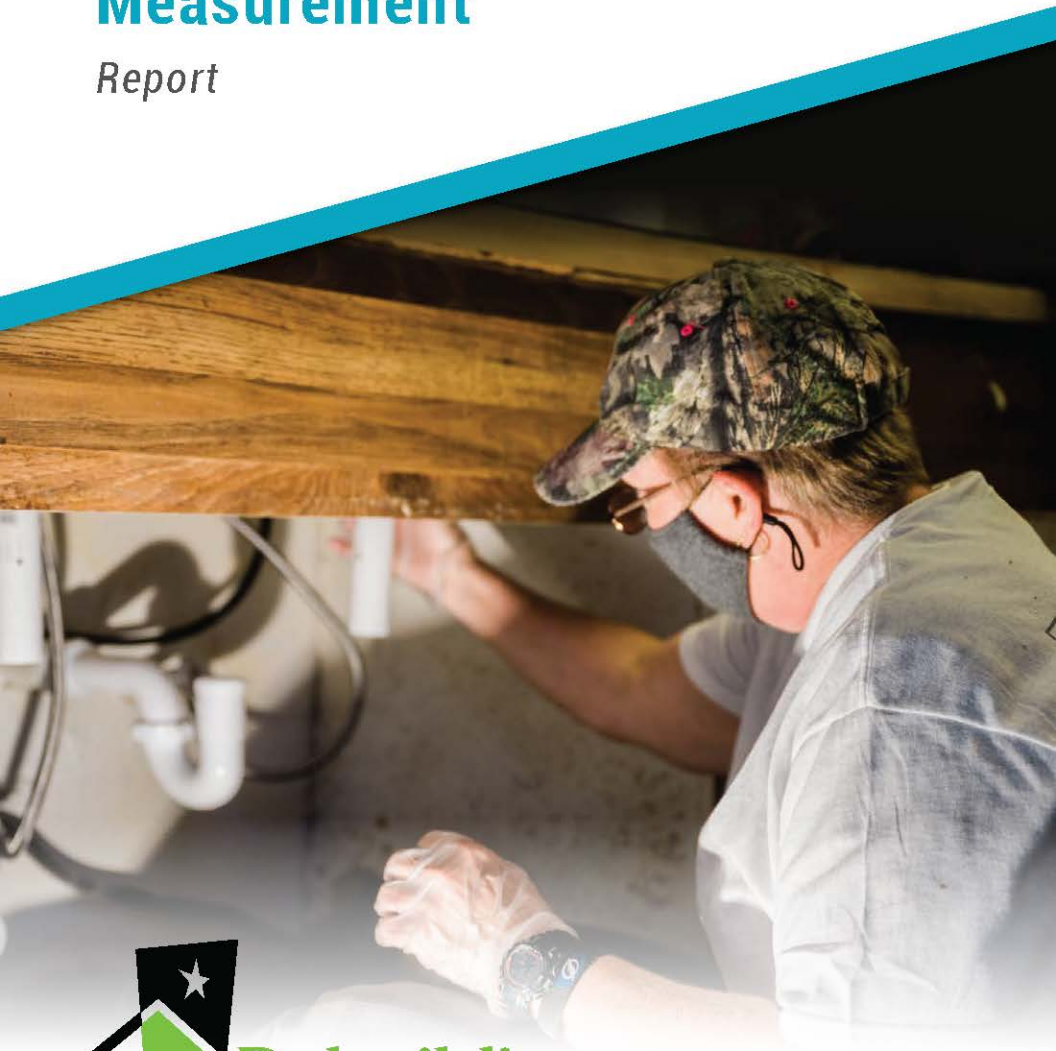
Impact Measurement

Report



Rebuilding Together.

2020 - 2021

Table of Contents

Prepared by Actionable Insights, LLC
1346 The Alameda, Ste. 7-507
San José, CA 95126
www.ActionableLLC.com
(408) 384-4955 | (408) 384-4956

Introduction

Rebuilding Together strengthens communities across the country by providing critical home repairs and modifications to neighbors in need. Through our national network of affiliates and a systematic, coordinated approach with community members and local organizations, Rebuilding Together revitalizes and sustains safe, healthy, and thriving communities. Safe and healthy housing is the foundation of our work, which targets common hazards to keep homes safe, dry, clean, pest-free, contaminant-free, well-ventilated, maintained, and thermally controlled.[1] Rebuilding Together provides safe and healthy housing repairs and partners with communities to addresses the connection between health and housing, while preserving the existing affordable housing landscape across the U.S.

The substandard condition of housing is a leading contributor to inequities in health status and outcomes.[2] In fact, 80% to 90% of health outcomes are related to social determinants—including environmental, behavioral, and socioeconomic factors—and not medical care.[3, 4] The chronic prevalence of unsafe and unaffordable housing in the United States disproportionately affects low-income families, households of color, veterans, and people with disabilities, and their ability to remain safely in their homes.[5, 6] Rebuilding Together provides home repairs and modifications to ensure safe and healthy housing conditions, which support positive health outcomes and can reduce spending on medical care.

In a year of unprecedented hardship with inequalities amplified by the COVID-19 pandemic, Rebuilding Together remains committed to learning how we can improve our services to neighbors in need and grow the long-term impact of our programs and mission. Impact measurement allows us to gauge the extent to which a program or an intervention has achieved its intended outcomes. Simply put, we want to know how our home repairs and modifications affect the lives of the individuals, families, and communities we serve. Outcomes can be measured by gathering specific data before, during, and/or after the intervention and noting what changes occurred over time.[7]

To strengthen our impact measurement process, staff from the national office and a number of affiliates worked with a professional research and evaluation firm to hone our efforts. The Impact Measurement Project took place over five years in two phases: The first phase outlined a logic model and evaluation plan, developed the impact measurement survey, and piloted the evaluation with five affiliates. The second phase refined the survey and expanded the evaluation to 13 affiliates. This report describes the results of the second phase.[a] The overall goals of the Impact Measurement Project were:

- Build consensus between the national office and local affiliates on the purpose and intended outcomes of our safe and healthy housing initiatives across the U.S.
- Improve our collective understanding of Rebuilding Together's impact on the residents and communities we serve.
- Strengthen Rebuilding Together's storytelling ability by collecting evidence about our work's impact.
- Demonstrate Rebuilding Together's value and credibility to existing and potential donors.
- Promote an organizational culture of learning and continuous improvement throughout our network.

[a] The report on the first phase may be found at:
https://rebuildingtogether.org/sites/default/files/PDF/Our%20Impact/2019%20Eval%20Report%20FINAL-2020-06-15_fixed.pdf

The Impact Measurement Project was designed as a retrospective pre-/post- evaluation. This was the most rigorous design feasible given the circumstances; Rebuilding Together made the decision that it would be unfair and too time-intensive for affiliates to assess homes that did not receive services. By establishing processes that the national office and local affiliates can easily replicate, the project will enable us to continue measuring the outcomes of our work in the future.

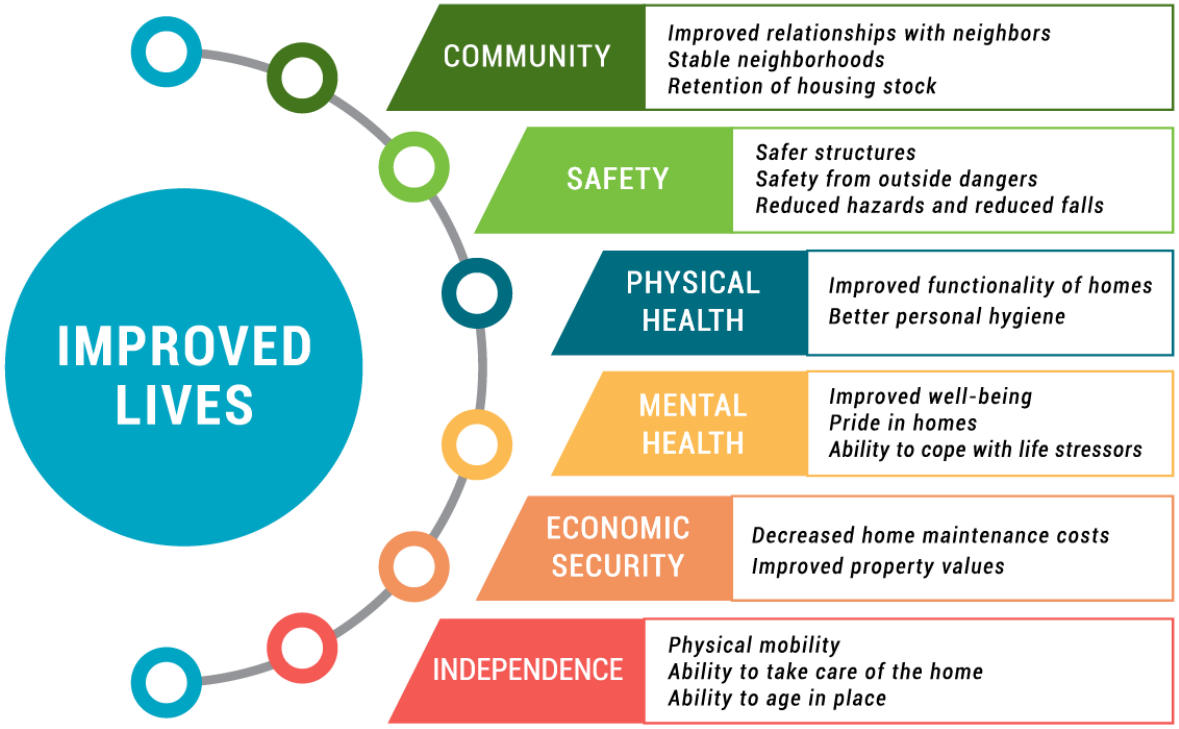
With the support of the Rebuilding Together National AmeriCorps program, we initiated the second phase of the project in late 2019 by calling for applications from local affiliates interested in participating. Of the 22 affiliates that applied, we chose 15—and 13 participated.[b] Selections were made to represent the greatest diversity possible among affiliates in size, location, and market density.

Logic Model and Areas of Impact

LOGIC MODEL AND IMPACT AREAS

A logic model, a key tool of evaluations, provides a road map of an organization's processes (resources and activities) and outcomes (desired effects). Based on our logic model, Actionable Insights (AI) organized the outcomes (Figure 1) into six areas of impact: community, economic security, independence, mental health, physical health, and safety. AI designed the impact measurement survey to gauge the extent to which these outcomes are achieved.

Figure 1. Rebuilding Together defined six areas of impact for its logic model outcomes.

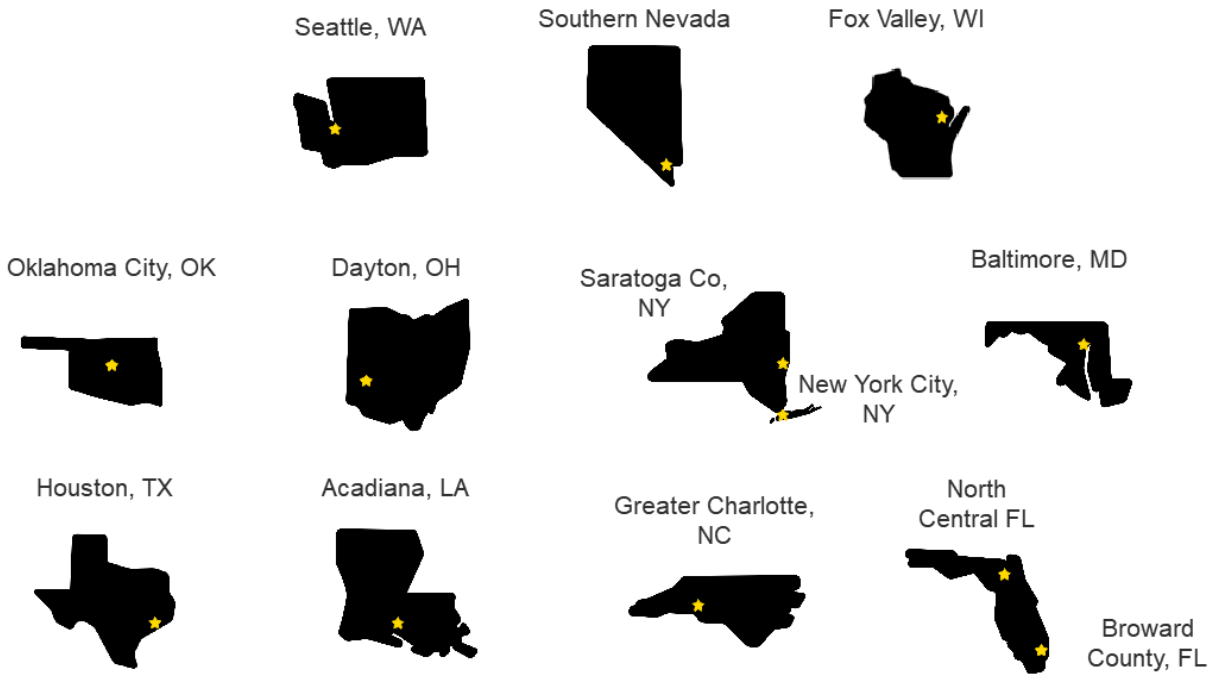


[b] One additional affiliate contributed data but, due to pandemic-related challenges, withdrew from the project before the data collection period was over; this fourteenth affiliate's data are included in the analyses but the affiliate is not identified in this report.

Evaluation Project Participants: Affiliates

A total of 13 affiliates in 11 states participated in the second phase of the Impact Measurement Project. Nine of these affiliates were AmeriCorps host sites. As in the pilot, affiliates were chosen based on their size (number of projects per year), market (urban, suburban, or rural), and geographic location (Pacific Northwest, Southwest, Midwest, South, and East Coast). The goal was to end up with a group that represented the diversity of our communities nationwide.

Figure 2. These 13 Rebuilding Together affiliates participated in the second phase of the Impact Measurement Project.



Their service areas and initiatives, along with the repairs completed during the Impact Measurement Project timeframe, are summarized in Appendix A.

Data Sources, Data Collection, and Analysis Methods

EVALUATION CONSULTANTS

Actionable Insights is a women-owned, professional research firm in Northern California that had previously worked with Rebuilding Together Peninsula to build the Redwood City-based affiliate's evaluation capacity, and had supported Rebuilding Together's pilot Impact Measurement Project in 2018–2019. Actionable Insights also has extensive experience with strategy development, individual grantee evaluation assistance, and leading large coalitions of nonprofit hospitals in community health needs assessments.

Rebuilding Together and its affiliates worked with Actionable Insights as its external evaluator in 2020–2021 to conduct the second phase of Rebuilding Together's evaluation, the Impact Measurement Project, building on the findings of the pilot. This project was designed as a single group retrospective pre-/post-test study (AKA a non-experimental outcome study) to determine the impact of Rebuilding Together's work on the people and communities served by our affiliates. The tools and methods we used to collect data are described in the following sections.

APPLICATIONS

Rebuilding Together affiliates collect information from homeowners when they apply for assistance. While the Application forms vary, most of our affiliates gather basic details about the household's demographics (age, income, race/ethnicity) and the property (size, type of dwelling). These data are stored in a Salesforce database or an Excel spreadsheet, depending on the affiliate, and aggregated for reporting. Demographic and property data presented in this report are based on application data provided by our affiliates to Actionable Insights. There were 1,012 households served during the Impact Measurement Project timeframe of July 1, 2019, to September 30, 2020.[c]

SAFE AND HEALTHY HOUSING PRIORITIES

Rebuilding Together takes a strategic approach to prioritizing home repairs and modifications. Safe and Healthy Housing is the foundation of Rebuilding Together's home repair work, targeting significant safety and health hazards based on the U.S. Department of Housing and Urban Development's Eight Principles of Healthy Homes— keep it dry, clean, pest-free, safe, contaminant-free, well-ventilated, maintained, and thermally controlled. Our affiliates use the 25 Safe and Healthy Housing Priorities in every home served, a checklist tool to ensure that every property meets these standards.[d]

Affiliate staff fill out the checklist as part of an initial home assessment, marking each of 25 items "pass," "fail," or "not applicable" (in cases where their database allows this) to determine needed repairs. The data recorded are entered into a Salesforce database or an Excel spreadsheet. After the home repairs are finished, staff complete the checklist again. Actionable Insights used these data to understand which health and safety issues had improved (i.e., changed from "fail" to "pass").

All but two participating affiliates provided pre- and post-project data from their checklists, which contain all 25 Safe and Healthy Housing Priorities, to Actionable Insights.[e] Between July 1, 2019, and September 30, 2020, these affiliates assessed 655 projects in their states.[f] Of Phase 2 projects with complete checklists (i.e., no missing data), more than half passed all 25 checklist items after repairs were finished (52%), compared to just 1% before repairs (N=578). While the proportion of Phase 2 projects that passed all 25 checklist items after repairs were finished was very similar to the pilot (49%), Phase 2 affiliates overcame a

[c] This includes 11 households with projects that closed earlier in 2019 but were sent surveys by affiliates. One of the 11 was served by an affiliate that participated in the pilot and continued surveying between the end of the pilot and the start of Phase 2.

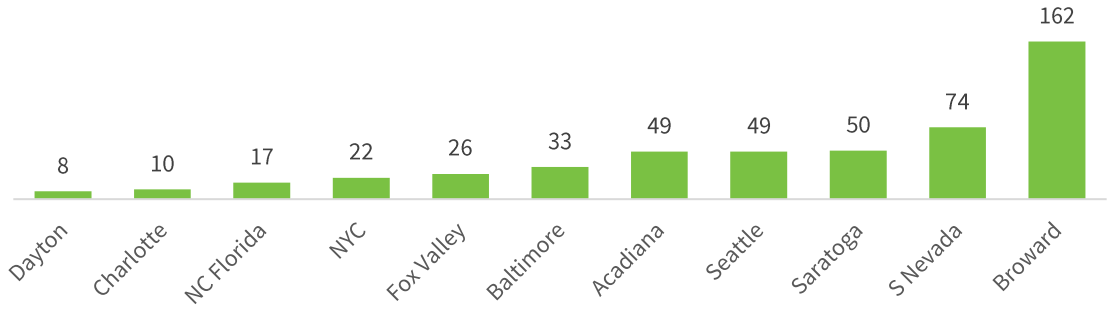
[d] See Appendix G and the Rebuilding Together 25 Safe and Healthy Housing Priorities Checklist online: https://rebuildingtogether.org/sites/default/files/PDF/Safe_Healthy_Housing/SafeandHealthyPriorities_Checklist_logo.pdf

[e] Neither Houston nor Oklahoma City collected checklist data during the study period. Houston uses the 25 Safe and Healthy Housing priorities list to determine what sorts of projects it takes on, but it does not complete a checklist for individual projects. Oklahoma City was just beginning to implement the checklist near the end of the data collection period.

[f] Seven NYC projects were outside the data collection window but are included because the homeowners were sent the Impact Measurement Project survey.

larger deficit compared to the pilot affiliates, in which nearly one in 10 projects (8%) already had all 25 items before repairs. For a summary of Phase 2 checklist data, see Appendix B.

Figure 3. The number of projects assessed with the 25 Safe and Healthy Housing Priorities Checklist ranged widely among affiliates.



Source: Rebuilding Together affiliates, 2020. (N=655.) Note: A total of 155 projects were assessed by the affiliate that withdrew from the project. No data available for Houston or Oklahoma City.

IMPACT MEASUREMENT SURVEY

We developed and piloted the impact measurement survey with a group of five affiliates[g] during the first phase of the Impact Measurement Project in 2019. The instrument was a retrospective pre- and post-impact survey; it asked homeowners to rate various health and safety conditions of their home -- and their quality of life -- before (retrospectively) and after Rebuilding Together projects were completed, to determine the effect of household repairs on low-income homeowners. After assessing the results of the pilot and gathering feedback from our staff, Actionable Insights revised the survey. AI removed seven questions that were not sensitive enough (that is, pilot data did not show any significant change), including two questions about the affordability of utilities and daily necessities. Other questions, such as those related to the risk of falls and coping with stress, were revised slightly at the request of our national office. New questions were added to learn more about respiratory health and mobility). (See Appendix G for the full text of the survey.)

We used many of the same survey collection methods as we did in the pilot (see below). Actionable Insights trained affiliate staff and AmeriCorps members on how to administer the survey. The training was recorded and the video made available to all affiliates' staff and volunteers for the duration of the survey. AI also created a web-based form of the survey in English and Spanish; affiliates could email a link to homeowners. (Only the English version was ultimately used.)

Surveys were assigned unique ID numbers corresponding to the Site IDs affiliates used for their projects.[h] At regular intervals between July 2020 and February 2021, affiliates identified all homeowners in their area who had received repairs four to 12 months earlier[i] and mailed each one the impact survey and a letter

[g] These affiliates were Baltimore, San Francisco, Seattle, Southeast Michigan, and Southern Nevada.

[h] Five surveys were missing unique ID numbers and could not be matched with their related demographic or HHC data, but they are included in the data set nonetheless.

[i] In 14 cases (about 3%), surveys were returned by homeowners who had received repairs less than four months earlier; in 74 cases (about 17%), surveys were returned by homeowners more than one year after they had received repairs. The aggregate data were analyzed both with and without these cases. There was no significant difference in impact results when removing these cases: All effect sizes were within one percentage point of the original results. Thus, they remain in the data set for this report.

explaining the survey process and (in the case of paper copies) a self-addressed, stamped envelope.[j] Two to three weeks after sending the surveys, affiliate staff and/or AmeriCorps members called homeowners who had not yet returned the completed survey.

