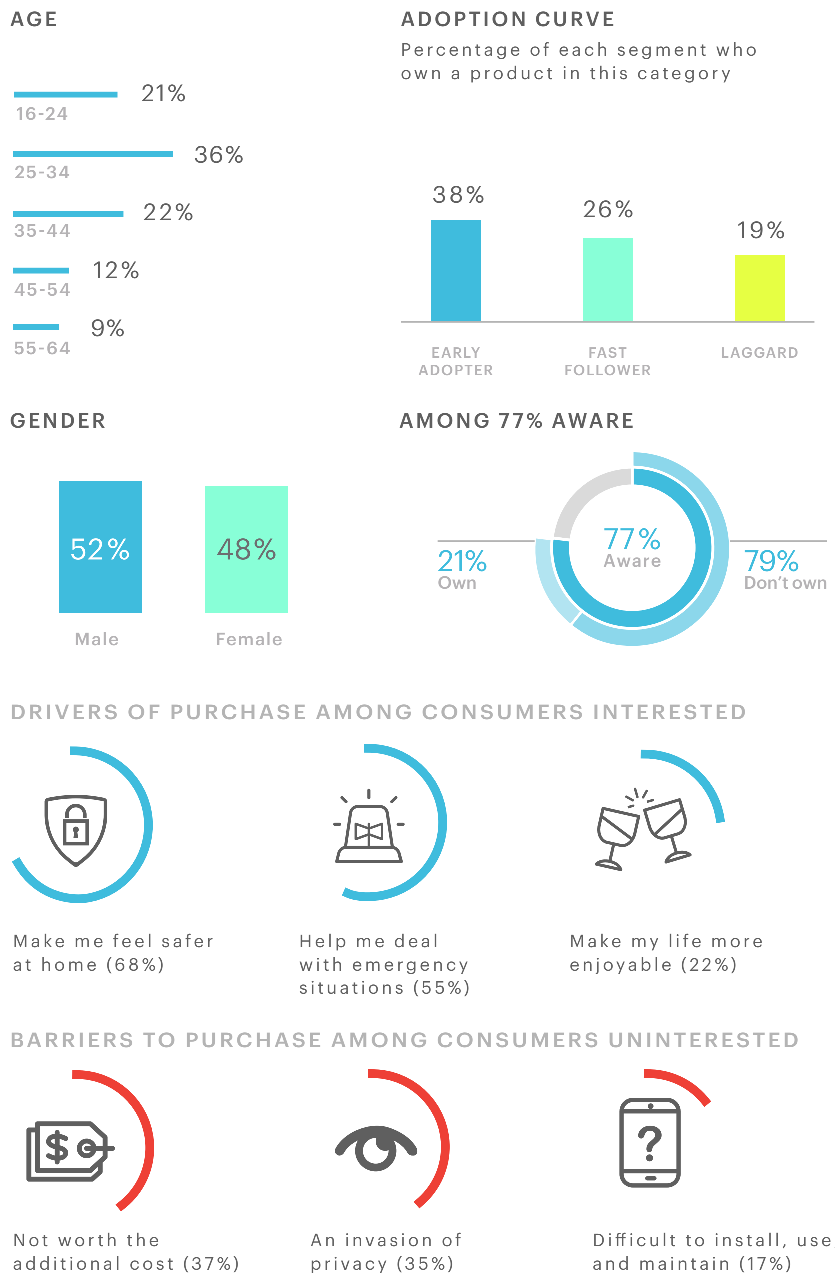
HOME ENVIRONMENT & COMFORT

For this broad category of home automation products (which range from smart thermostats to lighting control), we measured a wide variety of drivers and barriers, as well as the most significant regional differences of any other product category. Products in this category, however, revealed the most promise for adoption, just behind Home Security.

The most striking regional differences were found in value drivers. Globally, “making life enjoyable” and “energy efficiency” lead purchase priorities (see Figure 15). Fifty-four percent of Europeans and 49% of North Americans prioritized “help me save money” compared with just 10% of Chinese consumers. Similarly, 60% of Europeans and 58% of North Americans prioritized “be energy efficient” compared to 24% of Chinese. Once again, the Chinese consumers’ focus on health (42%) was a much stronger driver of purchase compared to consumers from North America (10%) and Europe (12%). The purchase drivers and barriers in Figure 15 represent global averages.

