

# Smart Home Technology to Promote Care of Individuals with Alzheimer's Disease and Dementia

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# Smart Home Automation

## Three characteristics

- Devices that can monitor the state of the home and its residents
- Devices that are networked to one another-IoT
- Interfaces (Smartphones, tablets etc) that can be used by residents to receive information and control devices remotely



# Feasibility Study

## Smart Home Technology to Support Caregiving of family members with Alzheimer's disease / dementia

1. Caregiver & Care recipient interview and home Assessment
2. Installation and training
3. Follow-up support

# Smart Home Technology for Caregiving

Activity scheduling and prompting

## Voice-Activated Assistants

- Daily Schedule
- Calendar
- Reminders
- Alerts



# Smart Home Technology for Caregiving

## Home monitoring and control



Monitor daily schedule  
Detect wandering  
Two-way communication  
Smoke & CO detection



Home Comfort



Schedule lights



wallflower



Smart plugs for safety



Smart Locks



Object Finders

# Smart Home Technology for Caregiving

## Caregiver-Care recipient connectivity



Scheduled Video Prompts



Stay connected



# Why the training on SH Automation?

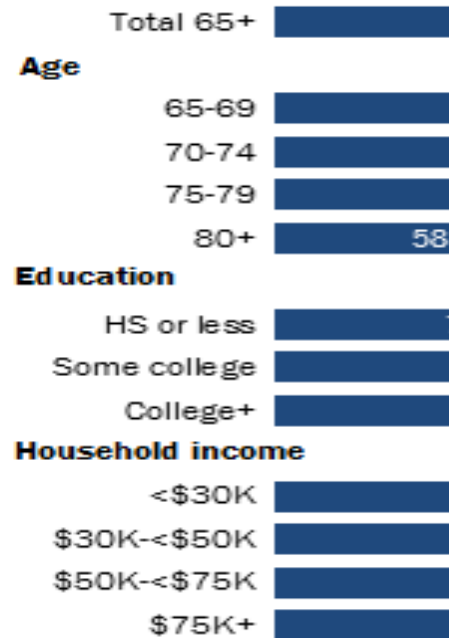
- High rate of innovation
  - Broadband Internet & WiFi
  - Bluetooth
  - Open source programs- IFTTT
- Low diffusion among older consumers
  - Technology's readiness
  - Digital divide
  - Psychosocial barriers

