Photo courtesy of Greater Metropolitan Housing Corporation

An Assessment of Home Renovation and Rehabilitation Needs of Older Adult Homeowners in Minnesota

Estimates of Need and Costs for Minnesota Housing and Minnesota Department of Human Services

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Summary

In 2016, the Minnesota Housing Finance Agency (Minnesota Housing), with support from the McKnight Foundation, contracted with Wilder Research to conduct a study to identify the home improvement needs of extremely low-income older adult homeowners in Minnesota. As part of the study, Wilder Research also estimated the cost of making necessary improvements that would allow these older adults to continue living in their homes and thereby avoid more costly and restrictive settings such as assisted living or nursing home care. Wilder also investigated ways in which home rehabilitation can be paired with home and community-based services. Through multiple methods, including a survey of older adult homeowners, interviews with experts in the home improvement field, and review of studies conducted locally and nationally, Wilder Research staff were able to answer key questions identified by Minnesota Housing and the Minnesota Department of Human Services to help in planning efforts. Details of each key finding as well as study methods can be found in the full report.

How many extremely low-income older adult homeowner households have home rehabilitation or improvement work that is needed for them to age-in-place appropriately?

- **Estimate:** 16,400 households (32% of households with extremely-low-income older adult homeowners) need home rehabilitation or improvement work in order for older adults to remain in their homes for the next five years. This includes 10,400 households in Greater Minnesota and 6,000 households in the 7-county metro area.
- **Additional information:** An estimated 17,900 additional households (35%) say that their home is in need of improvements, although they feel they could remain in their homes for the next five years without them.

The following estimates apply to the 16,400 households that need rehabilitation or improvement work to stay in their homes for the next five years.

How much will it cost to do this rehabilitation or improvement work?

- **Estimate:** $15,749 per household
- **Additional information:** $258 million statewide per 5 years, including $164 million for Greater Minnesota and $94 million for the 7-County Metro Area (see Figure 1)

Projected statewide cost in 2040: approximately $438 million per 5 years

1. Geographic distribution of costs

	Number of households with extremely-low-income older adult homeowners	Households with home improvement needs	Total statewide cost (typical)	Lower bound	Upper bound
Greater MN	32,548	10,400	$163,789,600	$126,578,400	$359,330,400
Metro	18,947	6,000	$94,494,000	$73,026,000	$207,306,000
Total	51,495	16,400	$258,283,600	$199,604,400	$566,636,400

Note: The estimates of the distribution of costs assume the same per-household costs and the same rate of need between greater Minnesota and the 7-county metro area.

How many of the older adult households that need home rehabilitation or improvement also have unmet home and community-based service needs?

- **Estimate:** 12,100 households
- **Additional information:** an estimated 74 percent of extremely-low-income older adult households that have improvement needs in order to stay in their homes for the next five years, will also need some kind of home and community-based service (HCBS).

What are effective strategies for pairing home rehabilitation and in-home services to better serve older adults?

Studies of older adults show that meeting the individual needs of adults, and supporting their caregivers in addressing these needs, can allow them to remain in their homes and communities as long as possible. However, few studies have examined the effectiveness of programs that use an integrated approach to addressing low-income older adults' desire to age in place. One promising model is The Community Aging in Place, Advancing Better Living for Elders (CAPABLE) program in Baltimore. This program applies a patient-directed and team-based intervention of a handyman, registered nurse, and occupational therapist who work with older adults to identify and address both their environmental housing and daily living needs. Minnesota has piloted three models that appear to have promising approaches. Further research and evaluation could demonstrate positive outcomes.

Cost comparison of home-based and facility-based strategies to meet older adults' needs[1]

- Estimated monthly cost of aging in place (home rehab and HCBS): $3,346
- Assisted living monthly cost: $4,357
- Skilled nursing facility monthly cost: $7,567

[1] These cost estimates are necessarily oversimplified to present the typical cost of care in each setting, while the true costs of care vary widely. The full report contains details of the assumptions underlying these estimates.

Introduction and background

One of the important issues facing the nation today is our changing demographic profile and exponential growth in the older adult population. In the state of Minnesota, the population of those 65 and older will more than double by 2035. Older adults are also increasingly choosing to remain in their homes as long as possible, even with chronic conditions or disabilities. With a broad array of home and community-based services to help them live independently in the community as they age, older adults are able to avoid more costly and restrictive settings.

However, the ability of older adults to age in place is a complex issue, and reduced financial resources may further complicate their living situations. Lower-income older adults may spend disproportionately on housing, thereby reducing financial resources available for other necessities, including food, medicine, and services that can increase the potential for older adults to remain at home. Lack of these resources can in turn jeopardize well-being and increase the likelihood of institutionalization. Increasing frailty and accumulating functional limitations may also make it difficult to maintain a home. The needs of older adults who are both housing cost-burdened and who may require long-term care services and supports as a result of chronic health conditions or disabilities is likely to increase. This will make demands on service systems throughout the state.

Housing that is not designed to accommodate the physical needs of older adults with accessible or adaptable supports can further impede older adults' ability to live safely and independently. Adapting living space via structural changes or assistive devices is an important first response in helping older adults to live independently for as long as possible. Rising health care costs and the increased incidence of chronic conditions that result in functional limitations among older adults demonstrate the need for innovations that are designed to integrate resources.

Minnesota Housing's Rehabilitation Loan Program serves extremely low-income older adult homeowners, providing interest-free, deferred loans to homeowners to make health, safety, accessibility, and energy efficiency improvements to their homes. Eligible improvements include:

- Safety and accessibility updates (e.g., ramps, railings, first floor accommodations)
- Electrical wiring
- Furnace/boiler repair or replacement
- Plumbing repairs

- Well and septic repair or replacement
- Mold remediation
- Windows
- Siding
- Roof repair or replacement
- Addressing lead paint hazards

In 2016, Minnesota Housing Finance Agency (Minnesota Housing), with support from the McKnight Foundation, contracted with Wilder Research to conduct a study to better understand the home rehabilitation/improvement and service needs of extremely low-income older adult homeowners who want and are capable of aging-in-place.

In order to make well-informed funding decisions and help Minnesota Housing and Minnesota Department of Human Services (DHS) leaders and their partners understand the scope of the needs of extremely low-income older adults to remain in their homes, the study was designed to address the following main questions:

- How many extremely low-income older adult homeowner households have home rehabilitation or improvement work that is needed for them to age-in-place appropriately?
- How much will it cost annually to do this rehabilitation or improvement work?
- How many of the older adult households that need home rehabilitation or improvement also have home and community-based service needs?
- What are effective strategies for pairing home rehabilitation and in-home services to better serve older adults?

This report includes four sections. The first section provides information about the data sources and methodologies used for the study. The second section presents findings from the four components of the study. The third section outlines issues to consider, based on the findings. The Appendices contain the data tables for the homeowner survey, cost parameters explanation, data from secondary sources, and a full bibliography of references.

Data sources and methods

This study gathered information and results from a diverse range of existing national and statewide sources, as well as the perspectives and opinions of experts in the field and homeowners. The four main sources of information and data included:

- Survey of low-income older adult homeowners
- Interviews with key experts in the home improvement field
- Review of existing literature on home rehabilitation and community-based services
- Analysis of existing data sources

Each of these sources is described in detail in Appendix D.

Cost computation methodology

The per-household home improvement cost was computed as the sum of the costs of all improvements that homeowners reported would be necessary in their home within the next five years. This computation requires two elements:

- A list of the improvements that the household said they will need within the next five years.
- A cost estimate for each of the listed improvements.

After gathering information on each household's home improvement needs and the approximate cost of each of the improvements, we computed the total home improvement cost for each household. This cost was computed as the sum of the costs for all home improvements reported as necessary for that household within the next five years. For example, for a household that indicated that they would need new windows, a shower at floor level, and a main floor laundry, the "typical" cost estimate for that household would be ($6,803 + $3,598 + $3,675 =) $14,076. Finally, the average per-household cost was computed as the simple average of these individual household cost estimates (excluding households that did not indicate a need for any of the listed improvements).

These methods are discussed in greater detail in Appendix D.

Definition of home and community-based services (HCBS)

AARP defines HCBS as "assistance with daily activities that generally helps older adults and people with disabilities to remain in their homes. Many people with functional limitations or cognitive impairments need assistance with activities of daily living (ADLs) such as bathing, dressing, and using the toilet, or instrumental activities of daily living (IADLs) such as shopping, managing money or medications, and doing laundry… Services such as personal care, chore assistance, transportation, congregate meals, or adult day services all constitute HCBS."[2]

Population covered in the study

In this study, "eligible households" refers to Minnesota households who:

- Own their home.
- Have a household head that is 65 or older.
- Qualify for Minnesota Housing's Rehabilitation Loan Program and Emergency & Accessibility Loan Program based on income.

Based on Integrated Public Use Microdata Series (IPUMS) data from the U.S. Census Bureau's American Community Survey (2014), there are approximately 51,495 households in Minnesota that meet these criteria. Their distributions of age and geography are shown in Figure 2 below, alongside those of the respondent population of the consumer survey. The age distribution of the survey respondent population aligns very closely with that of the overall eligible population, while the survey over-represents Greater Minnesota and under-represents the 7-county metro area.

2. Age and geographic distribution of statewide eligible population and surveyed population

Age	Percentage of surveyed population	Percentage of statewide eligible population
65-74	39%	43%
75-84	41%	35%
85+	20%	21%
Location		
Greater MN	79%	63%
7-County Metro	21%	37%

[2] Retrieved from Home and Community-Based Long-Term Services and Supports for Older People, AARP Public Policy Institute Fact Sheet. https://assets.aarp.org/rgcenter/ppi/ltc/fs222-health.pdf

Findings

Wilder Research completed a study for Minnesota Housing to better understand what extremely-low-income older adults in Minnesota need to remain in their homes. This section of the report expands on key findings related to four evaluation questions.

- How many extremely low-income older adult homeowner households have home rehabilitation or improvement work that is needed for them to age-in-place appropriately?
- How much will it cost to do this rehabilitation or improvement work?
- How many of the older adult households that need home rehabilitation or improvement also have home and community-based service needs?
- What are effective strategies for pairing home rehabilitation and in-home services to better serve older adults?

How many extremely low-income older adult homeowner households have home rehabilitation or improvement work that is needed for them to age-in-place appropriately?

- **Estimates:** 16,400 households in total
  - Greater Minnesota (outside the 7-county metro area): 10,400 households
  - 7-county metro area: 6,000 households

Supporting data

We estimate that approximately 16,400 older adult households in Minnesota need at least one of the 16 home improvements asked about in the consumer survey in order to remain in their homes for the next five years.[3] These households comprise about one-third (32%) of the estimated 51,495 older adult (age 65+) households in Minnesota that meet the income requirements for Minnesota Housing's Rehabilitation Loan Program and Emergency & Accessibility Loan Program (Figure 3).

[3] This estimate is based on two figures: (1) an estimate of the total eligible population in the state of Minnesota, derived from Census microdata as described in the methods section, multiplied by (2) the proportion of surveyed older adult households that reported needing home improvements in order to remain in their homes for the next five years. Details are described in the methods section.

Survey respondents were asked whether their home would need specific improvements related to maintenance, safety and accessibility during the next five years. They were also asked whether or not they thought they could remain in their homes for the next five years, with or without such improvements.[4] Almost two-thirds of eligible households (62%) reported that although they could remain in their homes for the next five years without making modifications or repairs, they also felt that their homes would need at least one of the improvements listed in the next five years. [5] This may indicate that the needed improvements are unrelated to health or mobility, or that they are not so severe or urgent that they would impact the homeowner's ability to continue living in the home.