FIGURE 15

HOME ENVIRONMENT CATEGORY PROFILE



Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: n=6,339

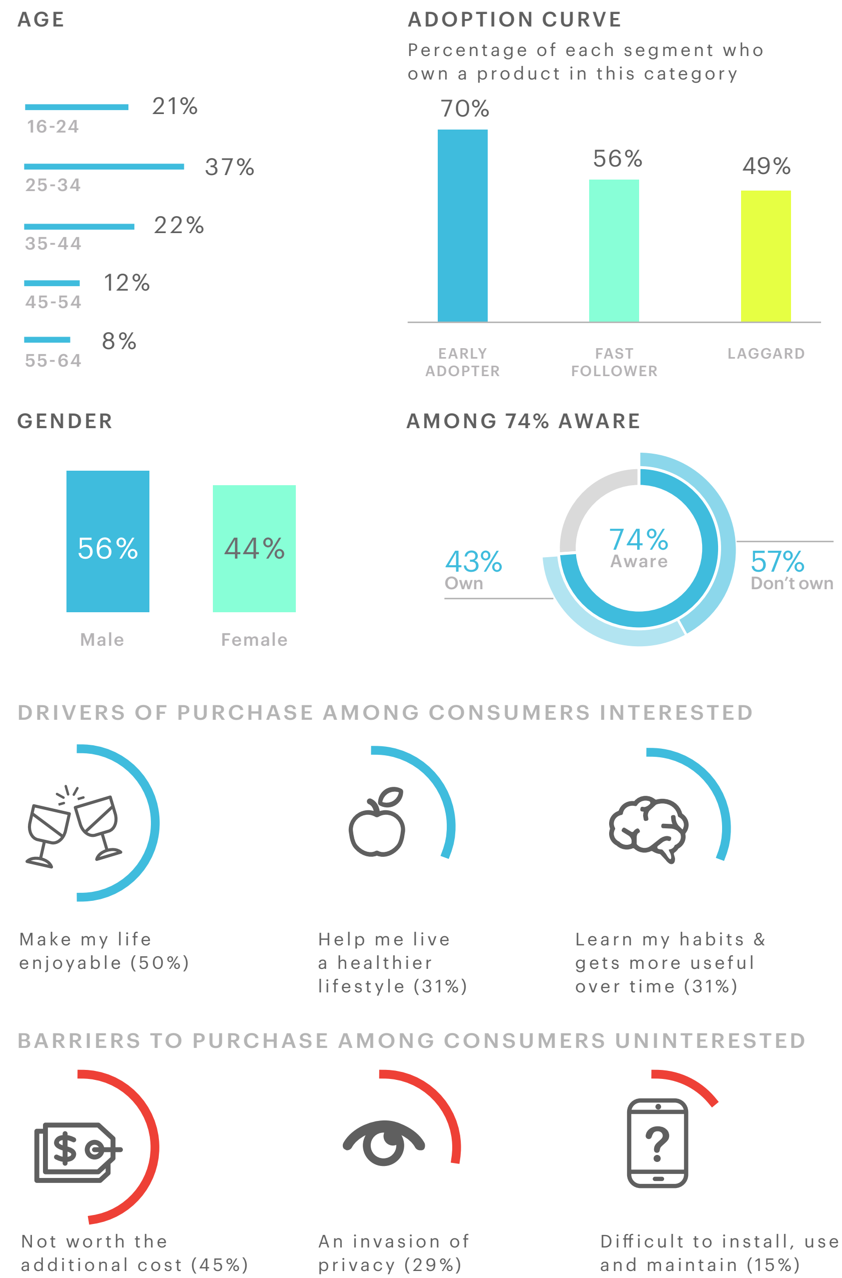
HOME ENTERTAINMENT

In this product category, consumers were asked about devices in the home focused on entertainment, such as audio/visual entertainment systems like smart TVs and speakers (see Figure 16). While not surprising that “make my life more enjoyable” was the main driver of purchase across all segments, with 50% of consumers reporting it as a priority, an interesting driver (globally) was “learn my habits and get more useful over time,” which was identified by 32% of consumers as a priority. To be considered smart and worth the extra cost, consumers want these products to learn habits, be trouble-free, and not be a distraction — as many of us have found with perhaps the first smart product, the smartphone. Just shy of the top three drivers, “make me feel safer at home” (22%) points to consumers’ willingness to merge home entertainment features with home security, a merging that leading broadband