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Department of Health Studies

**Safe at Home Program Evaluation
FINAL REPORT**

Prepared for:

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Executive Summary

DACL collaborated with American University's Department of Health Studies from July 2022-September 2023 to evaluate the Safe at Home (SAH) program. The overarching goal of the evaluation is to determine the reach, impact, and outcomes of SAH in reducing falls and fear of falls among clients, and to provide recommendations for how to structure the SAH 2.0 program for continued success. This evaluation addresses three research objectives: 1) analysis of SAH program data from Fiscal Year (FY) 2016-2022; 2) methodology for collecting phone survey data, and 3) results from clients who completed SAH between October 2021-March 2022.

The SAH program served 4,753 older adults or adults with disabilities in FY 2016-2022, the majority of whom were women (79%) and over age 60 (92%). Almost 50% of clients live in Ward 7 and Ward 5. In FY 2016-2022 there were 11,361 intake applications of which 58% were ineligible for the SAH program (n=6,620). The two most common reasons for ineligibility were incomplete documents (58%) and unresponsive/no longer interested (31%). FES score was significantly lower than the pre-FES score for each FY, indicating a reduction in fear of falling and positive impact of the home modifications. The average cost per client across all FY 2018-2022 was \$4,019. There was a positive correlation between average total cost per client and pre-FES score. The higher the pre-FES score, the higher average cost per client ($r = 0.15$, $p < 0.01$).

Letters were mailed to SAH clients (n=492) who had home modifications completed between October 2021-March 2022 inviting them to participate in a brief survey (response rate 54.9%). Demographic characteristics of respondents and SAH clients FY 2016-2022 were similar, indicating the sample is representative of the SAH population. Respondents (n=241) reported high satisfaction overall and with specific program components, with 89.2% (n=215) reporting they were 'completely satisfied'. Most clients served, 78.8%, did not fall since the home modifications were completed. Of the 21.2% who reported a fall, most reported having one fall (range 1-6 falls). The 21.2% of respondents who reported a fall is lower than both the US and the DC average reported by the CDC. The majority of falls, 75.5%, occurred inside the home, which is consistent with national data. The survey respondents had a mean FES score of 32.5 (sd 22.6, range 10-100), indicating relatively low fear of falling. Higher FES scores were associated with a greater likelihood of reporting a fall ($r = 0.44$, $p < .001$, $n = 51$). There was a positive correlation between older age and higher FES scores ($r = 0.17$, $p < 0.01$).

The key takeaways from this evaluation include:

1. The majority of SAH clients are women (~80%) and over age 60 (~90%). Almost 50% of clients live in Ward 5 and Ward 7. The mean age is 75 years.
2. The client-centered SAH program consistently demonstrates significant reductions in fear of falling (post FES, $p < 0.01$) and high satisfaction among clients (89.2%).
3. SAH program appears to be cost-effective; average cost of \$4,019 per SAH client to safely age in place is significantly less than the average cost of a hospital visit for a fall (\$62,521).¹

¹ Dykes, P. C., Curtin-Bowen, M., Lipsitz, S., Franz, C., Adelman, J., Adkison, L., Bogaisky, M., Carroll, D., Carter, E., Herlihy, L., Lindros, M. E., Ryan, V., Scanlan, M., Walsh, M. A., Wien, M., & Bates, D. W. (2023). Cost of Inpatient Falls and Cost-

4. High number of ineligible intake applications (60% due to incomplete documents).
5. Higher FES scores are a significant predictor of experiencing a fall (either inside the home or outside of the home), which is consistent with the literature and previous findings.²
6. Likelihood of falls after home modification is low (78.8% report no falls) and severity is low among those who reported a fall/s.

Benefit Analysis of Implementation of an Evidence-Based Fall Prevention Program. *JAMA Health Forum*, 4(1), e225125.
<https://doi.org/10.1001/jamahealthforum.2022.5125>

² Greenberg, M., Jacoby, J., Barraco, R. D., Yazdanyar, A. R., Surmaitis, R. M., Youngdahl, A., Chow, R. B., Murillo, S. M., Zeng, A. H., & Kane, B. G. (2021). Analysis of Falls Efficacy Scale and Vulnerable Elders Survey as Predictors of Falls. *Cureus*, 13(4), e14471. <https://doi.org/10.7759/cureus.14471>

BACKGROUND

Fall Trends in United States

Falls impact the health and independence of older adults (aged 65+ years) and adults with disabilities. In the United States (US), both the population of older adults and adults with disabilities are growing. Older adults are the fastest growing demographic in the US.³ The number of older adults is estimated to double, from over 6 million individuals in 2020 to over 14 million individuals in 2040.⁴

Older adults and adults with disabilities are at risk for falls and fall-related injuries. Millions of older adults fall each year in the US and this number is increasing. A 2023 CDC report⁵ determined that on average 100 older adults die from falls every day. Unintentional falls are the leading cause of injury and of deaths from injury among older adults.

Most falls occur in the home. Further, individuals who fall are more likely to fall again.⁶ There are both demographic and geographic variations in the distribution of falls. Women report falls and fall related injuries more frequently than men; however, men have higher rates of fatal falls compared to women.³ Further, fall injury incidence trends are likely underreported as self-reported survey data significantly undercount fall injuries.⁷

Falls also have financial implications to individuals, their caregivers/families, and the health care system. In addition to being the leading cause of death from unintentional injury among older adults, falls are the leading causes for emergency department visits for unintentional injuries. A recent 2023 study among over 900,000 patients across two large northeast metropolitan hospital systems between 2013-2019 found that average cost of a fall was \$62 521.⁸ Costs of falls were not significantly different by injury level.

Even falls that are not severe may result in significant health impacts, including fear of falling, social isolation, and declines in mobility.⁹ Adults who have fallen may have fears about falling again which may be associated with reduced activities, which increases frailty and increased risk

³ U.S. Department of Health and Human Services, Administration for Community Living (May 2022). 2021 Profile of Older Americans.

⁴ CDC, National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS).

⁵ Kakara R, Bergen G, Burns E, Stevens M (2023) Nonfatal and Fatal Falls Among Adults Aged >65 Years- United States, 2020-2021. *MMWR*, 72; 938-943, https://www.cdc.gov/mmwr/volumes/72/wr/mm7235a1.htm?s_cid=mm7235a1_w

⁶ Special Committee on Aging, United States Senate (2019) Fall Prevention: National, State, and Local Solutions to Better Support Seniors. https://www.aging.senate.gov/imo/media/doc/SCA_Falls_Report_2019.pdf

⁷ Hoffman GJ, Ha J, Alexander NB, Langa KM, Tinetti M, Min LC. (2018) Underreporting of fall injuries of older adults: implications for wellness visit fall risk screening. *J Am Geriatr Soc*. 66(6):1195-1200. doi: 10.1111/jgs.15360

⁸ Dykes, P. C., Curtin-Bowen, M., Lipsitz, S., Franz, C., Adelman, J., Adkison, L., Bogaisky, M., Carroll, D., Carter, E., Herlihy, L., Lindros, M. E., Ryan, V., Scanlan, M., Walsh, M. A., Wien, M., & Bates, D. W. (2023). Cost of Inpatient Falls and Cost-Benefit Analysis of Implementation of an Evidence-Based Fall Prevention Program. *JAMA Health Forum*, 4(1), e225125. <https://doi.org/10.1001/jamahealthforum.2022.5125>

⁹ Boyd R, Stevens JA. (2009) Falls and fear of falling: burden, beliefs and behaviours. *Age Ageing*. 38(4):423-428. doi: 10.1093/ageing/afp053

for a fall. Further, there is a need to support older adults and adults with disabilities¹⁰, given that loneliness and social isolation also negatively impact physical health.¹¹

Trends in fall incidence underscores the importance of investment in prevention and funding for fall prevention programs. Risk of falling does increase with age. However, falls are preventable by decreasing modifiable risk factors, raising awareness about fall prevention, promote preventive behaviors, and improving screening and referrals for those at fall risk.¹²

Fall prevention efforts are an important part of older adult education and health. Recent research suggests that many falls can be prevented through a variety of comprehensive evidence-based interventions.¹³ For the past two decades, the CDC has maintained a compendium of falls prevention interventions¹⁴ that have demonstrated, in randomized controlled trials, to reduce falls and fall risk among older adults. Some interventions address multiple fall risk factors, such as removing or reducing potential fall hazards in the home environment; others address individual fall risk factors, such as exercise programs to improve balance. Both impact and outcome studies of home assessment and home modification programs studies suggest significant positive health outcomes for older adult participants.

