



Report



**SAFE
HOMES AND
COMMUNITIES
FOR EVERYONE
SEE THE
SOCIAL VALUE**



rebuildingtogether.org

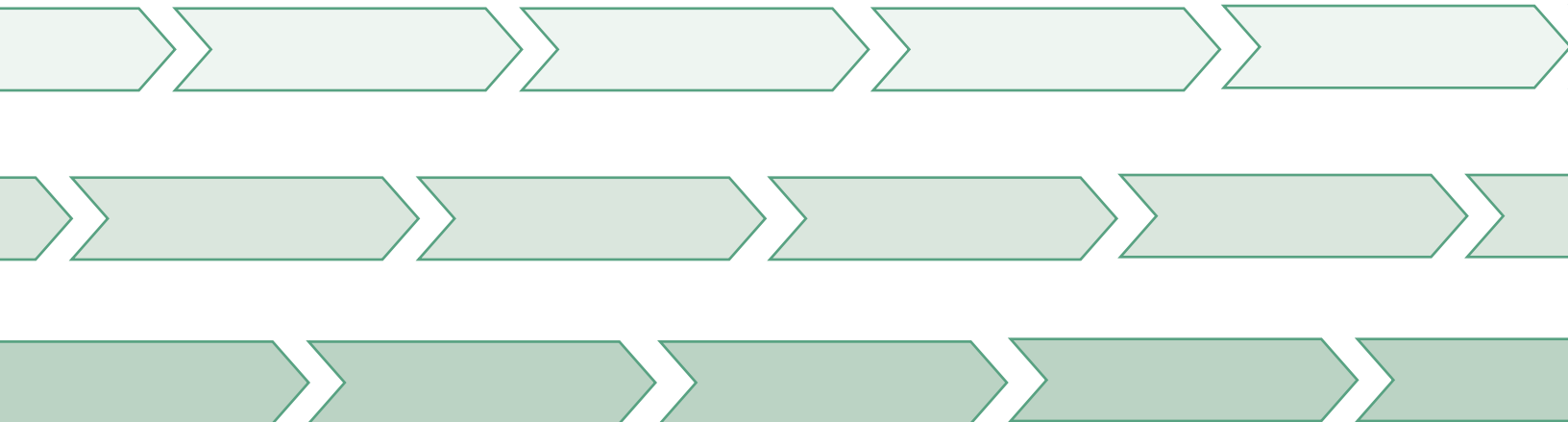


Technical Document for:

Rebuilding Together

November 19th, 2021

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TECHNICAL DOCUMENT FOR REBUILDING TOGETHER

Executive Summary.....	05
Introduction.....	06
Structuring the Analysis.....	06
Logic Model.....	11
Projected Costs.....	15
Projected Outcomes.....	17
Projected Social Return on Investment.....	26
Discussion on Methodology and Data Quality.....	29
Takeaways and Recommendations.....	34
Impact Communication.....	38
Appendix A: Sensitivity Analysis.....	42
Appendix B: Cost estimation details.....	43
Appendix C: SROI for homeowner at risk of fall.....	45
Appendix D: Monetized Pathways.....	48
Appendix E: Levels of Evidence and Bibliography.....	64
Appendix F: Glossary.....	73

About this Report

Ecotone Analytics conducted this impact analysis and calculated the projected social return on investment for Rebuilding Together. This report considers the value of providing safe and healthy housing repairs and modifications at no cost to low-income homeowners in the U.S.

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Directors of three affiliates

- Caleb Marshall, Executive Director, Rebuilding Together Seattle;
 - RD Bonnaghan, Executive Director, Rebuilding Together North Central Florida;
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-
- Jonathan Wilson, Deputy Director and CFO, National Center for Healthy Housing
 - Dr. Tiffany Manuel, CEO and President, The Case Made

About Ecotone Analytics

Ecotone Analytics is an impact accounting organization that does benefit-cost analysis for clients' social and environmental impacts. Combining evidence-based research analysis and monetization of impact outcomes, Ecotone derives a social return on investment ratio and identifies the key stakeholder groups to whom those impact benefits accrue. Results are communicated using a proprietary visualization of the flows of value that result from the initial investment.

Disclaimer: This assessment addresses the impact measurement and management systems, practices, and metrics employed by the impact assessment consultants. It does not address financial performance and is not a recommendation to invest. Each investor must evaluate whether a contemplated investment meets the investor's specific goals and risk tolerance. Ecotone Analytics GBC (Ecotone), its staff, and Ecotone analysts are not liable for any decisions made by any recipient of this assessment.

This assessment relies on the written and oral information provided by the analyst at the time of the Ecotone analysis. Under no circumstances will Ecotone, its staff, or the Ecotone analysts have any liability to any person or entity for any loss of damage in whole or in part caused by, resulting from, or relating to any error (negligent or otherwise) or other circumstances related to this assessment.

THE SOCIAL IMPACT OF REBUILDING TOGETHER

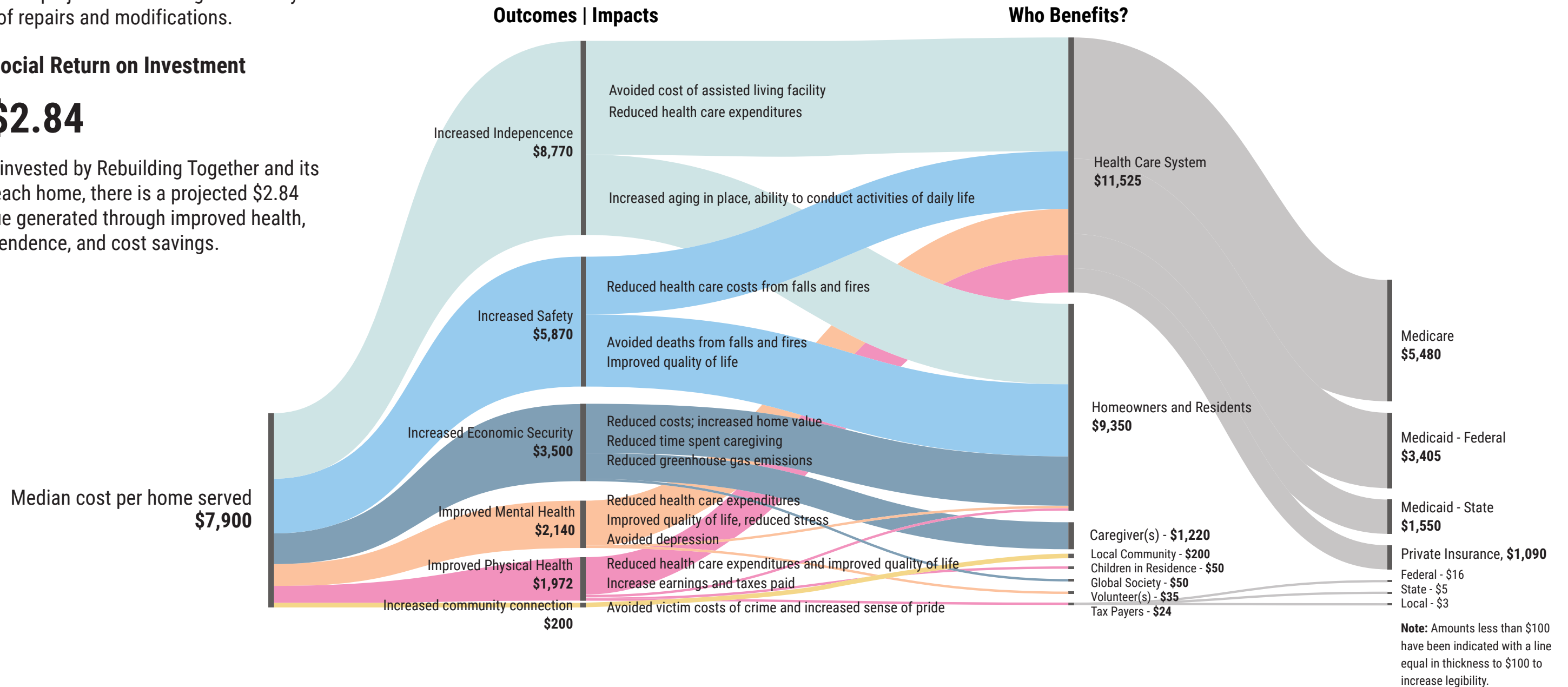
This impact value map shows the median cost per household receiving Safe and Healthy Housing repairs and modifications delivered by Rebuilding Together affiliates, and the projected benefits generated by the average mix of repairs and modifications.

Projected Social Return on Investment

\$1 → \$2.84

For every \$1 invested by Rebuilding Together and its affiliates in each home, there is a projected \$2.84 in social value generated through improved health, safety, independence, and cost savings.

Estimated Return on Investment per Home \$22,452



EXECUTIVE SUMMARY

Ecotone Analytics conducted an impact analysis and calculated a social return on investment (SROI) for Rebuilding Together's safe and healthy housing repairs and modifications. Rebuilding Together and its affiliates are committed to delivering essential home repairs to help low-income homeowners stay in their homes.

This analysis began with scoping the elements of Rebuilding Together's work to be included in the analysis and an agreed upon depiction of these programmatic elements in a logic model, i.e. the roadmap for how a given set of inputs and activities will generate the outcomes and impact desired. From there, external literature's study of the effects of safe and healthy housing repairs including the Eight Principles of Healthy Homes - keep it dry, clean, pest-free, safe, contaminant-free, well-ventilated, maintained and thermally controlled how they can impact the impact domains of safety, independence, physical health, mental health, economic security and community connection. The review of this literature informed the identification of outcomes to be monetized. The monetization process was done conservatively to avoid risk of overclaiming impact as well as giving consideration to impact that cannot be attributed to Rebuilding Together services.

Following our research and analysis, we project that the social return on investment (SROI) supported by Rebuilding Together's safe and healthy housing repairs and modifications is \$2.84. That is, **for every \$1 invested by Rebuilding Together and its affiliates, a projected \$2.84 in social value is generated.** As this analysis will show, housing can have a significant impact on an individual's health, both directly due to the environmental conditions, but also indirectly through the economic security of the residents and the community context they live within.

Based on this analysis, we have identified recommendations for future impact measurement, operational management, and strategic opportunities to consider pursuing. This includes leveraging the United Nations' Sustainable Development Goals (UN SDGs) and the Impact Management Project's 5 dimensions of impact to communicate the type of change being facilitated by Rebuilding Together. Further discussion on recommendations are included starting on page 34.

INTRODUCTION AND RESEARCH QUESTION

Rebuilding Together is a national nonprofit organization repairing the homes of neighbors in need. Through a national network of affiliates, Rebuilding Together works with community leaders, long-term residents, funders, corporations, public agencies and volunteers to foster dialogue and create safe, healthy communities together across the country. Rebuilding Together operates four core programs: 1) Safe at Home; 2) Disaster Readiness and Response; 3) Building a Healthy Neighborhood; and 4) She Builds. Across these programs are the Eight Principles of Healthy Homes which Rebuilding Together adheres to through their Safe and Healthy (SHH) Housing Priorities checklist which affiliates can use to check off the 25 home characteristics that support safe and healthy homes. Rebuilding Together adopts a deeper and longer-term focus at the neighborhood level by making a multiyear commitment to partner with neighbors, volunteers, community leaders and local organizations to revitalize target neighborhoods.

Based on the 25 SHH Priorities, Ecotone Analytics conducted an impact analysis and calculated a social return on investment (SROI) for Rebuilding Together. The analysis takes a benefit-cost approach to external literature of the highest available level of evidence of causality to project the social value supported by the average mix of services delivered to homes.

Ecotone was guided by the following research question:

What is the estimated social return on investment for Rebuilding Together's safe and healthy housing repairs and modifications, the key outcomes supported and to whom do the benefits accrue?

STRUCTURING THE ANALYSIS

Through its milestone meeting process, Ecotone Analytics developed the scope of this analysis with the Rebuilding Together team, three participating affiliates as well as through its own review of secondary research.” change to “During its milestone meeting process, Ecotone Analytics developed the scope of this analysis with the Rebuilding Together team, three participating affiliates as well as through its own review of secondary research. The scoping process involved understanding the role of Rebuilding Together, its programs, the role of the affiliates, the types of services delivered, cost of services delivered, characteristics of the neighbors receiving services, neighborhood context, among others. This analysis then explored the available research and data on home repairs and modifications, aligning evidence with the services provided by Rebuilding Together affiliates to inform our projections of the potential value created. Table 1 provides the resulting scoping summary that guided the analysis.

Table 1. Rebuilding Together Scoping Summary*

SCOPE	Projecting the social return on investment from Rebuilding Together's safe and healthy housing repairs and modifications (driven by Safe and Healthy Housing (SHH) Priorities checklist).
PROJECT GOALS	Rebuilding Together would like to tell a better story about the value of their work that is based on research without over-claiming impact. This will include data analysis, data visualization and storytelling.
POPULATION SERVED	Low-income homeowners in single-family homes, majority below 80% AMI. In 2020, the median income for a two-person household in the areas served by affiliates was between \$65,200 (Lafayette Parish, Louisiana) and \$113,300 (Seattle, Washington). The majority of homeowners served were Black (51%); the rest were white (44%) or Asian/other (5%). Among all homeowners served, 6% were also of Latinx ethnicity. Often times, older adults who live alone. In 2020, 70% of homes had at least one resident age 65 or older. 12% of households served in 2020 had children. 68% of homeowners served were female, and 50% of households included a resident with a disability.
TARGET AUDIENCE FOR ANALYSIS	Communities served, affiliate network, and partners.
SCALE	Affiliate network of 125 organizations located in 38 states and the District of Columbia. Budgets range from \$50,000 to over \$1 million. In 2019, the mean affiliate budget size was \$616,015 and the median budget size was \$203,986. Affiliates across the network completed 9,087 rebuild projects in 2019, including 8,885 projects for homes and 202 projects for community facilities. In 2020, 6,136 households were served, for a total of 10,848 individuals served. The scale of services in 2020 was impacted by the COVID-19 pandemic.
DURATION	Repairs generally last the warranty of the product, expect 5-15 years depending on the repair and upwards of 20 for larger repairs (e.g. roofs).
MARKET NEED	Rebuilding Together affiliates target services to those households who do not have other options to remain safely in their home. An estimated 20.7 million low-income homeowners live in the U.S. today (ACS, 2017). There are an estimated 5,996,000 homes in the United States in severe or moderate disrepair. 2,856,000 of these homes are owner-occupied and around 1,477,000 of these homes are owned by low-income homeowners (U.S. Census Bureau, 2017).
THEORY OF CHANGE	Providing critical home repairs and home modifications in underserved communities at no cost to homeowners, to address Social Determinants of Health and preserve affordable housing.

*Table 1 includes data from 2019, as the COVID-19 pandemic limited the scale of programs in 2020 due to health and safety concerns.

An important component to scoping the analysis is an accounting of the stakeholders who are impacted by Rebuilding Together’s work. Table 2 notes the many stakeholders directly and/ or indirectly involved. A full accounting of stakeholders helps to clarify the potential value proposition to each of them, and how when one stakeholder benefits, others may then benefit as a result. Ecotone’s proprietary visualization helps to bring this connection to life.

Table 2. Key Stakeholders

CLIENTS	HEALTH CARE SYSTEM	PUBLIC	PRIVATE	FUNDERS	COMMUNITY	CIVIL SOCIETY
<ul style="list-style-type: none"> • Single family homeowners • Family members • Caregivers • Community facilities 	<ul style="list-style-type: none"> • Health care system • Skilled nursing facilities • Insurers • In-home care services 	<ul style="list-style-type: none"> • Housing agencies • Public health departments • Tax revenue departments • Fall prevention organizations • Fire department • Community development organizations • Utility providers • Public safety 	<ul style="list-style-type: none"> • Banks • Contractors • Home improvement stores / material suppliers 	<ul style="list-style-type: none"> • Governments - Department of Housing and Urban Development (HUD) funding, locally there are municipal and state funding • Foundations • Corporate sponsors and donors • Individual donors 	<ul style="list-style-type: none"> • Area residents/ neighborhood • Local businesses • Volunteers • Formal and informal community groups, including neighborhood councils, civic groups, and trade associations 	<ul style="list-style-type: none"> • Rebuilding Together affiliates • Non-profit partners including the American Red Cross

Finally, the Social Determinants of Health are recognized as an important frame to view the work of Rebuilding Together. Table 3 notes the five determinants, of which three are addressed by Rebuilding Together to varying extents.

Table 3. Social Determinants of Health Addressed (based on Health.gov SDOH domains)

ECONOMIC STABILITY	EDUCATION ACCESS AND QUALITY	HEALTH CARE ACCESS AND QUALITY	NEIGHBORHOOD AND BUILT ENVIRONMENT	SOCIAL AND COMMUNITY CONTEXT
X			X	X

ASSUMPTIONS

To develop a suitable model for the impact analysis, a series of assumptions are relied upon. Below are the core assumptions that dictated the scope of the analysis. Additional assumptions are built into the individual outcome estimates and will be discussed later in this report as well as described in Appendix D. As has been mentioned, the focus of this analysis is on safe and healthy housing repairs and modifications for residential, primarily single-family, homes. This is a subset of the total scope of activities conducted by Rebuilding Together and its affiliates. As a result, certain related outcomes that affiliates may address are not included in this analysis (e.g. affiliates may address the critical home repairs that fall under the SHH Priorities but may also address tangential home upgrades based on budget such as energy efficiency upgrades).

We structure the SROI to show the typical benefits of each home Rebuilding Together serves. We also assume an average mix of repairs and modifications are provided to each home. This does not include all potential repairs and modifications or that all safe and healthy housing priorities are addressed.

OUTCOMES

- **Counterfactual:** It is assumed that homeowners receiving services from Rebuilding Together are unlikely to otherwise receive no-cost repairs and modifications from other service providers. While there is uncertainty around the extent of outcomes to which experienced by homeowners are tied exclusively to the work of Rebuilding Together, the secondary research referenced creates strong arguments for the causal relationships. Future research may better account for the outcomes that would otherwise be achieved by homeowners were Rebuilding Together services not available.
- **Characteristics of homeowners/residents:** Homeowners/residents included in Rebuilding Together's 2021 impact evaluation are assumed representative of all homeowners served. This assumption is made to align with the short-term outcomes also measured in the impact evaluation.
- **Number of homeowners and residents:** Outcomes are focused on the characteristics of the homeowner themselves although children in the home are also accounted for in applicable outcomes. This approach conservatively frames the number of people benefiting.
- **Duration of impact:** Different outcomes have a different projected duration based on the type of outcome and who is receiving the value of the outcome. Outcomes are projected over a period of 1-5 years depending on the repair/modification(s) that drive the outcome and the characteristics of the individual benefiting. For more information on the duration of impact for each outcome, see the Appendix D detailing the monetized pathways estimation processes.
- **Discounting multi-year benefits:** Multi-year benefits are discounted to present value with a 3% discount rate.
- **Repairs and modifications delivered:** The impact evaluation from 2021 assess repair and modification results from a sampling of affiliates. We assume this sampling is representative of the affiliate network as a whole, and that the outputs and outcomes measured in this evaluation are appropriate to the network.

- Scale of benefits: For each outcome valued, there is a potential range of monetized values due to variability in the local costs of health care, the local job market, as well as varied perceptions of the extent and value of improved well-being. To manage this variation, lower values are utilized to ensure conservative valuations.
- Long-term outcomes: Secondary research, aligned as closely as possible to the services delivered by Rebuilding Together, is used to project expected long-term outcomes which are then monetized. While research is not specific to Rebuilding Together it is assumed to be a suitable approximation of the change being generated by Rebuilding Together and where needed, adjustments are made to align the research base with the repairs/modifications delivered and homeowner characteristics.

COSTS

- Geography: Costs vary by geography as labor markets, material costs, climates, etc. will vary for each affiliate. This can be an important factor for the types and scale of investment needed for homeowners. This analysis assumes a network-wide median cost.
- Timeline: Costs are assumed to be incurred within a single year for each project.
- Volunteers: Average volunteer cost per house is estimated, including a separate valuation for general vs. skilled volunteers. In-kind donations of time/expertise from contractors is accounted for under the valuation of skilled volunteers. No in-kind materials are accounted for.
- Average expense per project for the national office is included. This estimate is not altered by the size of the project.

Additional clarifications regarding our analysis include:

This is a prospective analysis framed by the 2021 impact evaluation and affiliate surveys. We do not know the true value generated by Rebuilding Together. While each homeowner will have a different experience and realize different types of benefits, our analysis frames the benefits as the average value generated for each home served. This should not belittle the stories of the individuals engaged.

LOGIC MODEL

The following pages show the logic model, identifying the planned inputs, activities, and outputs for Rebuilding Together, and from there, describing the outcomes accruing from all those features present and activities conducted. These outcomes can be distinguished by whether they were short-term outcomes, intermediate outcomes or long-term outcomes (those achieved indirectly from the short-term and intermediate outcomes achieved). Last are the impacts directly attributed to Rebuilding Together. The logic model serves as the map of the analysis, as intermediate and long-term outcomes are those we seek to monetize to calculate the final SROI.

Table 4. Logic Model Key

1. HOW TO READ IT	2. RELATIONSHIP BETWEEN COLUMNS	3. PURPOSE	4. IN COMPARISON TO WHAT
<p>Reads from left to right, with each column collectively influencing the column to its right and being influenced by the column on its left</p>	<p>Individual cells do not necessarily link directly to those immediately on their left or right, although these specific causal chains will be established in our next steps</p>	<p>Connects 'Inputs', those resources required to begin, with the projected final 'Impact' resulting and attributed to Rebuilding Together</p>	<p>Outcomes and impact described in the logic model are assumed to be in comparison to homeowners not having access to comparable repairs and modifications as those provided by Rebuilding Together</p>

Of note, while pursuing monetization for all those pathways identified in the logic model, inevitably some have a better evidence base than others, and in some cases, the data is too lacking to pursue monetization with a reasonable causal understanding. The following sections will describe in detail those pathways that were successfully monetized.



