

# Housing Upgrades to Benefit Seniors

## Efficiency, Impact, and Replication Evaluation



**March 11, 2019**





**SUBMITTED TO**

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**PROJECT**

Housing Upgrades to Benefit Seniors

**TASK & DELIVERABLE**

Task #2695  
Deliverable: Final Evaluation Report

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## Acknowledgments

We would like to thank the HUBS Leadership Team, especially Lauren Averella, Molly Wisniewski, and Chelsea Hayman at Civic Works; Bonnie Bessor at Rebuilding Together Baltimore; Cathy Semans and Ann Sherrill at Neighborhood Housing Services; Scott McVicker at Green & Healthy Homes Initiative (GHHI); and Alice Kennedy at the Baltimore Department of Housing and Community Development for their time and input toward this project. We also thank the Harry and Jeanette Weinberg Foundation, especially their Program Officer Earl Millett and Aaron Merki, Managing Director, Programs and Grants, and as Program Director for Older Adult Services, and the Leonard and Helen R. Stulman Charitable Foundation, especially their Executive Director, Cathy Brill, for their financial support and feedback throughout the evaluation process. For the Impact Study, we thank Margaret Henn from the Pro Bono Resource Center of Maryland for BidBaltimore's tax-lien sales dataset and for guidance for analyzing tax-lien sales data. We thank GHHI's Aging in Place team and Johns Hopkins School of Nursing student interns for collecting and sharing HUBS client-outcomes data. For the Efficiency Study, we thank the staff at Comprehensive Housing Assistance, Inc. (CHAI)/Sinai Hospital; Keswick Community Health; Banner Neighborhoods Community Association; and Meals on Wheels of Central Maryland, Inc. for agreeing to be interviewed and for connecting us with clients to be interviewed.

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# Table of Contents

Acknowledgments.....	2
Table of Contents.....	3
EXECUTIVE SUMMARY .....	5
1. INTRODUCTION.....	8
1.1 Brief Methodology .....	9
1.2 History of HUBS.....	10
1.3 Logic Model.....	12
1.4 HUBS Goals and Processes.....	16
1.4.1 HUBS Partners.....	16
1.4.2 HUBS Client Services .....	20
2. EFFICIENCY STUDY.....	25
2.1 Efficiency and Effectiveness of HUBS Leadership Team .....	28
2.2 Efficiency and Effectiveness of HUBS Partnerships .....	30
2.3 Best Practices for Recruiting and Serving Clients .....	34
2.4 Keeping Vital Community Stakeholders in the Community.....	35
2.5 Opportunities for Improvement .....	39
2.6 Strategies for Sustainability .....	41
3. IMPACT STUDY .....	43
3.1 Goal 1 – Estimating the need for grant-funded services in Baltimore City .....	45
3.1.1 Total Number of Low-Income Older Adults and Homeowner Cost Burden .....	46
3.1.2 Reverse Mortgages .....	48
3.1.3 Tax-Lien Certificate Sales .....	51
3.2 Goal 2: Cost Benefit Analysis (CBA) Simulation of HUBS .....	53
3.2.1 Unpacking the Projected Cost Savings.....	54
3.2.2 Sensitivity Analysis .....	60
3.3 Goal 3: Impact of HUBS on Health and Well-Being Outcomes .....	61
3.3.1 Impact Estimates using Cities for All Ages (CAA) Data.....	62
3.3.2 Impact Estimates using Green & Healthy Homes Initiative Data .....	67
3.3.3 Limitations and Strengths .....	69

4. RECOMMENDATIONS FOR REPLICATION.....	71
4.1 Logic Model Template.....	72
4.2 Planning for Program Replication .....	74
4.2.1 Identifying the Program Owners and Administrator .....	74
4.2.2 Needs Assessment and Resource Analysis .....	75
4.2.3 Strategic Planning .....	77
4.2.4 Build the HUBS Network .....	79
4.2.5 Assemble the HUBS Operating Team.....	80
4.2.6 Universal Database .....	82
4.2.7 Sustainability .....	84
5. SUMMARY OF STUDY FINDINGS .....	86
5.1 Efficiency Study Findings.....	86
5.2 Impact Study Findings.....	87
5.3 Recommendations for Program Improvement and Future Evaluations.....	88
5.4 Recommendations for Replication .....	89
APPENDICES .....	90
Appendix A: Annotated HUBS Network Diagram .....	91
Appendix B: Impact Study Methodology .....	93
Appendix C: Replication Forum Discussion Prompts .....	96

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# EXECUTIVE SUMMARY

## ***History of the Evaluation***

In the spring of 2018, Civic Works, on behalf of the leadership team contracted with IMPAQ International LLC (IMPAQ) to evaluate the Housing Upgrades to Benefit Seniors (HUBS) program. Specifically, Civic Works sought to understand the program's efficiency, effectiveness, and the potential impact it was making on clients' lives and the broader community of Baltimore City. Civic Works also requested an analysis of what programmatic components would be necessary to replicate the program successfully in locations beyond Baltimore.

## ***Report Structure***

The HUBS program is fundamentally a network of organizations with a shared mission of helping older adult homeowners<sup>1</sup> in Baltimore age in place, built on a foundation of existing relationships. This report begins by outlining the creation of the HUBS program from those relationships and diagrams the specific inputs, activities, outputs, and outcomes of the program in a Logic Model.

The HUBS program's outcomes are evaluated in three ways:

1. Demonstrating the magnitude of the need for HUBS services;
2. Estimating the savings of every dollar invested in HUBS; and
3. Estimating the impact of HUBS on the health and well-being of clients.

The evaluation includes sections on an Efficiency Study, an Impact Study, and Recommendations for Replication.

## ***Findings***

The Efficiency Study found that the HUBS program has been very successful at coordinating and completing home repairs for older adults, as well as linking clients to social support services to further assist them in maintaining their safety as they age in place. In a three-year grant period, HUBS served 1,128 households, helping these older adult homeowners to live at home safely and with a better quality of life.

HUBS partners could increase efficiency and effectiveness by identifying opportunities for providing ongoing support to clients, expanding HUBS outreach by strategically using social networks, and building sustainability through new partnerships that can help to close gaps in the

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<sup>1</sup> HUBS also serves some renters if they meet eligibility criteria.

current system. Opportunities exist to improve the program's efficiency and effectiveness by creating centralized data and resource libraries to reduce staff burden in serving clients and by expanding partnerships to close gaps and connect to additional resource streams.

The Impact Study sought to quantify the need for HUBS services and the homeowners who would benefit from low- or no-cost home repairs. Findings indicate that there are currently 20,486 low-income older adult homeowners in Baltimore City who may benefit from HUBS services. Of these, 10,414 older adults face explicit housing-cost burdens, and between 3,559 and 4,256 of older adult homeowners face difficult loan-ineligibility constraints because of having had a reverse mortgage in the past or a tax-lien sale on their property.

A cost-benefit analysis simulation was conducted in order to estimate the potential economic benefit or dollar savings generated by the HUBS program. The analysis found that **for every dollar invested in HUBS, \$1.80 in benefits are realized**. This means that for each year the program is implemented at a cost of \$1,678,998.67, **HUBS has the potential to produce net savings of \$3,022,369 over the next 10 years.<sup>2</sup> These benefits will primarily accrue to Medicaid/Medicare (on account of avoided healthcare costs) and to federal, state, and city governments (on account of avoided rental assistance costs).**

In order to estimate the impact of HUBS has on the client, the community members, and local communities' health and well-being outcomes, we used a combination of pre-post regressions and outcome-data tabulations using a dataset from the Cities for All Ages data (a program that provides home modifications and occupational therapy services to HUBS clients). The most significant impact of the HUBS program is in the reduction of fall risk:

- Falls inefficacy is lower by about 32.63 percent among older adults after being in the program.

Green & Healthy Homes Initiative data show that the program had the greatest impact on mobility:

- 67 percent of clients reporting an improved ability to move around their homes safely.
- 62 percent of clients reporting improved mobility while entering or exiting their homes.

Other areas of substantial improvement for the client include:

- Ability to perform Activities of Daily Living (59 percent report improvement)
- Physical endurance and strength (54 percent report improvement).

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<sup>2</sup> Cost savings or "profits" are realized over a 10 year period and are calculated in present-value terms for one year of investment in the program where 375 clients are served.



- Improvements in the temperature of their homes.
- Socialization
- Reduction in client's anxiety regarding home maintenance, overall health, and their utility bills.

Impact on the local community and community members:

- Neighborhood stability
- Generational wealth transfer
- Increase home value
- Benefit to person, house, neighborhood and family
- Increases health and wellness of multiple generations

Finally, based on the findings from the Efficiency and Impact studies and discussions during a Replication Forum held with key HUBS stakeholders in Baltimore City, we identified several key steps and factors that should be considered when building a replication of the HUBS program in a location other than Baltimore City.

1. Identify official Program Owners and designate an Administrator.
2. Conduct a needs assessment and resource analysis to ensure that adequate need exists and that funding and partners are available to the program.
3. Create a strategic planning process, to include:
  - Building the HUBS network,
  - Assembling the HUBS Operating Team,
  - Building a universal database, and
  - Planning for program evaluation and sustainability.

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# 1. INTRODUCTION

In May 2018, Civic Works contracted with IMPAQ International LLC (IMPAQ) to conduct an evaluation of the Housing Upgrades to Benefit Seniors (HUBS) program. Specifically, the Leadership Team, wanted to understand the efficiency and impact of HUBS, as well as the programmatic components necessary to replicate the program successfully in locations beyond Baltimore.

This report begins by setting the context for the evaluation with: (1) a brief history of the HUBS program and (2) a detailed logic model depicting the specific inputs, activities, outputs, and outcomes of the HUBS program and the goals, processes, and partners involved.

Following this, the **Efficiency Study** describes how well the HUBS program is operating and whether it is achieving its intended goals of helping older adult homeowners in Baltimore successfully age in place by answering six questions.

1. **Is the HUBS Leadership Team's role efficient and effective?**
2. **How efficient and effective are partnerships between HUBS sites, the HUBS program, and key stakeholders?**
3. **What are the best practices of the four operating sites in recruiting and serving clients?**
4. **How is the HUBS program successfully keeping vital community stakeholders in the community?**
5. **What opportunities exist to make the HUBS program more efficient and effective?**
6. **What strategies show promise for sustaining HUBS into the future?**

Next, the **Impact Study** provides estimates and analysis that may help demonstrate the economic value of HUBS and inform future fundraising objectives. This study had three goals.

1. To provide the HUBS Leadership Team with an estimate regarding the potential need for grant-funded services. In part this is estimated by **calculating the magnitude of loan ineligibility among older adult homeowners in Baltimore City.**
2. To conduct a **cost-benefit analysis** of the HUBS program. The purpose of this analysis is to provide the HUBS Leadership Team with an estimate of the potential economic benefit or dollar savings generated by the HUBS program.
3. To estimate the **impact of HUBS on the health and well-being outcomes of its clients.**

Finally, we present **Recommendations for Replication**, using findings from both the Efficiency and the Impact studies and feedback gathered during the Replication Forum to identify aspects of the program that are tied to its success and to discuss other important factors to consider and plan for when replicating HUBS in another location. A logic model template documents the inputs, activities, outputs, and outcomes most important to replication. **Steps and factors to consider when planning for program replication** include:

1. **Identifying the Program Owners and Administrator**
2. **Conducting a needs assessment and resource analysis**
3. **Building a network**
4. **Assembling the HUBS Operating Team**
5. **Creating a universal database**
6. **Planning for sustainability**

On December 10, 2018, a Replication Forum was convened with key members of Civic Works, the HUBS Leadership Team, HUBS grantee site staff, the HUBS Advisory Committee, the IMPAQ evaluation team, and other stakeholders. The forum provided an opportunity for key stakeholders in the HUBS program to discuss and reach consensus on recommendations for HUBS replication outside of Baltimore City and for program sustainability. Findings from the discussions were synthesized and used in the writing of the Recommendations for Replication (Section 4).

## 1.1 BRIEF METHODOLOGY

### *Efficiency Study Methods*

To understand HUBS' processes and to evaluate those processes for efficiency, effectiveness, and opportunities to improve, we collected and analyzed the three streams of data described below.

1. **Review of documents** provided by the Leadership Team and sites, which included: workflow documents, grant applications, program descriptions, program budgets, client intake and data reporting forms, and introduction letters.
2. **In-depth interviews** with Leadership Team members, site staff, referral partners, clients, and key stakeholders involved in the development of HUBS.
3. **Review of process metrics**, as collected for and reported in grant reports.

### *Impact Study Methods*

To estimate HUBS' potential impact, we worked with a combination of different datasets and methods tailored to the analytic needs of each of the three research topics within the study.

1. **To estimate the need for grant-funded services** among Baltimore City older adult homeowners, we calculated descriptive statistics regarding the total number of low-income older adult homeowners, the incidence of housing-cost burden, reverse mortgages, and tax-lien sales. We used data from (a) the American Community Survey for income and housing costs, (b) HUD's Home Equity Conversion Mortgage Dataset on reverse mortgages, and (c) Bid Baltimore's tax-lien sales dataset.
2. For the **Cost-Benefit Analysis**, we used simulation methods and impact estimates of home-modification interventions from the literature to estimate the potential net cost savings of HUBS over a long-term time horizon.
3. We calculated the **impact of HUBS on health and well-being outcomes** using pre-post regressions and tabulations on outcome data from two HUBS partners (Cities for all Ages and the Green & Healthy Homes Initiative).

### ***Recommendations for Replication Methods***

We utilized findings from both the Efficiency and the Impact studies and synthesized feedback from the Replication Forum to identify aspects of the program that are tied to its success and to discuss other important factors to consider and plan for when replicating HUBS in another location. Key informant interviews included questions about how to improve HUBS, what worked well, what could have been done differently, and what should be considered if HUBS were to be replicated. Interview responses were analyzed and combined with the findings from the Efficiency and the Impact studies to provide a framework, depicted using a logic model, for the key resources/inputs, activities, and outputs needed to replicate the HUBS program.

## **1.2 HISTORY OF HUBS**

The Association of Baltimore Area Grantmakers convened funders, non-profits, and government stakeholders from the aging and housing sectors in a Seniors and Housing Collaborative. The collaborative developed several subcommittees, including a Housing Rehabilitation subcommittee whose members included housing rehabilitation groups, government stakeholders in aging and housing, and aging nonprofits. The subcommittee discussed a number of problems with the current system supporting older adults aging in place, such as identifying clients, making referrals, and completing the home repairs. Baltimore City had also received an influx of funding for home energy efficiency repairs

*"The kind of coordination to solve complex problems doesn't happen unless you get everybody in a room, focused on the case, and work through it... If you actually have the Department of Public Works at the table – the people who are supposed to get those requests for senior discounts on water bills and prevention of foreclosure – then you're a lot further along than just calling up or telling people where to call for help." – HUBS Partner*

as part of the conditions for Exelon’s merger with Constellation Energy<sup>3</sup> and was seeking applicants to make use of those funds.

The Stulman Foundation invited subcommittee members to create and develop a better, more coordinated system that would identify the seniors most in need, help them complete their applications for rehab work, connect them to other services, and take advantage of the city's windfall. That subcommittee developed the proposal for what is now HUBS, with the four leadership team organizations including Civic Works, Green and Healthy Homes Initiative, Neighborhood Housing Services of Baltimore, Rebuilding Together Baltimore and Baltimore City Housing and Community Development as partners

Civic Works, as an organization with experience working with older adults on aging in place, would serve as the recipient of the grant and then disburse grant funds to other organizations within the HUBS network (the sites). The grant application was drafted iteratively during planning, strengthening the existing relationships and shared mission. Once the initial grant was awarded, the team solicited RFPs for the site subgrants.<sup>4</sup>

As the central organization, Civic Works serves as the liaison between the HUBS sites (and their clients), the other Leadership Team members (described in detail below), and between other non-profits and relevant city entities. Civic Works also centralizes client intake, coordinates data collection on HUBS services, and disburses funds to HUBS sites and partners.

*“So, we opened the floodgates to get applications from seniors who needed home repair... I mean, we knew it was big, but now it’s on paper.” – HUBS Partner*

As the project continued into its first year, the HUBS partners realized that the true need in Baltimore—both in number of households and complexity of repairs in each household—was beyond what they had initially planned for. In facilitating applications to programs, it became clear that

the volume of households in need of and eligible for city services would be overwhelming. Delays in home repairs due to backlog could make repairs more extensive, as one compromised part of the house could lead to other issues.

To achieve their goals for number of households serviced by the end of the initial three-year grant, the HUBS Leadership Team reached out to additional funders for resources to directly fund home repairs. The Weinberg Foundation joined the HUBS team with a grant to alleviate the

<sup>3</sup> Hopkins, J.S. (2012, November 8). Exelon merger-fund millions go to projects to lower energy costs. *Baltimore Sun*. Retrieved January 31, 2019 from <https://www.baltimoresun.com/business/bs-bz-exelon-merger-payments-approved-20121108-story.html>

<sup>4</sup> Leadership Team members. Personal correspondence. 2018.

backlog through funds that could be paid directly to contractors. Each site submitted a grant application and funding was made available to sites as well as HUBS Leadership Team organizations based on the size and service provision that the organization could provide. Sites would pool these funds with the city's contribution to address major home repairs for clients. HUBS's mission and role then evolved into one of **facilitating home repairs by helping older adults complete applications and providing direct repairs through the home-repair organizations.**

HUBS was conceived as an effort to streamline existing programs and assist older adults with aging in place. In response to the scope of the need in Baltimore City and the waitlist for services that such a need generates, HUBS partners took a more active role in delivering services as well as connecting older adults to service organizations. **After three years, the program has become an effective network of non-profits, city, and state programs.**

*"HUBS doesn't just 'go in for home repairs.' They are very systems perspective: they look at the whole home, which is not just the structure of the home but what's going on with the person ... HUBS is the entry way to accessing community supports. – Referral Partner*

HUBS brings together organizations that have experience working with older adults and home repairs into a diverse "ecosystem" of services. By creating central points of contact—Civic Works for HUBS program administration, case workers for contact with clients—HUBS streamlines the process for clients and helps all involved navigate the available home-repair and social services. With the additional funding from the Weinberg Foundation, HUBS partners now also provide direct funding for home repair to better meet older homeowners' needs for timely housing repairs.

### 1.3 LOGIC MODEL

IMPAQ created a HUBS Logic Model (**Exhibit 1**) to diagram the specific inputs, activities, outputs, and outcomes of the HUBS program. In order to illustrate clearly the levels of service HUBS provides, the activities, outputs, and outcomes are presented in three tiers: the HUBS Program tier (administration), the House and Neighborhood tier (repairs and condition), and the Person and Family tier (additional support services provided).

#### ***Resources/Inputs***

The resources and inputs supporting the HUBS program can be broadly grouped into three main categories: partnerships, monetary support, programmatic/personnel effort and time.

- **Partnerships** between Civic Works and the member organizations of the Leadership Team (comprised mostly of organizations that coordinate home-repair programs,

including the city), HUBS sites, Referral Partners, Advisory Committee Members, Community Partners, Contractors, and Funders.

- **Monetary support** from foundations for programmatic activities and housing repairs; city and state housing-repair funds; and funding available through other organizations related to housing and other wrap-around services.
- **Programmatic/Personnel effort and time** involved in supporting all aspects of the program.

### ***Activities, Outputs, Outcomes (by Tier)***

Below we present HUBS activities, outputs, and outcomes categorized according to the three tiers: the HUBS Program tier, the House and Neighborhood tier, and the Person and Family tier.

#### **HUBS Program Tier**

The HUBS Program tier covers all *activities* related to administration of the program and coordinating between HUBS partners, short of client intake and delivering services. These activities include: identification of potential clients, creating and sustaining relationships among partners, managing data, identifying funds, managing sites, and advocacy. These activities result in *outputs*, such as referrals to HUBS, the creation of datasets, partner relationships, and documentation for grant reporting. Ultimately, these activities/outputs result in the following *short-, medium- and long-term outcomes*. In the short term, relationships between Civic Works, HUBS partners, and referral/community partners are strengthened. In the medium term, there is increased awareness of HUBS in the community. Finally, in the long term, the increased awareness of HUBS should lead to increased referrals and financial support for the program.

#### **House and Neighborhood Tier**

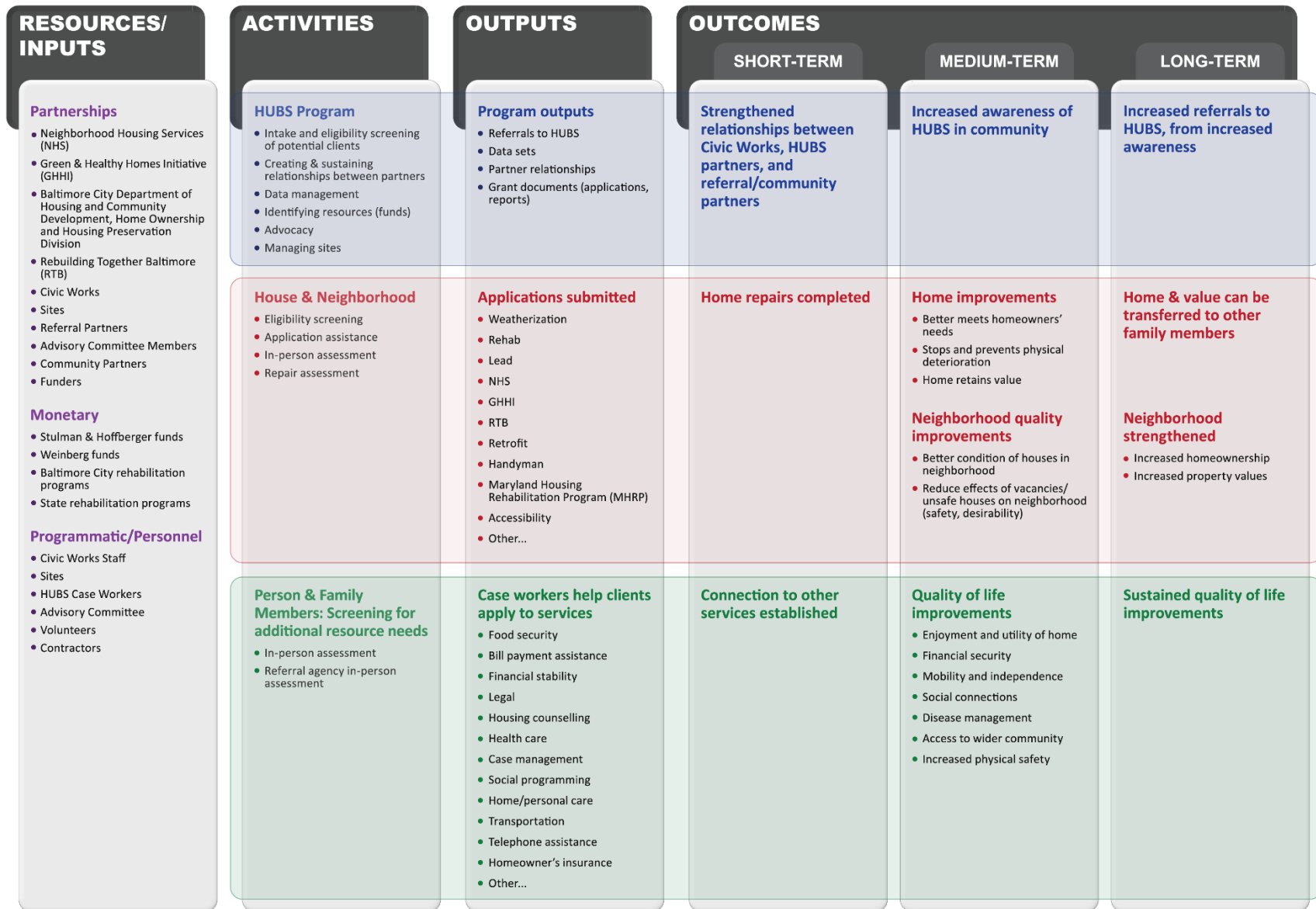
The House and Neighborhood tier involves the process of repairing the client's home and the outcomes that are expected for the home's physical structure and the surrounding neighborhood. Several *activities* are involved in eligibility screening and the application process, including telephone screening completed by the HUBS Intake Coordinator and site case workers' in-person intake assessment of needed home repairs and social supports. The *outputs* of these activities are completed applications to the relevant programs. Ultimately, these activities/outputs result in the following *short-, medium- and long-term outcomes*. In the short term, the home repairs, modifications, and upgrades are completed. In the medium term, the home is livable and does not contribute to blight in the neighborhood. Finally, in the long term, the home and its value may increase and can be transferred to other family members, and the neighborhood is strengthened by retained property values and invested homeowners and families.