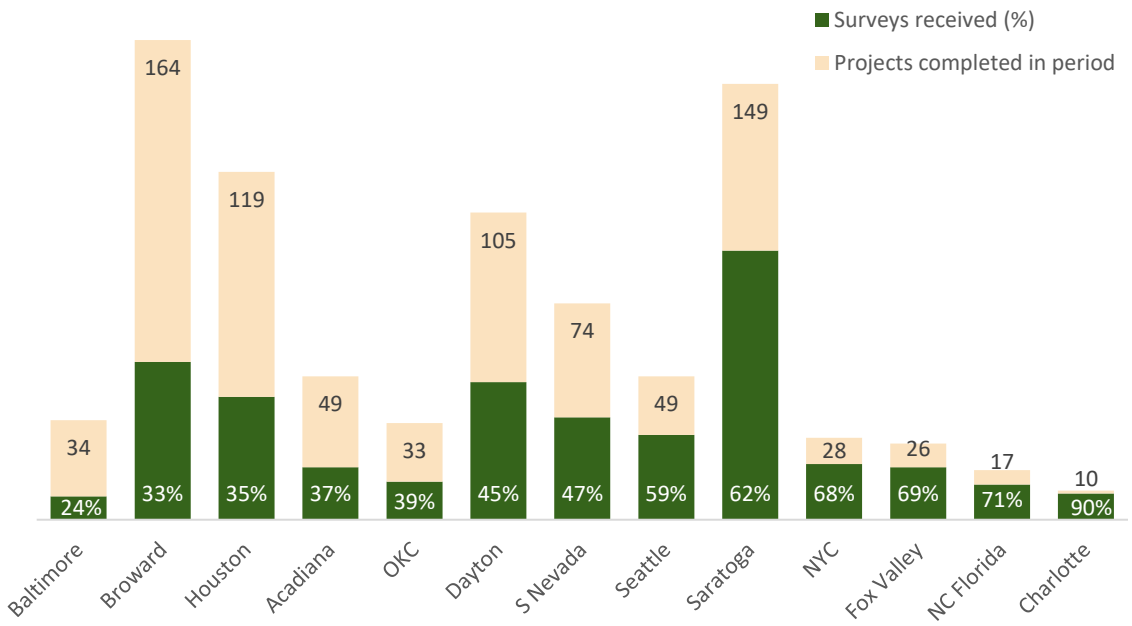
Some homeowners contacted by phone chose to complete the written survey and mail it back. Some opted to complete the online survey instead, treating the call as a reminder. Others decided to answer the survey questions over the phone; these surveys took approximately 12 minutes each. Most affiliates provided a financial incentive to every participant who completed the survey; typically $5 or $10 in cash or on a gift card to a supermarket or similar store. Some affiliates offered a larger incentive, which they raffled off to a randomly selected survey respondent.

Affiliate staff, volunteers, or AmeriCorps members entered survey data into a SurveyMonkey form. Actionable Insights downloaded and analyzed the survey data for this report.

Impact Measurement Survey response rates

Of the 1,012 households served by the affiliates during the Impact Measurement Project timeframe, 429 (42%) responded to the survey. Response rates from households served by each participating affiliate are shown in dark green in the bar chart (Figure 4). Nearly three-quarters (74%) of all surveys were returned by mail. One-fifth (20%) were conducted by phone, and the rest (6%) were completed online.

Figure 4. Response rates (proportion of survey respondents to completed projects, by affiliate) varied widely.



Source: Affiliates' application data, 2019-2020 and Impact Measurement Survey, 2020-2021 (N=429). Note: 33 surveys were received by the affiliate that withdrew from the project.

[j] Not all affiliates sent a self-addressed, stamped envelope with all surveys, which may help explain lower response rates in some areas.

The response rate for this Phase 2 was similar to the response rate for the pilot (48%), and higher than typical response rates for public surveys.[8] For a summary of Phase 2 impact measurement survey data and associated demographics, see Appendix C.

DATA ANALYSIS

Demographic comparisons

The group of affiliates chosen for phase two of the Impact Measurement Project was a purposeful sample. Participants were selected for variation in geographic location (region of the country), size of the affiliate (number of projects completed annually), and type of market served (urban, suburban, rural). This ensured that the group represented the diversity of our communities nationwide as closely as possible. Most affiliates completed checklists for the majority of the projects they finished between July 1, 2019, and September 30, 2020. Affiliates also sent impact measurement surveys to all households they served in that time period.

The responding households were relatively representative of all households served by the participating affiliates. When comparing households that responded to the impact survey with *households that were sent the survey but did not respond*, we found only a few statistically significant differences.[k] Households with older adults (age 65+) were more likely than households without older adults—and households with children were less likely than households without—to respond to the survey.[l] Households in which homeowners identified as white were significantly more likely to respond than others and households in which homeowners identified as Black were significantly less likely to respond than others.[m] Households whose projects received larger investment amounts were more likely to respond than those whose projects received smaller investment amounts.[n] See Appendix E for more information.

Selecting a diverse group of affiliates to participate in impact measurement ultimately enabled us to compare the households that responded to the impact survey to *all households served by Rebuilding Together nationwide*. Survey respondents were demographically similar to all households served in aspects such as median annual income and the proportions of Black residents and households with residents with disabilities. However, Actionable Insights was unable to make a full statistical comparison between the survey respondents and all households served by Rebuilding Together because limited demographic data are available across the affiliate network. Nonetheless, enough similarities exist that the survey results

[k] The number of days between project close and the end of the survey period was statistically significant and positive, indicating that a longer window made it more likely for homeowners to respond (the effect size indicates that for each extra month, homeowners were 6% more likely to respond, $p < .001$). This is simply common sense; it often took affiliates several follow-ups to obtain responses.

[l] Forty-nine percent of survey respondents had an older adult living at home (standard deviation, 0.50), compared to 40% of non-respondents (SD 0.49, $p < .05$). Households with older adults were 41% more likely to respond than households without any older adults ($p < .05$). Thirty-six percent of respondents had a child living at home (SD, 0.48), compared to 48% of non-respondents (SD 0.50, $p < .05$). Households with children were 58% less likely to respond than households without any children ($p < .05$).

[m] For 47% of survey respondents, the homeowner identified as white (SD 0.50), compared to 37% of non-respondents (SD 0.48, $p < .01$). Among Black homeowners, 37% responded (SD 0.48) and 47% did not (SD 0.50, $p < .01$).

[n] When investment in a project was doubled, households were 18% more likely to respond ($p < .001$); for example, a household whose project had received $5,000 in investment was 18% more likely to respond to the survey than a households whose project had received $2,500 in investment. Again, this is common sense; homeowners whose dwellings were the subject of larger projects might feel more compelled to respond out of a sense of obligation. Note that homeowners generally do not know exactly how much direct investment an affiliate puts into their projects.

offer reasonable examples of what a typical affiliate may see if they conduct a similar evaluation. See Appendix F for more information.

Methods of analysis

For the phase two evaluation, Actionable Insights matched the household demographics provided by each participating affiliate with their 25 Safe and Healthy Housing Priorities results and impact survey data. The Site ID was used as a unique identifier matching all of these data sets. Actionable Insights used cross-tabs (tables that show the relationships between variables) to compare pre- and post-project data from the checklist. These tables showed the differences in the usability or accessibility of homes before and after repairs were completed. For the impact survey, Actionable Insights employed both cross-tabs and paired T-tests (statistical tests that compare the means [averages] of two samples—in this case, pre-survey responses compared to post-survey responses) to understand the improvements reported by homeowners. In addition, AI used other tests, such as analyses-of-variance, to compare the averages of two samples when both measures were binary to understand the context in which repairs were made. (For example, they compared whether or not a repair was completed with whether or not a home had any older adult occupants.)

While means tests indicate whether a difference is statistically significant, they do not assess the effect size. Effect size measures the magnitude, or what might be thought of as the importance, of a pre-/post-change. Change between pre- and post- may be statistically significant but too small to have any material effect. Actionable Insights calculated effect sizes using the Common Language, or "CL," statistic for correlated samples (paired pre-/post- scores), originally proposed by McGraw & Wong.[9] CL is a proportion, which is the difference between mean (average) pre- and post- scores ("M_{diff}") divided by the standard deviation of those difference scores ("S_{diff}"). This allows AI to describe effect size as a small, medium, or large probability, rather than as a standard deviation.[10] So, for example, an effect size of 74% for the item "Ease of bathing" would indicate there was a large probability that the average homeowner served by Phase 2 affiliates experienced greater ease of bathing after repairs compared to before.[o]

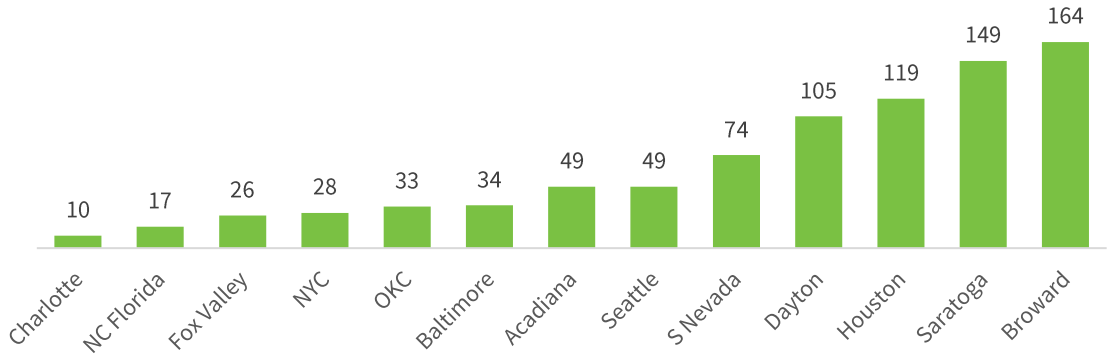
Actionable Insights used regression analysis to understand the potential effects of repairs on survey respondents' attitudes and feelings. That is, the researchers regressed each post-repair survey item's responses on its related retrospective pre-repair survey item's responses as well as respondents' household demographics and selected checklist items to determine which repairs may have had an effect on respondents. For example, the regression analysis method allowed AI to show that repairs to a homeowner's roof and gutters, new interior paint, and the installation of carbon monoxide detectors were significantly and positively associated with respondents' reports of increased happiness after repairs (controlling for their level of reported happiness before repairs and for certain household demographics).

[o] A 50% probability means the likelihood of improvement is no better than chance (50/50). A 74% probability means there is close to a three in four chance that the average homeowner served by affiliates experienced an improvement in that item from pre- to post-project. Following Wuensch (see reference in previous footnote), values of CL may be considered small but non-zero at >55%, moderate at >63%, large at >71%, very large at >83%, and extremely large at >91%. Exact CL percentages for each survey and checklist item are shown in Appendices B and C.

Projects

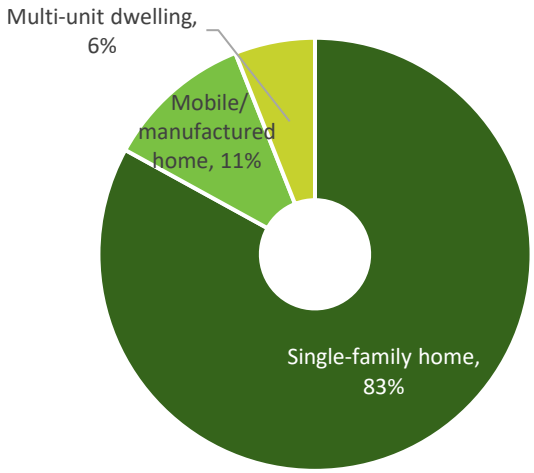
Between July 1, 2019, and September 30, 2020, the affiliates participating in this Impact Measurement Project completed over 1,000 projects for low-income homeowners nationwide.[p] Single-family homes accounted for most (83%) of these projects, followed by mobile/manufactured homes (11%) and single units in multi-unit dwellings (6%). Multi-unit dwellings include rowhomes, condos, and apartments.

Figure 5. Phase 2 affiliates completed between 10 and 164 projects in the 2019–2020 period.



Source: Rebuilding Together affiliates, 2020. (N=1,012) Note, 155 projects were completed by the affiliate that withdrew from the project.

Figure 6. The majority of dwellings repaired by affiliates were single-family homes.



Source: Rebuilding Together affiliates, 2020. (N=1,007.)

INCOME LEVEL

Almost all households served by Rebuilding Together are low-income, as defined by the U.S. Department of Housing and Urban Development (HUD). HUD categorizes a household's income level by comparing its total

[p] A few projects, including three in NYC and one in Baltimore, were completed outside the data-collection timeframe but are included because the homeowners responded to the Impact Measurement Project survey.

number of occupants and how much money those occupants earn overall each year to the area's median income for a household of the same size.[11]

Any household earning 80% or less of its area's annual median income is considered low-income. In 2020, the median income for a two-person household in the areas served by our affiliates was between $65,200 (Lafayette Parish, Louisiana) and $113,300 (Seattle, Washington). Table 1 shows the HUD definitions of low-, very low-, and extremely low-income for two-person households in the communities served by affiliates participating in the Impact Measurement Survey. (Affiliates are listed in alphabetical order.)

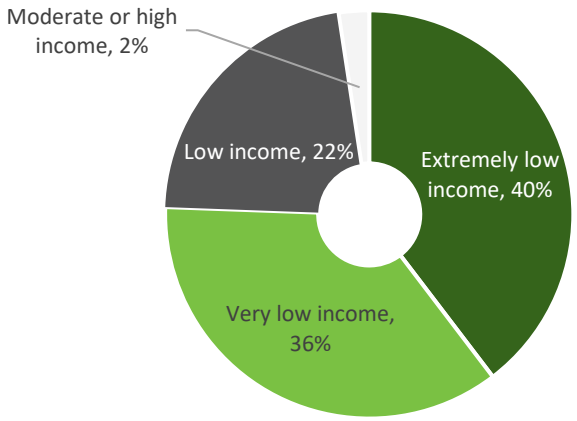
Table 1. HUD annual median income limits in affiliate areas vary.

Affiliate	Area	Two-Person Household Income, 2020			
		Area Median Income (AMI)	Low-Income (80% of AMI)	Very Low-Income (50% of AMI)	Extremely Low-Income (30% of AMI)
Acadiana	Lafayette*, Iberia, Acadia, and Vermilion parishes, LA	$65,200	$41,750	$26,100	$17,240
Baltimore	Baltimore Metro Area, MD	$104,00	$62,800	$41,600	$25,000
Broward County	Broward County, FL	$74,800	$57,050	$35,650	$21,400
Dayton	Montgomery County, OH	$72,800	$46,600	$29,150	$17,500
Fox Valley	Outagamie*, Calumet, Winnebago, and Waupaca counties, WI	$86,400	$55,300	$34,600	$20,750
Greater Charlotte	Charlotte Metro, NC	$83,500	$53,450	$33,400	$20,050
Houston	Harris County, TX	$78,800	$50,450	$31,550	$18,950
New York City	Bronx*, Brooklyn, Manhattan, Queens, and Staten Island boroughs, NY	$78,700	$72,800	$45,500	$27,300
North Central Florida	Alachua County, FL	$69,800	$44,700	$27,900	$17,240
Oklahoma City	Oklahoma City Metro, OK	$74,400	$47,600	$29,800	$17,850
Saratoga County	Saratoga County, NY	$99,200	$62,100	$38,800	$23,300
Seattle	Seattle-Bellevue Metro, WA	$113,300	$76,200	$47,800	$28,650
Southern Nevada	Clark County, NV	$70,800	$48,000	$30,000	$18,000

Note: When an affiliate serves multiple areas, an asterisk (*) indicates which area's median income is shown. Source: U.S. Department of Housing and Urban Development, 2020.

Extremely low-income households (those earning from $17,240 a year or less in Acadiana and North Central Florida to $28,650 a year or less in Seattle) were the most commonly served by our affiliates, representing 40% of households. Another 36% were very low-income households (earning from $26,100 or less in Acadiana to $47,800 or less in Seattle). Figure 7 shows the distribution of these households by income category. The median annual income among all households served (N=916) was $19,307.

Figure 7. Two in five households served were extremely low-income.



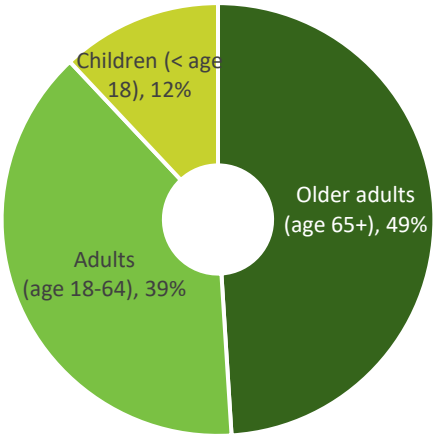
Note: For a few households, only the income classification was provided (e.g., very low), not their actual household income in dollars. Source: Rebuilding Together affiliates, 2020. (N=921.)

HOUSEHOLD SIZE AND DEMOGRAPHICS

The majority of households our affiliates served in Phase 2 were occupied by only one person (60%, N=998), and the majority of household occupants were female (63%, N=1,354 residents).[q] Two-thirds of homeowners were female (68%, N=1,008). Half of all households included a resident with a disability (50%, N=999), and about one in seven had a veteran of the U.S. military (14%, N=996).

Seventy percent of households had at least one resident age 65 or older (N=838),[r] and older adults represented nearly half of all residents in those households (49%, N=1,435). About one in 10 households (11%) had at least one child living in the home (N=843).[r] The chart below shows the proportion of residents by age category in households served by Phase 2 affiliates.

Figure 8. About half of all residents served were older adults.



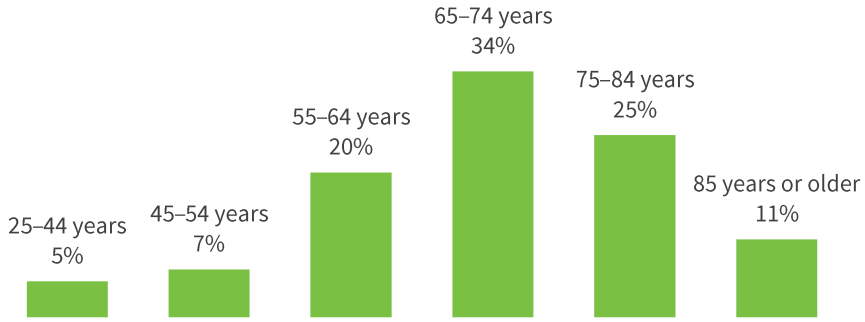
Note: Some affiliates did not capture the age of residents other than the homeowner. Source: Rebuilding Together affiliates, 2020. (N=1,435 residents, 852 households.)

[q] Less than 1 percent of household residents identified as gender nonbinary (N=758 residents). Some affiliates did not ask about the gender nonbinary category.

[r] Some affiliates did not record the age of occupants other than the homeowner.

The majority (69%, N=991) of all homeowners are older adults; only about 11% are younger than age 55. The chart below shows the distribution of households served by homeowner age range.

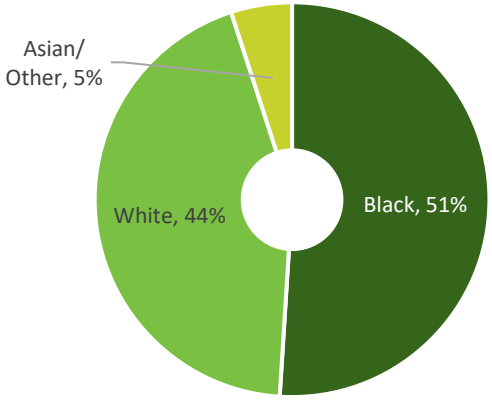
Figure 9. The majority of homeowners were older adults.



Source: Rebuilding Together affiliates, 2020. (N=980.)

The majority of homeowners served were Black (51%); the rest were white (44%) or Asian/other (5%) (N=978). Among all homeowners served, 6% were also of Latinx ethnicity (6%, N=930).

Figure 10. More than half of all homeowners were Black.



Source: Rebuilding Together affiliates, 2020. (N=978.)

PROJECT INVESTMENT AND IMPACT

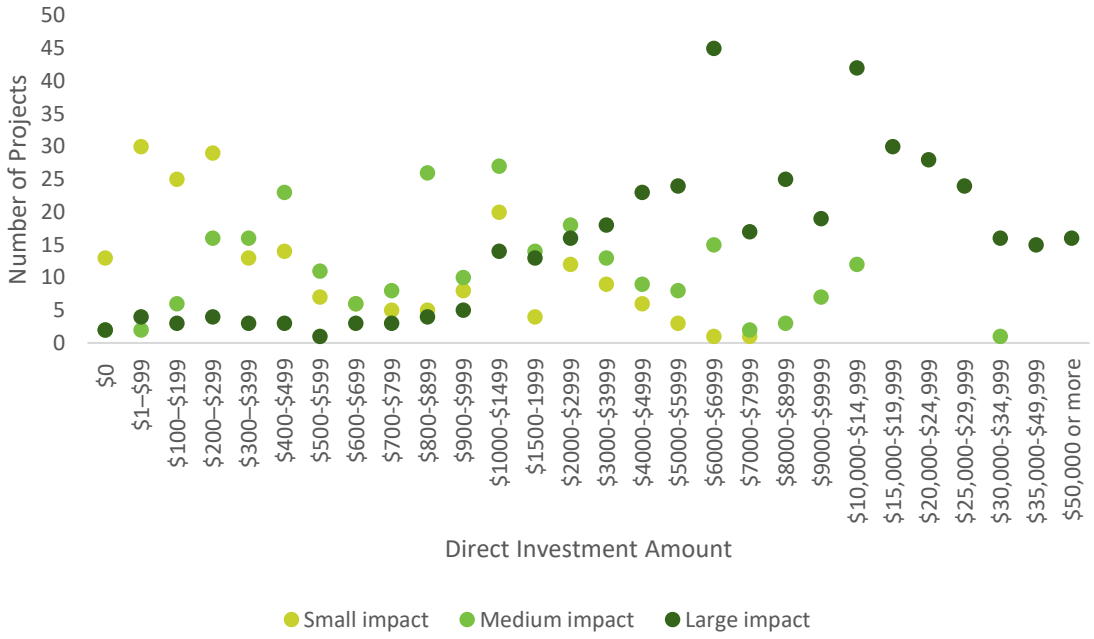
We asked all Phase 2 affiliates to assign each of their repair projects an impact level—small, medium, or large—to represent the effect they thought the project had on its respective residents. Affiliates were also asked to indicate how much money (direct costs only) they had invested in each project. These investments ranged from zero to over $118,000, with the median just over $2,700 (N=886). Projects were relatively evenly spread across the impact categories, but more projects were expected to have a large effect (44%) than a small (24%) or medium (32%) one (N=1,009).