Washington, DC (DC) Demographic Profile

There are several key demographic trends in Washington, DC (DC) that are relevant to priorities for expansion of services and partnerships to prevent falls among older adults and adults with disabilities. DC has a total population of ~685,000 residents, among which 113,644 (16.5% of total population) are adults 60 or older.¹⁵ Approximately, 1 in every 9 residents is an older adult. Similar to national trends, this is the largest growing segment of the DC population across all eight Wards. Moreover, nearly 1 in 4 adults over 18 years old have a disability; over 45% of older adults have a disability.¹⁶

More older adults live in Wards 3, 4, and 5 compared to other Wards (Figure 1). Over 50,000 older adults live in Wards 7 and 8, the areas of DC with the least access to health services and

¹⁰ Malani P, Kullgren J, Solway E, Hoffman G., Singer D., Kirch M. (2021) National Poll on Healthy Aging Physical Functioning and Falls During the COVID 19 Pandemic. https://deepblue.lib.umich.edu/bitstream/handle/2027.42/168424/0239_NPHA-Falls-report-FINAL-08022021.pdf

¹¹ Holt-Lunstad, J. (2017) The Potential Public Health Relevance of Social Isolation and Loneliness: Prevalence, Epidemiology, and Risk Factors, *Public Policy & Aging Report*, Volume 27, Issue 4, Pages 127–130. <https://doi.org/10.1093/ppar/prx030>

¹² Ambrose AF, Paul G, Hausdorff JM. (2013) Risk factors for falls among older adults: a review of the literature. *Maturitas*;75:51–61.

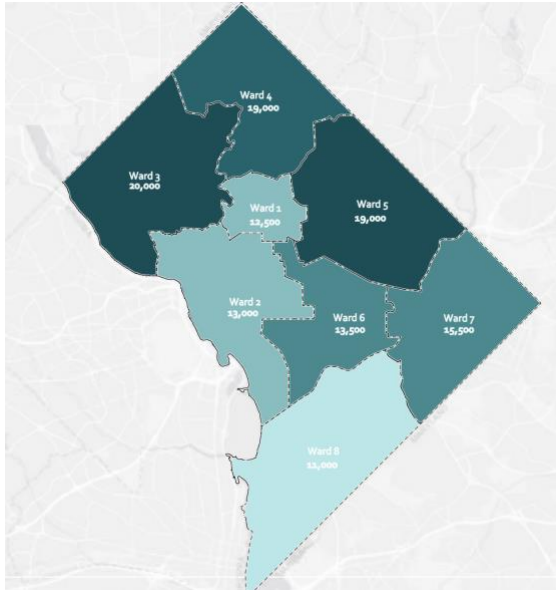
¹³ United States Government Accountability Office (July 2022) Older Adults and Adults with Disabilities: Federal Programs Provide Support for Preventing Falls, but Program Reach is Limited. GAO-22-105276. <https://www.gao.gov/assets/gao-22-105276.pdf>

¹⁴ Stevens JA & Burns E. (2015) A CDC Compendium of Effective Fall Interventions: What Works for Community-Dwelling Older Adults. 3rd ed. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control.

¹⁵ DC Office on Aging (DACL). 2019-2022 District of Columbia State Plan on Aging. https://dacl.dc.gov/sites/default/files/dc/sites/dacl/page_content/attachments/DACL%20State%20Plan%20on%20Aging_0.pdf

¹⁶ Okoro CA, Hollis ND, Cyrus AC, Griffin-Blake S. (2018) Prevalence of Disabilities and Health Care Access by Disability Status and Type Among Adults-United States, 2016. *MMWR Morb Mortal Wkly Rep.* 67:882–887. [http://dx.doi.org/10.15585/mmwr.mm6732a3external icon](http://dx.doi.org/10.15585/mmwr.mm6732a3external_icon)

Figure 1. DC Older Adult by Ward, 2020¹²



highest proportion of individuals who are low income.¹⁷ Most DC older adults are female (59.3%), Black (62.5%), unmarried (58.6%), live alone (74.1%), or are homeowners (65.5%).¹⁸

In DC, one in four older adults experiences a fall each year. The rate of falls among older adults is 29% and the death rate from falls per 100,000 people is 70, which is comparable to the US national average. However, the rate of reported falls and falls-related injuries and deaths varies significantly across underserved DC Wards and demographic segments.

Safe at Home Program (SAH)

In January 2016, DC Mayor Muriel Bowser established the innovative Safe at Home program (SAH) with the Department of Aging and Community Living (DACL) and administered by Home Care Partners, to offer comprehensive services to the underrepresented aging population in DC and adults with the disabilities. DACL's mission is to: 1) advocate, plan, implement, and monitor programs in health, education, and social services for seniors; 2) promote longevity, independence, dignity, and choice for DC residents with disabilities regardless of age, and caregivers; 3) ensure the rights of older adults and their families, and prevent their abuse, neglect, and exploitation; 4) uphold the core values of service excellence, respect, compassion, integrity, and accountability, and; 5) lead efforts to strengthen service delivery and capacity by engaging community stakeholders and partners to leverage resources.

¹⁷ DC Policy Center (2018). A portrait of DC's Older Adults. <https://www.dcpolicycenter.org/publications/a-portrait-of-d-c-s-older-adults/>

¹⁸ Office of the Budget Director, Council of the District of Columbia (2020) The state of older adults in the District of Columbia. <https://static1.squarespace.com/static/5bbd09f3d74562c7f0e4bb10/t/5f91dbfc4433c22bbc35756/1603394563391/The+State+of+Older+Adults+in+the+District+of+Columbia.pdf>

SAH promotes aging-in-place for older adults and adults with disabilities by providing in-home accessibility adaptations (e.g., grab bars, safety railings, stair lifts, and bathtub cutouts) to reduce the risk of falls and reduce barriers that limit mobility for DC residents. The program is based on the rationale that environmental factors play a large role in falls and population-targeted risk mitigation is cost effective and beneficial. SAH also incorporates one access point for referrals and screening. Aging adults are referred to the program by contacting the DACL Intake/Referral and Assistance line and completing a falls risk assessment. Home care partners, senior wellness centers, community-based organizations, and/or health care providers can also refer adults 60 and older or adults with a disability to SAH. A key component of SAH is the integration of occupational therapy (OT) practitioners, with training and certification in home modification practices, who are uniquely qualified to provide comprehensive client evaluations and to develop client-centered home modification recommendations that acknowledge the multifactorial nature of falls.¹⁹

Adults 60 or older or adults 18 or older with disabilities who are DC homeowners or renters of their primary residence and who have an income at or below 80% of the Area Median Income are eligible to participate in SAH. In May 2019, DACL implemented a cost-share component to increase SAH eligibility to individuals earning up to 100% of the Area Median Income (maximum of \$72,550 annually for an individual or \$82,550 for a married couple). Clients may be considered for eligibility for SAH participation for two episodes. The SAH Program provides up to \$6,000 of preventative modifications for clients at “low falls risk.” SAH refers all projects over the \$6,000 and clients who score a “high falls risk” to the Department of Housing and Community Development’s Single Family Residential Rehabilitation Program. Beginning in Fiscal Year 2024, the modification maximum will be raised to \$7,000.

SAH eligibility criteria also includes assessment of fear of falling and falls risk, determined at intake over the phone. SAH uses evidence-based assessments to quantify fall risk and modification recommendations. Given the multifactorial risk of falling, SAH uses a variety of standardized assessments and a minimum of three assessments on each client. The assessments include: 1) Safety Assessment of Function and The Environment for Rehabilitation in home version (SAFER HOME) assessment completed pre and post to determine the number of safety hazards; 2) Falls Efficacy Scale (FES) completed pre and post to determines the level of fear of falling; 3) Falls Risk of Older People is a multifactorial fall risk assessment measures cognition, medication, and history of falls. Demographic information including client age, race/ethnicity, gender, type of housing is also collected. Since the launch of SAH, DACL has served more than 6,000 residents installing safety adaptations. DACL received the National Association of Area Agencies on Aging (n4a) Innovations Award in the Home & Community-Based Services category for the Safe at Home Program in 2017.²⁰

In January 2023, DC Mayor Bowser announced the expansion of Safe at Home 2.0 (SAH 2.0), offering medication review, vision screenings, and balance/strength training classes for individuals who meet criteria for being at the highest risk of continued falls. For SAH 2.0,

¹⁹ American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74(Suppl. 2). <https://doi.org/10.5014/ajot.2020.74S2001>

²⁰ DC Office on Aging (DACL). 2019-2022 District of Columbia State Plan on Aging. https://dacl.dc.gov/sites/default/files/dc/sites/dacl/page_content/attachments/DACL%20State%20Plan%20on%20Aging_0.pdf

balance/strength Matter of Balance classes are offered virtually and in-person at all six senior wellness centers across DC, accommodating a variety of abilities. This goal of this holistic program is to support older adults to live and age in place safely in their homes. Currently, SAH 2.0 is a pilot program provided to participants already enrolled in SAH.

EVALUATION METHODOLOGY

DACL and Home Care Partners collaborated with American University's Department of Health Studies (AU) for the SAH evaluation from July 11, 2022 - September 30, 2023 to evaluate the effectiveness of SAH to reduce falls and fear of falling among program clients, as well as satisfaction with the program.

