How Well Does the Housing Stock Meet Accessibility Needs?

An Analysis of the 2019 American Housing Survey

MARCH 2022 | SAMARA SCHECKLER, JENNIFER MOLINSKY, WHITNEY AIRGOOD-OBRYCKI

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Abstract

A poor fit between the physical design of the home and a resident's functional ability can endanger the resident's health and housing stability. This research used the Accessibility Module of the 2019 American Housing Survey (AHS) to understand national trends in housing fit, or the alignment between a resident's needs and the home. A sizable share of households, especially among those with a resident with a disability, had at least one resident who experienced difficulty entering, getting around, or using the home. Commonly reported challenges included entering the home and using bedrooms, bathrooms, and kitchens. Housing fit tended to be worse for households with older residents as well as residents who were Black or Hispanic, or who lived with lower income. However, measures of resident satisfaction with housing did not always align with objective measures of housing fit, raising questions for future research about perception and decision-making. It was also unclear from these data which specific housing features impacted either housing fit or housing satisfaction. This research highlights the need for universal design, flexible design, and home modifications to improve housing fit, but it also raises questions that will be relevant to housing policy design.

Introduction: Accessibility and Housing Fit

As mobility challenges and frailties increase with older age, the physical environment of the home becomes particularly important to sustain well-being. Poor fit between residents' functional abilities and the house can disrupt routines, increase dependence on others, and lower life satisfaction and expectancy (Gitlin et al. 2009; Stark et al. 2017; Wahl et al. 2009). Good housing fit, on the other hand, can facilitate health and independence for older residents and people living with a disability. A house well aligned with the residents' needs can increase resident safety, self-sufficiency, and housing stability as it enables residents to remain in their home, even as they lose functional capacity. For instance, a lift or ramp ensures that a person who relies on a wheelchair or who has trouble navigating stairs can enter or exit their home on their own. Likewise, the design of door handles and sink taps can surmount barriers imposed by arthritis or muscle weakness.

Through an analysis of the 2019 American Housing Survey, this brief explores the demographic characteristics of residents who experience challenges entering, navigating within, and using their homes. It also identifies housing characteristics that are associated with a higher likelihood of experiencing these difficulties. Findings suggest that many Americans who need accessibility features in their homes do not have them. Less than half of adults who rely on a mobility aid such as a wheelchair or walker live in a home that has both a no-step entry or ramp and a bedroom and bathroom on the

main level. Poor housing fit was closely associated with age, with more than one of ten heads of household age 80 or older reporting that they had a hard time entering the home without assistance. However, when there was resident with a mobility impairment in the household, older heads of household reported better rates of good housing fit than households headed by a person under 65. The houses of lower-income homeowners and renters were proportionally more likely to include basic accessibility features. But people living with lower income were also more likely to rely on mobility devices and ultimately, they had a higher share of accessibility challenges as compared to higher-income households.

Background

The concept of "housing fit" emerged from environmental gerontology research focused on the interface between people and place. Housing fit can deteriorate over time as residents experience increased challenges with mobility and function, though fit can also decline if the physical environment of the home changes (Golant 2003; Iwarsson 2005; Rowles and Ravdal 2002). When the physical home is not a good fit, older residents might modify their behavior to accommodate the inflexible features of the home. For example, older adults may become unable to access certain rooms or floors of the house or they might use a mobility aid that is not appropriate for their condition because they do not have enough space to operate a walker or wheelchair. They may also rely on others for assistance with tasks such as food preparation, laundry, or toileting which could have been accomplished independently in a better-fit environment(Wahl et al. 2009). This dependence reduces functional capacity, increases reliance on informal support, and increases spending on long-term care services (Fried et al. 2001). Additionally, older adults in poor-fit environments live with greater risk of falls (Stark et al. 2017). In contrast, good-fit houses can increase housing stability for an older adult. Home modifications can even reduce older adult mortality (Gitlin et al. 2009).

Home modifications can improve housing fit; depending on need, changes might include adding grab bars, lever-style handles on doors and faucets, ramps or lifts, or even additions and renovations to allow single-floor living. However, modifications can be financially costly and complex. One impediment for older adults can be securing a trusted, available, and affordable contractor (Wiseman et al. 2021). Renters may request reasonable accommodations for their disability according to fair housing law, but they must negotiate a proposed modification with the property owner. This includes widening doorways or installing grab bars and other necessary modifications to the inside or outside of a structure. But in many cases, the tenant will be required to pay the cost of the modification, introducing affordability

issues, especially for older adults who do not anticipate remaining in the rental unit very long. Further, the fair housing law does not guarantee proactive modifications, so older renters must wait until they experience a functional decline to assert their right to reasonable accommodation, and they will likely experience poor-fit housing in the interim.

Homes that include universal design features or are designed to be easily adapted to resident needs are more likely to fit the needs of residents without major interventions. However, the US housing stock does not regularly incorporate accessibility, and includes very few housing units that offer multiple accessibility features. Joint Center for Housing Studies analysis of the 2011 American Housing Survey home accessibility module found that less than 4 percent of US homes offered a combination of a no-step entry into the home, single-floor living, and wide halls and doors that could accommodate a wheelchair. Only 1 percent of units have these features plus lever-style handles and electrical controls reachable from a wheelchair (Airgood-Obrycki & Molinsky 2020; JCHS 2014; JCHS 2016). Using the same data, Bo'sher et al. (2015) found that only 0.15 percent of housing units in the US were fully wheelchair accessible, under 4 percent of housing units could be considered livable by people with moderate mobility difficulties, and only a third of units were potentially modifiable (having some structural features necessary for accessibility but in need of additional modifications). This research increases our understanding about US housing accessibility by focusing on residents' experience of their home accessibility and housing fit.