INPUTS

Funding

- Corporate, government and foundation grants
- Individual donors
- Corporate sponsorships

Rebuilding Together National Office

- Staff
- Offices and overhead

Strategic Framework

- Safe and Healthy Housing
- Community Revitalization Partnerships

Four Core Programs

- Safe at Home
- Disaster Readiness and Response
- Building a Healthy Neighborhood
- She Builds

Partnerships

- Foundations, government, corporations, healthcare, community partnerships
- AmeriCorps

Affiliates

- Staff - leadership, managers, fundraisers, occupational therapists, contractors
- Volunteers - skilled and unskilled
- AmeriCorps and CapacityCorps members
- Overhead (technology, office space, utilities, etc.)
- Materials for repairs and modifications (sometimes discounted/donated)

Partnerships

- Health care, financial services, government
- Housing and Community Development
- VA
- Social services
- Learning institutions
- Skilled trade organizations
- Faith-based orgs
- Vendors and licensed subcontractors

Programs

- Most common services: Critical/emergency repair, Energy efficiency/weatherization, Handyman services, Fire safety/prevention

Homeowners

- Based on Area Median Income, typically below 80%
- Single-family homes in need of repairs and/or modifications

ACTIVITIES

Rebuilding Together National Office

- Surveying and data collection
- Insurance and compliance
- Communications, public outreach and fundraising
- Grant making to affiliates
- Partnership development
- Development of curriculum and models
- Coordination of resources and learnings

Affiliates

- Recruit and coordinate volunteers
- Hire and coordinate contractors
- Community outreach and partnership building
- Grant writing
- Donor engagement
- Event coordination
- Referrals to partners (workforce, financial education, etc.)

Work Process

- Receive and review applications for services
- Triage applications
- Initial interview and home assessment
- 25 Safe and Healthy Housing Priorities applied to each house - based on 8 principles of safe and healthy housing from HUD
- Work order to prioritize home repairs - Emergency repairs, critical repairs, roofing repairs, safety modification
- Home repair and home modification work provided free of charge to homeowners
- Follow-up assessment and inspection

OUTPUTS

- # of affiliates
- # of volunteers and volunteer hours
- # of AmeriCorps members trained
- # of homes served (per quarter, year, cumulative)
- # of neighbors benefiting (disaggregated by race/ethnicity, age, gender, disability)
- # of applications received
- # of applications accepted
- # of repairs per home
- # of properties expertly assessed
- # of housing hazards eliminated
- # of repairs and modifications by type
- # of homes repaired / modified at no cost to low-income homeowner
- # of projects with SHH 25-point checklist completed
- \$ raised
- \$ spent on repairs and modifications (total and per house)



In comparison to eligible homeowners not having access to Rebuilding Together's Safe and Healthy Housing services

SHORT-TERM	INTERMEDIATE	LONG-TERM	2ND GENERATION	IMPACT
Homeowner-centric				
<ul style="list-style-type: none"> Increased access to home repair and modification services Increased awareness of hazards, maintenance required Increased understanding of health risks Increased referral to other resources as needed Increased ability to take care of the home <p>Repairs and Modifications</p> <ul style="list-style-type: none"> Reduced moisture and leaks Reduced drafts Improved ventilation Improved temperature control Elimination of contaminants Increased insulation/weatherization Increased use of modifications for resident usability (e.g. ramps, grab bars, etc.) Elimination of pest problems Increased cleanliness Increased dwellings up to code Improved functioning of plumbing fixtures and electrical devices Increased lighting Increased accessibility including ingress and egress Reduced potential exposure to lead, asbestos and radon 	Increased Safety		<ul style="list-style-type: none"> Increased wealth transfer Improved cognitive development Reduced risk of asthma and other respiratory ailments Reduced emergency room (ER) visits Increased educational attainment Increased earnings 	<ul style="list-style-type: none"> Rebuilt lives - Improved well-being Reduced racial disparities in housing quality and health status Reduced inequality Increased self-sufficiency Increased community resiliency and stability Protection of affordable housing Safer communities Increased strength of social fabric
	<ul style="list-style-type: none"> Reduced fall risk Reduced fire risk - smoke detectors Easier ingress and egress Improved perception of risk/safety in house Improved home security Improved child safety 	<ul style="list-style-type: none"> Reduced medical visits, hospitalizations and emergency room visits Reduced risk of fire fatalities Avoided skilled nursing facility Reduced 911 calls 		
	Improved Physical Health			
	<ul style="list-style-type: none"> Reduced air and water quality risk Improved self-reported health status before and after Improved hygiene Reduced risk of lead poisoning Reduced risk of mold exposure, allergens and carbon monoxide Increased temperature comfort in home 	<ul style="list-style-type: none"> Improved respiratory health Reduced risk of infectious diseases Improved nutrition Reduced cancer rates (e.g. radon exposure) Reduced risk of certain allergies 		
	Improved Mental Health			
	<ul style="list-style-type: none"> Reduced stress Increased comfort in home Greater ability to have visitors and/or housemates 	<ul style="list-style-type: none"> Increased happiness and quality of life 		
	Increased Independence			
<ul style="list-style-type: none"> Ability to stay in place Reduced caregiver and/or home health aide support Increased ease of bathing Increased cooking at home 	<ul style="list-style-type: none"> Increased aging in place Increased sense of self-efficacy and confidence 			
Economic Sustainability				
<ul style="list-style-type: none"> Reduced maintenance costs Reduced household cost burden Increased home value Improved home lifespan Reduced energy use 	<ul style="list-style-type: none"> Increased wealth Increased ease of future maintenance Improved ability to perform their job (if working) Increased financial resiliency and stability Reduced risk of foreclosure Reduced energy bills and greenhouse gas (GHG) emissions 			
Community Connection				
<ul style="list-style-type: none"> Increased quality of housing stock Increased pride in homes and communities 	<ul style="list-style-type: none"> Increased sense of neighborhood cohesion 			
Volunteer-centric				
<ul style="list-style-type: none"> Increased engagement in community Increased awareness of community needs and disparities Foregone earnings from potential paid work opportunities 	<ul style="list-style-type: none"> Increased skills in home repair and modifications Increased network in the trades 		<ul style="list-style-type: none"> Increased quality of life Improved mental health Improved physical health (longer life for retiree members) Increased likelihood of volunteering again in some form in the community Increased future civic engagement 	
	Neighborhood-centric			
	<ul style="list-style-type: none"> Increased housing tenure in community Increased community safety 	<ul style="list-style-type: none"> Reduced risk of gentrification Increased area property values 		
	Family / caregiver - centric			
<ul style="list-style-type: none"> Reduced caregiving responsibilities Reduced risk of having to reduce paid working hours Reduced expenditures on food, driving, etc. 	<ul style="list-style-type: none"> Reduced burn out, reduced stress (financial stress and from caring for the individual) Increased earnings Improved mental and financial health 			

- Increased Safety**
- Improved Physical Health**
- Improved Mental Health**
- Increased Independence**
- Economic Sustainability**
- Community Connection**

REBUILDING TOGETHER COMPLETE LOGIC MODEL

This logic model is the compilation of the preceding two pages.

			In comparison to eligible homeowners not having access to Rebuilding Together's Safe and Healthy Housing services								
INPUTS	ACTIVITIES	OUTPUTS	SHORT-TERM OUTCOMES	INTERMEDIATE OUTCOMES	LONG-TERM OUTCOMES	2ND GENERATION OUTCOMES	IMPACT				
<p>Funding</p> <ul style="list-style-type: none"> Corporate, government and foundation grants Individual donors Corporate sponsorships <p>Rebuilding Together National Office</p> <ul style="list-style-type: none"> Staff Offices and overhead <p>Strategic Framework</p> <ul style="list-style-type: none"> Safe and Healthy Housing Community Revitalization Partnerships <p>Four Core Programs</p> <ul style="list-style-type: none"> Safe at home Disaster Readiness and Response Building a Healthy Neighborhood <p>Partnerships</p> <ul style="list-style-type: none"> Foundations, government, corporations, healthcare, community partnerships Americorps <p>Affiliates</p> <ul style="list-style-type: none"> Staff - leadership, managers, fundraisers, occupational therapists, contractors Volunteers - skilled and unskilled AmeriCorps and CapacityCorps members Overhead (technology, office space, utilities, etc.) Materials for repairs and modifications (sometimes discounted/donated) <p>Partnerships</p> <ul style="list-style-type: none"> Health care, financial services, government Housing and Community Development VA Social services Learning institutions Skilled trade organizations Faith-based orgs Vendors and licensed subcontractors <p>Programs</p> <ul style="list-style-type: none"> Most common services: Critical/emergency repair, Energy efficiency/weatherization, Handyman services, Fire safety/prevention <p>Homeowners</p> <ul style="list-style-type: none"> Based on Area Median Income, typically below 80% Single-family homes in need of repairs and/or modifications 	<p>Rebuilding Together National Office</p> <ul style="list-style-type: none"> Surveying and data collection Impact Analysis Communications, public outreach and fundraising Grant making to affiliates Partnership development Development of curriculum and models Coordination of resources and learnings <p>Affiliates</p> <ul style="list-style-type: none"> Recruit and coordinate volunteers Hire and coordinate contractors Community outreach Grant writing Donor engagement Event coordination Referrals to partners (workforce, financial education, etc.) <p>Work Process</p> <ul style="list-style-type: none"> Receive and review applications for services Triage applications Initial interview and home assessment 25 Safe and Healthy housing priorities applied to each house - based on 8 principles of safe and healthy housing from HUD Work Order to prioritize home repairs - Emergency repairs, critical repairs, roofing repairs, safety modification Home repair and home modification work provided free of charge to homeowners Follow-up assessment and inspection 	<ul style="list-style-type: none"> # of affiliates # of volunteers and volunteer hours # of AmeriCorps members trained # of homes served (per quarter, year, cumulative) # of neighbors benefiting (disaggregated by race/ethnicity, age, gender, disability) # of applications received # of applications accepted # of repairs per home # of properties expertly assessed # of housing hazards eliminated # of repairs and modifications by type # of homes repaired / modified at no cost to low-income homeowner # of projects with SHH 25 point checklist completed \$ raised \$ spent on repairs and modifications (total and per house) 	<p>Homeowner-centric</p> <ul style="list-style-type: none"> ↑ Access to home repair and modification services ↑ Awareness of hazards, maintenance required ↑ Understanding of health risks ↑ Referral to other resources as needed ↑ Ability to take care of the home <p>Repairs and Modifications</p> <ul style="list-style-type: none"> ↓ Moisture and leaks ↓ Drafts ↑ Ventilation ↓ Temperature control ↓ Contaminants ↑ Insulation/weatherization ↑ Use of modifications for resident usability (e.g. ramps, grab bars, etc.) ↓ Pest problems ↑ Cleanliness ↑ Dwellings up to code ↑ Functioning of plumbing fixtures and electrical devices ↑ Lighting ↑ Accessibility including ingress and egress ↓ Potential exposure to lead, asbestos and radon 	<p>Increased Safety</p> <ul style="list-style-type: none"> ↓ Fall risk ↑ Fire risk - smoke detectors ↑ Ingress and egress ↑ Perception of risk/safety in house ↑ Home security ↑ Child safety <p>Improved Physical Health</p> <ul style="list-style-type: none"> ↓ Air and water quality risk ↑ Self-reported health status before and after ↑ Hygiene ↓ Risk of lead poisoning ↓ Risk of mold exposure, allergens and carbon monoxide ↑ Temperature comfort in home <p>Improved Mental Health</p> <ul style="list-style-type: none"> ↓ Stress ↑ Comfort in home ↑ Ability to have visitors and/or housemates <p>Increased Independence</p> <ul style="list-style-type: none"> ↑ Ability to stay in place ↓ Caregiver and/or home health aide support ↑ Ease of bathing ↑ Cooking at home <p>Economic Sustainability</p> <ul style="list-style-type: none"> ↓ Maintenance costs ↓ Household cost burden ↑ Home value ↑ Home lifespan ↓ Energy use <p>Community Connection</p> <ul style="list-style-type: none"> ↑ Quality of housing stock ↑ Pride in homes and communities 	<ul style="list-style-type: none"> ↓ Medical visits, hospitalizations and emergency room visits ↓ Risk of fire fatalities ↓ Skilled nursing facility ↓ 911 calls ↑ Respiratory health ↓ Risk of infectious diseases ↑ Nutrition ↓ Cancer rates (e.g. random exposure) ↓ Risk of certain allergies ↑ Happiness and quality of life ↑ Aging in place ↑ Sense of self-efficacy and confidence ↑ Increased wealth ↑ Ease of future maintenance ↑ Ability to perform their job (if working) ↑ Financial resiliency and stability ↓ Risk of foreclosure ↓ Energy bills and greenhouse gas (GHG) emissions ↑ Sense of neighborhood cohesion ↑ Increased community resiliency 	<ul style="list-style-type: none"> ↑ Wealth transfer ↓ Cognitive development ↓ Risk of asthma and other respiratory ailments ↓ Emergency Room (ER) visits ↑ Educational attainment ↑ Earnings <ul style="list-style-type: none"> ↑ Rebuilt lives - Improved well-being ↓ Reduced racial disparities in housing quality and health status ↓ Inequality ↑ Self-sufficiency ↑ Community resiliency and stability ↑ Protection of affordable housing ↑ Safer communities ↑ Increased strength of social fabric 					
							<p>Volunteer-centric</p> <ul style="list-style-type: none"> ↑ Engagement in community ↑ Awareness of community needs and disparities ↑ Foregone earnings from potential paid work opportunities 	<ul style="list-style-type: none"> ↑ Skills in home repair and modifications ↑ Network in the trades 	<ul style="list-style-type: none"> ↑ Quality of life ↑ Mental health ↑ Physical health (longer life for retiree members) ↑ likelihood of volunteering again in some form in the community ↑ Future civic engagement 		
							<p>Neighborhood-centric</p> <ul style="list-style-type: none"> ↑ Housing tenure in community ↑ Community safety 		<ul style="list-style-type: none"> ↓ Risk of gentrification ↑ Increased area property values 		
							<p>Family / caregiver - centric</p> <ul style="list-style-type: none"> ↓ Caregiving responsibilities ↓ Risk of having to reduce paid working hours ↓ Expenditures on food, driving, etc 		<ul style="list-style-type: none"> ↓ Burn out, reduced stress (financial stress and from caring for the individual) ↑ Earnings ↑ Mental and financial health 		

- Increased Safety
- Improved Physical Health
- Improved Mental Health
- Increased Independence
- Economic Sustainability
- Community Connection

PROJECTED COSTS

Costs to deliver a Rebuilding Together project are multi-faceted due to the combination of the affiliated organizational structure and the non-profit status of the affiliates. Taking an ingredients costing method, we identify and value the various resources required to complete a project. The average and median costs per home served are summarized in Table 5 below. The median value is significantly lower than the average, showing that some projects are significantly more expensive than others. Noting this potential spread of project costs, the median value was used in the visualization to show a more representative view of the typical project. Table 6 shows the disaggregation of the primary budget categories utilized to deliver a project. Appendix B includes further details on these estimates.

Table 5. Costs per home

AVERAGE COST PER HOME	\$15,830
MEDIAN COST PER HOME	\$7,904

Table 6. Components of cost estimation and variation by project size

	AVERAGE	MEDIAN	PROJECT IMPACT - SMALL	PROJECT IMPACT - MEDIUM	PROJECT IMPACT - LARGE
Direct cost per home (64% of affiliate budget on average)	\$7,802	\$2,729	\$931	\$2,635	\$14,391
Admin + fundraising expenses (36% of affiliate budget on average - Inside the Numbers, 2019)	\$4,389	\$1,535	\$524	\$1,482	\$8,095
Estimated volunteer hours value*	\$2,961	\$2,961	\$2,961	\$2,961	\$2,961
National office cost per project	\$679	\$679	\$679	\$679	\$679
Investment per home	\$15,830	\$7,904	\$5,094	\$7,757	\$26,125

**Volunteer value is an average across all homes - data does not currently allow for disaggregating volunteer hours by size of project. As a result, this value may not capture the potential shift in volunteer hours.

The largest cost component is on average the value of volunteer hours committed to each project, followed closely by the median direct costs covered by the affiliate. This may include materials purchased, permit fees, portions of a project addressed by a paid contractor, etc. While volunteer hours are the largest line item, this value may be skewed high due to being based on an average number of hours as opposed to a median number of hours. With project by project volunteer figures a median figure could be utilized in the future, potentially slightly reducing the total investment per home. However it appears to only be significantly larger for Rebuilding Together affiliates with budgets over \$1 million, such that the current figure utilized may not change much (see Appendix B for more details).

Administrative and fundraising expenses are the next largest line item, being based on the direct cost per home. The ratio between direct costs and administrative/fundraising expenses is based on survey responses from Rebuilding Together's annual affiliate surveying.

To provide an additional sense of the distribution of project scales, the last three columns of Table 6 note the estimated investment by perceived size of project - small, medium, and large (as reported in Rebuilding Together's 2021 impact evaluation). Large projects pull the average direct investment cost up.

Table 7. Investment amounts per home by homeowner characteristics

	HOMEOWNER HAD PREVIOUSLY FALLEN OR WERE CLOSE	DISABLED HOMEOWNERS	HOMEOWNERS 65+	HOUSEHOLDS WITH KIDS	HOUSEHOLDS WITH 2+ PEOPLE	HOUSEHOLDS WITH 1 PERSON
Median direct cost	\$4,200	\$3,479	\$2,176	\$3,800	\$4,367	\$1,961
Admin + fundraising expenses	\$2,363	\$1,957	\$1,224	\$2,137	\$2,456	\$1,103
Estimated volunteer hours value*	\$2,961	\$2,961	\$2,961	\$2,961	\$2,961	\$2,961
National office cost per project	\$679	\$679	\$679	\$679	\$679	\$679
Investment per home	\$10,202	\$9,075	\$7,039	\$9,577	\$10,463	\$6,703

*Volunteer value is an average across all homes - data does not currently allow for disaggregating volunteer hours by homeowner characteristics. As a result, this value may not capture the potential shift in volunteer hours by homeowner.

Table 7 above utilizes the survey results of the 2021 impact evaluation to isolate the median direct cost by homeowner and household characteristics. Across other household characteristics, variations in investment are noted for households with two or more residents compared to households with a single resident - households with more people incur greater direct costs. Similarly, households with residents who have a disability or at risk of a fall are also more likely to receive above median investments.

While these estimates are illuminating, we do not use them in the SROI analysis due to additional analysis required to further understand how administrative costs, volunteering time and national office costs may vary by the household characteristics. Further cost analysis will

better capture the extent to which total costs differ. In the meantime however, comparison of the median direct cost is valid at this time as these costs are reported through the evaluation survey.

PROJECTED OUTCOMES

Below are long-term outcome benefits projected for Rebuilding Together and its affiliates' repairs and modifications. These outcomes are referred to as the marginal benefit (the cost/benefit of an event occurring multiplied by the likelihood of that cost/benefit occurring). Multi-year benefits are presented here as a net present value (NPV). Shaded rows are those outcomes that are currently non-monetizable but are likely to be an additional source of value creation. Future data collection and secondary research will support their inclusion in subsequent analyses.

Table 8. Monetized Outcomes

IMPACT DOMAIN	OUTCOMES	AVERAGE BENEFIT PER HOME (NPV AT 3%)
Independence	Improved quality of life from increased ease of conducting activities of daily life	\$3,107
Independence	Increased likelihood of aging in place and avoided use of assisted living facility	\$5,661
Safety	Reduced risk of fall leading to hospitalization and Emergency Department (ED) costs due to home modifications (e.g. ramps, grab bars, etc.)	\$2,847
Safety	Reduced risk of fall leading to death due to home modifications (e.g. ramps, grab bars, etc.)	\$2,639
Safety	Reduced risk of fall due to home modifications (e.g. ramps, grab bars, etc.) leading to avoided loss of future activities of daily life (ADLs)	\$384
Safety	Improved health and earnings from avoided Carbon Monoxide (CO) poisoning	\$9
Safety	Increased safety leading to reduced fire death rate	\$9.50
Safety	Increased safety leading to reduced fire injury rate	\$0.02
Economic Security	Reduced social cost of Greenhouse Gas Emissions (GHG) emissions from increased energy efficiency	\$49
Economic Security	Cost savings from increased energy efficiency	\$220
Economic Security	Reduced home maintenance costs	\$476
Economic Security	Increased home value appreciation	\$1,535
Economic Security	Reduced cost to caregivers from avoiding having to miss work, cutting back to part-time hours, etc.	\$1,221
Mental Health	Improved mental health from volunteering (affiliate volunteers, AmeriCorps members, CapacityCorps members)	\$207
Mental Health	Improved mental health due to reduced stress and increased thermal comfort	\$1,931
Physical Health	Improved respiratory health from improved ventilation and air quality leading to avoided asthma related hospitalizations, ED visits and reduced medication use for adults	\$48

Physical Health	Increased productivity from reduced asthma symptoms	\$25
Physical Health	Improved respiratory health for children from avoided health care expenditures from asthma symptoms	\$1
Physical Health	Improved respiratory health for children leading to avoided missed work days for parents	\$0.37
Physical Health	Improved respiratory health for children leading to avoided loss of Quality Adjusted Life Years (QALY)	\$3
Physical Health	Improved physical health for kids from reduced exposure to lead, asbestos, radon leading to avoided health care costs and increased earnings	\$133
Physical Health	Improved physical health leading to reduced hospitalizations	\$1,719
Physical Health	Reduced Type 2 Diabetes-related health care expenditures from increased home cooked meals	\$42
Physical Health	Improved physical health from increased temperature control	\$0.04
Community Connection	Reduced crime and increased sense of pride in community	\$200
Community Connection	Beneficial spillover effects on the neighborhood such as strengthened neighborhood fabric, increased property values, etc.	-
Physical and Mental Health	Improved health from reduced household cost burden	-
Economic Security	Increased wealth transfer to 2nd generation	-
Physical Health	Improved hygiene	-
Total		\$22,452

All 6 impact domains utilized by Rebuilding Together are monetized although there is significantly variability in the number of outcomes captured in each domain. This is a result of some domains being more readily monetized due to data availability and existing research.