entertainment providers like Comcast have taken advantage of. Comcast today claims to be the fast-growing home security company in the United States[6], disrupting legacy brands like ADT.

Value for the money was the leading barrier (45%), followed by Privacy & Security (30%) and Ease of Use concerns (16%). Consumers are clearly wary of devices that require too much effort to install and maintain. This is good news for device makers that invest in machine-based learning to anticipate user’s needs and to recognize trends in user behavior. But it also requires close, ongoing evaluation and tuning of the use cases a device supports. This compels a shift in thinking: Marketers, for example, build complex journey maps to discover as many effective consumers touchpoints to engage as possible, whereas in connected devices, consumers are looking for as few interactions as possible, and increasingly, through voice control.

FIGURE 16

HOME ENTERTAINMENT CATEGORY PROFILE



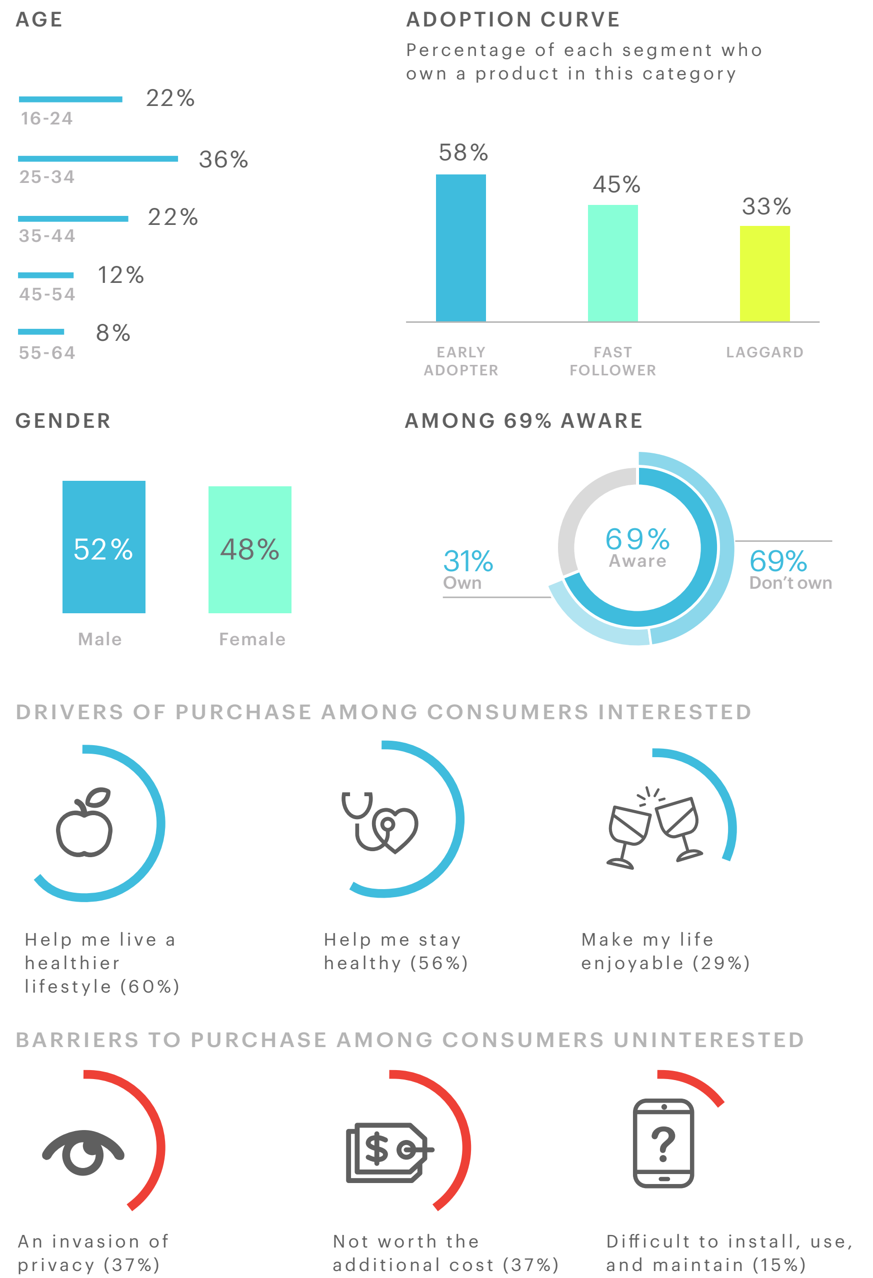
Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: n=6,339