Methods

This analysis uses the accessibility module of the 2019 American Housing Survey (AHS), the most recent available. The AHS is a nationally representative panel survey of housing units conducted every other year by the US Census Bureau. The most recent survey consisted of 54,455 occupied homes, including 32,972 that were owned and 21,483 that were rented. The AHS includes special topic modules that are fielded to half of the sample. The special topic module in the 2019 survey asked questions about residents' use of assistive mobility devices, the presence of features that allow for single-floor living, and whether someone in the household has difficulty navigating and using their home. The full list of variables in the accessibility module are presented in **Table 1**. Additionally, the full-sample base survey asked if homes have a no-step entrance.

The special topic modules vary with each survey, and the 2011 and 2019 surveys were the most recent iterations that included any accessibility questions. While the 2011 and 2019 modules share several questions, the 2011 module was more expansive, asking a wider range of questions about

housing features as well as including a healthy homes module that provided details on home safety features. Though the 2019 accessibility module asks fewer questions about specific features of the home, it focuses more on housing fit through questions about difficulty using and navigating the home.

For this analysis, we used descriptive statistics on housing fit at the household level. Poor housing fit implies that a household's accessibility needs are not met by their current home. We used the AHS-provided split-sample household weights in tabulating these statistics. We defined poor housing fit along two dimensions of questioning: difficulty with *getting around* the home and difficulty *using* the home. To identify difficulties getting around the house, respondents indicated if anyone in their household had difficulty entering the home and/or difficulty getting to the kitchen, the bathroom, or the bedroom due to a long-term condition. Respondents then indicated difficulties experienced by household residents in using the kitchen, bathroom, or bedroom. These questions were broad, and reported difficulties using a room could encompass a range of possible issues; for example, difficulties using a kitchen could refer to challenges reaching and opening cabinets or the refrigerator, or using the stove, counters, or sinks in the kitchen. Difficulties using the bathroom might have referred to challenges using the sink, turning faucet taps, getting on or off the toilet, or getting into or out of the tub or shower. In the bedroom, difficulties might refer to the opening of closets or windows, getting dressed, or getting into or out of bed.

Table 1. Variables Included in the 2019 American Housing Survey Accessibility Module

Variable	Question Text
CANE	Does anyone in the household currently use any of the following equipment to get around because of a long-term condition?
CRUTCH	Does anyone in the household currently use any of the following equipment to get around because of a long-term condition?
ECHAIR	Does anyone in the household currently use any of the following equipment to get around because of a long-term condition?
WCHAIR	Does anyone in the household currently use any of the following equipment to get around because of a long-term condition?
MOBOTHER	Does anyone in the household currently use any of the following equipment to get around because of a long-term condition?
HARAMP	Does your house have a ramp?
HALIFT	Does your house have a chairlift, stairlift, or platform lift?
HAGETHOME	Without assistance from another person, does anyone in the household 6 years of age and older currently have difficulty entering the home or property because of a condition other than a temporary injury?

HAGETKIT	Without assistance from another person, does anyone in the household 6 years of age and older currently have difficulty getting to the kitchen because of a condition other than a temporary injury?
HAGETBATH	Without assistance from another person, does anyone in the household 6 years of age and older currently have difficulty getting to the bathroom because of a condition other than a temporary injury?
HAGETBED	Without assistance from another person, does anyone in the household 6 years of age and older currently have difficulty getting to the bedroom because of a condition other than a temporary injury?
HAKITUSE	Without assistance from another person, does anyone in the household 6 years of age and older currently have difficulty using the kitchen because of a condition other than a temporary injury? Consider such activities as reaching and opening kitchen cabinets or the refrigerator, turning the stove on and off, reaching and using kitchen counters or the sink.
HABATHUSE	Without assistance from another person, does anyone in the household 6 years of age and older currently have difficulty using the bathroom because of a condition other than a temporary injury? Consider such activities as reaching and using the sink, turning sink or tub or shower faucets on or off, getting into or out of the bathtub or shower.
HABEDUSE	Without assistance from another person, does anyone in the household 6 years of age and older currently have difficulty using a bedroom because of a condition other than a temporary injury? Consider such activities as reaching and opening closets or windows, getting dressed, or getting in or out of bed.
HASUPP	On a scale of 1 to 5 (1=Not at all, 5=Very well): How well do you think your current home layout and features support the accessibility needs of anyone in your household?
HABEDENTRY	Does your home currently have a bedroom on the entry level, that is accessible without going up or down steps or stairs?
HABEDADD	Do you plan to add this feature to your home in the next 2 years?
HABATHENTRY	Does your home currently have a full bathroom on the entry level, that is accessible without going up or down steps or stairs?
HABATHADD	Do you plan to add this feature to your home in the next 2 years?
HAFUTURE	In the next 2 years, do you plan to do any home improvement projects to make your home more accessible for people with physical limitations, such as people using a wheelchair or a walker?

Source: US Housing and Urban Development, 2019 American Housing Survey.
Note: Variable and question text are reproduced from the source.

We examined housing fit by age, use of mobility devices, disability status, tenure, income, and race/ethnicity. Age was categorized based on the age of the householder. Mobility devices include wheelchairs, electric wheelchairs, canes, or crutches that are used due to a long-term condition. Disability status was identified through six separate disability questions that were asked in the base AHS.

The respondent was asked whether they or anyone in the household has serious difficulty hearing; serious difficulty seeing even when wearing glasses; difficulty concentrating, remembering, or making decisions; serious difficulty walking or climbing stairs; difficulty dressing or bathing; or difficulty doing errands. Households with disabilities had at least one household member with any of these difficulties. Tenure refers to whether a household rents or owns their home. Incomes represent the total income for all members of the household. Race/ethnicity was based on the householder, and we report just three categories because of small sample sizes. White and Black householders were all non-Hispanic, and Hispanic householders could be of any race. We omitted an Asian alone category and a category that included householders who were multi-racial or another race.