When we compared the distribution of projects by investment amount with their distribution by impact level, we found that they were significantly different, statistically speaking,[s] which is good: It means that affiliates

[s] We used Friedman's chi-square test because neither impact levels nor dollar amounts invested are distributed normally; the test produced a sizable chi-square value of 819.305, $p < .001$ (N=886).

did not simply rely on the amount invested to assess the expected impact of their work. Figure 11 shows the distribution of projects by investment amount, color-coded by expected impact level.[t]

Figure 11. Projects with small amounts of direct investment can have a large impact.



Source: Rebuilding Together affiliates, 2020. (N=886.)

Program Evaluation Results by Area of Impact[u]

Housing is one of the leading social determinants of health.[12] Good physical and mental health is associated with housing conditions that meet HUD's Eight Principles of Healthy Homes—safe, dry, clean, pest-free, contaminant-free, well-ventilated, maintained, and thermally controlled. Being able to afford and maintain a home on a fixed or low income is associated with many physical and mental benefits, including reduced crowding and stress, increased safety, and greater availability of resources for other basic needs (medical care and healthy food).[13] Simply having stable housing contributes to health: people without it experience significantly worse physical and mental health outcomes than those who are stably housed.[14]

SAFETY

Maintaining good physical health requires preventing injuries at home and is a particular concern for Rebuilding Together affiliates: About 70% of the households served in Phase 2 included at least one adult aged 65 or older. Mobility of household occupants, especially the ability to engage in the activities of daily living (ADLs) such as cooking and bathing, is a related concern. Engaging in ADLs supports aging in place, which is associated with better mental and physical health.[15]

[t] However, when using impact and investment level in regression analyses with other key variables, neither were significantly associated with homeowner outcomes.

[u] Additional statistical details related to evaluation results are available in Appendices B and C, and upon request.

Preventing falls

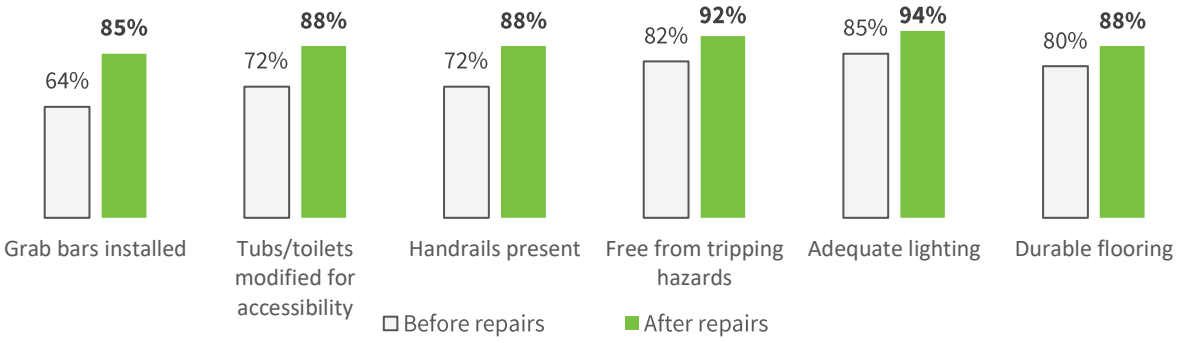
Falling (including slipping and tripping) is the most common source of home injuries,[16] Falls among older adults at home and nearby are common and costly: There were over 8.4 million falls among U.S. older adults that resulted in an injury needing medical care or limiting regular activities for at least one day in 2018, and about 32,000 died from falling.[17] U.S. medical costs from falls-related injuries and deaths totaled over $50 billion in 2018.[18] Injuries from falls can reduce older adults' independence, may require long-term care, and can even increase their risk of earlier death.[19]

Falls can be prevented, in part, with home modifications such as installing better lighting, elevated toilets, bathroom grab bars, and stairway railings.[20, 21, 22] One study found that these interventions reduced the number of falls by 44% and the number of fallers by 22% among high-risk recipients.[23] Another study found a 26% reduction in the rate of fall-related injuries in homes where modifications were made.[24] Safety modifications made by Rebuilding Together affiliates (Figure 12) reduced falls by 50%.

"The chair lift is a huge help. Not easy for me to do stairs especially carrying groceries." –Survey respondent

During certain repair projects, affiliates updated bathrooms with grab bars, elevated toilets, and/or more-accessible tubs, and installed handrails at stairs and steps. Grab bars represented the largest increase: **33% more households had grab bars after repairs were completed** than before. All effect sizes for these repairs are considered moderate; that is, these repairs were more likely than not to be made. Additional safety modifications included clearing away tripping hazards, improving lighting, and replacing flooring. The chances of these repairs being made to the average home were lower, but still significant.

Figure 12. Affiliates reported improved accessibility after making modifications.



Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2019–2020. (N=635–641.)

Among all Impact Measurement Survey respondents, 67% reported that they have a chronic mobility condition (N=401). When reviewing checklist data for the various repairs made to improve mobility and safety against self-reported chronic mobility conditions, AI found no significant differences in the likelihood of mobility-related repairs being made to homes of people living with such conditions versus people without such conditions, with the exception of handrails. Survey **respondents who reported having chronic mobility conditions were significantly more likely to have handrails installed in their homes** during an affiliate project than respondents without chronic mobility conditions. This was **also true for the homes of people who reported low confidence in ADLs prior to repairs, and of people who reported they had fallen** or had a close call prior to repairs.

Our Impact Measurement Survey findings support the checklist data. Survey respondents reported fewer hazards in their homes after repairs, making them feel safer from potential injuries due to falls. **Among respondents who fell or almost fell** (33% and 12%, respectively; a total of 163 of 366 respondents) in the six months **before repairs, two thirds (67%) did not fall again** in the four- to 12-month period after repairs. Overall, the number of respondents who fell *after* repairs (60 people) was half the number who fell in the six months *before* repairs were made (120 people). This didn't differ significantly by respondents' age or disability status. A logistic regression analysis confirmed that the installation of grab bars ($p < .05$, one-tailed), the elimination of tripping hazards ($p < .05$), and the improvement of lighting ($p < .05$, one-tailed) were all significantly and positively associated with survey respondents' reported lack of falls after repairs were completed.[v]

"It was difficult for me to walk out of the house because I had steps before; now that I have a porch with a walkway, it's very easy for me to walk down with my walker." –Survey respondent

Figure 13. Repairs reduced the number of people who fell by 50% in the months after project completion.

Source: Rebuilding Together affiliates, Impact Survey data, 2020–2021. (N=366.)

Making bathing easier

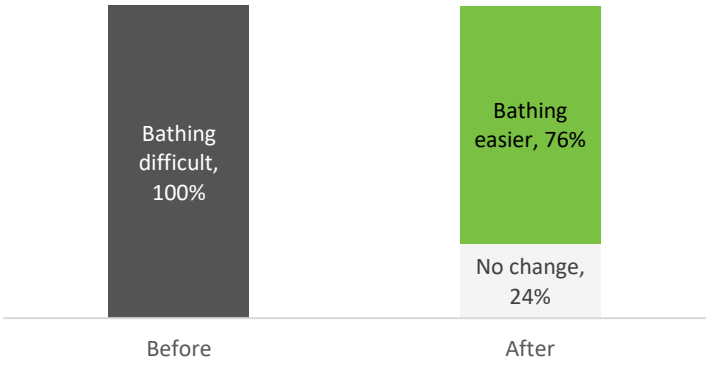
Among survey respondents who felt it was "difficult" or "very difficult" to bathe before repairs (172 of 352 respondents), **76% reported finding it easier after repairs.** Among all respondents, nearly half (49%) found it easier to bathe after repairs compared with before. The effect size metric indicates a very sizable probability that the average homeowner served by affiliates reported greater ease of bathing after receiving repairs, compared to before. A regression analysis confirmed that **modifications to tubs/toilets were significantly and positively associated with increases in survey respondents' reported ease of bathing after repairs were completed** ($p < .05$).[w]

"My mom is able to shower by herself and she is able to leave the house by ramp without the worry of her falling down steps." –Survey respondent

[v] This analysis controlled for pre-repair falls (vs. no falls or a close call) as well as the amount of project investment, level of project impact, number of days from project close to date of survey, whether the respondent had a chronic mobility condition, and household/homeowner demographics.

[w] This analysis controlled for pre-repair response to the ease of bathing survey item, as well as the amount of project investment, level of project impact, number of days from project close to date of survey, and household/homeowner demographics. Note that adequate lighting also had a significant positive association with post-repair ease of bathing ($p < .05$).

Figure 14. Three-fourths (76%) of survey respondents who had difficulty bathing before repairs found it easier to bathe after repairs.

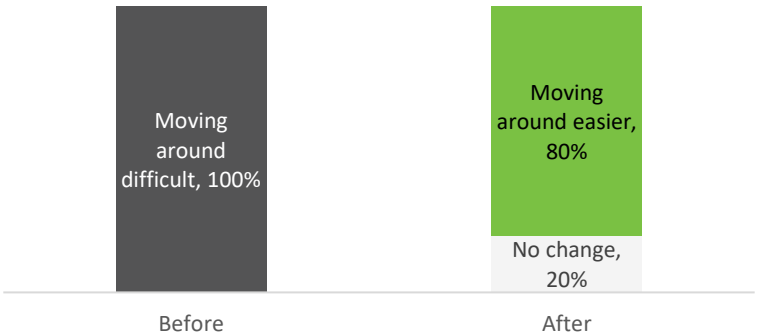


Source: Rebuilding Together affiliates, Impact Survey data, 2020–2021. (N=172.)

Improving mobility

Among survey respondents who felt it was "difficult" or "very difficult" to move around their home before repairs (66 of 321 respondents), **80% reported finding it easier after repairs.** Among all respondents, over one third (35%) found it easier to move around their home after repairs than before repairs. The effect size metric indicates a moderate probability that the average homeowner served by affiliates would report greater ease of movement around their home after repairs were completed than before repairs. There were no significant differences in post-repair ease of movement for older adults or individuals with disabilities compared to others. **Lighting improvements were significantly and positively associated with increases in survey respondents' reported ease of movement after repairs were completed** (regression analysis, $p < .05$).[x]

Figure 15. Eight in 10 survey respondents who had difficulty moving around all the rooms of their home before repairs found it easier to do so after repairs.



Source: Rebuilding Together affiliates, Impact Survey data, 2020–2021. (N=66.)

[x] This analysis controlled for pre-repair response to the ease of movement survey item, the amount of project investment, level of project impact, number of days from project close to date of survey, and household/homeowner demographics.

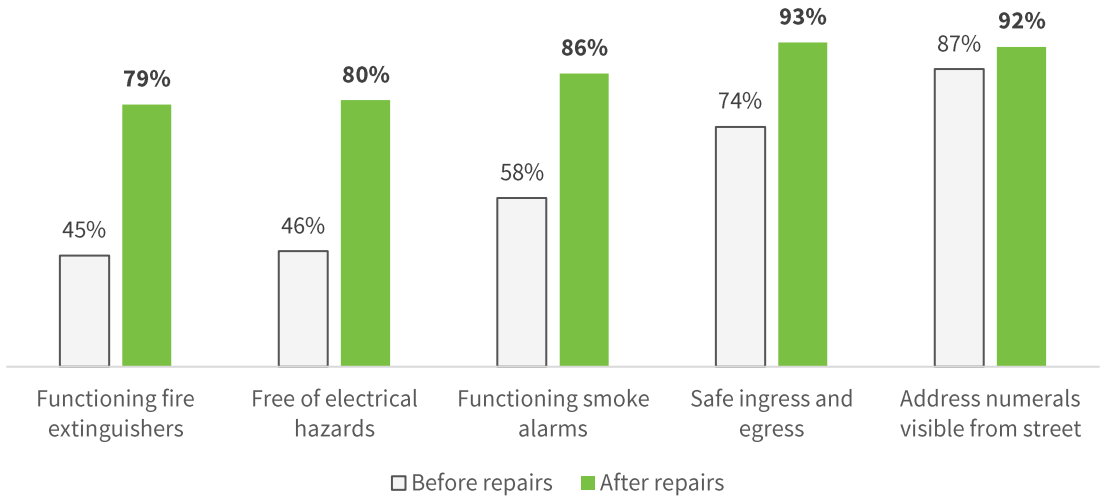
"I feel so much better getting in and out of the house (railing and lighting), up and down the staircases (railings), and feel more comfortable in using all the rooms and spaces in my house." –Survey respondent

Fire safety

Rebuilding Together affiliates made repairs and modifications that considerably improved fire safety in the households served. According to checklist data, provision of fire extinguishers and repair of electrical hazards represented the largest increases: **76% more households had fire extinguishers and 74% more households were free of electrical hazards after repairs were completed** than before. The proportion of homes with **functioning smoke detectors also significantly increased (by 48%)** as the result of project improvements (Figure 16). Based on the effect size metric, the average home served would have a high probability of having a working fire extinguisher and functioning smoke detectors and being free of electrical hazards after repairs. Repairs also made it possible for most residents to safely enter and exit their home in case of an emergency,[y] and for emergency vehicles to easily identify their house or unit number from the street. The chances of these modifications being made to the average home were lower than for other fire safety repairs, but not insignificant.

"Replacing the water heater lowered our power bill. Replacing alarms, extinguisher made us feel safer." –Survey respondent

Figure 16. Most homes received fire safety modifications.



Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2019-2020. (N=634-651.)

Rebuilding Together affiliates also made home repairs and modifications to increase security, including ensuring that windows and doors could close and lock. **A total of 85% of homes met the home security requirement after affiliates' repair**s, an increase of 23%. Looking at the effect size metric, there is a

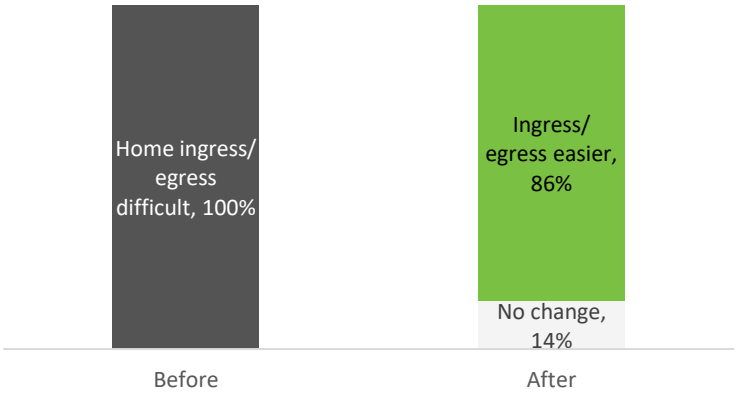
[y] Survey respondents who reported having chronic mobility conditions were significantly more likely to have repairs made to improve the safety of their home's ingress/egress than other respondents (30% vs. 16%).

moderate chance that the average home served by affiliates would have had windows and exterior doors that can open effectively and close and lock securely after repairs.

> **"My front door feels more safe and it helps the anxiety."**
> **–Survey respondent**

Findings from the Impact Measurement Survey suggest that respondents experienced improved ease in entering and exiting their homes, which effectively makes their residences safer in a fire or other emergency. **Among survey respondents who felt it was "difficult" or "very difficult" to enter and exit their home before repairs** (133 of 388 respondents), **86% reported finding it easier to do so after repairs.** Among all respondents, nearly half (46%) found it easier to enter and exit their home after repairs than before. The effect size metric indicates there is a large probability that the average homeowner served by affiliates would report greater ease of ingress/egress after repairs were completed, compared to before. There were no significant differences in post-repair ease of ingress/egress for older adults or individuals with disabilities compared to others.

Figure 17. The great majority of survey respondents who had difficulty entering and exiting their home before repairs found it easier to do so after repairs.



Source: Rebuilding Together affiliates, Impact Survey data, 2020–2021. (N=133.)

A regression analysis confirmed that **repairs to ingress and egress were significantly and positively associated with increases in survey respondents' reported ease of home entry/exit after repairs were completed** ($p < .05$, one-tailed).[z]

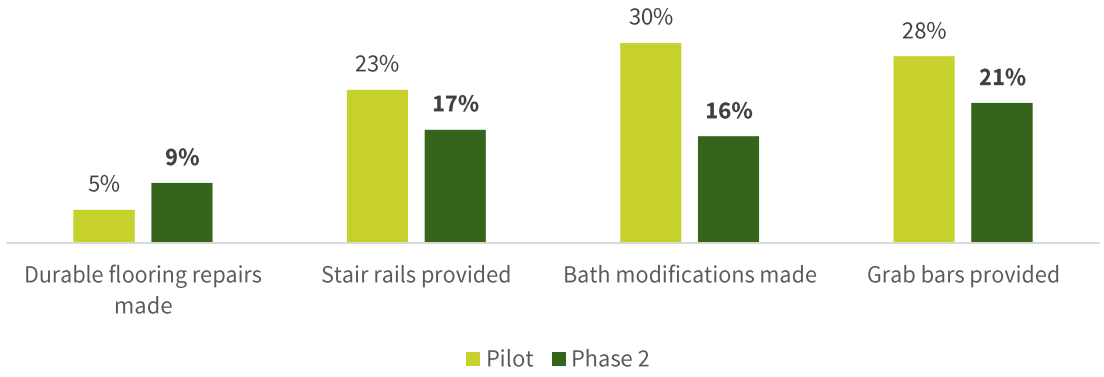
Comparison of Phase 2 to pilot: Findings related to safety

In general, homes assessed in Phase 2 had significantly higher levels of Healthy Housing Checklist items in place *before* (pre-) repairs than homes in the pilot. However, when asked to rate the condition of their homes *before* repairs in retrospect, homeowners surveyed in Phase 2 provided significantly lower ratings on safety items than homeowners surveyed in the pilot.

[z] This analysis controlled for pre-repair response to the ease of entry/exit survey item, the amount of project investment, level of project impact, number of days from project close to date of survey, whether the respondent had a chronic mobility condition, and household/homeowner demographics.

Accessibility: Although Phase 2 started with a smaller proportion of households in need of accessibility modifications, **a significantly larger proportion of Phase 2 projects received repairs to make flooring more durable** than pilot projects. However, significantly smaller proportions of Phase 2 projects than pilot projects received stair rails, bath modifications, or grab bars ($p < .05$ for all). See Figure 18. Among homeowners, there was no statistically significant difference in the perceived change to ease of bathing: **Pilot and Phase 2 survey respondents reported about the same amount of increased ease of bathing**. They also **reported statistically similar reductions in falls after repairs**. (N=90-93, pilot; N=352-366, Phase 2.)

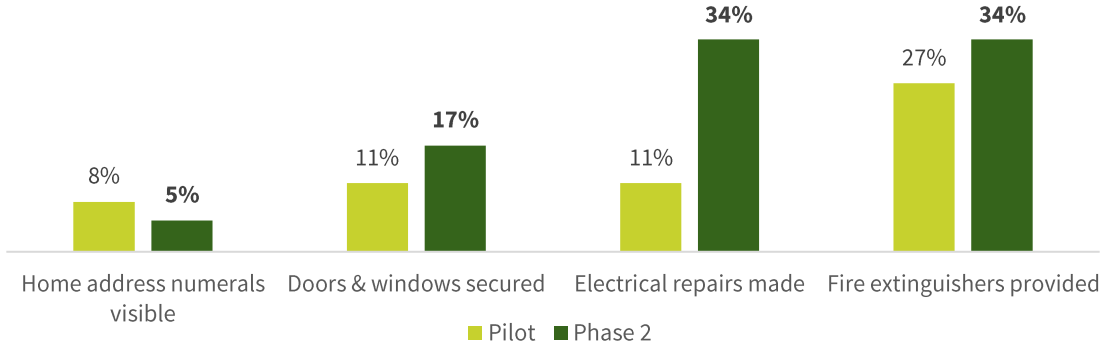
Figure 18. Affiliates provided a larger proportion of projects with durable flooring repairs in Phase 2 than in the pilot.



Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2018–2019, pilot (N=349-350) and 2019–2020, Phase 2 (N=628-632).

Fire safety and home security: Although Phase 2 started with a smaller proportion of households in need of most fire safety and home security updates, **a significantly larger proportion of Phase 2 projects received fire extinguishers and repairs to secure doors and windows** than pilot projects. However, **affiliates also provided electrical repairs to a significantly larger proportion of Phase 2 projects** than pilot projects. But a smaller proportion of Phase 2 projects received upgrades that made the home's address numbers visible from the street ($p < .05$ for all). See Figure 19. Among homeowners, there was no statistically significant difference in the perceived change to ease of ingress or egress: **Pilot and Phase 2 survey respondents reported about the same amount of increased ease in entering and exiting their homes** (N=88, pilot; N=377, Phase 2).

Figure 19. Affiliates provided larger proportions of projects with home security and electrical repairs in Phase 2 than in the pilot.



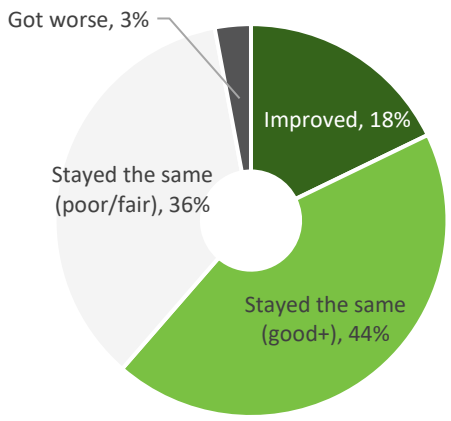
Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2018–2019, pilot (N=350) and 2019–2020, Phase 2 (N=625-635).

PHYSICAL HEALTH

A home's conditions have major implications for the well-being of its occupants and contribute to disparities in health status and outcomes. Poor housing conditions are associated with cardiovascular diseases, infectious diseases, and a wide range of other illnesses and injuries. Improving unsafe and substandard housing conditions can prevent disease, decrease the risks of injury, lower stress, improve quality of life, and reduce poverty.[25] A clean home that is dry, well-ventilated, and free of pests is important to good physical health.[26, 27, 28] For example, a longitudinal study in the U.K.[29] found that home improvements (e.g., secured and weatherproofed windows and doors, electrical upgrades, wall insulation) reduced hospital admissions among adult occupants age 60 and older by 39%. Recent research in the U.S. has found that weatherizing homes and providing energy-efficient upgrades contributes to low-income residents' improved physical health and reduces health care spending by both individuals and the government.[30]

Impact Measurement Project survey respondents rated the quality of their physical health before and after the Rebuilding Together affiliates made repairs.[31] Figure 20 shows reported changes to physical health. The effect size metric suggests a small, but not negligible, probability that the average homeowner served by affiliates would report improved physical health after repairs compared to before repairs.