Three percent of households said that their homes needed at least one improvement but that, even with improvements, they would be unable to remain in the home for the next five years. In this case, homeowners may have felt that their inability to continue living in the home was unrelated to the home's condition or attributable to other factors.

3. Estimated counts of eligible households with home improvement needs
(Only surveyed households with annual incomes below $24,000 per year)

Will need improvements to remain in home for the next five years	Percentage of surveyed population (N=144)	Estimated statewide count of households
Needs at least one listed improvement	31.9%	16,400
None of the listed improvements are needed	3.5%	1,800
Can remain in home for the next five years without improvements		
Needs at least one listed improvement, which is not required to stay in the home	34.7%	17,900
None of the listed improvements are needed	27.1%	14,000
Cannot remain in home for the next five years, even with improvements		
Needs at least one listed improvement	2.8%	1,400
None of the listed improvements are needed	-	-
Total eligible households in Minnesota[a]		51,495[b]

[a] Eligible households are defined as those eligible for Minnesota Housing's Rehabilitation Loan Program and Emergency & Accessibility Loan Program (income cut points in effect from 5/31/16), with household head that is a homeowner age 65+

[b] Disaggregated counts do not precisely sum to total due to rounding.

4 The full consumer survey instrument is provided at the end of Appendix A.

5 These home improvements and their estimated costs are listed in Figure B1 in Appendix B. The 16 listed items fall into two general categories: safety and accessibility (e.g., entrance ramp, grab bars and handrails, etc.) and maintenance (e.g., replacement of roof, furnace, windows, etc.).

4. Geographic distribution of households with home improvement needs

	Estimated eligible population	Estimated count of households with home improvement needs to stay in the home
Greater Minnesota	32,548	10,400
7-County Metro	18,947	6,000
Total eligible households	51,495	16,400

Note: Rates of home improvement need are assumed to be the same between the 7-county metro area and greater MN. Survey results indicate a slightly higher rate of need among greater Minnesota households, but the difference was not statistically significant.

Consumer survey respondents were more likely to report needing maintenance work (54%) rather than safety or accessibility improvements (43%; Figure 7). The maintenance work that was most often needed was a new water heater (27%) or new windows (25%; Figure 6). The safety and accessibility improvements that were most often needed were grab bars or hand rails (21%) and a shower at floor level (20%; Figure 5).

5. Detailed rates of self-reported home improvement needs for safety and accessibility (All surveyed households)

Safety and accessibility	N	Will need this	Already have this	Do not think we will need this
Install grab bar or hand rail	366	21%	39%	41%
Shower at floor level*	364	20%	31%	49%
Main floor laundry*	369	14%	40%	46%
Lever door handles	371	13%	33%	53%
Wider doorways for a wheelchair or walker	362	11%	24%	66%
Entrance ramp*	366	10%	8%	82%
Install stair railing	361	8%	65%	28%
Non-slip or level flooring*	370	7%	54%	39%
Lower kitchen cabinets and counters for wheelchair accessibility*	368	5%	7%	88%
Bathroom on main floor*	375	4%	81%	16%
Elevator*	368	2%	2%	97%

* High cost item

Note: Totals may not equal 100% due to rounding.

6. Detailed rates of self-reported home improvement needs for maintenance (All surveyed households)

	N	Will need this	Already have this	Do not think we will need this
New water heater	375	27%	41%	33%
New windows*	374	25%	40%	35%
New roof*	378	21%	55%	24%
New central air conditioner	374	20%	33%	47%
New furnace or boiler*	368	18%	44%	38%

* High cost item

Note: Totals may not equal 100% due to rounding.

7. Self-reported need for any improvements (All surveyed households)

	Will need this
Any safety or accessibility item	43%
Any maintenance item	54%
Any improvement	65%
Any high-cost improvement (est. $3000+)	53%

It is important to note that self-reported needs, particularly related to safety and accessibility, are likely underreported due to respondent optimism about their future health and mobility. For this reason, the survey question distinguished between respondents who have already made these improvements to their homes in preparation for aging and those who believe they will not need the improvements.

Figure 8 presents several characteristics of respondents' homes that might indicate the level of need for certain home improvements. For example, most households have at least one step up to enter their home, and more than one-quarter (27%) have four or more steps, a likely indication of need for entrance ramps. Half of households have no main-floor laundry facilities, and 12 percent have no bedroom on their main floor.

8. Characteristics and condition of house (N=386 ± 3) (All surveyed households)

House has four or more steps to enter home	27%
House has one to three steps to enter home	56%
House has more than one story of living space	46%
House does not have a bedroom on the main floor	12%
House does not have laundry on the main floor	53%
House is in poor or very poor condition	8%
Average age of house (based on year house was built)	58 years

How much will it cost to do this rehabilitation/improvement work?

- **Estimates:** $15,749 per household
  - Statewide (per 5 years): $258 million
  - Greater MN: $164 million
  - 7-County Metro Area: $94 million
  - Projected statewide cost in 2040: approximately $438 million (per 5 years)
- **Estimate range:** $12,171 - $34,551 per household, approximately $200 million - $567 million statewide

Supporting data

Home improvement needs are expected to cost $15,749 per household for the 16,400 households in need, totaling approximately $258 million to enable these households to remain in their homes for the next five years (Figure 9). This typical cost was computed by first summing the total estimated cost for each household (using the typical cost parameters identified in the key stakeholder interviews, combined with whether the household indicated that they would need each home improvement listed in the survey), and then taking the average across household who reported needing any of the listed

home improvements in the next five years.[6] The details of the cost computations are described in Appendix D.

Just over half of this cost (56%) goes to maintenance needs (new roof, furnace, etc.), while the remainder is needed for safety and accessibility improvements like an entrance ramp and widened doorways for a wheelchair. The full list of improvements and their corresponding cost assumptions are shown in Figure B1 in Appendix B, while the details of this cost breakdown are shown in Figure B2 in Appendix B.

9. Estimated household and statewide costs of needed home improvements
(All surveyed households)

	Typical cost		Lower bound cost		Upper bound cost	
	Cost per household	Total statewide cost	Cost per household	Total statewide cost	Cost per household	Total statewide cost
Will need at least one listed improvement to remain in home for the next five years	$15,749	$258,283,600	$12,171	$199,604,400	$34,551	$566,636,400
Could remain in home with no improvements, but home will need improvements in next five years	$8,456	$151,356,875	$6,696	$119,856,212	$18,721	$335,108,979
Cannot remain in home even with improvements, but home needs improvements in next five years	$12,180	$17,052,595	$9,315	$13,041,467	$26,557	$37,179,100

[6] While the per-household cost estimates in Figure 9 are based on the full surveyed population, the total statewide costs in the figure are computed using the rate of need among the lowest-income subset (i.e., to compute the statewide totals, the per-household cost from the full surveyed population was multiplied by the household count that was derived using the lowest-income subset, the household count shown in Figure 3). We opted for this approach because the full surveyed population provides a larger sample size to better represent the diversity in home improvement needs. This approach does, however, result in slightly lower cost estimates than would be found if the estimate were based on the costs of meeting improvement needs of the lowest-income subset.

The costs of any given home improvement project can vary widely from one house to the next. To account for this variation, upper and lower bound estimates are presented in addition to the estimated typical cost. The lower-bound estimate of $12,171 per household represents the best-case scenario, with all homes requiring only the low-cost version of each improvement (generally meaning small homes with convenient circumstances requiring no customized approaches or abatement of lead or asbestos). In this best-case scenario, the total statewide cost is approximately $199.6 million to enable this group of households to remain in their homes for the next five years.

On the other hand, key stakeholders noted that maintenance tends to be lacking in the homes of many extremely low-income older adults, leading to higher costs for many routine tasks as other problems often surface after work begins. In particular, asbestos and lead abatement costs are relatively common and quite large when encountered. As a result, while the upper bound cost ($34,551 per household) will certainly not be required for every household, the true total statewide cost is likely to fall between the typical and upper bound estimates.

While this report focuses on eligible households who indicated that they require home improvements in order to remain living in their homes for the next five years, many other households noted their need for home improvements as well. In particular, 35 percent of households reported being able to remain in their homes for the next five years without home improvements, but also indicated that their household would need one or more of the listed improvements in the next five years (Figure 3). The typical cost of the needed improvements for these households is $8,456 (Figure 9).

Figure 10 presents the geographic distribution of home improvement costs between Greater Minnesota and the 7-county metro area. Because greater Minnesota contains nearly two-thirds of eligible households, the estimated cost to meet the home improvement needs of the extremely low-income older adult population in greater Minnesota is approximately $164 million over five years, compared to $94 million to serve the metro area population.

10. Geographic distribution of costs

	Eligible households	Households with home improvement needs to stay five years	Total statewide cost (typical)	Lower bound	Upper bound
Greater MN	32,548	10,400	$163,789,600	$126,578,400	$359,330,400
Metro	18,947	6,000	$94,494,000	$73,026,000	$207,306,000
Total	51,495	16,400	$258,283,600	$199,604,400	$566,636,400

Note: The estimates of the distribution of costs assume the same per-household costs and the same rate of need between greater Minnesota and the 7-county metro area.

Based on current population growth projections for the population age 65+ and assuming a constant per-household home improvement cost, the statewide five-year costs of meeting these home improvement needs is expected to rise steadily to about $438 million by 2040 (Figure 11). Because these costs cover a five-year period, the next set of five-year costs listed in the table is on top of the costs from the previous five-year period. A whole new set of older adults will have rehabilitation needs, or additional rehabilitation may be needed.

11. Projected home improvement costs

	Eligible households	Households with home improvement needs	Total statewide cost (per 5 years)
2020	63,760	20,300	$319,704,700
2025	74,725	23,800	$374,826,200
2030	83,370	26,600	$418,923,400
2035	86,949	27,700	$436,247,300
2040	87,203	27,800	$437,822,200

Note: The mean cost per household (expressed in 2016 dollars) and the proportion of the eligible older adult population are assumed to remain constant, while the household count is inflated based on projected growth of the population of adults age 65+ (Minnesota Compass, http://www.mncompass.org/aging/demographics#1-11581-d). The assumption of constant per-household cost over time implies that, in each five-year period, the home improvement needs of the population aging into the 65+ age group will be comparable to those of the current population, and that new home improvement needs will arise among the current population to replace the needs that are met by funds allocated during the previous period.

How many of the older adult households that need home rehabilitation also have unmet home and community-based service needs?

- **Estimate:** 12,100 households

Supporting data

The need for home and community-based services (HCBS) varies widely across groups of survey respondents. To examine these differences, first note that the surveyed households with home improvement needs fall into three categories based on how their home improvement needs relate to their ability to stay in their housing (Figure 12):

- Households who reported that home improvements would be necessary in order for them to remain in their homes for the next five years (32%) are more likely than the others to have an unmet HCBS needs (74%). Based on this finding, we estimate that 12,100 households in Minnesota would need both home improvements and HCBS to age in place.

- Households who reported that they could live in their homes for the next five years even without home improvements, but also indicated that their home would need improvements (35%) also reported unmet HCBS needs one-half of the time (50%). Based on this finding, we estimate that 9,000 households in Minnesota might be able to continue living in their house with only HCBS.

- Households who reported that they could not remain in their homes for the next five years even with improvements, but who reported that their home would need improvements within the next five years (3%) also reported unmet HCBS needs one-half of the time (50%). Based on this finding, we estimate that 700 households in Minnesota would require improvements and HCBS, and still would not be able to age in place.