Phase 1 of this project described the research evaluation methodology and preliminary results, which were presented to DACL in October 2022. This final report describes the complete analysis to evaluate the reach, impact, and outcomes of the Safe at Home Program operated during Fiscal Year 2016-Fiscal Year 2022.

Evaluation Objectives

The overarching goal of this project is to evaluate the reach, impact, and outcomes of the SAH program in reducing falls and fear of falls among clients, and to provide recommendations for how to structure the SAH 2.0 program. The evaluation report includes three primary research objectives:

- **Objective 1:** Conduct statistical analysis on SAH program data from FY 2016-2022 to examine demographics of clients, eligibility barriers, and costs per client by key factors.
- **Objective 2:** Describe the methodology for collecting post-program survey data among clients served, including the analysis approach.
- **Objective 3:** Collect and analyze data via phone surveys from clients who completed the SAH program between October 2021-March 2022.

Table 1 describes the timeline of activities for the SAH evaluation project.

Data Sources

The data agreement between DACL and AU was executed August 25, 2022. DACL transferred data to AU from their Customer Service Tracking and Reporting System (CSTARS) database and SharePoint files. DACL transferred the SharePoint data on SAH clients for Fiscal Year 2016 through Fiscal Year 2022 and clients' names, addresses, and phone numbers for clients served from October 1, 2021-March 31, 2022 for the post-program survey (see **Appendix A** for list of data fields). The AU team used this information to contact the clients served on behalf of DACL by both mail invitation and phone survey data collection. SPSS (Version 28) was utilized to analyze the data using descriptive statistics and inferential statistics to examine associations between variables of interest. The definition of key terms used in this report are detailed in **Appendix B**.

Table 1. Timeline and Tasks Completed

Evaluation Task	Date Action Completed
Data Agreement	August 2022
SharePoint data transferred to AU	August 2022
AU IRB approval	September 2022
Mailed letter inviting clients to participate in phone survey	September 2022
RA training	September 2022
Developed and pre-tested survey instrument	September 2022
Created tracking sheets and Qualtrics data collection tool	September 2022
Collected phone survey data from clients who completed SAH program Oct 2021-March 2022	September 2022
Cleaned data, conducted descriptive statistical analysis	September 2022
Drafted preliminary report	September 2022
Presented preliminary findings to DACL	October 2022
Conducted descriptive statistical analysis	November 2022- January 2023
Conducted inferential statistical analysis	February 2023- June 2023
Presented key findings on Age Friendly City Topics panel with DC Department of Health	June 28 th 2023
Drafted final report	July 2023- September 2023

Protection of Human Subjects

The AU research team implemented several precautions to ensure the privacy, confidentiality and protection of information provided by all clients, as well as a high post-program survey participation rate. Institutional Review Board (IRB) approval was granted (#2023-106) on September 9, 2022 (see **Appendix C** for approval letter).

All data were stored on password-protected AU computers only accessible by the authorized owner of the computer. All names and personal identifying information were removed prior to data summary and analysis. Data were de-identified during data analysis and contain unique client IDs.

Verbal informed consent was provided by respondents before the post-program phone survey questions were administered. Data were collected via phone, recorded in Qualtrics using a secure link, and stored on AU computers encrypted with a password. The data were stored as Excel files generated from Qualtrics survey form and SPSS data files for data analysis.

Invitation to Participate in Evaluation Phone Survey

The AU research team drafted a letter to invite all clients who completed the SAH program recently (between October 1, 2021 and March 31, 2022) to participate in a brief phone survey. Rinaldo Washington, Program Manager DACL, approved and signed the letter. The letter was mailed to the eligible clients served (n=492) on September 2, 2022 (see letter in **Appendix D**).

Research Assistant (RA) Training

Three AU undergraduate students who are public health majors were hired and trained to assist with survey data collection, clean and recode data, and conduct descriptive data analyses. Preference was given to students who have completed the CITI Human Subjects certification for conducting ethical research with human subjects.

Research Assistant (RA) training was conducted the week of September 6, 2022, which included pre-testing survey items. During the training the RAs reviewed the phone survey script, practiced asking questions/probes slowly and clearly, and role-played interviewing techniques with the research team. Emphasis was placed on effectively developing rapport and answering clarifying questions regarding the purpose of the survey.

Survey Instrument Development & Pre-Testing

Best practices for survey design were followed for the development, pre-testing, and administration of the post-program phone survey. This included clarity and brevity of questions to reduce respondent burden, specificity in questions and response options, and a mix of open and close-ended questions with ‘don’t know’ options included. Demographic questions were not asked as that information is available within DACL data and was matched post data collection during data cleaning and analysis.

The 10-item post-program survey included a brief introduction describing the SAH program and purpose of the phone survey, informed consent to participate, program satisfaction (2 questions), feedback on SAH (2 questions), fall history since SAH modifications completed including location and severity (5 questions), and fear of falling (Fall Efficacy Scale).²¹ The respondent also had the opportunity to provide feedback/comments/suggestions about the SAH program in a final open-ended question (see Phone Survey Script in **Appendix E**).

The FES asks respondents to rate how confident they are in doing ten daily activities without falling on a scale of 1 to 10, with 1 being very confident and 10 not confident at all. The ten activities include: taking a bath or shower, getting in and out of bed, getting dressed and undressed, and walking around the house and stairs. The SAH occupational therapists administer the pre- and post-modification FES. Ratings for the items are summed to give an overall score ranging from 10 to 100. Lower scores indicate more confidence in not falling. Scores of above 70 are indicative of high fear of falling during everyday activities. The FES has strong psychometric properties with a test-retest reliability of .96 in an older adult population and internal reliability of

²¹ Tinetti, M., D. Richman, et al. (1990). Falls efficacy as a measure of fear of falling. *Journal of Gerontology* 45(6): 239.

.96.²² Beginning in FY2024, the short 7-item FES scale will be administered to SAH 1.0 and SAH 2.0 clients because of administration ease and high test-retest reliability.²³

The draft phone survey was reviewed by Tori Goldhammer, Clinical Manager of the Safe at Home Program at Home Care Partners at the time. The survey was then pre-tested and revised with minor revisions. DACL suggested including information if a respondent expressed a need for food or other health services; this was included in the list of contact information for RAs to share at the end of the survey. Minor revisions included adding in a voicemail message and adding in an option for the survey to be completed by a “support person/caretaker.” The survey was tested with hypothetical data to make sure that the skip logic programming within the Qualtrics survey worked as intended. The RAs also provided feedback for minor revisions for clarity. For example, a section was added to the beginning of the phone script for leaving a voice message. Additionally, the phrase “without falling” was added to each activity in FES scale to ensure the respondents clearly understood each question.

Data Monitoring & Tracking

An Excel spreadsheet was created for RAs to track all the calls attempted and surveys completed, including time and date of attempted calls, name of RA assigned to each client (divided alphabetically), and any follow-up requests. RAs also noted call progress: complete, completed by support person, not willing to participate, follow up requested, left a message, or not working number, deceased, etc. Each RA was assigned ~150-175 calls each (n=492 total). The tracking sheets were stored in Microsoft Teams with password-protected files. The AU team met each Monday to check in regarding call progress, updates, and discuss any issues with data collection procedures.

Data Collection Procedures

Phone surveys were completed September 12, 2022-September 30, 2022. All calls were made at AU in the Department of Health Studies offices from phones with (202) extension between the 9am-8pm Monday-Saturday. Verbal informed consent was provided before the administration of survey items. The RAs recorded the clients' response to the 10-question phone survey in Qualtrics, an online survey software program.

Data Analysis

Survey data was transferred from Qualtrics to IBM SPSS Statistics software (Version 28) for cleaning, recoding, and analysis. Analysis of data was conducted on password-protected computers by the research team. DACL provided program data files in Excel that were also transferred to SPSS software for analysis. The AU phone survey data was merged with the SAH program data files for additional in-depth analyses of the pre-modifications, post-modifications

²² Yardley L, Beyer N, Hauer K, Kempen G, Piot-Ziegler C, Todd C. (2005) Development and initial validation of the Falls Efficacy Scale-International (FES-I). *Age and Ageing*. 34(6): 614-619.

²³ Kempen GJIM, Yardley L, van Haastregt JCM, Zijlstra GAR, Beyer N, Hauer K, Todd C. (2008) The Short FES-I: a shortened version of the falls efficacy scale-international to assess fear of falling. *Age and Ageing*. 37(1): 45-50.

and phone survey data. Statistical analyses were performed using SPSS with the alpha level of significance at $p < 0.05$ and 95% confidence intervals calculated for all effect estimates.

The data analyses were performed sequentially in the following steps:

1) **Data cleaning and preparation:** The merged dataset was checked for duplicates; duplicates were resolved by confirming if they were true duplicate or a 2nd SAH client. Data cleaning was performed on the merged data set. New variables were created for falls (0, 1, 1+) and for inside falls (0, 1, 1+). Age was examined as both a continuous variable (age in years) and dichotomous variable (below 60 and 60+ year); FES scores were also examined as a continuous variable (overall score) and dichotomous variable (below 70 and 70+).

