Developing Sustainable Financing Models to Scale Aging-in-Place Programs

Green & Healthy Homes Initiative and People Working Cooperatively

FEBRUARY 2020

Green & Healthy Homes Initiative®

People Working Cooperatively

Authors

Adam Halper, *Senior Social Innovation Specialist*
Green & Healthy Homes Initiative

Nina Creech, *Senior Vice President*
People Working Cooperatively

Organizations

The Green & Healthy Homes Initiative (GHHI), founded in 1986, is a national 501(c)3 nonprofit, nonpartisan organization focused on creating healthy, safe, and energy efficient homes to improve health, economic, and social outcomes for low-income families while reducing public and private health care costs. Our Policy & Innovation Team is working across 15 states to scale sustainable financing models that address the social determinants of health for vulnerable populations with a focus on the intersection of health and housing.

People Working Cooperatively (PWC) is a community-based non-profit organization serving low-income, elderly, and disabled homeowners. PWC strengthens communities by providing professional, critical home repairs, weatherization, modification, and maintenance services to help residents stay safely in their homes. Since 1975, PWC has provided 250,000 healthy housing services to low-income or disabled individuals across 19 counties in Ohio, Northern Kentucky, and Southeastern Indiana.

Acknowledgements

We would like to thank our extraordinary colleagues at PWC and GHHI for their contributions to this work. Special thanks to the leadership at both organizations—Jock Pitts at PWC and Ruth Ann Norton at GHHI—for their continuous support of this project over the past year. At PWC, Ron Henlein, Aaron Grant, Sara Bourgeois, and Brad Staggs served as the core project team on the ground in Cincinnati. At GHHI, Michael McKnight, Kiersten Sweeney, Will Klein, Daniel Son, and Kelsey McClain all made valuable contributions to this publication.

We would also like to thank the Corporation for National and Community Service, the Robert Wood Johnson Foundation and the JPB Foundation for their generous support of this work. This material is based upon work supported by the Corporation for National and Community Service (CNCS) under Social Innovation Fund Grant No. 16PSHMD003. Opinions or points of view expressed in this document are those of the authors and do not necessarily reflect the official position of, or a position that is endorsed by, CNCS.

TABLE OF CONTENTS

INTRODUCTION

The United States is in the midst of an unprecedented demographic experiment.[1] The achievements of the past century—lower poverty rates, improved environmental regulations, higher educational attainment—have led to a remarkable growth in life expectancy. The average life expectancy for an American born in 1920 was 54.1 years. As of 2017, that number had risen to 78.6 years.[2] This growth in life expectancy has been coupled with a steep drop in birth rates. In 1960, the fertility rate in the United States was 3.65 births per woman. By 2017, that number had fallen by more than 50% to 1.76 births per woman.[3]

This transformational change in our country's demographic profile—a growing elderly population paired with a stagnant youth and working age population—raises important challenges from a public finance perspective with warning signs already flashing in other advanced liberal democracies. In France, where the ratio of active workers to retirees has fallen from 4 to 1 in 1960, to 1.7 to 1 today, the longest strikes in 51 years have brought segments of the country's economy to a halt as the Macron administration has attempted an overhaul of its 70-year-old pension system, which it argues is headed for large deficits.[4]

The challenge presented by a changing demographic profile in the U.S. is particularly acute in the healthcare sector, which currently constitutes almost one-fifth of the nation's GDP, and where annual cost growth has outpaced inflation for decades. As we consider our public policy priorities as a nation for the next decade, at the top of the list *should* be the question of how we can provide high-quality, personalized, empathetic care to a growing senior population, and do so in a way that is cost-effective and financially sustainable.

In evaluating healthy aging from both a public health and economic perspective, among the most expensive and life altering public health issues for seniors is falls. In the United States, 30% of adults over the age of 65 experience a fall annually.[5] Falls are the leading cause of fatal injury and the most common cause of nonfatal trauma-related hospital admissions among older adults.[6]

> ***Aging is not lost youth but a new stage of opportunity and strength.***
>
> — Betty Friedan

In purely financial terms, this translates to over $50 billion a year in direct medical expenditures.[7] As will be discussed in Part 1, the indirect costs of falls for seniors—increased social isolation, reduced quality of life, increased risk of future health complications, and skyrocketing caregiver costs—are exponentially higher. While fall prevention is an enormously important public health issue in its own right, it is intimately tied to the concept of "aging-in-place"—the preference of the vast majority of older adults to "live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level."[8] Because the majority of falls take place in the home,[9] effective aging-in-place and fall prevention programs are deeply intertwined.

Our goal with this paper is to explore pathways to sustainably fund programs that significantly reduce falls among seniors, allow them to gracefully age-in-place, *and* impact a range of other public health issues—such as social isolation—that are reaching epidemic proportions among elderly Americans.