12. Estimated rates of Home and Community-Based Service (HCBS) need among extremely-low-income households with home improvement needs

	Estimated count of households with home improvement needs	Percentage with at least one unmet HCBS need [a]	Estimated count of households with both home improvement and unmet HCBS needs
Will need at least one listed improvement to remain in home for the next five years	16,400	74%	12,100
Could remain in home with no improvements, but home will need improvements in next five years	17,900	50%	9,000
Cannot remain in home even with improvements, but home needs improvements in next five years	1,400	50%	700

[a] The percentage with at least one unmet HCBS need is based on households that need at least one of the home improvements addressed in the survey (and need them in order to remain in their homes for five years), and have annual incomes below $24,000 per year (the same population on which the estimated count of households with home improvement needs is based).

Of surveyed households with annual incomes below $24,000, one in five households said someone in their household has difficulty with at least one of the four Activities of Daily Living (ADLs) addressed in the survey, including 17 percent who have difficulty going up or down stairs and 15 percent who have difficulty leaving home to shop or visit the doctor (Figure 13). These rates of difficulty are higher among those who will need home modifications in order to remain in their homes for the next five years, with 35 percent of these households expressing difficulty with at least one ADL on the survey.

13. ADL difficulties among households with annual incomes below $24,000 (N=143-144)

At least one adult in household has difficulty or needs help with…	Could remain in home for five years with no modifications (N=88-89)	Will need home modifications to remain in home for the next five years) (N=50-51)	Total (N=143-144)
Getting in and out of bed or a chair	2%	10%	5%
Going up or down stairs	8%	28%	17%
Getting around inside the home	3%	6%	4%
Going outside the home to shop or visit a doctor's office	6%	27%	15%
At least one of the items above	12%	35%	22%

Note: The rates of ADL difficulties are not shown for households who stated that they could not remain in their homes for the next five years (even with modifications) because there were fewer than 10 households in that group. These households are included in the total column.

Two-thirds (68%) of surveyed households with annual incomes below $24,000 reported either needing or receiving at least one of the home and community-based services (HCBS) covered in the survey. Almost one in three (29%) said they receive some kind of HCBS and nearly half (47%) said they need at least one HCBS that they are not currently receiving (Figure 14). The most common HCBS needed and received was help with home repairs and maintenance, a service received by 22 percent of households but needed by another 42 percent of households. About one in 10 households also receive help with light housekeeping and transportation, while another one in 10 households need those services.

Rates of HCBS use are highest among households who said they could remain in their homes for the next five years with no modifications, and rates of unmet HCBS need are highest among households who said they would need home modifications to remain in their homes. Aside from their significant need for help with home improvements (reported by 63% of the households who need home modifications to remain in their homes), these households also reported relatively high levels of unmet need for help with light housekeeping (16%), transportation (16%), and a home health aide (10%).

14. Home and Community-Based Service (HCBS) needs among households with annual incomes below $24,000 (N=139-142)

At least one adult in household gets or needs help with…	Could remain in home for five years with no modifications (N=86-89)		Will need home modifications to remain in home for the next five years) (N=49-51)		Total (N=139-142)	
	Get this help	Need this help	Get this help	Need this help	Get this help	Need this help
Meals that are brought to your home or prepared for you	3%	-	4%	6%	5%	2%
Help with light housekeeping or cleaning	11%	8%	6%	16%	11%	11%
Home repairs or maintenance	24%	31%	16%	63%	22%	42%
Help with bathing or getting dressed or using the toilet	2%	1%	2%	6%	3%	3%
Rides to appointments or errands	10%	7%	10%	16%	11%	11%
Health worker (aide, nurse, etc.) who comes to your home to help with medical needs	2%	-	6%	10%	4%	4%
At least one of the items above	30%	35% [b]	24%	67%[b]	29%[a]	47%[a]

[a] Because any given household could simultaneously receive one HCBS while having an unmet need for another, the total (met and unmet) need for HCBS is slightly less than the sum of these two figures; a total of 68 percent of households (with annual income below $24,000) receive and/or need HCBS.

[b] Rates of overall HCBS needs presented here differ from those presented in Figure 12 because Figure 12 is limited to respondents that stated a need for one or more of the specific home improvement items on the survey (questions 8 & 9, shown in Appendix A). The data presented in this figure are based only on their HCBS needs and the respondents' stated ability to remain in their homes for the next five years, with or without modifications (question 13), even if they did not indicate a need for any of the *specific* home improvements addressed in survey questions 8 and 9.

What are effective strategies for pairing home rehabilitation and in-home services to better serve older adults?

Wilder Research conducted a review of the literature to find evidence of effective models for pairing home rehabilitation and in-home services for older adults. Older adults' desire to age in place, the barriers created by difficulties with activities of daily living (ADLs), and the importance of home and community-based services for older adults are well documented in current literature, but as distinct issues. Numerous articles also discussed the need for integrated approaches, but there were very few that highlighted specific models with evidence of improved outcomes.

Recently, Minnesota has piloted three models that appear to have promising approaches. These, as well as one Baltimore-area model that has shown some preliminary evidence, are described below.

Rebuilding Together Twin Cities (RTTC)[7]

In 2014, the Minnesota Department of Human Services funded a two year pilot project that completed accessibility modifications to the homes of 12 low-income older adults. The main objective was to pair occupational therapy interventions with home safety modifications to extend the ability of older adults to age in place.

The results appear promising. One assessment tool, The Live Well at Home Rapid Screen, measured the likelihood that an older adult will be forced to move to a long term care facility in the near future. Before implementation of the Rebuilding Together initiative, clients received an average score of 4, which indicated a high risk of moving. After implementation of the initiative, these clients' scores decreased to an average of less than 2, which indicated a low to moderate risk. Clients also reported less anxiety about falling, fewer activities for which they required assistance, and more support from caregivers. Caregivers also reported that they felt less stressed.

RTTC is expecting that assessment tools and protocols may be replicated by additional national Rebuilding Together affiliates. Expanded interventions and further study could reveal additional quantitative and qualitative outcomes, especially considering the small number of households that were included in the initial pilot

Mahube-Otwa Community Action Partnership[8]

The Minnesota Department of Human Services funded a demonstration project implemented through Mahube-Otwa (in Mahnomen, Hubbard, Becker, Otter Tail, and Wadena counties) with the goal of providing ongoing homemaking/chore or one-time home repair/remodel assistance to low-income older adults living in rural Minnesota. This Live Well at Home grant-funded project began in 2015.

Repair and remodel services included larger roofing repairs, appliance repairs or replacements, septic tanks, and wells. Smaller home repairs for health and safety included steps, grab bars, entrance ramps, windows and doors.

Limited outcome information is available at this time, as the project is still in its early stages. The most recently available service data indicates that among clients aged 65 and older, 53 have received homemaker services and 36 have received home repair services. Program staff report that interventions have allowed older adults to remain in their homes for as long as possible, and that consumer feedback has been positive. A comprehensive evaluation and analysis of program data could demonstrate promising practices and positive outcomes.

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7 Results and program information provided by MN DHS staff

8 Ibid.

Sustainable Resources Center (SRC)[9]

Funded through a Live Well at Home grant, SRC has implemented a program that uses HUD's Healthy Homes Rating System risk assessment, a weatherization audit, and universal design assessments for a "whole house" approach to health risks and safety for low-income older adults in Hennepin County, as well as the Live Well at Home Rapid Screen. The goal of the program is to "account [for] the full range of factors that allow for successful aging in place, (SRC-Attachment A)," and complete repairs and modifications in order to create safe and comfortable homes for 120 older adults. The program was first implemented for two years, beginning in July 2014, with a subsequent contract to expand upon this work in 2016.

Preliminary and follow-up interviews were completed with consumers to assess their subjective perceptions of benefit from the intervention. Housing inspections to assess the work were also completed. Early results indicate that consumers are satisfied with the quality of the work and believe that the modifications help them live more safely and comfortably. According to notes in a quarterly report, program staff stated that "…we are learning that a little goes a long way. Having grab bars, railings, proper lighting and higher toilets do have an actual impact on our clients' actual and perceived safety (Quarter 4: 4/1 to 6/30)." It will be important to evaluate the effectiveness of this approach to determine whether hoped for outcomes are achieved.

CAPABLE

One promising national model provides structured services for older adults in a holistic way. Community Aging in Place, Advancing Better Living for Elders (CAPABLE), is currently being tested in Baltimore by John Hopkins and is funded by the Centers for Medicare and Medicaid Services (CMS) Innovation Center. The model involves the team-based intervention of a handyman, registered nurse, and occupational therapist (OT) who work together with low-income older adults to identify and address their functional needs. Successfully aging in place requires that both the environmental housing needs and the daily living needs of the individual be managed. Innovative aspects of this model include a patient-directed approach, and expanding care beyond a purely clinical or medical approach.

The model allows up to $1,300 per household on home modifications and includes up to 10 home sessions (four by the nurse and six with the OT) over the course of five months. The sessions help identify functional challenges, and participants create goals to drive the interventions.

[9] Results and program information provided by MN DHS staff.

Early results indicated that older adults showed improvement in their daily functioning, as well as a reduction in the total numbers of difficulties related to ADLs. Additionally, older adults reported reduced depressive symptoms, and researchers noted a reduction in the numbers of home hazards. It is unclear the extent to which the per household funding provides a return on investment, but researchers determined that the program likely saves on health care expenses by redirecting expenditures in the home environment. Further study could result in a clearer picture of the overall cost savings (Szanton, 2015).[10]

Cost comparison of home-based and facility-based strategies to meet older adults' needs

- **Estimated Monthly costs:**
  - Skilled nursing facility: $7,567
  - Assisted living: $4,357
  - Aging in place (home rehab combined with HCBS): $3,346

Supporting data

The combined monthly costs of housing, home improvements, and home and community-based services associated with aging in place sum to an estimated $3,346. This estimate includes $263 per month for the typical home improvements costs (spread over five years), $399 in housing costs (property taxes, insurance, and utilities, assuming mortgage is paid off [11]), and $2,684 for fairly intensive, in-home health services (Figure 15). The monthly costs of facility-based care are significantly higher, from $4,357 for assisted living to $7,567 for skilled nursing home care.[12]

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10 Szanton, S. L., Wolff, J. L., Leff, B., Roberts, L., Thorpe, R. J., Tanner, E. K., … Gitlin, L. N. (2015). Preliminary data from Community Aging in Place, Advancing Better Living for Elders, a patient-directed, team-based intervention to improve physical function and decrease nursing home utilization: The first 100 individuals to complete a Centers for Medicare and Medicaid Services innovation project. *Journal of the American Geriatrics Society, 63*(2), 371–374

11 This average housing cost estimate may be low as some homeowners over the age of 65 may not have paid off their mortgage.

12 It is important to note two significant caveats to this analysis. First, the home improvement costs are borne up front (by the state), with no guarantee that the homeowner will remain in the home for the full five years that are assumed in computing the monthly home improvement costs. Still, if the resident remains in their home for a minimum of 13 months after the home improvements are funded, the total monthly cost of housing, home care, and home improvements would still be less than those of assisted living. ($15,749/13 = $1211/month, plus $399 for housing and $2,684 for home care, = $4,294/month.) Second, while a large portion of the costs of aging in place can be shared among two or more residents, the facility costs are for one person only. The cost savings of aging in place would therefore be even larger for multi-resident households.

15. Comparison of Average Monthly Long-Term Care Costs

Setting	Monthly Average Cost (MN Statewide)	Monthly Average Cost (Metro)
Assisted Living[a]	$4,357	$4,597
Nursing Home[b]	$7,567	$7,787
Aging in Place (Total)	$3,346	$2,988
Home Care (Home Health Aide)[c]	$2,684	$2,326
Home improvements	$263	$263
Housing costs[d]	$399	$399

Notes. All figures are based on MetLife study, with 2012 figures adjusted for inflation to 2015 US Dollars. Due to data limitations, housing costs and improvement costs are assumed to be the same between the metro and statewide estimates. Monthly home improvement costs are based on the estimate of $15,749 (Figure 9) distributed evenly over 5 years (60 months). The home care estimate is based on the costs of a home health aide, the most intensive (and expensive) service of home care, for 20 hours per week.

