Old Housing, New Needs: Are U.S. Homes Ready for an Aging Population?

Current Population Reports

By Jonathan Vespa, Jeremy Engelberg, and Wan He Issued May 2020 P23-217

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This report was prepared by **Jonathan Vespa**, **Jeremy Engelberg**, and **Wan He**, under the direction of **Oliver Fischer**, Assistant Division Chief for International Programs, Population Division. **Karen Battle**, Chief of Population Division, provided overall direction. Additional direction was provided by **Matthew Streeter**, Chief of American Housing Survey Branch, Social, Economic, and Housing Statistics Division.

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Director

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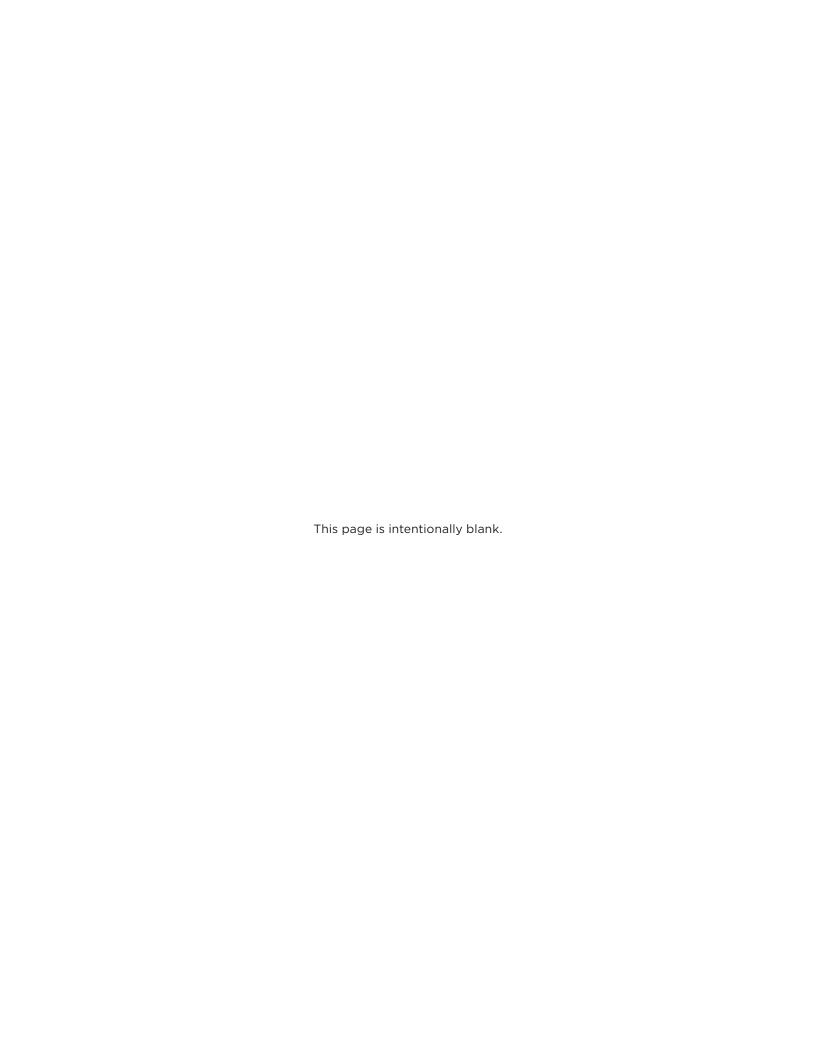
Associate Director for Demographic Programs

Karen Battle,

Chief, Population Division

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INTRODUCTION

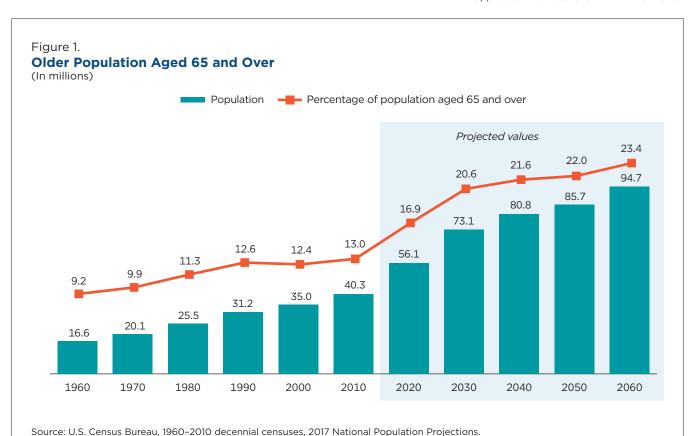
The United States is rapidly graying. The number of older Americans is projected to more than double from 40.3 million in 2010 to 85.7 million in 2050, while their share of the total population is projected to increase from 13 percent to 22 percent during the same period (Figure 1) (U.S. Census Bureau, 2017a; West et al., 2014). In 2011, the first Baby Boomers began turning age 65. By 2030, all Baby Boomers will be older than age 65 and after 2050, all Baby Boomers will be older than age 85. As America ages, more people will need homes that allow them to live safely and comfortably: for example, hallways wide enough to accommodate wheelchairs, showers with handrails and seats to safeguard against falls, or bedrooms on the first floor to avoid navigating staircases.

Whether the growing population of older Americans can live safely and comfortably in their homes touches on the health of older people and is also a question of steep economic costs. The Centers for Disease Control and Prevention (CDC) estimate that more than 1 in 4 people aged 65 and over fall each year and that the direct medical costs of fall-related injuries total more than \$50 billion annually (Burns and Kakara, 2018; CDC, 2016)—a cost expected to rise as the older population grows in coming years. Medicare and Medicaid pay the majority of these costs, with an average hospital bill for a fall-related injury totaling about \$30,000 (Burns et al., 2016). Aging-accessible home modifications can reduce the risk of injury and burden on caregivers (Agree and Freedman, 2000; Newman,

2003). Given that many older adults are highly likely to remain in their home as they age, it is important to understand whether and how their home poses obstacles to daily living that could harm their health (Gitlin, 2003).

This report uses data from the American Housing Survey (AHS) to explore the prevalence of housing units with aging-accessible features. AHS is a panel survey of housing units conducted every 2 years with rotating topical modules. Unlike many surveys that sample people, AHS is specifically designed to measure housing and the stock, quality, and features of housing units. Data in this report come from a group of questions

¹ The U.S. Census Bureau reviewed this data product for unauthorized disclosure of confidential information and has approved the disclosure review avoidance practices applied to this release. CBDRB-FY19-B0146



in the 2011 AHS Household Accessibility Module that asked respondents about specific features of their home, such as the presence of handrails and grab bars, and whether anyone in the household used them. The AHS has not asked these questions more recently than 2011. Although there are many aspects to aging in place—neighborhood amenities and services, loneliness and social interaction, availability of transportation, perceptions of crime and safety—this report focuses on the built environment of housing units (Molinsky and Forsyth, 2018). Specifically, this report explores a variety of basic housing accessibility features that affect the safety, well-being, and daily living experiences of older adults.