HEALTH & FITNESS

It’s not surprising that for those consumers who expressed interest in this category, “help me live a healthier lifestyle” (60%) and “help me stay healthy (56%) are leading drivers of purchase (see Figure 17). These drivers were particularly strong among Chinese consumers, who consistently ranked health among their most important priorities for home IoT products. As may be expected with healthcare products, 37% of consumers reported “be an invasion of privacy” as the main barrier of purchase, followed by concerns about product value and ease of use. Interestingly, Chinese consumers are almost twice as likely to identify tech-savviness — concerns that the product may “be for just technology-savvy people” (20%) and “be difficult to install, use, and maintain” (23%) — as a barrier in this category (see Figure 11). Similarly, Chinese consumers reported concerns over technological skills needed to engage with these products as a strong barrier for purchase more than did consumers in other regions and in other product categories.

FIGURE 17

HEALTH & FITNESS CATEGORY PROFILE



Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: n=6,339

BED, BATH & KITCHEN

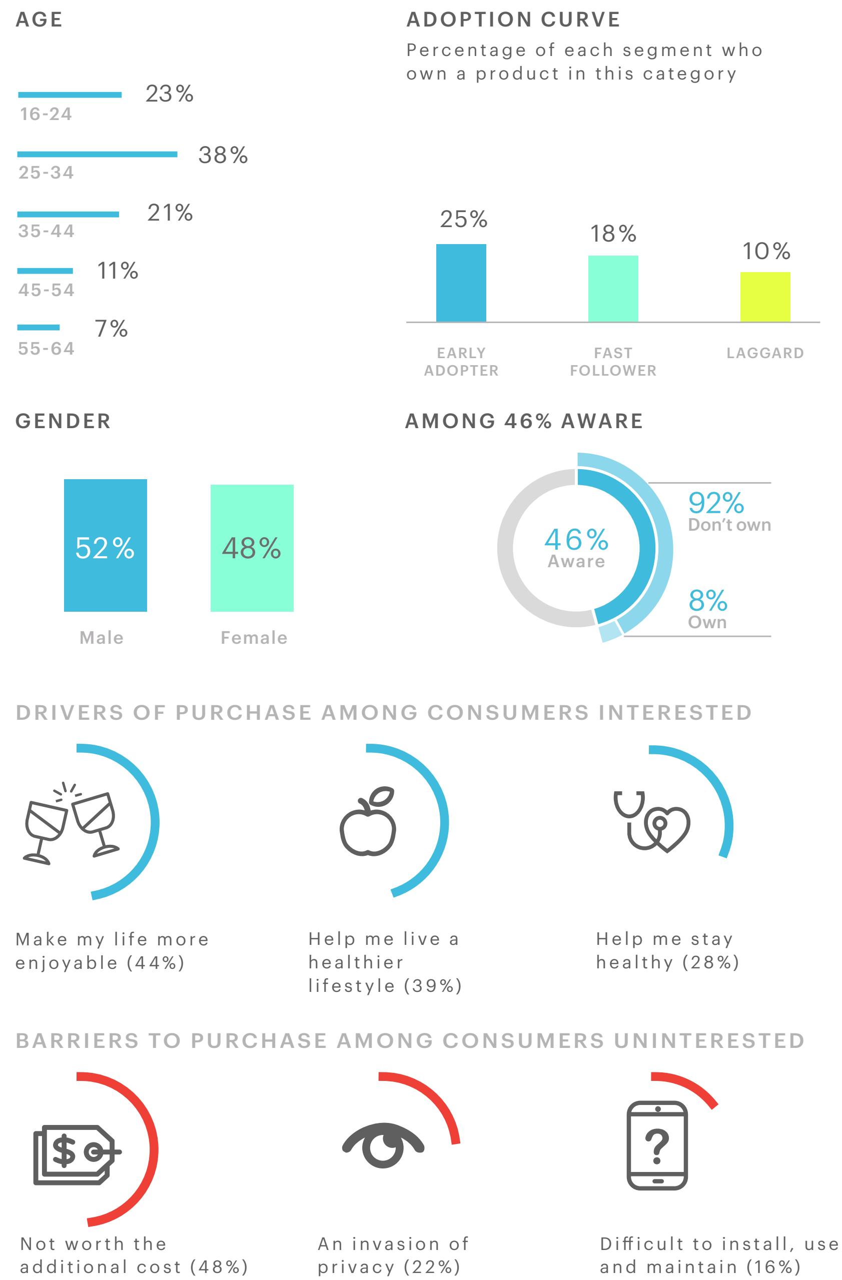
Globally, among those consumers interested in this product category, “make my life enjoyable” (44%) and “help me live a healthier lifestyle” (39%) lead consumer priorities, whereas “not worth the additional cost” (48%) and, again, privacy and security concerns lead barriers for those less interested in the category (see Figure 18). Few consumers were aware of products in this category (only 46%), and of those, only 8% have converted to purchase — not a good sign for future conversion to purchase.

As shown in our regional analysis in Figure 11 above, significant regional difference among drivers for purchase was “help me save money,” which ranked as a higher priority in North America (36%) and Europe (35%) compared to in China (7%). “Help me live a healthier lifestyle” which — as we found in other product categories — ranked much higher among Chinese (44%) consumers compared to North Americans (27%) or Europeans (21%) consumers.

When considering barriers to purchase, cultural differences in the importance of privacy where significant, with only 12% of Chinese consumers expressing concern as opposed to 27% of Europeans and 22% of North Americans (for a global weighted average of 22%). Our research found that Chinese consumers were less price sensitive (35% of them expressed cost as a barrier) compared to North Americans and Europeans (51% percent each).