[a] Cost includes average monthly assisted living base rate (specific to MN statewide and Twin Cities metro), plus the national average monthly cost of a limited set of services. These services include: assistance with bathing ($187), dressing ($244), other personal care ($520), and medication management ($358).

[b] Average monthly cost for nursing home private room. A semi-private room would reduce this cost by approximately 7 percent.

[c] Home care cost assumes services for 20 hours per week. Note that this cost does not include the cost of services provided for free by family members, friends, and neighbors. These costs rarely factor into economic modeling due to the difficulty of quantifying them, but in the case of high-need residents, they can be quite substantial.

[d] Median monthly housing costs (property taxes, insurance, utilities) for a Minnesota homeowner age 65+ with an annual income of $20,600 or less who has paid off their mortgage, computed by Minnesota Housing Finance Agency using ACS 2014 microdata (5-yr sample)

To provide a single cost estimate for any of these housing and service arrangements is to oversimplify a very complex issue, as the costs of each arrangement will vary greatly across providers and across residents based on their specific needs. In order to provide a useful cost comparison between aging in place and assisted living, these estimates aim to represent the cost of similar levels of care in each of these two settings. The assisted living cost includes the average monthly assisted living base rate, in addition to the average monthly service fees for medication management, as well as assistance with bathing, dressing, and other personal care. The in-home care cost assumes a home health aide for 20 hours per week, and this aide is assumed to provide these personal care and medication management services (most likely in addition to other services). The costs of in-home care could be much higher for a high-needs client, while the costs of assisted living could be much lower (a statewide base rate of $3,048) for someone who does not require these additional services. As a result, aging in place may be most cost-effective for residents with relatively few service needs, while a group care setting may be most cost-effective for high-need residents.

Next steps

This study suggests that there is value in providing home rehabilitation or renovations for extremely low-income older adult households to help delay a move to more costly and restrictive settings, such as assisted living or skilled nursing facilities. The input from homeowners and key experts shows that there is a need for, and interest in, housing that can accommodate the needs of older adults as they age. There are few integrative models that have been studied for evidence of the effectiveness of a holistic approach. However, in order to support older adults in staying in their homes as long as possible, state and local agencies need greater inter-agency and inter-sector collaboration, blended funding, and individualized planning to connect homeowners with home modifications that are integrated with home and community-based supports.

The following are issues to consider when determining next steps.

Cross-systems collaboration and innovative approaches

Staff from Minnesota Housing and Minnesota Department of Human Services identified the needs related to low-income older adults as a priority, due to the growth that is expected in this population over the next decade. These agencies have initiated the process of exploring strategies to meet the range of housing and service needs for older adults.

Possible approaches:

- Increase inter-agency partnerships such as the Rebuilding Together Twin Cities, Mahube-Otwa (Mahnomen, Hubbard, Becker, Otter Tail, and Wadena counties) Community Action Partnership, and Sustainable Resources Center that expand innovative practices, help to identify and avoid duplication of efforts, and contribute greater cost efficiencies. Supporting and replicating these efforts may strengthen the response to the growth in need over the next decade.
- Develop an assessment for older adult homeowners that identifies their housing, health, and HCBS needs, as well as strengths related to family and community supports that are in place. This assessment can be used by older adults and their families to help guide decisions and choices related to their housing.
- Develop a pre-home-rehabilitation counseling protocol to help homeowners create a plan that realistically matches their immediate and upcoming health-related needs with the most beneficial home modification intervention. For some homeowners with substantial care needs, it may not be feasible to address those needs in their current housing. However, for many, an individualized housing and service plan developed in

a pre-home-rehabilitation counseling session may help them stay in their homes with appropriate supports.

- Fund and evaluate innovative pilot programs that are designed to address the housing and service needs of older adults, in order to understand the level of support needed to produce good outcomes and which interventions work well for older adults with differing characteristics (examining outcomes based on levels of health-related needs and/or support from friends and family).
- Create ways to share results and best practices from innovative approaches more widely.

Research

The current literature contains very little evidence of outcomes related to programs that connect interventions related to aging in place, home and community-based services, and housing; this is a topic ripe for further exploration.

This limited-scope study could only present broadly generalized cost estimates for facility-based care options and in-home care. The complexity and nuances involved in selecting the most appropriate and cost-effective housing and care plan for each household are not yet well documented in the literature. Documenting these would provide policy and decision-makers the tools to effectively deploy public and private resources.

Capacity Building

While cross-systems collaboration and innovation will be important, basic capacity building will also be critical. This assessment documents the very large and rapidly increasing need to support extremely-low-income older adult homeowners in Minnesota as they age in place. Building capacity of providers will be important to effectively deliver home rehabilitation and HCBS.

Appendix A – Consumer survey*

*Percentages in tables may not equal 100% due to rounding.

Homeowner and household characteristics

A1. Gender of homeowners

By income

Gender	Income less than $24,000 (N=145)	Income $24,000 and over (N=229)	Total (N=374)
Male	23%	39%	**33%**
Female	77%	61%	**67%**

By geography[13]

Gender	Metro (N=79)	Outstate Metro (N=66)	Micropolitan (N=81)	Small town/ Rural (N=165)	Total (N=391)
Male	34%	44%	32%	27%	**32%**
Female	66%	56%	68%	73%	**68%**

A2. Race of homeowners

Race/Ethnicity	Total
Non-White	**<1%**
White	**99%**

A3. Income of homeowners

Income level	Metro (N=78)	Outstate Metro (N=63)	Micropolitan (N=79)	Small town/Rural (N=159)	Total (N=379)
Less than $24,000	40%	33%	43%	38%	**39%**
$24,000 and over	60%	67%	57%	62%	**61%**

[13] Analysis was completed for respondents' residence according to the Census tract-based classification scheme, outlined in Appendix D.

A4. Residence of homeowners

Geographic location	Income less than $24,000 (N=147)	Income $24,000 and over (N=232)	Total (N=379)
Twin Cities 7 county metro	21%	20%	**21%**
Outstate metro	14%	18%	**17%**
Micropolitan	23%	19%	**21%**
Small town/rural	42%	42%	**42%**

A5. Ages of adults in household

By income

Ages of adults in household	Income less than $24,000 (N=148)	Income $24,000 and over (N=239)	Total (N=387)
At least one person over the age of 85	30%	18%	**23%**
No one over age 85	70%	82%	**78%**
Mean	77 years	74 years	**75 years**

By geography

Ages of adults in household	Twin Cities Metro (N=83)	Outstate Metro (N=68)	Micropolitan (N=85)	Small town/Rural (N=169)	Total (N=405)
At least one person over the age of 85	25%	32%	26%	17%	**23%**
No one over age 85	75%	68%	74%	82%	**77%**
Mean					**75.5 years**

A6. Number of people in household

By income

Number of people in household	Income less than $24,000 (N=146)	Income $24,000 and over (N=237)	Total (N=383)
1	70%	41%	**52%**
2	28%	52%	**43%**
3	1%	5%	**3%**
4	1%	1%	**1%**
5	0	1%	**1%**

By geography

Number of people in household	Metro (N=83)	Outstate Metro (N=67)	Micropolitan (N=85)	Small town/Rural (N=167)	Total (N=402)
1	63%	51%	54%	48%	**53%**
2	35%	43%	42%	47%	**43%**
3	1%	5%	2%	4%	**3%**
4	1%	0%	1%	1%	**1%**
5	0%	2%	0%	1%	**1%**

A7. Preference for remaining in home

By income

How long you would prefer to stay in your home	Income less than $24,000 (N=96)	Income $24,000 and over (N=167)	Total (N=263)
I would like to move now	3%	2%	**2%**
1 to 3 years	7%	8%	**8%**
4 to 5 years	10%	7%	**8%**
6 to 10 years	20%	20%	**20%**
More than 10 years	59%	63%	**62%**

By geography

How long you would prefer to stay in your home	Metro (N=64)	Outstate Metro (N=37)	Micropolitan (N=56)	Small town/Rural (N=112)	Total (N=269)
I would like to move now	63%	51%	54%	48%	**53%**
1 to 3 years	35%	43%	42%	47%	**43%**
4 to 5 years	1%	5%	2%	4%	**3%**
6 to 10 years	1%	0%	1%	1%	**1%**
More than 10 years	0%	2%	0%	1%	**1%**

Disabilities and assistance needs of homeowners

A8. ADL Status

By income

ADL difficulties	Income less than $24,000 (N=148)	Income $24,000 and over (N=239)	Total (N=387)
Person in household has at least one ADL difficulty	23%	18%	**20%**
Person in household has no ADL difficulties	77%	82%	**80%**

By geography

ADL difficulties	Metro (N=83)	Outstate Metro (N=68)	Micropolitan (N=85)	Small town/Rural (N=169)	Total (N=405)
Person in household has at least one ADL difficulty	19%	24%	25%	17%	**20%**
Person in household has no ADL difficulties	81%	77%	75%	83%	**80%**

A9. Assistance needs

By income

Need help with	Income less than $24,000 (N=146-147)	Income $24,000 and over (N=238-239)	Total (N=384-386)
Getting in and out of bed or a chair	5%	4%	**4%**
Going up or down stairs	18%	14%	**15%**
Getting around inside the home	4%	4%	**4%**
Going outside the home to shop or visit a doctor's office	14%	11%	**12%**

By geography

Need help with	Metro (N=82)	Outstate Metro (N=67-68)	Micropolitan (N=85)	Small town/Rural (N=167-169)	Total (N=402-404)
Getting in and out of bed or a chair	4%	4%	7%	4%	**5%**
Going up or down stairs	10%	21%	18%	16%	**16%**
Getting around inside the home	5%	4%	7%	3%	**5%**
Going outside the home to shop or visit a doctor's office	16%	16%	17%	7%	**12%**

A10. HCBS Needs

By income

Unmet Need for HCBS	Income less than $24,000 (N=148)	Income $24,000 and over (N=239)	Total (N=387)
Person in household needs at least one service or support that they do not currently receive	47%	31%	**37%**
Person in household needs no additional services or supports	53%	69%	**63%**

By geography

Unmet Need for HCBS	Metro (N=83)	Outstate Metro (N=68)	Micropolitan (N=85)	Small town/Rural (N=169)	Total (N=405)
Person in household needs at least one service or support that they do not currently receive	27%	27%	44%	40%	**36%**
Person in household needs no additional services or supports	74%	74%	57%	60%	**64%**

A11. Types of HCBS needed – Meals

By income

Help with meals brought to home or prepared for you	Income less than $24,000 (N=143)	Income $24,000 and over (N=236)	Total (N=379)
Get this help	5%	2%	**3%**
Need this help	2%	2%	**2%**
Do not need this help	93%	96%	**95%**

By geography

Help with meals brought to home or prepared for you	Metro (N=80)	Outstate Metro (N=68)	Micropolitan (N=84)	Small town/Rural (N=165)	Total (N=397)
Get this help	4%	4%	5%	3%	**4%**
Need this help	3%	0%	4%	2%	**2%**
Do not need this help	94%	96%	92%	95%	**94%**

A12. Types of HCBS needed – housekeeping or cleaning

By income

Help with light housekeeping or cleaning	Income less than $24,000 (N=144)	Income $24,000 and over (N=236)	Total (N=380)
Get this help	11%	10%	**11%**
Need this help	11%	8%	**9%**
Do not need this help	78%	82%	**81%**

By geography

Help with light housekeeping or cleaning	Metro (N=80)	Outstate Metro (N=68)	Micropolitan (N=83)	Small town/Rural (N=167)	Total (N=398)
Get this help	13%	10%	11%	10%	**11%**
Need this help	4%	6%	16%	10%	**9%**
Do not need this help	84%	84%	74%	80%	**80%**

