STEP UP TO STOP FALLS

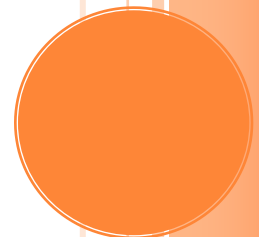*Cross-collaborative Evaluation*

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

BACKGROUND

Funded by the Health Foundation for Western & Central New York (HFWCNY), the Step Up to Stop Falls Collaborative aims to prevent falls among older adults living in the community who are frail, or at risk of becoming frail, and reside in counties served by the HFWCNY. The goal of Step Up is to help older adults continue living safely in the community for as long as possible by reducing falls.

In 2009, HFWCNY funded 7 county coalitions to undertake a 6-month planning phase, followed by an 18-month implementation phase (Phase 1) to address falls in their counties. Counties implemented a variety of fall-prevention programs, including exercise programs, home assessment and modification programs, community awareness and education programs, and health care provider educational activities. HFWCNY supported a comprehensive evaluation of this phase of the Step Up to Stop Falls Collaborative that examined the role and effectiveness of Collaborative structures and processes, achievement of desired outcomes, and the impact, sustainability and spread of new programs resulting from Step Up. One aspect of that comprehensive evaluation was a cross-collaborative evaluation, conducted by a team from the University at Albany led by Mary Gallant, PhD, and designed to evaluate Step Up's reach, impact and maintenance of programs beyond the funding period. This cross-collaborative evaluation aimed to:

- Assess the reach and spread of falls prevention practices;
- Determine the overall impact of Collaborative activities on fall-related outcomes;
- Examine the ability of the work to continue beyond the formal structure of the Collaborative.

The purpose of this evaluation was not to evaluate the work of individual counties; rather it was intended to provide a picture of the overall influence of the work of the entire Collaborative, and to help the Foundation determine how successful the entire Collaborative was at reaching and impacting the lives of older adults. It should be recognized that each of the counties had different goals from the start, each focused on different projects, and each had different histories and starting points in terms of their previous involvement with fall prevention activities. The number of participants reached by each project may not completely reflect the effort put into establishing new projects, developing working relationships among the collaborative organizations, or the impact the different projects had on older adult's lives.

EVALUATION METHODS

The cross-collaborative evaluation focused on the work of the Collaborative during the May 2009 – November 2012 implementation period. A mixed method evaluation design was

employed, which utilized both quantitative and qualitative data. Data sources utilized to examine reach included participation data, program site information, and participant outcome data from bi-monthly county reports and final reports; interview data from counties about target populations; and census data. To examine impact, common outcome measures were determined for each category of program (i.e. exercise; home modification; community education; healthcare professional education) and individual counties collected data for these outcome measures for subsets of their program participants to the extent possible. This data was submitted bi-monthly to the evaluation team who then compiled it for analysis. To examine sustainability, a written questionnaire and follow-up telephone interview was conducted with each county one year following the end of their 18-month program implementation phase.

RESULTS

Who was reached?

Across all counties and types of programs, the Step Up To Stop Falls Collaborative reached approximately 10,000 participants.

- Exercise programs reached approximately 1,200 older adults. A variety of exercise programs were implemented, including Tai Chi, Growing Stronger, OTAGO, strength and balance, and yoga, among others. The most common programs were Tai Chi or Qigong. All counties had at least one exercise program and several counties had more than one type of exercise program.

> "Almost all of the counties reported reaching 100% or more of the participants that they intended to reach."

- Home modification programs reached over 2000 individuals. The most common home assessment used was the HSSAT (used in 90% of home assessment activities).

- Older adult education and social marketing programs reached over 3000 participants with a variety of educational programs ranging from one-time sessions to on-going educational programs to social marketing campaigns.

- Healthcare professional programs reached approximately 500 healthcare professionals. In addition, approximately 1000 older adults were reached through activities aimed at healthcare professionals.