The first section of the report estimates how many housing units in the United States have agingaccessible features at the national level and by region and division, regardless of whether any residents of the household need or use the features. This section provides estimates of the total stock of housing in the United States with aging-accessible design elements. The second section looks at difficulties using certain elements of the home. It details households with adults aged 65 and over who have, for example, difficulty climbing stairs, getting into the shower, or using kitchen counters. Next, the report explores households with older adults who have specific unmet needs in that they have trouble performing a specific task in the home and the home lacks a feature that would help. For example, households with older adults who have trouble climbing the stairs, but the home lacks a bedroom and bathroom on

the first floor; or households with older adults who use a wheelchair, but the home does not have wheelchair-accessibility features, such as lowered kitchen countertops or cabinets. The report discusses several unmet needs for older Americans. Last, the report compares the demographic and economic characteristics of households where older adults reported difficulty using home features with households where older adults reported no such difficulty. Throughout the report, older households refer to housing units with at least one adult aged 65 and over: oldest-old households refer to those with at least one adult aged 85 and over.

HIGHLIGHTS

- Of the 115 million housing units in the United States in 2011, about 108 million (or 94 percent of homes) had at least one aging-accessible feature.
- Only 11 million housing units (or about 10 percent of homes) were aging-ready: had a stepfree entryway, a bedroom and full bathroom on the first floor, and at least one bathroom accessibility feature.
- Of the 28.5 million households with an adult aged 65 years and over, 8 million households (or about 28 percent) had an older adult who had difficulty using some element of the home such as climbing stairs, getting into the bathtub, or using the kitchen.
- Among the 4.4 million households with an adult aged 85 years and over, 2.1 million households (or 49 percent) had an oldest-old adult who had difficulty using some element of the home.

- Among households with an adult aged 65 years and over, 23 percent had an older adult who had difficulty walking, but the home lacked handrails or grab bars; 16 percent had an older adult who had difficulty bending down or kneeling, but the home lacked an elevated toilet.
- Compared with all households with an adult aged 65 and over, those with an older adult who had difficulty using a home feature were more likely to have a female householder, to be one-person households, to live in or near poverty, and to live in a rented housing unit.

PREVALENCE OF HOUSING UNITS WITH AGING-ACCESSIBLE FEATURES

There were roughly 115 million housing units in the United States in 2011, ranging from single-family homes to mobile homes and apartments in multistory buildings. These housing units (referred to as homes or households in this report) have a variety of designs, builds, and aging-accessible elements, even if those elements were not specifically designed to help older adults live independently. Of the 115 million housing units, nearly 108 million (94 percent) had at least one basic agingaccessible element: a step-free entryway, sink handles or levers instead of knobs, handrails or grab bars in the bathroom, or electrical outlets that are wheelchair accessible (for a list of basic agingaccessibility features reported in AHS, see Table 1).

Despite that 94 percent of homes had some kind of basic agingaccessible feature, far fewer homes had multiple, critical

Table 1. **Housing Units With Aging-Accessible Features: 2011** (In percent)

	Uni											
Basic aging-	States		North	east	Midv	i e		South		Wes	st	
accessible features	Mil- lions	Per- cent	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central		Mountain	Pacific	
Total number of housing												
units ¹	114.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
At least one basic aging-	4070	07.0	01.6	00.5	07.0	040	00.7	0.4.0	05.0	00.0	05.4	
accessible feature	107.9 11.3	93.9	91.6 6.7	92.5 5.8	93.9	94.0	92.7	94.8	95.0	96.6	95.1	
Aging-ready home ²	11.5	9.8	6.7	5.8	8.1	10.8	10.3	11.1	13.9	13.1	10.0	
BASIC ACCESSIBILITY FEATURES												
Home Layout Single-floor home	43.8	38.1	7.9	8.7	20.6	20.3	49.2	60.2	69.2	49.5	48.0	
Multiple-floor home with bed-	45.0	30.1	7.5	0.7	20.0	20.5	75.2	00.2	05.2	75.5	40.0	
room and bathroom on entry												
level	40.4	35.2	45.3	44.9	48.3	50.4	26.4	27.8	20.9	32.0	29.5	
Multiple-floor home without												
bedroom or bathroom on entry	70.6	26.7	46.7	16.1	71.0	20.7	24.4	101	0.0	10 5	22.5	
level	30.6 48.7	26.7 42.4	46.7 28.0	46.4 33.1	31.0 31.8	29.3 36.5	24.4 47.2	12.1 42.4	9.9 55.8	18.5 51.3	22.5 48.6	
Bathroom Accessibility	40.7	72.7	20.0	33.1	31.0	30.5	77.2	72.7	33.0	31.3	40.0	
At least one basic bathroom												
accessibility feature	28.2	24.6	26.9	22.6	25.9	29.0	24.1	25.1	23.0	25.3	23.5	
All three bathroom features:	1.7	1.5	1.4	1.2	1.6	2.1	1.5	1.6	1.4	1.7	1.2	
Built-in shower seats	9.5	8.3	7.4	5.8	8.7	10.8	8.9	8.2	9.1	8.6	7.8	
Elevated toilets	7.7	6.7	6.4	5.3	7.4	10.0	6.8	8.0	7.0	6.6	5.1	
Handrails or grab bars in	20.3	17.7	21.7	100	10.4	19.3	16.0	177	140	19.2	17.5	
bathroom	20.3	1/./	21.7	18.0	18.4	19.5	16.8	17.3	14.8	19.2	17.5	
Mobility Features At least one basic mobility												
feature	75.7	65.9	57.1	63.3	67.2	67.4	62.4	70.7	70.6	68.7	67.0	
Elevator in home	0.3	0.2	s0.2	0.3	0.3	s0.2	0.3	s0.1	0.2	s0.1	s0.2	
Extra wide doors or hallways	9.0	7.8	8.3	6.6	7.8	9.3	6.9	11.1	7.3	8.9	7.5	
No steps between rooms	72.9	63.5	54.0	60.8	64.7	64.6	60.0	67.3	68.8	66.5	64.7	
Ramps in home	0.7	0.6	1.2	0.6	0.9	1.0	0.5	0.6	0.3	s0.5	0.4	
Wheelchair Accessibility												
At least one basic wheelchair	70.0	60.6	67.0	67.7	70.4	75.5	65.6	70.0	65.0	70.5	77.0	
feature Average number of wheelchair	79.9	69.6	63.8	63.7	72.4	75.5	65.6	72.2	65.9	78.5	73.9	
features:	×	3.1	2.7	2.7	3.2	3.4	2.8	3.3	3.1	3.5	3.3	
Bathroom	45.5	39.6	32.7	32.7	40.2	44.1	36.6	44.0	40.4	44.0	44.6	
Climate controls	53.7	46.8	41.2	39.5	52.4	54.7	41.4	47.1	45.1	53.8	50.4	
Countertops	58.6	51.0	45.4	47.3	51.6	57.8	47.4	54.5	49.6	55.9	54.2	
Electrical outlets	71.6	62.4	56.4	55.5	64.8	67.8	59.2	64.1	59.5	71.8	66.4	
Electrical switches	73.2 34.8	63.7	58.9 22.5	56.6 27.3	67.3 29.7	70.2 34.2	59.8 25.9	64.7 36.1	58.9 32.2	73.1 37.0	68.7 33.0	
Kitchen cabinets	18.5	16.1	14.5	13.6	14.9	15.2	14.6	18.8	21.4	19.3	15.9	
Other Housing Features												
At least one basic other housing												
feature	53.6	46.6	53.9	46.9	54.0	57.4	39.6	38.4	34.4	55.0	49.3	
Door handles instead of												
knobs	12.8	11.1	7.6	9.6	12.4	11.0	9.7	7.4	9.0	17.5	14.2	
Handrails or grab bars along												
the stairway or in other areas of the home	19.9	17.3	29.0	21.0	21.6	22.6	14.6	14.4	10.7	14.4	14.4	
Kitchen trays or lazy susans	21.9	19.1	25.3	19.7	24.7	26.2	14.6	13.4	9.6	26.4	19.3	
Sink handles or levers	32.2		23.6	25.8	30.9	34.8	24.0	22.6		37.2	33.6	

X Not applicable. s This estimate has a coefficient of variation that is 30 percent or greater. As a result, users should exercise caution when interpreting the estimate.