POTENTIAL IMPACT AT SCALE

Approximately 40% of affiliates use the SHH priorities all of the time, and 36% use them some of the time. With 125 affiliates in total, this amounts to about 50 and 45 affiliates. Without accounting for how the size of the affiliate may influence their likelihood of using the SHH priorities, we take the average number of projects per year (49 in 2019) by an affiliate to project the total social value generated by Rebuilding Together affiliates using the SHH priorities. Assuming those affiliates using the SHH priorities are very likely to achieve the outcomes projected from the 2021 impact evaluation results, there is a projected \$55 million in social value (in present value) generated each year. And for those affiliates using the SHH priorities some of the time - if they also generate similar outcomes, that will result in \$49 million in social value generated each year (in present value). Together this is over \$100 million per year.

And if we further expand the assumption that all affiliates, regardless of the extent they use the SHH priorities will generate similar types and scales of benefits, there would be a total of almost \$140 million in social value (in present value) generated each year - assuming the same number of projects as in 2019 prior to COVID-19. This is not to say that affiliates not using the SHH priorities checklist are not creating social value, only that there is much more uncertainty at this time around the scale of social value those projects generated. Future analysis may compare the average value generated from a project using SHH priorities compared to one that does not.

KEY METRICS

Among the many variables used to estimate the value of each outcome, there is a subset of key metrics that most significantly drive the monetized value. These metrics include:

- Proportion of homeowners at risk of a fall
- Reduced risk of falling from Rebuilding Together repairs/modifications
- Health care expenditures and quality of life affected from a fall on average
- Proportion of homeowners with increased ease of conducting activities of daily life
- The quality of life gained from improvements in conducting activities of daily life
- Proportion of homeowners who report increased likelihood of aging in place due to Rebuilding Together repairs/modifications
- Cost differential between an assisted living facility and aging in place
- Proportion of homeowners reporting reduced doctor visits following Rebuilding Together repairs/modifications
- Proportion of homeowners reporting improvements in mental health due to Rebuilding Together repairs/modifications

These metrics were especially important to delivering the outcome values projected. However, we do not expect each of these to be readily trackable for Rebuilding Together. As a result, a later section notes the recommended Key Performance Indicators (KPIs) that the affiliates may track to help understand the impact of their work. Further, as these metrics were the most important for determining the current monetized outcomes, there are other metrics that are valuable and important to track as well.

The following paragraphs describe the estimation process in more detail for the largest monetized outcomes and show why the above metrics became most important. For those outcomes not discussed in this section, details on their estimation process can be found in Appendix D where both specific figures and the multi-year projections are detailed for every outcome.

INCREASED SAFETY - REDUCED RISK OF A FALL

This outcome has three monetized pathways: reduced risk of injury, reduced risk of death, and reduced risk of lost Quality-adjusted Life Years (QALYs). Each of these outcomes begin from the proportion of homeowners served who are at risk of a fall, followed by the likelihood that Rebuilding Together repairs/modifications reduce this risk. Multiple studies were referenced to understand this potential reduced likelihood of a fall (Rebuilding Together 2021 Eval Report; Karlsson et al. 2013; WHO, 2007) with values ranging from approximately 30-50% reductions in number of falls. Based on this reduction in number of falls, additional sources are used to inform the likelihood that a fall leads to a serious injury requiring ED and hospitalization (CDC, 2017; Wilson, 2021) or leads to death (WSIPP, 2019). These can then be monetized via both avoided health care expenditures from the hospitalization (informed by WSIPP, 2019) and associated health care costs (e.g. pharmacy, outpatient services, etc.) and in the case of death, the value of a statistical life (informed by EPA, 2021). These two outcomes capture two different types of value and as a result there is no risk of double counting benefits.

In the case of avoided quality of life, the avoided serious injury from reduced risk of a fall protects the ability to conduct activities of daily life (ADL). Based on Jia et al., (2019) and Mossey et al., (1989) there is both strong signals of the likelihood of permanently lost ease of conducting ADLs following a serious fall injury as well as the alignment of ADLs with QALYs - such that reduced ability to conduct ADLs is closely linked to the QALYs for that individual. Avoiding a loss of ADLs helps protect against the loss of QALYs - valued conservatively at \$50,000 per QALY (Neumann et al., 2014).

IMPROVED MENTAL HEALTH

Estimating the extent of mental health improvements as well as the value of those improvements are both a complicated outcome but also a potentially highly valuable one. As one's mental health is changed so too are other aspects of their well-being. Rebuilding Together (2021) found that 33% of homeowners reported

improvements in their mental health following repairs/modification and 82.7% said the improvements were due to repairs. This is significant in that it is a causal signal in favor of Rebuilding Together. The resulting 27.3% of homeowners experiencing a boost due to Rebuilding Together coincides with a systematic review of studies (Thomson et al., 2013) that found that home repairs—particularly improvements to thermal comfort and energy efficiency—have been associated with improved mental health, both of which are addressed by Rebuilding Together. Although the 2021 impact evaluation for Rebuilding Together also noted the importance of other elements of repairs such as a fresh coat of paint often serving as a promising signal of improved perceptions of the home which can reduce stress.

The improved rates of mental health are then multiplied against the value of that improvement. While the mental health that homeowners say is improving is not explicitly defined, we utilize proxy values of the medical expenditures associated with depression and other anxiety disorders (Marciniak et al., 2005). Medical expenditures of depression and anxiety, while not necessarily occurring directly for low-income residents who do not seek medical attention, may serve as a conservative proxy of the loss in quality of life and loss of earnings also associated with cases of depression.

IMPROVED PHYSICAL HEALTH - REDUCED HOSPITALIZATIONS

The collective scope of repairs and modifications can support improved physical health across multiple dimensions too numerous to isolate individually. As a result, this outcome seeks to aggregate those improvements in health for older homeowners served by Rebuilding Together under a broader outcome of reduced hospitalization. This is in part informed by a longitudinal study in the U.K. which 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% (Rodgers et al., 2018). Wall insulation specifically reduced hospital admissions by 25%. In a related vein, Rebuilding Together's 2018 evaluation found that 59% of respondents reported fewer doctor visits after repairs/modifications. Noting this consistency of reduced health care utilization, we use the 25 percentage point reduction as a conservative value of reduced hospitalizations, noting that homeowners receiving Rebuilding Together services will receive a mix of supports in part mirroring that of the electrical upgrades, insulation, windows, etc. that those in the study received. While the U.K. context may differ based on housing quality, age of housing and climatic conditions, the non-energy benefits of weatherization services are very difficult to isolate and assign to specific repairs and tend to only be measured collectively.

Pigg et al., (2021) from the Oak Ridge National Laboratory note that the bulk of research on non-energy benefits over the past 30 years supports the case for weatherization beyond energy savings but shows limited insights around how non-energy benefits could be tied to specific energy efficiency measures. They go on to note that most health-related non-energy benefits are "the result of complex interplays among the mix of measures installed, the regional climate, the occupant characteristics, and the household environment" (Pigg et al., 2021). Thus, Rodgers et al's study provides a unique signal of the value of specific repairs which helps to create an understanding of how the benefits of each individual repair may add up. Future research will support greater understanding of the value from specific repairs.

Based on this conservative reduced rate of hospitalization, we modify the rate of hospitalization for 65+ year olds in the U.S. and multiply by the average cost of inpatient medical care (non-surgical) to estimate average reduction in health care expenditures per home.

INCREASED INDEPENDENCE - INCREASED EASE OF CONDUCTING ADLS

Supporting one's ability to conduct activities of daily

life (ADLs) is a target outcome of Rebuilding Together's work. In their 2021 evaluation report, six months after repairs, more than half of survey respondents reported that bathing was easier than before. The effect size metric indicates there is an 83% probability that the average homeowner served by the pilot affiliates would report greater ease of bathing safely after repairs were completed, compared to before. 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. In sum, based on the increased ease of ADLs by homeowners and the repairs/modifications conducted, about 16% of homes received the modifications aligned to increasing ADLs.

Jia et al., (2019) find that the ability to conduct ADLs is associated with changes in quality of life, measured as Quality-adjusted Life Years (QALYs). For example, older individuals with increased ease of conducting ADLs have a greater number of QALYs, while those unable to conduct ADLs have fewer QALYs. We utilize the average difference in QALYs between a stage of ADLs as the number of QALYs protected by Rebuilding Together i.e. would have otherwise been lost without the repairs and modifications. The resulting average loss in QALYs from a reduction in ADLs is about 0.8 QALYs. To make the estimate more conservative, we assume half of this value can be captured through Rebuilding Together's work. This is to say that the modifications conducted by Rebuilding Together increase the ability to conduct ADLs and thereby increase quality-adjusted life years that lie ahead for the homeowner. The amount of QALYs gained/protected for the homeowner are then multiplied by the value of a QALY - a conservative figure of \$50,000 (Neumann et al., 2014). In other cases, QALYs can be assigned a value of over \$100,000 and as a result there is potentially much higher value that could be assigned to this outcome in the future as additional research is conducted to understand the extent and duration for

which Rebuilding Together affects ADLs.

INCREASED INDEPENDENCE - INCREASED AGING IN PLACE

Aging in place is a leading outcome of Rebuilding Together's work. Of those homeowners who said they were unlikely or very unlikely to age in place prior to receiving repairs and modifications, 86% reported more likely to age in place afterwards (Rebuilding Together, 2021). This amounts to approximately 10.3% of all households served. The costs of moving for these homeowners can potentially be very large, especially when considering a senior living community or as is more likely for those requiring home modifications, an assisted living facility. Wilder Foundation (2016) did an assessment of the costs of aging in place compared to an assisted living facility and found significant price differentials. On the most conservative scenario, homeowners save approximately \$1,000 a month by staying in home versus moving to assisted living and that includes an intensive home visiting service if they are to stay in home. We use this figure as a conservative baseline while noting that savings per month could stretch up to several thousand dollars per month depending on the facility and needs of the homeowner.

The subject of aging in place is more complex than direct savings however and with future research this complexity may be better accounted for in this SROI. For example, aging in place and living independently may put homeowners at greater risk of loneliness. Much attention has been placed on older adults who are living alone, because of recent studies that have shown that both loneliness and social isolation are associated with poor health outcomes (Perissinotto and Covinsky, 2014). Davidson and Rossall (2015) note that loneliness can be as harmful for our health as smoking 15 cigarettes a day and that people with a high degree of loneliness are twice as likely to develop Alzheimer's as people with a low degree of loneliness. Of course, living alone does not mean the person is lonely. Even in assisted living facilities where there is minimal social isolation individuals may still lack the social connections to

reduce their sense of loneliness.

Moving to an assisted living facility may pose other risks to homeowners which are costs that could be accounted for in the future with further data. Examples include risk of illness - as evidenced by COVID-19, there was a likely increase in overall mortality rates in senior housing segments (Pearson et al., 2021). And interestingly, the act of moving can lead to detrimental health impacts. Ferrah et al., (2018) examine the impact of the transition process from a community dwelling (i.e. their house) to a nursing home. Mortality rates increased following the move and this increase was not simply due to an individual's health status but also tied to the transition process itself and characteristics of the facility they are moving into.

The variables of aging in place are deserving of a study in and of themselves.

INCREASED ECONOMIC SECURITY - HOME VALUE APPRECIATION

Understanding the extent of home value appreciation following the work of Rebuilding Together remains an area of uncertainty. However, research has shown that conducting annual maintenance on a home facilitates the realization of 1% increase in property value (Houston Realtors, 2019). Noting the 45% of homeowners who felt their home was more valuable following repairs (Rebuilding Together, 2021), we can conservatively estimate home value appreciation.

INCREASED ECONOMIC SECURITY - REDUCED COST TO CAREGIVER FROM AVOIDING HAVING TO MISS WORK, CUTTING BACK TO PART-TIME HOURS ETC.

Improving the independence of a homeowner can have ripple effects on their loved ones. In many cases these loved ones also serve as informal caregivers - helping out around the house, bringing meals, etc. Various studies have looked at the importance of informal caregivers in society and noted their prominence as well as the large value of their time that currently goes uncompensated. To value this outcome we look at the

proportion of homeowners with disabilities or at risk of a fall and the extent home modifications reduce this risk (much like the pathways focused on avoided falls). From there, we link the effect of the modifications to the effect on the informal caregivers, noting that about 40% of older Americans have an informal caregiver (Institute of Medicine (US) Committee on the Future Health Care Workforce for Older Americans, 2008). A study by Carnemolla and Bridge (2019) found that home modifications could reduce the number of hours of informal care required by about 6 hours per week. Over a year that results in 312 hours of saved caregiver time which Reinhard et al. (2019) value at \$15.41 per hour. Depending on the modifications and the caregiver the value of this outcome could be much larger. It also does not account for the type of work the caregiver could otherwise be doing or the mental health benefits the caregiver could experience from less worry about their loved one. Future consideration of this outcome may be important for Rebuilding Together to include in their surveying efforts.

Notes on other less valuable outcomes:

While the above highlights the thinking behind some of the most highly valued outcomes, there are several others that while less influential on the end SROI value, are still outcomes that are occurring in homes served by Rebuilding Together.

For example, increasing health and safety is addressed through several repairs and modifications. Smoke and Carbon Monoxide (CO) detectors support avoided fire injury, avoided fire death, increased earnings and avoided health care costs from avoided CO poisoning. Moisture reduction repairs help to avoid and/or mitigate breathing problems such as asthma or Chronic obstructive pulmonary disease (COPD) with an estimated 21% of asthma cases caused by to in-home dampness and mold problems (Mudarri and Fisk, 2007). Research on COPD and moisture is still in formative stages but similar findings may occur. With 43% of homeowners responding that they have difficulty breathing at time (Rebuilding Together, 2021), efforts to improve the air quality in home could have far reaching effects for both adults

who may have greater trouble controlling symptoms that affects their ability to work and for children who may be able to avoid a lifetime of asthma and the costs associated with it. Similarly, avoided lead exposure for children can have far reaching effects, particularly on lifetime earnings due to avoided cognitive losses as well as health care costs (Gould, 2009).

The outcomes monetized extend beyond just the homeowners and residents however. Volunteering has been shown to have health benefits particularly when it is not conducted for any self-benefit. This form of volunteering improves mental health, physical health, life satisfaction, social wellbeing as well as a 4.3% reduction in depression (Yeung et al., 2017). When applied across those volunteers working on affiliate projects the value can become substantial. In this analysis it is framed conservatively by the value of depression avoided. The effect on neighborhoods can also be monetized with the most readily monetizable outcome being the value of reduced crime due to increased home repairs. South et al., (2021) find that targeted neighborhood grant-making in Philadelphia to conduct electrical, plumbing, heating or roofing repairs can reduce crime on the block receiving the funding by over 20%. While we do not know the extent crimes occurring lead to arrests or convictions, the occurrence of a crime signals of victim cost - both tangible and intangible. McCollister et al., (2010) provide a victim cost breakdown that is utilized for this analysis to show the potential monetized value of avoiding crime on the block.

NON-MONETIZED OUTCOMES

Some impacts are not readily monetizable given that the repairs and modifications made and the impact of their simultaneous delivery, are deserving of additional scientific research. In these cases there is limited data to understand how the many impacts may be realized, how they interact and the extent to which they can be isolated and attributed to Rebuilding Together. These benefits may accrue to residents, family and community members, employers, government, local businesses, or other stakeholders as of yet not identified. It is important to note that where data limitations restrict the ability to monetize an outcome there may continue to be significant value not presently represented in this SROI. The neighbors being served are value creators - they build the social fabric of their communities. This analysis is not meant to reduce them to their health care costs, energy bills, etc. just because they are most monetizable. The numbers we have calculated in this analysis are conservative and can be considered a baseline onto which additional non-monetized outcomes can be added.

Examples of non-monetized outcomes include:

- Improved hygiene: Multiple outcomes of repairs and modifications support the ability to improve personal hygiene. However, determining the extent to which hygiene improved and the resulting health outcomes from that improvement is unclear. It is expected there is some additional value creation here.
- Increased wealth transfer to 2nd generation: This outcome is important to Rebuilding Together and its mission. The evidence base surrounding this however would benefit from greater research of interventions that support wealth transfer. This requires a multi-decade study - no small undertaking - but would do a lot for understanding the extent home repairs and modifications support transfer of the ownership of the home to the next generation. The promise of this pathway is strong based on the extent a house tends to be the single largest asset of low-income homeowners.
- Additional workforce-related outcomes: Multiple outcomes that were monetized capture slices of value tied to workforce benefits. For example, avoided asthma events, avoided lead poisoning, avoided Carbon monoxide (CO) poisoning, and saved time for caregivers, each support future earnings for children and working age adults. There may be other outcomes that are directly tied to local workforce that are not yet monetized. The inclusion of these outcomes could support engagement with corporate sponsors who will be able to see how their investment can end up benefiting themselves in the long-run.
- Additional beneficial spillover effects on the neighborhood: The idea of spillover effects is one that has been discussed in multiple contexts - whether it is the qualitative discussion of the role of older homeowners in a local community, increased social cohesion, reduced gentrification, increased affordable housing all the way to the potential for increasing property values realized by low income homeowners due to home repairs on a given block. Some spillover effects, such as reduced crime were monetized in this analysis. There remains however difficulty in aligning the literature on some of these subjects to Rebuilding Together. For example, leading studies on the subject may address a different scope of investments in a community that then support increased property values. For example, Galster et al.'s (2008) study on the Neighborhoods in Bloom initiative in Richmond, VA includes a multitude of investment types in a targeted geography such as new construction, tear downs, rehabilitation, exterior code enforcement and referrals to financial assistance. And at this point it is unclear if the extent certain types of investment may be the leading value drivers or if they all equally support property value appreciation in a community. And similarly, understanding change in property values of immediately adjacent properties necessitates sales data which may or

may not be occurring and may be confounded by other influences - particularly as the radius out from the house served is expanded. Further, studies documenting the rise in property values from targeted neighborhood development initiatives have not effectively controlled for who is benefiting from that rise in property value. The tension between rising property values for the homeowner versus the risk of gentrification means that affordable housing may be lost when a low-income homeowner sells their appreciated property.

- Change in health from reduced household cost burden: Multiple outcomes such as reduced maintenance and reduced energy bills support reduced household cost burden. The potential impacts of this reduced household cost burden may lead to reduced downward pressure on calories consumed by household members among other potential effects (e.g. increased dental visits, health care use, reduced debt stress, etc.). The isolation of the extent health is improved from reduced household cost burden is less clear at this time. Bhattacharya et al., (2003) study the effects of increased fuel expenditures during uncommonly cold weather in the U.S. They find that while caloric intake of poor families was reduced by 7.9%-11.6%, the resulting effects on vitamin deficiencies and anemia were not statistically significant. Noting this limitation, this analysis focuses on the cost savings

experienced by homeowners without assuming how the savings may be used.

- Cost of removing neighbors from home due to poor quality housing conditions: The potential avoidance of having to move neighbors from their home is large as new housing must be found and social services may be needed. Understanding the likelihood a homeowner served by Rebuilding Together would otherwise be at risk of having to move due to unsafe conditions would allow for inclusion of this pathway in the future.
- Public agency involvement leading up to or following hospitalization: depending on the incident numerous public services may be activated at different times to support homeowners. This may include social workers, fire department, police, etc. - each of which incurs a cost that could potentially be avoided with safer, healthier housing. The extent these costs are avoided is however variable and understudied.

SOCIAL RETURN ON INVESTMENT

The SROI for this analysis takes the benefits generated by each safe and healthy housing residential project undertaken by Rebuilding Together affiliates, divided by the median costs incurred to deliver those benefits (shown in Table 9). The resulting SROI is approximately \$2.84. For every \$1 invested in the typical home, there is a projected \$2.84 in social value generated for the homeowners, their families, their caregivers, the health care system and taxpayers more generally. The health care system as a whole receives approximately \$1.46 in value for every dollar invested while homeowners and residents receive approximately \$1.19 in value.

Table 9: Projected SROI by Stakeholder

TOTAL		\$2.84	OUTCOMES EXPERIENCED
Resident		\$1.19	Improved quality of life, avoided falls, death prevention, improved respiratory health, avoided chronic diseases, increased earnings, reduced stress, home maintenance and energy cost savings, increased home value
Health Care System	Medicare (Federal)	\$0.69	Reduced health care costs covered due to avoided falls, fire-related injury, lead exposure, use of assisted living facility, stress, depression and other hospitalizations
	Medicaid - Federal	\$0.43	
	Medicaid - State	\$0.20	
	Private Insurance	\$0.14	
Children in Home		\$0.00	Increased future earnings, improved health, avoided special education use
Caregiver		\$0.01	Value of time saved from reduced caregiving needed
Society		\$0.15	Avoided victim costs of crime (local communities), social costs of carbon from increased energy efficiency (global society)
Taxpayers - Federal		\$0.0019	Increased income, payroll, sales, property taxes paid
Taxpayers - State		\$0.0006	
Taxpayers - Local		\$0.0004	

In comparison, using an average cost per house leads to a reduction in the SROI to about \$1.42. This reduction is due to an average cost that is approximately double that of the median cost. Some projects are significantly more expensive than the majority of projects which drives the average cost up. The median value is used in the visualization as it is a more representative view of the typical investment made into each home.

OUTCOME ATTRIBUTION RATIOS

In order to estimate the SROI to each stakeholder (shown in Table 10), we must estimate the extent each outcome affects the relevant stakeholder. The table below shows how the value of each outcome (left column) is allocated to the given stakeholder (top row). Of note, the stakeholders with value assigned to them only include those with associated monetized outcomes. This stakeholder breakdown should be viewed as a preliminary estimate to note the potential scale of value to target beneficiaries. With additional data on aspects of homeowners health care coverage for example, these figures can be refined.

