

Toolkit

How to Assess the Need for, and Effectiveness of, Home Repairs in Your City

Community Innovation and Action Center, University of Missouri-
St. Louis

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Introduction

When we started this research, we knew there was a great need for home repairs but finding out the magnitude of this need and the life-altering effects of home repairs has been eye-opening. Some would argue that home repairs are an individual responsibility and should be left to the marketplace. We disagree. Housing is a necessity. Deteriorated housing can cause sickness and even death. Access to a safe and secure home should be a right -- not left to the vagaries of the market. No one should be forced to choose between life-saving medicine and basic home repairs. Moreover, the backlog of needed home repairs is not equally distributed. In our study of older homeowners in St. Louis, we found that low-income households, people of color, and women were especially burdened. Housing deterioration and the inability to pay for needed home repairs are issues of racial and economic injustice. The need for home repairs is often hidden from view. We hope the research methods we outline here will enable advocates around the country to document the need for repairs and the positive effects home repairs have on people's quality of life. We need to mobilize public, private, and nonprofit resources so that everyone, everywhere can live in a safe and comfortable home.

The purpose of this toolkit is to share a methodology for assessing the need for, and effectiveness of, home repairs. Normally, estimating the need for home repairs across a broad population is prohibitively expensive. It requires sending skilled housing inspectors into each home to estimate the need for physical repairs to bring the home up to code. With the help of researchers at the Federal Reserve Bank in Philadelphia, we developed a new methodology for assessing the need for home repairs based on the experience of people in their homes.¹ Our survey instrument can be administered relatively inexpensively to homeowners to identify a set of repair scenarios whose costs can be easily estimated.

Our methodology is not perfect. While not covering every conceivable home repair, we believe our scenarios cover all *major* home repairs. It is difficult to standardize home repairs into uniform repair scenarios. Each repair is going to be a little different. Nevertheless, by drawing on the perceptions and experiences of those who live in the home, we can produce stable estimates that aggregated across many homes can be used to compare home repair needs across time, as well as across cities, neighborhoods, and different demographic groups. Our methodology can be applied, as is, to single-family homes and duplexes. If you want to estimate the need for repairs for larger multifamily housing, you will need to modify our methodology.²

The second part of the Toolkit, our methodology for evaluating the effectiveness of home repairs, is based on a modification to standard policy evaluation methodology. Our methodology is relatively inexpensive to administer and can generate powerful results. The gold standard for policy evaluation is to identify a control group and an experimental group that are identical in every way except that the experimental group was administered the program intervention -- in this case, home repairs. Randomly assigning households to an experimental group (getting repairs) and a control group (not getting repairs), however, has obvious political drawbacks and if tried with governmental funds would probably violate the constitutional right to equal protection. The alternative of finding households (a control group) that are identical to households that received home repairs is also very difficult. Households receiving home repairs differ from other households in myriad ways -- income, race, age of home, location, etc. Finding a match for households receiving home repairs would be time-consuming and expensive; and you can never be sure they do not differ on some unseen aspect, such as the attitudes of the residents themselves.

Given the difficulties of comparing a control group and an experimental group, we took a different approach -- asking homeowners to retrospectively evaluate the effects of home repairs on the quality of their lives. The advantage of this approach is that the control group (what life was like before the repairs) is based on the same house and residents as the experimental group (what life was like after the repairs) so if they report changes in the quality of life, we can quite confidently attribute it to the repairs. The disadvantage is that we must rely on people's memory of what life was like before the repairs. Concerned about lapsing memory, we sent questionnaires only to households that had received repairs in the past two years. We modelled our survey on one devised by Rebuilding Together.³ In consultation with our home repair partners, we reworked the Rebuilding Together questionnaire, utilizing the Activities of Daily Living (ADL), a list of the basic functions a home helps people perform, such as personal hygiene and food preparation.