### **Person and Family Members Tier**

The Person and Family Members tier involves the services the person or household receives because of the connection to HUBS and how this affects their quality of life as well as that of any family members living with them. Several *activities* are involved in screening for further resources to assist with additional needs of the client, including the initial assessment and ongoing communication with the client and family members. Case workers then help the person to apply for additional services or refer them to other programs/ organizations. Ultimately, these activities and their outputs (completed applications) result in the following *short-, medium-, and long-term outcomes*. In the short term, the individual is connected to other established services. In the medium term, the individual's quality of life is improved (i.e., reduced isolation). In the long term, quality of life and health improvements are sustained.



**Exhibit 1: HUBS Logic Model**



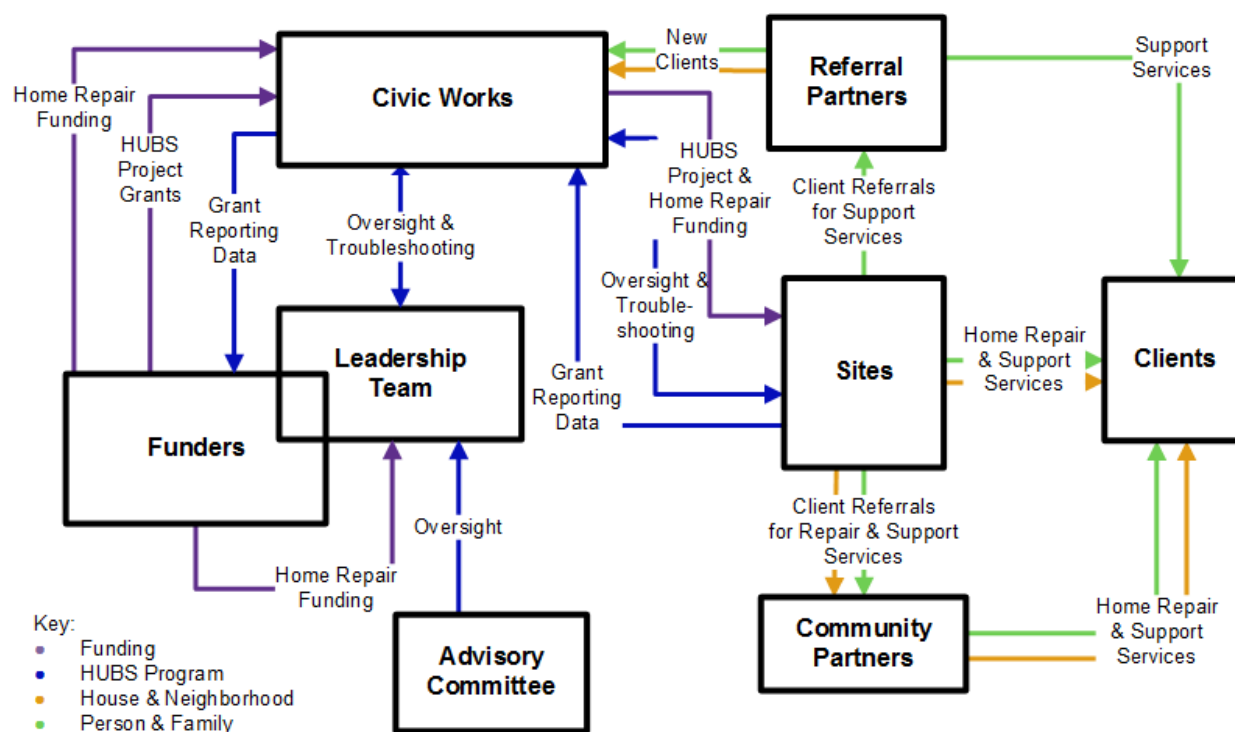
## 1.4 HUBS GOALS AND PROCESSES

The HUBS program is fundamentally a network of organizations with a shared mission of helping older adult homeowners in Baltimore age in place. In describing the HUBS processes, this report begins with an overview of the partners and their roles before describing the model through which HUBS delivers services.

### 1.4.1 HUBS PARTNERS

The “ecosystem” of partners and services is outlined below in **Exhibit 2**. A more detailed diagram is available in **Appendix A**.<sup>5</sup>

**Exhibit 2: HUBS Network Diagram**



### Funders

Funders supply Civic Works and the Leadership Team partners with funds to disburse to sites (in the case of Civic Works) or to be used directly for home repairs. The primary funders for the

<sup>5</sup> The outline and more detailed diagrams represent a snapshot of the HUBS network at the time of report writing. The HUBS network has evolved and continues to evolve as new partnerships are formed; at the time of report writing, the HUBS partners were submitting grant applications for a new round of funding, which would include at least one new site.

HUBS project are the Stulman, Hoffberger, and Weinberg Foundations. Other indirect sources of funding are pre-existing housing-repair, weatherization, utility-assistance, and other programs to which sites refer clients. (HUBS clients' repairs and assistance are paid for by the funding sources that have been previously established for those services.)

### **Leadership Team**

The Leadership Team is composed of organizations that coordinate home-repair programs: Civic Works, the Green & Healthy Homes Initiative (GHHI), Neighborhood Housing Services of Baltimore (NHS), Rebuilding Together Baltimore (Rebuilding), and representatives from the Baltimore City Department of Housing and Community Development. As the Leadership Team, these organizations provide advisory and problem-solving assistance to sites, coordinated

*"They [the Leadership Team] are advocates for the program in the community. They have connections, leaders, and know how to push the right people." – HUBS Partner*

through the Civic Works HUBS Coordinator. They also generate capital for HUBS, using their knowledge of and relationships with funders. Team members combine forces and resources to find solutions to clients' needs, and each member brings different strengths to the team.

- **Civic Works** is a non-profit organization that has capacity to manage grant funds as well as experience working with older adults. Civic Works provides oversight to sites and liaison with city organizations based on previous relationships.
- **Green & Healthy Homes Initiative** is a national healthy-housing nonprofit with a Baltimore direct-service program that integrates home remediation, case management, and legal services. Due to GHHI's comprehensive assessment approach, in-house crew capacity, and contractor relationships, GHHI is able to address the homes with the greatest need.
- **Neighborhood Housing Services** brings experience working with multiple funders on previous aging-in-place projects, including previous experience as a grantor. NHS also provides rehabilitation loans for Baltimore homeowners.
- **Rebuilding Together Baltimore** is a national organization whose Baltimore affiliate brings extensive experience working in low-income communities and providing aging-in-place-related home repairs. They bring to bear relationships with paid contractors and resources for volunteer labor.

The Leadership Team was originally created to have an advisory role, similar to a Board of Directors. As the Team began to take on more of a troubleshooting and sustainability role, Team members recognized the need for an additional body, an **Advisory Committee**, which could play that role and bring in the perspectives of additional organizations.

## **Referral Partners**

Referral partners as described by respondents, include organizations that refer clients to HUBS as well as organizations that provide services to which case workers can refer clients. This reciprocal relationship expands the HUBS network by bringing these organizations into the “ecosystem” of coordinated services. Referral partners can include:

- Healthcare organizations that identify patients who can benefit from HUBS.
- Social-support organizations for older adults that can identify potential HUBS clients in need of home repairs and provide social services for existing HUBS clients.
- Counterpart aging-in-place services networks, such as Project Household (which focuses on legal issues that prevent older homeowners from successfully aging in place).

## **HUBS Sites**

At the time of report writing, the four HUB sites are: (1) Comprehensive Housing Assistance, Inc. (CHAI)/Sinai Hospital; (2) Keswick Community Health (Keswick); (3) Banner Neighborhoods Community Association (Banner); and (4) Meals on Wheels of Central Maryland, Inc. (Meals on Wheels). (One previous site, Strong City Baltimore, ended its participation in HUBS in 2017.)

Civic Works assigns clients to each site based on the client’s residential catchment area (a collection of zip codes serviced by a site). Sites work collaboratively with the Leadership Team, referral partners, and each other to identify resources to meet clients’ needs and to troubleshoot when current resources (repair dollars or available services) do not meet a client’s needs. Each of the current sites is described in detail below.

- The **Comprehensive Housing Assistance, Inc./Sinai Hospital** site brings together a pre-existing housing-assistance program for older adults with a medical center that serves many older adults who can benefit from home repairs. CHAI’s experience helps Sinai deliver services more efficiently and helps with the larger case load for the Sinai area (as compared to CHAI’s service area). This site utilizes three case workers: two employed by CHAI, one by Sinai. As a team, this site covered Northwest Baltimore, specifically zip codes 21215, 21216, 21229, 21207, and a small section of 21217. The future catchment area will focus only on 21215 and a small portion of 21208 and 21209 in order to improve service to clients by serving fewer clients more comprehensively.<sup>6</sup> This area will still include an estimated 9,014 homeowners 65 or older.

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<sup>6</sup> Sinai Hospital of Baltimore and Comprehensive Housing Assistance, Inc. Northwest HUBS Service Site Proposal. 2018.

CHAI's community partners include: Jewish Community Services (offering a wide range of aging-in-place and caregiver services), the Jewish Community Center (fitness, cultural, and social programs), and the Myerberg Center (social, fitness, and art programs). Sinai's community partners include: the Park Heights Renaissance (community events, foreclosure prevention, energy-saving loans), Healthy Neighborhoods (home-renovation loans), and the Zeta Center for Healthy and Active Aging (a senior center).

- The **Keswick** site is a partnership between Keswick (which provides services for older adults that include short-term rehabilitation and residential programs) and several community partners in northern and northeastern Baltimore, serving the 21210, 21211, 21212, 21213, 21214, 21218 zip codes and the city portion of zip code 21239. This area is home to 24,069 adults over the age of 65 and a higher percentage of people living at or 50 percent below the poverty level, as compared to overall Maryland rates.<sup>7</sup>

Keswick's community partners include: Action in Maturity (offering transportation for older adults), St. Mary's Outreach Center (social-services assistance and coordination), Medstar Health (a referral partner), the Hampden Family Center (social and health programs for older adults, benefits assistance), and GEDCO (older adult housing, food assistance, and social services).

- The **Banner** site is led by the Banner Neighborhoods Community Association, a non-profit founded in 1982 to serve the Patterson Park area in eastern-southeastern Baltimore. Their Home Maintenance Program was one of Banner's first projects and dovetailed neatly with HUBS' services, serving clients with an average age of 78 and an average annual income of \$15,000. In response to the large caseload in its catchment area, Banner has devoted additional resources to case management, including an administrative assistant to support their case worker.<sup>8</sup>

Banner's community partners for their HUBS work are based on existing relationships from their Home Maintenance Program and include existing HUBS organizations (NHS, Baltimore City Department of Housing, GHHI, Civic Works' Cities for All Ages); the Southeast Community Development Corporation; Johns Hopkins Bayview Medical

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<sup>7</sup> Keswick Community Health. HUBS Proposal. 2018.

<sup>8</sup> Banner Neighborhoods Community Corporation. HUBS Proposal. 2018.

Center (a referral partner), and St. Ambrose (many services for older homeowners and now itself a HUBS site).

- The **Meals on Wheels** site brings its existing connections to older adults through meal-delivery services into a comprehensive service provision that includes an in-home assessment and connection to social services, which can serve as an entry point to HUBS. As of 2018, Meals on Wheels has enrolled 22 clients as referrals from its meal-delivery services (Meals on Wheels, HUBS Proposal, 2018). One-half of Meals on Wheels' city residents served were over 75, and the majority (69 percent) lived at or below the poverty line.<sup>9</sup> Meals on Wheels also offers its meal-delivery services to all sites' clients, as that service covers all of central Maryland.

Meals on Wheels' community partners include: the Baltimore City Department of Aging and Care Services; MedStar Good Samaritan Hospital's Center for Successful Aging (referrals to HUBS and from HUBS to medical care coordination); Johns Hopkins Bayview Medical Center (Together in Care initiative); and the Johns Hopkins School of Nursing Center on Innovative Care in Aging (care coordination and in-home care for frail older adults).

Sites have a good deal of autonomy in how they run the program, sharing best practices with each other but using resources that make sense for their organization. The Leadership Team and sites meet regularly for troubleshooting and information sharing, such as having optional talks from speakers addressing specific issues for older adults. Sites, the Leadership Team, and Civic Works also frequently communicate informally over email and telephone calls and meet regularly during their Monthly Case Worker Meetings where they discuss programmatic and case-specific issues.

#### 1.4.2 HUBS CLIENT SERVICES

To be eligible for HUBS, a client must be 65 years or older, meet income requirements (that vary by number of members in the household and the Department of Housing and Urban Development's area median income calculations), and live in one of the catchment areas. In addition to HUBS eligibility requirements (age, income, living within catchment areas), sites have client subtypes they try to focus on: those on fixed incomes, those who lack heat (especially during cold months), and those

*"The typical client is fairly independent. Not completely dependent, but their independence is decreasing. They are usually very proud people that don't like to ask for help, but they find themselves in a situation where they feel stuck." – Case Worker*

<sup>9</sup> Meals on Wheels of Central Maryland, Inc. HUBS Proposal. 2018.

clients from their other services who have expressed a need or interest in home repairs. With the addition of the Weinberg funding to alleviate repair waitlists, case workers also reported focusing that funding on new urgent cases (where another program would not be able to respond as quickly).

Although HUBS clients vary by age, home condition, and other needs, in general clients can be described as adults who are living independently (alone or with family members) but who are facing challenges with repairing and living safely in their home and who do not have resources to fix it themselves.

**Exhibit 3** below summarizes clients' demographic information. (Note: not all demographic categories may sum to the full number of clients, if data are not available for that demographic category.) In general, most HUBS clients identified as female, and most identified as African-American. Just over one-half of the clients had annual income levels below 30 percent of the area median income for their household size.

**Exhibit 3: HUBS Client Demographic Information, Cumulative**

Demographic Data		Totals
<b>Primary Age Group Served</b>		
65–70		290
71–75		212
76–80		171
81–85		124
86–90		49
90+		55
<b>Gender</b>		
Male		154
Female		745
Transgender		0
Queer		0
Non-binary		0
<b>Race/Ethnicity</b>		
Caucasian		76
Asian		0
African-American		826
American Indian		0
Hispanic/ Latino		1
Other		4

Demographic Data	Totals
<b>Average Household Income</b>	
Area Median Income <sup>10</sup> , 0–30%	441
31–50%	323
51–80%	97
<b>Other Characteristics</b>	
SSI/SSDI <sup>11</sup> Recipients	773
Homeowners Served	877
Renters Served	3
Veterans Served	26

Even if the homeowner is eligible for services, there may be legal or administrative issues they require help with (such as not being listed on the deed). In case workers' estimation, fixed income is very common, one-half of households were multi-generational, and about one-half of clients had additional resource needs beyond home repair. While some HUBS clients are eligible for home loans for repairs, case workers noted that many clients are concerned about taking out additional loans. The loan process is lengthy (ranging from several weeks to over a year in some cases) and is not always appropriate for clients' immediate needs. Lack of home equity, sufficient credit, or homeowners insurance (common among HUBS clients) can further complicate this process. As HUBS partners discovered, the great need for cost-assisted loans can deplete the available annual resources before the end of the year, presenting another financial barrier to paying for repairs.

Lack of homeowners insurance presents a circular challenge to initiating home repairs. As one case worker explained,

*If your house is in a dilapidated state, you can't get homeowners insurance. The reason they need the home-repair loan is because it's in a dilapidated state, and it's like that because they don't have homeowners insurance. – Case Worker*

This lack also makes a client ineligible for many city services, and the same barriers that HUBS identified as barriers to accessing city services—difficulty obtaining and submitting documents

<sup>10</sup> Based on U.S. Department of Housing and Urban Development-designated Area Median Income for the Baltimore Metro Area. Total annual dollar amount varies by size of household (for example, 0–30% median income is \$19,950 for a household of 1 and \$42,380 for a household of 8).

<sup>11</sup> Supplemental Security Income/Social Security and Disability Income.



like deeds, proof of identity, financial information—are also barriers to securing homeowners insurance.

### ***Identifying, Screening, and Enrolling Clients***

Civic Works conducts the initial intake for clients, verifying their eligibility requirements (age, income, catchment area) and assigning them to sites based on a zip code.<sup>12</sup> Potential HUBS clients are directed to the HUBS Hotline for intake, whether this is by word of mouth, from a referral partner, or from community outreach conducted by sites.

Once a client is assigned to a site, case worker conduct an intake assessment to determine housing services needed and additional information on the client's housing situation (whether or not a child is present in the home, regular or reverse mortgage, home equity loan, homeowners insurance, fall within the last six months, bed bugs in the home, and any major health conditions).<sup>12</sup> Case workers have created introduction letter templates that describe what the program offers and prompts the client with list of documents needed for application so that clients are prepared for the first home visit. Depending on the urgency of the situation and the caseload at the site, timing for the home visit can vary from a few days to several weeks. Case workers then triage clients and assist them with submitting applications to the relevant city, state, and partner services. Case workers also advocate for clients during repairs and follow up on clients' satisfaction after repairs.<sup>12</sup>

### ***Delivering Services***

Sites track client updates and referrals using a client-tracker spreadsheet, as well as their own internal documentation. Sites provide Civic Works with monthly updates on the number of clients served and the services provided, which Civic Works reports to the grantors. Commonly delivered services include safety modifications, roof repair/replacement, furnace repair/replacement, water heater repair/replacement, electrical, plumbing, weatherization, energy-efficiency services, lead and hazardous-materials abatement, and repair of porches and steps.<sup>12</sup> Of these, roofing and heating are the most common, followed by accessibility modification. (This was corroborated by both the tracker data and case workers' responses.)

Organizations that manage home repairs—whether a site, a community partner, or one of the Leadership Team organizations that provide repairs—receive information on what repairs are needed, identify contractors, send out bids, and manage payment. Some organizations, such as Civic Works, have created a position dedicated to supervising contracts; others have a similar

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<sup>12</sup> Weinberg Foundation. "Re: One-Year Capital Project Grant (non-challenge)." Memo to Civic Works. 2015.

position built into the organization so that the case workers can focus on follow-up and communication with the client.

Aside from home repairs, sites provide assistance with deed changes, foreclosure and bankruptcy prevention, food assistance, Medicare/Medicaid, property tax credits, veterans programs, and caregiver support and resources.<sup>12</sup> The degree of assistance varies, depending on a client's needs.

*"Sometimes it's just me sending an email, sometimes it's actually an application that I would submit for them. So then I would interact with the various program heads—anyone who brings in those intakes or applications." – Case Worker*

In case workers' estimation, nutrition assistance, bill-payment assistance, and de-cluttering were the most common supplemental services clients needed. Sites partner with other HUBS organizations (Leadership Team members, other sites, community partners) to deliver these to clients, with most supplemental services delivered via referrals to outside programs or to other HUBS sites. Case workers maintain a shared resource list of service providers, which they view as essential for problem-solving with clients. Sites may also refer their HUBS clients for additional, non-HUBS-related services that those organizations provide, if the clients are eligible for them. For example:

- CHAI can offer ongoing support for clients under CHAI's other programs, after the HUBS grant funds are used. CHAI also has affordable housing units for older adults whose homes are or become unsafe for habitation.
- Banner's additional programs include community safety, social events, and community beautification. Their home-repair program offers home repairs for older adults starting at age 62 (some of whom also become HUBS clients when they turn 65).
- Meals on Wheels offers its home meal-delivery service as well as connections to the YMCA and Jubilee (an organization that offers creative and exercise classes for older adults).
- Keswick, as a complete care system for older adults, offers both extended residential programs (for those who cannot safely age at home) as well as short-term rehabilitation, which helps them identify people who could be supported by HUBS to age in place.

Case workers use multiple modes to contact clients, with telephone being the most frequent. Some clients described texting or emailing their case worker, but case workers agreed that clients who preferred text or email were in the minority. Case workers will also use postal mail (for sending introduction letters or copies of documents) and home visits (for assessments and collecting/returning sensitive documents).

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## 2. EFFICIENCY STUDY

### ***Motivation for the Study***

We conducted the Efficiency Study to understand how well the HUBS program is operating and whether it is achieving its intended goals of helping older adult homeowners in Baltimore successfully age in place. This inquiry was guided by four overarching research questions.

- **Is the HUBS Leadership Team's role efficient and effective?**
- **How efficient and effective are partnerships between HUBS sites, the HUBS program, and key stakeholders?**
- **What are the best practices of the four operating sites in recruiting and serving clients?**
- **How is the HUBS program successfully keeping vital community stakeholders in the community?**

In addition to assessing the efficiency of HUBS among the four domains covered in the research questions, we also identified:

- **What opportunities exist to make the HUBS program more efficient and effective?**
- **What strategies show promise for sustaining HUBS into the future?**

### ***Methods***

To understand HUBS' history, its processes, and to evaluate those processes for efficiency, effectiveness, and opportunities to improve, we collected and analyzed three streams of data.

1. **Review of documents** provided by the Leadership Team and sites, which included: workflow documents, grant applications, program descriptions, program budgets, client intake and data- reporting forms, and introduction letters.
2. **In-depth interviews** with Leadership Team members, site staff, referral partners, clients, and key stakeholders involved in the development of HUBS.
3. **Review of process metrics**, as collected for and reported in grant progress reports.

Documents were reviewed and summarized by a pair of coders, with overview from the Efficiency Study lead. Information from the documents was used to prepare for interviews (identifying current workflow patterns, opportunities to probe for additional detail, or places where obtaining multiple perspectives would be important). The documents also provided information on how the HUBS program was originally proposed as well as how it changed over time. This supplied additional context for responses from the key informant interviews.

Interviews were conducted with a total of 35 individuals across the stakeholder groups.<sup>13</sup> Challenges with recruiting clients at two of the sites resulted in a smaller number of client perspectives, but no site-specific differences between clients' responses were identified during analysis.

Note-takers transcribed each interview and applied qualitative codes related to the research questions using qualitative data analysis software. The Efficiency Study Lead ensured inter-coder reliability by conducting several rounds of coder training and using team-based coding on complex interviews.

Finally, we analyzed process metrics that quantify the activities performed by sites. These data are helpful in setting context for the Efficiency Study and can be combined with information from the interviews to provide quantitative detail on the processes described qualitatively.

Brief findings follow, with detailed findings in the subsequent sections.

- **Is the HUBS Leadership Team's role efficient and effective?** We compared the reflections of respondents from the Leadership Team with those of site case workers and other HUBS Partners. Overall, case workers were satisfied with the degree of support they received from the Leadership Team and especially from Civic Works, with whom the case workers interact regularly for client referrals, data reporting, and problem-solving. Site staff experienced challenges in working with Leadership Team members when the staff member or point of contact for a HUBS partner left the position.
- **How efficient and effective are partnerships between HUBS sites, the HUBS program, and key stakeholders?** For this, we compared responses across all respondents. Similar to the Leadership Team, HUBS partners generally found partnerships fruitful and essential to doing the work. A shared mission and pre-existing relationships were key factors to efficient and effective partnerships.

When there were challenges with partnerships, they related to staff turnover that disrupted the working relationship between partners. As a result, sites and HUBS partners have focused on attracting and retaining staff to maintain these relationships. Other challenges that sites experienced included a high caseload, lack of a universal database, and limitations of the funding for direct home repairs. Sites have addressed the first and third challenges by adjusting their catchment areas and prioritizing funds for

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<sup>13</sup> Including 6 HUBS Case Workers, the current and previous HUBS Coordinate, 9 Leadership Team member, 3 referral partners, the HUBS Contracting Coordinator, an early HUBS stakeholders, and 13 clients across the 4 HUBS sites.

emergency repairs, but lack of a universal, shared database for all data remains a challenge.

- **What are the best practices of the four operating sites in recruiting and serving clients?** Not surprisingly, the best practices from the sites capitalize on the network model that underlies the HUBS program. Recruiting HUBS clients utilizes clients' social and partners' professional networks: word-of-mouth was how most self-referred clients learned about the program, and partners to which HUBS clients were referred could become partners that referred older adults to HUBS. Case workers cited the universal knowledgebase for client resources as a best practice that helped make them more efficient as well as ensuring that they had resources available to meet clients' needs. When there were challenges or no resource was available, case workers appreciated the collaborative problem-solving approach: case workers would work collectively to solve a problem and could bring it to the Leadership Team for additional perspectives, solutions, or advocacy.
- **How is the HUBS program successfully keeping vital community stakeholders in the community?** HUBS has made measurable progress toward its objective of keeping older adults in the community and is projected to serve over 1,000 households in the three-year grant period. Based on client responses, we learned that while clients may have planned to stay in their homes, this generally came with a compromise to safety and comfort given the home's condition. HUBS helps older adult homeowners live at home safely and with a better quality of life. The impact of being a HUBS client also goes beyond home repair and support services: the relationship case workers develop with clients holds significant meaning for these older adults, and even if all issues could not be addressed, clients expressed gratitude for what case workers could help them obtain.
- **What opportunities exist to make the HUBS program more efficient and effective?** In the short term, the HUBS partners should consider: creating a universal database for collecting HUBS resources and tracking data; identifying opportunities to streamline the contractor process (identification, bidding, follow-up); and identifying more ways to prioritize urgent repairs. In the longer term, HUBS partners could increase efficiency and effectiveness by: identifying opportunities for providing ongoing support to clients; expanding HUBS outreach by strategically using social networks; and building sustainability through new partnerships.
- **What strategies show promise for sustaining HUBS into the future?** As described above, the need for something like HUBS will continue well into the future. Although the

HUBS partners have succeeded in securing another round of funding for the next three years, partners could help build the sustainability of the program by:

- Identifying partners that can close the current gaps in the HUBS program (urgent and ongoing repairs, as well as specific needs for the types of clients HUBS sites are seeing).
- Using the structure of the Advisory Committee to invite in organizations that can potentially become sites or members of the Leadership Team (bringing additional resources directly to serving clients).