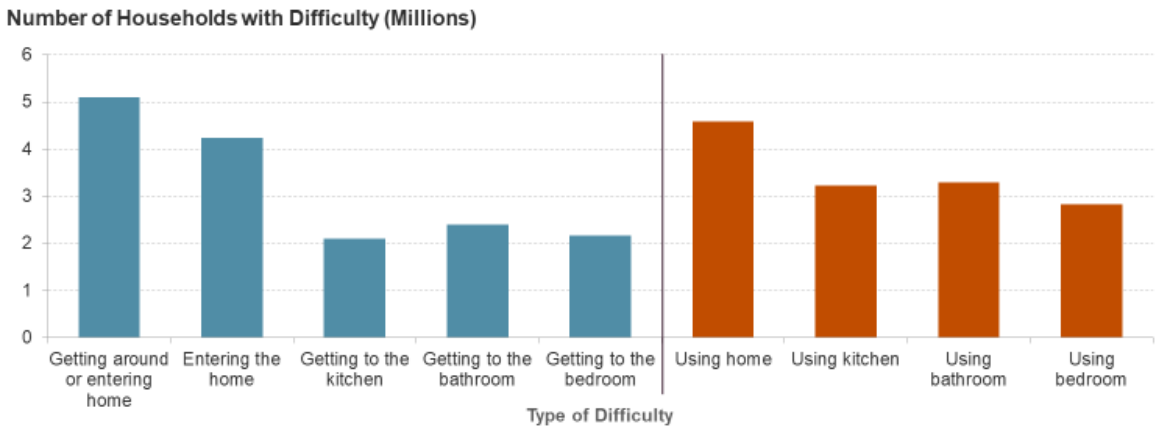
Results

In this section, we share six major findings from our analysis. First, we discuss the number of households who have housing fit difficulties and the number of housing units that have basic accessibility features. Next, we highlight five demographic areas and their association with housing fit. We begin with age of the householder. Because disability increases with age, we discuss difficulties by age for the remaining household characteristics, including use of an assistive mobility device, disability status, tenure, and income and race.

6.8 Million Households Have Difficulties with Their Housing

About 5 percent of households reported that they experienced difficulty navigating or using their homes, amounting to a total of 6.8 million households. Of these households, 2.9 million (42 percent) reported difficulties with both navigating and using their home, 2.2 million (33 percent) had difficulty with navigating their home only, and 1.7 million (25 percent) had difficulty with using their home only. Difficulty entering the home was the most common housing fit problem reported, at 4.2 million households **(Figure 1)**. Within the home, use difficulties with the kitchen and bathroom were reported most often, at 3.2 million and 3.3 million households.

Figure 1: Households Most Frequently Reported Difficulty with Navigating Their Home



Source: Author tabulations of US Housing and Urban Development, 2019 American Housing Survey.

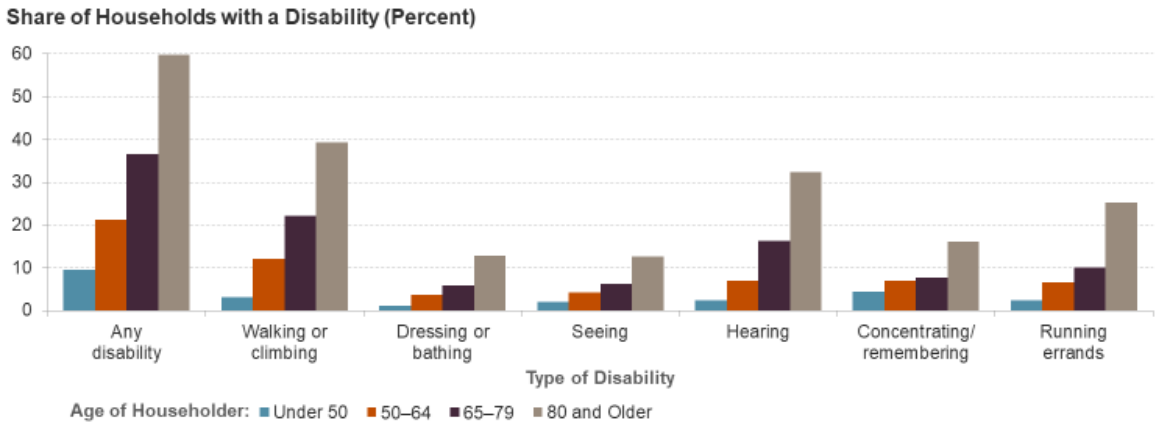
Housing fit depends on the physical ability of household members as well as the features of the home. Basic accessibility features, including single-floor living and no-step entrances, could improve fit and reduce difficulty for some residents. Most homes have either single-floor living or a no-step entrance, but less than half of all homes have both features. Just over 9.0 million homes (73 percent) have a bedroom and bathroom on the entry floor. About 6.8 million homes (54 percent) have a no-step entrance or a ramp. It is less common to have these two features combined, leaving just 5.2 million homes (42 percent) with both a no-step entry and single-floor living. It is important to note that these are minimum features for accessibility, and homes with these features may still lack other basic features that improve housing fit, such as grab bars, levered handles, and widened doorways, or rooms without steps or other impediments. Indeed, 7 percent of households living in homes with both no-step entry and single-floor living still experience poor housing fit, reporting difficulty with either use or navigation of their home.

Housing Fit Worsens with Age

Disabilities are most common among households with older residents, increasing the need for accessibility features in these homes. The occurrence of at least one disability in a household rose with each age group, from just 9 percent for household heads under 50 to a full 60 percent for household heads age 80 and over **(Figure 2)**. Of the disabilities reported in the AHS, difficulty walking or climbing the stairs is the most prevalent among households headed by older adults, and difficulties hearing and running errands are also common. In addition to having a higher rate of mobility-related disability, older

adults are more likely to use assistive devices—such as a wheelchair, cane, or crutch—that could make it difficult to navigate a home with stairs or narrow doorways.