Table 10: Outcome attribution ratios

	Primary beneficiary in Home	Taxpayers - Federal (income)	Taxpayers - State (income)	Taxpayers - Local (indirect from income)	Medicare (Federal)	Medicaid - Federal	Medicaid - State	Private Insurance	Provider Charitable Contribution	Children in Home	Caregiver	Global Society	Notes
Reduced risk of fall leading to hospitalization due to home modifications (e.g. ramps, grab bars, etc.) - Avoided hospital admission and ED costs	0.08				0.5	0.225	0.135	0.06					Assume fall risk is avoided for 65+ population who are Medicare beneficiaries. Additional out of pocket may go to outpatient rehab.
Reduced risk of fall leading to death due to home modifications (e.g. ramps, grab bars, etc.)	1												Value of a Statistical Life (VSL) is realized by the individual themselves.
Reduced risk of fall leading to non-hospitalization due to home modifications (e.g. ramps, grab bars, etc.) - reduced future ADLs	1												QALY is realized by the individual themselves.
Improved respiratory health from improved ventilation and air quality - avoided asthma related hospitalizations, ED visits and reduced medication use for adults	0.08				0.3	0.35	0.21	0.06					WSIPP, 2019 - general hospital costs. The weighting of Medicaid to Medicare beneficiaries here is greater than the population total, given that we expect Medicaid recipients to disproportionately benefit from RT services.
Increased productivity from reduced asthma symptoms	0.76	0.159	0.049	0.032									
Improved respiratory health - children - avoided health care expenditures from asthma symptoms	0.021					0.563	0.338	0.079					Noting that the majority of children in households served by Rebuilding Together Affiliates will be on Medicaid or Medicaid and noting that 37.5% of Medicaid on average comes from the States, the bulk of the health care expenditures are realized by federal and state governments.
Improved respiratory health - children - avoided missed work days for parents	0.76	0.159	0.049	0.032									
Improved respiratory health - children - avoided loss of QALY										1			QALY is realized by the child themselves.
Improved physical health from reduced exposure to lead, asbestos, radon - for children	0.319	0.079	0.025	0.016	0.055	0.011	0.007	0.109		0.38			Lead exposure impacts both future earnings of the child and their physical health care expenditures
Improved physical health - reduced hospitalizations	0.08				0.3	0.35	0.21	0.06					WSIPP, 2019 - general hospital costs. The weighting of Medicaid to Medicare beneficiaries here is greater than the population total, given that we expect Medicaid recipients to disproportionately benefit from RT services.
Improved hygiene													
Increased ease of conducting activities of daily life	1												QALY is realized by the individual themselves
Reduced Type 2 Diabetes expenditures from increased home cooked meals	0.166				0.304	0.25	0.15	0.13					Assumes in large part, cost of care is covered by Medicare or Medicaid but includes proportions of out of pocket and private insurance as aligned to WSIPP, 2019 projections
Improved mental health (due to reduced stress and increased thermal comfort)	0.011					0.587	0.220	0.182					WSIPP, 2019 - Proportion of Health Care Costs by Source - Mental Health Costs

Reduced Greenhouse gas (GHG) emissions from energy efficiency												1	The social cost of carbon applies to global society with negative effects felt most heavily those with the least ability to adapt	
Cost savings from energy efficiency	1												Avoided energy spending is realized by the homeowner	
Increased wealth transfer to 2nd generation														
Increased likelihood of aging in place	0.092				0.609	0.167	0.059	0.073					WSIPP, 2019 - Proportion of Health Care Costs by Source for Individuals Age 65 and Over - Skilled Nursing Facility (assuming this aligns with the cost breakdown of low income individuals entering an assisted living facility)	
Reduced maintenance costs	1													
Increased safety - reduced fire death rate	1												Valuation is tied to value of a statistical life - based on an individuals WTP	
Increased safety - reduced fire injury rate	0.08				0.3	0.35	0.21	0.06						
Improved physical health from increased temperature control	0.08				0.3	0.35	0.21	0.06					WSIPP, 2019 - general hospital costs. The weighting of Medicaid to Medicare beneficiaries here is greater than the population total, given that we expect Medicaid recipients to disproportionately benefit from RT services.	
Increased home value appreciation	1												Home value is experienced by the homeowner but may not be 'cash in pocket'	
Reduced cost to caregiver from avoiding having to miss work, cutting back to part-time hours, etc.												1	Value of time spent caregiving is value for the caregiver themself	
Improved mental health from volunteering (affiliate volunteers, AmeriCorps members, CapacityCorps members)	0.166				0.304	0.25	0.15	0.13					Assumes in large part, cost of care is covered by Medicare or Medicaid but includes proportions of out of pocket and private insurance as aligned to WSIPP, 2019 projections	
Reduced crime and increased sense of pride in community													1	Benefits of avoided victim costs accrue to victims only
Improved health and earnings from avoided CO poisoning	0.3	0.063	0.065	0.013	0.18	0.21	0.126	0.036					Benefits of avoided CO poisoning extend across homeowners, health care system and taxpayers due to potential change in earnings.	
Beneficial spillover effects on the neighborhood														

DISCUSSION ON METHODOLOGY AND DATA QUALITY

Data in this projection is built from a combination of external literature, milestone meeting discussions, and information provided by Rebuilding Together and affiliates that participated in milestone meetings. As discussed earlier, this analysis is a projection, using estimates based on Rebuilding Together data where available and secondary research with the highest level of evidence of causality when possible.

The monetization process utilized a combination of market price and benefits transfer methods such that we are attaching dollar values to impacts based on the market price associated with that impact (e.g. health care expenditures) and/or utilizing the value in another study when the study is appropriately aligned with the services provided by Rebuilding Together (e.g. value of a QALY).

As monetization of outcomes is occurring, Ecotone's process utilizes trumping rules - best practice for benefit-cost analyses (as detailed by WSIPP, 2019). This means that where monetized pathways lead to the same category of outcome (e.g. increased earnings from more hours worked vs. increased earnings from additional education), we take the largest valued pathway to be the one utilized in the SROI calculation. This is to avoid risk of double counting gains made and to be sure not to overclaim impact generated.

As a part of the analysis process, subject matter experts provided feedback on draft components of the analysis. Experts engaged included:

- Directors of three affiliates
 - Caleb Marshall, Executive Director, Rebuilding Together Seattle;
 - RD Bonnaghan, Executive Director, Rebuilding Together - North Central Florida;
 - Abby Lemay, Executive Director, Rebuilding Together Central Florida
- Jonathan Wilson, Deputy Director and CFO, National Center for Healthy Housing
- Dr. Tiffany Manuel, CEO and President, The Case Made

These interviews provided insights on scoping the work that Rebuilding Together delivers, developing key messages for the analysis to address, creating useful deliverables, discussing the evidence base related to specific outcomes, among other aspects.

AREAS OF UNCERTAINTY

As with any SROI projection there are uncertainties in the modeling - many of which were described within the previous description of the monetized outcomes. We note them here for transparency.

- Understanding the counterfactual is an ongoing and important uncertainty that would benefit from simultaneously tracking outcomes of homeowners on the waitlist
- The causal argument of Rebuilding Together repairs being the cause of all outcomes monetized is often uncertain
- Duration of impact of the repairs and modifications could have potentially very wide ranging timelines although few studies take long-term follow-ups to inform the full duration
- The extent the affiliates participating in the evaluation are representative of the affiliate network as a whole may influence the extent the projected SROI can be used by all affiliates
- Weatherization-related repairs are studied as a collective set of repairs although it is unclear the extent Rebuilding Together addresses them in whole or in part at each project
- Energy and maintenance savings are both driven by homeowners' qualitative responses and would benefit from further analysis that is more specific to Rebuilding Together's services
- Characteristics of other household members is harder to account for but could be an important additional set of outcomes
- Cost variability and impact variability of volunteer vs. contractor services is worthy of further analysis
- Health care system cost savings and who would bear the costs is often unclear, including the extent Medicaid vs. Medicare would cover expenses and if other insurers would be involved
- Quality of life and mental health gains that result from physical health gains could be very significant although are often unclear/understudied

ADDITIONAL FUTURE RESEARCH

There are multiple opportunities for future research that can enhance the value monetized in this analysis. The first avenue of future research would be a longitudinal quasi-experimental study of homeowners and residents who receive Rebuilding Together services versus those who do not. This would serve to customize future SROIs to be as specific to Rebuilding Together as possible and reduce the extent external literature is leveraged to build the monetized pathways. This would also be used to help understand the potential added value from the unique bundling of repairs and modifications that make up the SHH priorities. Implementation of this type of longitudinal study may not be readily feasible given the resource intensiveness of those studies, but we note it here to acknowledge its role in future SROI analyses. For example, tracking the same outcomes of those homeowners on the waitlist versus those who receive services could be conducted if affiliates have the appropriate capacity.

For Rebuilding Together, specific areas of future research and data collection involve addressing questions such as:

- What is the likelihood homeowners find alternative options to make critical repairs/modifications without Rebuilding Together? Do they end up making the repair themselves, accessing public grants, connecting with other non-profits? Understanding the extent homeowners at least partially address repair and modification needs is helpful to Rebuilding Together understanding their competition which will vary from market to market.
- What are the baseline characteristics of homeowners and other household members? What health conditions do they have, how severe are they, etc. could help further refine the types of monetized benefits accounted for. Certain characteristics are already accounted for (e.g. have had a fall or near fall, trouble breathing) but aspects of rates of chronic disease, types of disabilities, etc. would help identify other outcomes.

- Follow up evaluations with those affiliates who are delivering services in targeted neighborhoods to both isolate the types of services being provided as well as surveying homeowners around the types of changes they've seen on their block, in their neighborhood, follow on investments, etc.
- In future evaluations, incorporating contingent valuation approaches into the surveying and/or focus groups may be used to help understand the value of currently less tangible outcomes such as those falling under the community connection impact domain (e.g. pride, social cohesion, optimism, etc.).
- Generating a sense of scale for the change in energy bills due to repairs would also help both to strengthen the outcomes relating to energy use, but also provide stronger footing for projecting benefits

of reduced household cost burden.

- What referrals are affiliates providing to homeowners? The increased likelihood of connecting to other forms of support can further support homeowner health and community well-being.

IMPACT RISK

A part of understanding impact is the risk of not achieving the desired positive impact and the risk of creating unintended negative impacts. The Impact Management Project (IMP) is a community of 2,000+ organizations building consensus on how to measure, compare and report impact on environmental and social issues. IMP has identified 9 types of impact risk, shown in Figure 11. We include a risk assessment and brief analysis of the 9 types of impact risk, shown in Table 12. These risks present as opportunities for further growing the impact and SROI of Rebuilding Together.

Table 11: Impact Management Project 9 Types of Impact Risk

Enterprises and investors face nine types of impact risks		Risk 
Impact Risk	Definition	
1 Evidence risk	→	The probability that insufficient high-quality data exists to know what impact is occurring
2 External risk	→	The probability that external factors disrupt our ability to deliver the impact
3 Stakeholder participation risk	→	The probability that the expectations and/or experience of stakeholders are misunderstood or not taken into account
4 Drop-off risk	→	The probability that positive impact does not endure and/or that negative impact is no longer mitigated
5 Efficiency risk	→	The probability that the impact could have been achieved with fewer resources or at a lower cost
6 Execution risk	→	The probability that the activities are not delivered as planned and do not result in the desired outcomes
7 Alignment risk	→	The probability that impact is not locked into the enterprise model
8 Endurance risk	→	The probability that the required activities are not delivered for a long enough period
9 Unexpected impact risk	→	The probability that significant unexpected positive and/ or negative impact is experienced by people and the planet

Source: Impact Management Project



Table 12: Impact Risk Assessment of Rebuilding Together, and their goal to serve provide affordable housing opportunities

IMPACT RISK	ASSESSMENT	ANALYSIS OF PERCEIVED RISK
Evidence Risk	Medium	Studies on the collection of repairs and modifications delivered by Rebuilding Together are in need of further development. To date, the evidence is focused on specific types of repairs/modifications (e.g. weatherization) and/or specific outcomes to be addressed (e.g. avoided falls). Future research is needed to help better understand how the combination of repairs/modifications drive value.
External Risk	Medium	The risk of disruption from external factors is currently medium. There is a very high need for Rebuilding Together's services and even if competition were to grow, the impact would not be significantly diluted. However, as shown over the course of the COVID-19 pandemic, large scale economic disruptions can alter the availability of materials Rebuilding Together needs as well as drive up the price of skilled labor, both of which restrict the reach of the organization's impact.
Stakeholder Participation Risk	Medium	Providing repairs and modifications that either do not align with the needs of the individuals or do not reach the individuals most in need is a potential risk to generating maximum impact. Further, repairs and modifications may not be culturally appropriate. And finally, unclear project expectations may lead to confusion and disagreement between homeowners and affiliates over what needs should be prioritized, the extent day-to-day living may be disrupted (based on the scale of the project), etc.
Drop-off Risk	Medium	Drop-off risk is in this case tied to the evidence risk as there is often uncertainty around not only how long repairs and modifications will last but also how long those repairs and modifications will support the outcomes initially realized. For example, deteriorating health of homeowners, lack of awareness of proper maintenance, etc. may spur a faster drop-off of impact. Further study and follow-ups are needed to more fully understand this risk.
Efficiency Risk	Low	The efficiency by which Rebuilding Together delivers its services does not appear to pose a risk to the organization achieving impact although as with any affiliated organization, the risk of multiple layers of overhead and fundraising efforts may lead to additional back-end staff time and energy. However, the national office has positioned itself to boost the effectiveness of its affiliates and streamline access to funding, supporting efficiency of service delivery.

Execution Risk	Medium	Rebuilding Together has a strong reputation as being experts in the safe and healthy housing space. The national office's efforts to systematize the delivery of repairs and modifications strengthen the execution of service delivery by affiliates. There does continue to remain execution risk on the ground due to potential reliance on volunteers with limited skills who cannot effectively deliver the scope of services a homeowner may need or from contractors that may put less effort into Rebuilding Together projects. Or alternatively, the potential reliance on project specific sponsorships and limited funding may similarly limit the ability of affiliates to deliver the scope of services needed and not address the most critical repairs which may be outside of the budget's capacity.
Alignment Risk	Low	There is very low risk of impact not being locked into the organization's model. Rebuilding Together's mission is built around delivering impactful solutions and its national office team is continually building impact measurement and management tools to further support the maximization of impact.
Endurance Risk	Medium	The risk that services are not delivered for a long enough time period is tied less to the time it takes to conduct the repairs/modifications and more so to the education and support provided to the homeowners in tandem to the repairs. Taking the time to help owners recognize why certain repairs and modifications are being delivered can help ensure the homeowners get the most out of their engagement with Rebuilding Together.
Unexpected Impact Risk	Medium	Given the importance of housing both as a social determinant of health and as the largest asset for many low-income homeowners, there is potential for unexpected impacts. These may be positive such as family members moving into the repaired home and realizing the associated health benefits. Or they may be negative such as if being connected to Rebuilding Together ends up leading to the homeowner having to leave their home due to unsafe living conditions. Or vice versa, if following the no-cost repairs the homeowner has the opportunity to sell the home.

TAKEAWAYS AND RECOMMENDATIONS

The SROI on Rebuilding Together's investment is projected to be almost \$3, supporting \$3 of social value for every \$1 invested. The largest outcome monetized was the increased likelihood of aging in place and avoided costs of assisted living facilities (\$5,661), followed by the improved quality of life from increased ease of conducting activities of daily life (\$3,107). Amongst stakeholders, the leading beneficiary is the health care system as a whole, followed closely by the homeowners. Many outcomes monetized have direct health care costs associated with them, as a result, creating savings for health care insurers and providers.

This analysis monetized 25 outcomes (and notes more for inclusion in the future) across the 6 impact domains. This is a compelling value proposition, particularly for funders interested in aligning their funding with the social determinants of health given that Rebuilding Together addresses multiple determinants with a single project, potentially impacting multiple people at once. Furthering the use of the Safe and Healthy Housing (SHH) Priorities checklist may help to ensure more affiliates are achieving the returns monetized here.

IMPACT MEASUREMENT AND REPORTING

The Key Performance Indicators (KPIs) in Table 13 are recommended for tracking Rebuilding Together's impact. KPIs noted are those that align closely with the outcomes monetized in this analysis and/or would be useful for future monetization efforts. Scale KPIs are outputs and subsets of outputs that can be used to understand the scale of impact of Rebuilding Together. Many of these are already tracked by Rebuilding Together. Quality KPIs are those incremental improvements that can be used to help understand the benefit generated per resident and family member served. These are often short-term or intermediate outcomes within the logic model. Of note, these figures do not have to be an annual figure, and instead could simply reflect 1) the present state and 2) the direction pursued.

Table 13: Recommended Key Performance Indicators (bolded KPIs are those already being tracked)

KEY PERFORMANCE INDICATORS (KPIs)	
Scale KPIs	Quality KPIs
# of housing hazards eliminated	% reduction in residents who fall and # of falls
# of homes served (per quarter, year, cumulative)	% reduction in health care visits (disaggregated by type of visit)
Funds spent on repairs and modifications (total and per house)	% of residents reporting improved mental health
# of projects with SHH 25-point checklist completed	\$ reduction in monthly energy bills
# of applications received and accepted	% of residents who age in place that would not have otherwise done so
# of repairs and modifications (per home, by type)	% change and \$ change in home value post-repairs
# of volunteers and volunteer hours	% of residents who report cooking at home more (and % increase in meals cooked at home)
# of people benefiting (disaggregated by race/ethnicity, age, gender, disability, veteran)	% reduction in respiratory health / % reduction in asthma-related hospital visits
# of affiliates	% of homeowners who would otherwise go without repairs/modifications
\$ invested per home (disaggregated by race/ethnicity, age, gender, disability, veteran)	% of homeowners and residents that increase ease of conducting ADLs
	% of homeowners and residents reporting improved personal hygiene

IMPACT STRATEGY RECOMMENDATIONS

The following recommendations are based on the assessed impact risk and are opportunities for Rebuilding Together to further protect and grow its impact:

- Look for more flexible funding sources to support adaptation to the critical repairs needed.
- Support equitable access to project funding including direct project expenditures.
- Disparities in how much direct spending occurred for different homeowner characteristics may reveal disparities in the ability to appropriately assess the household's needs. Continued and expanded trainings to recognize biases, including racism, may support more equitable project funding.
- Continued support for building the evidence base specific to Rebuilding Together will strengthen its understanding of impact as well as how best to manage and maximize it. This includes supporting longitudinal studies that include follow ups with homeowners.
- Continue providing educational support to both homeowners and volunteers to maximize effective utilization of the repairs and modifications including what continued maintenance the homeowner may be responsible for.
- Continued targeting of households at greatest risk of unsafe and unhealthy homes.
- Expand the use of neighborhood targeting among affiliates.
- Utilize impact reporting standards - outlined in the following section.

ATTRACTING INVESTMENT AT SCALE

The perceived size of the investment opportunity and the capacity to package up the investment offering could make Rebuilding Together appear more competitive against other housing-related investment opportunities (this may be a part of the national office's role already). To help lay out how a municipality may view the impact potential of an affordable housing development compared to Rebuilding Together repairs/modifications we outlined a quick example.

Say there is a \$5 million investment for a new affordable housing development which is projected to generate \$10 million in social value (an SROI of \$2). The city could point to a net benefit of \$5 million.

Meanwhile if Rebuilding Together affiliates are viewed as a smaller investment opportunity but can take say a \$200k investment and create \$600k

in social value (SROI of \$3 and net benefit of \$400k), they are more efficiently creating value but are not generating the scale of value that a new development can.

If however, the national office / affiliates can pool their capacity to be able to receive, for example, a \$3 million investment for repairs/modifications to preserve affordable housing, and then generate \$9 million in social value (SROI of \$3), now they have made a net benefit of \$6 million. They have created greater net benefits than the affordable housing development and done so with less upfront investment. The message here is just that the perceived investability could influence how large funders like a municipality determine how much to give. Bigger funders often want bigger investment opportunities - and if the only big opportunities to generate impact look like new developments, that's where a lot of dollars will go.

In addition to mitigating impact risks which protects the SROI, there are additional means to grow the SROI. These include:

- Target homeowners at greatest risk of having to move due to safety, independence, or risk of a fall. Especially homes where there are multiple individuals with the same or similar safety and independence risks.
- Target homeowners who rely on caregivers - especially informal caregivers.
- Target homeowners at greatest risk of being moved and in neighborhoods experiencing gentrification.
- Target households with multiple residents.
- Reduce direct costs of repairs and modifications.
- Provide access to continued home maintenance supports, referrals to estate planning, etc. which help to protect value created by Rebuilding Together.

With future analysis and continued data collection, Rebuilding Together affiliates will be able to prioritize repairs and modifications by expected SROI (among other project criteria).

IMPACT COMMUNICATION

Effective impact communication is important for partner engagement and fundraising. Use of the United Nations' Sustainable Development Goals (UN SDGs) and the Impact Management Project Five Dimensions of Impact can help investors quickly understand the nature of Rebuilding Together's work.

UNITED NATIONS' SUSTAINABLE DEVELOPMENT GOALS

These are the blueprint, established by the United Nations, to achieve a better and more sustainable future for all and include 17 distinct goals. They serve as an easily recognizable marker of agreed upon impact areas for stakeholders.



Goal 1:

End poverty in all its forms everywhere

Target 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

Indicator 1.4.1 Proportion of population living in households with access to basic services

Target 1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters



Goal 3:

Ensure healthy lives and promote well-being for all at all ages

Target 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being

Indicator 3.4.1 Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease

Target 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

Indicator 3.9.1 Mortality rate attributed to household and ambient air pollution

Indicator 3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)

Indicator 3.9.3 Mortality rate attributed to unintentional poisoning



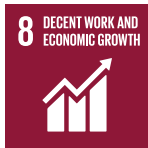
Goal 6:

Ensure availability and sustainable management of water and sanitation for all

Target 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

6.1.1 Proportion of population using safely managed drinking water services

Target 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations



Goal 8:

Ensure access to affordable, reliable, sustainable and modern energy for all

Target 7.3 By 2030, double the global rate of improvement in energy efficiency



Goal 10:

Reduce inequality within and among countries

Target 10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

Indicator 10.2.1 Proportion of people living below 50 per cent of median income, by age, sex and persons with disabilities



Goal 11:

Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing

Target 11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities

IMPACT MANAGEMENT PROJECT FIVE DIMENSIONS OF IMPACT

The Impact Management Project (IMP) is a community of 2,000+ organizations building consensus on how to measure, compare and report impact on environmental and social issues. The IMP community has developed a set of 5 dimensions of impact in order to help build consensus and a common language when organizations and investors discuss their impact. This has been a rapidly growing field, and future alignment with the 5 dimensions could help attract additional investment.