Below we provide additional detail in response to each of these six questions: role of HUBS Leadership Team (Section 2.1), HUBS partnerships (Section 2.2), HUBS best practices (Section 2.3), keeping stakeholders in the community (Section 2.4), opportunities to improve HUBS (Section 2.5), and strategies to sustain HUBS (Section 2.6).

## 2.1 EFFICIENCY AND EFFECTIVENESS OF HUBS LEADERSHIP TEAM

The HUBS Leadership Team is a collaborative body of representatives from key organizations working to coordinate home repairs for older adults in Baltimore City: funders (the Stulman, Hoffberger, and Weinberg Foundations), organizations that coordinate and provide home repairs (Civic Works, NHS, GHHI, Rebuilding), and representatives from the Baltimore City Department of Housing and Community Development. As described by one Leadership Team Member, the Team's initial goal was:

*... To be almost like a steering committee or a board in some way ... To have a group of people who could be discussing what challenges we might be encountering through the process and how to direct those challenges. To celebrate successes. To look at things we've encountered along the way and consider how those things, whether they're barriers or new opportunities, might impact the program." – Leadership Team Member*

The Team has since taken on a more active, problem-solving role, especially in identifying additional funding for programs to meet clients' needs. The prime example of this role was in securing funding from the Weinberg Foundation for direct home-repair contracts. That is, when case workers encountered delays in completing home repairs through existing programs, the Team identified a funder and put together a proposal estimating what would be needed to resolve the backlog. Leadership Team respondents acknowledged that **this**

*"They are exhausting their grant funding, and they also make way for clients to still get what they need: contractors at a reduced rate, send it our way and we'll see what we can do." – Case Worker*

**active role was not originally planned for but also felt that it was a necessary, positive development** over the course of the HUBS program. With the additional Weinberg Foundation funding, NHS, GHFI, and Rebuilding all received grant money to deliver services quickly, shrinking the waitlist for repairs that had grown in the first year of HUBS.

Regular communication with sites ensures that the Leadership Team is apprised of challenges and can brainstorm to solve them. The Leadership Team holds semi-annual “check-ins” with sites to assess progress.<sup>14</sup> Case workers and other partners also described voluntary monthly meetings with the Leadership Team, including presentations by outside speakers on topics relevant to aging in place. This regular, formal communication schedule was supplemented by ad hoc telephone calls and emails. **The combination of flexible, ad hoc communication with regular meetings has succeeded in forming effective working relationships while still holding all partners accountable for making progress.** Overall, sites felt that communication with the Leadership Team had improved over the course of the grant. When site respondents described negative experiences working with Leadership Team partners, they attributed the difficulty to staff turnover in the partner organization; **as partner staff became more familiar with the project, respondents noticed, the working relationships became more effective: fewer delays and less need for follow-up.**

To support the Leadership Team in the original goal of providing oversight, the HUBS partners created an Advisory Committee. This body includes representatives from Leadership Team members as well as a much wider array of stakeholders: community partners, medical institutions, and aging experts. **Since the Advisory Committee is a relatively new entity (formed in just the last year) and membership overlaps with the Leadership Team, the responsibilities of each group should be clearly defined in order to avoid duplicating efforts, especially for members who participate in both groups.**

In addition to oversight and problem-solving for day-to-day work, the Leadership Team is responsible for ensuring HUBS’ sustainability. This continues to be an ongoing process, but **one indicator of success for sustainability is the second round of grant funding for four continuing sites and the addition of one new site.**

Sites interact most frequently with Civic Works, as a reporting body and as a troubleshooting resource, and all respondents spoke positively about this relationship. Civic Works is also the grantor for HUBS site funds and, as shown in **Exhibit 4** below, utilizes one-third of the funds for the HUBS Coordinator salary and ongoing coordination and administration of HUBS, including handling all client intake. Although the last period shows no funds disbursed to sites, the final

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<sup>14</sup> Civic Works. Leonard and Helen R. Stulman Charitable Foundation, Grant Report (Preliminary). 2018.



grant period amount was utilized for a partner Civic Works program, Cities for All Ages, and the rest held in reserve by Civic Works. By both of these metrics—percentage of funds allocated to the program and percentage of funds held in reserve—Civic Works is operating efficiently.<sup>15,16</sup>

**Exhibit 4: HUBS Grant Expenditures Summary**

Period	Total Grant	Amount Disbursed to Sites	Percent of Total Disbursed to Sites
3/15/15 – 9/30/15	\$223,386.00	\$144,579.00	65%
10/1/15 – 9/30/16	\$408,138.00	\$ 290,073.50	71%
10/1/16 – 9/30/17	\$482,120.00	\$415,127.50	86%
10/1/17 – 12/31/17	\$186,366.00	\$0.00	0%
<b>Total Period</b>	<b>\$1,300,010.00</b>	<b>\$849,780.00</b>	<b>65%</b>

Source: Civic Works, HUBS 3.15.15 – 12. 31.17 Expenditures Report.

## 2.2 EFFICIENCY AND EFFECTIVENESS OF HUBS PARTNERSHIPS

### ***Strength of HUBS Partnerships***

As discussed further in the Replication sections, respondents identified a number of strengths that help the HUBS partners—funders, members of the Leadership Team, sites, and referral and community partners—accomplish their goal of helping older adults age in place. First and foremost, **having a shared mission—wanting to make life better for older adults—was crucial to keeping all the partners aligned.** Having leadership from the housing-services groups within the Baltimore City government aligned to this mission was identified as particularly important, since much of HUBS’ work is accomplished through city- and state-administered programs.

In addition to a shared mission, **the HUBS project was built on a foundation of existing relationships between organizations and, importantly, individuals at organizations.** Through these personal relationships, the network is able to accomplish more than individuals or individual agencies working alone. As one member of the Leadership Team described, “*We were successful because HUBS came out of a meeting with 120 people from the beginning.*” In addition to strengthening existing relationships, the HUBS program also helps build new relationships—both between current HUBS partners and with new organizations as they are

<sup>15</sup> Charity Navigator. “How Do We Rate Charities’ Financial Health?” 2016. Retrieved November 30, 2018, from <https://www.charitynavigator.org/index.cfm?bay=content.view&cpid=35>.

<sup>16</sup> Better Business Bureau Wise Giving Alliance. “Standards for Charity Accountability.” 2003. Retrieved November 30, 2018, from <https://www.bbb.org/us/storage/0/Shared%20Documents/Standards%20for%20Charity%20Accountability.pdf>.



added to case workers' resource list or become HUBS grantees themselves. This extends even beyond the HUBS' work, as in this example from a member of the Leadership Team:

*We're getting ready to launch a new partnership with Keswick that is kind of unrelated to HUBS, but ... HUBS has kind of opened the doors for us to begin doing this new partnership with Keswick. – Leadership Team Member*

This network of relationships helps with problem-solving, whether identifying new resources for a client's needs, solutions for HUBS processes, or new funding sources for the work. However, a network based on relationships between champions at organizations can be vulnerable to the effects of staff turnover and loss of institutional knowledge (e.g., knowledge about workflows and points of contact). To remedy this, many sites made attracting and retaining staff members the focus of their new grant proposals, and partners have developed a way to disseminate the knowledge gathered over time to new partners. Additionally, while reaching consensus among partners is a necessary part of collaboration, it can take time to win every partner's buy-in.

Even with these drawbacks, **HUBS partners and clients appreciated having a single, identified point of contact for their needs.** Civic Works coordinates client intake, the HUBS Coordinator is the point of contact for information about the program, and the case worker is the client's point of contact for their housing repairs or services.

*Because everyone works together, I can go to one person and see who is on a waiting list and what answers they [the funders] need. – Leadership Team Member*

*There was no problem too big or too small. No problem that she [case worker] couldn't find out what to do. – Client*

As the sole organization conducting client intake, Civic Works recognized the need for additional support and has created an Intake Coordinator position (after seeing successes with interns and volunteers). Case workers in particular appreciated Civic Works' coordination of intake and also appreciated the improvements made to the intake process over time, which reduced time spent by case workers verifying eligibility.

### **Challenges with HUBS Partnerships**

In the first three years of the grant, and especially in the first year, the HUBS partners discovered and overcame challenges to delivering home-repair and support services to older adults in Baltimore, the first of which was learning to work together as a network.

*You can see it in the number of homes that were completed in the first two years compared to the third. We kind of found our groove and we're able to get a lot more done. I think it takes time with a new program, to develop processes that work. – Case Worker*

Over time, the HUBS partners refined the processes laid out in the initial grant proposal and identified opportunities where new positions or additional support were needed. However, **some challenges persisted throughout the grant period, such as staff turnover, a high volume of clients with complex needs, limitations on the amount of funds that can be allocated to each household directly for repairs, and challenges with collecting and reporting data on clients and services.** Each of these challenges is discussed further below.

#### **Staff Turnover**

When staff turnover occurred at sites and at HUBS partner organizations, fractures and delays in communication appeared until the relationships could be re-established. Additionally, the mission of HUBS—to facilitate homeowners wishing to age in place by navigating them through home-repair and support services—uncovered a significant need, which respondents described as overwhelming the current city services.

#### **Client Volume and the Complexity of Need**

The high volume of clients, driven by the scope of the need in Baltimore City, was a common challenge mentioned by all HUBS partner respondents and even some of the clients. As the HUBS program has successfully completed and submitted applications, this has resulted in waitlists for services as the “bubble” of applications come in to each program. The HUBS partners have tried to alleviate this in several ways, including: sharing referral partners and resources (as well as sharing which programs are inundated so clients can be referred elsewhere); identifying new community partners to keep up with the demand for repairs and services; and securing funding for direct home-repair services from the Weinberg Foundation.

In addition to having an overall high volume of clients, case workers reported that many clients had complex and ongoing needs:

*We're usually getting people at rock bottom, their worst-case scenario, and a lot of the time, they don't know the benefits they could be accessing. I would say, of the 450 cases I've touched ... there's probably been 20 easy, cut-and-dried, 'you need a grab bar, ok, here it is' cases. They're usually a lot more involved. – Case Worker*

The same high volume of eligible and interested clients that overwhelmed service providers also made it difficult for case workers to stay on top of new client intake, follow up with existing clients, and navigate clients through all the steps of partner programs when the HUBS work is complete. For clients, this could be upsetting and frustrating to wait several weeks for an update or several months for a service to be completed. Still, some clients reported their own sense of how many people in the city need the assistance and expected that their case worker might be delayed because of how busy he or she was.

*"I refer [clients] to a foreclosure counselling agency... But I've developed a relationship with a lot of these clients, so a lot of them want me to help them to fill out the application for the foreclosure agency and I'm not always able to do that... I really like to do it myself because I know it was submitted, turned in, the client gave them all their documents, I keep a copy – but I'm not always able to do that." – Case Worker*

Finally, case workers also noted that a significant minority (between 25 percent and 40 percent) of their clients reached out with multiple needs over the course of their time as a HUBS client. This made it difficult for case workers to "close out" the client's case, as new problems would emerge. On the one hand, this supported clients in being able to age in place, but on the other hand, this put strain on the case workers by continuing to add to their case load. At least one site described a process by which clients could "re-enroll" in HUBS, but this re-enrollment would be somewhat limited due to funding requirements to complete a number of households by the end of the grant period. Case workers have done some data collection on clients' experience with the program and outcomes and expressed interest in doing more, but acknowledged needing to balance this with taking care of the existing caseload.

#### **Limitations of Direct Repair Funding**

In addition to the high number of clients, one challenge noted by those working with clients was the limited funding that can be allocated to each household for direct repairs. The goal of the Weinberg Foundation's additional funding was to speed up the completion of HUBS clients' cases by directly funding housing repairs.

*"I've found that, even if clients are eligible for a deferred loan, they're very hesitant to take on an additional loan. Even if it's deferred, once you say the "I-word"—loan—they kind of shut down. – Case Worker*

However, needed repairs often involve expensive repairs (such as roof replacements, entrance ramps, and stairlifts), since cost was often the barrier preventing the homeowner from completing the repair or modification. While some clients may be eligible for private loans, the application process can take significant time and clients are apprehensive about taking on more debt.

As noted in the initial Weinberg grant agreement (2017), the cost per household can range from \$1,000 to \$20,000, depending on the complexity of the repairs (especially for issues that require several sequential, smaller repairs to fully address the problem).

*“We have to be conscious of what we are spending our funding on—we try to address the most urgent need.” – Case Worker*

While the Weinberg funding was not intended to replace other city- and state-run home-repair programs, case workers appreciated the timeliness that comes from being able to directly fund a contract for home repair and reserve it for their most urgent home repairs.

Even with Civic Works collating sites’ data and generating the grant reports, data collection and reporting is still a persistent challenge for the HUBS partners involved in both. Due to the requirements of some sites, sensitive client data must be kept in a Health Insurance Portability and Accountability Act (HIPAA)-compliant environment, which has resulted in a large amount of data being stored in individual databases at each site. As explained by the case workers, generating summary reports of these data for monthly reporting to Civic Works is a time-consuming process. Although sites can store some information in a common tracking document, all case workers expressed a strong desire for a universal HUBS database that would allow them to store up-to-date data on each client and quickly generate the needed data summaries for the grant reports.

## 2.3 BEST PRACTICES FOR RECRUITING AND SERVING CLIENTS

Although the current challenge facing HUBS is managing the large number of households that are eligible and interested in HUBS services, the Efficiency Study identified best practices for bringing clients into HUBS, as well as how to be most efficient and effective when serving them. Best practices specifically identified by respondents included: raising HUBS awareness through networks, maintaining a universal knowledgebase, and collaborative problem-solving.

### ***HUBS Awareness through Networks***

As reported by clients and case workers, word-of-mouth is the most common way that prospective HUBS clients hear about the program. A number of clients mentioned learning about HUBS from outreach done by the lead site organizations in places where clients already go (such as senior centers), and older adults have been referred by other clients or through sites’ other programs. In particular, case workers mentioned that partnerships with hospitals or local medical centers were helpful in recruiting clients. These partnerships could also be developed into referrals for provider-care coordination or fall-prevention programs. Sites expressed interest in doing additional outreach (explained in detail under Section 2.5

“Opportunities for Improvement” below) but are cognizant of balancing this with the current caseload and waitlists.

*“The shared space has all tracking information, resource information. It is kind of like our ‘HUBS Bible.’ We can find anything in it, including applications, some resources, tracking for Weinberg clients and [all] HUBS clients, and it is always updated in real time.”*  
– Case Worker

### **Universal Knowledge Base for Client Resources**

The case workers have improved their effectiveness and efficiency over time by generating a **HUBS Training Manual, a shared resource list, and an up-to-date client tracker that is easily accessed by all sites**. The training manual is especially helpful to newer case workers, who can learn from the processes developed during the first years of HUBS. Using templates for process documents

(e.g., intake forms, introduction letters), case workers can spend more time interacting with clients and be more effective during those interactions. Finally, standardized forms across sites, especially for data collection, makes data collection more complete and efficient. Even with limitations, the shared tracker allows case workers to maintain some client information in “real time,” in a way that can also be shared with Civic Works.

### **Collaborative Problem-solving**

The shared resource list is one example of how case workers share information and lessons learned among the sites. Case workers describe an organic, informal process of using telephone calls and emails to troubleshoot and taking any unresolved issues/questions to the Leadership Team for additional help. Among the Leadership Team, there is also a collaborative approach to problem-solving, based on the strengths or expertise of the different Team members.

*“Within the Leadership Team, we divide [responsibility] based upon what the issue is. There is no laid out responsibility for each person.”*  
– Leadership Team Member

This **collaboration keeps the goal of HUBS (expert organizations coming together to streamline processes that help older adults age in place) central to the day-to-day work.**

## **2.4 KEEPING VITAL COMMUNITY STAKEHOLDERS IN THE COMMUNITY**

HUBS has helped clients in over 1,000 households age in place, improving their safety and well-being and achieving broader impacts beyond home repair and other support services.

**HUBS has fulfilled its initial objective of completing repairs for 75 houses per site, per year, for three years.** In the first HUBS grant agreement, each site was tasked with completing repairs for 75 households per year for three years, for a total of 1,125 houses across (at that time) five sites over three years. With the additional capital from Weinberg, HUBS partners have

successfully completed their goal and provided thousands of individual repairs, in-home assessments, and assistance with applications for repairs and support services.

#### **Exhibit 5: HUBS Performance Measures, Cumulative for First Three Grant Years**

<b>Performance Measure</b>	<b>Cumulative Total (FY 2015-2018)</b>
In-Home Assessments	2,022
Current Caseload (as of September 2018)	2,168
LIGHT Applications on Waitlist	350
LIGHT Repairs Made	79
Applications to Other Housing Services	2,193
Overall Applications Submitted	2,543
Other Housing Repairs Made	1,182
Completed Services	1,260
<b>Completed Houses</b>	<b>1,128</b>

Case workers, from their position “on the ground” working with clients and programs, observed evidence of the program’s scope and effectiveness: one case worker saw that sites’ annual Weinberg funding was always spent completely before the end of the year, and another observed a state-run program had exhausted its 2018 funding halfway through the year with the increased number of applications.

#### ***Keeping Clients in Their Homes—Safely***

From the clients’ perspective, what HUBS improves is quality of life and safety, reducing the risk that clients may experience accidents or illness that will render them unable to age in place. When asked how HUBS helps them stay in their homes, clients responded that they had planned to stay in their homes, yet in situations they knew were less than safe and presented them with challenges (stairs they were unable to navigate, lack of heat, weather damage from incomplete roofs).

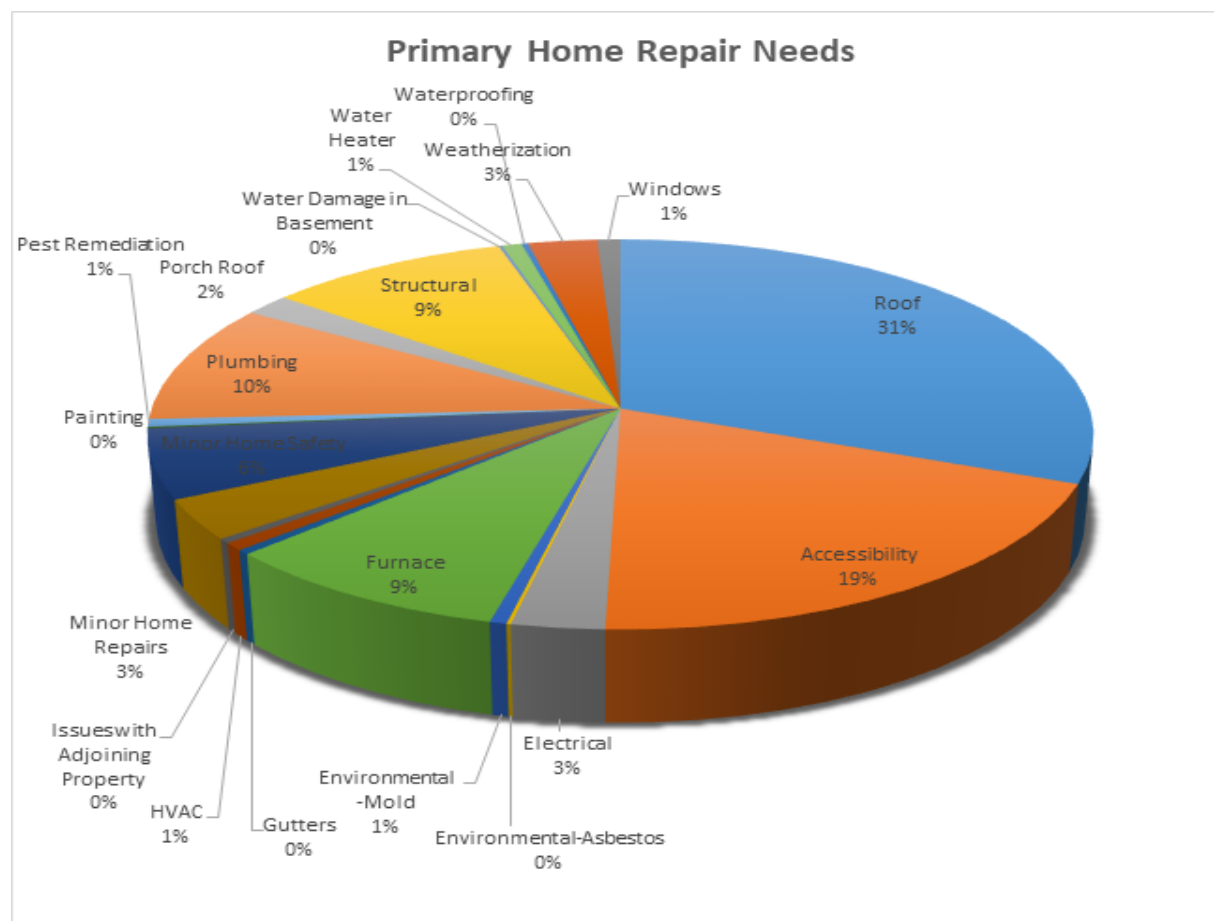
*The roof really helped because I didn’t have the money to get that done. I guess I would still be here, but maybe with a leaky roof. – Client*

*Those types of things that were done for me—the maintenance for the roof, the handrails, and all those type of things—they definitely help me to stay right where I am. I’m able to maintain my health and my strength to help take care of everything, so yes, it helped me a lot. – Client*

**Exhibit 6**, created by Civic Works from data on client needs identified by sites, shows that roof and accessibility needs, combined, make up one-half of clients’ primary home needs, with roof

repairs making up almost one-third. As also indicated in the grant reports, roof repairs or replacements are a significant cost to homeowners, with roof replacements starting at \$5,000.<sup>14</sup>

**Exhibit 6: Primary Home Repair Needs Identified by HUBS Sites, as of January 2018**



Source: Civic Works, 2018, Leonard and Helen R. Stulman Charitable Foundation Grant Evaluation Report

Several clients emphasized that **HUBS was able to provide repairs that clients otherwise could not afford**, especially the more extensive repairs.

*Yes, oh my goodness, it was like, I was like seeing the light at the end of the tunnel, you know, when you're on a fixed income ... I had some savings that was done for some of my house, I had windows put in but the daily care is just, you know, it just takes all of your savings. But I am thankful, I've been able to maintain right now on my fixed income because of the reduction that I received through those programs. – Client*



*Doing the roof was a miracle. Over the years, my roof has gotten repairs, but they [HUBS] didn't repair—they gave me a new roof. They took three pounds of rotten tar and [gave me] a new roof. – Client*

Even when repairs were less expensive, financial constraints may still prevent older adults from completing repairs with serious quality-of-life impact: all case worker respondents shared examples of clients who had gone several years without heat or hot water in the household.

### ***Impacts Beyond Home Repair and Support Services***

Case workers develop relationships with clients during the HUBS intervention that have impacts beyond the effectiveness of completing home repairs. Clients appreciate having someone who advocates for their needs, someone they know they can approach with questions or problems.

*She [case worker] didn't have a checklist that she ticked off, she really cared. You could see her care and confidence, of help with compassion. – Client*

*They appreciate the case management, that they have someone guiding them. – Leadership Team Member*

*The progress I have seen is the extreme gratitude. Prior to us, older adults were having trouble getting simple services, before us. – Case Worker*

*She [case worker] would ask questions on anything I needed help with, and it meant a lot to come to my house and help me. And she would get things we need, like the application and paper. To me, she didn't have to do that; she could have had me go downtown to the court house, to get the original deed, and she was able to get it for me without me going there. – Client*

Beyond improving safety and basic livability, clients and HUBS partners observed that **home repairs and other social supports provided intangible but important social and psychological benefits to clients.**

*I think the whole experience was amazing. It's like moving into a new house with all the things they did here. – Client*

*I had a patient who has had the floor redone. The floor was unstable and there were rats coming into the home. [Through] the HUBS program, she was able to get the floor repairs. The floor was also a pretty floor, and she was so proud of that laundry area now. We are bringing a pride to [people of]*



*Baltimore City that wouldn't have access to home repairs, either. – Referral Partner*

## 2.5 OPPORTUNITIES FOR IMPROVEMENT

Over the first three years of HUBS, partners have encountered and surmounted significant challenges to meeting the need for services to help older adults age in place. Still, there are some areas identified in the Efficiency Study that could make HUBS more efficient and more effective.