Figure 20. Over six in 10 survey respondents (62%) either maintained good/excellent health after repairs, or experienced improved health after repairs.



Source: Rebuilding Together affiliates, Impact Survey data, 2020-2021. (N=321.)

The percentage of homeowners reporting "fair" or "poor" physical health decreased from 54% before repairs to 41% after repairs. **Among those who reported that their physical health was "fair" or "poor" before the repairs** (205 of 383 respondents)**, 33% said their health improved after the repairs**.

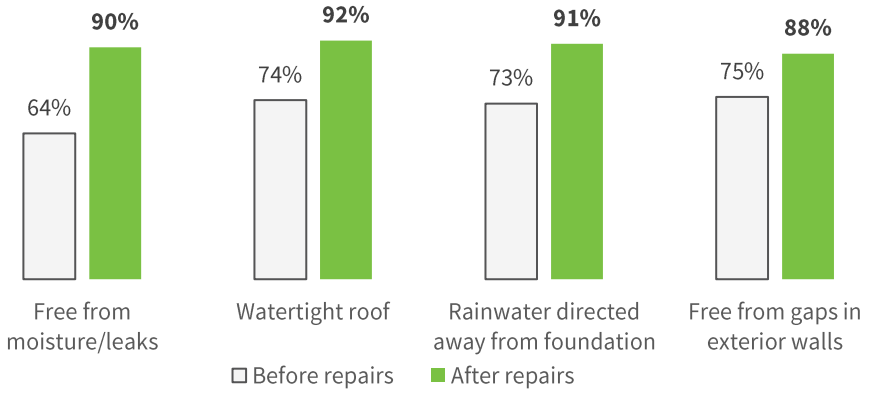
There was no significant difference in post-repair physical health ratings by household demographics (e.g., disability, age, veteran status), controlling for pre-repair health ratings. Only **one checklist item was significantly associated with an increase in survey respondents' physical health ratings from pre- to post-repair: the ability to control the home's internal temperature** ($p < .05$), although the effect size was small. This may be because regulating a home's indoor climate helps alleviate issues that can make breathing more difficult. Health researchers have associated respiratory illnesses such as asthma with homes that are damp. Moisture can promote cockroaches and other pests as well as dust mites, mold, and other

allergens.[32] In a randomized controlled trial of asthma and mold abatement interventions similar to Rebuilding Together's efforts, over half (52%) of the participants in the treatment group experienced improved breathing six months after the intervention; none of the control group participants did. Also, 41% of the treatment group reported less of a need for medication use, compared with 17% of the control group.[33] Another study found that similar repairs reduced the number of days per month that asthmatic children experienced symptoms (by about 50%) and lowered the proportion of individuals who experienced asthma attacks requiring urgent care and/or hospitalizations (from 33% in the control group to 4% in the treatment group).[32]

"My physical health improved because I no longer suffer from the cold and hot temperatures of the outside weather. I can now control how my home feels inside."
—Survey Respondent

During Phase 2, a total of **43% of all of our impact measurement survey respondents indicated that they have a chronic respiratory condition** (N=402). Rebuilding Together affiliates made several types of repairs related to improved respiratory health, as shown in Figures 21 and 22. In particular, **affiliates did substantial work to reduce moisture in homes, such as ensuring that the vast majority (92%) had watertight roofs.** Patching of leaks represented the largest increase: **43% more households were free of moisture/leaks after repairs were completed** than before. Looking at the effect size metric, there is a high probability that the average home served by our affiliates received repairs to reduce moisture/leaks, and a moderate probability that it received roof or gutter/downspout maintenance. Affiliates also repaired exterior walls, but the chance of these modifications being made to the average home was only moderate.

Figure 21. Repairs reduced moisture, contributing to respiratory health.



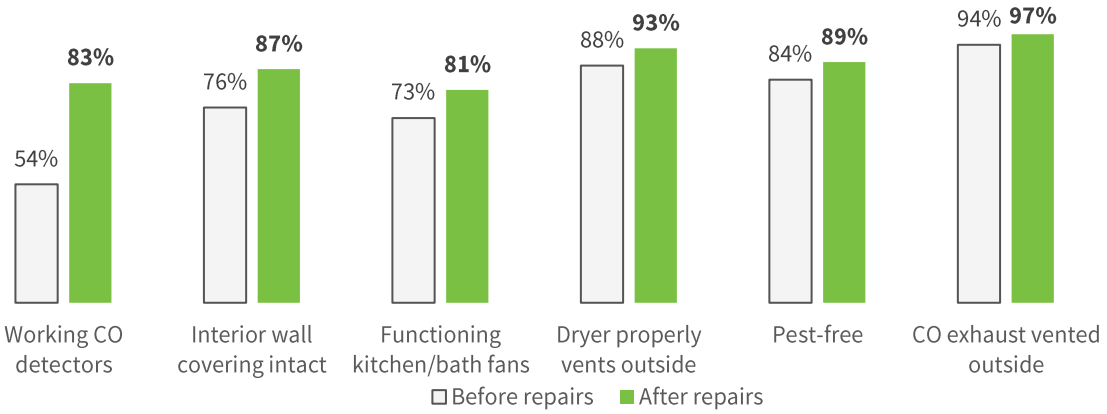
Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2019–2020. (N=642-657.)

Functioning carbon monoxide alarms save lives and contribute to respiratory health.[34, 35] Although no rigorous studies have been conducted, some experts suggest that increasing the number of carbon monoxide alarms in homes would have an impact similar to installing and educating homeowners about smoke detectors.[36, 37, 38]

A simulation conducted on behalf of the U.S. Department of Housing and Urban Development found that upgrading unvented combustion appliances is the "single most effective intervention" for reducing carbon monoxide and nitrogen dioxide in homes.[39] The simulation also found that the installation or repair of externally vented kitchen and bathroom exhaust fans significantly reduced carbon monoxide, assuming

inhabitants used these fans when appropriate.[39] The results of similar interventions by Rebuilding Together affiliates to protect homeowners against airborne contaminants are shown in Figure 22. **The biggest positive change, by far, was in the proportion of homes with working carbon-monoxide detectors: a 54% increase.** Based on the effect size metric, there is a large probability that the average home served by affiliates had a carbon monoxide detector installed.

Figure 22. Far more households are protected from carbon monoxide after repairs than before.



Note: CO is short for carbon monoxide. Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2019–2020. (N=611–638.)

Affiliates also ensured that most homes (87%) had intact interior wall coverings; approximately one in four (24%) were missing this item before repairs. Some homes also received repair or replacement of ventilation fans, pest eradication, and/or improved carbon-monoxide venting for dryers and other combustion appliances; the chances of these repairs being made to the average home were small, but not insignificant.

When reviewing the various repairs above against self-reported chronic respiratory conditions, AI found no significant differences between repairs to homes of individuals with such conditions and individuals without such conditions (with one exception[aa]).

> **"Needed a roof and got it and have felt much safer and easier to breathe since." —Survey Respondent**

Survey data also suggest that respondents believe improvements to their physical and/or mental health were related to our affiliates' work. Specifically, **of the survey respondents who reported health improvements, 83% agreed or strongly agreed with the statement, "My physical or mental health improved because of the repairs to my home."** There was no significant difference in responses to this statement from people who reported having a chronic respiratory condition or mobility challenges and those who did not.

Comparison of Phase 2 to pilot: Findings related to physical health

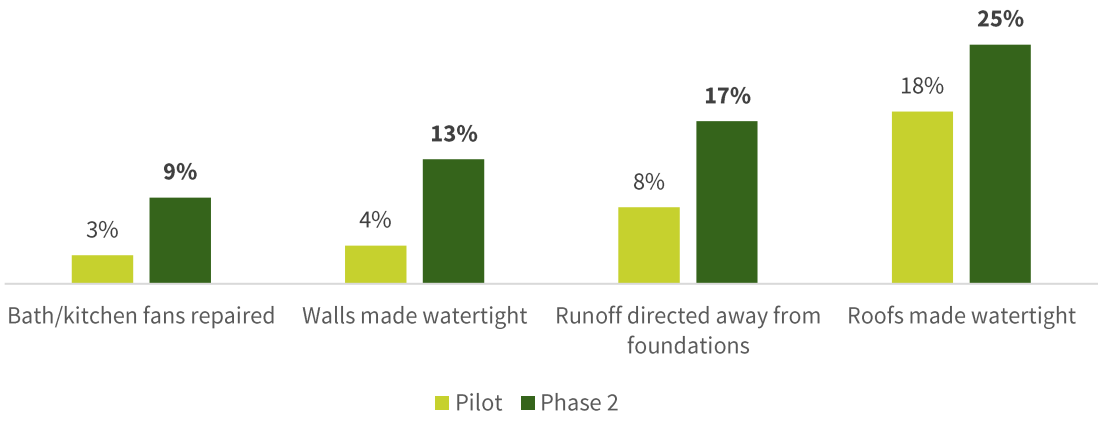
In general, homes assessed *before* (pre-) repairs in Phase 2 had significantly higher levels of Healthy Housing Checklist items in place than homes in the pilot phase. However, when asked to rate the *before*

[aa] Survey respondents who reported having chronic respiratory conditions were significantly less likely to have received repairs to their homes to direct rainwater away from the foundations (14% vs. 24% among respondents without chronic respiratory conditions, $p < .05$).

(pre-) condition of their homes in retrospect, homeowners surveyed in Phase 2 provided significantly lower ratings on physical-health items than homeowners surveyed in the pilot.

Moisture reduction: Although Phase 2 started with a smaller proportion of households in need of repairs to address leaks and excess moisture, **a significantly larger proportion of Phase 2 projects than pilot projects received repairs to make roofs watertight**, **make walls watertight**, and **direct runoff away from foundations**. In addition, **a significantly larger proportion of Phase 2 projects received repairs to bath and kitchen fans** than pilot projects ($p < .05$ for all). See Figure 23. However, the post-repairs improvement in physical health reported by homeowners surveyed was lower in Phase 2 (0.25 point) than in the pilot (0.54 point) ($p < .05$; N=93, pilot and N=383, Phase 2).[bb]

Figure 23. Affiliates provided larger proportions of projects with moisture reduction repairs in Phase 2 than in the pilot.



Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2018–2019, pilot (N=350) and 2019–2020, Phase 2 (N=625-635).

INDEPENDENCE

The Rebuilding Together affiliate projects included ensuring that homeowners had access to clean, running water—which is key to good hygiene[40, 41]—via working water heaters, sinks, and toilets. **More than one in five households (22%) did not have access to functioning plumbing before repairs; almost all (95%) had functioning plumbing afterward**. Looking at the effect size metric, there is a moderate likelihood that the average home would have received plumbing repairs during an affiliate project.

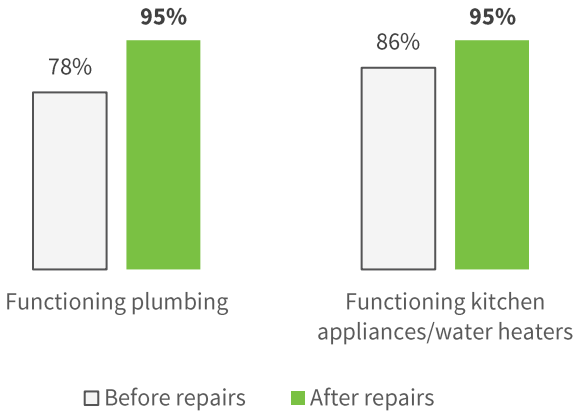
When homeowners lack access to working kitchen appliances (refrigerator, range, etc.), they are at higher risk of maintaining a poor diet and developing associated chronic diseases (diabetes, etc.).[42, 43] The repair or replacement of kitchen appliances contributes to a homeowner's ability to cook and eat nutritious food. **Before affiliates made repairs, one in seven households (14%) did not have functioning kitchen appliances and water heaters; afterward, almost all homes (95%) did.** Based on the effect size metric, there is a small

[bb] Physical health ratings in Phase 2 may have been affected by the coronavirus pandemic that was occurring while the survey was being administered.

likelihood that the average home would have received improvements to kitchen appliances or water heaters during affiliates' repairs.

"I could not prepare meals for my family at that time because I did not have a stove, nor good electricity. But now I am blessed with a stove. Thank you." —Survey Respondent

Figure 24. Affiliates' repairs contributed to homeowner' independence.



Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2019–2020. (N=636–641.)

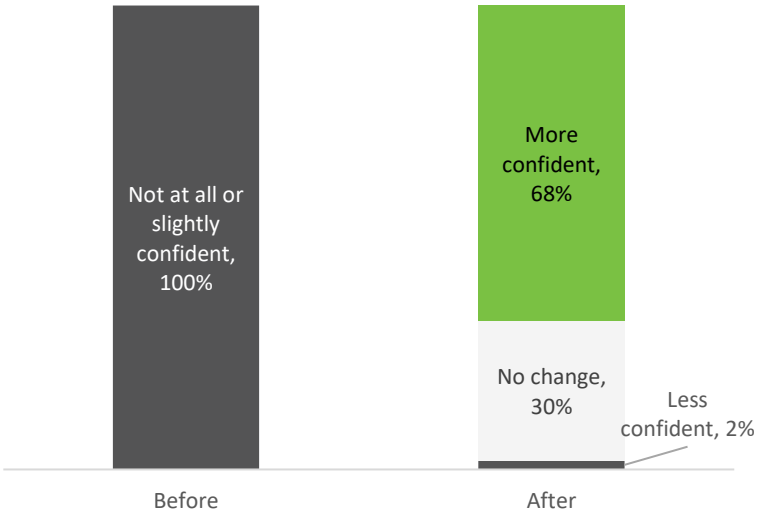
Older adults and people living with disabilities need safe and healthy homes that enable them not only to maintain independence and good health, but also to handle health crises and stresses if they occur. In addition, low-income adults need homes they can afford to own and maintain. One measure of independence is whether homeowners can "age in place" (stay in their own homes as they age).[44] According to the AARP, although 76% of adults aged 50 and older would like to remain in their current home as they age, only 46% feel they will be able to do so.[45] Aging in place is associated with better mental and physical health.[46]

"My husband had a massive stroke and is paralyzed on the left side. His condition cannot get better; however, your generous repairs helped his quality of life and made it easier for me to take care of him." —Survey Respondent

Findings from the Impact Measurement Survey suggest that respondents experienced improved conditions in their homes, maintaining or enhancing their ability to continue living independently. **Among survey respondents who were "not at all confident" or only "slightly confident" engaging in activities of daily living (ADLs) without falling before repairs** (100 of 353 respondents), **68% reported feeling more confident after repairs.** Among all respondents, over one third (36%) felt more confident engaging in ADLs after repairs compared to before. The effect size metric indicates there is a moderate probability that the average homeowner served by affiliates would report greater confidence engaging in ADLs after repairs were completed than before repairs. There was no significant difference for older adults or individuals with disabilities, but individuals who fell or had a close call after repairs did have a significantly lower increase in confidence (or even a decrease) in engaging in ADLs after repairs ($p < .001$), as did individuals with chronic mobility conditions ($p < .01$). A regression analysis found that **the installation of grab bars was significantly**

and positively associated with increases in survey respondents' reported confidence in ADLs after repairs were completed ($p < .05$, one-tailed).[cc]

Figure 25. More than two-thirds of respondents (68%) who had low confidence in activities of daily living before repairs reported greater confidence after repairs were completed.



Source: Rebuilding Together affiliates, Impact Survey data, 2020–2021. (N=100.)

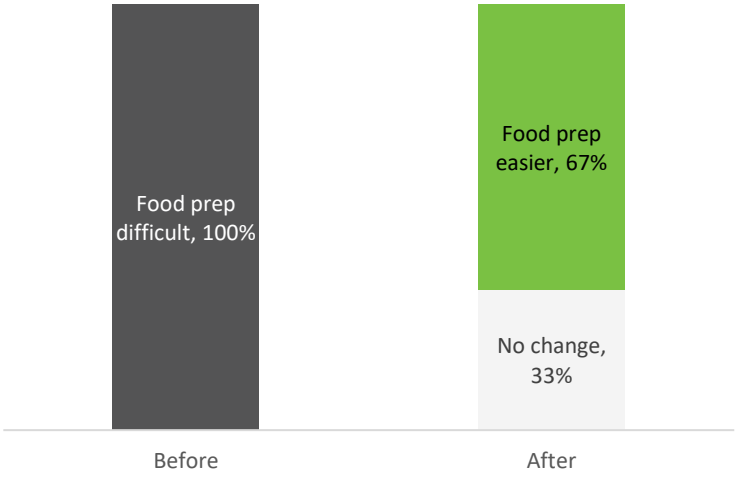
Among survey respondents who found it "difficult" or "very difficult" to prepare food before repairs (64 of 347 respondents), **67% reported finding it easier after repairs.** Among all respondents, one quarter (25%) found it easier to prepare food after repairs than before. The effect size metric indicates there is a small probability that the average homeowner reported increased ease of food preparation after repairs were completed than before. There were no significant differences in post-repair ease of food preparation among older adults or individuals with disabilities compared to others, but individuals with chronic mobility conditions did not do as well as others. A regression analysis confirmed that **repairs to kitchen appliances were significantly and positively associated with increases in survey respondents' reported ease of food preparation after repairs were completed** ($p < .05$, one-tailed).[dd]

"I don't have to worry about my 10-month-old falling through the floor or getting hurt anymore. Now I can cook and move around my house." —Survey Respondent

[cc] This analysis controlled for pre-repair response to the confidence in ADLs survey item, the amount of project investment, level of project impact, number of days from project close to date of survey, whether the respondent had a chronic mobility condition, and household/homeowner demographics.

[dd] This analysis controlled for pre-repair response to the ease of food preparation survey item, the amount of project investment, level of project impact, number of days from project close to date of survey, whether the respondent had a chronic mobility condition, and household/homeowner demographics. Note that the provision of durable flooring as a repair was also found to be a significant, positive factor associated with post-repair ease of food preparation ($p < .001$).

Figure 26. Two-thirds of respondents who found food preparation difficult before repairs reported that it was easier after repairs.



Source: Rebuilding Together affiliates, Impact Survey data, 2020–2021. (N=64.)

> **"It was a huge burden and handicap to just get up and down the stairs to do laundry. You bringing laundry to the main level has helped me considerably." —Survey Respondent**

Among survey respondents who found it "difficult" or "very difficult" to clean and maintain their home before repairs (141 of 355 respondents), **64% reported finding it easier after repairs.** Among all respondents, more than one third (37%) found it easier to clean and maintain their home after repairs than before repairs. The effect size metric indicates there is a moderate probability that the average homeowner served by affiliates reported increased ease of home cleaning and maintenance after repairs were completed, compared to before. There were no significant differences in post-repair ease of cleaning and maintenance among older adults or individuals with disabilities compared to others, but individuals with chronic mobility conditions and those who had fallen prior to repairs did not do as well as others. A regression analysis found that **the installation of durable flooring was significantly and positively associated with increases in survey respondents' reported ease of home cleaning and maintenance after repairs were completed** ($p < .01$).[ee]

> **"Because of the repairs, I feel inspired to make more improvements within the scope of my abilities." —Survey Respondent**

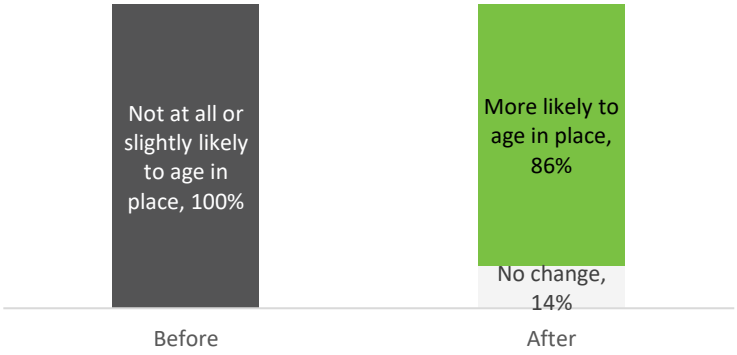
[ee] This analysis controlled for pre-repair response to the ease of cleaning/maintenance survey item, the amount of project investment, level of project impact, number of days from project close to date of survey, whether the respondent had a chronic mobility condition, and household/homeowner demographics.

Figure 27. Nearly two-thirds of respondents (64%) who found it difficult or very difficult to clean and maintain their home before repairs reported it was easier to clean and maintain their home after repairs.

Source: Rebuilding Together affiliates, Impact Survey data, 2020-2021. (N=141.)

Among survey respondents who reported it was "not at all likely" or only "slightly likely" that they would age in place before repairs (44 of 366 respondents), **86% reported an increased likelihood that they would age in place after repairs.** Among all respondents, over one quarter (26%) reported an increased likelihood of aging in place after repairs than before repairs. The effect size metric indicates a moderate probability that the average homeowner served by affiliates reported greater likelihood of aging in place after repairs were completed than before.

Figure 28. Close to nine in 10 survey respondents (86%) who were least likely to say they would age in place before repairs reported they are more likely to age in place after repairs.



Source: Rebuilding Together affiliates, Impact Survey data, 2020-2021. (N=44.)

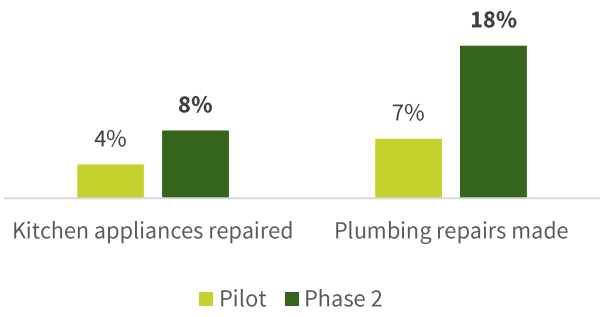
"The bathroom makes it so easy to shower. We plan to stay here because we feel much safer." —Survey Respondent

Comparison of Phase 2 to pilot: Findings related to independence

In general, homes assessed *before* (pre-) repairs in Phase 2 had significantly higher levels Healthy Housing Checklist items in place than homes in the pilot phase. However, when asked to rate the *before* (pre-) condition of their homes in retrospect, homeowners surveyed in Phase 2 provided significantly lower ratings on independence items than homeowners surveyed in the pilot.