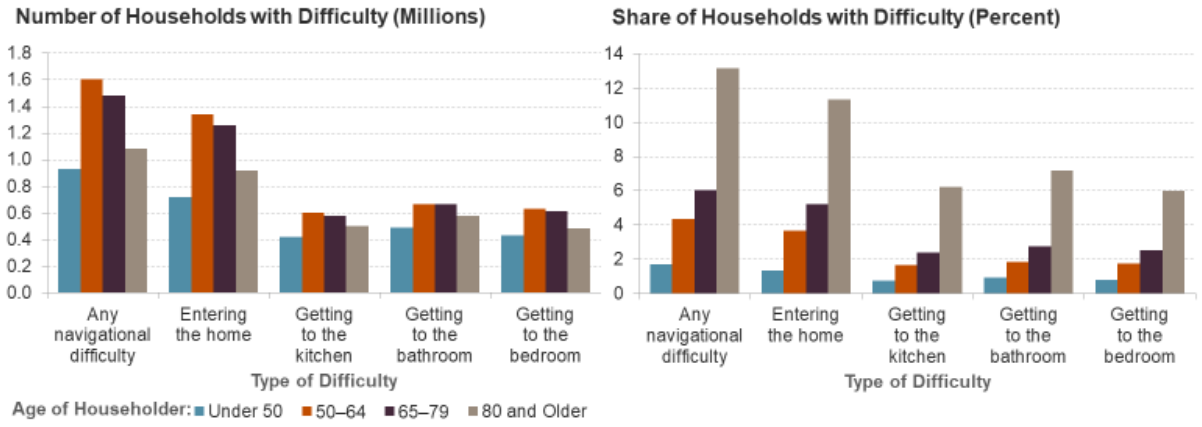
Figure 2: The Incidence of Disability in the Household Increases with Age



Notes: Disabilities are self-reported. Households with a disability have at least one member reporting that challenge.
Source: Author tabulations of US Housing and Urban Development, 2019 American Housing Survey.

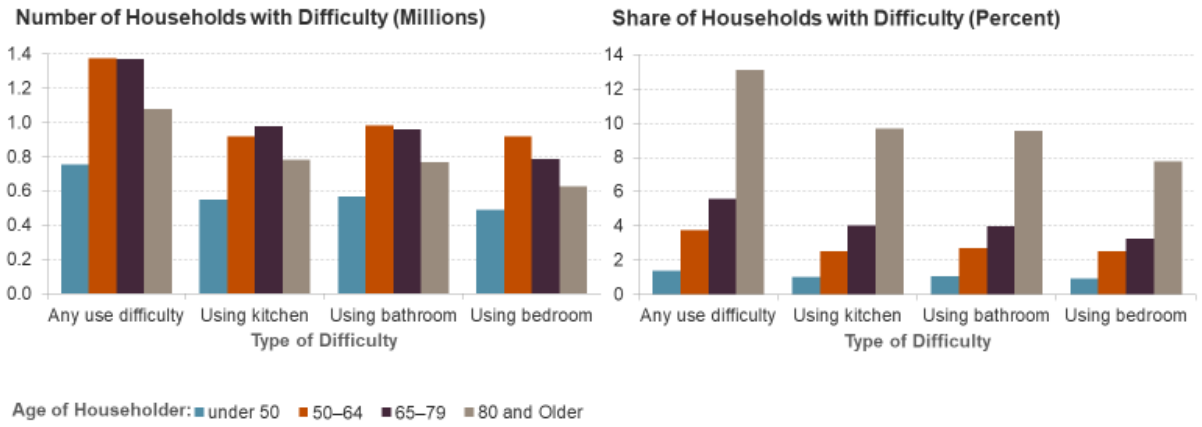
Given the higher rate of disability and use of assistive devices, older adults were more likely to experience difficulties getting around their homes. Across all age groups, more than five million households had a resident who found it difficult to enter or get to the kitchen, bathroom, or bedroom **(Figure 3a)**. Half of these households (2.6 million) were headed by a person aged 65 or older. Notably, about 1.6 million householders age 50–64 already reported at least one difficulty with entering or navigating their home, suggesting that the need for accessible housing units is likely to grow as these households age since the rate of poor housing fit increases with age. While less than two percent of adults under 50 experienced any difficulties entering or navigating their home, 13 percent of adults 80 or older reported these challenges. The most common difficulty across all age groups was entering the home, and getting to the bathroom was the most frequently reported difficulty with getting around inside the home.

Figure 3a: Navigational Difficulties Are More Common for Adults Aged 65 or Older



Notes: Difficulties are reported only for people with a long-term condition. Households with a difficulty have at least one member reporting that challenge.
Source: Author tabulations of US Housing and Urban Development, 2019 American Housing Survey.

Figure 3b: Older Households Experienced More Difficulties Using the Home



Notes: Difficulties are reported only for people with a long-term condition. Households with a difficulty have at least one member reporting that challenge.
Source: Author tabulations of US Housing and Urban Development, 2019 American Housing Survey.

Older adult households also had higher frequency and rates of difficulty *using* key rooms in their homes as compared with younger households. About 4.6 million households reported difficulty using their kitchen, bathroom, or bedroom **(Figure 3b)**. The majority of these households (2.5 million) were again headed by a person aged 65 or older. Like challenges with navigating their homes, difficulties using certain rooms were more common among older households, reaching 6 percent for those headed by a

person age 65–79 and 13 percent for those age 80 or older. Use difficulties were reported most frequently for kitchens and bathrooms, with about 4 percent of householders age 64–79 and 10 percent of householders age 80 or older indicating that someone in their household had difficulty using these rooms.