2) **Demographic characteristics** (age, gender, ward, race/ethnicity) were examined and summarized. The representativeness of the post-program phone survey sample was compared with the overall number of SAH clients served using chi-square tests of independence for categorical variables.

3) **Descriptive statistics** (means, standard deviations, counts, frequencies) and distributions obtained for all survey items to summarize measures, including fall history and fear of falling. Analyses were also stratified by age (below 60 and 60+ years).

4) **Bivariate analysis** was conducted to examine associations and relationships between pre and post changes in falls and fear of falling, and demographic characteristics. Bivariate analysis was conducted on the merged data set to examine the following: FES scores and demographic characteristics of survey respondents (gender, age, DC ward, falls, severity); falls (both overall and inside) and demographic characteristics (gender, age, DC ward, severity, and location).

5) **Fall rate and FES scores changes over time** were calculated to examine baseline-post-evaluation assessment differences. Mean scores for each item, as well as summary scores, were compared using paired t-tests for all assessments.

6) **Determination of the impact and reach** of the SAH program was determined by examining between group differences for each outcome (falls and FES) was evaluated using regression for repeated measures, which are robust to missing data because they allow subjects with differing numbers of repeated measures to remain in the analysis.

RESULTS

The results are organized in the section below according to evaluation objectives: **Objective 1)** Conduct statistical analysis on SAH program data from FY 2016-2022, and **Objective 3)** Collect and analyze data via phone surveys from clients who completed the SAH program between October 2021-March 2022.

These analyses inform the key research evaluation questions including: Who is most likely to complete the SAH program? Who obtains the most benefit from participation in the SAH program? What were clients' overall satisfaction with the SAH program? Do home modifications lead to decreased fall risk and reduced fear of falling?

1. Demographic Characteristics

As of September 2022, 4,753 older adults or individuals who are disabled have had home modifications completed by the SAH program. Demographic information is collected for each client through SAH, including household information, age, race/ethnicity, and gender.

The majority of SAH clients are women (79%) and over age 60 (92%) both by FY year of participation and overall. Almost 50% of clients live in Ward 5 and Ward 7. The mean age is 75 years. Among the SAH population, 90% live alone, 97% identify as Black/African-American, and 72% are homeowners.

Table 2 compares the demographic characteristics of survey sample respondents with all SAH clients served FY 2016-2022. The two groups are similar and there are no significant statistical differences, indicating that the sample is representative of the larger SAH population.

Table 2. Demographic Characteristics of Survey Sample and SAH Population

	Survey Sample (n=241)		SAH Population (n=4753)	
	n	%	n	%
Gender				
Female	193	80.1%	3766	79.4%
Male	48	19.9%	974	20.5%
Age				
<=60	22	9.1%	360	7.6%
>60+	219	90.9%	4393	92.4%
Ward				
1	8	3.3%	212	4.5%
2	3	1.2%	80	1.7%
3	6	2.5%	84	1.8%
4	44	18.3%	848	17.9%
5	52	21.6%	985	20.7%
6	28	11.6%	452	9.5%
7	50	20.7%	1200	25.3%
8	50	20.7%	891	18.8%
TOTAL	241	100%	4753	100%

2. SAH Program Data by Fiscal Year

The SAH program data was analyzed to examine barriers to enrollment and participation, types of home modifications by fiscal year, and amount spent by fiscal year and other key demographic variables including age, housing type, and FES scores.

Barriers to Enrollment and Full SAH Participation

In FY 2016-2022 there were 11,361 intake applications completed of which 42% (n=4,741) were evaluated by a contractor and 58% were ineligible for the SAH program (n=6,620).

Of the ineligible applicants, 39% (n=2,557) did not have reason listed for ineligibility. The majority of ineligible participants, 94.5% (n=3719) were aged 60 or older. Thirty-eight percent (n=4,325) intake received DC Public Benefits and there is no difference in those who eligible or ineligible by DC Public Benefit.

For those who were ineligible with a reason provided, the two primary reasons (accounting for 89%) were: 1) incomplete documents and 2) unresponsive/no longer interested. Table 3 details the list of ineligibility reasons, in order of most to least common.

Table 3. Reasons Ineligible for SAH Program (n=4,063)

Reason Ineligible	N	Percent
Incomplete documents	2353	57.9%
Unresponsive/not interested	1270	31.3%
Not income eligible	136	3.3%
Died	109	2.7%
Other	107	2.6%
No modifications needed	60	1.5%
Moved	18	0.4%
Not disability eligible	10	0.2%
Total	4063	100%

Of SAH participants FY 2016-22, 24.9% had their first contractor visit in 2019 (n=1181). Twelve percent (n=572) of clients returned for a ‘second episode’ (2nd time participating in SAH program). **Appendix F** details the number and % of first contractor visits by year.

Total Cost for SAH Occupational Therapists and Contractors

Total cost per client was examined by the variable ‘*Actual Amount Calculated*’ which is defined as the total cost for occupational therapists and contractors. Note that total cost does not include staff occupational therapists.

The average cost per client across all FY 2018-2022 was \$4,019.22 (Table 4). There are no significant differences in average cost by FY.

Table 4. Average Cost per Client by Fiscal Year (FY 2018 – 2022)

Average Cost per Client by Fiscal Year (Years 2018 - 2022)	
FY	Average Cost per Client
2018	Not available
2019	\$4,273.22
2020	\$3,936.59
2021	\$4,022.91
2022	\$4,089.43
TOTAL	\$4,019.22

There is a significant, positive correlation between average total cost per client and pre-FES score. The higher the pre-FES score, the higher cost per client ($r = 0.15$, $p < 0.01$) (Table 5).

Table 5. Average Cost per Client by Pre-FES Scores

Average Amount Spent by FES Score		
FES Score	n	Average Amount Spent
Below 70	1,396	\$3,818.49
70 & Above	35	\$4,489.14

Neither Ward of residence nor age is correlated to average amount spent. **Appendix G** details average cost per client by housing type and by age group.

Home Adaptations by Fiscal Year

Data were analyzed by all fiscal years to determine the top home modifications provided by the SAH program (Table 6). Overall, grab bar (18 inch), custom grab bar, and chair power lift recliners were the most common modifications provided between FY 2019-2022.

The total number of modifications completed between FY 2019 (Quarters 3 & 4) through FY 2022 was 32,688 for a total of 2,406 clients.

Appendix H describes home modifications by fiscal year.

Table 6. Top 15 Home Modification (FY 2019 (QTR 3 and 4)- FY 2022)

	# Completed	# Clients
Grab Bar 18 inch	2972	1641
Grab Bar Custom	1662	889
Chair Power Lift Recliner	1418	1379
Railing Iron Rail Without Pickets - Two Post (5' and Under)	1405	730
Clamp Handheld Shower on Grab Bar	1403	1305
Handheld Shower	1265	1178
Grab Bar 24 inch	1104	807
Stairlift Straight Standard up to 300 lbs Interior	967	923
Bed Handle	962	894
Toilet Seat Elevated	913	746
Seat Shower with Back	789	760
Grab Bar "L"	766	575
Grab Bar 32 inch	737	634
Bench Tub Transfer Slide/Swivel	646	631
Grab Bar 09 inch	594	287
TOTAL	32,688	2,406

Note: 2018 and 2019 (quarter 1 and 2) have a different modifications list from later years

Fear of Falling (FES scores)

SAH program data (FY 2018-2022) also includes SAFER HOME scores to assess barriers present in the home. A lower SAFER HOME scores indicates fewer safety hazards. These data were analyzed overall by FY for FES and SAFER score changes over time (Table 7).

The post-FES score was significantly lower than the pre-FES score for each FY, indicating a reduction in fear of falling and positive impact of the home modifications. The average difference in pre-post ranged from 14- 20 points (in the first year of the SAH program in FY 2018).

Likewise, the post SAFER score was significantly lower than the pre-SAFER score for each FY, indicating a reduction in the number of safety hazards in the home. The difference in pre-post scores range from 10-11.5 points across the years.

Table 7. FES and SAFER Scores by Fiscal Year (FY 18-22)

	FY18	FY19	FY20	FY21	FY22
	Avg Score	Avg Score	Avg Score	Avg Score	Avg Score
Pre- FES	44.0	40.0	34.1	35.5	36.9
Post- FES	23.4	22.8	20.3	19.0	18.3
Difference	20.6 *	17.2 * **	13.8 *	16.5 *	18.6 *
Pre- SAFER	21.2	19.7	16.6	17.2	17.4
Post- SAFER	9.95	8.23	6.63	6.96	7.79
Difference	11.3 *	11.5 *	9.97 *	10.2 *	9.61 *

*Significant changes between pre- to post- scores by year ($p < 0.05$)

**Significant changes between scores from one fiscal year to the next ($p < 0.05$)

Note: average FES Score of SAH phone survey respondents was 32.5.