Cooking and hygiene: Although Phase 2 started with a smaller proportion of households in need of repairs to address independence, **a significantly larger proportion of Phase 2 projects received repairs to kitchen appliances** and **plumbing** than pilot projects ($p < .05$ for both). See Figure 29. However, among homeowners, the increase in ease of food preparation reported by survey respondents was lower in Phase 2 (0.47 point) than in the pilot (0.74 point) ($p < .05$; N=81, pilot and N=347, Phase 2).

Figure 29. Affiliates provided larger proportions of projects with kitchen and plumbing repairs in Phase 2 than in the pilot.



Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2018–2019, pilot (N=350) and 2019–2020, Phase 2 (N=631-634).

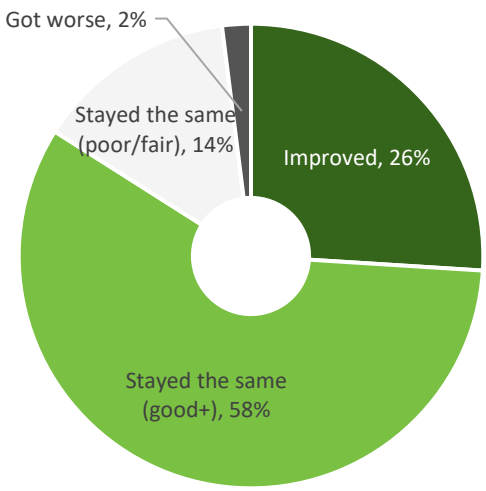
MENTAL HEALTH

Homeowners experience stress related to home maintenance.[47] Research shows that, although home ownership is considered to have a "therapeutic" effect by providing greater residential stability, the stress of maintaining a home can be "emotionally draining" and "damaging to health."[48] In addition, poor housing conditions are associated with poor mental health.[49] By providing no-cost home repairs, Rebuilding Together can improve low-income homeowners' mental health.

> **"You gifted us with peace of mind, independence, and the precious opportunity to grow old in our home sweet home. By removing the stress, worry, and challenging conditions, you have changed our lives!" —Survey Respondent**

Impact Measurement Survey respondents rated the quality of their mental health before and after the Rebuilding Together affiliates made repairs.[50] Figure 30 shows reported changes to mental health. The effect size metric suggests there is a small, but not negligible, probability that the average homeowner served by affiliates would report improved mental health after repairs, compared to before.

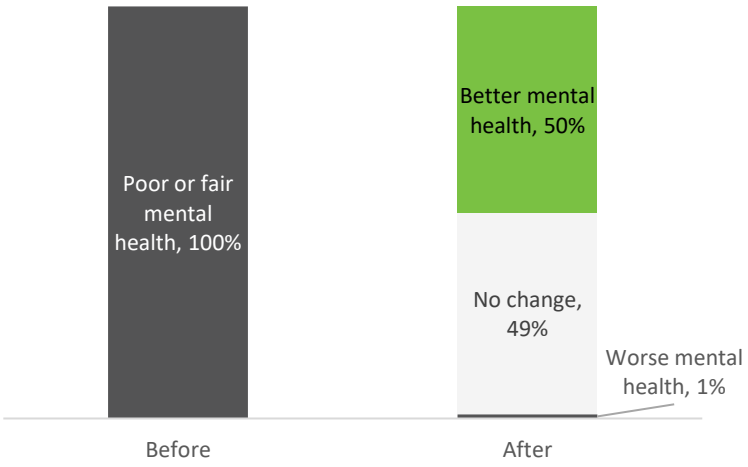
Figure 30. More than eight in 10 (84%) survey respondents either maintained good/excellent mental health after repairs or experienced improved mental health after repairs were completed.



Source: Rebuilding Together affiliates, Impact Survey data, 2020–2021. (N=363.)

The percentage of homeowners reporting "fair" or "poor" mental health decreased from 29% before repairs to 18% after repairs. **Among those who reported that their mental health was "fair" or "poor" before the repairs** (107 of 363 respondents)**, 50% said their health improved after the repairs**.

Figure 31. Half of respondents who started with poor/fair mental health experienced improved mental health as a result of repairs.



Source: Rebuilding Together affiliates, Impact Survey data, 2020–2021. (N=107.)

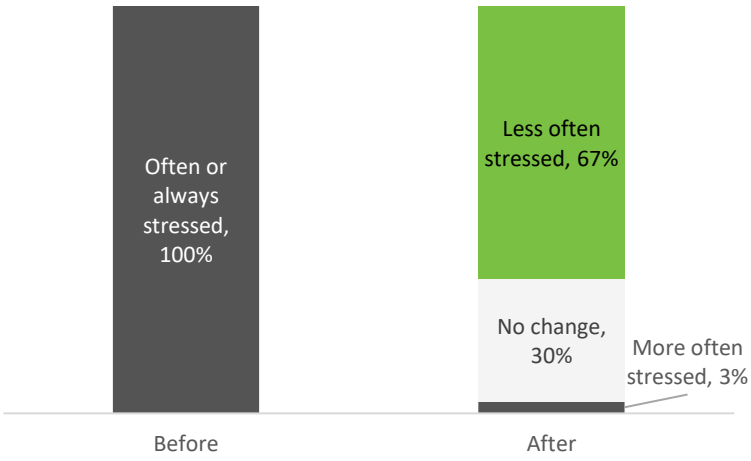
There was no significant difference in post-repair mental health ratings by household demographics (e.g., disability, age, veteran status), controlling for pre-repair mental health ratings. Interestingly, the **checklist items that were significantly associated with an increase in survey respondents' mental health ratings from pre- to post-repair were all related to respiratory health**: dryer, if present, vents outside ($p < .05$), other appliances that exhaust carbon monoxide are vented outside ($p < .05$), and water leaks were repaired

($p < .01$). While this could mean that household occupants experienced improved mental health because of improved respiratory conditions in their home, that is only speculation and would require further research.

Among survey respondents who reported a high frequency of feeling nervous or stressed about the condition of their home ("often" or "always or almost always") before repairs (207 of 377 respondents), **67% reported a reduction in their frequency of feeling nervous or stressed after repairs.** Among all respondents, half (50%) reported a reduction in their frequency of stress after repairs compared to before. The effect size metric indicates a moderate probability that the average homeowner served by affiliates would report a reduced frequency of stress after repairs were completed, compared to before. A regression analysis found that **a fresh coat of interior paint** ($p < .05$) **and repairs to kitchen appliances** ($p < .05$) **were significantly and positively associated with reductions in survey respondents' reported frequency of stress after repairs were completed.**[ff] Again, while this could mean that household occupants experienced reduced stress because of improved conditions in their home, that is only speculation and would require further research.

"My mental health has improved since I feel more secure in my home due to the repairs, which included critical items such as replacing the furnace. I also have peace of mind since I was stressed about necessary repairs that I could not afford." —Survey Respondent

Figure 32. Among homeowners who reported the highest frequencies of stress, two-thirds reported experiencing stress about the condition of their home less often after repairs.



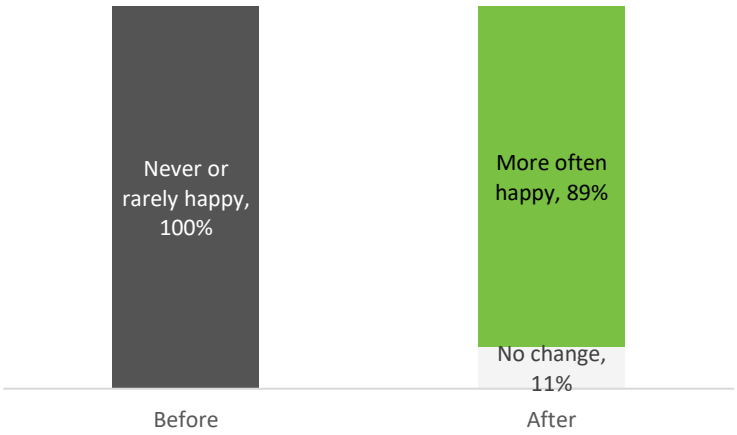
Source: Rebuilding Together affiliates, Impact Survey data, 2020–2021. (N=207.)

[ff] This analysis controlled for pre-repair response to the frequency of stress survey item, the amount of project investment, level of project impact, number of days from project close to date of survey, and household/homeowner demographics.

"When you have a lot of clutter around, you just can't have mental clarity. When you remove those things, you just feel so much better. Also, knowing that you have a lot of little repairs and don't have the money to do that; getting those repairs done is totally freeing, so much better." —Survey Respondent

Among survey respondents who reported a low frequency of feeling happy ("rarely" or "never or almost never") before repairs (64 of 375 respondents), **89% reported an increase in their frequency of happiness after repairs.** Among all respondents, over one third (38%) reported an increase in their frequency of feeling happy after repairs compared to before repairs. The effect size metric indicates a moderate probability that the average homeowner served by affiliates would report increased frequency of happiness after repairs were completed compared to before.

Figure 33. Among homeowners who reported the lowest frequencies of happiness, nearly nine out of 10 (89%) reported experiencing happiness more often after repairs.

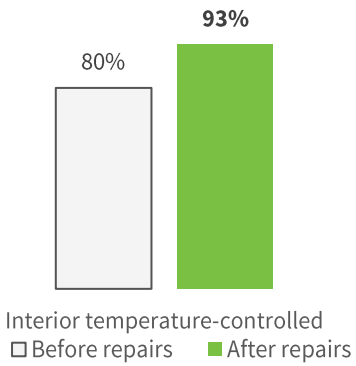


Source: Rebuilding Together affiliates, Impact Survey data, 2020-2021. (N=64.)

"Before my house was repaired I was depressed and felt that the house was never going to be repaired. When I found out I was approved for repairs it was such a relief. I am so proud of my house now." —Survey Respondent

Finally, a systematic review of studies found that home repairs—particularly improvements to thermal comfort and energy efficiency—have been associated with improved mental health.[51, 52] One in five households (20%) could not control the temperature of their homes before repairs. **Rebuilding Together affiliates increased to 93% the proportion of homeowners with the ability to control the interior temperature of their homes.** Looking at the effect size metric, there is a moderate likelihood that the average home served by the affiliates would have received thermal comfort improvements during affiliates' repairs.

Figure 34. Repairs increased the proportion of households that experienced thermal comfort.



Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2019–2020. (N=627.)

"I was unsure about staying in my home before the repairs (replacement) of the A/C-heat unit. Getting older brings arthritis, and no heat or A/C made it hard to move. With the new unit, my plans of staying in my home have greatly changed for the best." —Survey Respondent

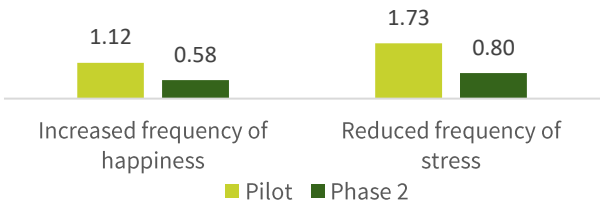
Comparison of Phase 2 to pilot: Findings related to mental health

In general, homes assessed *before* (pre-) repairs in Phase 2 had significantly higher levels of Healthy Housing Checklist items in place than homes in the pilot phase. However, when asked to rate the *before* (pre-) condition of their homes in retrospect, homeowners surveyed in Phase 2 provided significantly lower ratings on mental-health items than homeowners surveyed in the pilot.

Thermal comfort: A significantly smaller proportion of Phase 2 households (13%) received repairs to control temperatures inside the home than pilot projects (18%) ($p < .05$; N=349, pilot and N=627, Phase 2).

Mood and stress: Survey respondents in Phase 2 reported smaller improvements than pilot survey respondents in their frequency of happiness and reduced stress about home maintenance ($p < .05$ for both).[gg] See Figure 35.

Figure 35. Survey respondents reported increased frequency of happiness and reduced frequency of stress about home maintenance in Phase 2, but improvements were smaller than in the pilot.



Source: Rebuilding Together affiliates, Impact Measurement Survey, 2018-2019, pilot (N=91-93) and 2019-2020, Phase 2 (N=375-377).

[gg] Mental health ratings in Phase 2 may have been affected by the coronavirus pandemic that was occurring while the survey was being administered.

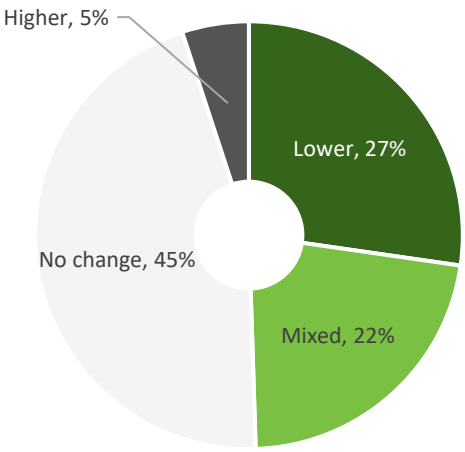
ECONOMIC SECURITY

A home represents a larger proportion of the wealth in a low-income household than a high-income one.[53] Therefore, when maintenance and other costs associated with owning a home increase, low-income homeowners tend to experience greater financial stress than high-income homeowners. For example, increased home costs exacerbate food insecurity in low-income families.[54] Rebuilding Together addresses critical home repairs that otherwise leave homeowners cost-burdened and struggling to pay for daily necessities. Through the kinds of home modifications and repairs made possible by Rebuilding Together affiliates, homeowners have less financial strain.[55]

> **"I just got a notification that my energy bills were at least 20% less this year than last. There is no doubt that the roof repairs are the reason." —Survey Respondent**

Most immediately, while the majority of survey respondents saw no change in home maintenance costs six months after repairs, compared to the same season the prior year, **more than a quarter (27%) of low-income homeowners participating in the Impact Measurement Survey said their maintenance costs had decreased since the Rebuilding Together affiliates had completed repairs.** Only one in 20 (5%) reported an increase in costs (N=340). **The more items on the checklist that were assessed as complete after repairs, the more likely a homeowner was to report lower maintenance costs** ($p < .05$).[hh]

Figure 36. Home maintenance costs were reported to have decreased for more than one-quarter (27%) of survey respondents after repairs, while only a small fraction of respondents reported increased costs.



Source: Rebuilding Together affiliates, Impact Survey data, 2020-2021. (N=340.)

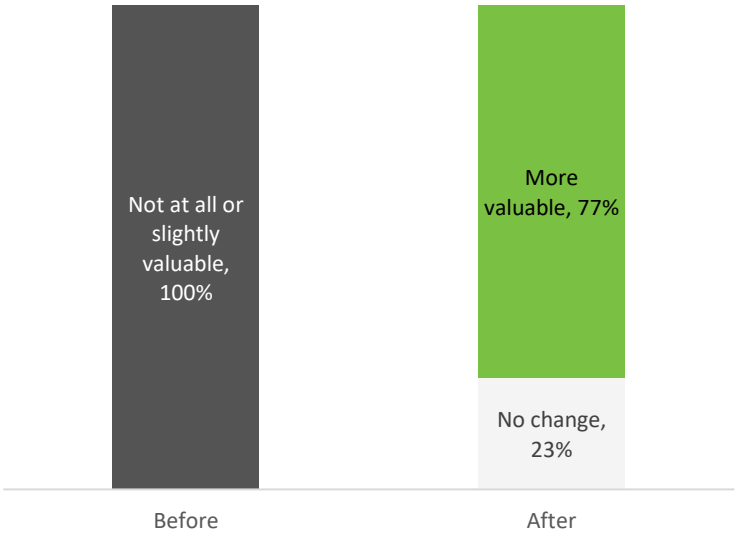
The transfer of wealth from one generation to the next—for example, a parent deeding a home to a child—plays a much larger role in the accumulation of wealth among lower-income populations (about 45% of net worth) than among those of higher incomes (18% of net worth).[56] **Close to half of homeowners surveyed**

[hh] At affiliates' request, an analysis was also conducted to determine whether the repair/modification of energy-efficiency-related items on the checklist were associated with survey respondents' reports of lower home maintenance costs. Neither the repair of energy-efficiency-related items, nor the assessment of such items as complete after repairs, were significantly associated with reported lower home maintenance costs.

indicated that they felt their home was more valuable as a financial asset after affiliate repairs than it was before (45%, 166 of 369 respondents). Among respondents who felt their home was least valuable before repairs, more than three-quarters (77%) reported feeling their home was more valuable after repairs compared to before. The effect size metric suggests there is a moderate likelihood that the average homeowner whom the affiliates served would report an increase in their perception of home value after repairs were completed, compared to before.

"I received a new lease on life and the security that my home would retain its equity with the improvements, as before I felt the equity diminishing." —Survey Respondent

Figure 37. Among homeowners who felt their home was least valuable before repairs, over three-quarters (77%) reported a perceived increase in the financial value of their home after repairs.



Source: Rebuilding Together affiliates, Impact Survey data, 2020-2021. (N=82.)

Over two-thirds of respondents said after repairs that they planned to pass their property on to a younger relative or a friend (69%, 179 of 258), **a net increase of 5%** compared to the proportion who said they would do so before repairs. A regression analysis found that **repairing gaps, cracks, and holes in the walls** ($p < .01$) a**nd ensuring that combustion appliances were properly vented outside** ($p < .01$), including the dryer specifically ($p < .05$), **significantly and positively contributed to that increase.**[ii]

Comparison of Phase 2 to pilot: Findings related to economic security

When asked how they felt about the *before* (pre-) condition of their home and neighborhood in retrospect, homeowners surveyed in Phase 2 provided significantly lower ratings on economic security items than homeowners surveyed in the pilot.

[ii] This analysis controlled for pre-repair response to the pass-along-home survey item, as well as the amount of project investment, level of project impact, number of days from project close to date of survey, and household/homeowner demographics. Note that the removal of tripping hazards was also significantly positively associated with an increase in respondents' reported plan to pass along their home ($p < .001$).

Home as a financial asset: There was a smaller increase in the perception of the home's financial value among Phase 2 survey respondents (0.72 point) than pilot survey respondents (1.22 point) ($p < .05$; N=87, pilot and N=369, Phase 2).

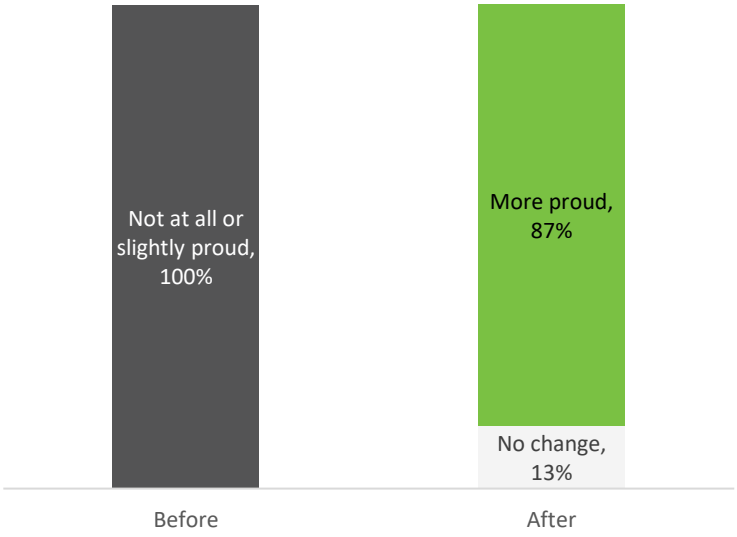
Home maintenance costs: Despite lower retrospective *before* ratings from Phase 2 homeowners, **both pilot and Phase 2 survey respondents reported statistically similar changes in home maintenance costs *after* repairs.**

COMMUNITY BENEFITS

Home repairs positively influence the overall condition of the neighborhood[57] and can have a positive spillover effect.[58] Rebuilding Together believes that home repairs also boost social inclusion for the recipients of the repairs. Such increased neighborhood cohesion has been shown to reduce the perceived effect of daily stressors and increase perceived physical health.[59]

Among survey respondents who reported feeling "not at all proud" or only "slightly proud" of their property before repairs (99 of 379 respondents), **87% reported feeling prouder after repairs.** Among all respondents, over half (51%) reported feeling prouder of their property after repairs than before. The effect size metric indicates there is a large probability that the average homeowner served by affiliates would report greater pride in their property after repairs were completed than before repairs.

Figure 38. Among homeowners who felt least proud of their home before repairs, close to nine out of 10 (87%) reported feeling prouder of their home after repairs.



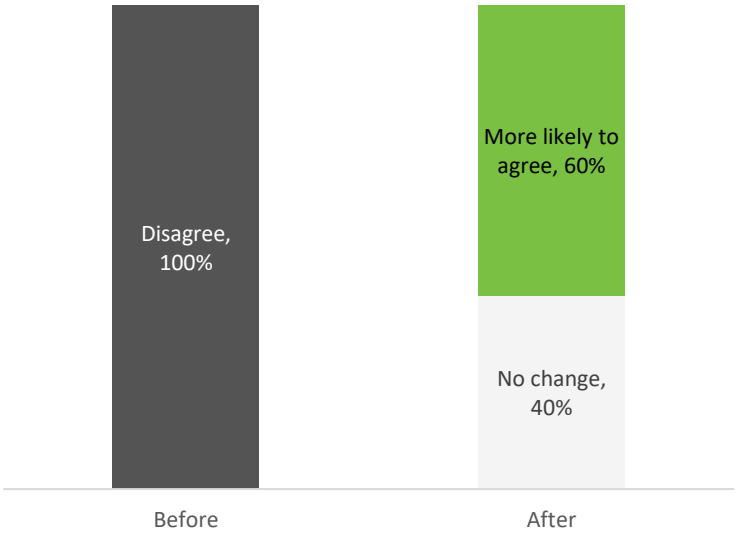
Source: Rebuilding Together affiliates, Impact Survey data, 2020-2021. (N=99.)