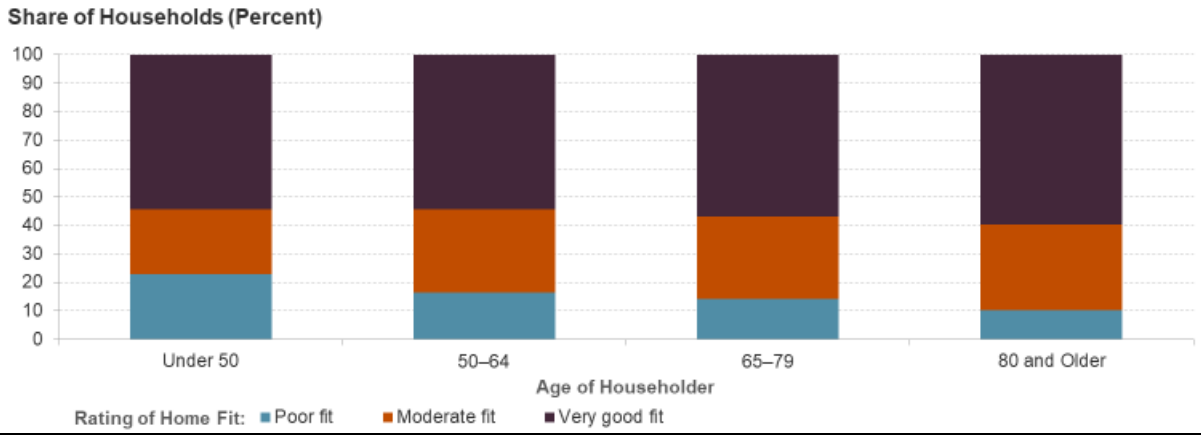
Use of Mobility Aids Was Associated with Poor Housing Fit

Reliance on a mobility aid is one indicator that a household may need accessibility features. Across all age groups, 13 percent of households (1.6 million) had at least one resident who used a crutch, manual wheelchair, or electric wheelchair due to a long-term condition, and these households were more likely to experience poor housing fit. More than a quarter (29 percent) of households with at least one person using a mobility aid reported that someone in the household had difficulty either navigating or using their home, suggesting unmet accessibility needs and poor housing fit. When asked how well their home's layout and features meet their needs, about 15 percent of households with mobility devices indicated that their homes did not meet their needs well or at all, the bottom two options of a five-level scale.

Reliance on mobility aids was also closely tied to age, and housing fit among older adults was worse for those who used assistive devices. Twenty percent of adults aged 65 to 79 used at least one aid, and 43 percent of adults 80 or older used a device to enhance mobility. Among households headed by someone age 65 or older and using mobility aids, one third had at least one resident reporting a difficulty navigating or using the home. In comparison, just 2 percent of older adult households without a mobility aid user reported these difficulties.

Additionally, among households using mobility devices, older-adult-headed households were more likely to report difficulty with navigating or using their homes than younger-adult-headed households. Yet despite this increased likelihood of poor fit, households headed by a person at least 65 years old and with at least one person using assistive devices were generally more satisfied with their housing fit than younger households with mobility aid users **(Figure 4)**. Respondents for households in which at least one person uses a mobility aid were asked to rate how well their home's layout and features meet the needs of the household on a scale from one (not at all) to five (very well). Twenty-two percent of households with a mobility aid headed by someone under 50 years old placed themselves into the two lowest categories, compared with 13 percent of householders age 65 or older who reported these lowest levels of housing fit.

Figure 4: Among Households in Which Someone Used a Mobility Device, Older Adults Reported Higher Satisfaction with Their Housing Fit

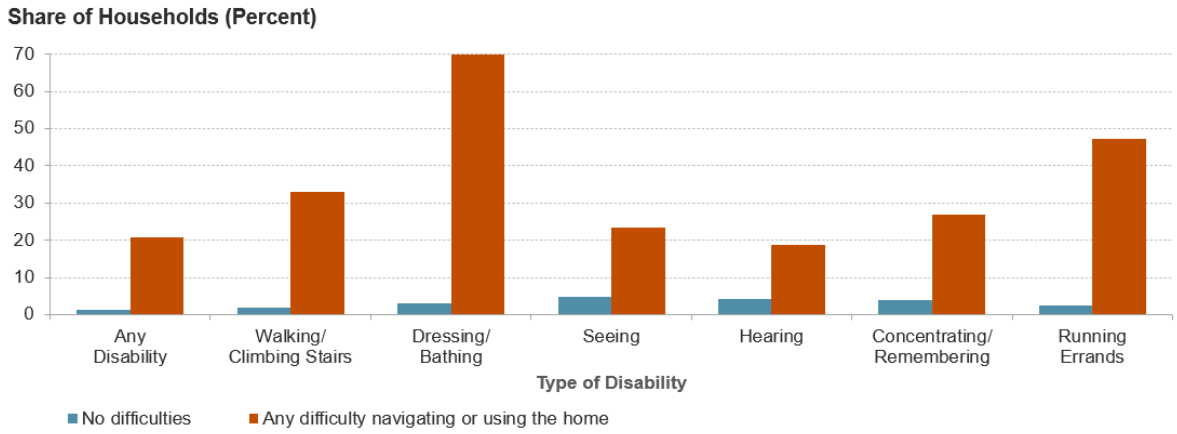


Notes: Mobility devices include canes, crutches, or wheelchairs. Households who rated their home 1 or 2 on a 5-point scale from "Not at all" to "Very well" were categorized as having poor fit. A rating of 3 or 4 was considered moderate fit, and a rating of 5 was very good fit.
Source: Author tabulations of US Housing and Urban Development, 2019 American Housing Survey.

People with Disabilities Had More Difficulties with Housing Fit

A household with a disabled resident, as defined for this research, has at least one member with difficulty walking or climbing stairs, dressing, bathing, seeing, hearing, concentrating and remembering, or running errands. Just over a fifth of households with a disabled resident had someone who had a hard time navigating or using the home **(Figure 5)**. Some specific disabilities are associated with higher rates of poor housing fit. Of the types of disabilities measured, households in which someone had difficulty dressing or bathing had the highest rates of poor housing fit (67 percent). Nearly half of households with a resident who had difficulty running errands also reported poor housing fit, and a third of households with a resident with either mobility or memory and concentration difficulties also identified difficulties navigating or using their home. Households with any disability were most likely to have a resident with difficulty entering the home (13 percent), and 10 percent of these households had a resident who had a hard time using the kitchen or bathroom.