A13. Types of HCBS needed – home repairs or maintenance

By income

Help with home repairs or maintenance	Income less than $24,000 (N=142)	Income $24,000 and over (N=235)	Total (N=377)
Get this help	22%	18%	**19%**
Need this help	43%	29%	**34%**
Do not need this help	35%	54%	**47%**

By geography

Help with home repairs or maintenance	Metro (N=79)	Outstate Metro (N=68)	Micropolitan (N=83)	Small town/Rural (N=165)	Total (N=395)
Get this help	23%	24%	22%	16%	**20%**
Need this help	24%	27%	36%	38%	**33%**
Do not need this help	53%	50%	42%	46%	**47%**

A14. Types of HCBS needed – bathing, getting dressed, toileting

By income

Help with bathing or getting dressed or using the toilet	Income less than $24,000 (N=144)	Income $24,000 and over (N=238)	Total (N=382)
Get this help	3%	2%	**2%**
Need this help	3%	1%	**2%**
Do not need this help	94%	98%	**96%**

By geography

Help with bathing or getting dressed or using the toilet	Metro (N=81)	Outstate Metro (N=68)	Micropolitan (N=85)	Small town/Rural (N=166)	Total (N=400)
Get this help	3%	2%	5%	1%	**2%**
Need this help	4%	3%	1%	1%	**2%**
Do not need this help	94%	96%	94%	98%	**96%**

A15. Types of HCBS needed – transportation

By income

Help with rides to appointments or errands	Income less than $24,000 (N=145)	Income $24,000 and over (N=236)	Total (N=381)
Get this help	11%	6%	**8%**
Need this help	11%	3%	**6%**
Do not need this help	78%	91%	**86%**

By geography

Help with bathing or getting dressed or using the toilet	Metro (N=81)	Outstate Metro (N=67)	Micropolitan (N=83)	Small town/Rural (N=168)	Total (N=399)
Get this help	10%	9%	7%	8%	**8%**
Need this help	9%	5%	4%	6%	**6%**
Do not need this help	82%	87%	89%	86%	**86%**

A16. Types of HCBS needed – home health aide

By income

Help with health worker who comes to your home to help with medical needs	Income less than $24,000 (N=144)	Income $24,000 and over (N=238)	Total (N=382)
Get this help	4%	3%	**3%**
Need this help	4%	2%	**3%**
Do not need this help	92%	96%	**94%**

By geography

Help with health worker who comes to your home to help with medical needs	Metro (N=80)	Outstate Metro (N=67)	Micropolitan (N=85)	Small town/Rural (N=166)	Total (N=398)
Get this help	3%	0%	7%	3%	**3%**
Need this help	1%	2%	6%	1%	**2%**
Do not need this help	96%	99%	87%	96%	**95%**

A17. Would have to live elsewhere without HCBS

By income

Adults would have to live somewhere else if they did not get in-home services or help	Income less than $24,000 (N=144)	Income $24,000 and over (N=238)	Total (N=382)
Definitely yes	9%	3%	**5%**
Probably yes	12%	10%	**11%**
Probably not	15%	15%	**15%**
Definitely not	5%	3%	**4%**
NA – no adults in household get in-home help	59%	68%	**65%**

By geography

Adults would have to live somewhere else if they did not get in-home services or help	Metro (N=82)	Outstate Metro (N=69)	Micropolitan (N=88)	Small town/Rural (N=170)	Total (N=409)
Definitely yes	5%	6%	7%	5%	**6%**
Probably yes	10%	13%	13%	9%	**11%**
Probably not	16%	9%	15%	15%	**14%**
Definitely not	2%	7%	5%	3%	**4%**
NA – no adults in household get in-home help	67%	65%	61%	68%	66%

A18. Need for modifications

By income

Based on health and mobility and layout of home could continue to live in home for next five years	Income less than $24,000 (N=144)	Income $24,000 and over (N=234)	Total (N=378)
Yes, with no modifications needed	62%	72%	**68%**
Yes, with some modifications	35%	26%	**30%**
No, not even with modifications	3%	2%	**2%**

By geography

Based on health and mobility and layout of home could continue to live in home for next five years	Metro (N=78)	Outstate Metro (N=66)	Micropolitan (N=83)	Small town/Rural (N=169)	Total (N=396)
Yes, with no modifications needed	82%	71%	61%	63%	**68%**
Yes, with some modifications	17%	26%	36%	33%	**29%**
No, not even with modifications	1%	3%	2%	4%	**3%**

House characteristics

A19. Room configurations

By income

Home has:	Income less than $24,000 (N=146-148)	Income $24,000 and over (N=235-238)	Total (N=381-386)
More than one story of living space	43%	48%	**46%**
A toilet on the main floor	94%	95%	**95%**
A bathtub or shower on the main floor	91%	91%	**91%**
A bedroom on the main floor	89%	88%	**88%**
Laundry on the main floor	52%	43%	**47%**

By geography

Home has:	Metro (N=81-83)	Outstate Metro (N=66-68)	Micropolitan (N=85)	Small town/Rural (N=167-168)	Total (N=399-404)
More than one story of living space	52%	41%	51%	42%	**46%**
A toilet on the main floor	93%	99%	91%	97%	**95%**
A bathtub or shower on the main floor	88%	94%	86%	94%	**91%**
A bedroom on the main floor	87%	93%	84%	90%	**88%**
Laundry on the main floor	34%	47%	31%	62%	**47%**

A20. Steps into house

By income

Number of steps to climb to enter home:	Income less than $24,000 (N=145)	Income $24,000 and over (N=237)	Total (N=382)
Home has an entry ramp	4%	3%	**3%**
None	10%	17%	**14%**
One to three steps	56%	54%	**55%**
Four or more steps	30%	26%	**27%**

By geography

Number of steps to climb to enter home:	Metro (N=83)	Outstate Metro (N=68)	Micropolitan (N=83)	Small town/Rural (N=139)	Total (N=347)
Home has an entry ramp	2%	6%	2%	3%	**3%**
None	17%	15%	17%	11%	**14%**
One to three steps	57%	59%	49%	57%	**56%**
Four or more steps	24%	21%	31%	29%	**27%**

A21. Year house built

By income

Year that house was built	Income less than $24,000 (N=124)	Income $24,000 and over (N=210)	Total (N=334)
Before 1910	11%	7%	**9%**
1910 to 1929	8%	10%	**9%**
1930 to 1949	11%	13%	**13%**
1950 to 1969	36%	29%	**31%**
1970 to 1989	17%	23%	**21%**
1990 to 2016	16%	19%	**18%**
Mean	1956	1960	**1958**

By geography

Year that house was built	Metro (N=77)	Outstate Metro (N=61)	Micropolitan (N=70)	Small town/Rural (N=139)	Total (N=347)
Before 1910	5%	5%	11%	12%	**9%**
1910 to 1929	10%	5%	14%	7%	**9%**
1930 to 1949	14%	5%	14%	13%	**12%**
1950 to 1969	35%	31%	36%	30%	**32%**
1970 to 1989	20%	23%	14%	23%	**21%**
1990 to 2016	16%	31%	10%	17%	**18%**
Mean	1959	1970	1948	1957	**1958**

A22. Condition of house

By income

Overall physical condition of house	Income less than $24,000 (N=139)	Income $24,000 and over (N=233)	Total (N=372)
Very good	25%	33%	**30%**
Good	66%	60%	**62%**
Poor	9%	6%	**8%**
Very poor	0%	1%	**1%**

By geography

Overall physical condition of house	Metro (N=77)	Outstate Metro (N=66)	Micropolitan (N=81)	Small town/Rural (N=163)	Total (N=387)
Very good	36%	32%	25%	29%	**30%**
Good	60%	62%	64%	63%	**62%**
Poor	4%	6%	11%	7%	**7%**
Very poor	0%	0%	0%	1%	**1%**

A23. Need for high cost improvements

By income

Need for high-cost improvements ($3500+ estimate)	Income less than $24,000 (N=148)	Income $24,000 and over (N=239)	Total (N=387)
Household needs at least one high-cost improvement	57%	51%	**53%**
Household needs no high-cost improvements	43%	49%	**47%**

By geography

Need for high-cost improvements ($3500+ estimate)	Metro (N=83)	Outstate Metro (N=68)	Micropolitan (N=85)	Small town/Rural (N=169)	Total (N=405)
Household needs at least one high-cost improvement	36%	41%	58%	64%	**53%**
Household needs no high-cost improvements	64%	59%	42%	36%	**47%**

A24. Need for very high-cost improvement

By income

Need for very high-cost improvements ($5000+ estimate)	Income less than $24,000 (N=148)	Income $24,000 and over (N=239)	Total (N=387)
Household needs at least one very high-cost improvement	47%	33%	**38%**
Household needs no very high-cost improvements	53%	67%	**62%**

By geography

Need for very high-cost improvements ($5000+ estimate)	Metro (N=83)	Outstate Metro (N=68)	Micropolitan (N=85)	Small town/Rural (N=169)	Total (N=405)
Household needs at least one very high-cost improvement	29%	24%	40%	45%	**37%**
Household needs no very high-cost improvements	71%	77%	60%	55%	**63%**

A25. Need for safety/accessibility improvements

By income

Need for safety/accessibility improvements	Income less than $24,000 (N=148)	Income $24,000 and over (N=239)	Total (N=387)
Household needs at least one safety/accessibility improvement	45%	42%	**43%**
Household needs no safety/accessibility improvement	55%	58%	**57%**

By geography

Need for safety/accessibility improvements	Metro (N=83)	Outstate Metro (N=68)	Micropolitan (N=85)	Small town/Rural (N=169)	Total (N=405)
Household needs at least one safety/accessibility improvement	35%	38%	42%	50%	**44%**
Household needs no safety/accessibility improvement	65%	62%	58%	50%	**57%**

A26. Need for maintenance improvements

By income

Need for maintenance improvements	Income less than $24,000 (N=148)	Income $24,000 and over (N=239)	Total (N=387)
Household needs at least one maintenance improvement	60%	51%	**54%**
Household needs no maintenance improvement	41%	49%	**46%**

By geography

Need for maintenance improvements	Metro (N=83)	Outstate Metro (N=68)	Micropolitan (N=85)	Small town/Rural (N=169)	Total (N=405)
Household needs at least one maintenance improvement	43%	43%	54%	63%	**54%**
Household needs no maintenance improvement	57%	57%	46%	37%	**46%**

Types of improvements needed

A27. Grab bars or hand rails

By income

Grab bars or hand rails	Income less than $24,000 (N=138)	Income $24,000 and over (N=228)	Total (N=366)
Already have this	42%	36%	**39%**
Will need this	21%	20%	**21%**
Do not think we will need this	37%	43%	**41%**

By geography

Grab bars or hand rails	Metro (N=81)	Outstate Metro (N=65)	Micropolitan (N=80)	Small town/Rural (N=158)	Total (N=384)
Already have this	36%	37%	44%	39%	**39%**
Will need this	16%	17%	16%	27%	**21%**
Do not think we will need this	48%	46%	40%	34%	**40%**

A28. Floor level shower

By income

Shower at floor level	Income less than $24,000 (N=137)	Income $24,000 and over (N=227)	Total (N=364)
Already have this	27%	34%	**31%**
Will need this	23%	18%	**20%**
Do not think we will need this	50%	49%	**49%**

By geography

Shower at floor level	Metro (N=79)	Outstate Metro (N=63)	Micropolitan (N=80)	Small town/Rural (N=159)	Total (N=381)
Already have this	25%	41%	26%	34%	**32%**
Will need this	11%	11%	25%	26%	**21%**
Do not think we will need this	63%	48%	49%	40%	**48%**