Occupied housing units only.

² This report defines an aging-ready home as a housing unit that has a step-free entryway, a bedroom and full bathroom on the first floor, and at least one bathroom accessibility feature.

Note: For more information on confidentiality protection, sampling error, nonsampling error, and definitions, see <www.census.gov/programs-surveys/ahs/tech-documentation/def-errors-changes.html>.

Source: U.S. Census Bureau, 2011 American Housing Survey.

features that are important for an aging population. Of the 115 million housing units, only 20.3 million (or 18 percent) had handrails or grab bars in the bathroom (Table 1). More than one-quarter of all homes are multistory and lack a bedroom and full bathroom on the first floor. This home design is more pronounced in New England and the Middle Atlantic, where just under half of all homes are multistory and lack a bedroom and full bathroom on the first floor (47 percent and 46 percent, respectively). First-floor access to these rooms is especially important considering the 10.9 million older Americans who have serious difficulty walking or climbing stairs (U.S. Census Bureau, 2017b). Over time, new construction and home design have gravitated towards multistory homes. Between 1975 and 2017, the percentage of newly built homes in the country that had two or more stories increased from 23 percent to 55 percent. The percentage was even higher in the Northeast, rising from 42 percent to 83 percent of newly built homes across the same period (U.S. Census Bureau, 1978 and 2017c).

For the stock of aging-ready homes, this report considers two core design elements that are important for older adults' health and safety: single-floor living and bathroom accessibility. This report defines aging-ready homes as housing units that have a step-free entryway, a bedroom and a full bathroom on the first floor, and at least one bathroom accessibility feature, such as handrails or grab bars in the bathroom

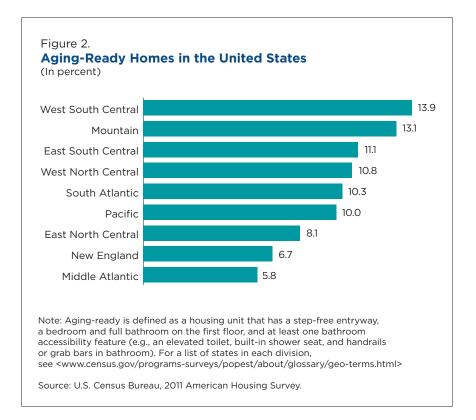
or an elevated toilet.² Although this definition does not include every accessibility need of the older population, it does focus on design elements that address common challenges that older adults face: serious ambulatory difficulties and fall-related injuries on the stairs or in the bathroom. Falls are the leading cause of both fatal and nonfatal injuries among the older population, and more than one-half of bathroom injuries are directly related to using the shower or getting into or out of the bathtub (Burns and Kakara, 2018; Stevens and Haas, 2011). When bathing or using the toilet, older adults who live in homes without bathroom accessibility features may rely on precarious and unstable supports (Aminzadeh et al., 2000). For these reasons, it is important to consider single-floor living in conjunction with bathroom accessibility features as core elements of an aging-ready home.

Across the nation, the stock of aging-ready homes is quite low. Just 10 percent of housing units in the United States have a stepfree entryway, a bedroom and a full bathroom on the first floor, and at least one bathroom accessibility feature such as handrails or a built-in shower seat (Table 1). The prevalence of this type of aging-ready home sometimes varies regionally (see Appendix A for regions and divisions, and states in each division as defined by the Census Bureau). For example, about 6 percent of

homes in the Middle Atlantic division (New Jersey, New York, and Pennsylvania) have all of these aging-accessible features, compared with 14 percent of homes in the West South Central division of the United States (Arkansas. Louisiana, Oklahoma, and Texas) (Figure 2). The difference is largely because of building types. Single-story homes are prevalent in divisions throughout the South and West regions. In contrast, more than 90 percent of homes in New England and the Middle Atlantic have multiple floors (Table 1).

Regional differences in the prevalence of aging-ready homes may also be related to the age of the housing unit. The stock of housing is older in the Middle Atlantic and New England, where the median year built is 1958 and 1963, respectively. In contrast, the median year built is 1984 in the West South Central area of the United States and 1986 in the Mountain division (U.S. Census Bureau, 2017d). Renovations could be limited in scope in regions with older housing units because they require more extensive and expensive renovations, or because these regions have older multistory homes and smaller apartment buildings in densely populated cities. This housing situation could put the older population at a higher health risk, especially in New England and the Middle Atlantic divisions whose states are among those with the highest proportion of adults aged 65 and over (U.S. Census Bureau, 2018).

² This is one possible definition of an aging-ready home. Other studies on aging-accessible features focus on single-floor living (Will, 2015). If we considered just a step-free entryway and a bedroom and full bathroom on the first floor, then about 32 percent of housing units in the United States (about 37.1 million) would be defined as aging-ready.



DAILY LIVING IN THE HOME: HOUSEHOLDS WITH OLDER ADULTS WHO HAD DIFFICULTY USING HOME FEATURES

Many older adults have difficulty using some element of their home; roughly 8.0 million older households (28 percent) reported such difficulty. In this report, we classify difficulty as respondents who reported that, without any assistance, they had problems using specific design elements of their home, whether the stairs, faucets, or kitchen countertops. The most common difficulty was walking around the house or climbing stairs, followed by getting into and out of the shower, and reaching kitchen cabinets (Table 2). About 16 percent of households with an adult aged 65 and over had difficulty using a single feature of the home, while almost 7 percent had difficulty using

three or more features (4.7 million and 2.0 million older households, respectively).

Difficulty using the home is far more prevalent among the oldest old, those adults aged 85 years and over. Among oldest-old households, almost half had difficulty using any home features (Table 2). This is not surprising given that the oldest old are more likely to have health limitations or difficulty with daily activities of living, such as dressing, bathing, or running errands, than adults in their 60s or 70s (He and Larsen, 2014). Of the home features measured in the AHS, the stairs, bathroom, and kitchen are the most common problem areas for the oldest old, just as these three areas posed the most common problems for households with adults aged 65 and over. About 23 percent of oldest-old households had an adult who had difficulty

using a single feature of the home, while almost 17 percent had difficulty using three or more features (1.0 million and 700,000 oldest-old households, respectively).