THE PAPER IS DIVIDED INTO FOUR PARTS:

1. **An aging nation: demographic trends and their healthcare implications**
2. **The opportunity: scaling the most effective aging-in-place programs**
3. **The model: an "enhanced" Stepping On prototype**
4. **The path to sustainability: opportunities for healthcare organizations, policymakers, and community-based organizations (CBOs)**

In Part 1, we review U.S. demographic trends and their implications for healthcare delivery, aging-in-place, and fall prevention. In Part 2, we assess the evidence base for investing in the most effective fall prevention and aging-in-place programs as an important tool for improving the health and quality of life of a growing senior population in a way that is financially sustainable. In Part 3, we summarize our key insights from an enhanced Stepping On pilot program we developed and evaluated in 2019 to address multiple interrelated public health issues affecting seniors in a cost-effective and scalable way. In Part 4, we describe a range of opportunities for stakeholders that are interested in scaling innovate aging-in-place and other social determinants of health (SDOH) programs.

At the Green & Healthy Homes Initiative (GHHI), our Policy & Innovation team is working across 15 states to scale sustainable financing models that address the SDOH for vulnerable populations. At People Working Cooperative (PWC), we have provided 250,000 healthy housing services to low-income or disabled individuals since 1975 across 19 counties in Ohio, Northern Kentucky, and Southeastern Indiana. Together, we hope to share our collective knowledge to stimulate action that will increase innovation and investment in how we care for seniors across the United States in the decades to come.

PART 1

An aging nation: demographic trends and their healthcare implications

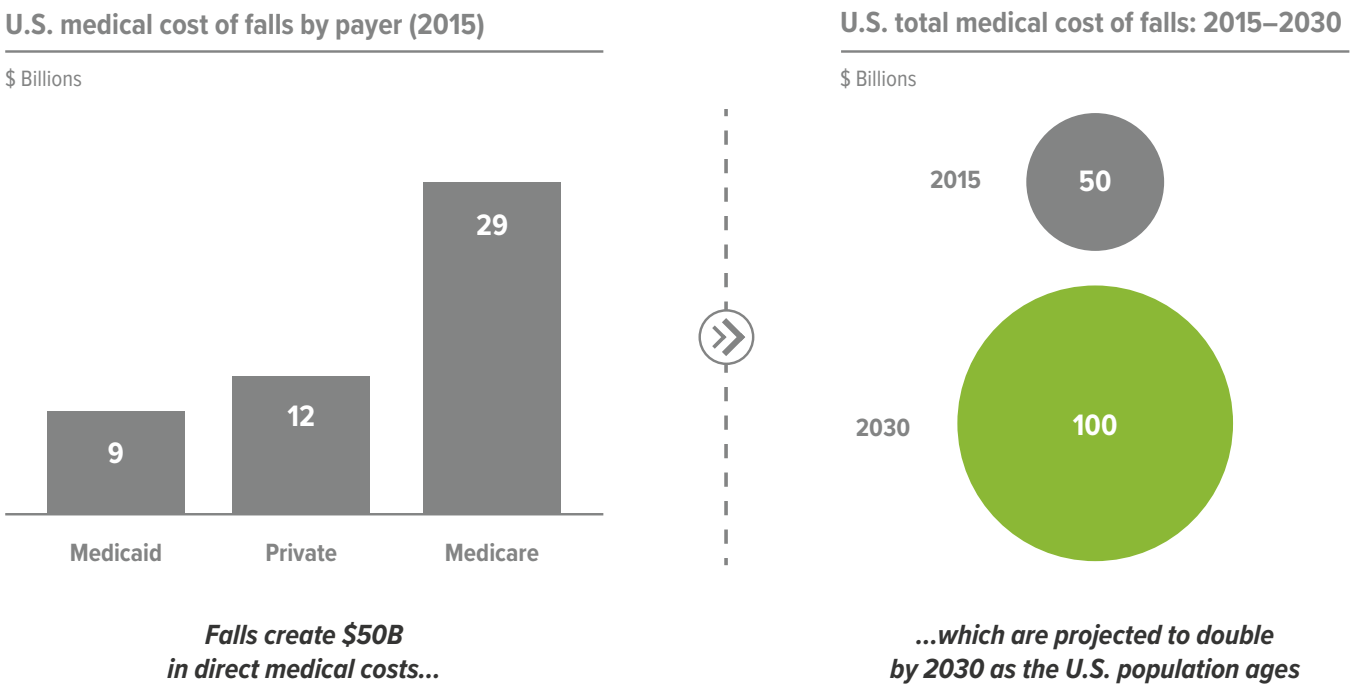
> ***Over the next decade, the population over the age of 80 will increase by 79%***

In the year 2030, the U.S. will reach a demographic milestone—all baby boomers will be older than age 65.[10] This milestone reflects a decades-long trend that is creating a dramatic upsurge in the 65+ population. As a report from the Population Reference Bureau highlights, in 1960, only 9% of the population was age 65 or older, while 36% was under age 18. By 2014, children made up less than 23% of the total population while the 65+ demographic made up 15% percent.[11] As this trend continues in the coming decades, seniors will eventually outnumber children for the first time in our nation's history.[12] Current U.S. Census Bureau projections show that by 2034, there will be 77 million people 65 years and older compared to 76.5 million under the age of 18.[13] In percentage terms, over the next decade, the population over the age of 80 will increase by 79%. This contrasts with the prime caregiving age group, from 45 to 64, which is expected to increase by only 1% over the same time period.[14]