Table 14. Rebuilding Together Five Dimensions of Impact











REBUILDING TOGETHER FIVE DIMENSIONS OF IMPACT	
	WHAT: No cost home repairs and modifications, enabling homeowners to stay in their homes and build generational wealth.
	WHO: Elderly, veteran, low-income homeowners and communities of color across the country with little access to other home repair and modification services.
	HOW MUCH: In 2019, 8,885 residential projects were completed, with repairs and modifications lasting between 5-20+ years.
	CONTRIBUTION: Research illustrates the extent that financial barriers and home health hazards impact homeowners’ abilities to safely and affordably stay in home. Homeowners are unlikely to receive similar services at no cost from other organizations.
	IMPACT RISK MITIGATION: Affiliates assess home repair and modification needs via a Safe and Healthy Housing Priorities checklist, ensuring thorough, quality, and accessible service. Multi-year commitments are made to target neighborhoods, strengthening community infrastructure. Equity educational models are used to improve staff, volunteer, and contractors’ engagement with homeowners, building trust.



Table 15. Impact Management Project’s Five Dimensions of Impact Defined

Impact Dimension	Impact Questions Each Dimension Seeks to Answer
 WHAT	<ul style="list-style-type: none"> • What outcome(s) does a business’ practices and products affect, positively or negatively? • Is it an important outcome to the person or planet?
 WHO	<ul style="list-style-type: none"> • Who experiences the effect, and how underserved are they in relation to the outcome?
 HOW MUCH	<ul style="list-style-type: none"> • How much of the effect occurs? Is the effect a deep driver of the outcome? • Does it occur for many people and/or last for a long time?
 CONTRIBUTION	<ul style="list-style-type: none"> • How does the effect compare and contribute to what the market would likely do anyway?
 IMPACT RISK MITIGATION	<ul style="list-style-type: none"> • What is the risk to people and planet that the impact does not occur as expected?

IMPACT
MANAGEMENT
PROJECT

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Appendix A: SENSITIVITY TABLE

VARIATION IN COSTS AND BENEFITS WITH- OUT SPECIFICITY TO A GIVEN ASSUMPTION

The following scenarios are developed to test the sensitivity of the SROI estimation to a simultaneous change in costs and benefits without specificity to a given assumption. Table 1A shows how the SROI could change given a 50% increase or decrease in costs and benefits. Only in those cases where costs are increased by 50% and benefits reduced by 50% does the SROI dip below \$1. As a result, it would take a significant alteration of how and what services are delivered to not achieve at least a \$1 SROI on average.

Table 1A: Rebuilding Together SROI Sensitivity

SROI Sensitivity		% change in outcome benefits										
		-50%	-40%	-30%	-20%	-10%	0%	10%	20%	30%	40%	50%
% change in cost	-50%	\$2.84	\$3.41	\$3.98	\$4.55	\$5.12	\$5.68	\$6.25	\$6.82	\$7.39	\$7.96	\$8.53
	-40%	\$2.37	\$2.84	\$3.32	\$3.79	\$4.26	\$4.74	\$5.21	\$5.68	\$6.16	\$6.63	\$7.11
	-30%	\$2.03	\$2.44	\$2.84	\$3.25	\$3.65	\$4.06	\$4.47	\$4.87	\$5.28	\$5.68	\$6.09
	-20%	\$1.78	\$2.13	\$2.49	\$2.84	\$3.20	\$3.55	\$3.91	\$4.26	\$4.62	\$4.97	\$5.33
	-10%	\$1.58	\$1.89	\$2.21	\$2.53	\$2.84	\$3.16	\$3.47	\$3.79	\$4.11	\$4.42	\$4.74
	0%	\$1.42	\$1.71	\$1.99	\$2.27	\$2.56	\$2.84	\$3.13	\$3.41	\$3.70	\$3.98	\$4.26
	10%	\$1.29	\$1.55	\$1.81	\$2.07	\$2.33	\$2.58	\$2.84	\$3.10	\$3.36	\$3.62	\$3.88
	20%	\$1.18	\$1.42	\$1.66	\$1.89	\$2.13	\$2.37	\$2.61	\$2.84	\$3.08	\$3.32	\$3.55
	30%	\$1.09	\$1.31	\$1.53	\$1.75	\$1.97	\$2.19	\$2.41	\$2.62	\$2.84	\$3.06	\$3.28
	40%	\$1.02	\$1.22	\$1.42	\$1.62	\$1.83	\$2.03	\$2.23	\$2.44	\$2.64	\$2.84	\$3.05
	50%	\$0.95	\$1.14	\$1.33	\$1.52	\$1.71	\$1.89	\$2.08	\$2.27	\$2.46	\$2.65	\$2.84

Appendix B: COST ESTIMATION DETAILS

The following tables outline a more detailed look into the approach to estimating the cost of each line item needed to deliver the repairs and modifications.

Table 1B: National office expenses - 2019

	Safe and Healthy Housing/affiliate relations - excluding grants made to affiliates	Supporting services	Proportion directed to Safe and Healthy Housing (based on proportion of program services directed to SHH)	Supporting services budget to SHH
Salaries and benefits	\$1,442,708	\$1,114,212	0.583	\$649,586
Professional fees	\$249,191	\$531,457	0.583	\$309,839
Donated goods and services	\$1,031,103		0.583	\$0
Occupancy and office expense	\$405,205	\$280,574	0.583	\$163,575
Special events and rehabilitation projects	\$848,392	\$25,700	0.583	\$14,983
Affiliate insurance	\$476,553		0.583	\$0
Travel, training and meetings	\$167,861	\$66,413	0.583	\$38,719
National conference	\$202,764	\$767	0.583	\$447
Video and promotional	\$23,196	\$14,394	0.583	\$8,392
Totals	\$4,846,973	\$2,033,517		\$1,185,540
Total national office expenses in 2019		\$6,032,513		

Table 2B: National office Expenses per Project

NATIONAL OFFICE EXPENSES 2019	NUMBER OF PROJECTS IN 2019	AVERAGE NATIONAL OFFICE COST PER PROJECT
\$6,032,513	8,885	\$679

Table 3B: Volunteer value per project

Skilled volunteer hours	General volunteer hours	Skilled volunteer hours per project	General volunteer hours per project	Skilled volunteer value (\$60/hr)	General volunteer value (\$28.54/hr)	2019 number of houses served	Average volunteer value per project
277,246.8	338,857.2	31.20	38.14	\$16,634,808	\$9,670,984	8,885	\$2,961

Table 4B: Volunteer value per project by size of affiliate

Annual budget	Average number of projects	% of all Rebuilding Together projects	Average volunteer hours per year		Average volunteer hours per project		Number of projects	Total cost to repair homes	Average cost per home
			General	Specialized	General	Specialized			
0-50k	9	1.98%	550	240	61.1	26.7	251	\$455,002	\$1,813
51-100k	17	3.74%	110	982	6.5	57.8	187	\$467,739	\$2,501
101-250k	25	5.49%	822	674	32.9	27	605	\$1,944,427	\$3,214
251-500k	44	9.67%	569	978	12.9	22.2	796	\$3,038,855	\$3,818
501-750k	44	9.67%	953	417	21.7	9.5	568	\$2,116,484	\$3,726
751k-1 million	190	41.76%	641	785	3.4	4.1	1713	\$4,188,737	\$2,445
1 million+	126	27.69%	1519	649	12.1	5.2	2016	\$19,784,876	\$9,814

Volunteer value per project is largest for organizations with an annual budget above \$1 million. Below that, the value of volunteers per project ranges from \$1,800 to \$3,800.

Appendix C: SROI WHEN SERVING THOSE AT HIGH RISK OF FALL

In order to understand how the SROI might change when we assume that services are being delivered to a homeowner who is most likely to realize the largest monetized gains from those services, we set up a second SROI scenario.

The following tables detail how the costs and benefits change for a given homeowner characteristic - high fall risk. For homeowners with this risk, it was found that the cost per home increased relative to all homes but so do the projected benefits. Median costs increased from \$7,900 to \$10,202. Benefits increased from \$22,452 to \$35,090.

Table C1: Average and Median costs

Average cost per home	\$15,830
Median cost per home	\$10,202

In Table C2 below we note the outcomes accruing when the homeowner is at risk of a fall and highlight the key outcomes that change as a result of this. All three outcomes tied to reduced risk of a fall dramatically increase. Similarly, ease of conducting activities of daily life and reduced burden on caregivers both increased substantially as well due to how homeowners may be affected following a fall.

Table C2: Outcomes

OUTCOMES	MARGINAL BENEFIT PER HOME (NPV AT 3%)
Reduced risk of fall leading to hospitalization due to home modifications (e.g. ramps, grab bars, etc.) - Avoided hospital admission and ED costs	\$6,326
Reduced risk of fall leading to death due to home modifications (e.g. ramps, grab bars, etc.)	\$4,978
Reduced risk of fall leading to avoided loss of ADLs due to home modifications (e.g. ramps, grab bars, etc.)	\$2,489
Improved respiratory health from improved ventilation and air quality - avoided asthma related hospitalizations	\$48
Improved physical health - reduced hospitalizations	\$1,719
Increased ease of conducting activities of daily life	\$6,796
Reduced Type 2 Diabetes expenditures from increased home cooked meals	\$42
Improved mental health (due to reduced stress and increased thermal comfort)	\$1,931
Reduced GHG emissions from energy efficiency	\$49
Cost savings from energy efficiency	\$220
Increased likelihood of aging in place	\$5,661
Reduced maintenance costs	\$476
Increased safety - reduced fire death rate	\$10
Increased safety - reduced fire injury rate	\$0
Improved physical health from increased temperature control	\$0
Increased home value appreciation	\$1,535
Reduced cost to caregiver from avoiding having to miss work, cutting back to part-time hours etc.	\$2,394
Improved mental health from volunteering (affiliate volunteers, AmeriCorps members, CapacityCorps members)	\$207
Reduced crime and increased sense of pride in community	\$200
Improved health and earnings from avoided CO poisoning	\$9
TOTAL	\$35,090

When bringing these costs and benefits together we see an increase in the SROI, moving from \$2.84 for all households to \$3.44 when targeting those at risk of a fall. While this is not to suggest that Rebuilding Together serve only those at risk of a fall, it shows how, based on the types of repairs and modifications delivered, there are certain homeowner characteristics that are more likely to more quickly realize the benefits of those repairs and modifications. In households with children and/or younger adults, the costs avoided may in some cases be many years out (e.g. lost earnings from respiratory health) which reduces the present value of the benefits.

Table C3: SROI by stakeholder

		BASED ON AVERAGE COST	BASED ON MEDIAN COST
TOTAL		\$2.22	\$3.44
Primary beneficiary in Home		\$1.12	\$1.74
Health Care System	Medicare (Federal)	\$0.46	\$0.71
	Medicaid - Federal	\$0.26	\$0.41
	Medicaid - State	\$0.13	\$0.20
	Private Insurance	\$0.08	\$0.13
Children in Home		\$0.00	\$0.00
Caregiver		\$0.00	\$0.23
Global Society		\$0.00	\$0.01
Taxpayers - Federal		\$0.00	\$0.00
Taxpayers - State		\$0.00	\$0.00
Taxpayers - Local		\$0.00	\$0.00

Appendix D: MONETIZED PATHWAYS

The following tables outline the estimation process for each outcome. These tables note the outcome, the projected marginal benefit (per year if appropriate), along with the figures, sources and accompanying notes used to make the project. Tables shaded grey were not monetized. Following these tables there is a Multi-Year Outcomes Map also included which shows how the per year valuations are projected over time to estimate their net present value.

Table D1.

Reduced risk of fall leading to hospitalization due to home modifications (e.g. ramps, grab bars, etc.) - Avoided hospital admission and ED costs			
Projected Marginal Benefit per Year		\$1,006	
Estimation Calculation: $0.45 * 0.44 * 0.1 * 50,832$			
Figure	Type	Informed by / Level of Evidence	Notes
0.45	Proportion of homeowners served at risk of a fall	Rebuilding Together 2021 Eval report, Level of Evidence: 6	45% - assumed representative as the proportion of homeowners who have fallen or almost fell. As a result, this pathway controls for those at greatest risk of a fall.
0.44	Reduced risk of fall	Rebuilding Together 2021 Eval Report, Level of Evidence: 6; Karlsson, M. K., et al. (2013). Level of Evidence: 4; WHO, 2007, Level of Evidence: 5	Safety modifications made by Rebuilding Together affiliates reduced falls by 50%. (2021 Eval Report). 33% fell in 6 months before repairs and 16% did not fall in the following 12 months after repairs. One study found that these interventions reduced the number of falls by 44% and the number of fallers by 22% among high-risk recipients. Similarly, factors related to the physical environment are the most common cause of falls in older people, responsible for between 30 to 50% of them (WHO, 2007). We assume an approximately 44% reduction in number of falls, a slightly more conservative figure than that measured in the 2021 Evaluation Report. These studies account for whether the modifications were conducted inside and/or outside the home and as a result, a further discount to account for likelihood of falling outside of the home would be redundant.
0.1	Portion of falls that cause injuries	CDC, 2017, Level of Evidence: 6; WSIPP, 2019, Level of Evidence: 4	More than one out of four older people falls each year, but less than half tell their doctor. Further, falling once doubles your chances of falling again. Given we are focusing on Rebuilding Together neighbors who have already fallen, those included in this pathway are considered high risk. To assess likelihood of hospitalization we consider multiple figures and estimations. On average, 10-15% of falls lead to emergency room visits. On the other hand, one out of five falls causes a serious injury such as broken bones or a head injury which may incur use of skilled nursing supports, outpatient rehab costs and pharmaceutical costs. While not all serious injuries lead to emergency room use or hospitalization, we assume approximately half of serious injuries will result in a hospital stay, resulting in an estimate of approximately 10% of falls among high risk older Americans who have already fallen before have 2.77 times greater odds of experiencing a fall than those who have not fallen. Further, rate of hospitalization increases with age of the person who falls. For those over 80 years old (about 25% of Rebuilding Together clients), the likelihood of hospitalization is estimated at almost 16% based on WSIPP, 2019 figures. Meanwhile, for those under 80 years old the rate of hospitalization per year ranges from about 3-7%. We assume those who have previously fallen are at greater risk of hospitalization as well, making our average rate of hospitalization of 10% a middle ground. This may be conservative given that this pathway does not include those homeowners who have not reported a fall or near miss and as a result, excludes those who may receive a home modification that supports an avoided fall in subsequent years.
\$50,832	The average cost of a hospital visit associated with an injury from a fall	WSIPP, 2019, Level of Evidence: 4	WSIPP 2019 estimates a total cost of in-patient hospitalization from a fall to be \$24,000. The additional emergency department (.211), outpatient (.351), short-term skilled nursing facility (.484) and pharmacy cost ratios (.072) lead to total costs of a fall of about \$5,064 + \$8,424 + \$1,728 + \$24,000 + \$11,616 = \$50,832. These are disaggregated to assign different stakeholder attributions.

Table D2.

Reduced risk of fall leading to death due to home modifications (e.g. ramps, grab bars, etc.)			
Projected Marginal Benefit per Year		\$792	
Estimation Calculation: $0.45 * 0.44 * 0.0005 * 8,000,000$			
Figure	Type	Informed by / Level of Evidence	Notes
0.45	Proportion of homeowners served at risk of a fall	Rebuilding Together 2021 Eval report, Level of Evidence: 6	45% - assumed representative as the proportion of homeowners who have fallen or almost fell. As a result, this pathway controls for those at greatest risk of a fall.
0.44	Reduced risk of fall	Rebuilding Together 2021 Eval Report, Level of Evidence: 6; M. K., Magnusson, H., von Schewelov, T., & Rosengren, B. E. (2013). Level of Evidence: 4	Safety modifications made by Rebuilding Together affiliates (Figure 12) reduced falls by 50%. (2021 Eval Report). 33% fell in 6 months before repairs and 16% did not fall in the following 12 months after repairs. One study found that these interventions reduced the number of falls by 44% and the number of fallers by 22% among high-risk recipients. Another study found a 26% reduction in the rate of falls-related injuries among people in households receiving home modification interventions (Keall et al, 2015). We assume an approximately 44% reduction in number of falls, a slightly more conservative figure than that measured in the 2021 Evaluation Report.
0.0005	Likelihood of death from a fall	WSIPP, 2019. Level of Evidence: 4	Likelihood of death from a fall ranges from 0.02% (65-69 year olds) to 0.36% (80+ year olds) depending on age of individual. Given the ages of homeowners at risk of fall included in the Rebuilding Together sample, we utilize a value of approximately 0.05%.
\$8,000,000	Value of life	https://www.epa.gov/environmental-economics/mortality-risk-valuation#whatisvsl	VSL of \$8,000,000 is utilized for this analysis.

Table D3.

Reduced risk of fall leading to non-hospitalization due to home modifications (e.g. ramps, grab bars, etc.) - reduced future ADLs			
Projected Marginal Benefit per Year			\$396
Estimation Calculation: $0.45 * 0.44 * 0.1 * 0.4 * 50,000$			
Figure	Type	Informed by / Level of Evidence	Notes
0.45	Proportion of homeowners served at risk of a fall	Rebuilding Together 2021 Eval report, Level of Evidence: 6	45% - assumed representative as the proportion of homeowners who have fallen or almost fell.
0.44	Reduced risk of serious injury-causing fall	Rebuilding Together 2021 Eval Report. Level of Evidence: 6; Karlsson, M. K., et al. (2013). Level of Evidence: 4	Safety modifications made by Rebuilding Together affiliates (Figure 12) reduced falls by 50%. (2021 Eval Report). 33% fell in 6 months before repairs and 16% did not fall in the following 12 months after repairs. One study found that these interventions reduced the number of falls by 44% and the number of fallers by 22% among high-risk recipients. Another study found a 26% reduction in the rate of falls-related injuries among people in households receiving home modification interventions (Keall et al, 2015). We assume an approximately 44% reduction in number of falls, a slightly more conservative figure than that measured in the 2021 Evaluation Report.
0.1	Portion of falls that cause injuries	CDC, 2017. Level of Evidence: 6	10-15% of falls lead to emergency room visits. More than one out of four older people falls each year, but less than half tell their doctor. Falling once doubles your chances of falling again. One out of five falls causes a serious injury such as broken bones or a head injury. While not all serious injuries lead to hospitalization, we assume approximately half of serious injuries will result in a hospital stay, resulting in an estimate of approximately 10% of falls among high risk older Americans who have already fallen leading to hospitalization. This may be conservative given the increased likelihood of a fall for those who have already fallen. This pathway does not include those homeowners who have not reported a fall or near miss and as a result, excludes those who may receive a home modification that supports an avoided fall in subsequent years.
0.4	Increased quality of life from increased ADLs	Jia et al., 2019. Level of Evidence: 4; Mossey et al., 1989. Level of Evidence: 6	The adjusted QALY for Stage 0 participants was 6.8 QALYs; for Stage I participants, 3.9 QALYs; for Stage II participants, 2.2 QALYs; for Stage III participants, 1.8 QALYs; and for Stage IV participants, 1.5 QALYs. We utilize the reduced loss of QALY's as the difference between Stage I and Stage II, Stage II and III and Stage III and IV - 0.8 QALY. We assume half of this value can be captured through RT work. This is to say that the modifications conducted by RT increase ability to conduct ADLs and thereby increased quality-adjusted life years that lie ahead for the homeowner. Loss of ADL post-fall: Estimate approximately 1 ADL lost on average in post-fall recovery. Only 28.1 per cent of those individuals who had a fracture after falling had returned to their prefracture functional status in at least six of the seven functional indicators. Twenty-three per cent had failed to regain prefracture function in at least four criteria.
\$50,000	Value of a Quality-Adjusted Life Year (QALY)	Neumann et al., 2014. Level of Evidence: N/A	Value of a QALY is approximately \$50,000. This is considered a lower-bound.

Table D4.

Improved respiratory health from improved ventilation and air quality - avoided asthma related hospitalizations, ED visits and reduced medication use for adults			
Projected Marginal Benefit per Year		\$17	
Estimation Calculation: 0.05 * 0.24 * 1,419			
Figure	Type	Informed by / Level of Evidence	Notes
0.05	Proportion of homeowners with a chronic respiratory condition	Jonathan Wilson, 2021. Level of Evidence: 7.; Rebuilding Together 2021 Eval Report. Level of Evidence: 6; Mudarri and Fisk, 2007. Level of Evidence: 4.	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). This figure however appears high and a conservative 20% figure will be utilized (based on personal interview with NCHH researcher, Jonathan Wilson) and multiplied by the 25% of homes that received a moisture related repair. The fraction of current asthma cases attributable to dampness and mold exposure in housing is estimated to be 21% (Mudarri and Fisk 2007).
0.24	Likelihood of mitigating asthma symptoms	Burr, et al. (2007) - Level of Evidence: 2; Kercksmar et al. (2006). Level of Evidence: 4; Rebuilding Together 2021 Eval Report - Level of Evidence: 6	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. We use the probability difference of approximately 24 percentage points to signal the likely reduction in asthma events.
\$1,419	Average daily earnings for one parent	Rebuilding Together Affiliate Survey, 2020. Level of Evidence: N/A	Median annual earnings of \$20,240 (Affiliate Survey). With 39% of people served being 18-64 years of age, we assume they work 30 hrs per week, that amounts to \$13.50 per hour or \$81 per 6 hr shift (assuming 1 shift per day is missed)

Table D5.