**In the short term,** HUBS partners should consider the suggestions below.

***Create a universal database for collecting HUBS resources and tracking data, especially for grant reporting.***

The current shared resources have been successful in helping different HUBS case workers stay up to date on the available resources and on client statuses. However, much of the information that case workers are using is stored locally and requires case workers' time to generate reports that contain the needed data. Additionally, case workers do not have a good sense of which referral programs may be at capacity for receiving clients. **Exploring options for a universal database that meets sites' needs for data security, case workers' collaboration needs, and Civic Works' requirements for grant reporting should be a high priority.** A well-structured database would allow more time for working with clients and offer opportunities to collect additional outcomes data (such as data on health outcomes).

***Identify opportunities to streamline the contractor process (identification, bidding, follow-up) across all the organizations that are funding home repairs.***

Another time-consuming activity that case workers identified was identifying, managing, and following up on contractors. In discussing home repairs, clients shared mixed satisfaction with the timeliness of home repairs: some repairs were completed quickly, while others remained in progress for weeks or months. Currently, there are several organizations that interact with contractors: sites, Civic Works' HUBS Coordinator, NHS, GHHI, and Rebuilding. **Creating a formal coordinating structure with a designated point of contact is a successful model that could be replicated to coordinate home-repair contractors.** This will reduce time needed to begin and complete repairs and can be used to evaluate contractor performance to improve client satisfaction.

***Identify more ways (including funding) to prioritize urgent repairs.***

This sentiment was expressed by case workers, clients, and the Leadership Team. There is a particular need to address urgent home repairs, especially extensive repairs that are preventing

an urgent repair (for example, asbestos remediation so that a furnace can be replaced). Case workers, in particular, saw a **need for a dedicated emergency repair fund and ways to prioritize older adults' cases in city- and state-run programs.**

*"If they are 90 years old and have to wait two years for an application to go through, that's a problem. When the Weinberg money is up, the applications, cases, and services can't move as fast." – Case Worker*

One way to accomplish this—as something that can also be built into the universal database—is to establish standard “tiers” or definitions of severity, formalizing the prioritization process case worker are already undertaking. This could be shared with city- and state-run programs, as part of the HUBS partnerships.

### ***Focus partnership-building on closing gaps that can be barriers to other home repairs.***

As discussed under strategies for sustainability below, one of the ways HUBS partners can sustain their efforts is by forming strategic partnerships that bring in additional resources (services, personnel, and funding). Currently, HUBS partners are aware there is a service gap in being able to help when urgent repairs are needed. Another service gap already identified by HUBS partners is that if a home has a current bed-bug infestation this will disqualify the household for many programs, thus creating a barrier to accessing home repairs. Two other repair types—mold and asbestos remediation—are costly, have a significant impact on health, and are challenging to successfully complete. In the short term, these gaps should be prioritized as part of an overall effort to close service gaps through new partnerships.

**Longer term,** HUBS partners should consider the suggestions below.

### ***Identify opportunities for providing ongoing support to clients.***

Currently, the Weinberg grant funding is not set up for ongoing or new repairs to the same household. Case workers noted that the grant funding is very efficient in terms of timely repairs, and it is challenging for case workers and clients when a house has additional issues that must be served by referrals to other programs. Case workers estimate that between 25 and 40 percent of clients (varying by site) will come back or need ongoing support:

*"Seventy percent are one issue—and when I say 'one,' I mean ... on a list it could be ten [issues] and once I solve those ten issues, I would say 70 percent don't reach out to me again. But those 30 [percent] do, and they call a lot." – Case Worker*

Younger clients (those in their 60s or 70s) that complete the HUBS program may need additional support in the future, as new repairs are needed and/or the homeowner's needs change. As described below, all HUBS partners saw opportunities to expand the reach of HUBS. **In addition to adding new partnerships to increase capacity, HUBS partners should look for**

**partners who can maintain ongoing relationships.** As more homes are repaired and more non-profit resources supplement current city- and state-run programs, this ongoing and anticipated need can be an advocacy point for maintaining (not decreasing) funding for those programs.

***Expand HUBS outreach to potential clients by strategically using social networks.***

Right now, capacity for existing clients and referred clients is a greater challenge than outreach, but opportunities exist to activate the social network of current and former clients, as many referrals are coming through word of mouth. Even those clients that heard about the program through word of mouth, when asked about ways to improve outreach, felt that more direct advertising would help to reach additional older adults. This presents **an opportunity to analyze what outreach approaches have been the most effective and what strategies can build on successes**, especially for the communities that HUBS partners identified as areas for outreach (the Hispanic/Latino, Greek, and Korean communities in Baltimore). Two respondents, however, voiced concerns about how socially isolated older adults could be made aware of the program.

## **2.6 STRATEGIES FOR SUSTAINABILITY**

As successful as the HUBS program has been in meeting its goals of connecting older adults to social and home-repair services that will help them age in place, the program also uncovered a vast, ongoing need for these services that will continue into the future. In addition to expanding capacity, reducing wait times, and making HUBS processes easier and more efficient for those doing the work, a number of opportunities exist to make HUBS part of a long-term solution to healthy aging in Baltimore.

***Determine the capacity of HUBS sites and partners to fill two documented gaps: urgent repairs and services and ongoing repairs and services.***

The HUBS program uncovered both a clear need for urgent repairs (especially for heat in colder seasons) and for an ongoing relationship with clients who have emergent needs (either in the next one to two years or as they age). One of HUBS' strengths is the program partners' shared mission, and so it will be important to identify HUBS' new mission or missions as it has evolved from the first grant applications. While having a single mission offers clarity, it may be appropriate to have multiple missions served by different partners. For example, some sites are already building long-term relationships with former HUBS clients by linking them to their other services (which use other funding streams). Other sites are able to tap into organizational funds (outside of the Weinberg funding) that allow them to directly fund time-sensitive repairs.

Expectations for future RFPs may include the ability to provide one or both, with HUBS' program structure continuing to coordinate these efforts.

***Build sustainability by identifying new partners to close other, specific gaps in HUBS' current work.***

All the HUBS partner respondents identified gaps in the HUBS program that they hoped to close through future partnerships. These include:

- Expanding social services to other household members in multi-generational households
- Building home-repair capacity by partnering with skilled trade training programs or offering education and training on home maintenance to interested homeowners
- Engaging larger organizations like the Baltimore Health Department, the Baltimore City Aging Network, and the state Department of Aging
- Partnering with organizations that focus on the need of LGBTQ older adults
- Identifying partners that can work on major barriers that threaten home repairs, such as mold, bed bugs and other infestations requiring extermination, tree grooming, and neighboring vacant houses
- Forming additional hospital partnerships to foster older adult health
- Creating and strengthening relationships with policymakers

In addition to the capacity for referrals, bringing in these new partners could continue to replicate the HUBS model by expanding the “seats at the table” to accommodate new funders, new members of the Leadership Team, and new members of the Advisory Committee.

***Use the Advisory Committee structure to bring in new Leadership Team members, sites, and funders.***

With the original goal of program oversight and steering now split between the Advisory Committee and the Leadership Team, one strategy for avoiding duplication is to use the Advisory Committee to vet organizations that may have the interest and capacity for becoming involved in the day-to-day operations of the HUBS program. Additionally, the wider reach of the Advisory Committee offers an opportunity to tap into new funding streams by utilizing Committee members' professional networks and advocacy for HUBS.

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## 3. IMPACT STUDY

The HUBS Impact Study helps further our understanding of two major areas of the HUBS logic model. The first part of the study (Goal 1) helps identify the resources/inputs needed to fully serve older adults in need of grant-funded home-modification services; the second and third study subsections (Goals 2 and 3) quantify the implications and magnitude of HUBS program impacts, in particular as they relate to the medium- and long-term quality-of-life outcomes of individuals served by HUBS. We conducted the HUBS impact study keeping in mind the **three main goals** of the evaluation.

1. **Goal 1.** To provide the HUBS Leadership Team with an estimate regarding the potential need for grant-funded services. Part of this estimate comes from **calculating the magnitude of loan ineligibility among older adult homeowners in Baltimore City**. This is to inform the Team's fundraising objectives.
2. **Goal 2.** To conduct a **cost-benefit analysis (CBA)** of the HUBS program. The purpose of this analysis is to provide the HUBS Leadership Team with an estimate of the potential economic benefit or dollar savings generated by the HUBS program. This may help demonstrate the economic value of HUBS to funders and stakeholders.
3. **Goal 3.** To estimate the **impact of HUBS on the health and well-being outcomes** of its clients. Again, this piece of analysis can help HUBS demonstrate the value of the program to funders and stakeholders.

Our main findings are presented in brief below.

### **Goal 1**

We estimate the need for grant-funded services by calculating the total number of low-income older adult homeowners in Baltimore City, using HUBS income-eligibility criteria. We also calculate the incidence of housing-cost burden and two indicators of loan ineligibility: having a reverse mortgage and having a tax-lien sale on one's property.

- a. **Housing-cost burden.** We calculate that as of the latest available data, there are 20,486 low-income older adult homeowners in Baltimore City. About 25.76 percent of these low-income older adult homeowners are moderately cost burdened, and an additional 25.85 percent are severely cost burdened. The total number of cost-burdened older adult homeowners in the city is about 10,414.

- b. **Reverse mortgages.** We estimate that roughly 3,559 older adults who took out reverse mortgages between 2003 and 2011 are potentially facing equity constraints today. This amounts to roughly 11 percent of the current older adult homeowner population in the city.
- c. **Tax-lien sales.** In 2018, we estimate that 4,256 older adults had a tax-lien sale on their property. This amounts to roughly 13 percent of the overall older adult homeowner population in the city.

Therefore, there are a little over 20,000 older adults homeowners that are in potential need of HUBS services today. Of these, between 3,559 and 4,286 older adults are most in need because they face difficult constraints on loan eligibility.

## **Goal 2**

We calculate, under certain assumptions, that HUBS has the potential to produce net cost savings of \$3,022,369 or roughly \$3 million over 10 years in present-value terms. Assuming HUBS program costs of \$1,678,998.67, used to serve 375 clients over one year, the calculated net cost savings imply a benefit-cost ratio of 1.80. This means that for every dollar invested in HUBS, \$1.80 in benefits are potentially realized. The estimate of net-cost savings of \$3,022,369 is on an annualized basis. If HUBS serves the same number of clients in years 2 and 3, then in present value terms, HUBS has the potential to produce net cost savings of \$9,067,107 over three years.

## **Goal 3**

We use data on outcomes from two HUBS partners—Cities for all Ages and the Green & Healthy Homes Initiative.

- a. **From CAA data**, we estimate the impact of the program on falls efficacy and general well-being for clients referred to the program by HUBS. Falls efficacy indicates the level of confidence that older adults feel about performing everyday tasks without falling. For the most representative sample, we find that post the CAA intervention, on average, falls inefficacy is lower by about 32.63 percent among older adults, relative to baseline. The post-intervention general well-being score is higher by about 5.42 percent, relative to baseline.
- b. Tabulations **from the GHHI data** show that a substantial proportion of clients report improvements on a varied set of outcome measures. The largest improvements are seen for mobility measures, with about 67 percent of clients reporting an improved ability to move around their homes safely and 62 percent of clients reporting improved mobility

while entering or exiting their homes. Other areas of substantial improvement include: ability to perform Activities of Daily Living (59 percent report improvement) and physical endurance and strength (54 percent report improvement). A large percentage of clients also report improvements in the temperature of their homes, their ability to socialize, their anxiety regarding home maintenance, overall health, and their utility bills.

Further detail on each of the above analyses follows below: estimating need (Section 3.1), cost-benefit analysis (Section 3.2), and assessing impact on client outcomes (Section 3.3).

### **3.1 GOAL 1 – ESTIMATING THE NEED FOR GRANT-FUNDED SERVICES IN BALTIMORE CITY**

The purpose of this analysis is to identify the need for grant-funded services among older adults in Baltimore City who may be in danger of losing their homes due to disrepair. This aspect of the study will help to inform the fundraising objectives of the HUBS Leadership Team, so that more older Baltimoreans can stay safely in their homes and neighborhood blight can ultimately be prevented.

We first estimate the total number of low-income older adult homeowners in the city as well as the number among them that face a high housing-cost burden. Next, we calculate two measures of loan ineligibility. Loan-ineligible older adults may be most in need of HUBS grants. While loan-eligible older adults may be able to take out small loans to make home repairs in order to avoid code violations and stay up to date on property and utility bills, this may not be possible for loan-ineligible adults. For example, taking on a reverse mortgage often makes older adults loan ineligible a few years down the line when payouts from the reverse mortgage have dried up and older adults no longer own equity in their home.

While loan ineligibility can provide a useful ball-park estimate for the need for grant-funded services, it is important to keep in mind that the need for HUBS services also comes from older adults who may be technically loan eligible but may still be in need of financial assistance. Insights from the Efficiency Study reveal that even if some of the clients are able to find personal resources to pay for their housing repairs and/or may not be technically loan ineligible, often they are unable to come up with all of the resources needed to pay for urgent, immediate needs like lack of heat during the winter. Therefore, the grant program in this case helps with the older adult's immediate needs and serves as one of many options that case workers will use to help someone obtain home repairs.

IMPAQ, in consultation with the HUBS Leadership Team, has estimated the numbers and percentage of older adult home owners who may be in need of grant-funded services using



three proxy indicators. These indicators are: (a) the total number of low-income older adults and the number and percent of older adults who are burdened by housing costs, (b) the percent of older adults with reverse mortgages, and (c) the percent of older adults with tax-lien sales on their property. The first indicator regarding having housing-cost burden does not directly indicate loan ineligibility, since it is possible that despite having high housing costs, some households are eligible for private, unassisted loans. However, the indicator still provides a useful insight into the proportion of older adults who may require financial assistance through a program like HUBS. The other two measures more directly indicate loan ineligibility and are not mutually exclusive. Both measures are complementary—each providing an estimate utilizing a different approach. Both reverse mortgage data and tax-lien sales data yield comparable findings on the percentage of older adults who are loan ineligible in the city and indicate that about 11 to 12 percent of older adults in Baltimore are loan ineligible.

Next, we describe our findings for each of the three proxy indicators.

### **3.1.1 TOTAL NUMBER OF LOW-INCOME OLDER ADULTS AND HOMEOWNER COST BURDEN**

We use latest available (year 2016) data from the American Community Survey (ACS)<sup>17</sup> to first estimate the total number of low-income older adult homeowners in Baltimore City. We calculate that as of the latest survey, there are a total of 20,486 low-income older adult homeowners in the City. To identify low-income older adult homeowners, we use the household-size-dependent income-eligibility cut-offs detailed in the HUBS brochure.<sup>18</sup>

Next, we look at Homeowner Cost Burden. Homeowner Cost Burden refers to the proportion of monthly income that households devote to housing-related expenses. According to HUD definitions,<sup>19</sup> when housing expenses amount to more than 30 percent but less than 50 percent of income, households are considered to be facing a moderate housing-cost burden. When housing-related expenses exceed 50 percent of total income, households are considered to be facing a severe housing-cost burden. The idea is that cost-burdened households may have difficulty affording other necessities such as food, transportation, and medical care. As mentioned previously, being housing-cost burdened is not a direct indicator of loan ineligibility, since it is possible that despite having high housing costs, some households are eligible for

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<sup>17</sup> In particular, we use data from the 2012–2016 ACS 5-year sample, which comprises 5 years of data up to and including 2016 and is the most reliable data extract to calculate estimates for small geographic areas like counties and cities. At the time of calculating these estimates, the 2012–2016 ACS 5-year sample was the most recent data publicly available.

<sup>18</sup> <https://civicworks.com/wp-content/uploads/2015/10/HUBS-Brochure-Final.pdf>.

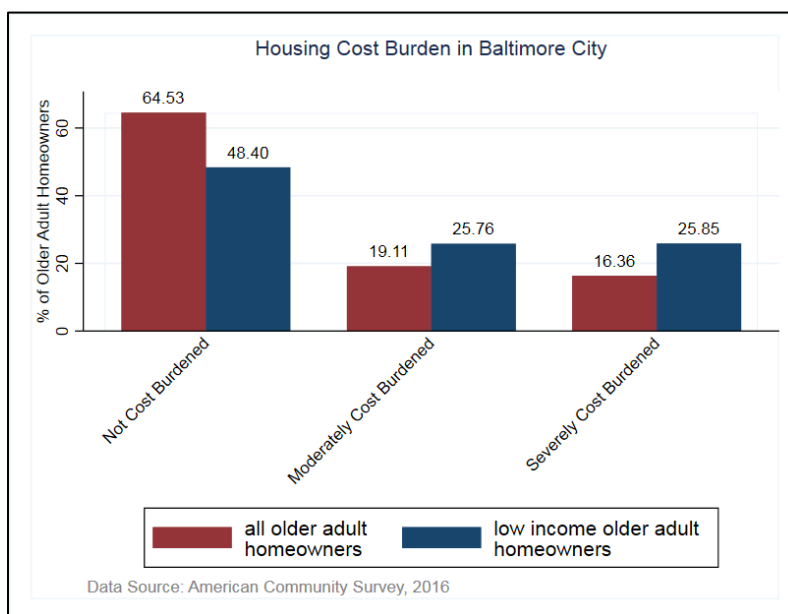
<sup>19</sup> U.S. Department of Housing and Urban Development. *Affordable Housing*. Accessed on 9/30/2018. URL: [https://www.hud.gov/program\\_offices/comm\\_planning/affordablehousing/](https://www.hud.gov/program_offices/comm_planning/affordablehousing/).



private, unassisted loans. However, the indicator still provides a useful insight into the proportion of older adults who may require financial assistance through a program like HUBS and, further, provides an upper bound on the total number of individuals who may require funding assistance for home modifications.

In **Exhibit 7**, we show the percentage of homeownership older adults (aged 65 and older)<sup>20</sup> who are housing-cost burdened in the city.<sup>21</sup> We estimate this percentage for (a) all older adult homeowners and (b) for low-income older adult homeowners. Overall, 19 percent of older adult homeowners are moderately cost burdened, and an additional 16 percent are severely cost burdened. Limiting the analysis only to low-income older adult homeowners, we estimate that 25.76 percent of low-income older adult homeowners are moderately cost burdened and an additional 25.85 percent are severely cost burdened. In terms of counts, we estimate that there are 5,198 low-income older adult homeowners who are moderately cost burdened in the city and an additional 5,216 who are severely burdened by housing costs. This means that, in total, about 10,414 low-income older adults are housing-cost burdened, which amounts to over 50 percent of the low-income older adult homeowner population.

**Exhibit 7: Housing Cost Burden in Baltimore City, 2016**



<sup>20</sup> Older Adult Homeowners are those where the household head is 65 or older in age.

<sup>21</sup> Homeowner costs in the ACS data are calculated, where applicable, as the sum of payments for mortgages, deeds of trust, contracts to purchase, or similar debts on the property (including payments for the first mortgage, second mortgages, home equity loans, and other junior mortgages); real-estate taxes; fire, hazard, and flood insurance on the property; utilities (electricity, gas, and water and sewer); and fuels (oil, coal, kerosene, wood, etc.). It also includes, where appropriate, the monthly condominium fee for condominiums and mobile home costs (personal property taxes, site rent, registration fees, and license fees).

The numbers we estimate align closely with ACS tabulations reported on American Fact Finder.<sup>22</sup> According to data on American Fact Finder, 35 percent of all older adult homeowners in Baltimore City, aged 65 and over, were cost burdened—that is, their homeowner cost-to-income ratio was 30 percent or more.

### 3.1.2 REVERSE MORTGAGES

Next, we consider the incidence of reverse mortgages as an indicator for the extent of loan ineligibility in Baltimore City. A reverse mortgage is a loan for seniors aged 62 and older that allows homeowners to obtain lump sum or regular payments, typically to supplement retirement income, in exchange for equity in their home. Seniors with reverse mortgages who no longer have equity in their home but require home upgrades are likely ineligible for most loans. In a large fraction of instances, seniors exchange the equity in their homes for the reverse mortgage payout as a lump sum, and the money is often spent by the time it is needed for late-in-life hardships.<sup>23</sup> In some cases, reverse mortgages can also eventually lead to defaults or foreclosures. Single spouses not named on a reverse mortgage loan suffer when their spouse dies or enters assisted care. Such spouses are responsible for loan repayment, in the absence of which their home is sold from under them. Defaults also occur because older adults cannot remain in their homes if they fail to pay property taxes and homeowners insurance.<sup>24</sup>

We use data from HUD's Home Equity Conversion Mortgage (HECM) dataset to estimate the number of reverse mortgages originating in Baltimore City from the early 1990s to 2011. Even though data are only available until 2011, for reverse mortgage analysis it makes sense to look at data within this timeframe. The seniors who currently lack adequate home equity and are in need of financial assistance are likely those who took out a reverse mortgage around seven to eight years ago.<sup>25</sup> In **Exhibit 8**, we look at the number of reverse mortgages originating in Baltimore City between 1991 and 2011. Up until 2002, very few reverse mortgages originated in the City. Between 2003–2005, there was a greater than six-fold hike in reverse mortgages, and in 2006–2008 there was a further five-fold hike. Between 2006 and 2008, a total of 4,132 reverse mortgages originated in the city, and between 2009 and 2011, a total of 3,726 reverse mortgages were originated. A number of exogenous, market factors likely explain this

<sup>22</sup> American Fact Finder is a data-retrieval product of the U.S. Census Bureau and a tool to access various tabulations from data collected by the Bureau. URL: <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>.

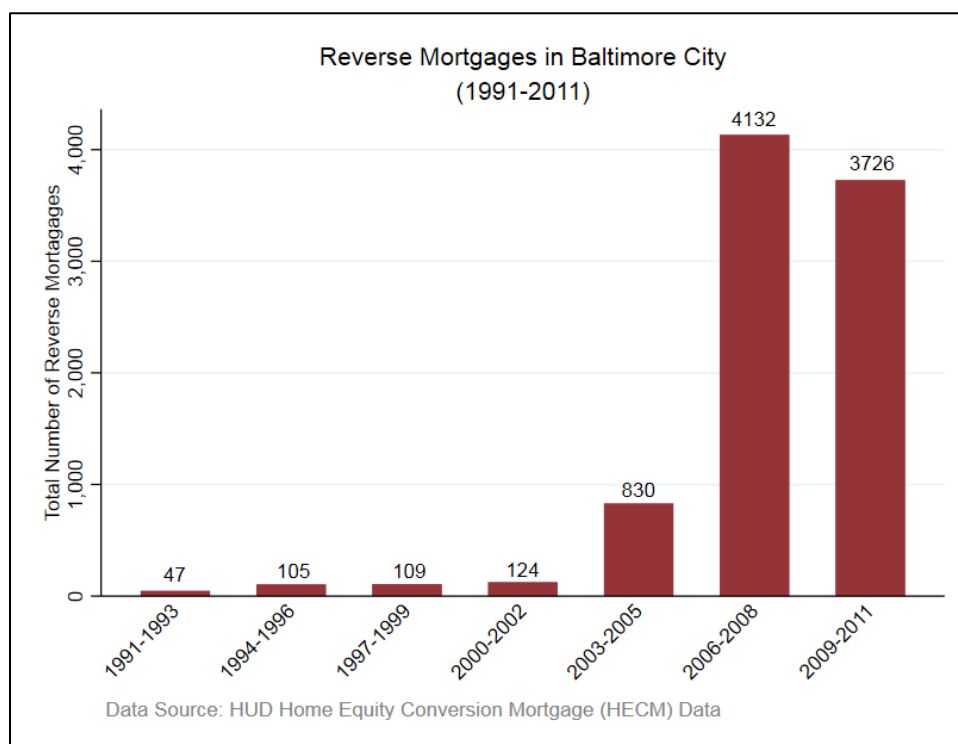
<sup>23</sup> ABC News. *Senior Homeowners Warned of Risks of Reverse Mortgages*. Accessed on 9/30/2018. URL: <https://abcnews.go.com/Business/senior-homeowners-warned-risks-reverse-mortgages/story?id=17889575>.

<sup>24</sup> AARP Brief. *Are Reverse Mortgages Risky?* Accessed on 9/30/2018. URL: <https://www.aarp.org/money/estate-planning/info-03-2012/risks-of-taking-reverse-mortgage-early.html>.