This explosion in the older adult population will have significant repercussions for how we think about effective healthcare delivery in the coming decades. Higher life expectancy is tied to an increase in the number of seniors in the U.S. living with chronic conditions.[15] In economic terms, the growth of the senior population will lead to an increase in Medicare and Social Security costs—from 8.7% of GDP today to 11.8% in 2050.[16] These trends also materially impact spending patterns among seniors. According to a recent report by Gallup and West Health, *The U.S. Healthcare Cost Crisis*, seniors withdrew $22 billion from long-term savings to pay for uncovered healthcare expenses in the past 12 months.[17]

In looking more specifically at the economic cost of falls, 3 million Americans ages 65 and older are treated for falls annually. This led to 300,000 hip fractures and 800,000 hospitalizations,[18] with a cost of $33,000 per hospitalization.[19] In total, as of 2015, this translated to direct fall-related medical costs of $50 billion annually with Medicare paying approximately $28.9 billion, Medicaid $8.7 billion, and private and other payers $12.0 billion.[20] In Ohio, where PWC is based, residents aged 65 and older experienced a 201% increase in the number of fatal falls and a 147% increase in the fall death rate from 2000 to 2015.[21] As fall risk increases with age—by the age of 80, half of older adults fall annually—these fall-related costs are projected to continue to rise as the older adult population nearly doubles by 2016 (Exhibit 1).

Exhibit 1 | Fall-related medical costs are projected to double by 2030



Falls create $50B in direct medical costs...

...which are projected to double by 2030 as the U.S. population ages

Source: Senate Committee on Aging

While the direct healthcare costs resulting from falls are in the tens of billions, they do not account for equally important long-term effects, which include "disability, dependence on others, lost time from work and household duties, and reduced quality of life."[22] An analysis of Medicare claims from 2007–2009 showed that older adults that had experienced fall-related injuries had a 64% increased risk of persistently high healthcare expenditures when compared to a control group.[23] Falls also have a significant psychological impact. According to the National Council on Aging, up to "50% of those who fear falling limit or exclude social or physical activities because of this fear."[24] This compounds the trends towards "chronic loneliness" and social isolation among seniors. Former U.S. Surgeon General, Vivek Murphy, has called the growing rates of loneliness a "public health epidemic,"—the equivalent to smoking 15 cigarettes a day.[25]

> ***"50% of those who fear falling limit or exclude social or physical activities because of this fear."***
>
> — The National Council on Aging

PART 2

The opportunity: scaling the most effective aging-in-place programs

76%
want to stay in their current homes

77%
would like to live in their communities as they age

46%
anticipated that they would be able to stay in their current home

Source: 2018 AARP Home and Community Preference Survey (adults 50+)

Despite the substantial challenges on the horizon in caring for an aging population, we've never had better evidence to point us towards a smart path forward. Before exploring the evidence base for scaling specific programs, it is worth highlighting that older adults have expressed a clear preference for where they prefer to reside in their golden years—a preference that has remained consistent over the past decade according to AARP's *Home and Community Preferences Survey.* The AARP survey from 2010 found that "the overwhelming majority of older adults prefer to age-in-place, remaining in their current homes or communities, because the familiar environment provides security and independence."[26] Similarly, the 2018 AARP *Home and Community Preference Survey* found that 76% of adults over the age of 50 want to stay in their homes and 77% would like to live in their communities as they age.[27] In spite of this preference, only 46% of respondents anticipated that they would be able to stay in their current home for as long as they would like.[28]

These reservations stem in part from a lack of appropriately tailored housing to enable healthy aging-in-place. As a report from the Bipartisan Policy Center, *America's Growing Senior Population: Assessing the Dimensions of the Demographic Challenge*, highlights:

> ***Unfortunately, many of today's homes were designed at an earlier time, before the demographic changes now transforming the country were even recognized. Most lack the necessary structural features that can make independent living into old age a viable, safe option. Considering that falls are the leading cause of injury and injury-related deaths for those 65 and older, safety must be central to any strategy to accommodate the desire to age-in-place.***[29]