FIGURE 18

BED, BATH & KITCHEN CATEGORY PROFILE



Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: n=6,339

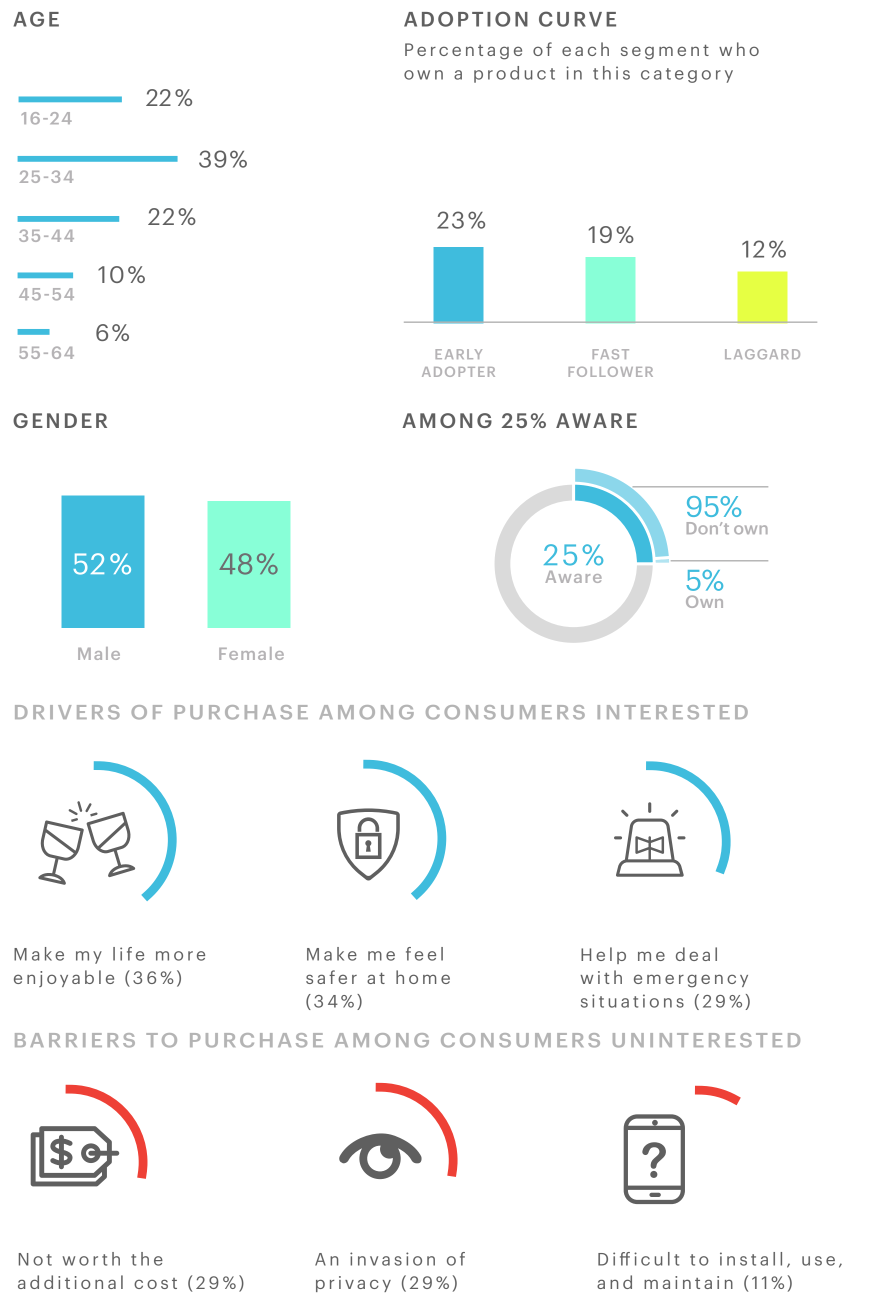
PET, CHILD & ELDERLY CARE

Interest in the use of IoT sensor devices to support the care of pets, children, and the elderly ranked lowest of all product categories among consumers globally (see Figure 19). This is somewhat to be expected, as it is a category that is not relevant to all consumers (globally, 52% of consumers surveyed responded that the product category "does not apply to me").

Of those interested in these products, we found that the drivers of purchase varied more for this category than for others. Thirty-six percent of consumers reported "making life more enjoyable" as a driver, while 34% chose "make me feel safer at home" and 29% listed "help me deal with emergency situations." Chinese consumers were twice as likely as Europeans and North Americans to prioritize health drivers (30%) over saving money (6%) or energy efficiency (9%). Of those disinterested in this category, 29% reported both value and privacy/security as barriers to purchase, while only 11% listed "ease of use" as a barrier.

FIGURE 19

PET, CHILD & ELDERLY CARE CATEGORY PROFILE



Source: Altimeter Smart Home survey, Q2 2017, Global (North America, Europe, China); Base: n=6,339

Looking Forward

Both brands that manufacture connected home products and the consumers who buy them are at the start of a long journey to widespread adoption.

Addressing key consumer barriers — such as privacy, security, and consumer understanding of the value and relevance of these products — should top the list of priorities for brands that compete in this space. Those brands selling smart home IoT products globally should also consider the key cultural differences between the Chinese market and the European and North American markets that our research highlights.