Home maintenance also appears to help homeowners feel more accepted by their community. **Among survey respondents who disagreed or strongly disagreed with the statement, "I felt welcomed by and included in my neighborhood" before repairs** (47 of 374 respondents), **60% reported greater agreement with the statement after repairs.** Among all respondents, nearly one in five (18%) reported greater agreement with the statement after repairs than before. The effect size metric indicates there is a small

probability that the average homeowner served by affiliates would agree more strongly with the statement after repairs were completed than before. A regression analysis found that **fresh interior paint was significantly and positively associated with increases in survey respondents' reported pride in their home and feelings of welcome and inclusion after repairs were completed** ($p < .05$ for each).[jj] It may be that a nicer interior lifts respondents' moods overall.

"You guys did a great job and I would say it helped mostly with my neighbors. Once you guys left, I feel like there was more of a sense of community." —Survey Respondent

Figure 39. Three in five respondents (60%) who disagreed with the statement, "I feel welcomed by and included in my neighborhood" before repairs agreed more (i.e., felt more welcomed and included) after repairs.



Source: Rebuilding Together affiliates, Impact Survey data, 2020-2021. (N=47.)

"You repaired a major gas leak that could have blown up my neighborhood. After I made contact with your office, those worries ended." —Survey Respondent

Greater neighborhood stability is a desired outcome of Rebuilding Together's work. Maintaining and repairing homes not only improves the chances that homeowners will be able to age in place,[60] but also boosts the quality of available housing stock and potentially slows the rate of property turnover.[61, 62] Although comprehensive research in this area is scarce—and Rebuilding Together lacks the resources to conduct a thorough analysis at this time—the data related to Phase 2 homeowners' plans to age in place, transfer their property to a younger relative or friend, and the perceived value of their home as a financial asset due to affiliates' repairs, has helped deepen Rebuilding Together's understanding of the importance of stability in low-income neighborhoods.

[jj] This analysis controlled for pre-repair response to the pride in home survey item, the amount of project investment, level of project impact, number of days from project close to date of survey, and household/homeowner demographics.

Comparison of Phase 2 to pilot: Findings related to community benefits

When asked how they felt about the *before* (pre-) condition of their home and neighborhood in retrospect, homeowners surveyed in Phase 2 provided significantly lower ratings on community-benefit items than homeowners surveyed in the pilot.

Pride in home: Phase 2 survey respondents reported a significantly smaller increase in reported pride in their property (0.94 point) than pilot survey respondents (1.56 point) ($p < .05$; N=91, pilot and N=379, Phase 2).

Neighborhood connection: There was no statistically significant difference in the change to perceived neighborhood connection between pilot and Phase 2 survey respondents, despite lower retrospective pre-ratings and the pandemic occurring in Phase 2. **Pilot and Phase 2 survey respondents reported about the same amount of increased connection with their neighborhood**.

Study Strengths and Limitations

The goal was to make the evaluation process easy and cost-effective to replicate. In designing the Impact Measurement Project, we kept things simple. We tapped the expertise of professional external evaluators, who drew upon existing research to support our evaluation methods and corroborate our outcomes. Affiliates used their existing application forms and checklists — and added only one survey — to gather impact data from the homeowners they served during the evaluation period. The Impact Measurement Survey consisted of questions that were validated by other studies, tested by us in the pilot phase of this study, or both. We had good access to our research subjects (the homeowners served) because they knew and trusted affiliate staffers. The result: Any affiliate can use this process to collect relevant local data without hiring additional people or asking current staff members to work a lot of overtime.

This simple approach, however, has a couple of drawbacks. In reducing the amount of necessary effort to a level that most affiliates could take on, we had to forego the ability to compare our results to a control group. However, prior research among a subset of our affiliates had already shown that a retrospective pre-/post- single-group design would be sufficient.[kk]

As with most social science research, our study relied on self-reported vs. objective data. For example, we asked people to tell us if they had any chronic respiratory conditions rather than obtaining their medical records. Survey responses therefore may be biased: Homeowners who completed our survey are more

[kk] There were significant concerns about the capacity of affiliates to conduct the evaluation research given their limited budgets and staffing (some are even partly run by volunteers). Indeed, even the existing study design (with a one-time retrospective pre-/post- data gathering mechanism rather than a pre-/post- format that would require gathering data twice on the same households) proved to be too much for two of the seven pilot affiliates.

Moreover, it was found in the 2015 CapacityCorps study by the McMahon Consulting Group (whose survey was adapted for this study with permission by McMahon) that there was no statistically significant difference in pre-survey responses of households that had been served compared to pre-survey responses of waitlisted households. McMahon had done pilot testing and based on that decided to use a retrospective pre-/post- design with existing Rebuilding Together clients who had already been served rather than using two groups, one the previously served clients and the other a comparison group of waitlisted Rebuilding Together clients.

In brief, McMahon accurately identified the main potential concern about using a retrospective pre-/post- design with previously served clients: poor recall. However, McMahon's validity analysis showed that there was remarkably strong consistency in "pre-" responses between previously served and waitlisted clients. In other words, testing showed that previously served clients were able reliably to assess their "pre-" state – or, at least, to give statistically indistinguishable pre-scores when compared to waitlisted clients' scores. As McMahon's report concluded, given this reliability, using the same group pre- and post- makes for a stronger match than a comparison group ever could. Therefore, to reduce the load on already-burdened affiliates as well as to obviate any issues of comparison group matching, they, and our external evaluators, used a retrospective pre-/post- design with previously served clients alone.

inclined to be pleased with Rebuilding Together affiliate services than homeowners who did not complete our survey.

We cannot attribute solely to our work the results experienced by the homeowners our affiliates served. Despite this fact, which is true for most social science studies, we believe it is clear from this project that our work contributes to our target outcomes.

Finally, there are external factors that we cannot control but that influence our outcomes. For example, the coronavirus pandemic posed additional challenges to our impact evaluation, such as reducing the number of projects affiliates could complete and limiting the ability of affiliate staff to conduct evaluations. We extended our data collection period and the survey timeframe to increase the number of participating households. To control for the potential effects of those extensions, we factored the time from a project's completion to its survey date into our analyses. We were unable to assess what effects the physical or mental health of affiliate staff or homeowners served may have had on data collection.

See the Recommendations section on page 49 for suggestions on how to improve the data collection process in the future.

Conclusions

The results of this Impact Measurement Project show that Rebuilding Together's home repair and maintenance projects help low-income homeowners keep their homes safe and healthy and improve their quality of life. The checklist data provided by affiliates shows that the conditions in more than half (52%) of homes met all 25 Safe and Healthy Housing Priorities after repairs and modifications, compared with only 1% before repairs. The Impact Measurement Survey data collected from homeowners suggests how these repairs improved the physical and mental health and economic security of many households, as well as their sense of community belonging.

Making sure that homeowners not only have a safe, healthy living space, but also feel happy and secure is tantamount. By working with a diverse array of affiliates nationwide to test and hone our evaluation methods, we're able to focus on specific areas of need — and achieve greater impact. Throughout the Impact Measurement Project, our affiliates provided a wide variety of repairs, depending on the condition of each home. We saw consistent and statistically significant improvements in all six desired areas of impact: community, economic security, independence, mental health, physical health, and safety.

Thanks to what we learned during the pilot, affiliates in Phase 2 were able to give more attention to repairs that reduced or eliminated unwanted moisture in homes, increased home security, and fixed electrical hazards. At the same time, Phase 2 affiliates achieved results comparable to the pilot in improving the ease of bathing as well as entering and existing homes, which is likely reflected in the comparable reduction in falls after repairs. Homeowners in both phases also similarly reported feeling more connected to their neighborhoods after affiliates completed upgrades. And, although we measured smaller improvements to mental and physical health in Phase 2 than in the pilot, we suspect the decrease had something to do with how homeowners and their families were coping with the global pandemic during the survey period.

Survey results paint a very clear picture of how our work is affecting homeowners' lives: They are moving around their homes with greater ease, falling less frequently, and facing fewer hazards related to improper maintenance. Our work is making key activities of daily living, such as bathing, cooking, and cleaning the

house—actions that many of us take for granted—are now easier for some of the homeowners we've served. This improved level of independence is associated with homeowners feeling happy more often and less frequently stressed about the condition of their homes than before the repairs were made.

Although we know that home repairs can't fix many of life's problems, Impact Measurement Survey data show measurable gains in homeowners' overall mental and physical health after repair projects were completed. Our work also gave many people a greater sense of pride in their homes and belonging in their communities and increased the likelihood that they'll stay put as they age. Last but not least, the data strongly indicates that our repairs led homeowners to regard their homes as more valuable financial assets that could be passed on to the next generation.

We're confident—given the representative sample of households in this report (more than 400 surveys and more than 650 sets of checklists)—that any Rebuilding Together affiliate can use this evaluation process to accurately gauge the impact of their work going forward.

Recommendations

PROGRAM RECOMMENDATIONS

- **Falls prevention.** Although the homeowners surveyed reported fewer falls after repairs, 15% (60) still fell. There are many factors that contribute to a fall, but a low-cost, high-impact solution includes installing grab bars, clearing tripping hazards, and making lighting improvements, which are all associated with a reduction in falls. Affiliates should consider including the falls question in their applications and making these improvements in every home in which someone has previously fallen or had a "close call," regardless of the homeowner's age or abilities.
- **Chronic respiratory conditions.** Survey respondents who reported having chronic respiratory conditions were significantly less likely than others to have received repairs to their home to direct rainwater away from the foundation. Affiliates should consider including a question about chronic respiratory conditions on their program applications and inspecting all homes whose owners answer yes for items that could reduce respiratory distress. Repairs should be made as needed.
- **Utility cost savings.** Affiliates could request homeowners' utility bills for the season after repairs and for the same season in the year before repairs took place. They could then compare and quantify the change in energy and/or water costs, to which their repairs contributed.

PROCESS RECOMMENDATIONS

- **Survey response rates.** Households in which homeowners identified as white were significantly and disproportionately more likely to respond to the Impact Measurement Project survey than other homeowners served by Phase 2 affiliates. Going forward, Rebuilding Together should consider how affiliates might improve response rates from non-white homeowners—especially Black homeowners, who made up 51% of the homeowners served by Phase 2 affiliates.
- **Missing checklist data.** Some checklist data were missing in non-random ways. AI described possible reasons for non-random missing data related to homeowners' income levels. With regard to other categories aside from income (e.g., level of expected impact), it is recommended that the

missing data patterns be discussed by Rebuilding Together's national office with its affiliates to determine why such patterns might exist and how to reduce them in the future.

- **Checklist post- "fails."** When a household needs an item on the checklist and does not receive it, AI recommends that affiliates track what happens (e.g., homeowner was referred to partner organization for item; homeowner applied to affiliate for future project; homeowner refused repair). Such information could assist Rebuilding Together in improving its work and potentially assist in development of funding for specific items that may be frequently skipped due to cost.

It is not expected that every recommendation will be implemented over the next year. Rebuilding Together will want to consider carefully the potential impact of any proposed changes. However, by making these adjustments, both the impact measurement process and the work of affiliates and the organization overall could be even more effective. Most importantly, the households that affiliates serve will reap the additional benefits, potentially experiencing even better outcomes from efforts that are still fully aligned with Rebuilding Together's vision of safe homes and communities for everyone.

Appendix A

PHASE 2 PARTICIPATING AFFILIATES

In this appendix, we provide short descriptions of all affiliates that completed Phase 2 of the Impact Measurement Project.

Acadiana

Rebuilding Together Acadiana serves four parishes in Louisiana: Lafayette, Acadia, Iberia, and Vermilion. The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Day:** Since 1998, Rebuilding Together Acadiana has partnered with community sponsors to repair approximately 15 homes each spring. The program is supported by approximately 250 volunteers.
- **Safe at Home:** Since 2008, Rebuilding Together Acadiana has taken on small, critical home-repair projects that can be completed any time of year. The affiliate currently serves approximately 20 low-income homeowners through this program each year with the support of staff, AmeriCorps members, and skilled volunteers.
- **Team Builds and Special Projects:** Since 2005, Rebuilding Together Acadiana has handled repair projects with sponsoring community partners to engage local volunteers in team-building opportunities outside of National Rebuilding Day. The affiliate currently takes on approximately 35 team builds and a few special projects each year. During the 2019–2020 fiscal year, Rebuilding Together Acadiana's special project focus was hurricane and flooding disaster response.

Baltimore

Rebuilding Together Baltimore's service area covers the City and County of Baltimore, Maryland. The affiliate places special emphasis on the Greater Govans and the Southwest regions of the city. The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Day:** Since 1989, Rebuilding Together Baltimore has partnered with community sponsors to repair approximately 20 homes and community facilities on National Rebuilding Day and throughout the year. The program is supported by the work of approximately 400 volunteers.
- **Team Builds and Special Projects:** Since 2009, Rebuilding Together Baltimore has handled repair projects with sponsoring community partners to engage local volunteers in team-building opportunities. The affiliate currently takes on approximately 10 team builds and a few special projects each year.
- **Housing Upgrades to Benefit Seniors:** Since 2018, Rebuilding Together Baltimore has partnered with the Housing Upgrades to benefit Seniors (HUBS) Program to provide repairs to approximately 25 low-income homeowners aged 65 and over in Baltimore City each year. HUBS repairs are completed mostly by contractors. The average spending is $8,000 per house.
- **Baltimore County Age-Friendly Upgrades for Seniors:** In 2021, Rebuilding Together Baltimore and several partner agencies launched the Baltimore County Age-Friendly Upgrades for Seniors (BCAUSE) program in Baltimore County to replicate the city's HUBS program. This program also serves low-income homeowners aged 65 and over.
- **Fire Safety and Prevention:** Rebuilding Together Baltimore ensures that each household it serves has kitchen-grade fire extinguishers and smoke and carbon-monoxide detectors installed.

Broward County

Rebuilding Together Broward's service area covers Broward County/Greater Fort Lauderdale, Florida. The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Day:** Since 2003, Rebuilding Together Broward has partnered with community sponsors to repair approximately 30 homes and community facilities each spring. The program is supported by the work of approximately 450 volunteers.
- **Safe at Home:** Since 2003, Rebuilding Together Broward has taken on small, critical home-repair projects that can be completed any time of year. The affiliate currently serves approximately 200 low-income homeowners through this program each year with the support of staff, AmeriCorps members, and skilled volunteers.
- **Team Builds and Special Projects:** Since 2003, Rebuilding Together Broward has handled repair projects with sponsoring community partners to engage local volunteers in team-building opportunities outside of National Rebuilding Day. The affiliate currently takes on approximately six team builds and a few special projects each year.

Dayton

Rebuilding Together Dayton's service area covers Montgomery County, Ohio. (Dayton is the county seat.) The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Day:** Since 1996, Rebuilding Together Dayton has partnered with community sponsors to repair approximately 30 homes owned by adults aged 60 and older each spring. The program is supported by the work of approximately 800 to 900 volunteers.
- **NeighborCare:** Since 2000, Rebuilding Together Dayton has tapped skilled tradespeople for its year-round, countywide repair and modification program. The installation of safety and accessibility aids—wheelchair ramps, grab bars, handrails, step-in showers—is the main focus of this program.
- **Seasonal Revitalization:** Since 2009, Rebuilding Together Dayton has handled repair projects with sponsoring community partners to engage local volunteers in team-building opportunities outside of National Rebuilding Day. The affiliate currently takes on approximately 20 to 30 projects annually. During the 2019–2020 fiscal year, Rebuilding Together Dayton concentrated on the U.S. Housing and Urban Development Department's "HUD Choice"[63] neighborhoods in West Dayton.

Fox Valley

Rebuilding Together Fox Valley's service area covers Calumet, Outagamie, Waupaca, and Winnebago Counties in Wisconsin. The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Day:** Since 2001, Rebuilding Together Fox Valley has partnered with community sponsors to repair approximately 12 homes each spring. The program is supported by the work of approximately 200 volunteers.
- **Safe at Home:** Since 2001, Rebuilding Together Fox Valley has taken on small, critical home-repair projects that can be completed any time of year. The affiliate currently serves approximately 35 low-income homeowners through this program annually with the support of staff, churches, volunteer groups, and skilled volunteers.
- **Team Builds and Special Projects:** Since 2001, Rebuilding Together Fox Valley has handled repair projects with sponsoring community partners to engage local volunteers in team-building

opportunities outside of National Rebuilding Day. The affiliate currently takes on approximately five team builds and a few special projects each year.

Greater Charlotte

Rebuilding Together of Greater Charlotte's service area covers the City of Charlotte and adjacent neighborhoods. The affiliate repairs homes and revitalizes communities through these core programs:

- **Team Builds and Special Projects:** Since 2010, Rebuilding Together of Greater Charlotte has engaged in repair projects throughout the year with sponsoring community partners to engage local volunteers in team-building opportunities. The affiliate currently takes on approximately 20 team builds and a few special projects annually.
- **Emergency Repair Day:** In 2020, Rebuilding Together of Greater Charlotte started providing small emergency home repairs, such as fixing a broken furnace in the winter or patching a leaking roof.

Houston

Rebuilding Together Houston's service area covers Harris County, Texas. The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Day:** Since 1982, Rebuilding Together Houston has partnered with community sponsors to repair approximately 150 homes each spring and fall. The program is supported by the work of approximately 2,500 volunteers annually.
- **Safe at Home:** Since 2012, Rebuilding Together Houston has taken on small, critical home-repair projects that can be completed any time of year. The affiliate currently serves approximately 50 low-income homeowners through this program each year with the support of staff, AmeriCorps members, and skilled volunteers. Activities for this program include ramp installation and "Safe and Sound Services," which involve the following:
    - Install grab bars, steps and handrails, smoke and CO detectors, fire extinguishers, and safety aids.
    - Ensure homeowners can control the temperature inside the home, installing energy efficient dual air-conditioning and heating unit and ceiling fans as needed.
    - Provide an air purifier if anyone in the home has respiratory issues.
- **Disaster Recovery:** In instances of disaster, Rebuilding Together Houston is an acknowledged leader in recovery, using its deep connections to communities and its construction expertise to restore homes throughout Harris County. Rebuilding Together Houston collaborates with other local nonprofits to develop best practices and a consistent scope of work. Whenever possible, the affiliate repairs not only the damage inflicted by the current disaster but also conducts deferred maintenance. Its Salesforce platform allows it to track every house in real time, enabling Rebuilding Together Houston to manage dozens of homes simultaneously.

New York City

Rebuilding Together NYC's service area covers the five boroughs of New York City. The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Day:** Since 2014,[II] Rebuilding Together NYC has partnered with community sponsors to repair approximately eight homes and community facilities each spring and fall. The program is supported by the work of approximately 100 volunteers.
- **Safe at Home:** Since 2014, Rebuilding Together NYC has taken on small, critical home-repair projects that can be completed year-round. The affiliate currently serves approximately 65 low-income homeowners through this program each year with the support of staff, AmeriCorps members, and skilled volunteers.
- **Team Builds and Special Projects:** Since 2014, Rebuilding Together NYC has handled repair projects with sponsoring community partners to engage local volunteers in team-building opportunities outside of National Rebuilding Days. The affiliate currently takes on approximately seven or eight team builds and a few special projects each year.
- **Careers in Construction:** Since 2018, Rebuilding Together NYC has enrolled 257 unemployed New Yorkers in this program and graduated 225 (an 88% success rate). The affiliate has also placed 165 graduates in jobs, mostly union apprenticeships with advancement potential, continuing education opportunities, and robust benefits packages. Careers in Construction graduates earn $20/hour on average to start.

North Central Florida

Rebuilding Together North Central Florida's service area covers the heart of North Central Florida. It comprises its headquarters of Gainesville and the surrounding towns of Alachua, Archer, Hawthorne, High Springs, Newberry, and Waldo. The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Day:** Since 2005, Rebuilding Together North Central Florida has partnered with community sponsors to repair approximately 10 homes each spring and fall. The program is supported by the work of approximately 100 volunteers.
- **Critical Repair Program:** Since its establishment in 2005, Rebuilding Together North Central Florida has taken on critical home-repair projects that can be completed year-round. This program focuses on repairs prioritized using the 25-point Health and Safety checklist that Rebuilding Together developed in partnership with the National Center for Healthy Housing. Rebuilding Together North Central Florida currently serves approximately 15 to 25 low-income homeowners through this program each year with the support of staff, AmeriCorps members, and skilled volunteers.
- **Emergency Repair Program:** In 2020, Rebuilding Together North Central Florida developed and implemented the Emergency Repair Program to address urgent home safety hazards during the COVID-19 pandemic. Repairs or replacements include major roof or plumbing leaks, electrical problems, failing HVAC systems, and accessibility aids such as ramps, grab bars, and modifications to showers, tubs and toilets. Since the program's start, Rebuilding Together North Central Florida has made emergency repairs to 14 households and, because of its success, intends to keep it as a regular service.
- **Energy and Water Efficiency:** Since 2008, Rebuilding Together North Central Florida has maintained partnerships with local organizations to decrease energy and water consumption for low-income

[II] The affiliate was founded in 1998, but database records only reach back to 2014.

neighbors who are most adversely affected by utility costs through a collaborative effort with the Community Weatherization Coalition.

Oklahoma City

Rebuilding Together Oklahoma City's service area covers all of Oklahoma County, which stretches across 718 square miles and supports almost 800,000 residents. The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Day:** Since 1992, Rebuilding Together Oklahoma City has partnered with community sponsors to repair approximately 24 homes each spring. The project is supported by the work of approximately 775 volunteers.
- **Safe at Home:** Since 1992, Rebuilding Together Oklahoma City has taken on small, critical home-repair projects that can be completed at any time of year. The affiliate currently serves approximately 135 low-income homeowners through this program each year with the support of staff, AmeriCorps members, and skilled volunteers.
- **She Builds:** Since 2017, Rebuilding Together Oklahoma City has handled repair projects each fall with sponsoring community partners to engage local volunteers in team-building opportunities outside of National Rebuilding Day. This women-led and women-focused program provides critical home repairs to approximately three low-income homeowners annually.