Increased productivity from reduced asthma symptoms			
Projected Marginal Benefit per Year		\$8.75	
Estimation Calculation: 0.05 * 0.24 * 9 * 81			
Figure	Type	Informed by / Level of Evidence	Notes
0.05	Proportion of homeowners with a chronic respiratory condition	Jonathan Wilson, 2021. Level of Evidence: 7. Rebuilding Together 2021 Eval Report. Level of Evidence: 6 Mudarri and Fisk, 2007. Level of Evidence: 4	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). This figure however appears high and a conservative 20% figure will be utilized (based on personal interview with NCHH researcher, Jonathan Wilson) and multiplied by the 25% of homes that received a moisture related repair. The fraction of current asthma cases attributable to dampness and mold exposure in housing is estimated to be 21% (Mudarri and Fisk 2007).
0.24	Likelihood of mitigating asthma symptoms	Burr, et al. (2007) - Level of Evidence: 2; Kercksmar et al. (2006). Level of Evidence: 4; Rebuilding Together 2021 Eval Report - Level of Evidence: 6	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. We use the probability difference of approximately 24 percentage points to signal the likely reduction in asthma events.
9	Days of work missed due to asthma event	Nunes et al., 2017. Level of Evidence: 4	In most patients with asthma attacks who need home treatment, the average working day absenteeism is 5.6 days. When hospital admission occur the average number of working days lost is 13 days, with an average of 4 days of hospital stay. We assume 4 of these 13 days would not be working days.
\$81	Average daily earnings for one parent	Rebuilding Together Affiliate Survey, 2020. Level of Evidence: N/A	Median annual earnings of \$20,240 (Affiliate Survey). With 39% of people served being 18-64 years of age, we assume they work 30 hrs per week, that amounts to \$13.50 per hour or \$81 per 6 hr shift (assuming 1 shift per day is missed)

Table D6.

Improved respiratory health - children - avoided health care expenditures from asthma symptoms			
Projected Marginal Benefit per Year		\$0.45	
Estimation Calculation: $0.0275 * 0.07 * 0.21 * 1,120$			
Figure	Type	Informed by / Level of Evidence	Notes
0.0275	Proportion of households with kids who recieved a moisture-related repair	Rebuilding Together BI tool, 2021. Level of Evidence: 7	11% of homeowners have kids * 25% of homes with moisture related repairs.
0.07	Proportion of kids with asthma in U.S.	Asthma and Allergy Foundation of America. 2021. Level of Evidence: N/A	7% of kids
0.21	Proportion of asthma cases due to mold and dampness in home	Mudarri and Fisk, 2007; Level of Evidence: 4	Current data are highly suggestive of a causal relationship between mold exposure and asthma symptoms. In addition, when dampness and visible mold are removed from the home, children's acute care visits decrease by up to 90%. The fraction of current asthma cases attributable to dampness and mold exposure in housing is estimated to be 21%.
\$1,120	Average additional medical costs with asthma	Gomez et al., 2017; Level of Evidence: 6	Annually, direct medical costs for the 22 million US children and adults with asthma are \$1004 and \$2077, respectively, more than those for children and adults without asthma. This amounts to \$1,120 in 2021 dollars

Table D7.

Improved respiratory health - children - avoided missed work days for parents			
Projected Marginal Benefit per Year		\$0.13	
Estimation Calculation: $0.0275 * 0.07 * 0.21 * 4 * 81$			
Figure	Type	Informed by / Level of Evidence	Notes
0.0275	Proportion of households with kids who recieved a moisture-related repair	Rebuilding Together BI tool, 2021. Level of Evidence: 7	11% of homeowners have kids * 25% of homes with moisture related repairs.
0.07	Proportion of kids with asthma in U.S.	Asthma and Allergy Foundation of America. 2021. Level of Evidence: N/A	7% of kids
0.21	Proportion of asthma cases due to mold and dampness in home	Mudarri and Fisk, 2007; Level of Evidence: 4	Current data are highly suggestive of a causal relationship between mold exposure and asthma symptoms. In addition, when dampness and visible mold are removed from the home, children's acute care visits decrease by up to 90%. The fraction of current asthma cases attributable to dampness and mold exposure in housing is estimated to be 21%.
4	Days of missed work per asthmatic event of child	Nunes et al., 2017. Level of Evidence: 5	An asthmatic child with an exacerbation of his/her symptoms, usually, loses from 3 to 5 school days and at least one of the parents/ caregivers loses the same working time. Therefore, children with asthma have more indirect costs than older asthmatics, as the parents missed work-days sum to the other expenses as an indirect cost. Thus we assume an average of 4 missed days of work for parents/ caregivers.
\$81	Average daily earnings for one parent	Rebuilding Together Affiliate Survey, 2020. Level of Evidence: N/A	Median annual earnings of \$20,240 (Affiliate Survey). With 39% of people served being 18-64 years of age, we assume they work 30 hrs per week, that amounts to \$13.50 per hour or \$81 per 6 hr shift (assuming 1 shift per day is missed)

Table D8.

Improved respiratory health - children - avoided loss of QALY			
Projected Marginal Benefit per Year		\$3	
Estimation Calculation: $0.0275 * 0.07 * 0.21 * 0.16 * 50,000$			
Figure	Type	Informed by / Level of Evidence	Notes
0.0275	Proportion of households with kids who recieved a moisture-related repair	Rebuilding Together BI tool, 2021. Level of Evidence: 7	11% of homeowners have kids * 25% of homes with moisture related repairs.
0.07	Proportion of kids with asthma in U.S.	Asthma and Allergy Foundation of America. 2021. Level of Evidence: N/A	7% of kids
0.21	Proportion of asthma cases due to mold and dampness in home	Mudarri and Fisk, 2007; Level of Evidence: 4	Current data are highly suggestive of a causal relationship between mold exposure and asthma symptoms. In addition, when dampness and visible mold are removed from the home, children's acute care visits decrease by up to 90%. The fraction of current asthma cases attributable to dampness and mold exposure in housing is estimated to be 21% (Mudarri and Fisk 2007). We use a probability difference of approximately 21 percentage points to signal the reduction in rate of onset of asthma.
0.16	Lost Quality-Adjusted-Life Years (QALY) from asthma symptoms	Craig et al., 2016 - Level of Evidence: 4	Among the 14 functional difficulties, "a little trouble with breathing" had the highest prevalence (37.1%), but amounted to a loss of just 0.16 QALYs from the perspective of US adults. We use this figure for children as well.
\$50,000	Value of a Quality-Adjusted Life Year (QALY)	Neumann et al., 2014. Level of Evidence: N/A	Value of a QALY is approximately \$50,000. This is considered a lower-bound.

Table D9.

Improved physical health from reduced exposure to lead - for kids			
Projected Marginal Benefit per Year		\$29	
Estimation Calculation: $0.11 * 0.11 * 2,400$			
Figure	Type	Informed by / Level of Evidence	Notes
0.11	Proportion of households with kids	Rebuilding Together BI tool, 2021. Level of Evidence: N/A	11% of homeowners have kids.
0.11	Proportion of homes receiving painting and wall repair that could cover lead paint issues	Rebuilding Together 2021 Eval report. Level of Evidence: 6	11% of homes receiving painting and wall repair that may cover lead paint issues
\$2,400	Cost of lead poisoning	Gould, 2009 - Level of Evidence: 4.	For every dollar invested in lead poisoning prevention, there is a savings of \$17 to \$221 in future costs (5% health, 71% earnings, 11% tax revenue, 13% special ed, .5% crime) – a net savings of \$181 billion–\$269 billion. The major source, lead-based paint, is by no means the only source of dangerous lead exposures among children. If a similar distribution of lead exposures or high and low BLLs are found from both lead-based paint and other types of lead hazards, a rough adjustment for other major sources of lead exposures on these benefits decreases the final benefit range by 30%, because lead-based paint represents about 70% of childhood exposure to lead. This leads to a return of \$12–\$155 for each dollar invested in lead paint hazard control. (Gould, 2009). If of the total RT project budget at least \$200 are spent on average in lead abatement (directly or indirectly affecting lead exposure) - the resulting savings amounts to at least \$2400.

Table D10.

Improved physical health - reduced hospitalizations for older adults			
Projected Marginal Benefit per Year		\$608	
Estimation Calculation: $0.6685 * 0.25 * 0.17 * 21,395$			
Figure	Type	Informed by / Level of Evidence	Notes
0.6685	Proportion of homeowners who are 60+ years old	Rebuilding Together BI tool, 2021. Level of Evidence: N/A	66.85% of homeowners are 60+ years old.
0.25	Increase in physical health from home repairs and weatherization	Rebuilding Together (2018)- Level of Evidence: 6; Rodgers et al., 2018 - Level of Evidence: 4; Pigg et al., 2021 - Level of Evidence: 4	A longitudinal study in the U.K. 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%. Wall insulation specifically reduced hospital admissions by 25%. (Rodgers et al., 2018). Similarly, Rebuilding Together's 2018 evaluation found that 59% of respondents reported fewer doctor visits after repairs/modifications. We use the 25 percentage point reduction as a conservative value of reduced hospitalizations, noting that homeowners receiving Rebuilding Together services will receive a mix of supports in part mirroring that of the electrical upgrades, insulation, windows, etc. that those in the study received. While the U.K. context may differ based on housing quality and climatic conditions, the non-energy benefits of weatherization services are difficult to isolate to specific repairs and tend to only be measured collectively. Thus, the U.K. study provides a unique signal of the value of specific repairs which helps to create an understanding of how the benefits of each individual repair may add up. Given the types of renovations included in the U.K. study, there appears to be less risk of overlap with the types of modifications accounted for in the reduced fall risk pathways. Future research will support greater understanding of the value from specific repairs.
0.17	Hospitalization rate for 65+ year olds	Statista, 2021. Level of Evidence: N/A	17% of those 65+ will have a hospitalization in a given year.
\$21,395	Average cost of inpatient medical care (non-surgical)	Health System Tracker, 2018. Level of Evidence: 6	Cost per hospital stay of \$21,395.

Table D11.

Improved hygiene	
Projected Marginal Benefit per Year	-

Table D12.

Increased ease of conducting activities of daily life			
Projected Marginal Benefit per Year		\$3,200	
Estimation Calculation: $0.16 * 0.4 * 50,000$			
Figure	Type	Informed by / Level of Evidence	Notes
0.16	Proportion of households with increased ease of ADLs	Rebuilding Together 2021 Eval Report. Level of Evidence: 6	Six months after repairs, more than half of survey respondents reported that bathing was easier than before. The effect size metric indicates there is an 83% probability that the average homeowner served by the pilot affiliates would report greater ease of bathing safely after repairs were completed, compared to before. 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. In sum, based on the increased ease of ADLs by homeowners and the repairs/modifications conducted, about 16 % of homes received the modifications aligned to increasing ADLs.
0.4	Increased quality of life from increased ADLs	Jia et al., 2019. Level of Evidence: 4	Homeowners can be grouped into 'Stages' based on their ease of conducting ADLs. Those who can conduct all ADLs are placed in Stage 0 while those in Stage IV face multiple difficulties in conducting ADLs on their own. People in each 'stage' have an associated number of QALYs they experience. The adjusted QALY for Stage 0 participants was 6.8 QALYs; for Stage I participants, 3.9 QALYs; for Stage II participants, 2.2 QALYs; for Stage III participants, 1.8 QALYs; and for Stage IV participants, 1.5 QALYs. We utilize the reduced loss of QALY's as the difference between Stage I and Stage II, Stage II and III and Stage III and IV - 0.8 QALY. We assume half of this value can be captured through RT work. This is to say that the modifications conducted by RT increase ability to conduct ADLs and thereby increased quality-adjusted life years that lie ahead for the homeowner.
\$50,000	Value of a Quality-Adjusted Life Year (QALY)	Neumann et al., 2014. Level of Evidence: N/A	Value of a QALY is approximately \$50,000. This is considered a lower-bound.

Table D13.

Reduced Type 2 Diabetes expenditures from increased home cooked meals			
Projected Marginal Benefit per Year		\$15	
Estimation Calculation: $0.123 * 0.09 * 0.14 * 9,600$			
Figure	Type	Informed by / Level of Evidence	Notes
0.123	Proportion of homeowners reporting increased ease of cooking	Rebuilding Together 2021 Eval Report. Level of Evidence 6.	Of those who found it difficult or very difficult to prepare meals at home, 67% reported easier cooking at home, amounting to 12.3% of all homeowners served. Enabling Better Kitchen Conditions: Six months after repairs, nearly one third of survey respondents reported that cooking was easier than before. Based on the effect size metric, there is a 72% probability that the average homeowner served by the pilot study affiliates would report greater ease in cooking at home after repairs, compared to before. When homeowners lack access to working kitchen appliances (e.g., refrigerator, range), they have a higher risk of a poor diet and associated chronic diseases. Repair or replacement of kitchen appliances contributes to a homeowner's ability to cook and eat more nutritious food.
0.09	Likelihood of having diabetes	CDC, 2021 - Level of Evidence: N/A	About 9% of Americans have Type 2 Diabetes. Assume this is the likelihood of homeowners served of having Type 2 Diabetes during their lifetime.
0.14	Reduce risk of Type 2 Diabetes	Zong et al. 2016 - Evidence level 4	Assuming the increased ease in cooking allows for an increase to 11-14 meals per week at home, there is a 14 percentage point reduction in risk of Type 2 Diabetes.
\$9,600	Annual cost of diabetes	Dall et al, 2010 - Evidence level 4. American Diabetes Association, 2018 - Evidence level 6	The average annual cost per case is \$2,864 for undiagnosed diabetes, \$9,975 for diagnosed diabetes (\$9,677 for type 2 and \$14,856 for type 1), and \$443 for pre-diabetes (medical costs only). People with diagnosed diabetes incur average medical expenditures of ~\$16,750 per year, of which ~\$9,600 is attributed to diabetes.

Table D14.

Improved mental health (due to reduced stress and increased thermal comfort)			
Projected Marginal Benefit per Year		\$683	
Estimation Calculation: $0.273 * 2,500$			
Figure	Type	Informed by / Level of Evidence	Notes
0.273	Increased likelihood of improved mental health	Rebuilding Together 2021 Eval report. Level of Evidence: 6 Thomson et al. (2013). Level of Evidence: 4	Rebuilding Together (2021) found that 33% of homeowners reported improvements and 82.7% said the improvements were due to repairs resulting in 27.3% of homeowners experiencing a boost due to RT. This coincides with a systematic review of studies (Thomson et al., 2013) that found that home repairs—particularly improvements to thermal comfort and energy efficiency—have been associated with improved mental health.
\$2,500	Cost of anxiety and depression	Marciniak et al., 2005 - Evidence level 4	The incremental impact of depression, other anxiety disorders, and prior mental health diagnoses on the total medical costs were \$1,945, \$1,900, and \$1,515, respectively. In 2021 dollars, approximately \$2,500. This value accounts only for the medical costs of seeking treatment. Homeowners served by RT however are often unlikely to seek care and as a result, this valuation is considered a conservative proxy of the reduced quality of life experienced by homeowners.

Table D15.

Reduced GHG emissions from energy efficiency			
Projected Marginal Benefit per Year		\$10.66	
Estimation Calculation: $500 * 0.000418 * 51$			
Figure	Type	Informed by / Level of Evidence	Notes
500	Energy savings from home weatherization	ACEEE, 2018 - Level of Evidence: 6; Keene et al., 2018 - Level of Evidence: 4	About 1,500 kWh saved per year for a weatherization specific program. Given that this outcome is an indirect effect of safe and healthy housing we take the value to be 1/3 of the a weatherization specific program.
0.000418	Metric tons of CO2e per kWh on average in US	Energy Information Administration, 2020. Level of Evidence: 6	About 0.92 pounds of CO2 emissions per kWh in US in 2019. Or about .000418 metric tons per kWh.
\$51	Social Cost of Carbon	U.S. EPA, 2021. Level of Evidence: 4	\$51 per metric ton

Table D16.

Savings from energy efficiency			
Projected Marginal Benefit per Year		\$59	
Estimation Calculation: 0.21 * 283			
Figure	Type	Informed by / Level of Evidence	Notes
0.21	Energy savings from home weatherization	Rebuilding Together 2021 Eval Report. Level of Evidence 6.	<p>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).</p> <p>When asked about utilities (e.g., water, energy), 21% indicated their costs were lower after repairs, and 7% said their costs were higher (N=83). The increase in utility costs may be the result of homeowners resuming the use of appliances (e.g., water heater, range, refrigerator, sink) that were previously broken, a difference in weather from the prior year, utility rate hikes, lack of weather-stripping or energy-efficient appliances, or an increase in the number of household members, among other possibilities</p> <p>While there is still lack of understanding about how this corresponds to energy savings, we take it as a conservative benchmark for the likelihood of realizing weatherization-related energy savings.</p>
\$283	Energy savings from repairs with weatherization-related components	Department of Energy, 2018. Level of Evidence: 6.	The DOE estimates about \$283 of savings per year for weatherization services that average approximately \$4,000 to implement. Noting this \$4,000 is below the median and average investment per home by Rebuilding Together (when including overhead, fundraising costs, etc. - as the DOE does) we assume a similar amount of savings would be noted for those homeowners who report a savings

Table D17.

Increased likelihood of aging in place - avoided costs of assisted living facility			
Projected Marginal Benefit per Year		\$1,236	
Estimation Calculation: 0.103 * 12,000			
Figure	Type	Informed by / Level of Evidence	Notes
0.103	Likelihood of aging in place	Rebuilding Together 2021 Eval report. Level of Evidence: 6	Of those who said they were unlikely or very unlikely to age in place, 86% reported more likely to age in place amounting to 10.3% of all households
\$12,000	Cost savings from aging in place	Wilder Foundation, 2016. Level of Evidence: 6	Monthly savings of aging place are at least \$1,000 compared to an assisted living facility (and that includes an intensive home visiting service when aging in place). As a result, this savings can be considered a very conservative baseline value that is useful across the U.S.

Table D18.

Reduced maintenance costs			
Projected Marginal Benefit per Year		\$330	
Estimation Calculation: 0.22 * 1,500			
Figure	Type	Informed by / Level of Evidence	Notes
0.22	Likelihood of reduced maintenance costs	Rebuilding Together 2021 Eval report. Level of Evidence: 6	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). There is a net 22% of homeowners benefiting.
\$1,500	Annual maintenance costs	https://www.har.com/blog_71192_how-much-value-does-regular-maintenance-add-to-your-home . Level of Evidence: 7	Over time, annual maintenance costs average more than \$3,300, according to data from the U.S. Census. Various lending institutions, such as Directors Credit Union and LendingTree.com, agree, placing maintenance costs at 1% to 3% of initial house price. That means owners of a \$200,000 house should plan to budget \$2,000 to \$6,000 per year for ongoing upkeep and replacements. We use a low end maintenance cost of \$1,500 as a conservative baseline of maintenance cost savings by the homeowner, assuming a home value of \$150,000. While the homeowner may not have spent this due to deferred maintenance, the value of maintenance is still to be included.

Table D19.

Increased safety - reduced fire death rate			
Projected Marginal Benefit per Year		\$3.36	
Estimation Calculation: 0.28 * 0.000015 * 8,000,000			
Figure	Type	Informed by / Level of Evidence	Notes
0.28	Rate of smoke alarm installation	Rebuilding Together 2021 Eval report. Level of Evidence: N/A	Proportion of homeowners served who got a smoke alarm installed: .28
0.000015	Reduced risk of fire death	Ahrens, 2004 - Level of Evidence: 5. Fahy and Maheshwari, 2021 - Level of Evidence: 4; Ahrens and Maheshwari, 2020 - Level of Evidence: 7	Homes with smoke alarms have a 40–50% lower fire death rate compared to homes without smoke alarms (Ahrens 2004). Death rate of 12 per thousand house fires when no smoke alarm. (Ahrens and Maheshwari, 2020) Based on 139 million houses in the US, and 353,000 house fires over 5 years in US (Ahrens and Maheshwari, 2020) chance of a house fire in the US is .0005 per year. But relative risk of injury from fire in low income communities is 4-8X a mid to high income community. (Fahy and Maheshwari, 2021) Given the aggregation of these figures the resulting reduced risk of a fire death Rebuilding Together is approximately 0.000015 per homeowner per year.
\$8,000,000	Value of life	EPA, 2021. Level of Evidence: 4	VSL of \$8,000,000

Table D20.

Increased safety - reduced fire injury rate			
Projected Marginal Benefit per Year		\$0.01	
Estimation Calculation: $0.28 * 0.00001666 * 16,461$			
Figure	Type	Informed by / Level of Evidence	Notes
0.28	Rate of smoke alarm installation	Proportion of homeowners served who got a smoke alarm installed: .28	Rebuilding Together 2021 Eval report. Level of Evidence: N/A
0.00001666	Reduced risk of fire injury	Ahrens, 2004 - Level of Evidence: 5. Fahy and Maheshwari, 2021 - Level of Evidence: 4; Ahrens and Maheshwari, 2020 - Level of Evidence: 7	Homes with smoke alarms installed had a 68% fewer medically treated house fire injuries (Yellman et al., 2018) In 2018, the national average was 2.5 civilian fire deaths and 9.8 injuries per 1,000 fires (NFDR). Based on 139 million houses in the US, and 353,000 house fires over 5 years in US (Ahrens and Maheshwari, 2020) chance of a house fire in the US is .0005 per year. But relative risk of injury from fire in low-income communities is 4-8X a mid to high income community. (Fahy and Maheshwari, 2021) Given the aggregation of these figures the resulting reduced risk of a fire death Rebuilding Together is approximately 0.000015 per homeowner per year.
\$16,461	Avoided medical expenditure for non-fatal fire injury	Yellman, et al. 2018. Level of Evidence - 6	\$16,461 (ED and hospital costs)

Table D21.