# Why the training on SH Automation?

## Roughly four-in-ten

% of U.S. adults ages 65 and older

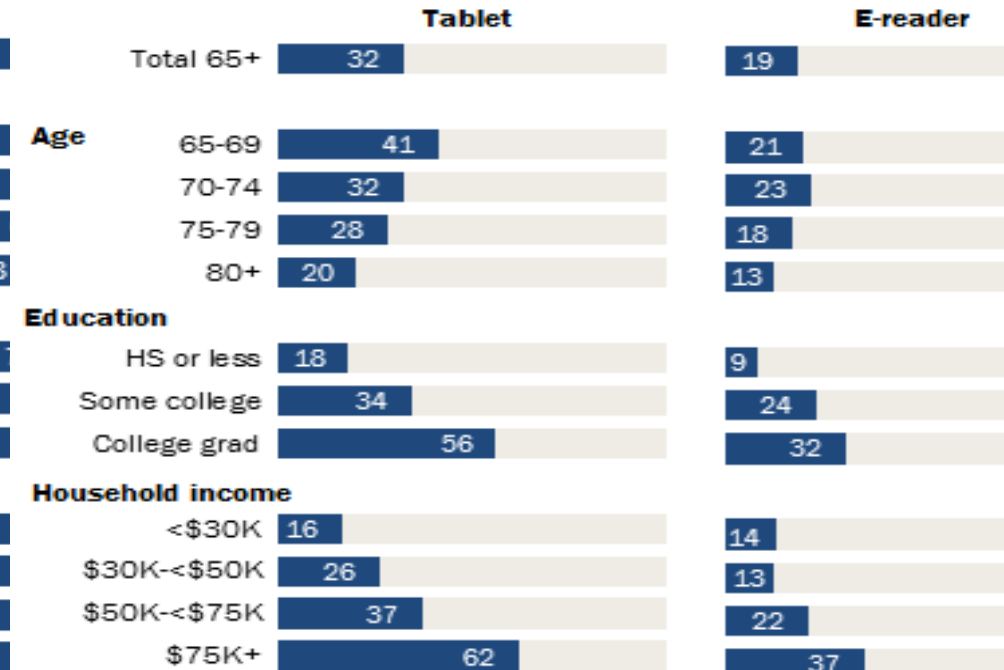
### Cellphone



## Among seniors, roughly a third own tablets and a fifth

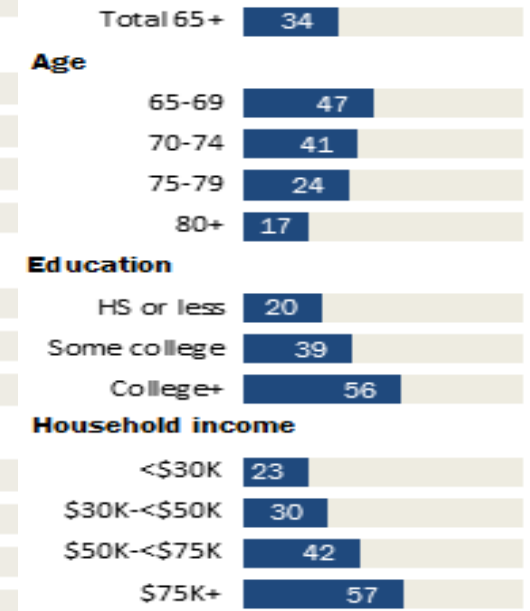
own e-readers

% of U.S. adults ages 65 and older who say they own the following ...



## Around a third of seniors report using social media

% of U.S. adults ages 65 and older who say they ever use social networking sites



Source: Survey conducted Sept. 29-Nov. 6, 2016. "Tech Adoption Climbs Among Older Adults"