To accelerate consumer adoption of these products, however, brands should also address consumers' current hesitation to buy multiple home IoT products unless they work together. It will take make more than great product design and marketing to accomplish this. To truly move forward, brands, component manufacturers, and retailers must find common ground for standards that allow devices to easily operate together. This challenge is but one of the many that brands face. In Part II of our research, we explore in depth these new challenges, as well as the business opportunities for brands entering the IoT for the home market.

Appendix

ALTIMETER'S OFFERINGS

Altimeter research is applied and brought to life in our client engagements. We help organizations understand and take advantage of digital disruption.

There are several ways Altimeter can help you with your business initiatives:

- Strategy Consulting. Altimeter creates strategies and plans to help companies act on business and technology trends, including ethical and strategic data use and communications. Our team of analysts and consultants work with global organizations on needs assessments, strategy roadmaps, and pragmatic recommendations to address a range of strategic challenges and opportunities.

- Education and Workshops. Engage an Altimeter speaker to help make the business case to executives or arm practitioners with new knowledge and skills.

- Advisory. Retain Altimeter for ongoing research-based advisory: Conduct an ad-hoc session to address an immediate challenge, or gain deeper access to research and strategy counsel.

To learn more about Altimeter's offerings, contact sales@altimetergroup.com.

ENDNOTES

[1] Source: GlobalWebIndex. (https://www.globalwebindex.net/). Survey data from Q1 2017.
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[5] "Gartner Hype Cycle Research Methodology." Gartner Inc. (http://www.gartner.com/technology/research/methodologies/hype-cycle.jsp).
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METHODOLOGY

Altimeter, a Prophet Company, conducted both qualitative and quantitative analyses, using a combination of online survey, and interviews and briefings with IoT and smart home experts and ecosystem contributors.

Specifically, we conducted:

- Interviews with 18 technology experts, technology vendors, retailers, and brands between Q1 and Q3 2017.
- Quantitative study of 6,339 consumers globally. Altimeter, a Prophet Company, conducted this survey online in Q2 of 2017. Online survey respondents were sourced from a global research partner. For the purposes of our research, 'North America' includes the United States and Canada; 'Europe' includes the United Kingdom, Germany, and France; and 'China' refers to the People's Republic of China ("mainland China").

CONSUMER DRIVERS & BARRIERS

We studied the following drivers and barriers of smart home products.

CONSUMER DRIVERS

What motivates consumers toward to purchase? When it comes to understanding human motivation, Maslow's hierarchy of needs[7] is an interesting model that maps well to the home IoT product landscape. From the bottom of the hierarchy in which physiological needs (survival) are met, to lofty self-actualization needs, we have sought to understand how our consumer segments at various points on the adoption curve think about IoT in the home. For our research, we recasted Maslow's hierarchy in terms of consumer drivers:

1. Physiological
As the foundation in the hierarchy, this driver is focused on survival, with use cases focused on health, home fitness, sleep needs, and handling life or death situations.

2. Safety
Once basic physiological needs are met, needs for personal safety take precedence. Here our uses cases focus on home security/monitoring, protection from elements (such as flooding), and financial security, which includes risk avoidance, and spending and saving wisely.

3. Love & belonging
With basic needs met, the next level focuses on use cases that enable relationships and connection to the wider community.

4. Esteem
Seeking respect for oneself and others is next. Here, our use cases focused on better understanding the world and one's place in it; increasing self-sufficiency and independence; being respected and accepted; and feeling accomplished.

5. Self-actualization
The highest level of need is focused on a person's need to reach their full potential. For some, this is focused internally, and so represented by use cases such as meditation orbrain training; learning new skills; and accessing and enjoying the "finer things in life," such as art and entertainment. For others, this motivation is focused externally, such as being the best parent one can or helping others reach their own potential.

Outside of these drivers, we also tested features that may drive adoption, such as saving money and energy efficiency, device voice controls and aesthetics, among others.