Improved physical health from increased temperature control			
Projected Marginal Benefit per Year		\$0.01	
Estimation Calculation: $0.13 * 0.00002 * 0.42 * 13,229$			
Figure	Type	Informed by / Level of Evidence	Notes
0.13	Increase in temperature control	Rebuilding Together 2021 Eval report. Level of Evidence: 6	13 percentage point increase in the number of homeowners that can control the internal temperature of their home
0.00002	Likelihood of weather-related hospitalization	EPA, 2016. Level of Evidence: N/A	From 2001 to 2010, the 20 states recorded a total of about 28,000 heat-related hospitalizations. The resulting annual rates ranged from 1.1 cases per 100,000 people in 2004 to 2.5 cases per 100,000 people in 2006, with a 10-year average rate of 1.8 cases per 100,000 people. If low income populations have twice the likelihood of hospitalization and AC units reduce likelihood by 42%, about .00002 chance of hospitalization each year.
0.42	Reduced risk of heat-related illness	Snyder and Baker, 2010. Level of Evidence: 5	Studies of heat waves in Philadelphia, Chicago, and Cincinnati confirm the risk posed by high temperatures in upstairs sleeping areas and the efficacy of air-conditioning to reduce the frequency of heat-related death. Looking at the general population over time, people living in homes with central air-conditioning are 42 percent less likely to die than those living in homes without air-conditioners, with positive effects seen for window airconditioning units in smaller residences.
\$13,229	Cost and likelihood of hospitalization from weather related reasons	AARP, 2010. Level of Evidence: 4	In 2005, about 12,700 people were hospitalized in the United States for weather-related reasons, with residents of lower income communities more than twice as likely as those from higher income areas to be hospitalized. Aggregate costs for these admissions are significant— \$38.7 million for heat-related stays and \$81.5 million for cold-related stays. This results in an average hospital cost of \$9,464 in 2005 dollars, or \$13,229 in 2021 dollars

Table D22.

Increased home value appreciation			
Projected Marginal Benefit per Year		\$675	
Estimation Calculation: 0.45 * 1,500			
Figure	Type	Informed by / Level of Evidence	Notes
0.45	Proportion of homes with increased valuations	Rebuilding Together 2021 Eval report. Level of Evidence: 6	Close to half of homeowners surveyed 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)
\$1,500	Home Maintenance affect on Property Value	https://www.har.com/blog_71192_how-much-value-does-regular-maintenance-add-to-your-home . Level of Evidence: 6	Estimated at about 1% of property value for each year of maintenance. We assume at least 1% of property value is gained from repairs/modifications by Rebuilding Together affiliates. Conservatively, 1% of a 150,000 home is \$1,500.

Table D23.

Reduced cost to caregiver from avoiding having to miss work, cutting back to part-time hours etc.			
Projected Marginal Benefit per Year		\$432	
Estimation Calculation: 0.51 * 0.44 * 0.4 * 312 * 15.41			
Figure	Type	Informed by / Level of Evidence	Notes
0.51	Proportion of residents who are disabled or at risk of fall	Rebuilding Together 2021 Eval report. Level of Evidence: 6	Over half of households include a resident with a disability (51%, N=423). Similarly, 45% of homeowners have fallen or almost fell.
0.44	Likelihood of benefiting from Rebuilding Together modifications	Rebuilding Together 2021 Eval Report. Level of Evidence: 6 Karlsson, M. K., Magnusson, H., von Schewelov, T., & Rosengren, B. E. (2013). Level of Evidence: 4	Reduced risk of fall as a proxy for benefiting from the modifications. Safety modifications made by Rebuilding Together affiliates (Figure 12) reduced falls by 50%. (2021 Eval Report). 33% fell in 6 months before repairs and 16% did not fall in the following 12 months after repairs. One study found that these interventions reduced the number of falls by 44% and the number of fallers by 22% among high-risk recipients. Another study found a 26% reduction in the rate of falls-related injuries among people in households receiving home modification interventions (Keall et al, 2015).
0.4	Likelihood of having an informal caregiver	Institute of Medicine (US) Committee on the Future Health Care Workforce for Older Americans (2008). Level of Evidence: N/A	Half of older Americans report having someone they consider to be a caregiver in their lives. Nearly 80 percent of adults who receive care at home rely exclusively on unpaid help from family and friends, while less than 10 percent received all of their care from paid workers (ILC-SCSHE Taskforce, 2007). This results in about 40% of older American having an informal caregiver.
312	Reduced hours of informal caregiving	Carnemolla, P., & Bridge, C. (2019). Level of Evidence: 4	For informal care provision, there is strong evidence (t = 6.39, p = 0.00) that home modifications reduced the need for informal care. In this data set, it reduced informal care hours by approximately 6 h per week, with a 95% confidence interval of between 4.12 and 7.8 h per week savings. Over 1 year, using the median value of 6 hours to conservatively project the value, this amounts to approximately 312 hours.
\$15.41	Value of informal caregiver time	Reinhard et al., 2019. Level of Evidence: 6	The estimated economic value of family caregiving was \$470 billion in 2017, based on about 41 million caregivers providing an average of 16 hours of care per week, at an average value of \$13.81 per hour. In 2021\$ this amounts to:\$15.41 per hour

Table D24.

Improved mental health from volunteering			
Projected Marginal Benefit per Year		\$144	
Estimation Calculation: 1.33548 * 0.043 * 2,500			
Figure	Type	Informed by / Level of Evidence	Notes
1.33548	Average hours per volunteer	Rebuilding Together - Inside the Numbers. 2019. Level of Evidence: N/A Nonprofit Source, 2020. Level of Evidence: N/A	9.66 hours per volunteer (Inside the Numbers, 2019). Per project: 69.34 volunteer hours per project (combined general and skilled volunteers). Amounts to 7.18 volunteers engaged per project on average. On average, people spend an average of 52 hours per year volunteering their time and as such, the average Rebuilding Together project makes up about .186 of total volunteer experience per year.
0.043	Health benefits of volunteering	Yeung et al., 2017. Level of Evidence: 4	Additional participation in voluntary services in the form of other-oriented volunteering resulted in an 8.54% increase in mental health, 9.08% in physical health, 7.35% in life satisfaction, and 11.11% in social well-being, as well as 4.30% decrease in depression, giving evidence that higher participation in voluntary services pertinent to other-oriented volunteering contributes to better health benefits cumulatively.
\$2,500	Cost of anxiety and depression	Marciniak et al., 2005. Level of Evidence: 4	The incremental impact of depression, other anxiety disorders, and prior mental health diagnoses on the total medical costs were \$1,945, \$1,900, and \$1,515, respectively. In 2021 dollars this amounts to approximately \$2,500.

Table D25.

Beneficial spillover effects on the neighborhood	
Projected Marginal Benefit per Year	

Table D26.

Workforce related outcomes	
Projected Marginal Benefit per Year	

Table D27.

Improved health from reduced household cost burden	
Projected Marginal Benefit per Year	

Table D28.

Reduced crime, Increased community pride			
Projected Marginal Benefit per Year		\$44	
Estimation Calculation:			
Figure	Type	Informed by / Level of Evidence	Notes
0.24	Proportion of homeowners receiving electrical, plumbing, heating or roofing repairs from Rebuilding Together	South et al., 2021. Level of Evidence: 3.; Rebuilding Together 2021 Evaluation report. Level of Evidence 6.	About 24% of homes on average.
0.395	Adjustment for investment size	Ecotone Assumption Level of Evidence: 7. South et al., 2021. Level of Evidence: N/A	The median investment per home is approximately \$7,900, about 39.5% of the total BSRP grant per home. As we do not know the total investment per home in the BSRP program (\$20,000), we use the 39.5% as a conservative reduction in the crime avoided.
0.116	Adjustment for geographically specific context and intervention strategy (e.g. housing density, urban, suburban, rural)	Rebuilding Together - Inside the Numbers, 2019. Level of Evidence: N/A	<p>About one-quarter of the affiliate network – 29 affiliates in total - worked in at least one or more target communities in 2019. Affiliates typically work in a target community for a minimum of three years. Between 2018 and 2019, there has been a decrease in the number of communities targeted by affiliates. However, there has been a slight increase in the number of homes rehabilitated in these neighborhoods. The majority of target neighborhoods – approximately 71% - are located in medium to large urban areas, while suburban and rural areas make up 27% of target neighborhoods served.</p> <p>Noting these figures - approximately 21 affiliates could achieve the results aligned with the BSRP intervention. Estimate average number of projects per year per affiliate (based on average projects annually by budget group): 49. This amounts to 1,029 projects out of 8,885 residential projects in 2019 = 11.6% of projects align to BSRP intervention.</p>
\$3,976	Cost of 'crime' - with unknown arrest and convictions	South et al., 2021. Level of Evidence: 3, McCollister et al., 2010. Level of Evidence: 5	Average victim cost of a crime avoided (\$5,163) multiplied by the number of crimes avoided per year (.77) amounts to \$3975.5 in avoided victim cost of crime per block (excluding homicides due to unknown local crime conditions, and including only victimization costs across other crime types - assault, robbery, burglary, theft - due to unknown arrest and conviction rates). The BSRP intervention lead to roughly 5.6 fewer crimes in total over 29 quarters from the addition of a property with BSRP intervention. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2782142

Table D29.

Increased health and safety from CO detector			
Projected Marginal Benefit per Year		\$3.16	
Estimation Calculation:			
Figure	Type	Informed by / Level of Evidence	Notes
0.29	Additional proportion of households with working CO Detectors following working with Rebuilding Together.	Rebuilding Together Evaluation 2021. Level of Evidence: 6	29%
\$10.90	Value of avoided CO poisoning	Hampson, 2016. Level of Evidence: 4	<p>To be a cost-effective, intervention necessary for alarms to reduce accidental, non-fire CO costs by at least 39% (reducing CO costs from \$1.33 billion to \$813 million). Since approximately 70% of accidental non-fire exposures are residential and this is the location where these devices would be installed, home exposures would need to be reduced 55% by CO alarms to achieve this degree of cost savings. If we use the British cost-benefit analysis of residential CO alarms which estimates 75% effectiveness, and controlling for the proportion of homeowners who are 65+ and as a result not of working age and losing wages, this supports an ROI of approximately \$1.3 ROI for working age (40%) and \$0.04 for seniors (60%) = ROI of \$0.544. Based on a cost of \$20 per CO detector that is a return of \$10.90.</p> <p>Functioning carbon monoxide alarms save lives and contribute to respiratory health. 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.</p>

MULTI-YEAR OUTCOMES MAPPING

The following table details how the per year estimates described above are mapped across multiple years to show that in many cases the repairs and modifications delivered will support benefits for years to come.

Table D30.

OUTCOME	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	NPV	NOTES
Reduced risk of fall leading to hospitalization and ED costs due to home modifications (e.g. ramps, grab bars, etc.)	\$1,006	\$1,006	\$1,006			\$2,847	Home modifications assumed to last at least 3 years and maintain the reduced risk of fall over that period. Beyond 3 years health status of the individual may change such that further modifications would be needed to maintain the avoided fall risk.
Reduced risk of fall leading to death due to home modifications (e.g. ramps, grab bars, etc.)	\$792	\$1,006	\$1,006			\$2,639	Home modifications assumed to last at least 3 years and maintain the reduced risk of fall over that period. Beyond 3 years health status of the individual may change such that further modifications would be needed to maintain the avoided fall risk.
Reduced risk of fall leading to protected ADLs due to home modifications (e.g. ramps, grab bars, etc.)	\$396					\$384	QALY is likely to be spread over several years although this is unclear.
Improved respiratory health from improved ventilation and air quality leading to avoided asthma related hospitalizations, ED visits and reduced medication use for adults	\$17	\$17	\$17			\$48	Air quality improvements assumed to last at least 3 years
Increased productivity from reduced asthma symptoms	\$8.75	\$8.75	\$8.75			\$25	Air quality improvements assumed to last at least 3 years
Improved respiratory health for children from avoided health care expenditures from asthma symptoms	\$0.45	\$0.45	\$0.45	\$0.45	\$0.45	\$1	Air quality improvements assumed to last at least 5 years for kids given avoidance of asthma entirely is possible

Table D30.

OUTCOME	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	NPV	NOTES
Improved respiratory health for children leading to avoided missed work days for parents	\$0.13	\$0.13	\$0.13	\$0.13	\$0.13	\$0.37	Air quality improvements assumed to last at least 5 years for kids given avoidance of asthma entirely is possible
Improved respiratory health for children leading to avoided loss of Quality Adjusted Life Years (QALY)	\$3					\$3	QALY is likely to be spread over several years although this is unclear.
Improved physical health for kids from reduced exposure to lead, asbestos, radon leading to avoided health care costs and increased earnings	\$29	\$29	\$29	\$29	\$29	\$133	Assume lead dust and lead paint risk is abated for 5 years given paint and wall repair likely to last several years.
Improved physical health leading to reduced hospitalizations	\$608	\$608	\$608			\$1,719	Repairs and modifications assumed to last at least 3 years
Improved quality of life from increased ease of conducting activities of daily life	\$3,200					\$3,107	QALY is likely to be spread over multiple years although this is unclear.
Reduced Type 2 Diabetes-related health care expenditures from increased home cooked meals	\$15	\$15	\$15			\$42	Uncertainty around change in cooking practices that actually occurs and how long it is maintained.
Improved mental health due to reduced stress and increased thermal comfort	\$683	\$683	\$683			\$1,931	Uncertainty around the scale and types of mental health gains
Reduced social cost of GHG emissions from increased energy efficiency	\$10.66	\$10.66	\$10.66	\$10.66	\$10.66	\$49	Energy efficiency gains likely to last at least 5 years
Cost savings from increased energy efficiency	\$59	\$59	\$59	\$30	\$30	\$220	Energy efficiency gains likely to last at least 5 years
Increased likelihood of aging in place and avoided use of assisted living facility	\$1,236	\$1,236	\$1,236	\$1,236	\$1,236	\$5,661	Wilder (2016) notes a conservative lower bound of 5 years
Reduced home maintenance costs	\$330	\$165				\$476	Maintenance costs are avoided for at least 1 year
Increased safety leading to reduced fire death rate	\$3.36	\$3.36	\$3.36	\$3.36	\$3.36	\$9.50	Fire safety benefits could foreseeably last much longer than 5 years
Increased safety leading to reduced fire injury rate	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.02	Fire safety benefits could foreseeably last much longer than 5 years
Improved physical health from increased temperature control	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.04	Temperature control benefits assumed to last at least 5 years

Table D30.

OUTCOME	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	NPV	NOTES
Increased home value appreciation	\$675	\$540	\$405	\$270	\$135	\$1,535	Assumes the value gained slowly erodes, in alignment with Rebuilding Together Cost-benefit analysis
Reduced cost to caregivers from avoiding having to miss work, cutting back to part-time hours, etc.	\$432	\$432	\$432			\$1,221	Home modifications assumed to last at least 3 years after which point changes in homeowner health status/disability status may increase caregiver time needed again.
Improved mental health from volunteering (affiliate volunteers, AmeriCorps members, CapacityCorps members)	\$144	\$72				\$207	Volunteering can have benefits lasting multiple years although unclear how this is realized when volunteers participate year after year. Conservatively assume at least 1 year of participation with benefits dropping off in the second year.
Reduced crime and increased sense of pride in community	\$44	\$44	\$44	\$44	\$44	\$200	Changes from Philadelphia's BRST program noted impacts lasting at least 29 quarters.
Improved health and earnings from avoided CO poisoning	\$3.16	\$3.16	\$3.16	\$3.16	\$3.16	\$9	CO detectors can last 5-10 years depending on the model
Beneficial spillover effects on the neighborhood	-	-	-	-	-	-	-
Improved hygiene	-	-	-	-	-	-	-
Increased wealth to 2nd Generation	-	-	-	-	-	-	-
TOTALS						\$22,466 *	

* due to rounding total figure may differ from visualization

Appendix E: LEVELS OF EVIDENCE AND BIBLIOGRAPHY

Table E1: Levels of Evidence of Causality – Ranked from highest to lowest, 1 to 7

1	Evidence from a systematic review or meta-analysis of all relevant randomized controlled trial (RCT) or evidence-based clinical practice guidelines based on systematic reviews of RCTs or three or more RCTs of good quality that have similar results.
2	Evidence obtained from at least one well-designed RCT (e.g. large multi-site RCT).
3	Evidence obtained from well-designed controlled trials without randomization (i.e. quasi-experimental).
4	Evidence from well-designed case-control or cohort studies.
5	Evidence from systematic reviews of descriptive and qualitative studies (meta-synthesis).
6	Evidence from a single descriptive or qualitative study.
7	Evidence from the opinion of authorities and/or reports of expert committees.

Level of Evidence	Study	Relevant Finding
Level 1 Evidence: Meta-analysis of RCTs	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. <i>Bulletin of the World Health Organization</i> , 69(5), 609–621.	Improved hygiene can support upwards of 25% reduction in rates of diarrhoea
	Washington State Institute for Public Policy. (2019). Benefit-Cost Technical Document. http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf	Health care expenditures are shared across government, private insurers, and individuals depending on type of care and income status of individual
Level 2 Evidence: Randomized Controlled Trials	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. <i>Thorax</i> , 62(9), 767–772.	Mold abatement can reduce asthma symptoms by 50%
Level 3 Evidence: Quasi-experimental Analysis	Ellen, I. G., Schill, M. H., Susin, S., & Schwartz, A. E. (2001). Building homes, reviving neighborhoods: Spillovers from subsidized construction of owner-occupied housing in New York City. <i>Journal of Housing Research</i> , 185-216.	Subsidized new construction of homes in NYC boosted surrounding homes’ property values
	George Galster, Peter Tatian & John Accordino (2006). Targeting Investments for Neighborhood Revitalization. <i>Journal of the American Planning Association</i> , 72(4), 457-474, DOI: 10.1080/01944360608976766	Blocks receiving \$21,000 in site-specific investment over 5 years in addition to \$9,000 of public and nonprofit infrastructure investment have greater property value growth
	South, E.C., MacDonald, J., & Reina, V. (2021). Association Between Structural Housing Repairs for Low-Income Homeowners and Neighborhood Crime. <i>JAMA Netw Open</i> , 4(7). doi:10.1001/jamanetworkopen.2021.17067	Housing repairs can support reduced crime on the block
Level 4 Evidence: Case Control/ Cohort Studies	Carnemolla, P., & Bridge, C. (2019). Housing Design and Community Care: How Home Modifications Reduce Care Needs of Older People and People with Disability. <i>International journal of environmental research and public health</i> , 16(11), 1951. https://doi.org/10.3390/ijerph16111951	Home modifications for older and adults with disabilities can reduce informal caregiver time
	Craig, B. M., Hartman, J. D., Owens, M. A., & Brown, D. S. (2016). Prevalence and Losses in Quality-Adjusted Life Years of Child Health Conditions: A Burden of Disease Analysis. <i>Maternal and child health journal</i> , 20(4), 862–869.	Trouble breathing causes a loss of about .16 QALY
	Dall, T. M., Zhang, Y., Chen, Y. J., Quick, W. W., Yang, W. G., & Fogli, J. (2010). The economic burden of diabetes. <i>Health affairs (Project Hope)</i> , 29(2), 297–303.	Medical care for Type 2 Diabetes averages over \$9,000 per year

Level of Evidence	Study	Relevant Finding
<p>Level 4 Evidence: Case Control/ Cohort Studies</p>	<p>DiGuseppi, C., Jacobs, D. E., Phelan, K. J., Mickalide, A. D., & Ormandy, D. (2010). Housing interventions and control of injury-related structural deficiencies: a review of the evidence. <i>Journal of public health management and practice</i> : JPHMP, 16(5 Suppl), S34–S43.</p>	<p>Increasing home safety through repairs/modifications can save lives</p>
	<p>Ellen, I. G., & Voicu, I. (2006). Nonprofit housing and neighborhood spillovers. <i>Journal of Policy Analysis and Management</i>, 25(1), 31–52.</p>	<p>Housing repairs and redevelopment for low-income homeowners can have positive effects on the surrounding homes and neighborhood</p>
	<p>Fahy, R., & Maheshwari, R. (2021). Poverty and the Risk of Fire. https://www.nfpa.org/~media/Files/News%20and%20Research/Fire%20statistics%20and%20reports/US%20Fire%20Problem/ospoverty.pdf</p>	<p>Relative risk of injury from fire in low income communities is 4-8X a mid to high income community</p>
	<p>Ferrah, N., Ibrahim, J. E., Kipsaina, C., & Bugeja, L. (2018). Death Following Recent Admission Into Nursing Home From Community Living: A Systematic Review Into the Transition Process. <i>Journal of Aging and Health</i>, 30(4), 584–604. https://doi.org/10.1177/0898264316686575</p>	<p>The transition to a nursing home from the community can increase risk of mortality</p>
	<p>Framework Institute. (2017). Reframing Affordable Housing Findings from Peer Discourse Sessions. https://www.frameworksinstitute.org/publication/reframing-affordable-housing-findings-from-peer-discourse-sessions/</p>	<p>Neighborhood conditions impact future earnings of children</p>
	<p>Gould, E. (2009b). Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control. <i>Environmental Health Perspectives</i>, 117(7).</p>	<p>Lead hazard controls can have very large returns on investment</p>
	<p>Hampson, N.B. (2016). Cost of accidental carbon monoxide poisoning: A preventable expense. <i>Preventive Medicine Reports</i>, 3, 21-24. https://doi.org/10.1016/j.pmedr.2015.11.010</p>	<p>An ROI of about \$1.30 is possible from CO detectors</p>
	<p>EPA (n.d.) Mortality Risk Valuation. https://www.epa.gov/environmental-economics/mortality-risk-valuation#whatisvsl</p>	<p>Value of a statistical life has a modal value of about \$8 million</p>
	<p>Interagency Working Group on Social Cost of Greenhouse Gases, United States Government. (2021). Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990. https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf?source=email</p>	<p>The social cost of carbon is estimated at about \$50 per metric ton</p>