A29. Main floor laundry

By income

Main floor laundry	Income less than $24,000 (N=138)	Income $24,000 and over (N=231)	Total (N=369)
Already have this	44%	38%	**40%**
Will need this	13%	15%	**14%**
Do not think we will need this	43%	47%	**46%**

By geography

Main floor laundry	Metro (N=78)	Outstate Metro (N=68)	Micropolitan (N=81)	Small town/Rural (N=159)	Total (N=386)
Already have this	27%	41%	27%	56%	**42%**
Will need this	5%	12%	24%	15%	**14%**
Do not think we will need this	68%	47%	49%	29%	**44%**

A30. Lever door handles

By income

Lever door handles	Income less than $24,000 (N=139)	Income $24,000 and over (N=232)	Total (N=371)
Already have this	28%	37%	**33%**
Will need this	14%	13%	**13%**
Do not think we will need this	58%	51%	**53%**

By geography

Lever door handles	Metro (N=80)	Outstate Metro (N=66)	Micropolitan (N=81)	Small town/Rural (N=160)	Total (N=387)
Already have this	21%	36%	35%	39%	**34%**
Will need this	11%	15%	12%	13%	**13%**
Do not think we will need this	68%	49%	53%	48%	**53%**

A31. Wider doorways

By income

Wider doorways	Income less than $24,000 (N=136)	Income $24,000 and over (N=226)	Total (N=362)
Already have this	21%	25%	**24%**
Will need this	12%	10%	**11%**
Do not think we will need this	67%	66%	**66%**

By geography

Wider doorways	Metro (N=78)	Outstate Metro (N=66)	Micropolitan (N=80)	Small town/Rural (N=155)	Total (N=379)
Already have this	19%	18%	25%	28%	**24%**
Will need this	5%	11%	10%	13%	**10%**
Do not think we will need this	76%	71%	65%	59%	**66%**

A32. Entrance ramp

By income

Entrance ramp	Income less than $24,000 (N=135)	Income $24,000 and over (N=231)	Total (N=366)
Already have this	11%	6%	**8%**
Will need this	11%	10%	**10%**
Do not think we will need this	78%	84%	**82%**

By geography

Entrance ramp	Metro (N=79)	Outstate Metro (N=68)	Micropolitan (N=81)	Small town/Rural (N=155)	Total (N=383)
Already have this	8%	7%	12%	7%	**8%**
Will need this	5%	7%	16%	12%	**10%**
Do not think we will need this	87%	85%	72%	82%	**82%**

A33. Stair railings

By income

Stair railings	Income less than $24,000 (N=134)	Income $24,000 and over (N=227)	Total (N=361)
Already have this	62%	66%	**65%**
Will need this	9%	7%	**8%**
Do not think we will need this	29%	27%	**28%**

By geography

Stair railings	Metro (N=75)	Outstate Metro (N=63)	Micropolitan (N=80)	Small town/Rural (N=160)	Total (N=378)
Already have this	64%	67%	69%	62%	**65%**
Will need this	4%	6%	6%	10%	**7%**
Do not think we will need this	32%	27%	25%	28%	**28%**

A34. Non-slip flooring

By income

Non-slip or level flooring	Income less than $24,000 (N=139)	Income $24,000 and over (N=231)	Total (N=370)
Already have this	46%	58%	**54%**
Will need this	7%	7%	**7%**
Do not think we will need this	47%	35%	**39%**

By geography

Non-slip or level flooring	Metro (N=79)	Outstate Metro (N=66)	Micropolitan (N=81)	Small town/Rural (N=160)	Total (N=386)
Already have this	46%	59%	47%	61%	**54%**
Will need this	4%	5%	6%	11%	**7%**
Do not think we will need this	51%	36%	47%	29%	**38%**

A35. Lower cabinets or counters

By income

Lower cabinets or counters for a wheelchair	Income less than $24,000 (N=139)	Income $24,000 and over (N=229)	Total (N=368)
Already have this	7%	7%	**7%**
Will need this	6%	4%	**5%**
Do not think we will need this	87%	89%	**88%**

By geography

Lower cabinets or counters for a wheelchair	Metro (N=78)	Outstate Metro (N=67)	Micropolitan (N=80)	Small town/Rural (N=160)	Total (N=385)
Already have this	9%	9%	9%	6%	**8%**
Will need this	0%	2%	6%	8%	**5%**
Do not think we will need this	91%	90%	85%	87%	**89%**

A36. Main floor bathroom

By income

Bathroom on the main floor	Income less than $24,000 (N=141)	Income $24,000 and over (N=234)	Total (N=375)
Already have this	80%	81%	**81%**
Will need this	4%	4%	**4%**
Do not think we will need this	16%	15%	**16%**

By geography

Bathroom on the main floor	Metro (N=81)	Outstate Metro (N=68)	Micropolitan (N=81)	Small town/Rural (N=162)	Total (N=392)
Already have this	75%	88%	78%	83%	**81%**
Will need this	3%	2%	7%	4%	**4%**
Do not think we will need this	22%	10%	15%	13%	**15%**

A37. Elevator

By income

Elevator	Income less than $24,000 (N=137)	Income $24,000 and over (N=231)	Total (N=368)
Already have this	2%	2%	**2%**
Will need this	1%	2%	**2%**
Do not think we will need this	98%	96%	**97%**

By geography

Elevator	Metro (N=80)	Outstate Metro (N=65)	Micropolitan (N=81)	Small town/Rural (N=157)	Total (N=383)
Already have this	4%	0%	1%	1%	**2%**
Will need this	1%	2%	1%	1%	**1%**
Do not think we will need this	95%	99%	98%	98%	**97%**

A38. New water heater

By income

New water heater	Income less than $24,000 (N=141)	Income $24,000 and over (N=234)	Total (N=375)
Already have this	37%	43%	**41%**
Will need this	32%	24%	**27%**
Do not think we will need this	31%	34%	**33%**

By geography

New water heater	Metro (N=80)	Outstate Metro (N=67)	Micropolitan (N=83)	Small town/Rural (N=161)	Total (N=391)
Already have this	38%	28%	40%	45%	**40%**
Will need this	25%	27%	23%	30%	**27%**
Do not think we will need this	38%	45%	37%	25%	**34%**

A39. Windows

By income

New windows	Income less than $24,000 (N=142)	Income $24,000 and over (N=232)	Total (N=374)
Already have this	30%	46%	**40%**
Will need this	33%	20%	**25%**
Do not think we will need this	37%	34%	**35%**

By geography

New windows	Metro (N=81)	Outstate Metro (N=66)	Micropolitan (N=83)	Small town/Rural (N=160)	Total (N=390)
Already have this	36%	38%	39%	45%	**41%**
Will need this	21%	15%	25%	29%	**24%**
Do not think we will need this	43%	47%	36%	26%	**35%**

A40. Roof

By income

New roof	Income less than $24,000 (N=142)	Income $24,000 and over (N=236)	Total (N=378)
Already have this	46%	60%	**55%**
Will need this	28%	18%	**21%**
Do not think we will need this	27%	23%	**24%**

By geography

New roof	Metro (N=79)	Outstate Metro (N=68)	Micropolitan (N=85)	Small town/Rural (N=163)	Total (N=395)
Already have this	53%	57%	55%	57%	**56%**
Will need this	15%	16%	26%	23%	**21%**
Do not think we will need this	32%	27%	19%	20%	**23%**

A41. Central air conditioning

By income

New central air conditioner	Income less than $24,000 (N=141)	Income $24,000 and over (N=233)	Total (N=374)
Already have this	32%	34%	**33%**
Will need this	17%	22%	**20%**
Do not think we will need this	51%	44%	**47%**

By geography

New central air conditioner	Metro (N=79)	Outstate Metro (N=67)	Micropolitan (N=84)	Small town/Rural (N=160)	Total (N=390)
Already have this	32%	31%	37%	34%	**34%**
Will need this	18%	12%	16%	27%	**20%**
Do not think we will need this	51%	57%	48%	39%	**46%**

A42. Furnace or boiler

By income

New furnace or boiler	Income less than $24,000 (N=141)	Income $24,000 and over (N=227)	Total (N=368)
Already have this	45%	42%	**44%**
Will need this	15%	20%	**18%**
Do not think we will need this	40%	37%	**38%**

By geography

New furnace or boiler	Metro (N=80)	Outstate Metro (N=66)	Micropolitan (N=81)	Small town/Rural (N=157)	Total (N=384)
Already have this	36%	36%	46%	49%	**44%**
Will need this	14%	20%	20%	19%	**18%**
Do not think we will need this	50%	44%	35%	32%	**38%**

A43. Other modifications or repairs

Other modifications or repairs needed to live in home for next five years	Total times mentioned
Painting (exterior and general)	4
Insulation	3
Flooring	3
Chimney repair	1
Foundation repair	1
Exterior steps repair	1
Driveway repair	1
Doors	1
Electrical work	1
Stair lift	1
Main floor bedroom	1

Homeowner Survey – Home Modifications and Needs

Please fill in the answer or check the response that best matches your opinion.

1. How many people live in your household? ☐

2. What are the **ages of each adult** (18 and older) in your household?

☐ ☐ ☐ ☐ ☐ ☐

3. Do you or someone in your household own your home?

☐1 Yes

☐2 No

4. How long would you prefer to stay in your current home? (Check one)

☐1 I would like to move now

☐2 1 to 3 years

☐3 4 to 5 years

☐4 6 to 10 years

☐5 More than 10 years

☐6 I am not sure

5. Does your home have…

		Yes	No
a.	More than one-story of living space (not including a basement)?	☐1	☐2
b.	A toilet on the main floor?	☐1	☐2
c.	A bathtub or shower on the main floor?	☐1	☐2
d.	A bedroom on the main floor?	☐1	☐2
e.	Laundry on the main floor?	☐1	☐2

6. How many steps must you climb to enter your home from the outside (for the door you usually use)?

☐1 My home has an entry ramp

☐2 None

☐3 One to three steps

☐4 Four or more steps

7. In what year was your home built? ☐

8. Please indicate what modifications you have or may need to continue living in your home for the next five years.

For each item, check the box that is closest to your situation.	We already have this	We will need this	We do not think we will need this
a. Lower cabinets or counters for a wheelchair	☐1	☐2	☐3
b. Grab bars or hand rails	☐1	☐2	☐3
c. Shower at floor level (that is easy to walk or roll into)	☐1	☐2	☐3
d. Bathroom (toilet and bathtub or shower) on the main floor	☐1	☐2	☐3
e. Entrance ramp	☐1	☐2	☐3
f. Stair railings	☐1	☐2	☐3
g. Wider doorways for a wheelchair or walker	☐1	☐2	☐3
h. Main floor laundry	☐1	☐2	☐3
i. Lever door handles that are easy to open	☐1	☐2	☐3
j. Non-slip or level flooring	☐1	☐2	☐3
k. Elevator	☐1	☐2	☐3

9. Please indicate repairs you have made or may need in your home for you to continue living there for the next five years.

For each item, check the box that is closest to your situation.	We already have this	We will need this	We do not think we will need this
a. New roof	☐1	☐2	☐3
b. New windows	☐1	☐2	☐3
c. New furnace or boiler	☐1	☐2	☐3
d. New central air conditioner	☐1	☐2	☐3
e. New water heater	☐1	☐2	☐3

10. Are there any other modifications or repairs you will need in your home to continue living there for the next five years? Please explain.