Answers to survey questions with fixed responses, however, can never convey the full range of the effects of home repairs on residents' quality of life. In order to flesh out the responses to the survey, we conducted face-to-face interviews with a sample of respondents who answered the questionnaire. The interviewers asked homeowners to elaborate on their responses to the survey questions. The interviews enabled us to understand not just the physical conditions of the home but how residents *experienced* their home. The qualitative interviews gave powerful testimony to the how home repairs can change people's lives.

Notwithstanding our policy preference that everyone should have access to basic home repairs, our research methodology was developed in a strictly objective and scientific manner. We hope our research methods reveal the facts that are necessary to help make the case for more effective and, if necessary, better funded home repair programs across the nation. We hope this Toolkit will give you everything necessary to determine the need for, and effectiveness of, home repairs in your city. If you want to find out more about our project, our full report is available at <https://www.umsl.edu/ciac/homerepair.html>.

¹ See Eileen Divringi, Eliza Wallace, Keith Wardrip, and Elizabeth Nash, *Measuring and Understanding Home Repair Costs: A National Typology of Households* (Philadelphia, PA: Federal Reserve Bank of Philadelphia, September 2019).

² Our questionnaire would effectively identify the need for repairs within the apartment itself. The challenge for multifamily housing would be to estimate the cost of repairs for structural issues external to the unit, such as roofs, foundations, and heating and cooling systems. Residents would be able to identify issues, such as leaks or inadequate heating, but translating those reported problems into repair scenarios with accurate cost estimates would require additional steps from what we outline here. The cost of replacing the furnace in a multifamily home is going to be different than in a single-family home. We believe our methodology could be adapted for multifamily housing and we encourage researchers take on this challenge.

³ Rebuilding Together, *Impact Measurement Pilot Report, 2019-2020* (Prepared by Actionable Insights, LLC), Appendix E.

General Guidelines:

As stated above, this toolkit is meant to be used to determine the need for and effectiveness of home repairs in your city. The step-by-step guidelines below are supplemented with links to documents and tools that should allow you to replicate our research method. We invite you to reach out to UMSL's Community Innovation and Action Center for support or with any questions as you work through this process.

A few things you may need to follow our methodology (these are recommendations and there may be work-arounds to any of these):

- A team member/partner/consultant with experience conducting and analyzing surveys
- A team member/partner/consultant with some basic understanding of coding
- A team member/partner/consultant with experience in conducting and analyzing qualitative interviews
- A team member/partner/consultant who is familiar with the home repair ecosystem and costs for your area
- Access to and familiarity with basic office computer programs (spreadsheets, word documents, mail merging)
- Access to relevant data sources to determine and contact your sample (city assessor property records)
- Access to contact information for homeowners who have received home repairs (we partnered with several non-profit/government organizations that run home repair programs)

Toolkit Quick Reference:

Below is an outline of the toolkit with links to documents and tools for use in your study. This is provided as a resource to quickly access these documents – more details are given in the corresponding sections below.

- Assessing cost of home repairs in your city
 - Creating a Sample
 - [Home Repair Sampling Plan](#)
 - Administer Survey #1
 - [Survey #1](#)
 - Repair Scenarios
 - [Repair Scenarios Table](#)
 - Cost Estimates
 - [Cost Estimating Tool](#)
 - [Analysis: Crosstabs, Survey 1](#)
- Assessing the effectiveness of different home repairs
 - [Survey #2](#)
 - [Interview Cheat Sheet](#)
 - [Qualitative Questionnaire](#)
 - [Analysis: Crosstabs, Survey 2](#)

PART 1: Assessing the Need for Home Repairs

STEP 1: Identify your Sample

In our study, we looked at the need for and effectiveness of home repairs for senior homeowners, but you could choose to examine any group of the population living in single-family homes. Determining the population that you are interested in will help you create your sample. To follow our methodology, you will need to have names and addresses for all the homes in your sample. In our case, these addresses came from St. Louis County tax assessor data (which tracks the ownership information of homes as well as some information about the building and property). As you will see later, to complete the needs analysis, you will need certain information that is not captured by the survey, such as square footage and number of floors.