Across the nation, more than one-quarter of older households and about one-half of oldest-old households had an older adult who had difficulty using some element of their home, but some of these patterns may vary by geography (Table 2). Two important factors underlie regional differences: the interplay of housing and population. First, the stock of housing in certain parts of the country may be ill-suited to older adults' needs such as the prevalence of older, multistory homes in the Northeast. Second, the population of older adults in certain parts of the country may be more likely to be disabled or in poor health, which is linked with higher levels of poverty across the country (He and Larsen, 2014; Melzer et al., 2001). In other words, in some regions the housing itself is inadequate for older adults' needs, while in other regions disability and poor health are more widespread, either of which would increase the number of households with older adults who had difficulty using the home.

Some divisions throughout the South had a higher proportion than other divisions of households with older adults who had difficulty using the home, even though this region had a greater overall stock of aging-ready homes.³ This may be an example of geographic differences in health, because poor health and disability

³ Only the South Atlantic division is significantly different from the national average. The East South Central and West South Central divisions are not significantly different.

Table 2.

Households With Adults Aged 65 and Over Who Have Difficulty Using Home Features: 2011
(In percent)

	Unit	ed				Regio	on and di	vision			
	Sta	tes	North	neast	Midv	vest		South		Wes	st
Household characteristic	Mil- lions	Per- cent	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
HOUSEHOLDS WITH ADULTS											
AGED 65 AND OVER	28.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Difficulty using any housing											
feature	8.0	28.2	30.6	26.6	30.5	27.2	26.8	31.8	31.2	27.1	25.7
Getting to the bathroom Getting into or out of bath-	0.9	3.0	3.1	2.8	2.5	1.3	3.9	4.9	2.7	2.7	2.6
tub or shower Reaching or opening kitchen	2.8	9.9	11.5	9.6	11.2	7.1	10.2	12.4	9.4	9.0	8.8
cabinets	2.7	9.3	9.5	9.4	10.7	8.7	9.1	10.3	8.6	8.9	8.2
Using faucets	0.5	1.9	s1.7	1.8	1.3	s0.8	2.6	3.4	1.8	s1.6	1.4
Using kitchen counters	0.6	2.2	s1.5	2.4	2.0	s0.9	3.3	2.6	1.8	s2.2	1.6
Using the sink or stove	0.8	3.0	3.4	3.3	2.9	s0.9	3.7	3.6	2.7	s2.3	2.6
Walking or climbing stairs	6.9	24.2	26.8	23.3	24.7	22.4	22.9	28.0	28.1	24.4	22.0
Households With Adults Aged 65 and Over With Difficulty Using Housing Features One feature	4.7 1.4 2.0	16.3 5.0 6.9	16.8 5.6 8.3	14.3 5.5 6.7	18.0 5.6 6.8	18.2 4.8 4.2	14.7 4.3 7.7	18.6 4.4 8.8	18.7 5.2 7.3	15.7 4.6 6.7	15.3 5.0 5.5
HOUSEHOLDS WITH ADULTS AGED 85 AND OVER Difficulty using any housing	4.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
feature	2.1	48.5	58.9	42.2	52.5	47.3	46.5	44.2	52.0	46.0	50.8
Getting to the bathroom Getting into or out of	0.3	7.4	10.7	4.6	6.1	s2.6	8.1	13.3	6.8	s9.6	8.2
bathtub or shower Reaching or opening kitchen	1.0	23.0	30.8	18.8	26.2	17.7	21.9	24.1	18.5	19.4	28.0
cabinets	0.8	17.1	19.7	16.3	17.6	19.7	15.8	17.7	16.0	17.9	17.4
Using faucets	0.2	4.5	s2.0	4.1	s3.0	s1.0	4.9	s13.1	s3.9	s4.2	5.2
Using kitchen counters	0.3	6.1	s3.7	7.8	3.6	s1.8	7.9	s11.4	s4.5	s6.8	5.7
Using the sink or stove	0.3	7.4	s7.3	8.1	5.1	s3.7	8.2	s13.0	6.6	s5.6	8.5
Walking or climbing stairs	1.8	42.0	51.9	37.6	41.3	37.3	43.3	40.2	45.8	41.9	42.4
Households With Adults Aged 85 And Over With Difficulty Using Housing Features											
One feature	1.0	23.2	27.0	18.4	26.5	25.7	20.8	19.8	29.3	23.6	23.2
Two features	0.4	8.8	⁵8.5	9.4	11.4	s11.2	7.5	§5.5	6.4	s4.0	10.6
Three or more features	0.7	16.5	23.4	14.4	14.6	10.4	18.2	18.9	16.2	18.4	17.1

^s This estimate has a coefficient of variation that is 30 percent or greater. As a result, users should exercise caution when interpreting the estimate.

are disproportionately higher throughout the South, along the Mississippi Delta, and in parts of Appalachia (He and Larsen, 2014). New England had the greatest prevalence of households with a person aged 85 and over who had difficulty using the home: about 59 percent of oldest-old

households in New England reported difficulty, compared with about 49 percent nationwide (Figure 3).

Beyond a general difficulty with home features, the AHS can measure specific unmet needs that older adults face at home. Unlike the broader definition of difficulty using home features that this report has discussed above, unmet needs further describe a subset of older households that has an older person who reported trouble performing a specific task, but the home lacked a corresponding accessibility feature that would have helped with the

Note: For more information on confidentiality protection, sampling error, nonsampling error, and definitions, see <www.census.gov/programs -surveys/ahs/tech-documentation/def-errors-changes.html>.

Sources: U.S. Census Bureau, 2011 American Housing Survey.

task. Of the 28.5 million house-holds with an adult aged 65 and over, about 23 percent reported difficulty walking, but the home lacked grab bars or handrails; about 16 percent of households had an older adult who had difficulty bending down or kneeling, but the home lacked an elevated toilet; and about 15 percent had an older adult who had difficulty walking, but he or she needed to climb steps to enter the home (Table 3).4

Unmet housing needs are especially acute for the oldest old. Of the 4.4 million households with an adult aged 85 and over, about 38 percent had an adult who had difficulty walking, but the home lacked grab bars or handrails; about 25 percent had an oldest-old adult who had difficulty

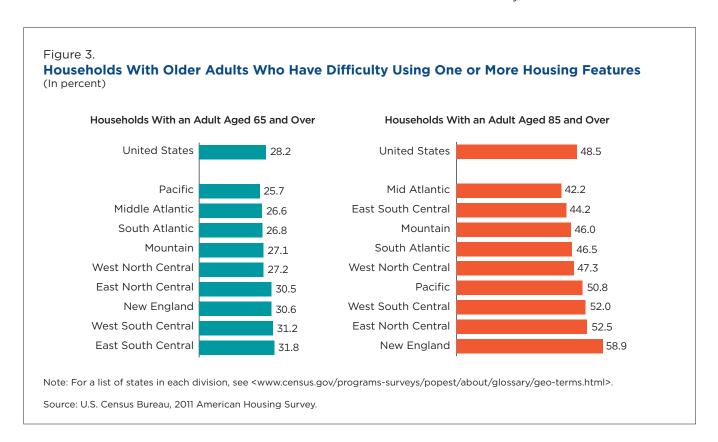
walking, but he or she needed to climb steps to enter the home; and about 23 percent had an oldest-old adult who had difficulty bending down or kneeling, but the home lacked an elevated toilet.