_____

11. How would you characterize the overall physical condition of your home? (Check one)

☐1 Very good ☐2 Good ☐3 Poor ☐4 Very poor ☐8 I don't know

12. Because of a physical condition, does any adult in your household have problems or need help with:

	Yes	No
a. Getting in and out of bed or a chair?	☐1	☐2
b. Going up or down stairs?	☐1	☐2
c. Getting around inside the home?	☐1	☐2
d. Going outside the home to shop or visit a doctor's office?	☐1	☐2

13. Considering the current health and mobility of the adults in your household, and the layout of your home, could you continue living in your home for the next five years?

☐1 Yes, with no modifications needed

☐2 Yes, with some modifications

☐3 No, not even with modifications

14. Because of a physical condition, do any adults in your household get help with any of the following <u>from someone outside the home</u>?

For each item, check the box that is closest to your situation.	**We get this help**	**We need this help**	**We do not need this help**
a. Meals that are brought to your home or prepared for you	☐1	☐2	☐3
b. Help with light housekeeping or cleaning	☐1	☐2	☐3
c. Home repairs or maintenance	☐1	☐2	☐3
d. Help with bathing or getting dressed or using the toilet	☐1	☐2	☐3
e. Rides to appointments or errands	☐1	☐2	☐3
f. Health worker (aide, nurse, etc.) who comes to your home to help with medical needs	☐1	☐2	☐3

15. Would any adults in your household have to live somewhere else if they did not get in-home services or help?

- ☐1 Definitely yes
- ☐2 Probably yes
- ☐3 Probably not
- ☐4 Definitely not
- ☐9 Does not apply (No adults in my household get in-home help)

Finally, we would like a little background information about you.

16. Are you:

- ☐1 Male
- ☐2 Female

17. How do you identify your race/ethnicity? (Please check all that apply)

- ☐1 African American
- ☐2 African-born
- ☐3 American Indian/Native American
- ☐4 Asian or Asian American
- ☐5 Hispanic
- ☐6 White
- ☐7 Other (Please describe: _____)

18. What is your zip code? ☐☐☐☐☐

Understanding the housing needs of people with different income levels is needed for Minnesota Housing to better plan for services.

19. What is your best guess of your household income last year?

- ☐1 Less than $16,000
- ☐2 $16,000 to $ 23,999
- ☐3 $24,000 to $31,999
- ☐4 $32,000 to $39,999
- ☐5 $40,000 to $47,999
- ☐6 $48,000 or more

Thank you!
Please return your completed survey to Wilder Research in the enclosed self-addressed postage-paid envelope **by June 30th**.

Appendix B – Cost parameters and assumptions

B1. Home improvement cost assumptions

Safety and Accessibility	Typical cost	Lower bound	Upper bound
Lower kitchen cabinets and counters for wheelchair accessibility	$5,563	$3,900	$14,000
Install grab bar or hand rail	$338	$263	$800
Shower at floor level	$3,598	$2,798	$4,698
Bathroom on main floor	$11,673	$10,645	$14,673
Entrance ramp	$3,875	$3,167	$7,375
Install stair railing	$386	$245	$828
Wider doorways for a wheelchair or walker	$1,232	$740	$2,878
Main floor laundry	$3,675	$2,975	$4,680
Lever door handles	$359	$265	$900
Non-slip or level flooring	$2,750	$533	$6,975
Elevator or stair lift[a]	$4,833	$4,500	$30,000
Maintenance			
New roof	$7,250	$5,850	$12,456
New windows	$6,803	$4,639	$25,503
New furnace or boiler	$4,333	$3,500	$9,167
New central air conditioner	$3,113	$2,975	$4,625
New water heater	$1,190	$1,160	$2,250

Note. Details of computations are described in the methods section. This list, by necessity, falls short of an exhaustive list of possible home improvement needs. Notable omissions include siding/exterior painting and insulation.

[a] While the consumer survey asked about the need for an elevator, it became clear during interviews with home improvement experts that stair lifts are far more common. As a result, cost estimates for this item reflect stair lifts for the lower bound and typical scenarios, and reflect shaft elevators in the upper bound scenario.

B2. Disaggregated per-household home improvement costs (safety, maintenance)

	Typical	Lower bound	Upper bound
Safety cost	$6,989	$5,284	$12,433
Maintenance cost	$8,760	$6,887	$22,117
Total cost	**$15,749**	**$12,171**	**$34,551**

Note. Details of computations are described in Appendix D.

B3. Additional assumptions for cost computations

Assumptions (used when respondent provided a cost per unit and no overall cost)	Typical	Lower bound	Upper bound
Roof size	25 square	20 square	30 square
Number of doors for knob replacement	4	3	6
Number of doors for doorway widening	2	1	4
Number of stair railings needed	2	1	3
Number of grab bars needed	3	2	4
Number of windows	12	8	30

Note. Additional assumptions include the following:
Main floor laundry requires new appliances at cost of $1800.
The lower bound end of non-slip flooring only includes estimates of no-skid remedies, while the upper bound only includes flooring replacement (assumed at a conservatively high 1500 square feet).
The lower bound end of the "elevator" item only includes estimates for stair lifts (an alternative to an elevator), while the upper bound only includes estimates for a shaft elevator.

Appendix C – Findings from existing data

C1. National Core Indicators Data – Demographics

Age (N=307)	Percent
50-59	14%
60-69	21%
70-79	28%
80-89	24%
90+	13%
Gender (N=307)	
Male	32%
Female	68%
Race/Ethnicity (N=241)	
American Indian/Alaskan Native	1%
Asian	3%
Black/African American	6%
White	89%

Source. NCI-AD Pilot data for MN, 2014

C2. National Core Indicator Data – Services

Receiving services (N=289)	Percent
PCA	52%
Homemaker	71%
Transportation	52%
Meal assistance	64%
Services needed (N=43)	
PCA	19%
Homemaker	23%
Transportation	35%
Nutritional assistance	21%

Source. NCI-AD Pilot data for MN, 2014

C3. National Core Indicator Data – Supports for daily living

Needs help with	Percent
Basic self-care (N=300)	40%
Everyday activities (N=298)	79%
Would need to live elsewhere without services received (N=273)	
Yes	51%
Maybe, not sure	14%
No	35%
Needs different supports to continue living in current place (N=274)	
Yes	18%
Maybe, not sure	8%
No	74%
Types of supports needed (N=72)	
Help with basic self-care	31%
Help with everyday things	43%
Home modifications	24%
Transportation	29%
Nutritional supports	21%
Financial assistance	33%
May need to move in the next 2 years (N=277)	18%

Source. NCI-AD Pilot data for MN, 2014. Used with permission from MN Board on Aging.

C4. National Core Indicator Data – Home modifications

Home modifications respondent has (N=303)	Percent
None	14%
Grab bars	71%
Bathroom modifications	51%
Ramp	13%
Home modifications respondent needs (N=303)	
None	74%
Grab bars	6%
Bathroom modifications	4%
Ramp	5%
Respondent is afraid of falling (N=278)	
Yes	32%
Maybe, not sure	7%
No	62%
Someone has worked with respondent to reduce risk of falling (N=272)	
Yes	40%
Maybe, not sure	3%
No	57%

Source. NCI-AD Pilot data for MN, 2014. Used with permission from MN Board on Aging.

C5. Characteristics of Minnesota OAA Clients

	Percent
Persons 60+ with mobility limitations	14.9%
Persons 60+ below poverty	7.5%
Persons 60+ living in rural areas	32.5%
Total population 60+	20.3%

Source: Profile of State OAA Programs, Minnesota (2014).
http://www.agid.acl.gov/StateProfiles/Profile/Pre/?id=25&topic=1&years=2014

C6. Minnesota 2014 Gaps analysis study[14] — Lead agency representatives

- 58% reported there were older adults currently living in their homes who are at risk of having to move into provider-controlled settings; the main needs that must be met to help them remain in their homes are homemaker services, personal care assistance, medication management, and chore services.
- 77% reported that there is a big need or some need to modify existing housing stock so older adults can continue to reside in current homes/communities.
- 66% reported that subsidies for low-income people who wish to make home modifications fall short of demand.
- 47% reported that builders/contractors who are willing to take on environmental accessibility adaptations fall short of demand.

Source. DHS Gaps Analysis Study
https://mn.gov/dhs/partners-and-providers/continuing-care/data-measures/gaps-analysis/current-study/

[14] The 2013-2014 Minnesota Department of Human Services Gaps Analysis study was completed to assess the capacity and gaps of the Minnesota services system to support older adults; persons with disabilities; and children, youth or adults living with mental health conditions. The long-term services and supports system includes home and community-based services and a continuum of mental health services and supports.

C7. Medicare enrollees' status for Activities of Daily Living and Instrumental Activities of Daily Living

Indicator 20 (2009)/22 (2013)	2009	2013
With IADLs or ADLs or in a long-term care facility	41.4%	44%
With IADLs only	12.1%	11.7%
With 1-2 ADLs	17.6%	20%
With 3-4 ADLs	5.1%	5.8%
With 5-6 ADLs	2.7%	2.8%
Indicator 37		
With ADLs and receive personal assistance only	6.4%	7.0%
With ADLs and use equipment only	38.4%	35.3%
With ADLs and receive personal assistance and use equipment	23.4%	25.4%
No assistance received	31.9%	32.4%

Source. Older Americans 2016: Key Indicators of Well-Being. http://www.agingstats.gov/docs/LatestReport/OA2016.pdf

C8. Medicare enrollees' status for Activities of Daily Living and Instrumental Activities of Daily Living

	Percent
Independent living difficulty	15%
Self-care difficulty	9%
Ambulatory difficulty	23%
Cognitive difficulty	9%
Vision difficulty	7%
Hearing difficulty	15%
Any disability	36%

Source. Older Americans 2016: Key Indicators of Well-Being. http://www.aoa.gov/Aging_Statistics/Profile/2014/16.aspx

C9. Administration on Aging Housing data for 26.8 million households of older adults in 2013

	Percent
Homeowners	81%
Median family income	$34,500
Homeowners who spent more than ¼ of income on housing	39%
Median home construction year	1972
Moderate to severe problems with plumbing, heating, electric, kitchen, and/or upkeep	2.7%
Homeowners who own homes, mortgage free	65%

Source. Department of Housing and Urban Development, American Housing Survey, National Tables: 2013
http://www.aoa.gov/Aging_Statistics/Profile/2014/11.aspx

C10. Characteristics of low-income homeowners

Age	Percent with disability	Percent who moved in the last year	Own home (owned/mortgage)
65-74	21%	4%	87%
75-84	37%	5%	78%
85+	67%	10%	57%

Poverty level of homeowners	Owner households
Below poverty	23,529 (6%)
Poverty to 30%	22,094 (6%)
30-50%	71,374 (18%)
50-80%	96,555 (24%)
>80%	186,376 (47%)
Total	399,930 (100%)

Source: MN Housing analysis of U.S. Census Bureau, 2012 American Community Survey micro-data from PowerPoint "Minnesota Housing & Serving Older Minnesotans, February 5, 2016.

C11. Minnesota Board on Aging Title III consumer feedback pilot survey results (2016)

This service [chore/homemaker, home delivered meals, transportation] helps me remain in my current living situation.	Total (N=181)
Strongly agree	**69%**
Moderately agree	**20%**
Slightly agree	**5%**
Slightly disagree	**2%**
Moderately disagree	**0%**
Strongly disagree	**4%**
Without this service [chore/homemaker, home delivered meals, transportation] it would be difficult to remain in my home.	
Strongly agree	**41%**
Moderately agree	**23%**
Slightly agree	**13%**
Slightly disagree	**10%**
Moderately disagree	**7%**
Strongly disagree	**7%**

Note: Pilot results used with permission from Minnesota Board on Aging.