<sup>25</sup> SFGATE. *The Normal Term of a Reverse Mortgage in Years*. Accessed on 10/1/2018. URL: <https://homeguides.sfgate.com/normal-term-reverse-mortgage-years-62796.html>.

variation in the number of reverse mortgages across years. Even though the HECM program started in 1989, in early years, only a very small number of elderly adults took out these mortgages. However, as awareness of the program grew among older adults, and financial/risk attitudes shifted, reverse mortgages started to gain popularity. Starting in year 2000, reverse mortgages grew rapidly on account of a housing market boom and lower interest rates, with mortgages peaking in 2008. The subsequent decline in numbers are likely on account of financial market regulations following the sub-prime mortgage crises and declining home prices.

**Exhibit 8: Reverse Mortgages in Baltimore City, 1991–2011**



A year-wise break-down of the number of reverse mortgages between 2003 and 2011 is shown in **Exhibit 9**. There was a steady increase in the number of reverse mortgages up until 2008, when the number peaked at 1,862, after which a decline can be observed. In 2011, there was a considerable slow-down, with only 670 reverse mortgages originating.<sup>26</sup> Next, in **Exhibit 10** we present some numbers in percentage terms—between 2007 and 2010 roughly 4 to 5 percent of older adult homeowners in the city obtained a reverse mortgage each year, and this rate slowed to around 2 percent in 2011. As per HUBS’ intake data from 2017, which asks a client about

<sup>26</sup> One point to note is that data were reported by HECM only through the end of November 2011. Therefore, if we had data for December 2011, it is likely that the year’s total tally would be greater than 670. In 2010, around 85 reverse mortgages originated in December. Therefore, even if the same number of reverse mortgages originated in December 2011 as in December 2010, the overall number in 2011 would be nowhere close to the 2010 number.

whether or not they have a reverse mortgage at the time of screening, 6.87 percent of all older adults screened by HUBS stated that they currently have a reverse mortgage.

**Exhibit 9: Reverse Mortgages in Baltimore City, 2003–2011**



**Exhibit 10: Number and Percentage of Older Adults with a New Reverse Mortgage, 2007–2011**

Year	Total Number of Older Adult Households with Reverse Mortgages	Total Number of Older Adult Homeowners	% of Older Adult Homeowners with Reverse Mortgages
2007	1,433	31,009	4.62%
2008	1,862	31,891	5.84%
2009	1,740	32,162	5.41%
2010	1,316	31,946	4.12%
2011	670	31,749	2.11%

Using the HUD data, we did some simple calculations to determine how many individuals who took out a reverse mortgage between 2003 and 2011 are still alive. The average life expectancy at 65 years is estimated to be around 84 years. Therefore, based on age of the borrower at the time of reverse-mortgage origination and the life-expectancy number, we estimate that roughly 3,559 individuals who took out reverse mortgages are still alive and are potentially facing equity constraints. This amounts to roughly 11 percent of the current older adult homeowner population in the city.

### **3.1.3 TAX-LIEN CERTIFICATE SALES**

A Tax-Lien Certificate is a negotiable instrument sold by a governmental entity (in this case Baltimore City) at an annual Tax-Lien Certificate Sale. When a property owner is unable to pay requisite property taxes and bills to the City, a Tax-Lien Certificate Sale is made on their property. The lienholder who purchases the Tax-Lien Certificate does not own the property as a result of purchasing the certificate. Instead, they pay the outstanding bills to Baltimore City on behalf of the property owner. In order to redeem their property, the property owner has to pay the total amount of the liens paid at the Tax-Lien Certificate Sale, including 12% per annum redemption interest on owner-occupied residences, all current taxes together with any interest and penalties on those taxes, and applicable legal fees. Failure to do so can give the lienholder the right to foreclose on the property. A tax-lien sale being made on a property is a good indicator that the homeowner is unable to access loans to maintain their property and may soon be in a situation wherein they lose equity in their property entirely.

For the purposes of this analysis, we obtained the full tax-lien sale list for Baltimore City for 2017 and 2018.<sup>27,28</sup> These data are originally from BidBaltimore.com. The data contain a complete enumeration of all property addresses in the city for which a tax-lien sale was made. Given the absence of data on age of the homeowner, we use data on property deed date to proxy for the age of the homeowner. In the past the City and other non-profits have used the assumption that people who have owned their property for more than 25 years are most likely seniors. We follow the same approach but present estimates under two scenarios—in the first case, we assume that older adult homeowners are those that have owned their property for 25 years or more and, in the second case, we assume a cut-off of 30 years.

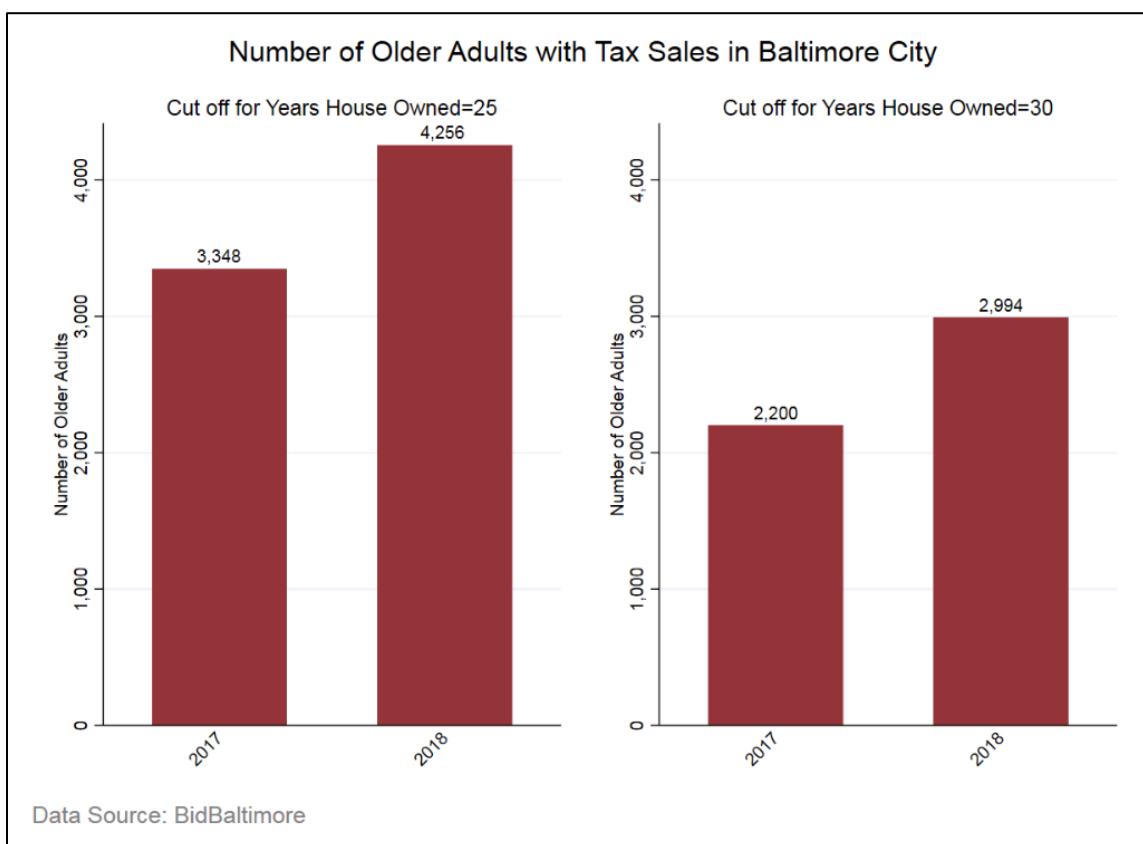
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<sup>27</sup> Personal communication, Margaret Henn, Project Household, June 25, 2018.

<sup>28</sup> We also tried to obtain data for 2016 for this analysis but were unable to do so. We contacted SDAT, BidBaltimore, and Baltimore City Collections via email and telephone to request the 2016 data. Both BidBaltimore and Baltimore City Collections had some data for 2016, but it was incomplete for the purposes of our analysis. Namely, the data did not contain a field for property deed date, which we use to approximate for older adult status.

In **Exhibit 11**, we present the total number of older adult tax-lien sales under the two scenarios for 2017 and 2018. If we assume a cut-off of 25 years, then in 2018, there were 4,256 older adult households with tax-lien sales. If instead we assume a cut-off of 30 years, then the estimate reduces to 2,994 older adult households with tax-lien sales in 2018. The corresponding numbers for 2017 are evident in the exhibit.

**Exhibit 11: Number of Tax-Lien Sales in Baltimore City, 2017 & 2018**



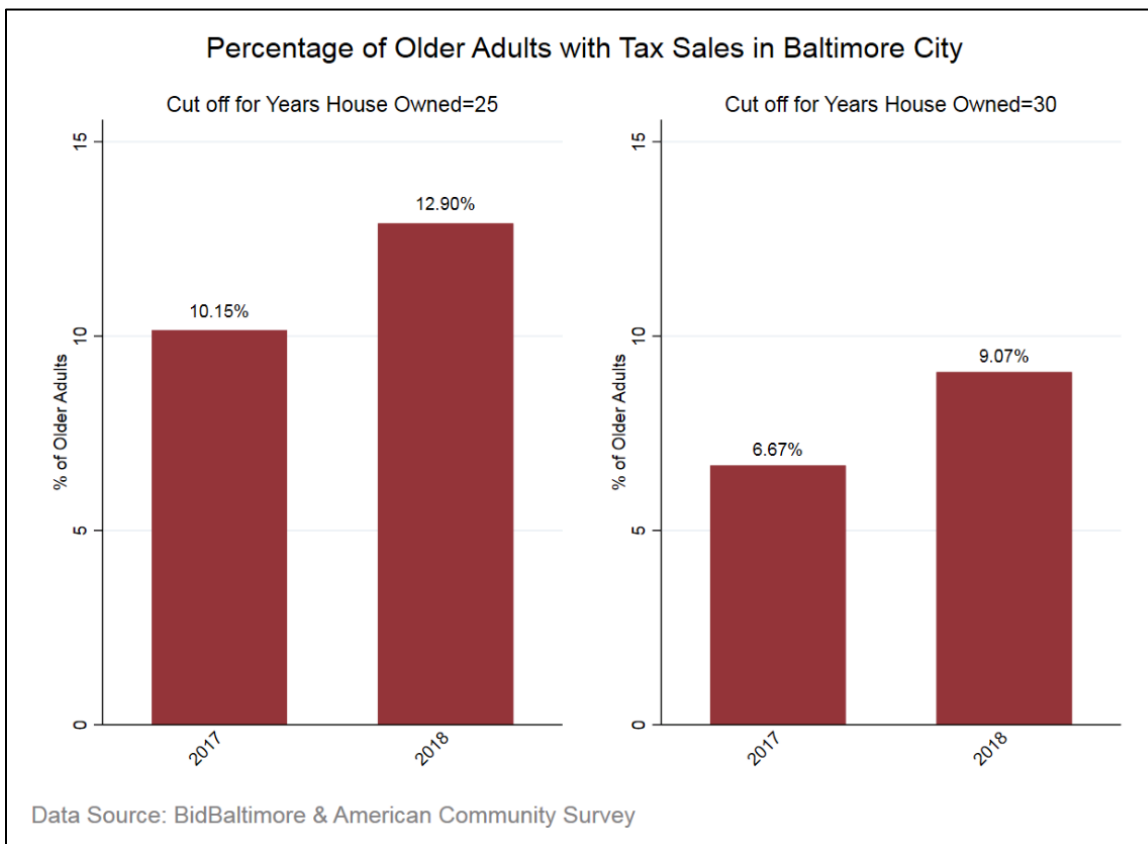
Subsequently, in **Exhibit 12**, we look at the percentage of older adult homeowners with tax-lien sales in 2017 and 2018.<sup>29</sup> If we assume a cut-off of 25 years, then in 2018, approximately 12 percent of older adult homeowners had tax-lien sales in 2017. If instead, we assume a cut-off of 30 years, then the estimate reduces to around 9 percent of older adult homeowners with tax-lien sales in 2018. The corresponding percentages for 2017 are evident in the exhibit.

<sup>29</sup> The percentage is calculated as:

$$\% \text{ of Older Adults with Tax Sales} = \frac{\text{Number of Older Adults with Tax Sales}}{\text{Total Number of Older Adult Homeowners}}$$

Data from the denominator comes from the ACS.

## Exhibit 12: Percentage of Older Adults with Tax-Lien Sales in Baltimore City, 2017 & 2018



### 3.2 GOAL 2: COST BENEFIT ANALYSIS (CBA) SIMULATION OF HUBS

The purpose of this analysis is to provide the HUBS Leadership Team with an estimate of the potential economic benefit or dollar savings generated by the HUBS program. This aspect of the study may help demonstrate the economic value of HUBS to funders and stakeholders. It may also serve as an internal guide for the program to set quantifiable goals for reducing adverse outcomes among older adults. For the cost-benefit analysis simulation, we worked with two hypothetical populations—a HUBS cohort of 375 older adults and a control cohort of 375 older adults. The analysis is based on the idea that older adults in the control group face a “normal” or “baseline” incidence of adverse events, and older adults in the HUBS cohort potentially face a lower incidence of such events, resulting in cost savings to the government and individuals. Detailed methods are in **Appendix B**. In this section, we present the results and an overview of the methodology.

In the CBA simulation, we focus on two main dimensions of potential savings relevant to the program: (a) avoided living/housing costs and (b) avoided healthcare costs of older adults served by HUBS. Since older adults served by HUBS are low-income, avoided housing costs

(i.e., because of fewer older adults moving to subsidized rental housing) represent cost savings for the government via lower government spending on rental assistance. Similarly, avoided healthcare costs (i.e., because of fewer older adults residing in nursing homes and facing adverse health events) represent cost savings for Medicare/Medicaid. It is important to keep in mind that this simulation is a simplification, and we do not attempt to quantify *all* potential benefits produced by HUBS. Many benefits of aging in a safer home, including aspects of improved quality of life, reduced anxiety, and greater peace of mind for the elderly, cannot be monetized easily. Therefore, we focus on a few potential impacts of HUBS that are both amenable to quantification and represent important cost savings to the government and taxpayers.

We estimate, under certain assumptions, that HUBS has the potential to produce net cost savings of \$3,022,369 over 10 years<sup>30</sup> in present-value terms. On an annualized basis, this indicates net cost savings of \$302,237 per year for ten years. Assuming HUBS program costs of \$1,678,998.67, used to serve 375 clients over one year, the calculated net cost savings imply a benefit-cost ratio

We estimate that HUBS has the potential to produce net cost savings of \$3 million over 10 years in present value terms. This means that for every dollar invested in HUBS, \$1.80 in benefits are realized.

(BCR) of 1.80.<sup>31</sup> This means that for every dollar invested in HUBS, \$1.80 in benefits are realized. A BCR of greater than 1 implies that the program's expected benefits exceed its cost and that the program is economically viable and should be invested in. A BCR of 1 indicates that expected benefits equal costs, and a BCR of less than 1 indicates that costs of a program outweigh its expected benefit. It is important to note that the simulated cost savings indicated above are based on several assumptions, and the estimate is sensitive to alternative assumptions. Below, under "sensitivity analysis," we discuss how projected savings could differ if crucial assumptions are varied.

### 3.2.1 UNPACKING THE PROJECTED COST SAVINGS

Cost savings for HUBS are simulated under the assumption that HUBS can help lower the incidence of the following adverse and costly events among older adults:

1. Moving from own home to subsidized rental housing

<sup>30</sup> A long-term time horizon (varies between more than 5 years to less than "lifetime") is common in the literature on cost-effectiveness analysis, especially for preventative healthcare interventions, in order to fully capture the long term benefits of such interventions. For example, see: Kim DD, Wilkinson CL, Pope EF, Chambers JD, Cohen JT, and Neumann PJ. The influence of time horizon on results of cost-effectiveness analyses. *Expert Review of Pharmacoeconomics and Outcomes Research* 2017;17(6):615–623.

<sup>31</sup>  $BCR = \frac{\text{Net Present Value of HUBS Cost Savings}}{\text{Net Present Value of HUBS Program Costs}}$



2. Nursing home placement
3. Falls
4. Episodes of respiratory illness including asthma, chronic obstructive pulmonary disease (COPD), and other related illness
5. Depressive symptoms, as a proxy for emotional well-being

The net cost savings of HUBS are calculated as the difference between total costs incurred by a “control” group of older adults not served by HUBS because of the above defined events and total costs incurred by the group of HUBS clients, over a 10-year timeframe. To derive total cost estimates, we need to know (a) the baseline incidence of each event, which would imply the incidence of the event in the control group; (b) the impact of HUBS in reducing the incidence of each event and the derived “reduced” incidence in the HUBS group; and (c) annual, per-unit cost of each event. In **Exhibit 1** we summarize our assumptions regarding (a), in **Exhibit 14** we summarize our assumptions regarding (b), and in **Exhibit 15** we summarize the cost estimates we use.

**Exhibit 13: Assumptions Regarding Baseline Incidence of Model Events**

Event	Annual Incidence	Source/Explanation
Moving from own home to subsidized rental housing	1.2%	Calculated from American Housing Survey, 2013 <sup>32</sup> (detailed calculation steps in Appendix B).
Nursing home placement	3.14%	The U.S. census bureau estimates <sup>33</sup> the % of the older adult population residing in nursing homes by age cohort (65–74 years, 75–84, etc.). We apply these cohort-specific incidences to the HUBS population, using age data from HUBS intake forms.
Falls	14.74%	Calculated from HUBS intake data for 2017; using “occurrence of a fall in the last 6 months (yes/no)” variable.
Respiratory illness including asthma, COPD, and other related illness	15.49%	Calculated from HUBS intake data for 2017; using primary, secondary, and additional chronic conditions variables.
Depressive symptoms	11.19%	Steffens et. al (2009) <sup>34</sup>

<sup>32</sup> U.S. Census Bureau, American Housing Survey 2013. Housing Migration-Previous Unit-Renter-Occupied Units, Table C-06-RO-M for Baltimore MD AHS Area, generated using American Fact Finder.

<sup>33</sup> West LA., Cole S, Goodkind D, and He W. 65+ in the United States: 2010. *US Census Bureau* 2014;23–212.

<sup>34</sup> Steffens DC, Fisher GG, Langa KM, Potter GG, and Plassman BL. Prevalence of depression among older Americans: the Aging, Demographics and Memory Study. *International Psychogeriatrics* 2009;21(5):879–888.

As can be seen in **Exhibit 13**, the baseline incidence of two events, falls and respiratory illness, is calculated directly from HUBS intake data. The incidence of movement into subsidized rental housing is based on data from the Baltimore Metropolitan Area, the lowest level of aggregation at which these data are collected. The incidence for nursing home placement is at the national level, and Maryland estimates are similar to the U.S. as a whole. The incidence of depressive symptoms among older adults is also a national estimate. In these cases, comparably credible data for Baltimore City were not available.

Next, in **Exhibit 14**, we summarize our assumptions regarding HUBS impact.

**Exhibit 14: Assumptions Regarding HUBS Impact**

<b>Event</b>	<b>HUBS Impact Estimate</b> <i>(indicates amount by which incidence is lower than in the base year)</i>	<b>Source/Explanation</b>
Moving from own home to subsidized rental housing	28%	Safran-Norton (2010) estimates that having certain safety-related home modifications were associated with fewer older adult households transitioning out of their main residence. <sup>35</sup>
Nursing home placement	29%	Szanton et al. (2018) estimate that participation in project CAPABLE, which shares many features with HUBS, reduced the probability of needing long-term care, in Baltimore by 42% on an annualized basis. We assume that HUBS' impact on NH admissions will be lower since HUBS does not provide nursing services. <sup>36</sup>
Falls	36%	Cummings et al. (1999) describes use of a Randomized Control Trial to estimate that a home modifications intervention reduced the incidence of falls for individuals with prior falls history. <sup>37</sup>
Respiratory illness including asthma, COPD	56%	A meta-analysis by Fisk et al. (2007) found that the dampness and mold in homes, a problem that HUBS

<sup>35</sup> Safran-Norton CE. Physical home environment as a determinant of aging in place for different types of elderly households. *Journal of Housing for the Elderly* 2010;24:208–231.

<sup>36</sup> Szanton SL, Alfonso YN, Leff B, Guralnik J, Wolff JL, Stockwell I, Gitlin LN, and Bishai D. Medicaid cost savings of a preventive home visit program for disabled older adults. *J Am Geriatr Soc* 2018 Mar;66(3):614–620.

<sup>37</sup> Cumming RG, Thomas M, Szonyi G, Salkeld G, O'Neill E, Westbury C, and Frampton G. Home visits by an occupational therapist for assessment and modification of environmental hazards: A randomized trial of falls prevention. *J Am Geriatr Soc* 1999;47(12):1397–1402.

and other related illness		addresses, is associated with an increase in the odds of asthma. <sup>38</sup>
Depressive symptoms	53%	Szanton et al. (2016) estimate that participation in project CAPABLE, which shares many features with HUBS, improved depressive symptoms among participants. <sup>39</sup>

It is crucial to note that assumptions regarding the impact of HUBS should be considered with special caution. These impact estimates are not directly measured for HUBS but are derived either from programs that share features similar to HUBS or from data that estimate the relationship between certain home hazards and the occurrence of an adverse event (for example, the association between dampness/mold and asthma). Additionally, while all of the studies are focused on older adults and home modifications/home-modification-related interventions, not all of them have Baltimore as their setting, and measured impacts likely vary considerably by context. Moreover, while some estimates are based on relatively rigorous research designs, such as experiments or quasi-experiments, other estimates, such as those for movement out of main residence, are derived from simple regressions that may not control for confounders adequately. Therefore, while the estimates in **Exhibit 14** are used to project the potential cost savings for HUBS, it is important to keep in mind that if these effects were measured specifically for HUBS, they could in fact be different, in which case the projected savings would be different. The sensitivity analysis section provides a useful guide to consider what HUBS cost savings would be if the HUBS program were less effective in reducing the incidence of the above events.

Even though the impacts listed in **Exhibit 14** are not directly measured for HUBS, insights from interviewing HUBS clients reveal that the program is having a tangible impact on helping older adults age safely at home. Several clients stated that in the absence of the home modifications HUBS provides—including roofing, heating, and accessibility features such as grab bars and rails—they would not be able to live safely in their homes (see also Section 2.4 of the Efficiency Study to read about clients’ perceptions of how HUBS has impacted their quality of life).

In **Exhibit 15** below we detail the cost data we use to price the occurrence of the above discussed events.

<sup>38</sup> Fisk WJ, Lei-Gomez Q, and Mendell MJ. Meta-analyses of the associations of respiratory health effects with dampness and mold in homes. *Indoor Air* 2007;17(4):284–296.

<sup>39</sup> Szanton SL, Leff B, Wolff JL, Roberts L, and Gitlin LN. Home-based care program reduces disability and promotes aging in place. *Health Affairs* 2016;35(9):1558–1563.

### Exhibit 15: Cost data used in the Cost Benefit Analysis

Event	Cost Estimate in 2017 dollars <sup>40</sup> (per year, per person)	Source/Explanation
Subsidized rental housing	\$16,104 per household	Fair Market Rent for a two-bedroom apartment in Baltimore City. <sup>41</sup> Low-income families usually pay 30% of their monthly adjusted gross income for rent and utilities. The rest is financed by the government via housing vouchers.
Nursing home stay	\$101,709	Average cost of a semi-private room in Maryland. <sup>42</sup> In general, even though Medicare covers a limited amount of post-acute care, Medicaid in Maryland covers nursing homes by default. Seniors who meet certain financial and medical guidelines can qualify for coverage for up to 100% of the fees. <sup>43</sup>
Non-fatal fall	\$10,405	Average direct cost of non-fatal falls across hospital, emergency department, and out-patient settings among older adults, estimated by Burns et al. (2016), <sup>44</sup> using Medicare claims data.
Respiratory illness	\$3,971	Average across medical costs estimated for COPD and asthma. Ford et al. (2015) <sup>45</sup> estimate the medical costs attributable to COPD and Nurmagambetov et al. (2017) <sup>46</sup> do the same for asthma.
Depressive symptoms	\$1,390	Difference in average medical costs between older adults with and without depressive symptoms estimated by Unützer et al. (1997). <sup>47</sup>

<sup>40</sup> A Consumer Price Index (CPI) inflator is used to express subsidized rental housing costs in 2017 dollar terms. For the rest of the events a Medical-Cost inflation factor is used.

<sup>41</sup> Information retrieved from: <https://affordablehousingonline.com/housing-search/Maryland/Baltimore#apartments>.

<sup>42</sup> Information retrieved from: <https://www.dibbern.com/nursing-homes/maryland/cost-for-maryland-nursing-home-care.htm>.

<sup>43</sup> <https://www.familyassets.com/nursing-homes/resources/medicaid/maryland>.

<sup>44</sup> Burns ER, Stevens JA, and Lee R. The direct costs of fatal and non-fatal falls among older adults—United States. *Journal of Safety Research* 2016;58:99–103.