CONSUMER BARRIERS
What concerns do home IoT buyers have? Consumers are exposed frequently to mass-media stories about hacking, lack of privacy, and more—while tech-focused media write about the promise of technology to make life easier. It's therefore understandable that buyers are confused. But there are significant differences in the perception of barriers among our three consumer segments. While there are intricacies within each of these sets of barriers, these are the most common and will help brands prioritize product features and marketing of connected home devices:

1. Privacy & Security
Here, we consider obstacles to purchase, such as the relative importance of these needs:

- My personal information is safe and secure
- I trust the brand to protect my information, avoiding unnecessary data collection and protecting what information they possess.
- My data will not be sold or shared in such a way that my privacy is compromised. I know that some data will be in the brand's possession, transmitted over the Internet, to make the device more useful and valuable to me.

2. Compatibility
Consumers at more advanced levels of adoption learn the importance of interoperability among new IoT devices and their existing smart products, especially their smartphone.

We measured needs such as:

- The product works seamlessly with my other connected home products, including devices I use regularly, such as my smart phone or TV.
- I don't have to think about how they interact, but I want to control or override that interaction if necessary.
- I have confidence that the device maker will maintain compatibility for the natural life of the product.
- I will achieve greater value by having a device that is compatible with others in my home—now and in the future.

3. Understanding / Ease of Use
The majority of consumers don't understand IoT or the "Smart Home". Here we measured:

- I understand the connected product enough to buy with confidence.
- The product is intuitive—anyone in my household can use it.
- I can use the product quickly, out of the box.
- It doesn't require excessive maintenance to own.
- The device is a seamless addition to my home

4. Value

Consumers struggle to understand the added value of either single-use case products like thermostats, but more significantly, an intra-connected set of home devices that work together to create a Smart Home. Questions here include:

- I see value paying more for a connected product.
- The product will not quickly become obsolete.

5. Aesthetics

Fortunately, many of the connected products we've seen follow Apple's lead in consumer electronics industrial design: they look great. Even still, for the next wave of buyers less concerned about owning the latest gadget, we considered:

- The product looks good in my home.
- I have both visual and audio choices that fit my preferences in home decor.

ECOSYSTEM INPUT

This report could not have been produced without the generous input from the following individuals. Input into this document does not represent a complete endorsement of the report by the individuals listed below:

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- Intel, Miles Kingston, General Manager, Smart Home Group
- Logmein, Ryan Lester, Director of IoT Strategy
- Apple
- Amazon, Noury Bernard-Hasan, Head of Corporate Analyst Relations
- Samsung, Ramon Alverez, Director of Home Innovation and Tammy Chow Director at Samsung Electronics, Product Strategy
- Wink, Matt McGovren, Head of Marketing & Business Development
- ROC Connect, Kevin Meagher, SVP Business Development
- Assurant, Andy Chambers, VP, Connected Home
- Thread Group, Grant Erickson, President
- Vivint, Liz Tanner, Director of Public Relations, and Colby Winegar, Vice President of Strategic Business Development
- The Home Depot, Elizabeth Mathes, Director of Smart Home at The Home Depot
- B8ta, Phillip Raub, Founder/CMO
- N.io, Chris Ratcliffe, CMO
- Jessica Groopman, Independent Industry Analyst & IoT Advisor
- Falcon.io, Ulrik Bo Larsen, Founder & CEO

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Ed Terpening is an Industry Analyst at Altimeter, a Prophet company. A Silicon Valley vet and a social-media expert, Ed has been at the forefront of digital transformation for 30 years.

Before joining Altimeter, Ed was Vice President of Social Media at Wells Fargo, where he led the first blog and social media team of any major U.S. bank. A co-founding member of SocialMedia.org, he's worked for Apple (still his favorite brand), where he led the development of advanced data visualization tools and data warehouses. At Cisco Systems, he managed its first company-wide Intranet, first e-commerce store, and the development of Cisco.com, one of the first business sites to offer online customer service.

When he's not mastering digital landscapes, he's painting real ones. An award-winning artist, his accomplishments include a cover story in American Artist, as well as serving on the advisory board of PleinAir Magazine. His art is in collections worldwide.

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