3. Evaluation Phone Survey

Survey Response Rate

Of the 492 clients included in the DAFL data file, 241 respondents completed the phone survey between September 12-30, 2022 for a response rate of 54.9%. The time to complete the post-program survey averaged 11.6 minutes (mean)/9.0 minutes (median) (SD= 6.7 minutes, ranging from 4.9 minutes to 24.4 minutes).

Table 8 describes the call attempts and completed surveys, including response rate calculations.

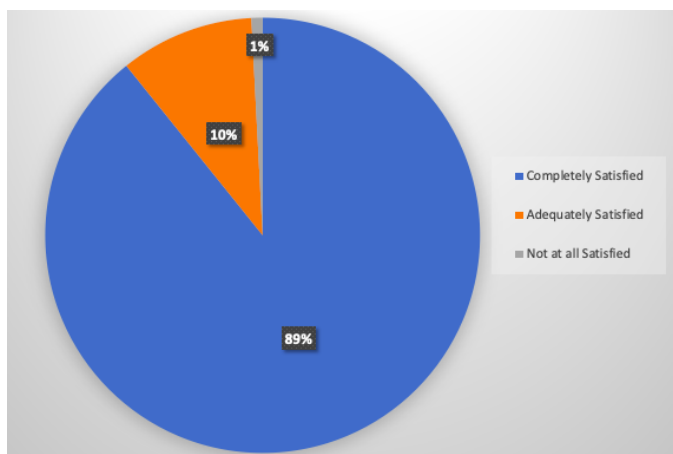
Table 8. Call Summary Response Rate

Calls	TOTAL
Clients on list	492
Ineligible (<i>non working number, disconnected, deceased, etc</i>)	53
Calls completed (<i>surveys completed</i>)	241
Response Rate <i>Calls Completed/(Calls Made-Ineligible)</i>	54.9%

Program Satisfaction

The overall satisfaction with the SAH program was high, across all demographic characteristics (Figure 2); 89.2% (n=215) of respondents reported they were ‘completely satisfied,’ 10.0% (n=24) were ‘adequately satisfied,’ and 0.8% (n=2) were ‘not at all satisfied’ with their experience with the SAH program. These findings are consistent with the FY 2021 program satisfaction results.

Figure 2. How Satisfied are you with the SAH Program Overall? (n=241)



The specific SAH program components were also rated highly. The majority of respondents, over 80%, indicated they were ‘completely satisfied’ with the specific program components.

Table 9 describes the program components and satisfaction levels.

Table 9. How Satisfied are you with the Specific Components of the SAH Program? (n=241)

Satisfaction Levels (n=241)			
	Not at all satisfied	Adequately Satisfied	Completely Satisfied
Plans for home modifications	2 (0.8%)	31 (12.9%)	208 (86.3%)
Comfort moving around home after home modifications installed	5 (2.1%)	38 (15.8%)	198 (82.2%)
Contractors who performed the modifications	5 (2.1%)	41 (17.0%)	195 (80.9%)
Sufficient clean up on behalf of the contractors	5 (2.1%)	37 (15.4%)	199 (82.6%)
Timeliness of the home modifications	4 (1.7%)	28 (11.7%)	208 (86.7%)

Respondents were asked an open-ended question about the home modifications they found to be most helpful. In order of frequency the five most helpful modifications respondents noted were: handrails, chair lift, grab bars in bathroom, shower chair, and toilet seat.

Falls Since SAH Modifications Completed

The majority of the respondents, 78.8% ($n=190$), stated that they had not fallen since the SAH program home modifications were completed. Of the 21.2% ($n=51$) who reported a fall, most reported having one fall (54.9%, $n=28$) since the completion of program (range 1-6 falls) and most falls were among clients 60 or older (84.3%, $n=43$). Among the 51 individuals who experienced a fall/s, 106 total falls reported. The 21.2% of respondents who reported a fall is lower than both the US and the DC average reported by the CDC.

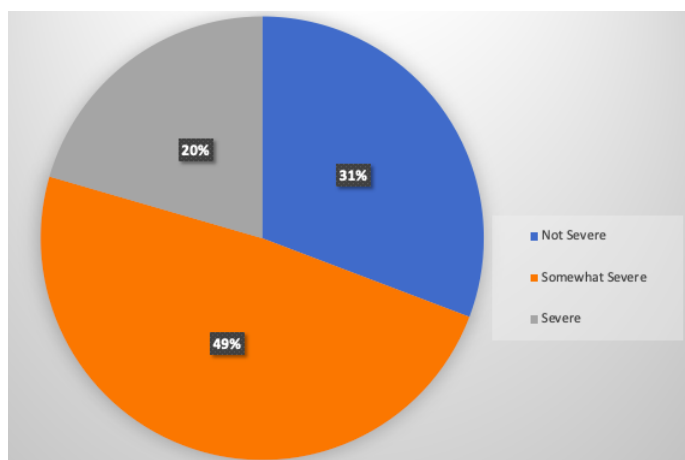
Fall Location

For falls experienced inside the home, the respondent was asked about location and severity of each fall. Seventy-five percent of the 106 falls ($n=80$ falls) occurred inside the home, which is consistent with national and local data. Those who reported an inside fall near a modification are also more likely to report having more than 1 fall. Falls occurring inside the home averaged 2.53 ($SD = 2.5$) per person per year in the previous 12 months at intake; at the follow-up evaluation survey, the average rate of falls inside the home per person per year had dropped significantly to 1.5 ($SD = .74$) ($z = 5.35$, $p < .01$).

Fall Severity

Figure 3 illustrates the self-reported severity of falls reported to have occurred inside the home ($n=80$). Severity was defined as: 1) *not severe*: able to get up easily; 2) *somewhat severe*: needed assistance from family/friend/neighbor etc; 3) *severe*: went to doctor/health care provider for medical attention. Further, those respondents who experienced a severe fall were two times more likely to also report having more than one fall. Note that Figure 3 refers to number of falls, not individuals; an individual may have reported >1 fall.

Figure 3. Self-Reported Severity of Falls Inside the Home



Predictors of Falls

Linear and logistic regression analyses were performed to examine predictors of experiencing a fall/s. Experiencing a fall was not associated with age, gender, neighborhood of residence (wards), fall severity, or whether the fall occurred near a modification. However, those who aged younger than 60 are two times more likely to report having more than one fall compared to those who are aged 60 or older.

FES scores were a significant predictor of experiencing a fall; that is higher FES scores are associated with a greater likelihood of reporting a fall (either inside the home or outside of the home), which is consistent with the literature and previous findings.²⁴

Phone Evaluation of Fear of Falling (FES)

The phone survey respondents ($n = 239$) had a median evaluation FES score of 26 and a mean score of 32.5 ($SD = 22.6$, range 10-100). Two respondents did not complete the FES questions because they were not mobile (both were wheelchair bound). There were 20 respondents (8%) who had FES scores > 70 in the survey. However, only 7 respondents had a FES score > 70 and reported a fall indicating most of the respondents with a high fear of falling did not report a fall.

The bivariate analysis of the phone survey data demonstrated that the FES scores were significantly associated with age. There was a positive correlation between older age and higher FES scores ($r = 0.17$, $p < 0.01$). Survey FES scores were not related to gender, neighborhood of residence (Wards), number of inside falls experienced, or fall severity (if a fall was reported).

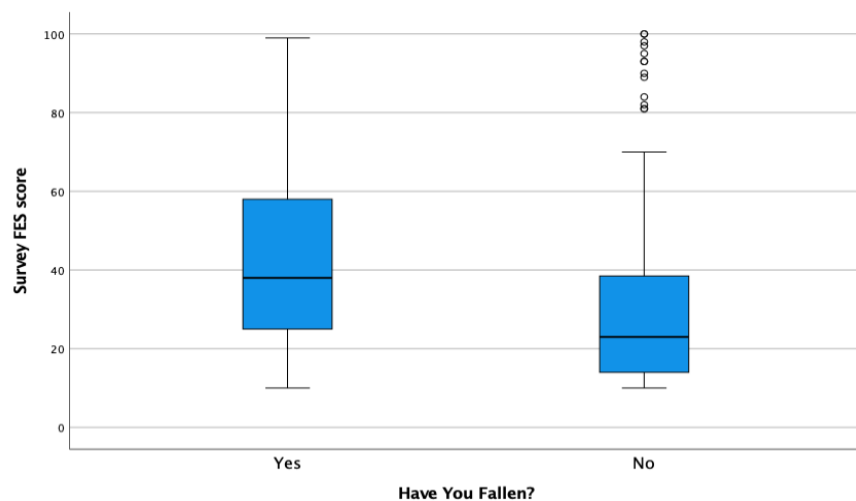
Of the 241 participant who completed the evaluation phone survey, 109 had pre-FES scores and 88 had post-FES scores. Average pre-FES scores were 36.9 ($SD = 21.3$), indicating some fear of falling during daily activities. FES scores significantly decreased (indicating more confidence in not falling) to a mean of 20.5 ($SD = 13.4$) at post assessment and remained significantly lower than pre-SAH modifications at the phone evaluation assessment ($M = 27.3$, $SD = 16.4$, $T(107) = 5.14$, $p < .001$).