C12. MetLife Market Survey of Long-Term Care Costs: Nursing Home, Assisted Living, Adult Day Services, and Home Care Costs

Home Care Hourly Cost (2012)	Home Health Aide			Homemaker Services		
	Low	High	Average	Low	High	Average
Minnesota	$11	$45	$30	$11	$44	$24
Minneapolis/St. Paul	$11	$45	$26	$11	$27	$22
Rochester area	$24	$44	$32	$20	$44	$28
Rest of state	$23	$40	$31	$17	$34	$23

Note. Based on 4 hours per day, 5 days per week. Figures not adjusted for inflation.

Nursing Home Daily Cost (2012)	Semi-Private Room			Private Room		
	Low	High	Average	Low	High	Average
Minnesota	$147	$308	$223	$161	$328	$241
Minneapolis/St. Paul	$189	$308	$231	$195	$328	$248
Rochester area	$147	$241	$200	$161	$255	$216
Rest of state	$193	$270	$228	$215	$285	$249

Adult Day Services Daily Cost (2012)	Low	High	Average
Minnesota	$37	$117	$71
Minneapolis/St. Paul	$70	$117	$82
Rochester area	$37	$62	$54
Rest of state	$44	$117	$68

Note. Based on 5 days per week

Assisted Living Monthly Base Rate (2012)	Low	High	Average
Minnesota	$1,665	$5,232	$2,953
Minneapolis/St. Paul	$1,665	$5,232	$3,185
Rochester area	$1,791	$3,195	$2,751
Rest of state	$2,276	$3,650	$2,744

Source: The 2012 MetLife Market Survey of Nursing Home, Assisted Living, Adult Day Services, and Home Care Costs
https://www.metlife.com/assets/cao/mmi/publications/studies/2012/studies/mmi-2012-market-survey-long-term-care-costs.pdf

Appendix D – Data sources and methodological details

Homeowner survey

The purpose of the survey was to hear directly from older, low-income homeowners about their perceptions of their current and future needs for home renovations or repairs that would allow them to remain in their homes as long as they wish. The survey also collected information about the age, condition, and layout of their houses; their current use of services and supports; their perception of their need for services and supports in the future; and basic demographic information. The survey was also designed to collect information about geographic variations in the situations and needs of the respondents.

Wilder Research mailed surveys and letters explaining the purpose of the survey to a sample of 1500 homeowners.[15] Mailings included a paper survey, a letter with instructions, and a postage-paid, self-addressed envelope to return the survey, along with a one-dollar bill sent as an incentive for participation. Respondents had the option of returning the completed survey in a postage-paid envelope or of calling Wilder Research to complete the survey over the phone. One week following the first mailing, a reminder postcard was sent to the entire sample. Of the original 1500 addresses, there were 1406 eligible cases,[16] with 420 completed surveys (413 returned by mail and seven completed over the phone). The final response rate was 30%.

Geographic analysis was completed, based on federal definitions of metropolitan and micropolitan statistical areas, according to the following designations:

- Metro: The seven-county metropolitan area (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, Washington counties)
- Outstate metro: Metropolitan statistical areas, not in the seven-county metro area (Benton, Chisago, Clay, Dodge, Houston, Isanti, Olmsted, Polk, Sherburne, St. Louis, Stearns, Wabasha, Wright counties)
- Micropolitan: 20 counties surrounding smaller urban centers of at least 10,000 people (Beltrami, Brown, Blue Earth, Cass, Crow Wing, Douglas, Freeborn, Goodhue,

[15] The sample was purchased for statewide listed telephone residential records, with targeted criteria for ages 65 years and over, homeownership, and household income of $30,000 or less. Limitations to this sample include possible under-coverage associated with households that do not have telephone numbers.

[16] Not eligible=44, undeliverable=46; refusals=14, returned after data analysis deadline=4

Kandiyohi, Lyon, Martin, McLeod, Mower, Nicollet, Nobles, Otter Tail, Rice, Steele, Wilkin, Winona counties)

- Small town/Rural: 46 counties not considered metropolitan or micropolitan (Aitkin, Becker, Big Stone, Carlton, Chippewa, Clearwater, Cook, Cottonwood, Faribault, Fillmore, Grant, Hubbard, Jackson, Kanabec, Kittson, Koochiching, Lac Qui Parle, Lake, Lake of the Woods, Le Sueur, Lincoln, Mahnomen, Marshall, Meeker, Mille Lacs, Morrison, Murray, Norman, Pennington, Pine, Pipestone, Pope, Red Lake, Redwood, Renville, Rock, Roseau, Sibley, Stevens, Swift, Todd, Traverse, Wadena, Waseca, Wantonwan, Yellow Medicine counties)

Complete survey results are located in Appendix A.

Interviews with key experts

Wilder Research conducted interviews with six industry representatives, recommended for their expertise in implementation of and costs associated with home rehabilitation. The purpose of the interviews with key experts was to develop estimates of the approximate typical cost (and range of costs) of the list of 16 home improvements covered in the study (listed in the cost computation methodology section below and in Figure B1 in Appendix B).

The key experts were asked to review a list of basic renovations that homeowners may need and then provide information about the range of costs for completing the work. In particular, they were asked first to describe an example of a low-cost instance of each home improvement task (e.g., a roof replacement for a simple gable roof on a single-story home) and give an approximate cost for the job. Next, they were asked for an example of a high-cost instance of each task (e.g., a roof replacement for an old 3-story Victorian home that requires decking replacement) and asked for an approximate cost of that high-cost example. Finally, they were asked to describe the typical situation that they encounter for each home improvement task, and asked for the approximate cost of that typical job (which was, in most cases, closer to the low-cost than the high-cost scenario). Respondents were also introduced to the study goals and invited to share any additional information that they felt would be relevant to the study.

Literature review

Wilder Research conducted an extensive search of existing literature in the field to gain a better understanding of trends and programs currently doing similar work, and reviewed the relevant sources to pull out key findings and content that could inform this study. Concepts and key words used in this search included:

- Age-in-place
- Home and community-based services
- Long-terms supports and services
- Home renovation and rehabilitation
- Functional limitations of older adults
- Low-income older adults

The complete bibliography of results is located in Appendix E.

Existing data sources

Wilder Research reviewed and analyzed existing public and programmatic data to answer the following questions:

- What are the demographic and disability characteristics of low-income older adults in Minnesota?
- What Home and Community Based Services are used by older adults in Minnesota? What services do they need?
- What supports and modifications do extremely low-income older adults use or need in their homes?
- How does the cost of care in less restrictive settings compare to the costs of care in nursing homes or assisted living settings?
- How many extremely low-income older adult (age 65+) households are there in Minnesota?

The following data sources were included in the analysis of data:

- American Community Survey data and other U.S. Census Bureau data (National and Minnesota)[17]
- Minnesota Statewide Gaps Analysis study data[18]
- Minnesota National Core Indicators pilot study data[19]
- National Older Americans Act and Medicare data from Administration on Aging[20]
- MBA Title-III Consumer Feedback Survey
- MetLife Market Survey of Long-Term Care Costs[21]

These sources were selected based on recommendations from Minnesota Housing staff and other experts, and availability through government agencies.

Complete tables with pertinent data from these sources are located in Appendix C.

Cost computation methodology

The per-household home improvement cost was computed as the sum of the costs of all improvements that homeowners reported would be necessary in their home within the next five years. This computation requires two elements:

1. **A list of the improvements that the household said they will need within the next five years**. In the consumer survey, respondents were given a list of 16 home improvements and asked to indicate whether they (a) already have this item or have made this improvement, (b) will need this improvement in the next five years, or (c) do not think they will need this improvement in the next five years. Respondents who

[17] Data come from the Integrated Public Use Microdata Series of the U.S. Census Bureau's American Community Survey. IPUMS microdata are composed of individual records containing information collected on persons and households through the American Community Survey, and weighted to reflect the larger population.

[18] Minnesota Department of Human Services, 2013-2014 Gaps Analysis Study. https://mn.gov/dhs/partners-and-providers/continuing-care/data-measures/gaps-analysis/current-study/

[19] CI-AD collects and maintains data for states about the impact of publicly-funded services on quality of life and outcomes for older adults served by the Older Americans Act programs. Minnesota participated as a pilot site in 2014.

[20] Older Americans 2016: Key Indicators of Well-Being, http://www.agingstats.gov/ and Administration on Aging: AGing Integrated Database (AGID) http://www.agid.acl.gov/

[21] The 2012 MetLife Market Survey of Nursing Home, Assisted Living, Adult Day Services, and Home Care Costs https://www.metlife.com/assets/cao/mmi/publications/studies/2012/studies/mmi-2012-market-survey-long-term-care-costs.pdf

will need the improvement (b) for any of these 16 items are included in this per-household cost computation. These items include:

- **Safety and Accessibility**
  - Lower kitchen cabinets and counters for wheelchair accessibility
  - Install grab bar or hand rail
  - Shower at floor level
  - Bathroom on main floor
  - Entrance ramp
  - Install stair railing
  - Wider doorways for a wheelchair or walker
  - Main floor laundry
  - Lever door handles
  - Non-slip or level flooring
  - Elevator or stair lift
- **Maintenance**
  - New roof
  - New windows
  - New furnace or boiler
  - New central air conditioner
  - New water heater

2. **A cost estimate for each of the listed improvements**. Six respondents (experts in the home renovation field) were asked to provide a set of cost estimates for each home improvement item, as described in the "Interviews with key experts" section above.[22] For each item, the typical cost was computed as the simple average of the typical cost estimates across all respondents who provided a typical cost for that item. When a respondent provided a cost range instead of a single number, the computation

[22] It is important to acknowledge that, for experts who work in the home improvement field, coming up with a generalizable cost estimate for most tasks is extremely difficult, as circumstances and their corresponding costs vary enormously from job to job. We would like to once again thank our experts for their willingness to help us arrive at a typical upper bound and lower bound estimate for each task, and for their patience in talking us through the nuance and details of each task. This study truly would not have been possible without their willingness to share their time and expertise with us.

was based on the midpoint of the range. The same procedure was applied to compute the upper bound and lower bound estimates.

For some tasks such as window replacement or installation of lever door handles, the task will involve installation of multiple items at once. In these cases, respondents often provided a per-unit cost (e.g., a cost per window opening). To convert these into a total project cost in a consistent way across all respondents, a single set of assumptions was applied to these items. For example, a low-cost window replacement job was assumed to require replacement of eight windows, so if respondents A, B, and C provided low-cost estimates of $400, $500, and $600 per window, the low-cost window replacement would be assumed to cost $4,000 (the average of $3,200, $4,000, and $4,800). The full list of these assumptions is shown in Figure B3 in Appendix B, and the full list of cost estimates for each home improvement task is shown in Figure B1 in Appendix B.

After gathering information on each household's home improvement needs and the approximate costs of each of the improvements, the total home improvement cost could be computed for each household. This cost was computed as the sum of the costs for all home improvements reported as necessary for that household within the next five years. For example, for a household that indicated that they would need new windows, a shower at floor level, and a main floor laundry, the "typical" cost estimate for that household would be ($6,803 + $3,598 + $3,675 =) $14,076. Finally, the average per-household cost was computed as the simple average of these individual household cost estimates (excluding households that did not indicate a need for any of the listed improvements). The same methods were applied to compute the upper bound and lower bound estimates.

Income thresholds for "eligible" households

In this study, "eligible households" refers to Minnesota households who own their home, have a household head that is 65 or older, and meet the income requirements for Minnesota Housing's Rehabilitation Loan Program and Emergency & Accessibility Loan Program. The income thresholds for eligibility, based on household size, are shown below.

D1. Income thresholds for eligibility

Household size	Maximum income
1 person	$18,100
2 people	$20,600
3 people	$23,200
4 people	$25,800
5 people	$27,900
6 people	$29,900
7 people	$32,000
8 people	$34,000

Appendix E – Bibliography

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