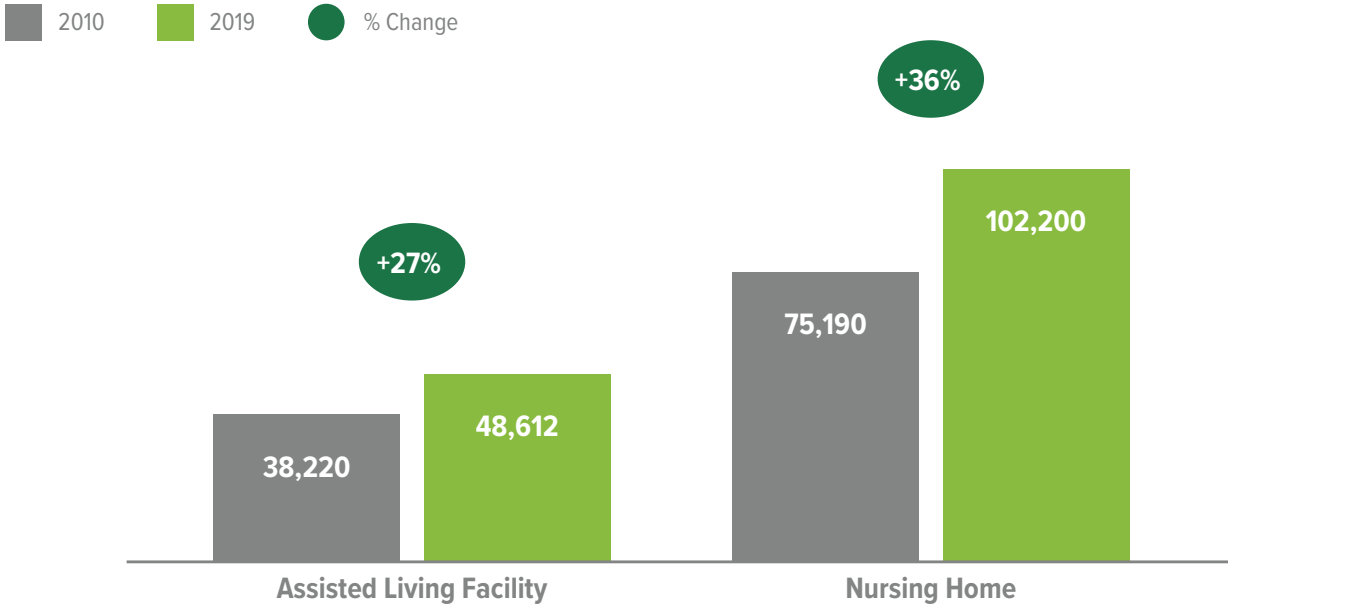
Although the report identifies a set of "universal design" features that can make homes safer for seniors—such as no-step entries, switches and outlets accessible at any height, and lever-style door and faucet handles—only 57% of existing homes have more than one of these features.[30]

While it is important to emphasize older adult preferences, enabling seniors to age-in-place also has significant health, economic, and social benefits. Aging-in-place confers widely acknowledged social and health advantages, such as "attachment to place, familiarity with the neighborhood, and the ability to maintain functional health."[31] From an economic standpoint, home care is significantly less expensive than institutional care.[32] Analysis by the financial insurance company Genworth (Exhibit 2),[33] highlights the long-term cost saving potential of shifting care from institutions to the home.

Although the case for investing in aging-in-place and fall prevention programs in the abstract is highly compelling from both a healthcare and public finance perspective, the more challenging question is determining which programs lead to the *best results for specific populations*. A growing evidence base demonstrates that evidence-based multifactorial[34] fall prevention programs that combine home modifications with tailored educational and exercise programs can dramatically reduce the incidence of falls among senior citizens. Multifactorial interventions have the highest potential to reduce fall risk since the risk of falling increases with the number of risk factors.[35]

Exhibit 2 | Institutional care costs are a growing economic burden on older adults

U.S. annual institutional cost of care per person: 2010–2019 (Dollars)



Source: Genworth

Three published systematic review articles (RAND, 2004; Cochrane, 2012; JAMA, 2018) aggregated over 100 studies on a range of fall prevention programs that included a combination of exercise, education, and environmental modification. Across these three review articles, the literature is clear that evidence-based multifactorial fall prevention programs lead to a statistically significant reduction in the rate of falls, with many studies across these three categories demonstrating a 20–30% reduction. While the literature tying fall prevention programs to healthcare expenses is more limited, studies published over the past three years have shown significant promise. For example, one study on the multifactorial aging-in-place program, CAPABLE, showed an average Medicare savings of over $10,000/year per enrollee and a 1-year return on investment greater than 3x.[36]

One particularly interesting insight from a 2012 Cochrane review article was that there is a limited difference in the reduction in the rate of falls between group- and home-based exercise programs (29% vs. 32%, respectively).[37] As will be detailed in Part 3, given the significantly lower cost profile of group-based therapy *and* the added socialization benefits that group therapy provides, we felt that designing a pilot that incorporated group therapy for older adults that are physically capable of traveling to a central location would be an important concept to explore.

PART 3

The model: an "enhanced" Stepping On prototype

PROGRAM DESIGN

Given the interrelated public health challenges affecting older adults that have been detailed in this report, PWC and GHHI chose to collaborate to design and evaluate a cost-effective and scalable model for improving the health and quality of life for older adults across multiple dimensions. Our goal was to design a prototype that addressed three interrelated public health challenges—falls, aging-in-place, social isolation—by combining Stepping On, an evidence-based group therapy program, with tailored home modifications provided by PWC's Whole Home experts. Our hypothesis was that a program that prioritized improved health outcomes, cost-effectiveness, socialization benefits, and operational flexibility[38] had strong potential to be a model that could be sustainably financed and scaled under the architecture of a U.S. healthcare system facing growing cost pressure.

Stepping On is a seven-week multifactorial, multifaceted community-based program conducted in a learning environment that recognizes that older people have a great amount of experience that they can bring to the process.