Phone Evaluation FES Scores and Falls

Fear of falling and number of falls was positively correlated; higher FES scores are associated with greater number of falls reported ($r = 0.44$, $p < .001$, $n = 51$). The mean FES score among those who reported a fall ($n = 51$) was 42.4 ($SD = 22.6$) which was significantly higher than the mean FES score of 29.8 ($SD = 21.9$) among those who did not report a fall ($n = 188$) in the phone survey ($p < .001$, $t = 3.6$, $df = 237$) (Figure 4).

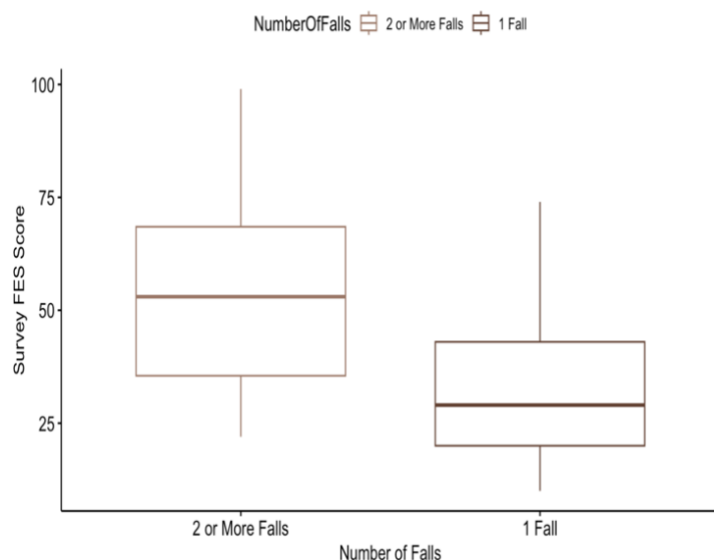
²⁴ Greenberg, M., Jacoby, J., Barraco, R. D., Yazdanyar, A. R., Surmaitis, R. M., Youngdahl, A., Chow, R. B., Murillo, S. M., Zeng, A. H., & Kane, B. G. (2021). Analysis of Falls Efficacy Scale and Vulnerable Elders Survey as Predictors of Falls. *Cureus*, 13(4), e14471. <https://doi.org/10.7759/cureus.14471>

Figure 4. Fall Occurrence and FES Scores (n=239)



Among those who reported a fall, those who experienced 2 or more falls ($n=23$) also had a higher FES score ($M = 54.1$, $SD = 23.3$) compared to those who reported 1 fall ($M = 32.8$, $SD = 17.1$) ($p < .001$, $t = 3.8$, $df = 49$) (Figure 5). This indicates that those who fell more often also report a greater fear of falling compared to those who fell 1 time.

Figure 5. Number of Falls and FES Scores (n=51)



4. Restricted Sample by Older Age

Additional analyses were conducted to stratify the phone survey respondents by age. Of the 241 phone survey respondents the majority, n= 219, were 60 and older and n=22 were <60 years old. The rationale for the stratified analysis was those clients < 60 years old are individuals with disabilities and may have characteristics related to falls and fear of falling that are distinct from the older age group. Unfortunately, the number of respondents < 60 years (n=22) was too small to analyze by other demographic factors.

There were no differences in demographic characteristics between full phone survey sample (n=241), restricted 60+ sample (n=219) and overall SAH population (n=4573) (Table 10). As with previous analyses, the majority of clients were female (~80%) and representation across all wards, with Wards 4, 5, 7 and 8 accounting for over 80% of clients served.

Table 10. Demographic Characteristics of Full Sample, Restricted Sample and SAH Population

	Full Survey Sample (n=241)		Restricted Sample (n=219)		SAH Population (n=4753)	
	n	%	n	%	n	%
Gender						
Female	193	80.1%	178	81.3%	3766	79.4%
Male	48	19.9%	41	18.7%	974	20.5%
Age						
<60	22	9.1%	n/a	n/a	360	7.6%
60 +	219	90.9%	219	91.3%	4393	92.4%
Ward						
1	8	3.3%	9	4.11%	212	4.5%
2	3	1.2%	2	0.91%	80	1.7%
3	6	2.5%	5	2.28%	84	1.8%
4	44	18.3%	41	18.7%	848	17.9%
5	52	21.6%	50	22.8%	985	20.7%
6	28	11.6%	25	11.4%	452	9.5%
7	50	20.7%	41	18.7%	1200	25.3%
8	50	20.7%	46	21%	891	18.8%
TOTAL	241	100%	219	100%	4753	100%

Overall program satisfaction is very high across all three samples, ~90% of clients report they are ‘very satisfied’ with the SAH program. When comparing the full sample with the restricted age sample, there were also consistent trends in experiencing falls. Among the restricted age sample, approximately 80% (n=176) report 0 falls since the SAH program modifications were complete. Of those who reported a fall (n=43), most reported 1 fall (n=24) and the range was 1-6.

It is important to note that there were less severe falls reported in restricted sample among those clients who had 1 or more falls. Fifty-nine percent of those in the restricted sample reported severe falls compared with 69% in the full sample.

There were similar trends and correlations with FES scores and correlations. Both the full sample and restricted sample had FES scores that ranged from 10-100. FES scores significantly higher among those who fell compared to those who did not report a fall. Of those who reported a fall, the average FES score was ~40 and for those who did not report a fall, the average FES score was ~30 in both samples.

Further, evaluation survey FES scores were moderately correlated to the number of falls experienced ~.4 in both samples ($p < 0.01$). In the restricted age sample, we examined falls that occurred near a modification. Of the 43 clients who reported a fall, 72% had fallen near a modification ($n = 31$). However, neither pre-FES, post-FES, or SAH survey FES scores were associated with falls near a modification.

5. Client Feedback

The phone survey respondents had the opportunity to provide any further comments or suggestions, the overwhelming majority of which were positive about the SAH program experience.

Qualitative analyses were conducted on the open-ended comments ($n=58$) and categorized by key themes and key quotes. The key themes were related to program satisfaction and requests for additional assistance.

Selected quotes on satisfaction with the program include:

- *“Wished the program was longer!”*
- *“Very grateful for the Safe at Home program and confident about all aspects of the program.”*
- *“Like the program, recommended it to friends!”*
- *“Glad to participate in program! fantastic program!!”*
- *“Pleased with service.”*
- *“I thank you all for everything you have done for me!”*
- *“I wouldn’t be able to live in my house without SAH services. [We are] very grateful!”*

Some respondents cited difficulty in receiving referral:

- *“Worst part [of the program] is contacting people for a referral.”*

Limitations

There are several limitations to note. The SAH program files had missing data which were accounted for using robust statistical approaches, when possible. Cost-effectiveness statements are estimated based on comparisons of average costs per client with national costs for hospital visits for falls.

Program data provided did not allow for analysis of average cost per client by number of modifications; therefore, it was not possible to examine the relationship between number of modifications and changes in fall risk after program participation. Other important factors that may impact both falls and fall risk were not reported in these data, including Activities of Daily Living (ADL) and the relationship with hours of Personal Care Assistance (PCA) services.

Survey data on number of falls, fall location, and fall severity was self-reported by the clients and thus subject to recall bias. Respondents may have provided responses they think are expected, which may contribute to response bias. The FES items may have caused some confusion as the respondents are asked to give a lower number for higher confidence; the RAs attempted to reduce errors by reading each statement carefully and slowly, repeating as necessary.

RECOMMENDATIONS

The SAH programs aims to prevent falls and reduce fear of falling to improve health outcomes for older adults and adults with disabilities in DC. In collaboration with DACL and Home Care Partners, AU collected and analyzed data to examine populations at risk for falls and to inform future SAH 2.0 program efforts.

Below are five recommendations for the SAH program that are also relevant to support SAH 2.0:

- 1) Raise **awareness of SAH program for adults with disabilities**. A small proportion adults with disabilities are currently served by the program.
- 2) Improve **efficiency of enrollment processes** given the large number of residents who were determined to be ineligible, largely due to incomplete paperwork.
- 3) Continue efforts to **enroll DC residents across the city with greatest need and highest fall risk**. Currently, those who benefit from SAH the most are women, and those who live in Ward 5 and Ward 7.
- 4) Collect data to **determine the number of modifications installed per client**. Currently cost per client is calculated but it is not possible to examine number of modifications installed per client with fall risk or number of falls.
- 5) Implement a **process to triage clients who are high risk falls**, as indicated by pre-FES scores, to provide additional follow up by OT. This would be an opportunity to provide fall education, particularly near home modifications.
- 6) Include an annual **follow-up phone survey among a small random sample of clients** to assess fall history since time of modification and allow for continued monitoring of the program's efficacy and sustained success.