Other unmet needs were less common, but no less challenging. About 6 percent of older households had an adult aged 65 and over who reported difficulty grasping small objects, but the home had knobs on the sinks and doors (Table 3). Knobs require a firmer grasp to manipulate than levers and handles and pose problems for older adults with arthritis. The proportion for every unmet need was higher among oldestold households, which again underscores how people aged 85 and over were more likely to face unmet housing needs. For older adults who relied on a wheelchair, there were about 413,000 households with a person aged

65 and over where the older adult used a wheelchair but the home lacked all seven of the measured wheelchair-accessibility features. No less serious were the 754,000 households, about 17 percent of homes with an adult aged 85 and over, that reported difficulty with the bathroom, but the home had none of the three measured bathroom accessibility features. The lack of wheelchair and bathroom accessibility features pose a serious unmet need for these older households, one that diminishes the comfort of the home and increases the chance of injury.

CHARACTERISTICS OF HOUSEHOLDS WITH OLDER ADULTS WHO HAD DIFFICULTY USING HOME FEATURES OR UNMET NEEDS

The first parts of this report look at the stock of housing with aging-accessible features and how many households had older adults



⁴ The latter two unmet needs are not significantly different from one another.

Table 3. **Households With Older Adults Who Have Unmet Housing Needs: 2011**(Numbers in thousands)

Unmet need	Households v aged 65 a		Households with adults aged 85 and over		
	Number	Percent	Number	Percent	
Total households with an older adult	28,520	100.0	4,394	100.0	
Uses a wheelchair, but the home lacks wheelchair-accessible features	413	1.4	108	2.4	
Has difficulty grasping small objects, but the home lacks sinks with handles or levers (instead of knobs)	1,188	4.2	331	7.5	
with door handles (instead of knobs)	1,588	5.6	410	9.3	
elevated toilet	4,419	15.5	1,023	23.3	
Has difficulty walking, but the home lacks a step-free entryway Has difficulty walking, but the home lacks handrails and grab	4,398	15.4	1,114	25.4	
bars	6,409	22.5	1,661	37.8	
Has difficulty walking, but the home is not livable on the first floor	786	2.8	191	4.4	
accessibility features	2,207	7.7	754	17.2	

Note: For more information on confidentiality protection, sampling error, nonsampling error, and definitions, see <www.census.gov/programs -surveys/ahs/tech-documentation/de-errors-changes.html>.

Source: U.S. Census Bureau, 2011 American Housing Survey.

with difficulty living in their home. The last section looks inside these households at the characteristics of older adults who reported difficulty living in their home. Research has shown that older adults who have such difficulty tend to live in economically disadvantaged households (Louie and Ward, 2011). These older people have fewer resources to redesign their homes or to move into housing with more aging-accessible features. In cases of a fall or injury, they may have fewer resources to help their recovery, as well.

Households with older adults who reported difficulty using three or more elements of the home are defined here as having severe difficulty. These households, along with those where older adults had a specific unmet need, were more likely to be living in or near poverty, and to have a householder who had less than a high school education compared with all households aged 65 and over

(Table 4). More than one-third of these households lived in or near poverty, significantly more than the national average for older households. Households with older adults who had severe difficulty or specific unmet needs were also more likely to have a female householder, to rent their home, and to live in an apartment building compared with all households aged 65 and over. For example, more than one-quarter (29 percent) of households with older people who had severe difficulty lived in a rented housing unit compared with about 19 percent of all older households. Compared with those who own their homes, older renters and those living in apartment buildings have less control over the physical space and design elements of their home. They may not be able to make home improvements such as installing handrails, a builtin shower seat, or wheelchairaccessible features. Households with older adults who had severe

difficulty also face more problems with the building structure itself such as holes in floors, cracks in walls, or broken kitchen and bathroom facilities.

Homes that are livable on the first floor offer important accessibility conditions to older adults such as a bedroom and full bathroom on the entry level. Compared with households where older adults had severe difficulty or unmet needs, homes that were livable on the first floor were more likely to have householders who were younger, living with a spouse, and who attended some college as their highest level of education (Table 4). They were also more likely to have an income-topoverty ratio that is 300 percent or greater. In other words, homes that were livable on the first floor were economically advantaged and had more resources, on average, than homes where older adults reported severe difficulty using the home.

Table 4.

Characteristics of Households With Adults Aged 65 and Over: 2011
(In percent)

		Older							
Characteristic	All older households	households livable on first floor ¹	Difficulty using any home feature	Severe difficulty using home features ²	Unmet need³				
DEMOGRAPHIC CHARACTERISTICS Average age of householder (in years)	72.5	72.9	75.3	76.4	75.1				
Sex of Householder Female	51.7	52.8	58.3	64.7	57.7				
	48.3	47.2	41.7	35.3	42.3				
Race or Ethnicity of Householder ⁴ White alone Black alone Other Hispanic (any race)	84.9	85.8	84.2	82.4	84.2				
	10.0	9.7	11.6	13.3	11.3				
	5.1	4.5	4.2	4.2	4.5				
	7.5	7.9	7.3	9.0	7.7				
Householder is foreign-born	11.1	10.3	9.8	12.7	10.3				
Household Living Arrangement Householder living alone Householder living with spouse Other arrangement	37.8	38.8	42.6	37.2	42.2				
	46.8	45.7	39.8	36.7	40.4				
	15.4	15.5	17.6	26.1	17.4				
ECONOMIC CHARACTERISTICS Householder's Education Some college or more	46.2	44.3	38.5	38.6	38.2				
	33.9	34.4	35.6	31.7	35.5				
	19.8	21.3	25.9	29.7	26.4				
Household Income-to-Poverty Ratio ⁵ 0 to 149 percent. 150 to 299 percent. 300 percent or higher.	28.7	29.7	36.1	37.2	36.1				
	32.2	33.4	33.7	33.8	34.1				
	39.0	36.9	30.2	28.9	29.8				
HOUSING CHARACTERISTICS Tenure									
Owned	80.8	80.5	74.2	71.4	75.1				
	19.2	19.5	25.9	28.6	24.9				
Inadequate housing quality ⁶	4.3	4.4	5.9	7.0	5.9				
Housing Type Single family home	75.8	74.1	69.6	68.1	69.8				
	17.4	17.4	22.5	23.8	21.7				
	6.9	8.6	7.9	8.1	8.5				

¹ Defined as a home with a bedroom and full bathroom on the first floor.

² Defined as a household with an adult aged 65 and over who has difficulty using three or more housing features.

³ Defined as a household with an adult aged 65 and over who reported trouble performing specific tasks around the home, but the home lacked any kind of corresponding accessibility feature that would have helped with the task.

⁴ "Other" includes respondents who reported Asian alone, Native Hawaiian or Other Pacific Islander alone, American Indian or Alaska Native alone, and Two or More Races. Categories will not add to 100 percent because Hispanics may be any race.

⁵ The ratio of the household's total income relative to the poverty threshold.

⁶ Includes housing units that are missing stair railings or steps in common areas, have holes in floors or cracks in walls, or have broken kitchen or bathroom facilities. For a complete list of features, see the American Housing Survey Codebook at <www.census.gov/data-tools/demo/codebook/ahs/ahsdict.html>.