Level of Evidence	Study	Relevant Finding
<p>Level 4 Evidence: Case Control/ Cohort Studies</p>	<p>Jacobs, D.E., & Baeder, A. (2009). Housing Interventions and Health: A Review of the Evidence. National Center for Healthy Housing.</p>	<p>Interventions to improve housing conditions can improve health</p>
	<p>Jia, H., Lubetkin, E. I., DeMichele, K., Stark, D. S., Zack, M. M., & Thompson, W. W. (2019). Quality-adjusted life years (QALYs) associated with limitations in activities of daily living (ADL) in a large longitudinal sample of the U.S. community-dwelling older population. <i>Disability and health journal</i>, 12(4), 699–705. https://doi.org/10.1016/j.dhjo.2019.05.003</p>	<p>Increasing ease of conducting activities of daily life can increase quality of life</p>
	<p>Kennedy, K., Allenbrand, R. & Bowles, E. (2019). The Role of Home Environments in Allergic Disease. <i>Clinical Reviews in Allergy and Immunology</i>, 57, 364–390.</p>	<p>Reducing in home allergens reduces health care costs</p>
	<p>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. <i>Environmental Health Perspectives</i>, 114(10), 1574–1580.</p>	<p>Moisture and mold-related repairs can reduce asthmatic hospitalizations by 29 percentage points</p>
	<p>Kim, E. S., Chen, Y., Kawachi, I., & VanderWeele, T. J. (2020). Perceived neighborhood social cohesion and subsequent health and well-being in older adults: An outcome-wide longitudinal approach. <i>Health & Place</i>, 66, 102420.</p>	<p>Social cohesion is associated with psychosocial well-being and reduced psychological distress</p>
	<p>Marciniak, M. D., Lage, M. J., Dunayevich, E., Russell, J. M., Bowman, L., Landbloom, R. P., & Levine, L. R. (2005). The cost of treating anxiety: the medical and demographic correlates that impact total medical costs. <i>Depression and anxiety</i>, 21(4), 178–184.</p>	<p>The annual additional medical expenditures for those with anxiety is over \$2,000 per year</p>
	<p>Mudarri, D., & Fisk, W.J. (2007). Public health and economic impact of dampness and mold. <i>Indoor Air</i>, 17(3), 226–235.</p>	<p>About 21% of asthma cases are due to dampness and mold exposure in home</p>
	<p>Pigg, S., Koolbeck, M., Nye, L., Stendel, S., Lord, M., & McLeod, H. (2021). Addressing non-energy impacts of weatherization. Oakridge National Laboratory.</p>	<p>Limited insights exist regarding attributing specific non-energy impacts (NEIs) to specific energy efficiency measures</p>
	<p>Rebuilding Together. (2017). <i>Repairing Homes & Rebuilding Lives: Key findings about our work with older adults in 2014-2017.</i></p>	<p>Receiving repairs reduced the likelihood of falling by 2-3X</p>
	<p>Rodgers, S.E., Bailey, R., Johnson, R., Poortinga, W., Smith, R., Berridge, D., Anderson, P., Phillips, C., Lannon, S., Jones, N., Dunstan, F.D., Morgan, J., Evans, S.Y., Every, P., & Lyons, R.A. (2018). Health impact, and economic value, of meeting housing quality standards: a retrospective longitudinal data linkage study. <i>Public Health Research</i>, 6(8).</p>	<p>Home repairs and weatherizations have been shown to reduced hospitalization rates by upwards of 40%</p>

Level of Evidence	Study	Relevant Finding
<p>Level 4 Evidence: Case Control/ Cohort Studies</p>	<p>Rossi-Hansberg, E., Sarte, P. D., & Owens III, R. (2010). Housing externalities. <i>Journal of political Economy</i>, 118(3), 485-535.</p>	<p>“land prices in neighborhoods targeted for revitalization rose by 2 to 5 percent at an annual rate above those in the control neighborhood.”</p>
	<p>Sandel, M., Baeder, A., Bradman, A., Hughes, J., Mitchell, C., Shaughnessy, R., Takaro, T.K., Jacobs, D.E. (2010). CIH Housing Interventions and Control of Health-Related Chemical Agents. <i>Journal of Public Health Management and Practice</i>, 16(5), 24-33.</p>	<p>Lead and radon are both very harmful to health</p>
	<p>Snyder, L.P., & Baker, C.A. (2010a). Affordable Home Energy and Health: Making the Connections. AARP Public Policy Institute.</p>	<p>Internal temperature controls reduces risk of heat-related illness</p>
	<p>Thomson, H., Thomas, S., Sellstrom, E., & Petticrew, M. (2013). Housing improvements for health and associated socio-economic outcomes. <i>The Cochrane database of systematic reviews</i>, (2), CD008657.</p>	<p>Home repairs such as those focused on thermal comfort support improved mental health</p>
	<p>Viscusi, W. K., & Hersch, J. (2008). The mortality cost to smokers. <i>Journal of health economics</i>, 27(4), 943–958.</p>	<p>Value of a Statistical Life Year for those 65+ is approximately \$100,000</p>
	<p>Wisconsin Department of Administration, Division of Energy, Housing and Community Resources. (2018). Assessment of Energy and Cost Savings for Homes Treated under Wisconsin’s Home Energy Plus Weatherization Program 2018. http://homeenergyplus.wi.gov/docview.asp?docid=28720&locid=25</p>	<p>Weatherization programs can reduce energy use by 1,500+ kWh per year per home</p>
	<p>Yeung, J., Zhang, Z., & Kim, T. Y. (2017). Volunteering and health benefits in general adults: cumulative effects and forms. <i>BMC public health</i>, 18(1), 8.</p>	<p>Volunteering can reduce rates of depression by 4.3%</p>
<p>Level 5 Evidence: Systematic Review of Descriptive Studies</p>	<p>Ahrens M. (2004). Smoking and fire. <i>American journal of public health</i>, 94(7), 1076–1077.</p>	<p>Homes with smoke alarms have a 40–50% lower fire death rate</p>
	<p>Enterprise Community Partners, Inc., & FrameWorks Institute. (2016). “You Don’t Have to Live Here” Why Housing Messages Are Backfiring and 10 Things We Can Do About It. https://www.frameworksinstitute.org/publication/you-dont-have-to-live-here-why-housing-messages-are-backfiring-and-10-things-we-can-do-about-it/</p>	<p>Understanding impact of housing quality can help with messaging</p>
	<p>Healthy Housing Solutions. (2017). Overcoming Obstacles to Policies for Preventing Falls by the Elderly Final Report. https://www.hud.gov/sites/documents/OVERCOMINGOBSTACLESFALLS.PDF</p>	<p>78% of falls are caused dby 4 or more factors</p>
	<p>Kilbourne, E.M. (1999). The Spectrum of Illness During Heat Waves. <i>American Journal of Preventive Medicine</i>, 16(4), 359-60.</p>	<p>Access to air conditioning is a leading preventative measure for heat-related deaths</p>

Level of Evidence	Study	Relevant Finding
<p>Level 5 Evidence: Systematic Review of Descriptive Studies</p>	<p>Kovats, R.S., & Hajat, S. (2008). Heat Stress and Public Health: A Critical Review. <i>Annual Review of Public Health</i>, (29)1, 41-55.</p>	<p>Individuals with chronic diseases are at greater risk of heat-related illness</p>
	<p>McCollister, K. E., French, M. T., & Fang, H. (2010). The cost of crime to society: new crime-specific estimates for policy and program evaluation. <i>Drug and alcohol dependence</i>, 108(1-2), 98–109. https://doi.org/10.1016/j.drugalcdep.2009.12.002</p>	<p>Costs when including victim costs amount to thousands or hundreds of thousands of dollars</p>
	<p>Nunes, C., Pereira, A.M. & Morais-Almeida, M. (2017). Asthma costs and social impact. <i>Asthma Res and Pract</i> 3(1). https://doi.org/10.1186/s40733-016-0029-3</p>	<p>Hospital admissions from an asthma attack lead to on average 13 days of missed work</p>
	<p>Perissinotto, C. M., & Covinsky, K. E. (2014). Living alone, socially isolated or lonely-what are we measuring?. <i>Journal of general internal medicine</i>, 29(11), 1429–1431. https://doi.org/10.1007/s11606-014-2977-8</p>	<p>Loneliness can have a negative impact on health</p>
	<p>Rebuilding Together. (n.d.) Safe at Home Occupational Therapy Model Program Brief</p>	<p>Increasing the ability to age in place will be increasingly important as the proportion of households with 65+ year olds increases</p>
	<p>Snyder, L.P., & Baker, C.A. (2010b). Affordable Home Energy and Health: Making the Connections. AARP Public Policy Institute.</p>	<p>Weather related hospitalizations cost over \$13,000</p>
	<p>Thomson, H., Thomas, S., Sellstrom, E., & Petticrew, M. (2013). Housing improvements for health and associated socio-economic outcomes. <i>Cochrane Database of Systematic Reviews</i>, 2.</p>	<p>Improved housing quality and comfort may also improve social relationships</p>
	<p>U.S. Department of Housing and Urban Development. (2013). Aging in Place: Facilitating Choice and Independence. https://www.huduser.gov/portal/periodicals/em/fall13/highlight1.html</p>	<p>There are potentially large cost savings from aging in place</p>
	<p>Wahl, H.W., Fänge, A., Oswald, F., Gitlin, L.N., & Iwarsson, S. (2009). The Home Environment and Disability-Related Outcomes in Aging Individuals: What Is the Empirical Evidence?. <i>The Gerontologist</i>, 49(3), 355–367.</p>	<p>Studies of the relationship between homes and disability-related outcomes are partially supportive</p>
	<p>Wahowiak, L. (2016). Healthy, safe housing linked to healthier, longer lives: Housing a social determinant of health. <i>The Nation’s Health</i>, 46(7), 1-19.</p>	<p>Housing quality is a social determinant of health</p>
<p>Weitzman, M., Baten, A., Rosenthal, D.G., Hoshino, R., Tohn, E., & Jacobs, D.E. (2013). Housing and Child Health. <i>Current Problems in Pediatric and Adolescent Health Care</i>, 43(8), 187-224.</p>	<p>Millions of cases of child asthma and bronchitis are tied to housing conditions</p>	

Level of Evidence	Study	Relevant Finding
<p>Level 6 Evidence: Systematic Review of Descriptive Studies</p>	<p>Actionable Insight, LLC. (2019). Rebuilding Together: Impact Measurement Pilot Evaluation Report 2019.</p>	<p>Rebuilding Together’s affiliates impact many aspects of homeowners’ lives</p>
	<p>Actionable Insight, LLC. (2021). Impact Measurement Project Report 2020–2021.</p>	<p>Rebuilding Together affiliates have positive effects on many outcomes for homeowners</p>
	<p>American Council for an Energy-Efficient Economy. (2018). Weatherization Assistance Program. https://www.aceee.org/sites/default/files/pdf/fact-sheet/weatherization-assistance-program.pdf</p>	<p>Weatherization programs can reduce energy use by 1,500+ kWh per year per home</p>
	<p>American Thoracic Society. (2018, January 12). Asthma costs the US economy more than \$80 billion per year. ScienceDaily. Retrieved November 8, 2021 from www.sciencedaily.com/releases/2018/01/180112091212.htm</p>	<p>The annual per-person medical cost of asthma was \$3,266.</p>
	<p>Boch, S. J., Taylor, D. M., Danielson, M. L., Chisolm, D. J., & Kelleher, K. J. (2020). ‘Home is where the health is’: Housing quality and adult health outcomes in the Survey of Income and Program Participation. <i>Preventive medicine</i>, 132.</p>	<p>Poor housing characteristics are associated with poor health</p>
	<p>Department of Energy. (2018). https://www.energy.gov/sites/prod/files/2018/03/f49/WAP-fact-sheet_final.pdf</p>	<p>The DOE estimates about \$283 of savings per year for weatherization services</p>
	<p>Eisenberg, A., Wakayama, C., & Cooney, P. (2021). Reinforcing low-income homeownership through home repair: Evaluation of the Make It Home repair program. University of Michigan.</p>	<p>Home repair services are viable means to protecting low-income homeownership</p>
	<p>Gardner, P. J. (2011). Natural neighborhood networks—Important social networks in the lives of older adults aging in place. <i>Journal of aging studies</i>, 25(3), 263-271.</p>	<p>Natural neighborhood networks can support well-being of older residents</p>
	<p>Gomez, M., Reddy, A. L., Dixon, S. L., Wilson, J., & Jacobs, D. E. (2017). A Cost-Benefit Analysis of a State-Funded Healthy Homes Program for Residents With Asthma: Findings From the New York State Healthy Neighborhoods Program. <i>Journal of public health management and practice</i>, 23(2), 229–238.</p>	<p>Kids with asthma have annual medical care costs about \$1000 higher than kids without asthma</p>
	<p>Independent Sector. (2021, April). Value of Volunteer Time. https://independentsector.org/value-of-volunteer-time-2021/</p>	<p>The value of a Volunteer hour is approximately \$28.54</p>
	<p>Jacobs, D.E., Tobin, M., Targos, L., Clarkson, D., Dixon, S.L., Breyse, J., Pratap, P., & Cali S. (2016). Replacing Windows Reduces Childhood Lead Exposure: Results From a State-Funded Program. <i>Journal of Public Health Management and Practice</i>, 22(5), 482-91.</p>	<p>Window replacement reduced lead exposure</p>
<p>Mossey, J. M., Mutran, E., Knott, K., & Craik, R. (1989). Determinants of recovery 12 months after hip fracture: the importance of psychosocial factors. <i>American journal of public health</i>, 79(3), 279–286. https://doi.org/10.2105/ajph.79.3.279</p>	<p>Falls can lead to long-term loss of ADLs</p>	

Level of Evidence	Study	Relevant Finding
<p>Level 6 Evidence: Systematic Review of Descriptive Studies</p>	<p>Viscusi, W. K., & Hersch, J. (2008). The mortality cost to smokers. <i>Journal of health economics</i>, 27(4), 943–958.</p>	<p>Rebuilding Together repairs lead to cost savings and home value appreciation</p>
	<p>Reinhard, S. C., Feinberg, L. F., Houser, A., Choula, R., & Evans, M. (2019). Valuing the invaluable: 2019 update charting a path forward. AARP Public Policy Institute.</p>	<p>Average value per hour of caregiving is \$15.41</p>
	<p>Ruggiero, R., Rivera, J., & Cooney, P. (2020). A Decent Home: The Status of Home Repair in Detroit. University of Michigan.</p>	<p>Racial disparities in housing lead to racial disparities in health</p>
	<p>Taylor, N.W., Searcy, J.K., & Jones, P.H. (n.d.) Cost Savings from Energy Retrofits in Multifamily Buildings. MacArthur Foundation.</p>	<p>Energy retrofits average approximately \$4,400 and save upwards of 3800 kWh in year 1</p>
	<p>U.S. Department of Energy. (2018). Weatherization Works!. https://www.energy.gov/sites/prod/files/2018/03/f49/WAP-fact-sheet_final.pdf</p>	<p>Weatherization-specific repairs average \$4,000 per house and lead to \$283 annual energy savings</p>
	<p>U.S. Department of Housing and Urban Development. (2011). Quantifying Energy Efficiency in Multifamily Rental Housing. https://www.huduser.gov/portal/publications/EM_Newsletter_Summer_2011_FNL.pdf</p>	<p>Weatherization retrofits are noted for saving 30% of energy</p>
	<p>Yellman, M. A., Peterson, C., McCoy, M. A., Stephens-Stidham, S., Caton, E., Barnard, J. J., Padgett, T. O., Jr, Florence, C., & Istre, G. R. (2018). Preventing deaths and injuries from house fires: a cost-benefit analysis of a community-based smoke alarm installation programme. <i>Injury prevention. Journal of the International Society for Child and Adolescent Injury Prevention</i>, 24(1), 12–18. https://doi.org/10.1136/injuryprev-2016-042247</p>	<p>Avoided medical expenditure for a non-fatal fire injury is over \$16,000</p>
<p>Level 7 Evidence: Single Descriptive/Qualitative Study</p>	<p>Frakt, A. B., Jha, A. K., & Glied, S. (2020). Pivoting from decomposing correlates to developing solutions: An evidence-based agenda to address drivers of health. <i>Health services research</i>, 55 Suppl 2(Suppl 2), 781–786.</p>	<p>Evidence can help determine the role of social factors in health</p>
	<p>Wilson, J. Personal communication. September 23, 2021.</p>	<p>Relevant Finding: Rates of asthma and trouble breathing among Rebuilding Together homeowners is about 20%.</p>
<p>N/A Fact</p>	<p>American Diabetes Association. (2018). The Cost of Diabetes. https://www.diabetes.org/resources/statistics/cost-diabetes</p>	<p>Average medical care costs for people with type 2 Diabetes averages over \$16,000 per year</p>
	<p>Asthma and Allergy Foundation of America. (2021, April). Asthma Facts and Figures. https://www.aafa.org/asthma-facts/</p>	<p>Approximately 7% of kids in the U.S. have asthma</p>
	<p>Centers for Disease Control and Protection. (2017, February 10). Important Facts about Falls. https://www.cdc.gov/homeandrecreationalafety/falls/adultfalls.html</p>	<p>One out of five falls causes serious injury</p>

Level of Evidence	Study	Relevant Finding
N/A Fact	(E. Haydasz, personal communication, August 31, 2021).	Rebuilding Together’s Affiliates tend to serve low-income, older, and homeowners with disabilities
	(E. Haydasz, personal communication, August 31, 2021).	chance of a house fire in the US is .0005 per year.
	Fahy, R., & Maheshwari, R. (2020). Home Structure Fires. https://www.nfpa.org/News-and-Research/Data-research-and-tools/Building-and-Life-Safety/Home-Structure-Fires	chance of a house fire in the US is .0005 per year.
	Institute of Medicine Committee on the Future Health Care Workforce for Older Americans. (2008). Chapter 6: Patients and Informal Caregiving. Retooling for an Aging America: Building the Health Care Workforce. National Academies Press. https://www.ncbi.nlm.nih.gov/books/NBK215401/ doi: 10.17226/12089	About 40% of older Americans have an informal caregiver
	McDermott, D., Hudman, J., Cotliar, D., Claxton, G., Cox, C., & Rae, M. (2020). How costly are common health services in the United States? https://www.healthsystemtracker.org/chart-collection/how-costly-are-common-health-services-in-the-united-states/	Average cost of in-patient (non-surgical) medical care is over \$20,000 per visit.
	Neumann, P.J., Cohen, J.T., & Weinstein, M.C. (2014). Updating Cost-Effectiveness – The Curious Resilience of the \$50,000-per-QALY Threshold. The New England Journal of Medicine, 371(9), 796-797.	QALY has often been benchmarked at \$50,000
	Nonprofits Source. (n.d.). Volunteering Statistics And Trends For Nonprofits. https://nonprofitssource.com/online-giving-statistics/volunteering-statistics/	Of those people who volunteer, they tend to volunteer about 52 hours per year
	Rebuilding Together. (2019). Inside the Numbers: 2019.	Rebuilding Together’s affiliate network completed thousands of projects and utilizes a variety of funding types and resources
	Rebuilding Together. (2021). Business Intelligence tool.	11% of households have kids
	Rebuilding Together. (n.d.) Building a Healthy Neighborhood.	Upwards of 1.5 million homes owned by low-income people are in need of repair in the U.S.
	Statista. (2021, May 27). Percentage of U.S. population with a hospitalization in past year from 2000 to 2018, by age. https://www.statista.com/statistics/184447/us-population-with-a-hospitalization-by-age/	17% of those 65+ will have a hospitalization in agiven year.
	U.S. Environmental Agency. (2016). Climate Change Indicators: Heat-Related Illnesses. https://www.epa.gov/climate-indicators/heat-related-illnesses	Weather-related hospitalizations in the U.S. averaged 1.8 per 100,000 residents
	Warren, C., Lindberg, C., Hansen, M., & Pittman, B. (2016). An Assessment of Home Renovation and Rehabilitation Needs of Older Adult Homeowners in Minnesota. https://www.wilder.org/sites/default/files/imports/MNHousing_CostsOfHomeRehabAndImprovement_%2012-16.pdf	Aging in place can save over \$1,000 per month

Appendix F: GLOSSARY

Common Terms in the Ecotone Analysis	
Discount Rate	The annual rate of reduction of the value of outcomes accrued in the future, designed to account for uncertainty and the time value of money when calculating a present value
Effect Size	The change in the likelihood of a cost occurring given the program
Estimated Return	Present value of all monetized outcomes
External Data	Data not gathered by and/or studies not conducted by the program being analyzed
External Validity	The extent to which results of a given study are applicable across other contexts
Evidence Based	An approach to the program's work which is designed based on existing research and applications
Evidence Informed	An approach to the program's work which is designed with the knowledge and influence of existing research
Impact	The change in outcomes derived exclusively from the given program
Internal Data	Data gathered by the program itself
Internal Validity	The extent to which results of a given study are only applicable to the context of that study
Intermediate Outcome	The change resulting from the short-term outcome
Levels of Evidence of Causality	Level 1 = greatest level of evidence that there is a causal relationship between the variables, Level 7 = lowest level of evidence that there is a causal relationship between the variables
Logic Model	The planned methodology for accomplishing the desired change(s)
Long-term Outcome	The change resulting from the intermediate outcome
Marginal Cost	The effect size * the outcome cost. The average change in cost accrued
Monetized Outcome	An outcome which has been linked to a cost occurring event, thereby placing a dollar value on the outcome
Net Present Value (NPV)	The aggregation of benefits and costs valued in the present day given an assumed time period and discount (interest) rate
Non-monetized Outcome	The change which is not or could not be linked, due to data quality, to a cost occurring event, thereby keeping the outcome from having a dollar value placed on it
Outcome	The resulting change occurring from the program's inputs and activities
Outcome Cost	The total cost of an event occurring
Output	The product from the inputs and activities of the program (e.g. number of people served)
Present Value (PV)	A single annuitized benefit or cost (depending on the outcome) valued in the present day given an assumed time period and discount rate
Short-term outcome	The initial change generated from the program
Trumping Rules	Selecting certain outcomes over others when they are interlinked to avoid double counting