The program was conceived based on evidence that falls can be prevented by improving lower limb strength and balance, increasing environmental and behavioral home safety, and providing regular medication reviews, as well as emerging evidence of the importance of regular visual screening and adaptations for low vision.[39] The program is led by a certified Stepping On trainer with guest experts—physical therapists, pharmacists, vision specialists, and EMS first responders—leading individual sessions in their respective areas of expertise. In a previous randomized controlled trial, Stepping On showed excellent results, with the intervention group experiencing a 31% reduction in falls over 14 months among an at-risk population over age 70.[40]

The team elected to combine the traditional Stepping On program with home assessments and modifications performed by PWC's Whole Home experts in the Cincinnati Metropolitan Area. The decision was based on evidence that targeted home modifications have been shown to reduce falls by up to ~30% for at-risk populations.[41] As a 2015 article in the *British Journal of Occupational Therapy* highlights, this impact is achieved through two key mechanisms: "(1) by minimizing known falls hazards and (2) by changing how a person interacts with their surroundings."[42] For the pilot program, each participant received a visit from a Whole Home expert who reviewed the fundamentals of home safety from the Stepping On class and worked with the participant to identify opportunities to apply these learnings at home. Changes in the home performed by PWC staff after the home assessment included the remediation of high-risk fall areas—such as locations with poorly secured throw rugs—coupled with lighting improvements, grab bars, handrails, and hand-held shower heads. Key to the success of the home visit was the trust PWC had developed in the community as a known home environment expert.

EVALUATION DESIGN

In constructing an evaluation design, we sought to: (1) identify quantitative measures that would demonstrate improvements in functional ability and quality of life, (2) identify qualitative measures that would help us better understand *why* the program was driving positive outcomes, and (3) evaluate program cost from a sustainable financing perspective.

We used two primary instruments to achieve those objectives. Pre/post surveys were used to collect information on improvements in Activities of Daily Living (ADL), mobility in the home, and more holistic factors such as stress and levels of socialization. We combined the survey data with qualitative research, which included focus groups, one-on-one participant interviews, and home visits to observe participants in their home environment.

RESULTS AND INSIGHTS

With generous funding from the Social Innovation Fund, we were able to enroll 35 individuals that completed the entire program. The average age of enrollees was 70.8, while the median age was 70. The total completion time for the program was 10 weeks, inclusive of the seven-week Stepping On course, the home assessment, and home modifications.

Our quantitative and qualitative evaluation process revealed a number of compelling insights that point to the enhanced Stepping On program as a valuable model for addressing a diversity of interrelated aging challenges. In reviewing the pre/post survey data, we discovered multiple important insights related to functional ability. In assessing ADL scores related to **walking**, **climbing stairs**, **transferring**, and **toileting**, the following categories showed notable improvement:

- **Difficulty moving throughout the home:** Before the program, 11.5% of participants expressed that they had "difficulty moving throughout the home" and required help (ADL score of 2). After program completion, the percentage had fallen to 3.8%—a **67% reduction**.
- **Difficulty using the toilet:** Before the program, 23% of enrollees listed that they had "difficulty in using the toilet, including getting to/on/off the toilet." After program completion, this percentage fell to 11.5%—a **50% reduction**.
- **Difficulty bathing or showing:** Before the program, 38% of enrollees listed that they had "difficulty in bathing or showing." After program completion, this percentage fell to 11.5%—a **70% reduction**.

Other survey questions related to functional ability also showed notable improvement:

- **I can move around outside my home safely:** Before the program, 11.5% rated "strongly agree" to the prompt "I can move around outside my home safely." After program completion, 27% rated "strongly agree"—a **133% increase**.
- **I can exit my home safely:** Before the program, 27% of enrollees listed "strongly agree" to the prompt "I can exit my home safely." After the program, this percentage increased to 46%—a **71% increase**.

These improvements in functional ability translated to broader psychological and holistic health benefits. For example, the percentage of enrollees that "strongly agree" that they are "relaxed when they are home" increased from 27% to 38%—a **43% increase**.

While our pre/post survey provided insight into the program's potential to significantly improve participant mobility and reduce fall risk, our qualitative evaluation provided additional color on the underlying causes of improvement. Through interviews, focus groups, and home visits, we identified three themes that provided deeper insight into why an enhanced Stepping On program improves functional mobility, reduces social isolation, and allows older adults to more gracefully age-in-place: **(1) program variety**, **(2) socialization**, and **(3) self-awareness and problem solving**.

- **Variety:** The multi-disciplinary nature of the Stepping On course—which provided exposure to expertise from a physical therapist, vision specialist, pharmacist, and EMS first responder—was identified by numerous enrollees as being a key benefit of the program. As one participant noted, she found the program to be particularly effective because "*each class offered something different.*"
- **Socialization:** One of the most exciting insights that we gleaned from participant interviews was the degree to which participants valued the socialization aspects of the program. This benefit was summed up by participants who noted: "*I'm going to miss coming here*," "*[it was] great to meet a lot of people*," and "*I didn't want it to end.*"
- **Self-awareness and problem solving:** Another exciting takeaway from our interviews and in-home observations was that the program changed the way enrollees *thought* about health and safety—improving both self-awareness and hazard recognition. Enrollees noted: "*I realize that I do need a handrail and that I'm always holding on the house*," "*there are a lot of things that were mentioned that I never thought of before*," and "*I realized that there are hazards in my home [after] taking the class*."