Figure 5: Households Were More Likely to Report Difficulties Navigating or Using Their Home When at Least One Resident Had a Disability



Notes: Difficulties are reported only for people with a long-term condition. Households with a difficulty have at least one member reporting that challenge. Disabilities are self-reported.
Source: Author tabulations of US Housing and Urban Development, 2019 American Housing Survey.

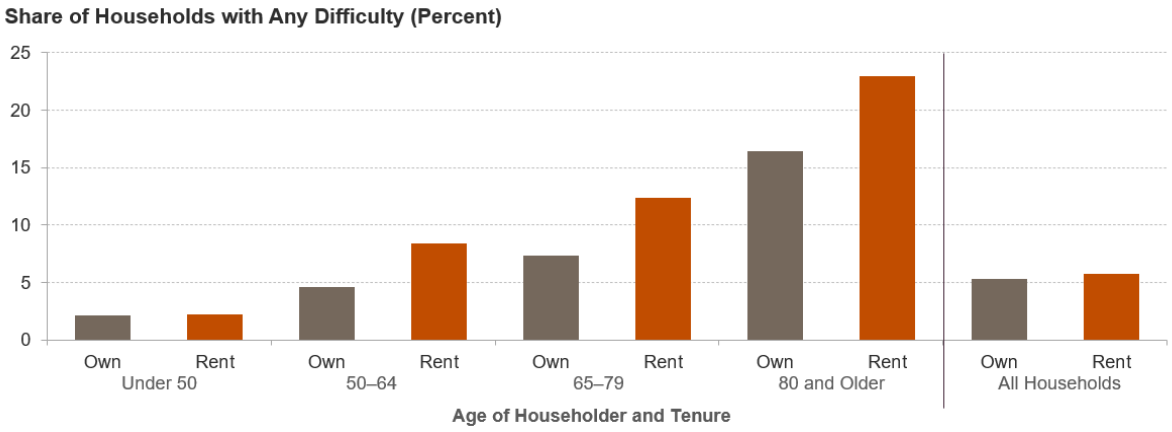
Even when controlling for the age of the householder, the presence of a resident with any type of disability was associated with a significantly higher likelihood of poor housing fit. For households headed by someone age 65 or older, 23 percent of those with disabilities had a housing fit difficulty, compared to just 4 percent of older adult households without disabilities. Older adult households with disabilities related to dressing and bathing had the highest rates of housing difficulties, with 67 percent of those headed by someone age 65–79 and 80 percent of those headed by someone age 80 and over reporting a problem with housing fit.

Older Renters Were More Likely to Have Poor Housing Fit

Among households of all ages, renters were only slightly more likely to experience housing fit difficulties. Four percent of homeowning households and 4.3 percent of renter households had difficulties entering or getting around their home. Similarly, 3.6 percent of owner households and 3.9 percent of renters reported difficulties using parts of the house. However, the larger share of younger households who rent skewed these results. When controlling for age, poor housing fit trended somewhat higher among renters as compared with owners, and the differences between owner and renter disability rates widened with age as disability rates diverged **(Figure 6)**. While renters age 50-64 were four percentage points more likely to be disabled than owners of the same age, renter households with a resident 65 or older were 6 points more likely. Ultimately, renter households headed by someone

at least 80 years old had the highest rates of poor housing fit, with 23 percent reporting difficulty getting around or using the house.

Figure 6: When Controlling for Age, Renters Were More Likely to Have Difficulty with Their Housing



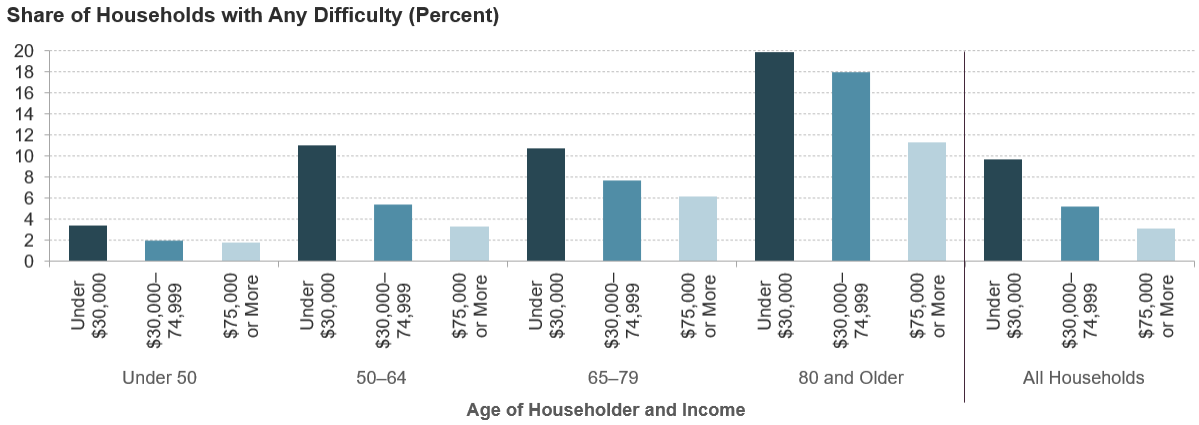
Notes: Difficulties include any navigational or use difficulty and are reported only for people with a long-term condition. Households with a difficulty have at least one member reporting that challenge.
Source: Author tabulations of US Housing and Urban Development, 2019 American Housing Survey.

Poor Housing Fit Was Less Common Among Higher-Income and White Households

Households with lower incomes were more likely to report housing fit difficulties. One in ten households with incomes below $30,000 had poor housing fit, with 7 percent experiencing difficulties getting around the house and another 7 percent experiencing difficulties using rooms. The share of fit problems fell to 3 percent for households with incomes of $75,000 or more, 2.4 percent of which had difficulty getting around and 1.9 percent of which had use difficulties. The pattern of lower-income households experiencing a greater frequency of difficulty with their housing held across age groups **(Figure 7)**.