Note: For more information on confidentiality protection, sampling error, nonsampling error, and definitions, see <www.census.gov/programs -surveys/ahs/tech-documentation/def-errors-changes.html>.

Source: U.S. Census Bureau, 2011 American Housing Survey.

SUMMARY

This report used data from the AHS, a panel survey of housing units that in 2011 asked respondents about specific aging-accessible features in their home. Unlike other surveys that sample the population, the AHS is designed to measure the stock, quality, and features of housing units in the United States. This report provided data on the number of housing units in the country that had aging-accessible features, as well as geographic differences in the prevalence of homes with these features. The report also estimated the number of households with an older adult who had difficulty using some aspect of the home, whether it was reaching and opening kitchen cabinets, climbing stairs, or getting into or out of the bathtub or shower.

In 2011, nearly 94 percent of the 115 million housing units in the United States had at least one of the basic aging-accessible features measured by the AHS, whether a step-free entryway, wheelchair accessible electrical outlets, or a bedroom or bathroom on the first floor. However, only 10 percent of all U.S. homes, or about 11 million housing units, were aging-ready in that they had a step-free entryway, had a bedroom and full bathroom on the first floor, and had at least one bathroom accessibility feature. These 11 million aging-ready homes were more common throughout some areas of the South, the West North Central division, and Mountain and Pacific divisions. However, households with older adults who had difficulty using elements of their home were disproportionately represented in states throughout the South and New England, Other factors besides the stock of housing with accessibility features may have affected these regional trends such as geographic differences in health, disability, and poverty.

Of the 28.5 million households with an older adult, more than one-quarter (28 percent) reported difficulty using some aspect of the

home. By far the most common unmet need was households with older adults who reported serious difficulty walking, but the home lacked handrails or grab bars for support. While unmet housing needs pose challenges for older adults, they are especially problematic because they are overrepresented among older households that are poor and economically disadvantaged. This is a population with relatively few resources for home renovations or for relocating to a new home with better agingaccessible features.

In coming decades, the demand for homes with aging-accessible features will rise as Baby Boomers age into older adulthood and the size of the older population grows. The need for aging-accessible homes is one of both health and economics, as fall-related injuries impose costly tolls on older people. Coupled with the growing size of the older population, it is necessary to consider how the functional design of homes may affect older people's ability to live safely and comfortably.

SOURCE AND ACCURACY

The AHS is a nationally representative longitudinal survey of housing in the United States. The survey is administered once every 2 years by the Census Bureau on behalf of the U.S. Department of Housing and Urban Development and is the most comprehensive national housing survey in the country.1 The AHS is a leading source of information on housing characteristics such as the size and composition of the nation's housing inventory, vacancies, home values, and the physical condition of homes.2

Beginning with the 2011 AHS, the survey instrument included a

permanent set of core questions that are asked in each survey and questions on topical supplements that rotate in and out of AHS surveys. In 2011, one of these topical supplements included questions on how accessible homes were for people with physical limitations. This supplement covered an array of topics including the usage of mobility equipment (e.g., wheelchairs), the prevalence of accessibility features (e.g., handrails), and the usage of these features due to individuals in the household having physical limitations. The availability of these questions in the AHS provides researchers with a unique opportunity to examine issues related to home accessibility and unmet accessibility needs in the United States.

Statistics from surveys are subject to sampling and nonsampling error. All comparisons presented in this report have taken sampling error into account and are

significant at the 90 percent confidence level unless otherwise noted. This means the 90 percent confidence interval for the difference between the estimates being compared does not include zero. Nonsampling errors in surveys may be attributed to a variety of sources, such as how the survey was designed, how respondents interpret questions, how able and willing respondents are to provide correct answers, and how accurately the answers are coded and classified. To minimize these errors, the Census Bureau employs quality control procedures throughout the production process, including the overall design of surveys, wording of questions, review of the work of interviewers and coders, and the statistical review of reports.

¹ AHS data and technical information are available online at <www.census.gov/programs-surveys/ahs.html>.

² Statistics from surveys are subject to error from different sources. Information on the source of the data and accuracy of the estimates are available at <www.census.gov/programs-surveys/ahs/tech-documentation/def-errors-changes.2011 .html>.

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Appendix A.

CENSUS REGIONS AND DIVISIONS

The U.S. Census Bureau delineates two sets of subnational areas that are composed of states. This twotiered system of areas consists of nine census divisions nested in four census regions.

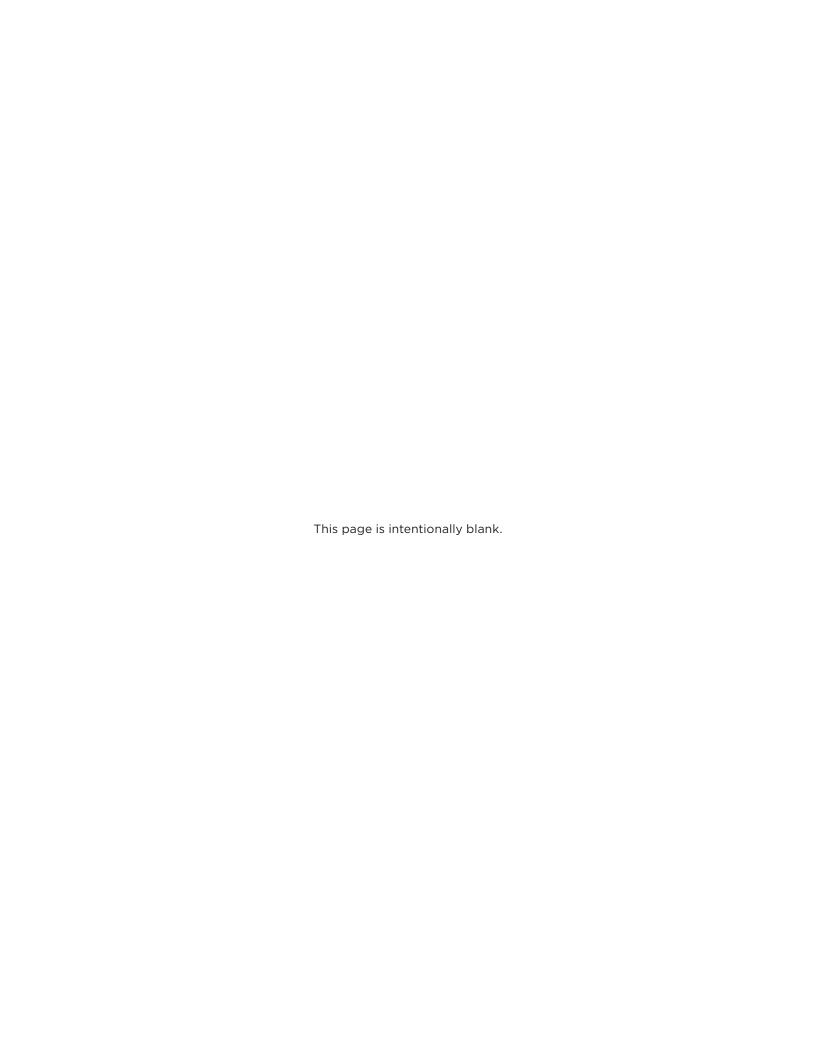
The Northeast region includes the New England division:

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; and the **Middle Atlantic division**: New Jersey, New York, and Pennsylvania. The Midwest region includes the East North Central division: Illinois, Indiana, Michigan, Ohio, and Wisconsin; and the West North Central division: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.