In assessing the program's cost profile, total cost fell in the range of $1,360–$1,560. Taking an average value of $1,450, this came to 50–60% of the total cost of alternative programs that combine both home modifications with one-on-one exercise and educational programming. From the standpoint of operational flexibility, the program's 10-week timeline also came to less 50% of similarly comprehensive aging-in-place programs with a home modification component. Ultimately, while the statistical power of these results is limited due to the sample size of enrollees, the positive trend across ADLs, supplemental mobility measures, socialization, and quality of life—coupled with a favorable cost and operational profile—suggests that the enhanced Stepping On prototype serves as a useful program model from a sustainable finance and scalability perspective.

PART 4

The path to sustainability: opportunities for healthcare organizations, policymakers, and community-based organizations

In 2020, the data proving that SDOH are among the most important drivers of health outcomes have become too compelling to ignore. While there is a growing consensus on the degree to which SDOH influences health outcomes, we are still in the early stages of understanding the most effective models that should be scaled nationally to improve the health of vulnerable populations while "bending the cost curve." In looking at aging-in-place programs as a critically important SDOH intervention, investing in and scaling the most effective and financially sustainable interventions will require a concerted national effort across policymakers, healthcare organizations, and CBOs. At GHHI, our team has spent the past five years exploring and developing sustainable financing models that can address a number of SDOH, including aging-in-place. Based on our work in 15 states, we think that there are a number of important opportunities for stakeholders that have an interest in supporting healthy aging for American seniors.

POLICYMAKERS

Our experience has shown that policymakers play the decisive role in creating the right incentives for driving smart investment in SDOH. Supreme Court Justice Louis Brandeis famously labeled states as the "laboratories of democracy," where innovative policies could be tested before they are expanded across the country. While we are encouraged by evolving Medicare Advantage regulations at the federal level, we have seen specific policies at the state Medicaid level that ought to be considered more broadly on a national scale.

> ***"We are still in the early stages of understanding the most effective models that should be scaled nationally"***

One policy idea, embedded in New York Medicaid's Value-Based Roadmap, is a requirement that specific provider groups and health plans *must* implement at least one SDOH-specific program and contract with at least one community-based organization.[43] A second valuable policy is MassHealth's Flexible Services Program, a dedicated $149 million fund that enables MassHealth's Accountable Care Organizations (ACOs) to "pilot evidence-based approaches that address a member's health-related social needs with the goal of improving health outcomes and reducing the total cost of health care for the member."[44] A third policy idea that we believe has significant promise on a national scale is for policymakers to enable an environment where health care entities and CBOs can more efficiently collaborate. In our work across the country, we have seen a variety of barriers preventing sustainable partnerships from forming between health care and CBOs, including data sharing and privacy, unlinked referral networks, lack of shared expertise, and the administrative burden of exploring new territory. In this vein, one concept that GHHI will be exploring in 2020 is the Health Connection Hub, which serves as a central contracting and data sharing entity that links healthcare organizations and CBOs in a given region.

HEALTHCARE ORGANIZATIONS

Healthcare organizations can play an invaluable role in evaluating and scaling effective aging-in-place programs. Similarly, as value-based payments grow as a percentage of overall U.S. healthcare dollars spent, the incentives for both payers and providers to invest in the highest quality evidence-based preventive health programs to improve population health continues to increase. One recommendation is to leverage the increased flexibility provided by an evolving regulatory landscape. This is particularly relevant for Medicare Advantage plans, where updated supplemental benefits regulations now allow for coverage of interventions that are not deemed "primarily health related," services, but can have a substantial impact on health outcomes. These changes have been described as a "turning point in Medicare policy"[45] by The Long-Term Quality Alliance and open the door for coverage of a number of non-medical services that address SDOH—including the home modifications performed in the enhanced Stepping On program. A second and related recommendation is a willingness to experiment with new program models—such as enhanced Stepping On—that address the root causes of leading public health issues that impact the 65+ population and then scale those that demonstrate the best results for the target population.

COMMUNITY-BASED ORGANIZATIONS

As the evidence base that SDOH are a key driver of long-term health outcomes continues to grow, CBOs are rightfully seen as key players in addressing the underlying causes of many public health issues.