Lower-income households were also more likely to have a resident with a disability. Among older adults, 36 percent of households that earned less than $30,000 reported a disability, compared to 13 percent of households that earned $75,000 or more. These income-related disability rates appear to drive housing fit issues since income-related differences in difficulty navigating or using the home disappear when focusing only on older adult households with at least one disabled resident. In these households, rates of difficulty accessing or using the house range between 22 and 24 percent persistently across income categories.

Figure 7: Older, Lower-Income Households Are Most Likely to Have Difficulties Navigating or Using Their Homes

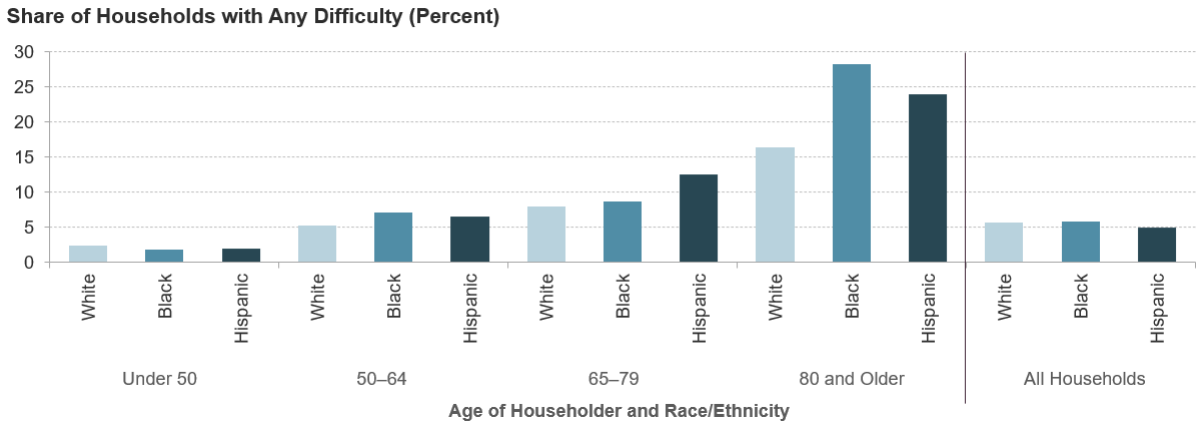


Notes: Difficulties include any navigational or use difficulty and are reported only for people with a long-term condition. Households with a difficulty have at least one member reporting a problem with their housing fit.
Source: Author tabulations of US Housing and Urban Development, 2019 American Housing Survey.

Income and race are correlated due to persistent discrimination in labor markets and education. White households have higher incomes on average than households who are headed by a Black or Hispanic person. However, white households also tend to be older while younger households are more racially diverse. As a result, white-headed households reported about the same rate of experiencing difficulties in their home compared to Black and Hispanic households, at 5–6 percent **(Figure 8)**.

Controlling for age teases out some of the underlying differences in demographic composition and illustrates racial disparities in housing fit among older age groups. For households headed by someone age 50–64, 5 percent of white households had any difficulty with navigating or using their home, as compared to 7 percent of Black and Hispanic households. White and Black households age 65–79 had similar rates of housing fit difficulty, at 8 and 9 percent respectively, lower than the 13 percent of Hispanic households with poor housing fit in this age range. The racial and ethnic gap in housing fit was greatest for households headed by someone 80 and over, with 16 percent of white, 28 percent of Black, and 24 percent of Hispanic households reporting a difficulty with their home.

Figure 8: Older Households with Black or Hispanic Residents Have More Frequent Housing Fit Difficulties



Notes: Difficulties include any navigational or use difficulty and are reported only for people with a long-term condition. Households with a difficulty have at least one member reporting that challenge. White and Black householders are non-Hispanic. Hispanic households may be of any race.
Source: Author tabulations of US Housing and Urban Development, 2019 American Housing Survey.

Conclusion

The 2019 accessibility module of the American Housing Survey provides valuable insight into how well housing matches the needs of its occupants, revealing that housing fit tends to worsen with age. Older adults are most likely to have challenges entering the home and using bedrooms, bathrooms, and kitchens. Analysis of the accessibility module also shows that poorer housing fit is more common among those with lower incomes, and that disparities in housing fit increase with age for non-Hispanic Black and Hispanic older adults when compared to similar-aged white households.

Unsurprisingly, housing fit in general is poorer for those reporting disabilities, whether or not the older residents used mobility devices. And broadly, older adults experience higher rates of poor housing fit than younger adults. However, older adults using mobility devices are more likely to report satisfaction with how their homes meet their needs than younger people who use mobility devices. This difference in satisfaction persists even when controlling for income. The difference between observable fit measures and self-rated measures raises interesting questions for further research, including how perceptions of good housing fit align with objective measures of housing fit and also with the home modification choices that residents make.

The 2019 accessibility module does not focus on specific barriers to accessibility in the homes of respondents. While specific challenges may vary from person to person, it is unclear to what extent

kitchen layout, counter or appliance height, knob-style faucets, or other elements pose the largest impediments to users, for example, or what barriers exist to use of the bedroom. This information would be useful for identifying common obstacles to accessibility and ascertaining which of these are related to the physical home (e.g., the presence of stairs or high counters) and which might be addressed with different furnishings, mobility devices, or technological innovations.

It would also be useful to know if people with disabilities who report good housing fit are more likely to have certain accessibility features, like ramps or walk-in showers, or if they are relying on smart technology, such as applications that allow someone to use a tablet or smartphone interface to change their thermostat or lower their blinds. Some may also report good housing fit if they can enter and use *most* of their home but must avoid certain entries, rooms, or features.

Further, the survey focuses on housing fit for the resident. It would be helpful to get a better understanding of the visitability of the US housing stock. COVID-19 pandemic isolation has reminded us of the importance of sociality and the numerous health and lifestyle challenges associated with loneliness. Homes that are accessible to a resident may yet be inaccessible to their friends or family and may limit residents' opportunities for social engagement.