The **South region** includes the **South Atlantic division**: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia; the **East South Central division**: Alabama, Kentucky, Mississippi, and Tennessee; and the **West South Central division**: Arkansas, Louisiana, Oklahoma, and Texas.

The **West region** includes the **Mountain division**: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming; and the **Pacific division**: Alaska, California, Hawaii, Oregon, and Washington.

For more information, see <www.census.gov/programs -surveys/popest/about/glossary /geo-terms.html>.



Appendix Table B-1.

Standard Errors for U.S. Housing Units With Aging-Accessible Features: 2011

	Unit	ed	Region and division										
Basic aging-	States		North	neast	Midv	vest		South	Wes	t			
accessible features	Mil- lions	Per- cent	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific		
Total number of housing units ¹	0.45	Х	х	х	х	х	х	х	х	x	X		
At least one basic aging- accessible feature Aging-ready home ²	0.46 0.20	0.18 0.17	0.77 0.50	0.35 0.31	0.31 0.33	0.56 0.51	0.51 0.37	1.04 0.82	0.51 0.72	0.42 1.10	0.27 0.39		
BASIC ACCESSIBILITY FEATURES Home Layout Single-floor home	0.50	0.43	1.14	0.41	1.00	2.27	1.28	1.82	1.07	2.77	0.92		
Multiple-floor home with bed- room and bathroom on entry level	0.42	0.32	1.09	0.59	0.83	1.57	0.82	1.29	0.80	2.03	0.59		
Multiple-floor home without bedroom or bathroom on entry level	0.35 0.44	0.28 0.35	1.27 1.06	0.68 0.77	0.87 0.75	1.17 1.37	0.87 1.13	0.91 1.71	0.53 1.26	1.24 1.83	0.75 0.71		
Bathroom Accessibility At least one basic bathroom accessibility feature All three bathroom features: Built-in shower seats Elevated toilets Handrails or grab bars in bathroom	0.31 0.08 0.18 0.16	0.25 0.07 0.16 0.14	1.04 0.23 0.65 0.57	0.52 0.15 0.27 0.30	0.51 0.16 0.35 0.30	0.77 0.28 0.60 0.52	0.44 0.13 0.35 0.28	1.32 0.34 0.64 0.60	0.82 0.18 0.60 0.51	0.94 0.27 0.81 0.49	0.56 0.15 0.38 0.25		
Mobility Features At least one basic mobility feature	0.50 0.03 0.19 0.50 0.05	0.34 0.02 0.16 0.35 0.04	1.47 0.09 0.69 1.44 0.23	0.67 0.07 0.38 0.66 0.09	0.73 0.07 0.35 0.73 0.14	0.97 0.07 0.60 1.11 0.22	0.74 0.05 0.34 0.79 0.08	1.92 0.05 1.27 2.13 0.16	1.15 0.06 0.43 1.17 0.08	1.32 0.06 0.47 1.47 0.18	0.76 0.06 0.43 0.81 0.07		
Wheelchair Accessibility At least one basic wheelchair feature	0.63	0.45	1.70	0.81	1.27	1.44	1.07	2.47	1.75	1.38	0.75		
Average number of wheelchair features: Bathroom. Climate controls. Countertops Electrical outlets Electrical switches. Kitchen. Kitchen cabinets.	X 0.55 0.57 0.58 0.60 0.61 0.52 0.33	0.02 0.42 0.44 0.43 0.44 0.46 0.43 0.28	0.08 1.36 1.16 1.63 1.50 1.63 1.38 0.89	0.04 0.66 0.73 0.90 0.80 0.84 0.72 0.61	0.08 1.29 1.37 1.50 1.37 1.40 0.69	0.08 1.59 1.81 1.68 1.42 1.64 1.96 0.98	0.05 0.74 0.87 0.89 1.12 1.02 0.85 0.55	0.16 2.63 2.77 2.78 2.71 3.03 2.83 1.44	0.09 1.38 1.47 1.46 1.64 1.70 1.36	0.10 2.39 2.08 1.87 1.46 1.51 1.96 0.97	0.04 0.93 0.68 0.88 0.77 0.80 1.10 0.59		
Other Housing Features At least one basic other housing feature	0.47	0.36	1.31	0.70	0.94	1.20	0.79	2.51	1.09	1.46	0.64		
Door handles instead of knobs	0.19	0.17	0.63	0.38	0.45	0.66	0.40	0.76	0.53	1.03	0.51		
the stairway or in other areas of the home	0.31 0.28 0.38	0.26 0.22 0.31	0.95 1.01 1.32	0.57 0.52 0.49	0.78 0.73 0.78	1.10 0.85 1.29	0.56 0.45 0.61	1.05 1.09 1.90	0.53 0.56 1.01	1.03 0.87 1.62	0.42 0.68 0.62		

X Not applicable.

¹ Occupied housing units only.

² This report defines an aging-ready home as a housing unit that has a step-free entryway, a bedroom and full bathroom on the first floor, and has at least one bathroom accessibility feature.
Source: U.S. Census Bureau, 2011 American Housing Survey.

Appendix Table B-2.

Standard Errors for Households With Adults Aged 65 and Over Who Have Difficulty Using Home Features: 2011

	Unit			Region and division								
	Stat	es	North	neast	Midv	dwest South				West		
Household characteristic	Mil- lions	Per- cent	New England		East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
HOUSEHOLDS WITH ADULTS												
AGED 65 AND OVER												
Difficulty using any housing												
feature	0.14	0.45	1.83	1.10	0.90	1.68	1.20	1.73	1.79	1.79	1.17	
Getting to the bathroom Getting into or out of bath-	0.05	0.17	0.78	0.36	0.35	0.35	0.48	0.90	0.55	0.78	0.31	
tub or shower Reaching or opening kitchen	0.09	0.32	1.43	0.72	0.68	0.89	0.89	1.28	0.83	1.11	0.63	
cabinets	0.08	0.27	0.98	0.65	0.65	0.96	0.76	1.20	0.94	1.28	0.67	
Using faucets	0.04	0.12	0.52	0.29	0.25	0.29	0.38	0.82	0.46	0.59	0.22	
Using kitchen counters	0.05	0.16	0.46	0.39	0.29	0.32	0.45	0.74	0.42	0.70	0.25	
Using the sink or stove	0.05	0.18	0.74	0.44	0.37	0.34	0.41	0.85	0.48	0.70	0.35	
Walking or climbing stairs	0.13	0.43	1.79	1.03	0.96	1.60	0.99	1.85	1.63	2.00	1.10	
Households With Adults Aged 65 and Over With Difficulty Using Housing Features One feature Two features Three or more features	0.11 0.06 0.08	0.36 0.22 0.26	1.45 1.09 1.06	0.79 0.52 0.57	0.83 0.56 0.50	1.50 0.74 0.72	0.79 0.50 0.77	1.41 0.78 1.23	1.44 0.65 0.84	1.41 0.75 1.15	0.86 0.56 0.48	
HOUSEHOLDS WITH ADULTS AGED 85 AND OVER Difficulty using any housing												
feature Getting to the bathroom Getting into or out of	0.08	1.24 0.57	5.25 3.07	3.22 1.25	2.73 1.29	5.19 1.57	3.04 1.36	5.35 3.85	5.48 1.99	5.02 3.25	3.16 1.48	
bathtub or shower Reaching or opening kitchen	0.05	0.92	4.87	2.59	2.32	3.71	2.55	4.94	2.86	4.35	2.78	
cabinets	0.04 0.02 0.03 0.03 0.07	0.89 0.50 0.64 0.66 1.19	4.67 1.43 1.73 2.25 4.90	1.95 1.11 1.55 1.58 3.05	2.69 0.93 1.01 1.34 2.55	4.10 1.09 1.29 1.97 4.87	1.83 1.17 1.77 1.41 2.95	4.21 4.13 3.97 4.43 5.12	3.26 1.47 1.66 1.95 5.59	3.95 2.03 2.40 2.15 4.68	2.48 1.20 1.30 1.63 3.08	
Households With Adults Aged 85 and Over With Difficulty Using Housing Features												
One feature	0.05	1.03	5.33	2.18	2.33	3.73	2.53	3.72	4.18	3.68	2.46	
Two features	0.03	0.70	3.11	1.98	1.90	4.03	1.37	2.12	1.91	1.60	2.05	
Three or more features		0.79	4.18	1.86	2.10	3.02	2.29	4.65	2.91	4.12	2.12	