Saratoga County

Rebuilding Together Saratoga County's service area covers Saratoga, Warren, and Washington Counties in New York. The affiliate repairs homes and revitalizes communities through these core programs:

- **Home Repair Program:** Since 2003, Rebuilding Together Saratoga County has made critical repairs to 1,379 homes. Its year-round work includes weatherizing, fixing plumbing and electrical issues, recarpeting, patching, painting, replacing siding, landscaping, and doing almost anything that restores homeowners' independence, safety, and security.
- **Safe at Home:** Since 2010, Rebuilding Together Saratoga County has provided safety assessments and safety and accessibility modifications year-round for more than 250 homes owned by either adults aged 60 or over, or people living with a disability. Many were at risk of losing their independence because they could not afford to make modifications themselves.
- **Handyman Program:** Since 2016, Rebuilding Together Saratoga County has addressed critical and urgent home-safety hazards for more than 700 homeowners. Through this program, the affiliate works with each homeowner to develop a fire safety and escape plan. It installs smoke and carbon-monoxide detectors, fire extinguishers, and exterior house numbers to help first responders locate the home in an emergency. The affiliate also makes other small repairs that, if left unaddressed, would likely result in more substantial and costly future repairs.
- **Homeowner Education:** Since 2018, Rebuilding Together Saratoga County has provided workshops that teach clients and the community about home maintenance, financial literacy, and other topics that promote self-sufficiency.
- **Community Strong:** Since 2003, Rebuilding Together Saratoga County has created safe community-gathering places through the renovation and beautification of recreational centers, schools, supportive housing facilities, and outdoor spaces. The affiliate has completed 103 projects through this program.

- **Manufactured Housing Replacement:** Since 2017, Rebuilding Together Saratoga County has replaced mobile and manufactured homes that are beyond repair with new, energy-efficient models for 24 low-income homeowners.
- **Emergency Rental Assistance:** In response to the COVID-19 pandemic, Rebuilding Together Saratoga County provided emergency rental assistance to 48 families in 2020 and 2021.

Seattle

Rebuilding Together Seattle's service area covers the whole city plus communities stretching from Everett to Renton, Washington, primarily along the Interstate 5 corridor. The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Month:** Since 1990, Rebuilding Together Seattle has partnered with community sponsors to repair approximately 20 to 30 homes and community facilities each spring. The program is supported locally by the work of more than 600 volunteers.
- **Safe at Home:** Since 2011, Rebuilding Together Seattle has taken on small, critical home-repair projects as part of this year-round program, which accounts for more than 80% of the affiliate's activities in the field. Rebuilding Together Seattle serves nearly 200 low-income households annually through Safe at Home, with the support of staff, AmeriCorps members, in-kind partners, and individual volunteers. Special program initiatives include partnerships with the Seattle Fire Department and King County EMS One Step Ahead Fall Prevention program; Rebuilding Together Seattle-led Open Volunteer Day monthly projects; and small group projects for highly skilled teams that bring considerable technical expertise and/or in-kind materials to the program.
- **Team Builds and Special Initiatives:** Since the early 2000s, Rebuilding Together Seattle has completed repair projects throughout the year with community funding partners in an effort to engage local volunteers in their work. Rebuilding Together Seattle facilitates around 20 team builds and a few special projects annually, including neighborhood activations.

Southern Nevada

Rebuilding Together Southern Nevada's service area covers Las Vegas, Henderson, North Las Vegas, unincorporated Clark County, and Nye County. The affiliate repairs homes and revitalizes communities through these core programs:

- **National Rebuilding Day (AKA Make a Difference Day):** Since 1994, Rebuilding Together Southern Nevada has partnered with community sponsors to repair approximately 30 homes and community facilities each spring and/or fall. The program is supported by the work of approximately 1,250 volunteers.
- **Safe at Home:** Since 2017, Rebuilding Together Southern Nevada has taken on small home-repair projects that can be completed any time of year. The affiliate currently serves approximately 125 low-income homeowners through this program each year with the support of staff and AmeriCorps members.
- **Critical Home Repairs:** Since 1994, Rebuilding Together Southern Nevada has taken on critical home-repair projects that can be completed at any time of year. The affiliate currently serves approximately 150 homeowners through this program each year with the support of staff and contractors.

- **Team Builds and Special Projects:** Since 1994, Rebuilding Together Southern Nevada has engaged in repair projects throughout the year with sponsoring community partners to engage local volunteers in team-building opportunities outside of National Rebuilding Days. The affiliate currently takes on approximately two team builds and a few special projects each year. During fiscal year 2019–2020, Rebuilding Together Southern Nevada's special project focus was revitalizing the Historic Westside neighborhood in Las Vegas.
- **HOME:** Since 2007, Rebuilding Together Southern Nevada has partnered with municipalities to provide complete top-to-bottom home rehabilitations. Each home can receive up to $50,000 of renovations, depending on its condition. Rebuilding Together Southern Nevada currently serves approximately 10 homeowners through this program each year with the support of staff and contractors.

Appendix B

25 SAFE AND HEALTHY HOUSING PRIORITIES CHECKLIST DATA

The following table contains the aggregate results of the pre-/post- analysis of completed checklists. All increases were statistically significant.[mm] The table is ordered by proportional increase, from largest to smallest.[nn]

Table 2. 25 Safe and Healthy Housing Priorities Checklist Results, Pre- and Post- Comparisons

Indicator (N=Number of Projects)	Households With This Item Complete Before Repairs (Pre-)	Households With This Item Complete After Repairs (Post-)*	Percentage Points (Proportional Increase) *Effect Size*
A currently dated Class ABC fire extinguisher is available in or near the kitchen. (N=634)	45%	79%	34 points (+76%) Effect Size: *76%*
No known electrical hazards are present, and kitchens and baths have ground fault circuit interrupters (GFCIs). (N=639)	46%	80%	34 points (+74%) Effect Size: *76%*
A working carbon monoxide detector protects homes that have combustion appliances or an attached garage. (N=616)	54%	83%	29 points (+54%) Effect Size: *73%*
A working smoke detector is on each floor and in or near each bedroom to meet code. (N=638)	58%	86%	28 points (+48%) Effect Size: *73%*
The home is free of active water leaks and serious moisture problems. (N=643)	63%	90%	27 points (+43%) Effect Size: *73%*
Grab bars are strategically placed for those at risk of falls. (N=638)	64%	85%	21 points (+33%) Effect Size: *70%*
The homeowner has safe ingress and egress to the home. (N=651)	74%	93%	19 points (+26%) Effect Size: *68%*
Rainwater is effectively shed and directed away from the structure. (N=657)	73%	91%	18 points (+25%) Effect Size: *68%*
The roof is watertight. (N=655)	74%	92%	18 points (+24%) Effect Size: *68%*
Window and exterior doors open effectively, close and lock securely, and seal well. (N=641)	69%	85%	16 points (+23%) Effect Size: *67%*

[mm] All pre- to post- changes are statistically significant (p<.05) and positive based on McNemar change tests.

[nn] Note that a 50% probability means the likelihood of improvement is no better than chance (50/50). Following Wuensch (Wuensch, K.L. (2015). CL: The Common Language Effect Size Statistic. Retrieved from http://core.ecu.edu/psyc/wuenschk/docs30/CL.pdf), values of CL may be considered small but non-zero at >55%, moderate at >63%, large at >71%, very large at >83%, and extremely large at >91%. Common Language effect size statistics may be read as the likelihood that the average home has received a specific repair or modification from a Rebuilding Together affiliate.

Indicator (N=Number of Projects)	Households With This Item Complete Before Repairs (Pre-)	Households With This Item Complete After Repairs (Post-)*	Percentage Points (Proportional Increase) *Effect Size*
The homeowner has access to a working sink, toilet, and bathtub or shower. (N=641)	78%	95%	17 points (+22%) Effect Size: *68%*
Modifications to toilets and tubs assist those who need help using the toilet or bathing. (N=635)	72%	88%	16 points (+22%) Effect Size: *67%*
Stairs and steps have secure handrails that meet occupants' needs. (N=636)	72%	88%	16 points (+22%) Effect Size: *67%*
Exterior walls have no gaps, cracks, or holes larger than 1/8 inch. (N=642)	75%	88%	13 points (+17%) Effect Size: *65%*
The homeowner can maintain the home's interior temperature in a comfortable range. (N=636)	79%	92%	13 points (+16%) Effect Size: *65%*
Interior paint and wall covering is intact. (N=636)	76%	87%	11 points (+14%) Effect Size: *63%*
Main rooms and stairs are free of tripping hazards. (N=641)	82%	92%	10 points (+12%) Effect Size: *63%*
Main rooms and stairs have adequate lighting for occupants to move about safely. (N=639)	85%	94%	9 points (+11%) Effect Size: *62%*
The kitchen and bathrooms have an exhaust fan that vents outside. (N=629)	73%	81%	8 points (+11%) Effect Size: *62%*
The homeowner has access to a working water heater, refrigerator, and range. (N=640)	86%	95%	9 points (+10%) Effect Size: *62%*
Old, worn carpeting has been replaced, preferably with durable flooring. (N=638)	80%	88%	8 points (+10%) Effect Size: *62%*
The clothes dryer, if present, vents outside through a metal duct with unobstructed airflow. (N=629)	88%	93%	5 points (+6%) Effect Size: *59%*
The home has no live infestation of pests, and sources of attraction are removed. (N=638)	84%	89%	5 points (+6%) Effect Size: *59%*
The numerals in the property's street address are clearly visible from the street. (N=644)	87%	92%	5 points (+6%) Effect Size: *58%*

Indicator (N=Number of Projects)	Households With This Item Complete Before Repairs (Pre-)	Households With This Item Complete After Repairs (Post-)*	Percentage Points (Proportional Increase) *Effect Size*
Water heaters, furnaces, and space heaters that produce carbon monoxide vent outside. (N=611)	94%	97%	3 points (+3%) Effect Size: *57%*

Note: Four of the 25 checklist items had more than 5% missing data; see Appendix D for more details. Source: Rebuilding Together affiliates, 25 Safe and Healthy Housing Priorities Checklist data, 2019–2020. (N=665.)

Appendix C

IMPACT MEASUREMENT SURVEY DATA

The Impact Measurement Survey asked homeowners to rate the condition of their homes on a scale from 1 to 5 before and after our affiliates completed repair work. The table below contains the aggregate results in the form of average scores and change, plus the effect size—this is essentially the importance of the effect.

The average change is the difference between the retrospective pre-score and the post-score (for example, if the average pre-score was 2.00 and the average post-score was 3.00, the average change would be 3.00–2.00=1.00). The proportional increase is the percentage change between the retrospective pre-score and the post-score (continuing the previous example, 1.00 is half of 2.00, so the proportional increase from 2.00 to 3.00 would be +50%). All increases were statistically significant.[oo] The table is ordered by proportional increase, from largest to smallest.

The Common Language effect size[64] appears in *italics* as the last figure in each row. Common Language effect size statistics may be read as the likelihood that the average respondent has reported an improvement in that survey item.[pp]

Table 3. Impact Measurement Survey Results, Pre- and Post- Comparisons

Indicator (N=Number of Respondents)	Average Pre-Score (Retro-spective)	Average Post-Score	Average Change (Proportional Increase) *Effect Size*
Ease of bathing (N=352) (1=Very difficult, 5=Very easy)	2.69	3.82	1.13 point (+42%) Effect Size: *74%*
Ease of ingress/egress (N=377) (1=Very difficult, 5=Very easy)	3.11	4.12	1.01 point (+32%) Effect Size: *74%*
Frequency of stress about home condition (N=377) (1=Always/almost always, 5=Never/almost never)	2.49	3.29	0.80 point (+32%) Effect Size: *68%*
Pride in property (N=379) (1=Not proud at all, 5=Very proud)	3.38	4.32	0.94 point (+28%) Effect Size: *73%*
Ease of cleaning/maintenance (N=355) (1=Very difficult, 5=Very easy)	2.92	3.66	0.74 point (+25%) Effect Size: *67%*
Value of home as family financial asset (N=369) (1=Not valuable at all, 5=Extremely valuable)	3.48	4.20	0.72 point (+21%) Effect Size: *68%*

[oo] All pre- to post- changes are statistically significant ($p < .01$) and positive based on Wilcoxon signed ranks tests.

[pp] A 50% probability means the likelihood of improvement is no better than chance (50/50). Following Wuensch (Wuensch, K. L. (2015). CL: The Common Language Effect Size Statistic. Retrieved from http://core.ecu.edu/psyc/wuenschk/docs30/CL.pdf), values of CL may be considered small but non-zero at >55%, moderate at >63%, large at >71%, very large at >83%, and extremely large at >91%.

Indicator (N=Number of Respondents)	Average Pre-Score (Retro-spective)	Average Post-Score	Average Change (Proportional Increase) *Effect Size*
Confidence in activities of daily living (N=353) (1=Not at all confident, 5=Extremely confident)	3.28	3.92	0.64 point (+20%) Effect Size: *64%*
Ease of movement (N=321) (1=Very difficult, 5=Very easy)	3.55	4.15	0.61 point (+17%) Effect Size: *67%*
Frequency of feeling happy (N=375) (1=Always/almost always, 5=Never/almost never)	3.46	4.03	0.58 point (+17%) Effect Size: *66%*
Likelihood of aging in place (N=366) (1=Not at all likely, 5=Extremely likely)	4.13	4.64	0.52 point (+13%) Effect Size: *64%*
Ease of food preparation (N=347) (1=Very difficult, 5=Very easy)	3.50	3.96	0.47 point (+13%) Effect Size: *62%*
Overall mental health (N=363) (1=Poor, 5=Excellent)	3.13	3.45	0.32 point (+10%) Effect Size: *58%*
Overall physical health (N=383) (1=Poor, 5=Excellent)	2.54	2.79	0.25 point (+10%) Effect Size: *57%*
Feel welcomed by/included in neighborhood (N=374) (1=Strongly disagree, 5=Strongly agree)	3.71	4.02	0.31 point (+8%) Effect Size: *58%*

Note: Five of the 14 items had more than 15% missing data; see Appendix D for more details. Source: Rebuilding Together affiliates, Impact Measurement Survey data, 2020–2021. (N=424.)

Appendix D

MISSING DATA PATTERNS

25 Safe and Healthy Housing Priorities Checklist Data

Four checklist items were missing at a rate of more than 5%. This table shows patterns in the missing data based on statistical significance testing. Orange-shaded boxes indicate data are missing in non-random ways; this is further described below the table.

Missing Item	Lower $ invested in project by affiliate	Lower impact expected by affiliate	Any individual with disabilities in home	Homeowner is not white
9. Carbon monoxide detector in place	↑ missing*		↑ missing***	↑ missing**
11. Carbon monoxide-exhaust appliances vented properly	↑ missing**		↑ missing***	↑ missing*
14. Kitchen exhaust fan in place	↑ missing*	↑ missing**		
21. Dryer vented properly			↑ missing*	

Note: Statistical significance at * p < 0.05, ** p < 0.01, *** p < 0.001

Income: Appliances that exhaust carbon monoxide, such as clothes dryers, may be less likely to be present in lower-income households. Affiliates had no way to indicate that the item was not applicable, which may explain the pattern of missing data by household income level for checklist items 9, 11, and 21. Some lower-income households may not have a kitchen. Again the affiliates had no way to indicate that the item was not applicable, which may explain the pattern of missing data by household income level for checklist item 14.

See Recommendations section of report for suggestions regarding other missing-data patterns.

Impact Measurement Survey Data

Six survey items were missing at a rate of more than 15%. This table shows the patterns to the missing data based on statistical significance testing. Orange-shaded boxes indicate data are missing in non-random ways; this is further described below the table.

Missing Item	Lower $ invested in project by affiliate	Medium impact expected by affiliate[qq]	Homeowner is a woman	No veteran in home	Homeowner is age 75-84
Costs changed due to repairs		↑ missing*	↑ missing**	↑ missing**	
Confidence in activities of daily living			↑ missing*		
Ease of bathing			↑ missing**		
Ease of cleaning/ maintenance					↑ missing*
Ease of movement	↑ missing*				
Ease of food preparation					

Note: Statistical significance at * $p < 0.05$, ** $p < 0.01$

It is unclear why certain data are missing non-randomly. We can only speculate about the reasons (e.g., a smaller investment in the project may mean that a home did not receive repairs that would improve residents' ease of movement). but as with the missing checklist data, it is recommended that these issues be discussed by Rebuilding Together's national office with its affiliates to determine why such patterns might exist.

There was a substantial amount of missing data across all surveys collected by Broward (more than 30% missing on most items) and Oklahoma City (more than 20% missing on many items). Because Baltimore used the pilot version of the Impact Measurement Survey, seven Phase 2 survey items that were not part of the pilot survey were missing across all of its surveys.

[qq] Compared to small or large impact.

Appendix E

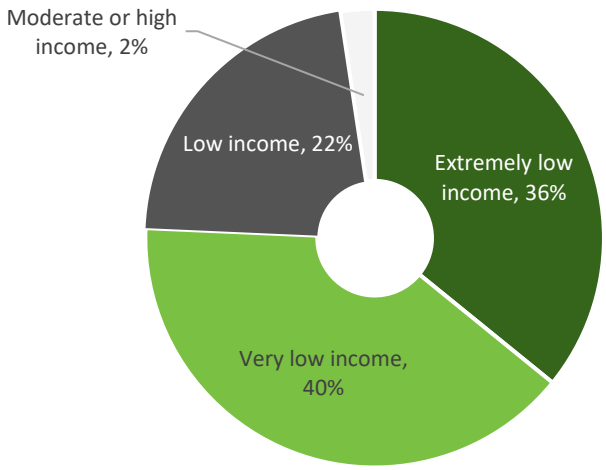
IMPACT MEASUREMENT SURVEY RESPONDENT DEMOGRAPHICS

The demographics of households that responded to the Impact Measurement Survey are shown in this appendix.

Income Level

The average household income among survey respondents was $22,980. Over one third (36%) of respondents are extremely low-income, and 40% are very low-income. The chart below shows their distribution by household income category.

Figure 40. More than one in three survey respondents were extremely low-income.



Source: Rebuilding Together affiliates, 2019–2020. (N=403.)

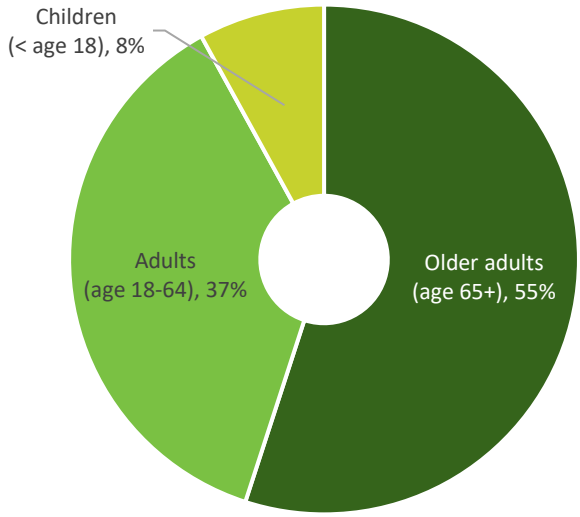
Household Size and Demographics

The majority of survey respondents live alone (60%, N=422), and most households are predominantly female (65%, N=596 residents).[rr] Over half of households include a resident with a disability (51%, N=423), and about one in six have a veteran of the U.S. military (16%, N=421).

While older adults represented half of the total number of residents of survey respondents' households (55%, N=631), nearly three quarters (74%, N=631) of households had at least one older adult resident. Fewer than one in 10 (9%) had one or more children living in the home; children made up 8% of all household residents. The chart below shows the age distribution of residents.

[rr] In households that responded to the survey, less than 1 percent of residents identified as gender non-binary (N=346 residents).

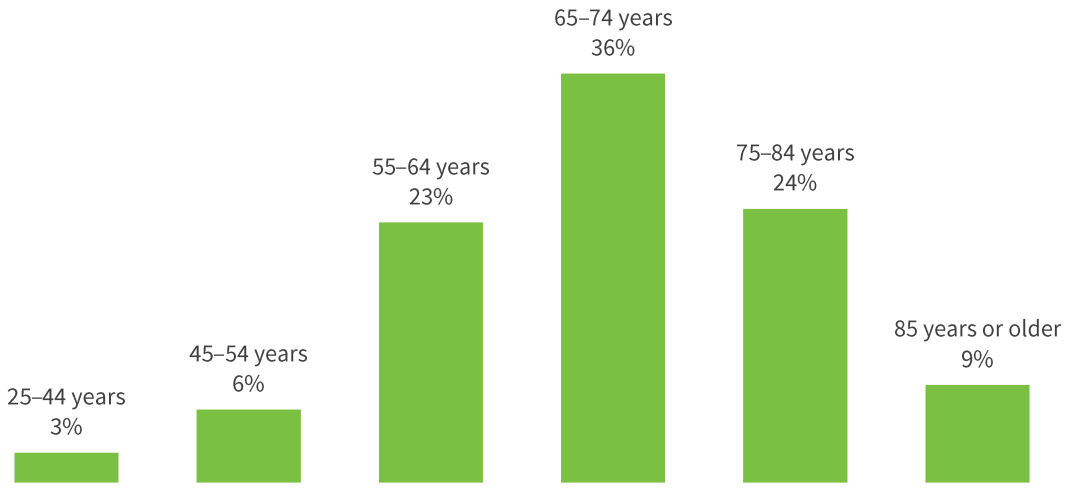
Figure 41. Over half of the residents of survey respondents' households were older adults.



Source: Rebuilding Together affiliates, 2019–2020. (N=631.)

Two-thirds of homeowners responding to the survey were women (68%, N=422). The majority (68%) of all responding homeowners are adults age 65 or older; very few (9%) are age 54 or younger. The chart below shows the distribution of age ranges among responding homeowners.

Figure 42. The majority of responding homeowners were older adults (age 65+).

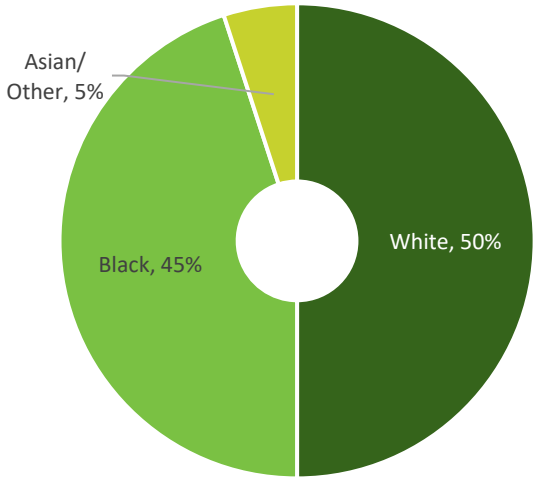


Source: Rebuilding Together affiliates, 2019–2020. (N=422.)