Despite the limitations of the 2019 data for understanding specific barriers, the high proportion of older households reporting difficulty entering, navigating through, and using their homes does raise significant concerns in an aging society, particularly given that a majority of older adults report wishing to remain in their current homes as they age. Our analysis suggests a need for programs that help older adults assess their homes to identify specific accessibility barriers and modifications that can improve housing fit, as well as funding to assist residents who cannot afford needed modifications. Home modification programs do exist in some communities and states, and public funds may be available to the small number of older adults who receive support through Medicaid home and community-based care waivers. However, these programs are very narrowly tailored to target residents with specific documented disabilities and to fund particular types of modifications, and many require the resident to make some financial contribution toward the project cost. It is unclear if respondents to the AHS survey who report even serious difficulty with vision, concentration and decision making, walking or climbing stairs, dressing or bathing, or doing errands would necessarily qualify. Furthermore, those who report satisfaction with their homes may experience sudden changes in circumstances. Programs should address accessibility and safety barriers before a need becomes acute to ease transitions in functional status and even potentially prevent injury that results in disability.

Renters may need particular assistance with home modifications. While accessibility modifications are typically provided and paid for by a property owner in publicly subsidized housing, low- and middle-income renters living in market-rate units may need to pay for modifications themselves, even when the modification is deemed “reasonable” under fair housing law and has been approved by the landlord. Since the rentership rate increases among the oldest households, a group with the highest rate of disabilities, assisting renters 80 and over to achieve a satisfactory housing fit will be a growing challenge.

While we must acknowledge that a growing number of adults will be aging in houses that were not designed for the particular needs of their bodies, policymakers and urban planners should also consider opportunities to promote universal design features in new housing so that it will provide a good housing fit for the largest range of occupants possible. They should also promote housing adaptability: design features that make it easier to modify a home in the future. An example of adaptability is installing blocking into bathroom walls so that grab bars can be added when they become necessary. As a growing proportion of the population ages at home, policies will be needed to support modifications, universal design, and adaptable homes to address poor housing fit.

References

Airgood-Obrycki, Whitney and Molinsky, Jennifer. 2020. “Accessibility Features for Older Households in Subsidized Housing.” Cambridge, MA: JCHS.

Bo’sher, Luke, Sewin Chan, Ingrid Gould Ellen, Brian Karfunkel, and Hsi-ling Liao. 2015. “Accessibility of America’s Housing Stock: Analysis of the 2011 American Housing Survey (AHS).” *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3055191.

Fried, Terri R., Elizabeth H. Bradley, Christianna S. Williams, and Mary E. Tinetti. 2001. “Functional Disability and Health Care Expenditures for Older Persons.” *Archives of Internal Medicine* 161 (21): 2602–7. https://doi.org/10.1001/archinte.161.21.2602.

Garvelink, Mirjam Marjolein, C. Allyson Jones, Patrick M. Archambault, Noémie Roy, Louisa Blair, and France Légaré. 2017. “Deciding How to Stay Independent at Home in Later Years: Development and Acceptability Testing of an Informative Web-Based Module.” *JMIR Human Factors* 4 (4): e32. https://doi.org/10.2196/humanfactors.8387.

Georlee, Gifty M, Abiram U, Pham Ngoc Dat, Nguyen Khac Tuan, and Shashank Mehrotra. 2020. “Home-Modification Interventions Addressing Falls and Participation in Activities of Daily Living among Older Adults: A Scoping Review Protocol.” *BMJ Open* 10 (9). https://doi.org/10.1136/bmjopen-2020-039742.

Gitlin, Laura N., Walter W. Hauck, Marie P. Dennis, Laraine Winter, Nancy Hodgson, and Sandy Schinfeld. 2009. “Long-Term Effect on Mortality of a Home Intervention That Reduces Functional Difficulties in Older Adults: Results from a Randomized Trial.” *Journal of the American Geriatrics Society* 57 (3): 476–81. https://doi.org/10.1111/j.1532-5415.2008.02147.x.

Golant, Stephen M. 2003. “Conceptualizing Time and Behavior in Environmental Gerontology: A Pair of Old Issues Deserving New Thought.” *The Gerontologist* 43 (5): 638–48. https://doi.org/10.1093/geront/43.5.638.

Iwarsson, Susanne. 2005. “A Long-Term Perspective on Person–Environment Fit and ADL Dependence Among Older Swedish Adults.” *The Gerontologist* 45 (3): 327–36. https://doi.org/10.1093/geront/45.3.327.

JCHS. 2014. "Housing America's Older Adults-Meeting the Needs of an Aging Population." Cambridge, MA: JCHS.

JCHS. 2016. "Projections and Implications for Housing a Growing Population: Older Households 2015–2035." Cambridge, MA: JCHS.

Rowles, Graham D., and Hege Ravdal. 2002. “Aging, Place, and Meaning in the Face of Changing Circumstances.” *Challenges of the Third Age: Meaning and Purpose in Later Life*, 81–114.

Stark, Susan, Marian Keglovits, Marian Arbesman, and Deborah Lieberman. 2017. “Effect of Home Modification Interventions on the Participation of Community-Dwelling Adults With Health Conditions: A Systematic Review.” *American Journal of Occupational Therapy* 71 (2): 7102290010p1. https://doi.org/10.5014/ajot.2017.018887.

Wahl, Hans-Werner, Agneta Fänge, Frank Oswald, Laura N. Gitlin, and Susanne Iwarsson. 2009. “The Home Environment and Disability-Related Outcomes in Aging Individuals: What Is the Empirical Evidence?” *The Gerontologist* 49 (3): 355–67. https://doi.org/10.1093/geront/gnp056.

Wiseman, Jessica M., David S. Stamper, Elizabeth Sheridan, Jeffrey M. Caterino, Catherine C. Quatman-Yates, and Carmen E. Quatman. 2021. “Barriers to the Initiation of Home Modifications for Older Adults for Fall Prevention.” *Geriatric Orthopaedic Surgery & Rehabilitation* 12 (January): 21514593211002160. https://doi.org/10.1177/21514593211002161.