In addition to finding and accessing the data you need to reach your target population; you will also have some decisions to make in terms of creating a sample that will represent the broader population in a fair and relevant way. For example, we oversampled (chose more of) people from low-income census tracts because we assumed (with input from our survey consultants) that we would receive a lower rate of return from these residents. Thus, to create a fair sample of the entire population, we needed to compensate for this likely lower rate of return.

For more information on how we created our sample, please see our [Home Repair Sampling Plan](#).

STEP 2: Administer Survey #1: HOME REPAIR SURVEY #1

Once you have determined your sample and collected the names and mailing addresses to reach them, you are ready to survey them. Surveying steps are as follows:

- Preparing the survey: For these steps, it is beneficial to have a team member or connection with someone familiar with surveying techniques. The following elements were included in our mailing to the sample population:
 - Cover page:
 - Greets the recipient of the survey,
 - explains the purpose of the survey,
 - shares the relevant partners and organizations involved in and leading the survey (the logos of these organizations should be included)
 - describes the survey instrument with any notable instructions and an estimate for the time it will take.
 - Gives a deadline for returning the survey
 - Informed consent document: The document was required by the Institutional Review Board (IRB) at the University of Missouri - St. Louis. Universities require human subject review approval if you plan to publish the results of your research. The main issue is maintaining confidentiality for your respondents. This has the advantage of encouraging your survey respondents and interviewees to be uninhibited in their responses. Please check on your lead organization's requirements for protecting the privacy of your survey respondents.
 - Survey instrument: Contains the questions that make up the survey. Note that the format is designed for simplicity and ease of use. We recommend that any modifications you make to your own survey instrument maintain this pattern.
 - Postage-paid envelope: You want to have as few barriers as possible for the respondent to return the survey. Including a postage-paid envelope will help dramatically with the return

rate for your survey and give you more data to work with. This envelope also should contain the ID Code (see below) for the specific address.

- Create a code to preserve confidentiality: To comply with the Human Subject Review standards that UMSL is subject to, we created a simple code to connect the survey responses to the address where they lived. We added a series of numbers and letters to the postage-paid return envelope that corresponded to our list of addresses to which the survey was sent. For example, the first address on our list was number 0001 (out of 2500), the return envelope for this address could contain a code in the return address HRS12340001. The extra letters and numbers are meant to disguise the coding.
- Distribute the survey: Working with your mailing provider, prepare and send the survey to your sample. NOTE: if you are using a code to hide respondents' names, it is important to be sure that the surveys are sent to the correct address corresponding to the code on the return envelope (see above). Please build in time to stuff envelopes in an orderly process that can minimize errors.
- A few weeks after mailing the original survey, we mailed out a [reminder post card](#).

STEP 3: Repair Scenarios → Costs

Our survey instrument is designed to identify needed home repairs based on the answers given to questions regarding the resident's experience of living in the home. We made assumptions based on their answers about the specific "repair scenario" needed to address the issue. For example, if someone reported that their heating system had failed for at least six hours three or more times, we assumed that their furnace needed to be replaced.

Once we had created our repair scenarios, we assigned a cost to each scenario. These costs are estimates based on input from a national database (RS Means), online sources, and our data partners who have hands-on experience in the home repair field in our region. In fact, every repair is different, and the costs would be different subject to the contractor hired and the specifics of the repair. However, we believe our costs represent a reasonable estimate of the average cost for the kind of repair identified. When aggregated across many homes they can be used to compare home repair needs across time, as well as across cities, neighborhoods, and different demographic groups

Before using this toolkit, we recommend you review the repair scenarios with a partner or partners who are familiar with home repairs and costs in your city/area. As costs can change over time and across different geographies, it may be appropriate to adjust some of the cost estimates for your process. It could also be that some of the repairs listed are not applicable in your area, or that others might be more important. For example, for seniors in St. Louis, we concluded that adequate air conditioning was a necessity (due to our very hot and humid summers). Air conditioning may not be necessary in other climates.

We linked answers to the questionnaire to 43 different repair scenarios. In most cases, answers to one question were directly linked to a repair scenario. In some cases, we used answers to more than one question to identify a repair scenario. Finally, we created a coded program to automatically convert survey answers into repair scenario costs.