<sup>45</sup> Ford ES, Murphy LB, Khavjou O, Giles WH, Holt JB, and Croft JB. Total and state-specific medical and absenteeism costs of COPD among adults aged 18 years in the United States for 2010 and projections through 2020. *Chest* 2015;147(1):31–45.

<sup>46</sup> Nurmagambetov T, Kuwahara R, and Garbe P. (2018). The economic burden of asthma in the United States, 2008–2013. *Annals of the American Thoracic Society* 2018;15(3):348–356.

<sup>47</sup> Unützer J, Patrick DL, Simon G, Grembowski D, Walker E, Rutter C, and Katon W. Depressive symptoms and the cost of health services in HMO patients aged 65 years and older: A 4-year prospective study. *JAMA* 1997; 277(20):1618–1623.

Some cost estimates in the literature also include indirect costs of conditions like COPD and asthma, for example, costs on account of loss of productivity or absenteeism at school or work. In our analysis we limit our cost estimates to direct medical costs since most older adults are retired and not active in the labor market.

We integrate the three pieces of data discussed in the previous exhibits to estimate the projected cost savings of HUBS. Broadly, the main methodological steps are shown below.

1. We simulate total costs for the HUBS intervention group and a hypothetical control group for each year—Years 0 through 9. Total cost incurred by each group in a given year is the number of people incurring an adverse event multiplied by the unit cost attributable to the event (**Exhibit 15**).
2. Based on the number of clients that HUBS serves each year, we use hypothetical cohorts of 375 older adults in each group—control and intervention—for our calculations. Incidence rates are then applied to calculate the total number of adults that face each event, in each group, in a given year. For the control group, baseline incidence rates from **Exhibit 13** apply. For the intervention group, reduced incidence rates apply, whereby the baseline incidence is reduced by the impact estimates in **Exhibit 14**.
3. Total costs are calculated separately for each year because, for the HUBS intervention group, we assume that the effectiveness of HUBS home improvements decline at a rate of 10 percent per year. This means that a one-time home improvement will not be as effective in reducing adverse events, like falls, in Year 9 as it was in Year 0. In other words, for Year 0, impact estimates from **Exhibit 14** apply, after that for every year the impact is 10 percent lower from the base of the previous year. Among other things, this is because the person's functional status may be changing while the original modification remains the same. We vary this assumption in the sensitivity analysis.
4. Then, net cost savings or net benefits for each year are calculated. For Year 0, this is given by: (total cost incurred by the control group on account of adverse events) – (total cost incurred by the treatment group on account of adverse events + HUBS program costs). Year 1 through Year 9, net cost savings are given by: (total cost incurred by the control group on account of adverse events) – (total cost incurred by the treatment group on account of adverse events).
5. We estimate HUBS program costs as \$1,678,998.67 to serve 375 clients in one year. We arrive at this figure as the average yearly amount funded by the Stulman and

Hoffberger Foundations, the Weinberg Foundation, and three sites—Sinai, Meals on Wheels, and Keswick.<sup>48</sup>

6. We use a discount rate of 3 percent to discount future benefits<sup>49</sup> beyond Year 0. Discounted net cost benefits for each year 0 through 9 are added to obtain the total net benefits or total cost savings of HUBS (the \$3 million figure). Thus, we express cost savings in present-value terms. Assumed discount rates vary across studies, so we also present estimates with a higher discount rate in the sensitivity analysis.
7. Another feature of the model to keep in mind is that the treatment of subsidized housing costs in the model differs somewhat from the treatment of the other events. We assume that a certain fraction of households move each year from their own home to a subsidized rental unit and continue to stay in the unit for the time period of the analysis. Therefore, in a given year, individuals and the government face a cost burden for the rental-housing unit, not just for households that move that year, but also for households that moved in a previous year. For nursing home admissions, we assume a length of stay of one year in the year of admission.

Further details about the CBA methodology may be found in **Appendix B**.

### 3.2.2 SENSITIVITY ANALYSIS

In this section we show that the projected cost savings of \$3,022,369 over 10 years (BCR=1.80) is sensitive to various assumptions of the model, and we show how cost savings change when assumptions are changed.

In **Exhibit 16** we vary the assumed size of the HUBS impact. We show net cost savings and the benefit-cost ratio if the effect size for each event is sequentially halved.<sup>50</sup> Since nursing home placement is the most expensive adverse event, halving the impact estimate for nursing home admissions has the largest impact on the net cost savings and benefit-cost ratio.

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<sup>48</sup> The breakdown of **per year average amounts** funded by each source are: \$409,670 (Stulman and Hoffberger), \$1,166,666.67 (Weinberg), \$50,078 (Sinai), \$13,333 (Meals on Wheels), and \$39,251 (Keswick).

<sup>49</sup> 3% discount rate has been recommended by the U.S. Department of Veteran Affairs for cost-effectiveness analysis: <https://www.herc.research.va.gov/include/page.asp?id=cost-effectiveness-analysis> and has also been used by the CDC for similar analysis: <https://www.cdc.gov/mmwr/preview/mmwrhtml/00038592.htm>.

<sup>50</sup> This means that we halve the effect size associated with an event, while holding all the other effect sizes at their original value. For example, in the first row of Exhibit 14, we set the effect size pertaining to movement into subsidized rental housing to 14% instead of 28%, while holding the other effect sizes at their original levels.

**Exhibit 16: Cost Savings If HUBS Impact Estimates Are Sequentially Halved for Each Event**

Event	Updated Net Cost Savings	Updated Benefit-Cost Ratio (BCR)
<b>Original Net Cost Savings=\$3,022,369 and BCR=1.80</b>		
Moving from own home to subsidized rental housing	\$2,710,309	1.61
Nursing home placement	\$1,989,405	1.18
Falls	\$2,414,920 -	1.44
Respiratory illness including asthma, COPD, and other related illness	\$2,643,384	1.57
Depressive symptoms	\$2,931,702	1.75

Next, in **Exhibit 17**, we explore the sensitivity of cost savings to varying either the assumption about the rate of annual decline in the effectiveness of HUBS or regarding our assumption about the discount rate. If the percent rate of annual decline is assumed to be 15 percent (instead of 10 percent), then projected net cost savings reduce considerably, and the BCR in this case is 1.37. Similarly, increasing the discount rate from 3 percent to 5 percent also reduces projected cost savings.

**Exhibit 17: Cost Savings If the Rate of Effectiveness Decline or Discount Rate Are Varied**

Event	Net Cost Savings	Benefit-Cost Ratio (BCR)
<b>Original Net Cost Savings=\$3,022,369 and BCR=1.80</b>		
Percent annual decline in effectiveness is increased from 10% to 15%	\$2,307,448	1.37
Discount rate is increased from 3% to 5%	\$2,718,768	1.62

**3.3 GOAL 3: IMPACT OF HUBS ON HEALTH AND WELL-BEING OUTCOMES**

By helping older Baltimoreans live safely in their homes, by connecting them to needed home repair and other supportive services, HUBS is expected to improve the health and well-being of its clients. Currently, HUBS as a whole does not collect data to track the impact of their interventions on outcomes of interest. Each HUBS site and HUBS partner collects its own data, which are usually programmatic in nature and useful in tracking clients served and services provided under the program. However, two HUBS programs, Cities for All Ages and the Green



& Healthy Homes Initiative collect some data that we use to investigate the impact HUBS is having on advancing the health and well-being of its clients.

Additionally, client interviews conducted as part of the Efficiency Study help backdrop this analysis. Many clients stated that HUBS interventions had a positive impact on their well-being. For example, one client said:

*My quality of life is defined as how you feel, it's improved because I don't have to worry about certain things. Living two years without heat and now having a working thermostat was really a blessing.*

Another client, in response to a question about how HUBS has helped them, responded by saying:

*A lot and I guess you want to know what I mean by a lot. I'm partly blind and can only see from one eye. HUBS worked on my bathtub and they gave me a step stool to get into bathtub and shelves. It is much safer to move around and when we went around the steps they provided another banister to the other wall.*

In the remainder of this section, we discuss impact estimates using quantitative data from CAA and GHHL.

### **3.3.1 IMPACT ESTIMATES USING CITIES FOR ALL AGES (CAA) DATA**

We use data collected by the CAA program to estimate the impact of HUBS on two outcomes—fall-prevention efficacy and general well-being—using pre-post regressions. CAA provides fall-prevention information, safety repairs, referrals to supportive services, and occupational therapy (OT) to Baltimore senior citizens aged 65 and over. CAA is one of the programs to which referrals are made by HUBS for Baltimore older adults needing such services. Even though clients served by CAA are a subset of HUBS clients, they form a good sample to study the potential impact of HUBS overall. This is because there is a strong overlap between the services provided by CAA and other programs to which HUBS clients are referred. The main difference is that CAA also offers OT to many of its clients, whereas the other programs do not. Therefore, in our analysis, we present results both for the full CAA sample and for the subsample of CAA clients who do not receive OT, with a greater focus on the latter. Impact estimates for clients without OT are more likely to be representative of the impact of other



programs to which clients are referred and assuming that all HUBS clients receive OT could overestimate the impact of HUBS overall.<sup>51</sup>

### **Data Description**

We use data collected by CAA in Year 4 (calendar year 2016) and Year 5 (calendar year 2017) of program operation. The data we use were retrieved from CAA's online drive on November 6, 2018. We focus on Years 4 and 5 of CAA because all referrals made to CAA were from HUBS in these two years. Data collected by CAA for program monitoring includes, among a few other items, client identifiers, age, dates at which the client's case was opened and closed, a description of home repairs needed by the client, the cost of home repair, whether or not the client received OT services, whether or not the client has a caregiver, whether or not the client was a veteran, number of case worker visits/phone calls, and pre and post averages of client responses to questions measuring general well-being, falls efficacy, and ability to perform Activities of Daily Living and Instrumental Activities of Daily Living (ADL/IADL). We focus on falls efficacy and general well-being as outcomes of interest since the ADL/IADL outcome is more relevant to the OT aspect of the CAA program.

In **Exhibit 18** below we detail the sample sizes that we utilize in our calculations.

**Exhibit 18: Sample Sizes in CAA data**

	Total # of Clients	# With Falls Data	# With General Well-Being Data
Year 4	253	196	198
Year 5	246	117	119
Total	499	313	317

As can be seen in **Exhibit 18**, after factoring in missing data for the two outcome variables, across Years 4 and 5, we analyze data on roughly 313–317 CAA clients.

Next, we describe how the two main outcome variables are constructed and collected by CAA:

- 1. Outcome-variable construction.** CAA reports pre and post data on variables measuring falls efficacy and general well-being. For falls efficacy, clients are first asked about how confident they are about being able to do a list of 10 activities without

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<sup>51</sup> Nevertheless, the impact on the subset of HUBS clients who do receive OT via CAA is also part of the impact of HUBS overall. Therefore, the “true” impact estimates for HUBS, if they were measured for a representative sample of HUBS clients, would likely lie between impact estimates obtained by assuming no client receives OT and estimates obtained by assuming all clients receive OT. However, they would be closer to the impact estimates obtained by assuming no client receives OT since a majority of HUBS clients do not receive OT.

falling.<sup>52</sup> For each activity, the client reports efficacy on a scale varying from 1 to 10, with 1 being very confident and 10 being not confident at all. CAA reports a pre and post average across the list of 10 activities. The falls efficacy average is, therefore, a number that can vary from a minimum of 1 (very confident) to a maximum of 10 (not confident at all). **Reductions in the average imply an increase in falls efficacy or a reduction in falls inefficacy.**

Similarly, for general well-being, clients are asked 6 questions measuring their quality of life. The first question asks them to rate their overall quality of life at the present time on a scale varying from 1 (very poor) to 5 (very good). The other 5 questions elicit the clients' opinion, on statements regarding their quality of life,<sup>53</sup> on a scale of 1 (strongly disagree) to 7 (strongly agree). CAA reports a pre and post average across the list of 6 questions. The general well-being average is, therefore, a number that can vary from a minimum of 1 (lowest measure of well-being) to a maximum of 6.7 (highest measure of well-being). **An increase in the average implies an increase in general well-being.**

2. **Data collection.** CAA collects pre-data prior to the intervention and post-data at the time of closing the client case. Averaging across clients, the length of time between the two rounds of data collection is approximately 4–4.5 months.

### ***Impact Estimates***

We estimate the impact of the CAA program on HUBS clients using pre-post regressions. The regression specification is outlined in Appendix B. Since pre-post regressions utilize repeated measurements of outcomes for the same set of clients, impact estimates from these regressions are not biased by fixed differences across clients, and the regressions account for the fact that different individuals start off with different baseline/pre-intervention levels of falls efficacy/well-being.

In **Exhibit 19**, we present impact estimates from CAA data for the full sample and for the sample without OT, which is more relevant for understanding the overall impact of HUBS. As can be seen, impact estimates for the sample without OT are somewhat smaller than for the full sample, although both sets of effects are large and statistically significant ( $p < 0.01$ ). The impact

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<sup>52</sup> The ten activities are: (i) taking a bath/showering, (ii) reaching into closets or cabinets, (iii) walking around the house, (iv) preparing meals requiring carrying heavy or hot objects, (v) getting in and out of bed, (vi) answering the telephone, (vii) getting in and out of a chair, (viii) getting dressed or undressed, (ix) personal grooming (e.g., washing face), (x) getting on and off the toilet.

<sup>53</sup> These statements are: (i) "In most ways my life is close to my ideal", (ii) "The conditions of my life are excellent", (iii) "I am satisfied with my life", (iv) "So far I have gotten the important things I want in life", (v) "If I could live my life over, I would change almost nothing".

on falls efficacy is larger than the impact on general well-being, which is in line with the nature of CAA interventions. For the sample without OT, post the CAA intervention, on average, falls inefficacy is lower by 0.583 points, which implies that relative to the baseline mean falls efficacy is higher by around 32.63 percent. For the same sample, on average, the post-intervention general well-being score is higher by 0.263 points. This implies that relative to the baseline mean, general well-being increases by around 5.42% post being served by the CAA program.

**Exhibit 19: Impact Estimates from CAA Data**

Variable	Full Sample	Sample w/o OT
<b>Falls Inefficacy</b>		
Effect of CAA	-1.360*	-0.583*
Baseline Mean	3.051	1.788
Effect Size Relative to Baseline Mean	44.56%	32.63%
Number of Observations	313	144
<b>General Well-Being</b>		
Effect of CAA	0.341*	0.267*
Baseline Mean	4.649	4.921
Effect Size Relative to Baseline Mean	7.33%	5.42%
Number of Observations	317	145

Note: \* denotes statistical significance at the 1 percent level.

In **Exhibits 20, 21, and 22** below we restrict our estimations only to the sample without OT. In **Exhibit 20**, we look at whether CAA program impacts were larger in Year 5 versus Year 4. It is possible that Year 5 estimates are larger than for Year 4 if more experience running the program leads to better outcomes. For CAA, we do not find this to be the case.

**Exhibit 20: Impact Estimates from CAA Data, by Year (Sample w/o OT)**

Variable	Year 4	Year 5
<b>Falls Inefficacy</b>		
Effect of C CAA	-0.615*	-0.522*
Baseline Mean	1.877	1.614
Effect Size Relative to Baseline Mean	32.75%	32.36%
Number of Observations	95	49
<b>General Well-Being</b>		
Effect of CAA	0.248*	0.303*
Baseline Mean	4.844	5.068
Effect Size Relative to Baseline Mean	5.11%	5.97%
Number of Observations	95	50

Note: \* denotes statistical significance at the 1 percent level.

In terms of effect sizes relative to the baseline mean, the impact of the program is very similar for both years, and the regression point estimates for Year 5 are not statistically different from those in Year 4.<sup>54</sup> It is not clear why this is the case, and several explanations are possible. For example, it could be that the composition of clients served in Year 5 was different than that in Year 4. If more needy/worse-off clients were served by HUBS in Year 5, then that could explain why the same intervention could be less effective. It could also be that a larger time horizon is required to measure increases in program experience.

In **Exhibit 21**, we look at impacts by age category to investigate whether the CAA program was more effective among relatively younger or older HUBS clients. While the impacts are somewhat larger for the 65–74 age-group of clients, the difference across the two age categories are small and not statistically different.

**Exhibit 21: Impact Estimates from CAA Data, by Age Category**  
(Sample without OT)

Variable	65 to 74	75 and Above
<b>Falls Inefficacy</b>		
Effect of CAA	-0.623*	-0.497*
Baseline Mean	1.859	1.650
Effect Size Relative to Baseline Mean	33.48%	30.10%
Number of Observations	71	60
<b>General Well-Being</b>		
Effect of CAA	0.301*	0.208*
Baseline Mean	4.738	5.196
Effect Size Relative to Baseline Mean	6.36%	4.00%
Number of Observations	72	60

Note: \* denotes statistical significance at the 1 percent level.

Finally, in **Exhibit 22**, we look at whether impact estimates differ across clients with more extensive home repair (and hence those with greater need) when compared with clients with less extensive home repair. The “extensiveness” of home repair is proxied by the cost of home repair. The idea behind this exploration is to see whether certain types of interventions among certain types of clients are more effective than others.

<sup>54</sup> This result is derived from including an interaction between the ‘post’ indicator and the ‘year’ indicator in the regression model. The interaction term is insignificant, indicating that the point estimates for Year 5 are not statistically different than for Year 4. This result is omitted for brevity but is available upon request.

**Exhibit 22: Impact Estimates from CAA Data, by Cost of Home Repair  
(Sample without OT)**

Variable	Less than \$500	\$500 or More
<b>Falls Inefficacy</b>		
Effect of CAA	-0.588*	-0.586*
Baseline Mean	1.857	1.594
Effect Size Relative to Baseline Mean	31.66%	36.74%
Number of Observations	108	35
<b>General Well-Being</b>		
Effect of CAA	0.297*	0.187
Baseline Mean	4.884	5.047
Effect Size Relative to Baseline Mean	6.09%	3.71%
Number of Observations	109	35

Note: \* denotes statistical significance at the 1 percent level.

There is some suggestive evidence, from the general well-being estimates, that the program is more effective among clients who need and get smaller home repairs as opposed to clients with more extensive needs. This difference, however, is only apparent when looking at the ‘general well-being’ indicator<sup>55</sup>.

### 3.3.2 IMPACT ESTIMATES USING GREEN & HEALTHY HOMES INITIATIVE DATA

To supplement the findings from the CAA data, IMPAQ worked with another HUBS partner, GHHI, to investigate the impact on health and well-being outcomes for clients being served under this program. GHHI serves older adults in the Baltimore area by providing in-home risk assessments, hazard intervention and remediation services, as well as energy efficiency and weatherization services. IMPAQ worked with GHHI to devise questions within their follow-up survey in order to gain feedback on client perceptions regarding certain health and well-being outcomes.<sup>56</sup> GHHI attempted to collect data from about 110 clients; however, only 44 clients could be reached. Of these 44 clients, roughly 66 percent were referred by HUBS. Data on the outcomes questions presented below were collected from between 32 and 36 clients.

<sup>55</sup> Note that the impact for the ‘\$500 or more’ group is not statistically significant for the ‘general well-being’ indicator. Since the effect size is small relative to other effect sizes, there may be power issues because of the small sample size.

<sup>56</sup> A more rigorous impact assessment was not feasible due to the lack of well-defined baseline data around which a follow-up survey could be constructed. For example, in collecting data related to falls, the baseline survey did not specify a “look-back” period. The specification of a look-back period at follow-up would have rendered the two sets of responses non-comparable, and data collected without a look-back period would be difficult to interpret in the context of the intervention.

**Exhibit 23: GHHI Client Feedback on Improvement in Health/Well-Being Outcomes**  
**[Number of GHHI Respondents (%)]**

<b>Outcomes</b>	<b>Improved substantially</b>	<b>Improved moderately</b>	<b>Improved only a little</b>	<b>Remained the same</b>	<b>Worsened</b>	<b>Total</b>
Ability to move safely around the house	15 (41.67%)	5 (13.89%)	4 (11.11%)	12 (33.33%)	0 (0%)	36 (100%)
Overall health	3 (8.57%)	7 (20.00%)	3 (8.57%)	22 (62.68%)	0 (0%)	35 (100%)
Ability to breathe	5 (14.71%)	2 (5.88%)	2 (5.88%)	23 (67.65%)	2 (5.88%)	34 (100%)
Mobility while entering/exiting the house	14 (41.18%)	3 (8.82%)	4 (11.76%)	13 (38.24%)	0 (0%)	34 (100%)
Ability to socialize	7 (21.88%)	3 (9.38%)	3 (9.38%)	19 (59.38%)	0 (0%)	32 (100%)
Physical strength/endurance	4 (11.43%)	8 (22.86%)	7 (20%)	15 (42.86%)	1 (2.86%)	35 (100%)
Activities of Daily Living (ADL)	11 (32.35%)	6 (17.65%)	3 (8.82%)	13 (38.24%)	1 (2.94%)	34 (100%)
Anxiety regarding home maintenance	7 (21.88%)	2 (6.25%)	3 (9.38%)	18 (56.25%)	2 (6.25%)	32 (100%)

Note: Total sample size differs by outcome because of more missing responses for some questions.

Because of the relatively small sample size, we do not restrict our analysis sample to only those clients referred by HUBS but attempt to glean insights across all clients receiving comparable services.

Here, we report on client feedback received as part of the client survey. First, clients were asked to rate their overall satisfaction with services provided by GHHI. A little over 81% of clients stated that they were “completely satisfied”.<sup>57</sup> Next, they were asked about their perceptions regarding how certain outcomes have improved/changed since the completion of GHHI modifications in their home. Tabulations from these questions are presented in **Exhibit 22**. For

<sup>57</sup> The other options were (i) neither unsatisfied nor satisfied, (ii) somewhat satisfied, and (iii) somewhat unsatisfied.

several outcomes, a majority of clients stated that their situation had improved. For the two mobility-related outcomes, improvements were particularly notable. Overall, 67 percent of clients stated that their “ability to move safely around the house” had improved,<sup>58</sup> with 42 percent reporting that this outcome had “improved substantially”. Similarly, for the outcome “mobility while entering or exiting the house”—overall 62 percent of clients stated that their situation had improved, with 41 percent reporting that their situation had “improved substantially”. A majority of clients also reported improvements in: their ability to perform Activities of Daily Living (59 percent) and physical strength and endurance (54 percent). For other outcomes, such as perception regarding improvements in overall health, ability to socialize, and anxiety regarding home maintenance, between 37 and 41 percent of clients reported that their situation has improved. For four of the outcomes in **Exhibit 23**, a small number of clients (1–2 clients), state that they believe their situation has worsened since the completion for GHHI activities. The reason behind this cannot be ascertained with the data at hand. It is possible that for these clients, their health and well-being situation deteriorated at a pace faster than could be fully addressed by GHHI. On the other hand, it is also possible that the program had unintended, negative consequences for a small number of clients.

The survey also asked clients about whether, since completion of GHHI modifications in their home, they have: (a) noticed any change in the temperature in their home and (b) seen the cost of their utility bills change. In response to the former question, 53 percent of clients stated that the temperature in their homes has improved, and 32.25 percent stated that they have seen a change in their utility bills.

In the survey clients were also asked about needs they have that are yet to be addressed. About 15 out of 44 clients stated that a need was yet to be addressed. These needs ranged from fall prevention to lead abatement to weatherization.

### 3.3.3 LIMITATIONS AND STRENGTHS

The main limitation of both sets of analyses presented above is that it is specific to the subset of HUBS clients served by each of the two programs and does not cover all clients served by HUBS across all sites/partners. A methodological limitation in the CAA data analysis is the lack of a comparison or a control group, which makes it more difficult to accord a causal interpretation to the impact estimates. Moreover, a substantial proportion of outcome data is missing, which can yield biased estimates because it is possible that the subset of clients who did not report data on outcomes had a worse experience with the program. The GHHI estimates

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<sup>58</sup> Overall improvements are recorded as a sum of percentages across the three “improvement” buckets—“improved substantially”, “improved moderately”, and “improved only a little”.

are more suggestive/exploratory in nature as compared to the CAA estimates and are based on self-reported client perceptions about the improvements in outcomes since GHHI modifications took place in their home. Another limitation across both surveys is the fact that clients receive a variety of different services, which makes it difficult to track a common set of metrics relevant for all clients. This aspect of the program should be considered seriously when planning for outcome data collection in the future.

The strengths of the overall analysis lie in the pre-post measurement of outcomes in the CAA data. Because the same individuals are followed over time, this approach is more rigorous than estimates from cross-sectional data and provides reliable impact estimates of the program.



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## 4. RECOMMENDATIONS FOR REPLICATION

An important objective of the evaluation was to gain a clear understanding of what programmatic structures and operations are key to the success of the HUBS program and how those can be used to replicate HUBS in geographic areas beyond Baltimore City. We utilized findings from both the Efficiency and the Impact studies and integrated findings from focus groups held during the Replication Forum to identify aspects of the program tied to its success and to discuss other important factors, such as program sustainability—current and future—to consider and plan for when replicating HUBS in another location.