APPENDIX A. List of Data Fields

DACL shared the following data elements with AU regarding individuals enrolled in DACL's SAH program from CSTARS from Fiscal Year 2018 to Fiscal Year 2022. These data were transferred to AU in an Excel file with the following four tabs:

Tab 1: Client Demographics:

- Name (for completed participants from October 1, 2021-March 31, 2022 only)
- Address (for completed participants from October 1, 2021-March 31, 2022 only)
- Phone Number (for completed participants from October 1, 2021-March 31, 2022 only) .
- Age
- Ward
- Gender

Tab 2: Enrollment Data:

- Referral Received Date
- Referral Type
- Number of previous episodes
- Receipt of DC Public Benefits
- Ineligibility Reason

Tab 3: Project Data:

- Date sent to contractor
- Dates of contractor visits
- 1st FES score, 2nd FES score
- 1st SAFER score, 2nd SAFER score

Tab 4: Number of Adults Served by:

- Ward
- Age
- Gender

APPENDIX B. Definitions and Terms

- ‘**older adult**’ refers to an individual who is 60 years of age or older
- ‘**disability**’ is documented for SAH program eligibility to confirm difficulty with at least one of six functioning domains—mobility, hearing, cognition, independent living, vision, and/or self-care.
- ‘**clients served**’ are individuals who have completed the SAH program. This is used interchangeably with the term ‘**completed projects**’
- ‘**enrollment**’ is number of referrals to the SAH program. **Note:** If an individual is enrolled in the SAH program, they would not be included in the ‘**clients served**’ list if they did not complete the SAH program.
- ‘**home assessment**’ includes multiple assessments to evaluate home safety and assess potential hazards or risks in the home, how the individual functions in the home environment, and factors that may hinder or prevent independent living.
- ‘**home modification**’ refers to changes to make a home environment safer to support the individual living independently in the home. Modifications may include structural, non-structural, and/or adaptive equipment.
- ‘**second episode**’ refers to clients who request additional SAH services after program completion. Second episodes are permitted if the client moves from one residence in DC to another residence in DC and is in need of SAH modification at the second residence; >3 years have elapsed since the completion of prior SAH services, or: the client experiences a significant change in medical status that affects mobility.
- ‘**impact studies**’ estimate what would have happened in the absence of the program or aspect of the program.
- ‘**outcome studies**’ assess the extent to which a program has achieved certain objectives, including how the program achieved these objectives.

APPENDIX C. IRB Approval Letter



INSTITUTIONAL REVIEW BOARD
OFFICE OF RESEARCH INTEGRITY

September 8, 2022

Anastasia Snelling
Protocol #: IRB-2023-106
Title: Safe at Home Program Evaluation

Determination date: September 8, 2022

Dear Anastasia Snelling, Melissa Hawkins,

On September 8, 2022, the above-mentioned protocol was reviewed by the IRB and it was determined that this research meets one or more of the criteria for exemption. You may now begin the research.

This research was determined to qualify for exemption under the following category or categories of the Code of Federal Regulations Title 45 §46.101(b):

*"Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7)."*

Any unanticipated problems that involve risks to subjects or others must be reported to the IRB in accordance with American University policies and procedures.

If you have any questions regarding this approval, please contact the IRB office at 202-885-3447.

On behalf of the Institutional Review Board and the Office of Research Integrity

APPENDIX D. Letter Inviting Participation in Survey



GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF AGING AND COMMUNITY LIVING



September 2, 2022

Dear **First Name/Last Name**,

We hope this letter finds you well. As a recent participant of the Safe at Home Program through the DC Department of Aging and Community Living, you are invited to complete a brief phone survey about your experience with the program. The Safe at Home Program may have provided home modifications and/or safety adaptations in your home to decrease your risk of falling.

During the short phone survey, a Safe at Home representative will ask you a few questions regarding your experience and satisfaction since completing the program. Your opinion and feedback is important to improve the program for DC residents. Please expect a call sometime after September 12, 2022.

We look forward to speaking with you!

All the best,

A handwritten signature in black ink that reads "Rinaldo Washington".

Rinaldo Washington
Program Manager
Email: Rinaldo.Washington@dc.gov
Phone: (202) 316-3097
Website: <https://dacl.dc.gov/>

APPENDIX E. Phone Survey Script

Q0 Research assistant to enter: (client name)

- First Name (1) _____
- Last Name (2) _____

MESSAGE IF VOICEMAIL:

Good [*morning/afternoon/evening*]. I am calling from the DC Safe at Home Program to speak with [*First Name, Last Name*]. We are calling everyone who completed the program to hear your experiences and satisfaction with the program. I will try to give you a call back [*day, date or you can say tomorrow/ this week*]. Thank you and hope to speak with you soon.

INTRODUCTION IF CALL IS ANSWERED:

Good [*morning/afternoon/evening*]. May I please speak with [*First Name, Last Name*]?

My name is [*First Name, Last Name*] and I am calling from the DC Safe at Home Program. I am following up on a letter you may have received recently from Mr. Rinaldo Washington of the Department of Aging and Community Living. We are calling everyone who completed the program to hear your experiences and satisfaction with the program.

Do you have 5-10 minutes to speak with me now?

[Below are responses ONLY if participants ask—'What is SAH program?' 'Why are you calling me?' 'I don't remember being in this program.']

The Safe at Home Program is administered by the DC Department of Aging and Community Living. It provides changes and modifications to your home to improve safety and reduce your risk of falling. Some of the changes may have been include: Handrails, Grab bars, Bathtub cuts, Shower seat, or a Stair lift. We are calling everyone who completed the program to hear your opinions and satisfaction with the program.

[More info:] Safe at Home is a grant funded home modification program that has served over 5,000 DC residents since 2016. The program is administered by Home Care Partners. It assesses the needs and determines the most appropriate home modifications increase safety in your home. The goal of the program is to decrease home safety hazards so you can live in your home independently and safely.

- No - Ok, when would be a good time for me to call back? This should take about 5-10 minutes of your time. Thank you and I look forward to speaking with you soon. [Enter new day/time to call on TRACKING SHEET]. [survey ends] (1)
- Yes - Great, thanks so much. This should take about 10-15 minutes. (2)
-

Display This Question:

If MESSAGE IF VOICEMAIL: Good [morning/afternoon/evening]. I am calling from the DC Safe at Home Pro... = Yes - Great, thanks so much. This should take about 10-15 minutes.

Consent **INFORMED CONSENT**

Your decision to take part in this phone survey, or not, is part of an informed consent process. The purpose of the survey is to ask about your satisfaction with the Safe at Home program and experiences since completing the program. It is expected that it will take 5-10 minutes of your time. There are no known possible harms or burdens of taking part in the survey. Possible benefits may be to improve the Safe at Home Program. Any feedback you provide or answers given will not affect your participation the Safe at Home Program or any other DC programs. Your information will be not shared with anyone outside of the research team. Your personal information will not be connected with the answers provided in the phone survey. It is your choice to take part or not.

Do you agree to participate in this short phone survey? Do you have any questions for me before we begin?

- Yes (1)
- No - This completes our conversation. Thank you for your time. [survey ends]. (2)

Skip To: End of Survey If INFORMED CONSENT Your decision to take part in this phone survey, or not, is part of an informed... = No - This completes our conversation. Thank you for your time. [survey ends].

Page Break

Q1 First, I'd like to ask about your experience with the Safe at Home program.

Some of the questions ask about 'home modifications'. A modification is an in-home adaption provided by the Safe at Home program that reduces the risk of falls. Modifications may include items like handrails, stair lifts, bathtub cuts, raised toilet seats, shower seats and many more.

Overall, how satisfied are you with the Safe at Home Program? [*read all the responses*]

- Not at all satisfied (1)
- Adequately satisfied (2)
- Completely satisfied (3)

Q2 For each of the statements I read, can you please indicate how satisfied you are with these **specific** parts of the Safe at Home program?

[*Read this statement and response options for each of the below*]

How satisfied are you with...

	Not at all (1)	Adequately (2)	Completely (3)
Plans for home modifications (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfort moving around your home after home modifications were installed (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contractors who performed the modifications (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sufficient clean up on behalf of the contractors (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Timeliness of the home modifications (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q3 Which home modification would you say has been most helpful to you? *[open-ended, can probe with list below]*

Probe Examples: Handrails, Grab bars, Bathtub cuts. Shower seat, Stair lift

Q4 Now I am going to ask you about any recent falls. Have you fallen, either inside your home or outside your home, since the Safe at Home program modifications were completed, since **[INSERT MONTH, YEAR program completed from TRACKING SHEET]**?