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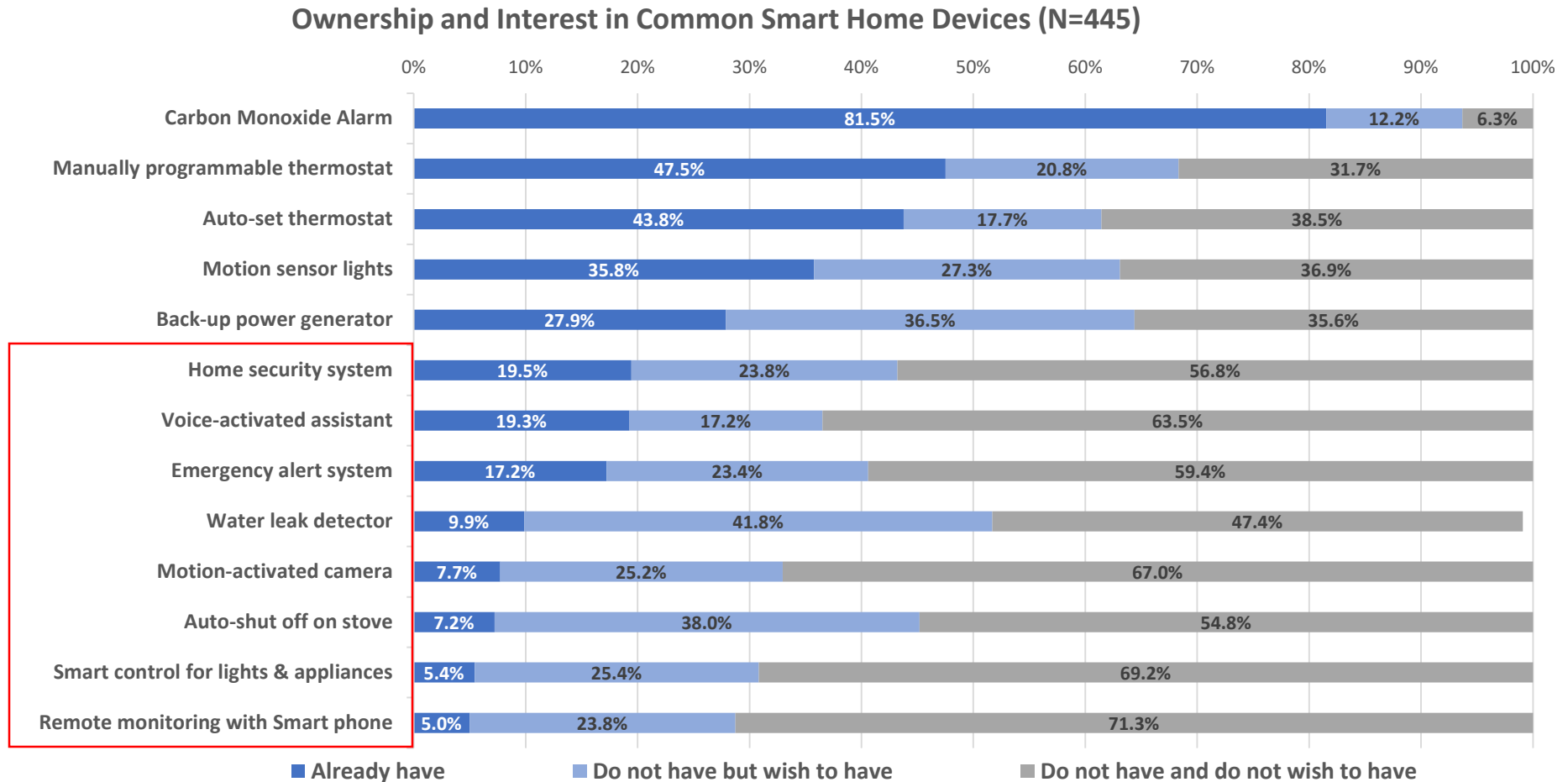
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Source: Survey conducted Sept. 29-Nov. 6, 2016. "Tech Adoption Climbs Among Older Adults"

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# Why the training on SH Automation?



# Conceptual Framework

AD Cognitive/Process Skills Deficits	SH Automation- Functionality	Alzheimer's Disease: Reisberg's Stages		
		Very Mild to Mild	Moderate to Moderately Severe	Severe to Very Severe
Memory Impairment	Daily Activity			
	Weekly or Monthly Calendar	Usability		
	Reminders			
	Alerts			
	Object Finding			
Disorientation	Time Orientation			
	Weather Awareness			
	Community Mobility/Driving			
	Remote Monitoring			
	Prevent Wandering			
	Location identification			
Aphasia (Language)	Reading			
	Speaking			
Agnosia (Recognition)	Visual recognition			
	Auditory recognition			
Apraxia (Motor planning)	Guided activities			

# Feasibility Study-Research Questions

1) How do we best implement these technologies for a caregiver to interface with the care recipient with AD?

- What are some of the technical barriers to overcome?
- What features and characteristics are ideal in each stage of AD?
- How do we ensure care recipient and caregiver privacy?
- What are some “fail safe” strategies if the technology malfunctions?

2) What are the caregivers perspectives from using the home automation devices?

# Findings: Themes

## Implementation

- Needs and preferences vary
- Takes longer
- Connectivity issues
- Password management
- Compatibility for programming
- App updates

# Findings: Themes

## Caregiver perspectives

- Motivation overcomes reluctance
- Prefer flexibility with monitoring
- Mutual independence and autonomy
- Potential to prolong home living
- Continuing technical difficulties

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# Questions for Discussion

- How might home automation technology for caregiving impact long-term care transition?
- What specific technologies or devices may be applicable in long-term care?