Based on our work across the country, we believe that there are three steps CBOs can take to scale high-impact programs. The first is to *know your value* by evaluating your program and quantifying its health impact. In our work on linking healthcare payers and community-based organizations, we've consistently found that the starting point for any discussion is the evidence base that a program can impact both health outcomes and costs. The second is to *know your costs* by understanding your budget and costs by service line. Healthcare entities typically need to understand ROI before investing in a program. This requires a detailed understanding of the services being offered, along with the attendant cost profile, so that a cost-benefit analysis can be performed. The third is to *build partnerships with health plans and health systems*. We have seen across the country that relationships between healthcare entities and CBOs can evolve from more informal partnerships to direct referrals as policy change and a growing evidence base incent healthcare entities to invest in SDOH programs. We are encouraged by specific partnership-focused initiatives in several states. One excellent initiative from New York that could be replicated nationally is *VBP* Forward, which includes conferences and workshops for CBOs across the state that aim to build "a bridge between community-based organizations and healthcare delivery."[46]

Ultimately, with the direct cost of falls projected to nearly double in the next decade—while the U.S. older adult population continues to soar for decades to come—there has never been a more pressing time to scale up our investment in the most effective healthy aging programs. Given the substantial health, social, and economic benefits associated with aging-in-place and fall prevention, addressing these challenges in a financially sustainable way should be a top priority in the decades to come. While developing, evaluating, and scaling the most effective programs will require a concerted effort across each of these stakeholder groups, our work in Cincinnati and across the U.S. has demonstrated that there is a positive path forward.

ENDNOTES

1 This experiment is mirrored by demographic trends in many other advanced economies, some of which are already experiencing net declines in total population.

2 Arias, E., & Xu, J. (2019). United States life tables: 2017. *National Vital Statistic Report 68*(7). Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_07-508.pdf

3 World Bank. Data: Fertility rate, total (births per woman). Retrieved from https://data.worldbank.org/indicator/SP.DYN.TFRT.IN

4 Nossiter, A. & Godin, M. (2019). Amid Chaos of Daily Commutes, Strikers and Macron Compete for the Commuters. *The New York Times.* Retrieved from https://www.nytimes.com/2019/12/17/world/europe/france-strikes-protest.html

5 Florence, C. S., Bergen, G., Atherly, A., Burns, E., Stevens, J., & Drake, C. (2018). Medical costs of fatal and nonfatal falls in older adults. *Journal of the American Geriatrics Society, 66*(4), 693–698. Retrieved by https://onlinelibrary.wiley.com/doi/pdf/10.1111/jgs.15304

6 National Council on Aging. Get the Facts: Falls Prevention Facts. Retrieved from https://www.ncoa.org/news/resources-for-reporters/get-the-facts/falls-prevention-facts/

7 *Ibid.*

8 Centers for Disease Control and Prevention. (n.d.). Healthy Places: Healthy Places Terminology. Retrieved from https://www.cdc.gov/healthyplaces/terminology.htm

9 Pynoos, J., Steinman, B. A., & Nguyen, A. Q. (2010). Environmental assessment and modification as fall-prevention strategies for older adults. *Clinics in geriatric medicine, 26*(4), 633–644. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6036911/

10 U.S. Census Bureau. (2018, March 13). Older People Projected to Outnumber Children for First Time in U.S. History. Release number CB18-41. Retrieved from https://www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html

11 Mather, M., Jacobsen, L. A., & Pollard, K. M. (2015). Population Bulletin: Aging in the United States *70*(2). Population Reference Bureau. Retrieved from https://www.prb.org/wp-content/uploads/2016/01/aging-us-population-bulletin-1.pdf

12 U.S. Census Bureau. (2018, March 13). Older People Projected to Outnumber Children for First Time in U.S. History. Release number CB18-41. Retrieved from https://www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html

13 *Ibid.*

14 Jacoby, S. (2019, December 23). We're Getting Old, but We're Not Doing Anything About It. *The New York Times.* Retrieved from https://www.nytimes.com/2019/12/23/opinion/america-aging.html

15 Mather, M., Jacobsen, L. A., & Pollard, K. M. (2015). Population Bulletin: Aging in the United States *70*(2). Population Reference Bureau. Retrieved from https://www.prb.org/wp-content/uploads/2016/01/aging-us-population-bulletin-1.pdf

16 *Ibid.*

17 Stevens, L. & Mallory, L. (2019, April 15). U.S. Seniors Pay Billions, yet Many Cannot Afford Healthcare [Blog post]. *Gallup*. Retrieved from https://news.gallup.com/opinion/gallup/248741/seniors-pay-billions-yet-cannot-afford-healthcare.aspx

18 Kaul, K. (2019, June 3). American Seniors Prefer to "Age in Place"—But What's the Right Place? [Blog post]. *Urban Institute.* Retrieved from https://www.urban.org/urban-wire/american-seniors-prefer-age-place-whats-right-place

19 *Ibid.*

20 *Ibid.*

21 Ohio.gov. (2018). Violence & Injury Prevention Section: Falls Among Older Adults. Ohio Department of Health. Retrieved from https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/core-violence-injury-prevention-program/falls-among-older-adults

22 Florence, C. S., Bergen, G., Atherly, A., Burns, E., Stevens, J., & Drake, C. (2018). Medical costs of fatal and nonfatal falls in older adults. *Journal of the American Geriatrics Society, 66*(4), 693–698. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/29512120

23 Hoffman, G. J., Hays, R. D., Shapiro, M. F., Wallace, S. P., & Ettner, S. L. (2017). The costs of fall related injuries among older adults: Annual per faller, service component, and patient out of pocket costs. *Health services research, 52*(5), 1794–1816. Retrieved from https://deepblue.lib.umich.edu/bitstream/handle/2027.42/138392/hesr12554.pdf?sequence=2&isAllowed=y