Note that RS means has a methodology for taking into account inflation in the cost of repairs in different cities. St. Louis is close to the mean (=100) so we did not adjust our cost estimates, but depending on your city you may want to make a cost adjustment based on the RS Means inflation multiplier.

STEP 4: Analysis

Once you have received the returned survey responses, you can begin the process of organizing and analyzing this data. For this step having a team member or partner with some basic coding experience can be helpful. This is the guide to the code created for our research in St. Louis:

- Using the UMSL Home Repair [Cost Estimating Tool](#)

Using this tool will generate the actual repair cost estimates based on the answers given to the survey questions. Based on these findings you can estimate the total cost of repairs needed for the broader population that your sample represents by simply multiplying the average cost of repairs for your sample times the total of your population divided by the size of your sample. You can also use cross-tabulations to look for correlations between factors such as race and income and the amount and kinds of home repairs needed (See our topline and crosstabs [here](#).)

PART 2: Evaluating the Effects of Home Repair

STEP 1: *Identifying the sample*

The second survey asks those who received home repairs to reflect on their quality of life before and after repairs. We identified a sample of older homeowners who had received home repairs in the last two years with the hope that their recollection of the effect would be clearer. We partnered with several non-profit and government home repair providers, contacting past clients of the home repair programs these organizations run. Note that the sample size of this survey was much smaller (we mailed out 202 surveys and received back 83 completed surveys). This sample is not intended to be representative of a larger population in statistical terms, but rather to help us understand the effects of different types of repairs on quality of life. We followed up the survey with follow-up interviews intended to supplement the survey answers (see below). Because we had a record of what home repairs were performed for each survey respondent, we made sure to sample a broad range of repairs, from very small to substantial (replacing electrical outlets versus replacing a roof, for example).

To conduct an evaluation of home repairs, we recommend connecting with local non-profits and government home repair providers in your city. Most cities will likely have several providers of different types of home repair, delineated either by the type of repair (i.e. weatherization) or the population served (low-income, senior, etc.). We found it advantageous to work with a variety of organizations that provided different kinds of repairs to seniors in St. Louis.

STEP 2: *Constructing Survey #2: [HOME REPAIR EVALUATION SURVEY](#)*

The home repair evaluation survey was implemented much like the needs survey but on a smaller scale. We again coded the return envelopes to be able to identify the resident by address while maintaining confidentiality. Each survey included a general description of the repairs of the repairs provided to that homeowner (e.g., minor electrical, major plumbing, etc.) to remind respondents about what repairs the questions were addressing.

STEP 3: *Follow-up Interviews*

At the end of the survey homeowners were asked if they would like to participate in a follow-up survey in exchange for a \$25 gift card. We had a high interest in the follow-up interview (79 out of 83) and were therefore able to select a broader range of interviewees across race, geographic area, and type of repairs.

- Interview Guidelines and Preparation: Interviewers should be prepared with a “script” and guidelines for questioning (see below) before beginning the interview process. It is important to train all interviewers to ensure efficiency and consistency in the process.
 - [Interview “Cheat Sheet”](#)
- [Interview Questionnaire](#)
 - Note that all relevant information (repairs completed, personal information, etc.) is included in the questionnaire to make it as easy as possible for interviewers.

STEP 4: *Analysis of Surveys and Interviews*

- Survey #2 Analysis: Based on the survey returns, we prepared “toplines” (a summary of answers) and “crosstabs” (the answers broken down by different survey characteristics, such as age, race, gender, geographical location, etc.). See our toplines and crosstabs [here](#).

- Interview Analysis:
 - All interviews were transcribed using [Otter](#) AI Transcription (available online). Interviewers needed to go over the transcription to correct errors.
 - We then analyzed the interviews by identifying key terms that were repeated and pulled out quotes illustrating those themes. While identifying counts of words is helpful, there is no substitute for reading through the interviews to identify themes. The qualitative interviews added depth and emotional resonance to the answers to the survey questionnaire.