[PROBE: this question is referring to any fall at all, no matter how serious]

- Yes (1)
- No (2)
- Not sure/don't remember *[PROBE: do you want a little more time to think back if you remember falling, having an injury, or visiting a doctor because of a fall?]* (3)

Skip To: Q9 - (FES) If Now I am going to ask you about any recent falls. Have you fallen, either inside your home or out... = No

*Skip To: Q9 - (FES) If Now I am going to ask you about any recent falls. Have you fallen, either inside your home or out... = Not sure/don't remember *[PROBE: do you want a little more time to think back if you remember falling, having an injury, or visiting a doctor because of a fall?]**

Display This Question:

If Now I am going to ask you about any recent falls. Have you fallen, either inside your home or out... = Yes

Q5 How many times have you fallen since **[INSERT MONTH, YEAR program completed]**?

[Enter exact number or range that they give]

Not sure/don't remember. *[PROBE: can you estimate the number of falls?]*

Display This Question:

If Now I am going to ask you about any recent falls. Have you fallen, either inside your home or out... = Yes

Q6 How many of these [*insert number given from previous question*] falls were **inside your home**?

[*Enter exact number or range that they give*]

Not sure/don't remember. [*PROBE: can you estimate the number of falls INSIDE your home?*]

Display This Question:

If Now I am going to ask you about any recent falls. Have you fallen, either inside your home or out... = Yes

Q7 Now, I'd like to ask about the **severity** of each fall **inside your home**. You said you have had [*insert number answered in Q6*] falls inside your home since [*date*].

For the ___ fall, would you say the fall was...*[read all response options]*

	Not severe. You were able to get up easily (1)	Somewhat severe. You needed assistance from family/friend/neighbor/etc (2)	Severe. You went to doctor/health care provider for medical attention (3)	Not Applicable (4)
1st fall (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2nd fall (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3rd fall (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4th fall (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5th fall (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6th fall (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7th fall (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8th fall (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9th fall (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10th fall (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Now I am going to ask you about any recent falls. Have you fallen, either inside your home or out... = Yes

Q8 Was the ___ fall inside your home in an area where modifications were provided by the Safe At Home program?

[PROBE: where did you fall?]

	Yes (1)	No (2)	Not sure/don't remember (3)	Not Applicable (4)
1st fall (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2nd fall (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3rd fall (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4th fall (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5th fall (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6th fall (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7th fall (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8th fall (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9th fall (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10th fall (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Q9 - (FES) Now, I'm going to ask you a few questions about your concerns about falling.

On a scale from 1 to 10, with 1 **being very confident and 10 being not confident at all**, how confident are you that you can do the following activities without falling? [*read statement before each of the below items*]

	Very confident	Somewhat confident	Not confident at all								
	1	2	3	4	5	6	6	7	8	9	10
Take a bath or shower without falling ()											
Reach into cabinets or closets without falling ()											
Walk around the house and stairs without falling ()											
Prepare meals not requiring carrying heavy or hot objects without falling ()											
Get in and out of bed without falling ()											
Answer the door or telephone without falling ()											
Get in and out of a chair without falling ()											
Get dressed and undressed without falling ()											
Personal grooming (i.e. washing your face) without falling ()											
Get on and off of the toilet without falling ()											

Page Break

Closing remarks Those are all the questions I have for you. Thank you so much for your time!

Do you have any questions or final comments for me?

[If they want to talk to someone or have additional questions about]:

- *Safe at Home Program: Tori Goldhammer, Clinical Manager, Safe at Home program at Home Care Partners, 202-642-6309, tgoldhammer@homecarepartners.org*
- *Survey or Survey Questions: Stacey Snelling, Chair, Dept of Health Studies, stacey@american.edu*
- *Rights as a Participant: Matt Zembrzuski, IRB Coordinator, American University, (202)885-3447 irb@american.edu*
- *Other DC services to assist with food, housing, Covid vaccines, etc: please refer them to the DACL Intake and Referral Line - 202-724-5626.*

APPENDIX F. First Contractor Visit by Year (n=4,741)

Year	n	Percent
No date	188	3.9%
2016	1	0.02%
2017	327	6.9%
2018	998	21.1%
2019	1181	24.9%
2020	576	12.2%
2021	941	19.9%
2022	529	11.2%
Total	4741	100%

APPENDIX G.

Average Cost per Client by Housing Type

Average Cost by Housing Type		
Housing Type	n	Average Cost per Client
Caregiver	13	\$5,125.87
Homeowner	1,125	\$4,677.96
Private Renter	376	\$2,602.36
Public Housing Renter	74	\$2,727.50
Senior Housing Renter	107	\$1,837.57
Other	77	\$4,479.59
No Information Given	637	\$4,130.42

Average Cost per Client by Age Group

Average Amount Spent by Age		
Age Group	n	Average Amount Spent
22 - 30	4	\$3,406.00
31 - 40	9	\$3,739.99
41 - 50	26	\$3,962.36
51 - 60	138	\$3,744.73
61 - 70	613	\$3,554.70
71 - 80	749	\$3,912.51
81 - 90	636	\$4,484.13
91 - 100	198	\$4,708.98
100+	4	\$4,896.25

APPENDIX H. Top 15 Modifications by Fiscal Year (2018 – 2022)

Top 15 SAH Modifications by Project Type <i>Fiscal Year 2018</i>		
Modification Type	Amount Completed	Number of Clients
Grab Bars - Regular	916	466
Railing - Interior	362	242
Railing - Exterior	288	204
Handheld Clamp	169	166
Reacher	145	134
Handheld Shower	144	148
Toilet Riser	140	120
Shower Seat/Bench	136	135
Night Light with Batteries	133	119
Power Lift Recliner	132	131
Stair Lifts	128	124
Freedom Alert	82	85
Shower/Bath Mat	77	73
Laundry Backpack	75	71
Toilet Handles	65	57
Top 15 SAH Modifications by Project Type <i>Fiscal Year 2019</i>		
Modification Type	Amount Completed	Number of Clients
Bed Over Bed Hospital Table	1982	642
Bed Rail Acrorail	1355	530
Bench Tub Transfer Slide/Swivel	333	323
Ceiling Repair	314	248
Brick for Walkway Repair	292	284
Chair Healthy Back Lift Chair with Heat	247	244
Ceiling Fan/Light Ball Chain Extension	235	228
Chair Power Lift Recliner	192	189
Chair Shower Bariatric	129	110
Chair with Arms for Dressing	78	78
Commode Bedside	62	61
Clamp Handheld Shower on Grab Bar	40	40
Clamp Tub Grab Bar	40	40
Concrete Repair	38	14
Concrete Path	35	34

Top 15 SAH Modifications by Project Type <i>Fiscal Year 2020</i>		
Modification Type	Amount Completed	Number of Clients
Grab Bar 18 inch	707	396
Grab Bar Custom	435	200
Railing Iron Without Pickets – Two Post	351	189
Clamp Handheld Shower on Grab Bar	318	297
Chair Power Lift Recliner	308	302
Bed Handle	302	278
Handheld Shower	286	265
Lights (Night Light w/ Battery)	263	225
Grab Bar 24 inch	258	199
Mats Shower/Bath	243	174
Toilet Seat Elevated	232	184
Stairlift Straight Standard up to 300 lbs Interior	210	206
Grab Bar “L”	189	146
Toilet Hinge Riser with Seat	178	133
Grab Bar 32 inch	170	151

Top 15 SAH Modifications by Project Type <i>Fiscal Year 2021</i>		
Modification Type	Amount Completed	Number of Clients
Grab Bar 18 inch	953	524
Grab Bar Custom	716	352
Chair Power Lift Recliner	481	464
Clamp Handheld Shower on Grab Bar	448	412
Railing Iron Rail Without Pickets – Two Post	426	216
Handheld Shower	397	371
Toilet Seat Elevated	356	300
Stairlift Straight Standard up to 300 lbs Interior	316	298
Bench Tub Transfer Slide / Swivel	275	269
Grab Bar 24 inch	266	197
Bed Handle	256	241
Grab Bar 09 inch	244	113
Seat Shower with Back	214	208
Shower Curtain Curved Rod Roller Rings and Curtain	214	207
Grab Bar “L”	213	160

Top 15 SAH Modifications by Project Type <i>Fiscal Year 2022</i>		
Modification Type	Amount Completed	Number of Clients
Grab Bar 18 inch	776	411
Chair Power Lift Recliner	451	437
Grab Bar 24 inch	357	244
Railing Iron Rail Without Pickets – Two Post	354	172
Clamp Handheld Shower on Grab Bar	352	333
Grab Bar 09 inch	349	173
Handheld Shower	333	310
Grab Bar Custom	300	198
Grab Bar “L”	280	190
Stairlift Straight Standard up to 300 lbs Interior	276	257
Seat Shower with Back	266	254
Grab Bar 32 inch	244	196
Toilet Seat Elevated	237	194
Toilet Riser with Handles	236	201
Grab Bar 16 inch	214	134