24 Aging.com. Falls—The Biggest Threat to Senior Health and Safety [Fact sheet]. *National Council for Aging Care.* Retrieved from https://www.aging.com/falls-fact-sheet/

25 McGregor, J. (2017). Retrieved from https://www.washingtonpost.com/news/on-leadership/wp/2017/10/04/this-former-surgeon-general-says-theres-a-loneliness-epidemic-and-work-is-partly-to-blame/

26 Keenan, T. A. (2010). Home and Community Preferences of the 45+ Population. American Association of Retired Persons. Retrieved from https://assets.aarp.org/rgcenter/general/home-community-services-10.pdf

27 Binette, J. (2018). 2018 Home and Community Preferences Survey: A National Survey of Adults Age 18-plus [PowerPoint slides]. American Association of Retired Persons. Retrieved from https://www.aarp.org/content/dam/aarp/research/surveys_statistics/liv-com/2018/home-community-preferences-survey.doi.10.26419-2Fres.00231.001.pdf

28 *Ibid.*

29 Bipartisan Policy Center. (2015). America's Growing Senior Population: Assessing the Dimensions of the Demographic Challenge. Retrieved from https://bipartisanpolicy.org/wp-content/uploads/2019/03/BPC-Housing-Health-Senior-Population.pdf

30 *Ibid.*

31 Dupuis-Blanchard, S., Gould, O. N., Gibbons, C., Simard, M., Éthier, S., & Villalon, L. (2015). Strategies for aging in place: the experience of language-minority seniors with loss of independence. *Global qualitative nursing research, 2*. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5342846/

32 *Ibid.*

33 Genworth.com. Cost of Care: Trends & Insights. *Genworth Financial, Inc.* Retrieved from https://www.genworth.com/aging-and-you/finances/cost-of-care/cost-of-care-trends-and-insights.html

34 Multifactorial fall prevention interventions target multiple fall risk factors

35 Shekelle, P. G., Maglione, M. A., Chang, J. T., Mojica, W., Morton, S. C., Booth, M., ... & Rubenstein, L. (2003). Falls Prevention Interventions in the Medicare Population. RAND Corporation. Retrieved from https://www.rand.org/content/dam/rand/pubs/reprints/2007/RAND_RP1230.pdf

36 Ruiz, S., Snyder, L. P., Rotondo, C., Cross-Barnet, C., Colligan, E. M., & Giuriceo, K. (2017). Innovative home visit models associated with reductions in costs, hospitalizations, and emergency department use. *Health Affairs, 36*(3), 425–432. Retrieved from https://www.healthaffairs.org/doi/abs/10.1377/hlthaff.2016.1305

37 Gillespie, L. D., Robertson, M. C., Gillespie, W. J., Sherrington, C., Gates, S., Clemson, L. M., & Lamb, S. E. (2012). Interventions for preventing falls in older people living in the community. *Cochrane database of systematic reviews, (9).* Retrieved from https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD007146.pub3/abstract

38 10 weeks (start to finish)

39 Clemson, L., Cumming, R. G., Kendig, H., Swann, M., Heard, R., & Taylor, K. (2004). The effectiveness of a community based program for reducing the incidence of falls in the elderly: A randomized trial. *Journal of the American Geriatrics Society, 52*(9), 1487–1494. Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1532-5415.2004.52411.x

40 *Ibid.*

41 Gillespie, L. D., Robertson, M. C., Gillespie, W. J., Sherrington, C., Gates, S., Clemson, L. M., & Lamb, S. E. (2012). Interventions for preventing falls in older people living in the community. *Cochrane database of systematic reviews, (9).* Retrieved from https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD007146.pub3/abstract

42 Pighills, A., Ballinger, C., Pickering, R., & Chari, S. (2016). A critical review of the effectiveness of environmental assessment and modification in the prevention of falls amongst community dwelling older people. *British Journal of Occupational Therapy, 79*(3), 133–143. Retrieved from https://journals.sagepub.com/doi/abs/10.1177/0308022615600181

43 New York State Department of Health. Redesigning New York's Medicaid Program: Social Determinants of Health (SDH) and Community Based Organization (CBOs). Retrieved from https://www.health.ny.gov/health_care/medicaid/redesign/sdh/index.htm

44 Mass.gov. (2019). MassHealth Accountable Care Organization Flexible Services. Commonwealth of Massachusetts. Retrieved from https://www.mass.gov/files/documents/2019/10/24/flexible-services-summary.pdf

45 Anne Tumlinson Innovations & Long-Term Quality Alliance. (2019). A Turning Point in Medicare Policy: Guiding Principles for New Flexibility Under Special Supplemental Benefits for the Chronically Ill. Retrieved from https://annetumlinsoninnovations.com/wp-content/uploads/2019/07/2019-07-24_GuidingPrinciplesForSSBCI.pdf

46 VBP Forward. VBP Forward, LLC. Retrieved from https://www.vbpforward.com/