Race and Ethnicity

Unlike the set of homeowners representing all projects served by participating affiliates, half of the homeowners who responded to the Impact Measurement Survey are white. Most of the rest (45%) are Black, and a small percentage (5%) are Asian, multiethnic, or of some other race. A few (6%) of the homeowners are also of Latinx ethnicity (any race).

Figure 43. Half of responding homeowners were white.



Source: Rebuilding Together affiliates, 2019–2020. (N=407.)

Appendix F

DEMOGRAPHIC COMPARISONS

This table provides the demographics of all households served by Rebuilding Together nationwide, the households served by Phase 2 affiliates, and the households served in Phase 2 that responded to the Impact Measurement Survey. Their side-by-side comparison reveals their similarities and differences. For key insights, see page 17 of this report.

Table 4. Comparison of Demographics of Households Served

Demographic Statistic	All Households Served Nationwide (Total N=6,136)	Households Served by Phase 2 Affiliates (Total N=1,012)	Households That Responded to the Impact Survey (Total N=429)
Household income:	N=7,649	N=187	N=92
Median annual income	$21,805	$19,307	$20,208
Extremely low-income[ss]	47%	40%	36%
Very low-income	32%	36%	40%
Low-income	17%	22%	22%
Moderate- or high-income	4%	2%	2%
Older adult (65+) owns home	N/A	69% N=991	68% N=422
Older adult (65+) resides in home	68% N=6,040	70%* N=838	74% N=387
Child (0–17 years old) resides in home	12% N=6,040	11%* N=843	9% N=390
Person with disabilities resides in home	48% N=6,040	50% N=999	51% N=423
Veteran resides in home	12% N=6,040	14% N=996	16% N=421

[ss] See page 20 for definitions of income categories.

Demographic Statistic	All Households Served Nationwide (Total N=6,136)	Households Served by Phase 2 Affiliates (Total N=1,012)	Households That Responded to the Impact Survey (Total N=429)
Race:	N=7,284	N=978	N=407
Black	43%	51%**	45%
White	37%	44%**	50%
Multiracial/Other	16%	3%	3%
Asian/Pacific Islander	4%	2%	2%
Ethnicity:	N=9,398	N=930	N=390
Latinx (of any race)	10%	6%	6%

Note: Statistical significance at * $p < 0.05$, ** $p < 0.01$; comparison is between households served by Phase 2 affiliates and households that responded to the Impact Measurement Survey. Source: Rebuilding Together affiliates, 2019–2020. (N=1,012 households.) Rebuilding Together national office, 2020. (N=6,136 households.)

Appendix G

INSTRUMENTS

In this appendix are the 25 Safe and Healthy Housing Priorities Checklist and the Impact Measurement Survey. Most affiliates create their own checklists based on the national 25 Safe and Healthy Housing Priorities Checklist.

Endnotes

[1] U.S. Department of Housing and Urban Development (HUD). (Undated). *Making Homes Healthier for Families.* Retrieved from https://www.hud.gov/program_offices/healthy_homes/healthyhomes

[2] Braveman, P. (2014). What are health disparities and health equity? We need to be clear. Nursing in 3D: Workforce diversity, health disparities, and social determinants of health. *Public Health Reports,* 2014 Supplement *2*(129), 5–8.

[3] Magnan, S. (2017). Social Determinants of Health 101 for Health Care: Five Plus Five. *National Academy of Medicine.* Retrieved from https://nam.edu/social-determinants-of-health-101-for-health-care-five-plus-five/

[4] Social determinants of health are "conditions in the places where people live, learn, work, and play that affect a wide range of health risks and outcomes." See: Centers for Disease Control and Prevention. (2021). *About Social Determinants of Health (SDOH).* Retrieved from https://www.cdc.gov/socialdeterminants/about.html

[5] Joint Center for Housing Studies of Harvard University. (2020). *The State of the Nation's Housing 2020.* Joint Center for Housing Studies, Harvard Graduate School of Design, Harvard Kennedy School. Retrieved from https://www.jchs.harvard.edu/sites/default/files/reports/files/Harvard_JCHS_The_State_of_the_Nations_Housing_2020_Report_Revised_120720.pdf

[6] U.S. Census Bureau. (2020). *2019 American Housing Survey Data Now Available.* Press Release Number CB20-TPS.59, September 16, 2020. Retrieved from https://www.census.gov/newsroom/press-releases/2020/2019-american-housing-survey.html

[7] National Resource Center. (2010). Measuring outcomes. *Strengthening Nonprofits: A Capacity Builder's Resource Library.* Retrieved from http://www.strengtheningnonprofits.org/resources/guidebooks/MeasuringOutcomes.pdf

[8] A typical survey draws a 33% response rate. See: Lindemann, N. (2019). *What's the Average Survey Response Rate?* Retrieved from https://surveyanyplace.com/blog/average-survey-response-rate/. Response rates to telephone surveys have dropped steadily over the past decades. See also: Kohut, A., Keeter, S., Doherty, C., Dimock, M., & Christian, L. (2012). *Assessing the representativeness of public opinion surveys.* Washington, DC: Pew Research Center.

[9] McGraw, K. O., & Wong, S. P. (1992). A common language effect size statistic. *Psychological Bulletin*, *111*(2), 361–365. See also: Coe, R. (2002). *It's the Effect Size, Stupid: What Effect Size Is and Why It Is Important.* Annual Conference of the British Educational Research Association. Retrieved from https://www.leeds.ac.uk/educol/documents/00002182.htm

[10] Wuensch, K. L. (2015). *CL: The Common Language Effect Size Statistic.* Retrieved from http://core.ecu.edu/psyc/wuenschk/docs30/CL.pdf

[11] U.S. Department of Housing and Urban Development. (2020). Income limits. *HUD User*, Office of Policy Development and Research. Retrieved from https://www.huduser.gov/portal/datasets/il.html.

[12] Social determinants of health are "conditions in the places where people live, learn, work, and play that affect a wide range of health risks and outcomes." See https://www.cdc.gov/socialdeterminants/about.html for more information.

[13] Maqbool, N., Viveiros, J., and Ault, M. (2015). The Impacts of Affordable Housing on Health: A Research Summary. *INSIGHTS from Housing Policy Research*, Center for Housing Policy, National Housing Conference, Washington, DC, April 2015. Retrieved from https://www.rupco.org/wp-content/uploads/pdfs/The-Impacts-of-Affordable-Housing-on-Health-CenterforHousingPolicy-Maqbool.etal.pdf

[14] Taylor, L. (2018). Housing and Health: An Overview of the Literature. *Health Affairs*. Retrieved from https://www.healthaffairs.org/do/10.1377/hpb20180313.396577/full/. See also Bailey, P. (2020). *Housing and Health Partners Can Work Together to Close the Housing Affordability Gap.* Center on Budget and Policy Priorities. Retrieved from https://www.cbpp.org/research/housing/housing-and-health-partners-can-work-together-to-close-the-housing-affordability.

[15] Viveiros, J., & Brennan, M. (2014). *Aging in Every Place: Supportive Service Programs for High and Low Density Communities.* Center for Housing Policy, National Housing Conference, Washington, DC, March 2014.

[16] Home Safety Council. (2004). *The State of Home Safety in America: Facts About Unintentional Injuries in the Home.* Runyan, C., & Casteel, C. (Eds.). Washington, DC: Home Safety Council.

[17] Moreland, B., Kakara, R., & Henry, A. (2020.) Trends in Nonfatal Falls and Fall-Related Injuries Among Adults Aged ≥65 Years — United States, 2012–2018. *Morbidity Mortality Weekly Report*. 69: 875–881. Retrieved from https://www.cdc.gov/mmwr/volumes/69/wr/mm6927a5.htm?s_cid=mm6927a5_w

[18] Florence, C.S., Bergen, G., Atherly, A., Burns, E.R., Stevens, J.A., & Drake, C. (2018). Medical Costs of Fatal and Nonfatal Falls in Older Adults. *Journal of the American Geriatrics Society*, 66 (4): 693–698. Retrieved from https://agsjournals.onlinelibrary.wiley.com/doi/full/10.1111/jgs.15304

[19] Burns, E. R., Stevens, J. A., & Lee, R. (2016). The direct costs of fatal and non-fatal falls among older adults—United States. *Journal of Safety Research, 58*, 99–103. Retrieved from https://www.aota.org/About-Occupational-Therapy/Professionals/PA/Facts/Fall-Prevention.aspx

[20] Nikolaus, T. & Bach, M. (2003). Preventing falls in community-dwelling frail older people using a Home Intervention Team (HIT): Results from the Randomized Falls–HIT Trial. *Journal of the American Geriatrics Society*, *51*(3), 300–305. Retrieved from http://plaza.ufl.edu/mlwsail/4_Preventing%20falls%20frail_marie.pdf

[21] Marshall, S. W., Runyan, C. W., Yang, J., Coyne-Beasley, T., Waller, A. E., Johnson, R. M., & Perkis, D. (2005). Prevalence of selected risk and protective factors for falls in the home. *American Journal of Preventive Medicine*, 28(1), 95–101. Retrieved from https://www.researchgate.net/publication/8103519_Prevalence_of_selected_risk_and_protective_factors_for_falls_in_the_home

[22] Jackson, G., Thornley, S., Woolston, J., Papa, D., Bernacchi, A., & Moore, T. 2011. Reduced Acute Hospitalisation with the Healthy Housing Programme. *Journal of Epidemiology and Community Health*, 65 (7): 588–593.

[23] Karlsson, M. K., Magnusson, H., von Schewelov, T., & Rosengren, B. E. (2013). Prevention of falls in the elderly: A review. *Osteoporosis International*, *24*(3), 747–762. Retrieved from https://www.panoramaortho.com/wp-content/uploads/2017/05/compressedFall-Prevention.pdf

[24] Keall, M. D., Pierse, N., Howden-Chapman, P., Cunningham, C., Cunningham, M., Guria, J., & Baker, M. G. (2015). Home modifications to reduce injuries from falls in the Home Injury Prevention Intervention (HIPI) study: a cluster-randomised controlled trial. *The Lancet*, *385*(9964), 231–238. Retrieved from https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)61006-0/fulltext

[25] World Health Organization. (2018). *WHO Housing and Health Guidelines.* Retrieved from https://www.who.int/publications-detail/who-housing-and-health-guidelines

[26] Fisk, W. J., Lei-Gomez, Q., & Mendell, M. J. (2007). Meta-analyses of the associations of respiratory health effects with dampness and mold in homes. *Indoor Air*, *17*(4), 284–296. Retrieved from https://iaqscience.lbl.gov/sites/all/files/mold-1.pdf

[27] Dimitroulopoulou, C. (2012). Ventilation in European dwellings: A review. *Building and Environment*, 47, 109–125.

[28] Ciaccio, C. E., Kennedy, K., & Portnoy, J. M. (2012). A new model for environmental assessment and exposure reduction. *Current Allergy and Asthma Reports*, *12*(6), 650–655. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3493798/

[29] Rodgers, S.E., Bailey, R., Johnson, R., Poortinga, W., Smith, R., Berridge, D., Anderson, P., Phillips, C., Lannon, S., Jones, N. and Dunstan, F.D. (2018). Health impact, and economic value, of meeting housing quality standards: a retrospective longitudinal data linkage study. *Public Health Research*, *6*(8). Retrieved from http://orca.cf.ac.uk/113179/1/Rodgers%20et%20al%202018%20Public%20Health%20Research_6_8.pdf

[30] Norton, R. A., & Brown, B. W. (2014). Green & Healthy Homes Initiative: Improving Health, Economic and Social Outcomes Through Integrated Housing Intervention, *Environmental Justice*, *7*(6): 1-7. See also Kersten, E. E., LeWinn, K. Z., Gottlieb, L., Jutte, D. P., & Adler, N. E. (2014). San Francisco Children Living in Redeveloped Public Housing Used Acute Services Less Than Children in Older Public Housing, *Health Affairs*, *33*(12): 2230.

[31] This survey item was modeled on the Centers for Disease Control and Prevention's health status question in its annual Behavioral Health Risk Factor Surveillance System survey. See question C01.01 in https://www.cdc.gov/brfss/questionnaires/pdf-ques/2019-BRFSS-Questionnaire-508.pdf

[32] Kercsmar, C. M., Dearborn, D. G., Schluchter, M., Xue, L., Kirchner, H. L., Sobolewski, J., Greenberg, S. J., Vesper, S. J. & Allan, T. (2006). Reduction in asthma morbidity in children as a result of home remediation aimed at moisture sources. *Environmental Health Perspectives*, *114*(10), 1574–1580. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1626393/

[33] Burr, M. L., Matthews, I. P., Arthur, R. A., Watson, H. L., Gregory, C. J., Dunstan, F. D. J., & Palmer, S. R. (2007). Effects on patients with asthma of eradicating visible indoor mould: A randomised controlled trial. *Thorax*, *62*(9), 767–772. Retrieved from https://thorax.bmj.com/content/thoraxjnl/62/9/767.full.pdf

[34] Leikin, J. B., Clifton, J. C., & Hanashiro, P. K. (1999). Carbon monoxide poisoning. *New England Journal of Medicine*, *340*, 1290. Retrieved from https://www.nejm.org/doi/full/10.1056/NEJM199904223401616

[35] Runyan, C. W., Johnson, R. M., Yang, J., Waller, A. E., Perkis, D., Marshall, S. W., Coyne-Beasley, T., & McGee, K. S. (2005). Risk and protective factors for fires, burns, and carbon monoxide poisoning in U.S. households. *American Journal of Preventive Medicine*, *28*(1), 102–108. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3066116/

[36] Hampson, N. B. (2016). Cost of accidental carbon monoxide poisoning: A preventable expense. *Preventive Medicine Reports*, *3*, 21–24. Retrieved from https://www.sciencedirect.com/science/article/pii/S2211335515001679

[37] Yoon, S. S., MacDonald, S. C., & Parrish, R. G. (1998). Deaths from unintentional carbon monoxide poisoning and potential for prevention with carbon monoxide detectors. *Journal of the American Medical Association*, *279*(9):685–687. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/9496987

[38] A randomized controlled trial of an educational intervention that included a free carbon monoxide alarm found increases (though not statistically significant) in knowledge about carbon monoxide safety and use of a carbon monoxide detector. McKenzie, L. B., Roberts, K. J., Kaercher, R. M., Collins, C. L., Comstock, R. D., Fernandez, S., Abdel-Rasoul, M., Casavant, M. J., & Mihalov, L. (2016). Paediatric Emergency Department-Based Carbon Monoxide Detector Intervention: A Randomised Trial. *Injury Prevention: Journal of the International Society for Child and Adolescent Injury Prevention*, *23*(5), 314–320. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5644346/

[39] Emmerich, S. J., Reed, C. H., & Gupta, A. (2005). *Modeling the IAQ impact of HHI interventions in inner-city housing*. U.S. Department of Commerce, Technology Administration, National Institute of Standards and Technology. Retrieved from https://nvlpubs.nist.gov/nistpubs/Legacy/IR/nistir7212.pdf

[40] Esrey, S. A., Potash, J. B., Roberts, L., & Shiff, C. (1991). Effects of improved water supply and sanitation on ascariasis, diarrhoea, dracunculiasis, hookworm infection, schistosomiasis, and trachoma. *Bulletin of the World Health Organization*, *69*(5), 609. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2393264/pdf/bullwho00050-0101.pdf

[41] Aiello, A. E., & Larson, E. L. (2002). What is the evidence for a causal link between hygiene and infections? *The Lancet Infectious Diseases*, *2*(2), 103–110. Retrieved from https://deepblue.lib.umich.edu/bitstream/handle/2027.42/55441/Aiello%20A,%20What%20is%20the%20evidence%20for%20a%20causal%20link%20between%20hygien%20and%20infections,%202002.pdf?sequence=1

[42] Broughton, M. A., Janssen, P. S., Hertzman, C., Innis, S. M., & Frankish, C. J. (2006). Predictors and outcomes of household food insecurity among inner-city families with preschool children in Vancouver. *Canadian Journal of Public Health*, 214–216.

[43] Dean, M., Raats, M. M., Grunert, K. G., & Lumbers, M. (2009). Factors influencing eating a varied diet in old age. *Public Health Nutrition*, *12*(12), 2421–2427

[44] Fausset, C. B., Kelly, A. J., Rogers, W. A., & Fisk, A. D. (2011). Challenges to aging in place: Understanding home maintenance difficulties. *Journal of Housing for the Elderly*, *25*(2), 125-141. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3209521/

[45] Note that respondents to AARP's survey were not only homeowners but also renters. Binette, J. & Vasold, K. (2019). 2018 Home and Community Preferences: A National Survey of Adults Ages 18-Plus. *AARP Research.* Retrieved from https://www.aarp.org/research/topics/community/info-2018/2018-home-community-preference.html

[46] Viveiros, J., & Brennan, M. (2014). *Aging in Every Place: Supportive Service Programs for High and Low Density Communities.* Center for Housing Policy, National Housing Conference, Washington, DC, March 2014.

[47] Nwogugu, M. (2008). Prospective home-buyers' propensity-to-buy in the housing industry. In F. F. Orsucci & N. Sala (Eds.), *Developments in Chaos and Complexity Research* (pp. 209–230). New York: Nova Science Publishers, Inc.

[48] Smith, S. J., Easterlow, D., Munro, M., & Turner, K. M. (2003). Housing as health capital: how health trajectories and housing paths are linked. *Journal of social issues*, *59*(3), 501–525. Retrieved from https://www.humanitarianlibrary.org/sites/default/files/2018/10/Housing%20as%20Health%20Capital%20How%20Health%20Trajectories%20and%20Housing%20Paths%20Are%20Linked.pdf

[49] World Health Organization. (2018). *WHO Housing and Health Guidelines.* Retrieved from https://www.who.int/publications-detail/who-housing-and-health-guidelines

[50] This survey item was modeled on the Centers for Disease Control and Prevention's health status question in its annual Behavioral Health Risk Factor Surveillance System survey. See question C01.01 in https://www.cdc.gov/brfss/questionnaires/pdf-ques/2019-BRFSS-Questionnaire-508.pdf

[51] Liddell, C., & Guiney, C. (2015). Living in a cold and damp home: Frameworks for understanding impacts on mental well-being. *Public Health*, *129*(3), 191–199. Retrieved from https://pure.ulster.ac.uk/ws/files/11471481/mental_health_framework_paper.pdf

[52] Thomson, H., Thomas, S., Sellstrom, E., & Petticrew, M. (2013). Housing improvements for health and associated socio-economic outcomes. *Cochrane Database of Systematic Reviews*, 2. Retrieved from https://researchonline.lshtm.ac.uk/856558/1/CD008657.pdf

[53] Bucks, B. K., Kennickell, A. B., Mach, T. L., & Moore, K. B. (2009). Changes in U.S. family finances from 2004–2007: Evidence from the Survey of Consumer Finances. *Federal Reserve Bulletin, 95,* A1–A55. Retrieved from http://www.federalreserve.gov/pubs/bulletin/2009/pdf/scf09.pdf

[54] Kirkpatrick, S. I., & Tarasuk, V. (2011). Housing circumstances are associated with household food access among low-income urban families. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, *88*(2), 284–296. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3079041/

[55] Maqbool, N., Viveiros, J., and Ault, M. (2015). The Impacts of Affordable Housing on Health: A Research Summary. *INSIGHTS from Housing Policy Research*, The Center for Housing Policy, The National Housing Conference. Retrieved from https://www.rupco.org/wp-content/uploads/pdfs/The-Impacts-of-Affordable-Housing-on-Health-CenterforHousingPolicy-Maqbool.etal.pdf

[56] Wolff, E. N. (2002). Inheritances and wealth inequality. *American Economic Review. 90*(2): 260–264. In the U.S., family wealth is also significantly lower among black and Latinx families than among whites. See: Hyman, M. (2019). The Impact of Financial Literacy on Homeownership: Financial Literacy Indicators. *National Association of Realtors.* Retrieved from https://www.nar.realtor/blogs/economists-outlook/the-impact-of-financial-literacy-on-homeownership-financial-literacy-indicators

[57] Galster, G., & Hesser, G. (1982). The social neighborhood: An unspecified factor in homeowner maintenance? *Urban Affairs Quarterly*, *18*(2), 235–254.

[58] Ellen, I. G., & Voicu, I. (2006). Nonprofit housing and neighborhood spillovers. *Journal of Policy Analysis and Management, 25*(1), 31–52.

[59] Robinette, J. W., Charles, S. T., Mogle, J. A., & Almeida, D. M. 2013. Neighborhood Cohesion and Daily Well-being: Results from a Diary Study. *Social Science & Medicine*, 96: 174–182.

[60] Hwang, E., Cummings, L., & Sixsmith, J. (2011). Impacts of home modifications on aging-in-place. *Journal of Housing for the Elderly*, *25*(3), 246–257.

[61] Van der Bos, A., & Meijer, F. M. (2005). Existing housing stock: How to improve the building quality. In *4th Triennial International Conference, Rethinking and revitalizing construction safety, health, environment and quality, CIB73, 528–543.* Construction Research Education and Training Enterprises. Retrieved from https://pdfs.semanticscholar.org/4c91/d1e927c55dde3c34c11dbaaac5a04236f45c.pdf

[62] Rohe, W. M., & Stewart, L. S. (1996). Homeownership and neighborhood stability. *Housing Policy Debate*, *7*(1), 37–81. Retrieved from https://www.dallasareahabitat.org/wp-content/uploads/2012/09/homeownership-and-neighborhood-stability.pdf

[63] U.S. Department of Housing and Urban Development (HUD). (Undated). *Choice Neighborhoods.* Retrieved from https://www.hud.gov/cn

[64] McGraw, K. O., & Wong, S. P. (1992). A common language effect size statistic. *Psychological Bulletin*, *111*(2), 361–365. See also: Coe, R. (2002). *It's the Effect Size, Stupid: What Effect Size Is and Why It Is Important.* Annual Conference of the British Educational Research Association. Retrieved from https://www.leeds.ac.uk/educol/documents/00002182.htm