### ***Methods***

Key informant interviews included questions about how to improve HUBS, what worked well, what could have been done differently, and what factors should be considered if HUBS were to be replicated. Interview responses were analyzed and synthesized with the findings from the Efficiency and Impact studies to develop a logic model that depicts the key resources/inputs, activities, and outputs needed to replicate the HUBS program.

Initial recommendations for replication were discussed with members of Civic Works, the HUBS Leadership Team, HUBS grantee site staff, the HUBS Advisory Committee, the IMPAQ evaluation team, and other key stakeholders during a Replication Forum held on December 10, 2018. The Replication Forum provided an opportunity for stakeholders in the HUBS program to participate in structured focus groups with discussions focused on recommendations for HUBS replication outside of Baltimore City and sustainability of the current HUBS program (see discussion prompts in **Appendix C**). Input from these focus groups was used to further develop recommendations for replication and include specific discussions of database needs and sustainability in Sections 4.2.6 and 4.2.7, respectively.

### ***Background***

In 2015, the Leonard and Helen R. Stulman Charitable Foundation and the Hoffberger Foundation awarded \$2.9 million in Operational Grant funding over the three years of the program. The funds opened an opportunity for HUBS to establish a coordinating body and to hire social workers with expertise serving the elderly, provide outreach and application assistance, and deliver housing rehabilitation and other social services to 1,125 low-income seniors. With the operational foundation secured, HUBS could move forward to create a coordinated system of triage and delivery combining government and nonprofit resources, grant and loan programs, pursue additional capital resources to expand the pool of available funds for seniors' housing rehabilitation.

From the Operational Grant funding, the Leadership Team received a \$5,000 stipend for overhead costs and their joint participation in the coordinating body. The HUBS Coordinator who was hired through the HUBS Administrator Civic Works received salary and benefits for their role as liaison between each site and the leadership team. Additionally, each site received funding to hire a social worker who could address the goal of 75 home repairs per year.

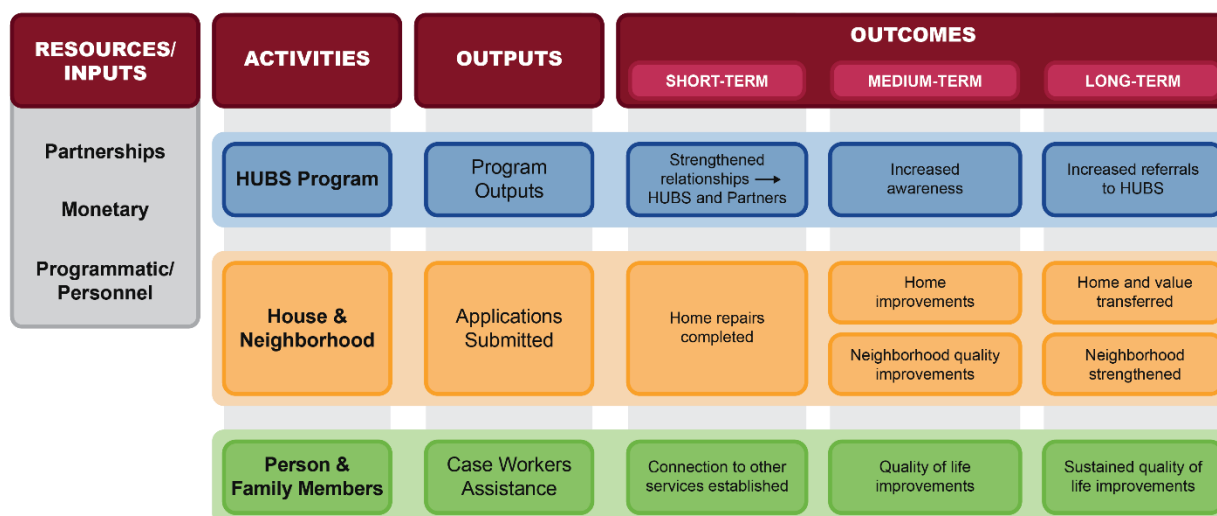
While HUBS had achieved success in locating vulnerable older adults and identifying services that they were eligible for, the initiative was constrained by 1) Limited funding that meets the needs of the most vulnerable older adults; and 2) Systemic problems at the city level including large numbers of applications, staff turnover, a bidding process that is confusing for homeowners and a lack of experienced rehab techs, which led to the backlog of clients needed to be served. As part of the HUBS Expansion project, HUBS partner organizations were awarded \$3.5 million in Capital Grant funding. The funds were distributed to each site based on their size and capacity of addressing cases. All sites had a mutual goal of treating the Cities waitlist by completing a total of 600 homes.

As a result of the expansion project and in recognition of the need for an experienced rehab tech, the Stulman Foundation granted HUBS an additional \$66,000 operational funding in 2017 to hire a Contracting Coordinator to be placed at Baltimore Housing to assist seniors in the housing rehabilitation process.

## 4.1 LOGIC MODEL TEMPLATE

Communities seeking to replicate HUBS must have the key *resources and inputs* and the ability to provide and coordinate needed *activities* in order to be good candidates for this program. These are all elements of the logic model presented in **Exhibit 24** below, which is a distillation of the logic model presented at the beginning of this evaluation report (**Exhibit 1**). For any parties seeking to replicate HUBS in another location, this model should help build an understanding of the program's goals, needed inputs/resources and activities, as well as the *expected outcomes* against which success may be measured as part of ongoing program monitoring and evaluation.

**Exhibit 24: HUBS Logic Model Template**



As shown in **Exhibit 24**, the key inputs/resources for any HUBS model will be:

- **Partnerships**, including the Program Owners and Administrator, city/state programs, organizations providing repairs, sites, referral partners, Advisory Committee Members, community partners, contractors, and funders.
- **Funding sources**, both public and private.
- **Programmatic/personal resources**, such as sites, case workers, and the effort and time involved in supporting the program.

The inputs/resources above will feed specific activities and outputs of the HUBS program in three programmatic tiers, represented by the three colored rows of the logic model. These tiers are: HUBS program administration, home repairs and neighborhood stabilization, and services for the client and their family members. Each tier should be focused on conducting activities and producing short-, medium-, and long-term outcomes specific to that tier, as presented below.

- **HUBS Program Tier.** Administrative *activities* of the program should produce program outputs and documentation. *Expected outcomes* are that this will strengthen the relationships of the partners involved in the program, leading to increased awareness of the program in the community, and thus increased referrals to the program.
- **House and Neighborhood Tier.** Application and assessment *activities* should result in home repairs, modifications, and updates. *Expected outcomes* are that the home repairs, modifications, and updates are complete, there is an improvement in the livability of the home and the neighborhood surrounding it and, ultimately, the home

may be transferred to the person's family members and the neighborhood will avoid blight and be strengthened.

- **Person and Family Members Tier.** Screening and assessment *activities* should result in applications for additional services. *Expected outcomes* are that the person will be connected to additional services, which will improve their quality of life, and ultimately provide sustained health and quality of life improvements.

## 4.2 PLANNING FOR PROGRAM REPLICATION

Before replicating the HUBS program, interested parties should begin by identifying the partner organizations that will own the program (Program Owners) and that will be ultimately responsible for program oversight and administration. Program owners should begin by conducting a needs assessment and analysis of resources in their community to determine if replication is appropriate. Once it has been determined that replication is appropriate and that needed program partners and funding are available, Program Owners should begin the strategic planning process, building their network, assembling an Operating Team, building a universal database, and planning for program evaluation and sustainability.

### 4.2.1 IDENTIFYING THE PROGRAM OWNERS AND ADMINISTRATOR

The first thing interested parties must do is to identify partners in their community that will come together to serve as the “Program Owners,” similar to the HUBS Leadership Team. Program Owners will be responsible for planning for program replication (i.e., leading the needs assessment and resource analysis, strategic planning, fundraising), building the program and its network, and program oversight. Within the group of Program Owners, one organization should agree to take on the role of program “Administrator”—managing program/grant activities and serving as the program’s administrative body and central contact, similar to the role Civic Works currently plays. These roles will be discussed further in Section 4.2.5.

Program Owners should have a shared mission to provide home repairs for older adults to help them to safely age in place. Similar to the current HUBS Leadership Team, the Program Owners group should be made up of organizations that are stakeholders in the HUBS process—providers of home repair services, city/state housing entities, etc. In the case of HUBS, Rebuilding Together Baltimore, Neighborhood Housing Services, and Green & Healthy Homes Initiative have experience coordinating home repairs for low-income individuals—many of whom were older adults—and thus already understood some of the intricacies involved in completing these tasks in Baltimore. These organizations have sites across the U.S., and are thus a potential starting place for interested communities that also have these connections. However, if

these specific organizations do not exist in a community, any organization with a mission to provide home repairs for low-income individuals could be considered.

In addition, having partners from any city/state programs providing access to home repair services is key, as they are the keepers of the public funding available for this work. The HUBS program has a close relationship with representatives from the Baltimore City Department of Housing and Community Development, a key funder of home repairs in the city. This collaboration has given the city better insight into and understanding of the barriers clients are facing, including any bottlenecks that may be slowing down the city's application and home repair processes. The city, in turn, can easily make HUBS partners aware of what programs are being under- or over- utilized so they can be more strategic about applications for assistance. Having these kinds of insights—both for the HUBS program and the city/state programs—will aid in process improvement across the system.

#### **4.2.2 NEEDS ASSESSMENT AND RESOURCE ANALYSIS**

Before deciding to replicate the HUBS program, it is important to determine two things:

(1) Is there a need for this type of model in our community? (2) Does our community have the necessary resources (i.e., community partners, funding sources, programmatic and personal resources) to support this program? The Program Owners should conduct a needs assessment and resource analysis consisting of the following steps:

1. Identify the problem.
2. Identify the level of need in your community.
3. Assess available community partners.
4. Assess the amount of funding available through public sources, potential in-kind sources via partners, and grant or foundation monies.
5. Document gaps in resources and partnerships.

##### ***Identifying the Problem***

The HUBS program was created as a response to known challenges in identifying and referring clients needing home repairs through already available public programming and ensuring home repairs were completed. Initially, the mission of the program was to streamline these processes to help more older adults receive home-repair services. The model is now an entry point for assessing individuals' service needs, assisting with applications to relevant programs, and coordinating with partners, funding streams, and contractors to ensure that these clients receive the home repairs and additional services they need in order remain safely in their homes. Program Owners should assess their current system to determine if similar problems exist.

### ***Identifying the Level of Need in the Community***

While the HUBS Leadership Team identified the need for the program after many discussions about the inefficiencies of the service system, they did not fully understand the level of need in Baltimore until after the program was created. Program Owners should determine how many low-income older adults are potentially in need of housing-repair services and unable to obtain them. As demonstrated in the Impact Study, estimating how many older adults are loan ineligible or are under significant housing-cost burden is one way to better understand the potential need for HUBS services. These estimations should also help Program Owners to understand if there is enough need to justify creation of a program.

After launching, the HUBS Leadership Team quickly learned that the resources they had initially identified were insufficient to adequately meet the level of need, in terms of both number of households and complexity of repairs. Fortunately, HUBS was able to obtain additional funding from the Weinberg Foundation to help close this gap in resources. However, HUBS is still working to fulfill needs for some services they did not initially plan for, such as bed-bug remediation. Thus, a needs assessment that takes into account the types of services potential clients would need, and feel they need, will also help Program Owners better prepare required resources and funding ahead of time so they are not caught off-guard.

### ***Assessing Available Community Partners***

Partnerships are integral to the functioning of the HUBS program and one of the key inputs for its success. As the logic models show, the key partners for the HUBS program are the members of the Leadership Team, city/state programs, organizations that already provide home repairs, HUBS sites, the contractors completing the home repairs, referral partners, Advisory Committee Members, community partners, and funders. Many of these organizations were already aware of each other and working closely within the system as partners on various activities, but they came together in a more focused way when the HUBS program was created. Program Owners should assess their community to determine if the needed partnerships can be developed or already to exist and which partnerships will be most integral to the functioning of the program.

### ***Assessing Funding Sources***

Early grants from the Stulman and Hoffberger Foundations allowed for the funding of key network and site staff to perform the work of the HUBS program. In addition, after the early successes of HUBS, the Weinberg Foundation provided a substantial investment over a multi-year period to be used to assist with home repairs and to fund the intake coordinator position at Civic Works. This level and depth of funding may not be feasible in all situations. However, securing a reliable source of funding that can be drawn upon for at least three years is important as it will allow time for program start-up. As with any program, implementers should create a

business model and annual fundraising plan to manage revenue and monitor program activities to ensure sustainability after initial start-up.

At minimum, funding will be needed for site case workers, an intake coordinator, and administrative costs for the Program Owner. Ideally, there will also be funding to fill gaps identified during the resource analysis. For example, the HUBS program found that additional funding was needed to serve existing clients who were on the waitlist for city services and to more quickly address emergency home-repair needs.<sup>59</sup>

*Questions to ask:*

- *How much funding is available through public/non-profit resources?*
- *What repairs, upgrades, and modifications can be covered with the funding?*
- *Are there gaps between the identified needs and what this funding can cover? If so, how much money will be needed to fill those gaps?*

In addition to program-specific funding, Program Owners should have a firm grasp on the trajectory of any funding relied upon from established city, county, and state programs and determine whether this funding has an expiration or limitation that will need to be taken into consideration. They should also determine if any other non-profit housing programs exist that can provide funding or in-kind services to assist with the work. Finally, the Program Owners should document these funding sources and include details about what the money does and does not cover, who is eligible, how it can be accessed, expected processing/wait-times, and its potential limitations—are current program operators prepared for an influx of applications?

### **Gaps**

Finally, once Program Owners have taken stock of the level of need and available partners and funding, they should identify what gaps remain. For example, before HUBS was launched the Leadership Team realized there was need for services focused on legal issues that prevent older homeowners from successfully aging in place, thus Project Household<sup>60</sup> was created. Program Owners should ask themselves what other partner organizations may be needed and whether there is truly enough publicly available funding to meet the level of need identified.

### **4.2.3 STRATEGIC PLANNING**

Once Program Owners have determined that there is need for a HUBS program and have verified they have the necessary community partners and funding sources to build it, they

<sup>59</sup> Civic Works. Leonard and Helen R. Stulman Charitable Foundation, Grant Report (Preliminary). 2018.

<sup>60</sup> Project Household is a collaboration of four legal-services organizations that provide legal services for low-income older adults in Baltimore to preserve homeownership and sustainable housing.



should begin the strategic planning process. Discussions during the Replication Forum stressed the importance of the strategic planning process for a program as multifaceted as HUBS. This process will help to clarify the program's mission and priorities, provide a sense of direction, and outline measureable goals. While there are an endless number and combination of strategic planning steps, those listed below are recommended for a HUBS replication, at a minimum.

1. Identify the program's mission and vision.
2. Create a roll-out plan.
3. Plan for program monitoring and evaluation.

### ***Mission, Vision, and Core Values***

Defining the program's core mission is important because it defines who is served, what the program does, and the impact it makes. Putting a succinct set of words to this mission clearly defines the program to supporters, potential funders, and the public. In tandem with development of the mission statement, Program Owners should also develop a vision statement. The vision statement should address a larger community-focused impact they hope the program will achieve. Both mission and vision statements serve as roadmaps to help team members and stakeholders stay focused on the program's purpose and goals and will help to prioritize actions when issues arise.

### ***Roll-Out Plan***

During the Replication Forum, many stakeholders identified the need for a defined roll-out plan for the program. In Section 4.2.2 we discussed the importance of conducting a needs assessment and resource analysis. The information gathered during this phase of planning should be used to develop the program's

roll-out plan. Program Owners should be able to clearly articulate the problem they seek to resolve, the level of need for services in their community, projected costs, expected funding (i.e., public, in-kind, foundation), and potential partners. This information should be brought together in a timeline with specific steps for the roll-out process to assist with program start-up. Two areas of planning specific to the HUBS program—building the HUBS network and assembling the HUBS operating team—are discussed in detail in Sections 4.2.4 and 4.2.5, respectively.

#### *Potential steps in the roll-out process:*

- *Secure funding*
- *Build the HUBS network*
- *Define team roles and responsibilities*
- *Assemble the HUBS operating team*
- *Document HUBS services and processes*
- *Train case workers*
- *Plan for program evaluation*

### ***Program Monitoring and Evaluation***

In the beginning, Program Owners should establish how they plan to monitor the program to determine whether its goals and objectives are being achieved in the expected timeline.

Monitoring should be completed on a regular basis to ensure that barriers to goal achievement are identified and addressed, if possible. In addition, metrics should be developed to measure the program's success in the short, medium, and long term. Program Owners should determine the data needed to support these metrics, and ensure these data can be obtained.

#### **4.2.4 BUILD THE HUBS NETWORK**

It is impossible to replicate exactly the network that HUBS has established. However, we will discuss the key types of organizations that should be involved, when possible. Building a strong network, both formal and informal, was key to the success of the HUBS program. The network created efficiencies in the system, which helped increase the number of older adults served and expanded the scale and impact of home-repair services in Baltimore City. Many of the network partners were already working together and were the first to recognize the need for a HUBS-like program. It is likely that the network that is developed in future iterations of HUBS will flow naturally from already established relationships and known gaps in needed services.

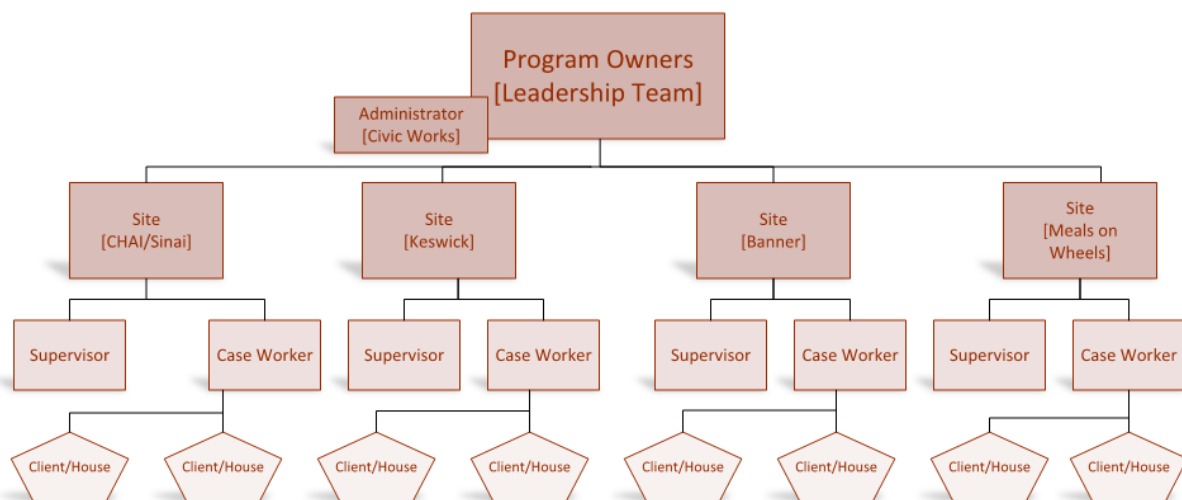
The core of the HUBS program's operating team is made up of the Leadership Team, including the HUBS Coordinator at Civic Works, HUBS sites with case workers and their supervisors, and the contractors conducting the home-repair services (see Section 4.2.5 for further detail on the Operating Team).

In addition to its formal network, HUBS has identified dozens of partners in their informal network (see Appendix A) that are also invested in helping older adults stay in their homes or are helping to provide other needed services. These partners include housing advocacy organizations, hospitals, programs providing mental health services, bed-bug remediation services, universities, city and state aging services, and other social services organizations. To fill an identified gap in partners, a group of organizations received grant funding to provide legal services affecting home ownership to HUBS clients (Project Household mentioned earlier). Recently, the Leadership Team pulled together a subset of these partners to create a HUBS Advisory Committee to help solidify relationships and assist with program oversight. Partners from the larger network are key to providing additional services that are needed and can serve as useful referral sources.

#### 4.2.5 ASSEMBLE THE HUBS OPERATING TEAM

Interviews with a variety of stakeholders in the HUBS process revealed that the way HUBS is structured—the Leadership Team as Program Owners with Civic Works as the Administrator and sites embedded in other community organizations where there is at least one case worker dedicated 100% to the HUBS process—greatly contributes to the program’s success (see HUBS Operating Model in **Exhibit 25**).

**Exhibit 25: HUBS Operating Model**



#### ***Program Owners and Administrator***

The Program Owners should provide oversight, direction, and support for program operations. Program Owners should serve as the local champions of the program, exerting the necessary energy to help with strategic planning, network building, fundraising, and the other steps involved in program creation.

As discussed in Section 4.2.1, from among the Program Owners, one organization should be designated as the Administrator, tasked with managing program/grant activities and serving as the program’s administrative body and central contact. This organization will also serve as the point of entry to the program, handling the initial screening of clients for eligibility and assigning them to sites based on zip code. One lesson to be learned from HUBS’ initial start-up of the program is to plan for a specific Intake Coordinator position to reduce the backlog of cases at the intake level.

## ***Sites***

HUBS sites should be embedded in existing community organizations that provide services that in some way help older adults to age safely in their homes. Having other organizations host the sites is useful because they already have structures in place to support the work, making setup quicker and less costly. In order to solicit applicants to host the sites, the HUBS Leadership Team released an RFP with their site and case worker requirements. The RFP process allowed for a variety of potential respondents and encouraged out-of-the-box thinking as organizations planned for how the HUBS services could be integrated into their current service-delivery model.

## ***Case Workers and Supervisors***

The site case workers are the linchpins to the HUBS process. If they are struggling to do their job or encounter too many barriers in the system, the program will not succeed. Hiring people with the right kinds of skillsets and background is important. As we learned in the Efficiency Study, case workers must be trained and provided with a detailed program manual and access to shared program materials to assist with onboarding. Their supervisor should also understand program processes and intricacies so they are able to provide support to the case worker when needed.

Since the case workers are embedded in organizations focused on other programming, it is important to provide regular opportunities for peer-to-peer discussions and interactions. HUBS case workers cited regular email and telephone contact with the other site case workers and monthly troubleshooting meetings with the Leadership Team as useful tools for resolving tougher cases and sharing best practices. In addition, it is important that the size of each case worker's caseload is reasonable so they have enough time to develop relationships with clients and still manage applications and contractor repair work. The ultimate goal of HUBS is to ensure a client's home has been repaired or modified in a way that will allow the client to safely age in place. The contractors working on clients' homes are key to this process. Thus, establishing relationships with reliable and trustworthy contractors and managing their work is an essential function of each case worker's job.

HUBS case workers noted that it is often easier when the application process is completed in-person because there is so much documentation that is required, and it is often more effective to communicate about these intricacies face to face. The intake process should be standardized across sites and, if possible, completed in-person with the individual, ideally in their home.

HUBS case workers also noted that the current process for client follow-up after they exit the program is not standardized and that they do not usually have time to devote to this task. It is

imperative for similar programs to develop a standardized process for following up with clients. This will ensure this task is completed in a timely manner so the program is able to gather point-in-time data, which can be used in metrics to evaluate the program. Follow-up should be a quick process that is not burdensome to the case worker and could even be assigned to interns or other staff, if available.

Finally, programs should be clear about what services the program can and cannot help with. As one person explained, *“HUBS isn’t ... going for just home repairs. They are very systems perspective, they look at the whole home which is not just the structure of the home, but what’s going on in the person.”* While this is one of the reasons HUBS is such a vital program, similar programs must also be careful not to overpromise or provide too many services that are outside of the program’s scope. Programs should establish a system for case workers to elevate clients to other resources, using partner connections, if HUBS cannot provide all that is needed. Limiting the scope of programming will ensure that case workers have the capacity to do their job well, take on new clients, and follow up on clients who have already been served.

### ***Client/House***

In the beginning, it is important to define who will and will not qualify for services. This should be based on the eligibility criteria of the programs that are currently available, service area, etc. The criteria should be uniform across the sites in order to lessen confusion and ensure the program’s target audience is being served. The HUBS program’s current process for client outreach and education is fairly minimal. Many of their referrals come through word of mouth, the organizations hosting the sites, or from their referral partners at the MedStar House Call Program and Johns Hopkins. Program Owners should create an outreach plan at the beginning of the program in order to ensure they are reaching those who most need services.

## **4.2.6 UNIVERSAL DATABASE**

Efficiency Study findings suggest that a unified database for client tracking across and within HUBS programs is key to program replication and efficiency. Specifically, the study recommended that exploring options for a universal database that meets sites’ needs for data security, case workers’ collaboration needs, and Civic Works’ requirements for grant reporting should be a high priority. In addition, case workers noted that the current HUBS program’s shared-resources database improved program efficiency and effectiveness. During the Replication Forum, the second discussion topic (see **Appendix C**) prompted discussion of a universal database for HUBS resources and client data. Stakeholder responses to this topic are synthesized and discussed further in this section.