Source: U.S. Census Bureau, 2011 American Housing Survey.

Appendix Table B-3.

Standard Errors for Households With Older Adults Who Have Unmet Housing Needs: 2011

Unmet need	Households v aged 65 a		Households with adults aged 85 and over		
	Number	Percent	Number	Percent	
Total households with an older adult	159.8	X	104.2	X	
Uses a wheelchair, but the home lacks wheelchair-accessible features	32.3	0.11	17.3	0.39	
Has difficulty grasping small objects, but the home lacks sinks with handles or levers (instead of knobs)	67.8	0.23	33.1	0.69	
Has difficulty grasping small objects, but the home lacks doors with door handles (instead of knobs)	74.9	0.26	37.4	0.78	
elevated toilet	113.3	0.37	48.0	0.98	
Has difficulty walking, but the home lacks a step-free entryway Has difficulty walking, but the home lacks handrails and grab	114.1	0.39	53.7	1.04	
bars	125.8	0.42	66.6	1.26	
Has difficulty walking, but the home is not livable on the first floor	43.9	0.15	22.9	0.50	
Has difficulty with the bathroom, but the home lacks bathroom accessibility features	80.8	0.28	44.5	0.89	

X Not applicable.

Source: U.S. Census Bureau, 2011 American Housing Survey.

Appendix Table B-4.

Standard Errors for Characteristics of Households With Adults Aged 65 and Over: 2011

		Older	Households with an adult 65 and over who has difficulty or unmet need						
Characteristic		households	Difficulty using	Severe difficulty					
	All older	livable on	any home	using home					
	households	first floor ¹	feature	features ²	Unmet need³				
DEMOGRAPHIC CHARACTERISTICS									
Average age of householder (in years)	0.10	0.11	0.22	0.48	0.20				
Sex of Householder									
Female	0.32	0.39	0.78	1.83	0.71				
Male	0.32	0.39	0.78	1.83	0.71				
Race or Ethnicity of Householder ⁴									
White alone	0.27	0.33	0.69	1.41	0.65				
Black alone	0.19	0.24	0.56	1.24	0.52				
Other	0.22	0.24	0.45	0.70	0.44				
Hispanic (any race)	0.17	0.21	0.48	1.07	0.46				
Householder is foreign-born	0.31	0.34	0.55	1.12	0.54				
Household Living Arrangement									
Householder living alone	0.32	0.41	0.81	1.85	0.80				
Householder living with spouse	0.20	0.30	0.74	1.70	0.75				
Other arrangement	0.33	0.37	0.82	1.87	0.79				
ECONOMIC CHARACTERISTICS Householder's Education									
Some college or more	0.48	0.54	0.87	1.83	0.84				
High school diploma	0.43	0.50	0.77	1.70	0.78				
Less than a high school diploma	0.39	0.43	0.84	1.71	0.88				
Household Income-to-Poverty Ratio⁵									
0 to 149 percent	0.40	0.46	0.87	1.67	0.85				
150 to 299 percent	0.46	0.52	0.92	1.76	0.90				
300 percent or higher	0.47	0.54	0.90	1.72	0.84				
HOUSING CHARACTERISTICS Tenure									
Owned	0.17	0.23	0.62	1.43	0.59				
Rented	0.17	0.23	0.62	1.43	0.59				
Nemed	0.17	0.23	0.02	1.45	0.55				
Inadequate housing quality ⁶	0.21	0.25	0.41	1.00	0.39				
Housing Type									
Single family home		0.46	0.80	1.80	0.78				
Apartment building		0.31	0.68	1.43	0.62				
Mobile home		0.36	0.57	1.56	0.60				

¹ Defined as a home with a bedroom and full bathroom on the first floor.

² Defined as a household with an adult aged 65 and over who has difficulty using three or more housing features.

³ Defined as a household with an adult aged 65 and over who reported trouble performing specific tasks around the home, but the home lacked any kind of corresponding accessibility feature that would haved helped with the task.

⁴ "Other" includes respondents who reported Asian alone, Native Hawaiian or Other Pacific Islander alone, American Indian or Alaska Native alone, and Two or More Races. Categories will not add to 100 percent because Hispanics may be any race.

⁵ The ratio of the household's total income relative to the poverty threshold.

⁶ Includes housing units that are missing stair railings or steps in common areas, have holes in floors or cracks in walls, or have broken kitchen or bathroom facilities. For a complete list of features, see the American Housing Survey Codebook at <www.census.gov/data-tools/demo/codebook/ahs/ahsdict.html>.

Source: U.S. Census Bureau, 2011 American Housing Survey.

Appendix Table B-5.

Number of Housing Units in the United States: 2011

(Numbers in millions, standard errors in parentheses)

		Region and division										
Housing units	United	North	neast	Midwest		South			Wes	st		
	States	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific		
Total number of housing units ¹	114.8	5.7	15.4	17.9	7.8	22.2	7.5	12.8	8.2	17.4		
	(0.45)	(0.39)	(0.39)	(0.58)	(0.58)	(0.99)	(0.86)	(0.82)	(0.71)	(0.79)		
Households with adults aged												
65 and over	28.5	1.5	4.2	4.5	1.8	5.7	1.9	2.8	1.9	4.2		
	(0.16)	(0.12)	(0.12)	(0.15)	(0.14)	(0.25)	(0.23)	(0.19)	(0.15)	(0.19)		
Households with adults aged												
85 and over	4.4	0.2	0.7	0.7	0.3	0.8	0.3	0.4	0.3	0.7		
	(0.10)	(0.03)	(0.04)	(0.05)	(0.03)	(0.06)	(0.04)	(0.04)	(0.03)	(0.05)		

¹ Occupied housing units only. Source: U.S. Census Bureau, 2011 American Housing Survey.