### ***Challenges and Potential Solutions***

Stakeholders during the Replication Forum were prompted to discuss potential challenges to developing and implementing a universal database. Cost was a major concern. A few groups mentioned the potential for funding through local hospitals or building the cost into their initial requests for administrative setup from funders. Many agreed that finding a low-budget and potentially limited-functionality option for basic data storage as a back-up if funding is not available for a high-tech, high-cost option is important. While many stakeholders mentioned drawbacks of the current HUBS program's database, they all agreed that it was better than having nothing.

It was noted that all of the current HUBS sites already had their own unique databases case workers were required to use for client data. Since this will likely be the case for replications of the HUBS program, this is a consideration that Program Owners should plan for and discuss with sites ahead of time. Involving sites and case workers in the design of the database will be key to functionality and will assist with earning their buy-in to the system's success. Two groups at the Replication Forum noted that it would be ideal to build a system that could accept data uploaded from other sources to decrease case workers' need to input the same data in multiple locations, thus decreasing the time burden of data collection.

The final challenge that was noted concerned liability and protected client information. Several groups had concerns about HIPAA-covered and personally identifiable information and the need to ensure these data were secure and could only be accessed by covered personnel. Since HIPAA was such a concern, a few groups suggested avoiding the capture of any medical data covered by the Act. Regardless, Program Owners should plan for proper data-security protocols and address any liability concerns at the outset of the program.

### ***Defining Database Needs and Uses***

Beyond affordability, data security, and functionality, stakeholders at the Replication Forum were prompted to discuss in their groups what information the database should hold and how that information could be used. All groups focused on the need for a client-tracking system that would help the HUBS Operating Team track client cases from start to finish. The information gathered for these cases would include:

- *Intake data*, i.e., client contact information, demographics, health and well-being status, incidence of falls.
- *Case information*, i.e., services received, status of applications, open/close status, status of contractor repairs, referrals for other needs.
- *Follow-up data*, i.e., 3-, 6-, and 12-month follow-up on the client's health and well-being, adequacy of repairs and modifications.

Functionality should also allow for attachments of copies of documents, such as financial documentation, deeds, completed applications, etc. Data captured by the system should be useful for the Operating Team but should also be easily extracted and used for reporting purposes, including metrics to evaluate the success of the program.

#### **4.2.7 SUSTAINABILITY**

The HUBS program's success in Baltimore, and the deep level of need for the program in the community, naturally led to a conversation about sustainability. Program Owners of HUBS replications should plan for sustainability as soon as the program launches. During the Replication Forum, stakeholders were prompted to discuss program sustainability for both the current HUBS program and potential HUBS replications (see Appendix C).

##### ***Serving Subgroups***

Because HUBS is a relatively new program in Baltimore, several groups discussed the need to increase saturation in older adult subgroups, such as specific cultural and racial groups (i.e., Korean, Russian, Latina), LGBT populations, individuals living with AIDS/HIV, faith communities, veterans, etc. Here, there is potential for funding sources that are group-specific and focused solely on the needs of their identified population. For example, one group at the Replication Forum discussed the Home Depot Foundation's Veteran Housing Grants Program, which award grants to nonprofit organizations for the new construction or rehabilitation of housing for veterans.<sup>61</sup>

##### ***Serving Multigenerational Households***

Almost all of the groups at the Replication Forum (4/5) focused on the fact that many of the households HUBS serves are actually multigenerational. Thus, the program is benefitting not only older adults, but also those living with them in their homes. This includes households with older adults taking care of grandchildren or adult children with disabilities and older adults taking care of their parents. Because investing in housing stability broadly can increase family stability, decrease the population of people experiencing homelessness, decrease neighborhood blight, and exert positive effects on a host of other societal issues, this type of programming is attractive to a multitude of funders. Stakeholders felt there was strong potential for identifying additional funder sources beyond those focused on older adults.

##### ***Sliding-Scale Fee Models***

Finally, two groups at the Replication Forum discussed the potential for offering HUBS on a sliding-scale for those above income qualification levels. The money earned from this service

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<sup>61</sup> Link: <https://corporate.homedepot.com/grants/veteran-housing-grants>.

could help to supplement the costs associated with serving lower income individuals. However, in order to support the resulting increased caseload, the program would need to scale up operations and likely connect with additional partners and contractors offering repair services.



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## 5. SUMMARY OF STUDY FINDINGS

Civic Works contracted with IMPAQ International to conduct an evaluation of their HUBS program. Specifically, Civic Works wanted to understand the efficiency and impact of HUBS, as well as the programmatic components necessary to replicate the program successfully in locations beyond Baltimore. This section presents a brief summary of the findings from the Efficiency and Impact studies and provides recommendations for program improvements and replication.

### 5.1 EFFICIENCY STUDY FINDINGS

The Efficiency Study's overall goal was to evaluate the efficiency and effectiveness of the HUBS program and provide recommendations for program improvement and sustainability. We found that, since inception, **the HUBS program successfully achieved its goal of completing repairs and linking older adults to social services in a total of 1,128 homes in Baltimore City.** Achieving this goal, however, required creative problem-solving from all HUBS partners, from the Leadership Team to the funders to the sites. Namely, HUBS partners had to contend with the **challenge of a large, unmet need for home repairs among older adult homeowners** in Baltimore City. Initially, HUBS was intended to coordinate repair requests, identify the appropriate referral program, and assist homeowners with successful applications. It became apparent during HUBS' first year that this was not sufficient to meet clients' needs, with many clients waiting a significant amount of time (in some cases, over a year) for repairs.

In response to this challenge, HUBS partners sought funding that would allow them to directly fund home repairs and alleviate the long wait-times homeowners experienced. This allowed HUBS sites and Leadership Team members to accelerate progress toward and potentially surpass the initial goals of the program. At the same time, HUBS partners continued to face challenges with staff turnover at partner organizations (including key site leadership and case workers), clients with complex needs, and a large, unmet need for urgent home repairs.

Overall, however, the response to these challenges showed **the strength of HUBS' network approach, the creativity of all the HUBS partners in collaborative problem-solving, and the commitment to helping older adults** wanting to live at home to do so safely and comfortably.

## 5.2 IMPACT STUDY FINDINGS

The HUBS impact study was conducted to meet three main goals of the HUBS Leadership Team. These goals were: (a) estimating the need for grant-funded HUBS services in Baltimore City, (b) conducting a cost-benefit analysis simulation of HUBS, and (c) estimating the impact of HUBS on health and well-being outcomes.

To estimate the need for grant-funded services among older adult homeowners in Baltimore City, we worked with several different data-sources. We used year 2016 data from the American Community Survey to estimate the percentage and number of (low-income and all) older adult homeowners in the city and those who are moderately and severely cost burdened in terms of housing costs. We found that there are 20,486 low-income older adults in the City, defined using HUBS income-eligibility criteria. Among them over 50 percent of older adults (N=10,414) face a moderate or severe housing-cost burden. Next, we used data from HUD's Home Equity Conversion Mortgage dataset to analyse reverse mortgages originating in the city. We calculate that roughly 11 percent (N=3,559) of older adults who took out reverse mortgages between 2003 and 2011 are potentially facing equity constraints today. Finally, we worked with data from BidBaltimore on all tax-lien sales made in the City in 2017 and 2018. We computed that in 2018, 13 percent (N=4,256) of older adult homeowners had a tax-lien sale on their property. Therefore, there are **a little over 20,000 older adult homeowners that are in potential need of HUBS services today**. Of these, between **3,559 and 4,286 older adults are most in need because they face difficult constraints on loan eligibility**.

As part of the second goal, we conducted a cost-benefit analysis of the HUBS program. For the cost-benefit analysis simulation, we worked with two hypothetical populations—a HUBS cohort of 375 older adults and a control cohort of 375 older adults. The analysis is based on the idea that older adults in the control group face a “normal” or “baseline” incidence of adverse events, and older adults in the HUBS cohort potentially face a lower incidence of such events, resulting in cost savings to the government and individuals. The potential lower incidence of adverse events in the HUBS cohort is estimated from the literature, drawing from home-modification interventions similar to HUBS. We focus on two main dimensions of potential savings relevant to the program: (a) avoided living/housing costs and (b) avoided healthcare costs of older adults served by HUBS. We calculate, under certain assumptions, that HUBS has the **potential to produce net cost savings of \$3,022,369 over 10 years** in present-value terms. **This amounts to a benefit-cost ratio of 1.80, meaning that for every dollar invested in HUBS, \$1.80 in benefits are realized. It is important to bear in mind that these benefits are realized on account of one year of investment into HUBS.** Since HUBS invests a similar amount every year (to date for 3 years), proportional net cost savings accrue for every year of investment into HUBS.

As part of the third goal, we work with outcomes data from two HUBS partners—CAA and GHHI. We use a combination of pre-post regressions (for CAA) and outcome data tabulations (for GHHI) to estimate the impact of these programs on the health and well-being outcomes of their clients. **From CAA data, we find that post the CAA intervention, on average, falls inefficacy is lower by around 32.63 percent among older adults, relative to baseline. The post-intervention general well-being score is higher by around 5.42 percent, relative to baseline.** Tabulations from the GHHI data show **the program had the greatest impact on mobility**, with about 67 percent of clients reporting an improved ability to move around their homes safely and 62 percent of clients reporting improved mobility while entering or exiting their homes. **Other areas of substantial improvement include: ability to perform Activities of Daily Living** (59 percent reported improvement) and **physical endurance and strength** (54 percent reported improvement). **A large percentage of clients also report improvements in the temperature of their homes, their ability to socialize, their anxiety regarding home maintenance, overall health, and their utility bills.**

### 5.3 RECOMMENDATIONS FOR PROGRAM IMPROVEMENT AND FUTURE EVALUATIONS

There are some areas of improvement that were identified in the course of the evaluations, many of which may also help with program sustainability. In the short term, we recommend that HUBS create a **universal database for collecting HUBS resource and tracking data**, especially for grant reporting. This database should be easy to use and accessible to all HUBS site and program staff. HUBS should also work to streamline the contractor process across all the organizations that are funding home repairs by creating a formal coordinating structure with a designated point of contact. And finally, HUBS case workers and staff recognize the need to better assist clients with urgent repair needs (furnace repair, etc.) and should continue to identify ways to prioritize and fund these repairs more quickly.

In the longer term, HUBS **should seek opportunities and funding to provide ongoing support, beyond home repair, to clients with more complex needs** to ensure they are able to continue to live safely in their homes. This may require HUBS to **add new partnerships** to increase their capacity and maintain ongoing relationships with clients. And finally, as we know from the Impact Study and anecdotal accounts from stakeholder interviews, there are still many potential clients to be served in Baltimore. HUBS staff and partners should continue to **expand their outreach to potential clients and further develop their network** in order to expand their client capacity.

In the future, the HUBS Leadership Team may want to measure the impact of the HUBS program on outcomes such as the number of falls, nursing home admissions prevented, or other health and well-being outcomes. IMPAQ recommends the ideas below for future impact evaluations.

1. Collect outcome data for all HUBS clients or a representative sample of HUBS clients, proportionally drawn from each site.
2. Collect baseline data prior to the intervention and post-intervention data at a fixed time period after completion of the intervention. For example, conduct a 6-month follow-up for falls or a 1-year follow-up for nursing home admissions.
3. Consider the construction of a comparison or a control group. One feasible option for HUBS may be to have a “waitlist control group”. For example, assume there is a group of older adults who can be served by HUBS but only 6 months down the line. Prior to being served by HUBS, under this evaluation design, these older adults can serve as a control group for a group of clients served by the intervention.
4. Systematically collect demographic, socioeconomic data, and other “covariates”. Such data can help in a variety of ways—to conduct subgroup analysis or to analyze the implications of missing data.
5. Consider having a third party collect outcome data so that respondents do not feel obliged to report positive outcomes.

## **5.4 RECOMMENDATIONS FOR REPLICATION**

Finally, a key goal of the evaluation was to identify key factors to consider and plan for when replicating HUBS in another location. Findings from the Efficiency and Impact studies were synthesized with feedback gathered during the Replication Forum to describe important steps and factors to consider when planning for program replication. Before replicating the HUBS program, interested parties should begin by identifying the partner organizations that will serve as Program Owners, ultimately responsible for building the program and providing oversight. This group of Program Owners should also designate an Administrator to handle administrative functions such as grant reporting and initial applicant screening and site assignment. Program Owners should begin by conducting a needs assessment and analysis of resources in their community to determine if replication is appropriate. Once it has been determined that replication is appropriate and that needed program partners and funding are available, Program Owners should move into the strategic planning phase, which will include building their network, assembling their Operating Team, building a universal database, and planning for program evaluation and sustainability.

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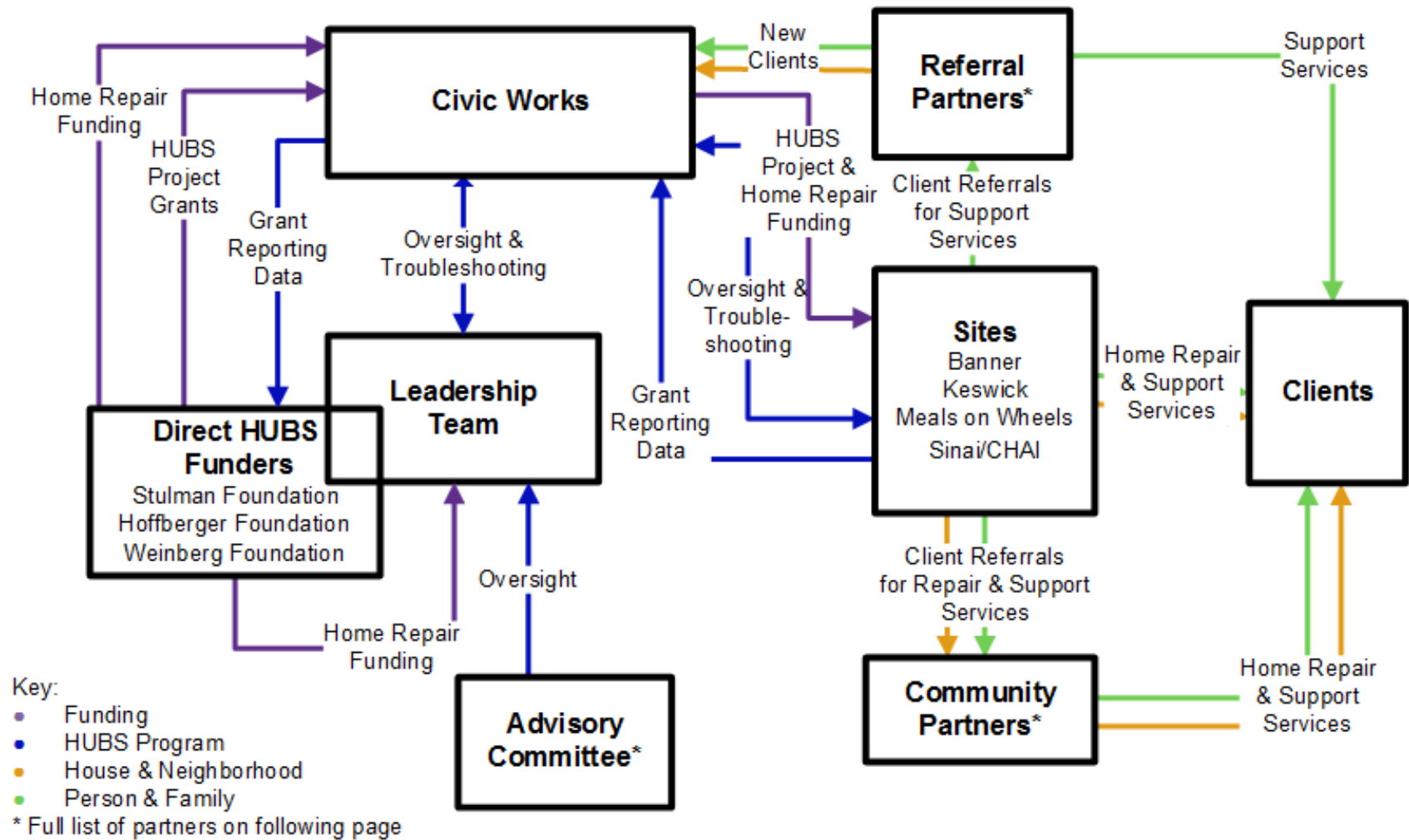
# APPENDICES

**Appendix A – Annotated HUBS Network Diagram**

**Appendix B – Impact Study Methodology**

**Appendix C – Replication Forum Discussion Prompts**

## APPENDIX A: ANNOTATED HUBS NETWORK DIAGRAM



### **Advisory Committee:**

- Abell Foundation
- Baltimore Division of Aging and CARE Services
- Centers for Medicare and Medicaid Services
- Maryland State Department of Aging
- Mental Health Association of Maryland
- University of Maryland
- Zeta Healthy Aging Partnership (ZHAP)

### **Referral Partners**

- Action in Maturity
- Baltimore Department of Taxation and Assessments
- Baltimore Energy Challenge
- Baltimore Housing Office of Rehabilitation Services
- Cities for All Ages
- City of Baltimore
- Cool Roof Project
- GEDCO
- Green and Healthy Homes Initiative (GHHI)
- Maryland Access Point
- Maryland Benefits Data Trust
- Maryland Cash Campaign
- Maryland Office of Home Energy Programs
- Meals on Wheels of Central Maryland
- MedStar Good Samaritan Hospital
- MedStar Union Memorial Hospital
- NHS Baltimore
- Project Household
- Rebuilding Together Baltimore
- Sinai Hospital Center
- St. Ambrose Housing Aid Center
- The State of Maryland

### **Community Partners**

- Action in Maturity
- Alegis Care
- Americorps
- Ashland Community Development Corporation
- Baltimore Area of Grant Makers
- Baltimore Aging Network
- Baltimore City Department of Health
- Baltimore City Department of Public Works
- Baltimore City Housing Authority
- Baltimore City Housing Office of Rehabilitation Services
- Caring Active Restoring Efforts
- Cities for All Ages
- Forth Worthington Community Association
- Friends of Patterson Park
- Johns Hopkins Bayview Medical Center
- Johns Hopkins University
- Jubilee
- LIGHT program
- Maryland Department of Aging
- Maryland Public Service Commission
- Maryland Department of Social Services
- McElderry Park Community Association
- Mercy Hospital
- Patterson Park Community Development Corporation
- Project Household
- Special Education Citizen's Advisory Committee
- St. Ambrose Housing Aid Center
- St. Mary's Outreach Center
- YM

## APPENDIX B: IMPACT STUDY METHODOLOGY

### 1. Cost Benefit Analysis Simulation

#### a. Estimating incidence of moving to subsidized rental housing

1. We use data from the American Housing Survey (AHS), 2013 (retrieved from American Fact Finder) to estimate how many older adult households move from their own home to rental housing in a year.
2. According to the data, roughly 1900 older adult households (65+) moved from owner occupied housing to rental housing in the year, in the Baltimore AHS area. While it is possible that "owner occupied" doesn't necessarily imply owned by mover, according to this data that is usually the case.
3. Around 11% of these households moved because they "wanted a better home". We exclude these individuals and focus on those individuals who moved for financial reasons or wanted to rent instead of own. Applying this adjustment, we estimate that around 1691 older adult households moved to rental housing based on necessity.
4. The Baltimore AHS area is equivalent to the Baltimore Metropolitan Area. Baltimore City makes up roughly 22% of the metropolitan area. Applying this adjustment, we estimate that around 372 older adult households moved to rental housing based on necessity in Baltimore City in the year.
5. The total number of older adult households in Baltimore City in 2013 was 30,630. Therefore the percentage of older adult households who move from own to rental housing in Baltimore City in one year is  $(372/30630)*100$  or 1.2%.
6. It is true that not everyone who moves into rental housing moves into subsidized rental housing. However, if we assume that the overall rate of movement into rental housing is also the rate among low-income older adult households and that all low-income older households move to subsidized housing, then the 1.2% rate applies for our purposes.

#### b. Cost-Benefit Analysis Methodology

1. We work with a control cohort of 375 older adults and an intervention cohort of 375 HUBS clients. Baseline incidence rates from Exhibit 11 are applied to calculate the total number of control older adults who face a certain event (like residence in a nursing home or incurring a fall) in a given year. Effect estimates



from Exhibit 12 are used to calculate “reduced” incidence rates in the HUBS group and these rates are applied to calculate the total number of HUBS clients who face a certain event in a given year.

$$Y_{get} = \pi_{get} * 375$$

Where,  $Y_{get}$  = Total number of older adults in group (control or intervention)  $g$ , facing event  $e$ , in year  $t$ .<sup>62</sup>

$\pi_{get}$  = Incidence/rate in group  $g$  of event  $e$  in year  $t$  ; note that while event specific incidence rates do not vary for the control group over the time period of the study, they vary for the intervention group because we assume that effect-estimates of HUBS decline over time.

2. The total cost on account of adverse events is the sum product of the cost per individual incurred if event  $e$  is faced and the total number of older adults facing event  $e$ :

$$TotCost_{gt} = \sum_{e=1}^5 Y_{get} * C_e$$

Where,  $TotCost_{gt}$  = total cost incurred in group  $g$  and year  $t$  summing across all 5 adverse events considered in the model.<sup>63</sup>

$C_e$  = unit cost associated with adverse event.

3. The equations below denote net cost savings in Year 0 and Years 1-9:

*Net cost savings in Year 0*

$$= [TotCost_{ig0} + HUBS Program Costs] - [TotCost_{cg0}]$$

$$Net cost savings in Year t_{t=1}^9 = [TotCost_{igt}] - [TotCost_{cgt}]$$

Here subscript  $ig$  denotes intervention group and  $cg$  denotes control group.

<sup>62</sup> Note that in the case of the event “movement to subsidized rental housing” the unit is technically an older adult household as opposed to an older adult. However, this distinction does not matter for our calculations, because all units are eventually converted in monetary terms.

<sup>63</sup> Note that the event “movement to subsidized rental housing” is an exception. Here, the event-specific cost is not simply given by  $Y_{gt} * C$  in year  $t$ . In each year  $t$ , the total cost incurred on account of households that moved in year  $t - 1$  are also added in, because we assume that once households move to rental housing, they stay there.

4. Net cost savings in years 1-9 are converted to present value terms by multiplying the net cost saving in year  $t$  by the discount weight in year  $t$  ( $d_t$ ). Here  $d_t = 1/(1 + r)^t$  where  $r$  is the assumed discount rate. Denote discounted net cost savings in a given year by  $disc.savings_t$ .
5. Projected net cost savings over ten years, in present value terms, is then simply a sum of year-specific savings. So,  $projected\ net\ cost\ savings = \sum_{t=0}^9 disc.savings_t$ .

## 2. Impact of HUBS on Health and Well-Being Outcomes

The main specification of the pre-post regression equation used to analyze the CAA data is as follows:

$$y_{it} = \alpha_i + \gamma Post_{it} + u_{it}$$

Where,

$y_{it}$  is the “Fall-Prevention Efficacy” or “General Well-Being” score for client  $i$  in period  $t$  (pre or post intervention)

$Post_{it}$  is an indicator variable equal to 1 if the outcome is measured post intervention (0 otherwise)

$\alpha_i$  is a client-specific “fixed” effect. It captures observed and unobserved client characteristics that are assumed to be constant over time (e.g., gender, race). Fixed characteristics are not confounders in a pre-post analysis of this type.

$u_{it}$  represents all other unobserved factors affecting the outcome and is also the mean zero error term.

## APPENDIX C: REPLICATION FORUM DISCUSSION PROMPTS

### Discussion Prompt #1

The IMPAQ Team has identified building blocks that encompass factors which are key to the replication of a HUBS program.

- a. Are there any additional details that should be considered within these factors?
- b. What, if any, factors might be missing?

### Discussion Prompt #2

Evaluation findings suggest that a unified database for client tracking across and within HUBS programs is key to program and replication efficiency.

- a. What kind of client information should the database hold? (i.e., intake, follow-up, demographic, case status)
- b. What information should be gathered for reporting and analysis purposes? (e.g., incidence of falling, well-being ratings)
- c. What types of materials should be included? (e.g., form templates, how-to guides)
- d. What other information should the database hold?
- e. What are the challenges to implementing this kind of database? (e.g., HIPAA, software, data entry)

### Discussion Prompt #3

How can the HUBS program in Baltimore City be sustained?

- a. Why is it important to sustain this program?
- b. What are potential funding sources?
- c. What elements are needed to sustain a successful collaboration like HUBS? (e.g. partnerships, processes, how-to guides)
- d. What other resources and partnerships are needed? (e.g. city/state partners, private entities, hospitals)
- e. How can a HUBS program be expanded to serve more clients with new and different services? (e.g. additional services, hard to reach clients)