- The vast majority of participants were female; about 80% of the participants for whom we have outcome data were female.

- The programs were very successful at reaching "older" age groups (80+). This is important because this age group has an increased risk for falls.

- Almost all of the counties reported reaching 100% or more of the participants that they intended to reach with their programs. The counties were able to reach the largest percentage of the older adult population with education and social marketing programs.

- Geographic reach varied across counties.

What was the impact?

Outcome data was received for 1018 participants in exercise programs, 591 participants of home assessment and modification programs, 464 older adult participants of educational programs, and 183 participants of healthcare professional education. Analysis of the data received for these individuals indicate that:

- Exercise programs were moderately effective at reducing fall risk. There were significant improvements in the 10-foot Timed-Up-and-Go pre- and post-test scores.

- On average, the TUG baseline scores were below the cut-off for high fall risk, indicating that many participants had relatively good lower body strength before they started the exercise programs.

- About 60% of participants in home assessment programs resolved at least 75% of home hazards identified and targeted for change, within 60 days of assessment. Only 17% of participants in home assessment programs resolved none of the hazards identified.

> "Participants demonstrated improvements in lower body strength, home hazards, beliefs about ability to reduce their and their patients' fall risk, and intentions to do something about falls."

- The results of exercise and home modification programs were consistent with documented outcomes of other evidence-based fall prevention programs.

- Older adults who participated in educational programs demonstrated a significant increase in their belief that they could do things to reduce fall risk.

- Women were more likely than men to have done something in the past year to reduce their fall risk.

- Health care providers demonstrated a significant change in the extent to which they agreed they could do things to reduce their patients' fall risk.

- Health care providers demonstrated a significant change in their intent to initiate conversations about falls and to obtain fall history among their patients.

To what extent were Step Up to Stop Falls programs sustained?

Although planning for sustainability was included in the county coalitions' initial plans, several of the counties did not have sustainable programs at the end of Phase 1 funding. All counties received a small amount of additional Phase 2 funding at the end of the 18-month Phase 1 implementation period. During Phase 2, these counties were able to embed many programs and procedures into their organizations.

- Several counties continued to offer the same exercise programs in the same locations that they offered in Phase 1. The counties that have sustained their Phase 1 programs have all engaged new participants within their on-going programs.

- All six counties continue to offer various exercise programs. They also expanded their exercise programming to new locations, started over 30 new exercise classes, and engaged several hundred new participants during Phase 2 funding. The majority of counties have plans and procedures to ensure the sustainability of their exercise programs beyond Phase 2.

- All six counties offered home assessment/modification programs (mainly the HSSAT) during Phase 1 and continue to do so during Phase 2. Over 100 home assessments were completed in Phase 2. All of the counties are confident in their ability to continue the home assessment after Phase 2 funding concludes.

- Most of the counties expanded their home assessment reach in Phase 2 by engaging healthcare professionals and working with them to refer patients for home assessments. Additionally, the counties have been quite successful at embedding the home assessments into the tasks of volunteers, case managers, and home health workers as a way to sustain these programs.

- All counties offered adult education/community outreach programs during Phase 1 and continued them in Phase 2. A few counties have worked to embed these programs into their organizations and will be able to continue certain aspects of their community outreach. Several counties remained unsure if, how, and to what extent they will be able to sustain the adult education/community outreach programs beyond Phase 2 funding.

- The adult education programs are quite variable, and range from social marketing, to community presentations, to presentations within other programs (i.e. medication presentation in an exercise class). During Phase 2 funding, over 3,000 additional community members were reached across the Collaborative.

- Every county tried to work with healthcare professionals during Phase 1; however, healthcare professionals proved to be the most difficult group to engage. Two of the counties ended their work with healthcare professionals at the end of Phase 1.

- Four counties continued their Phase 1 work with healthcare professionals in Phase 2. Two counties reported that their healthcare professional programs were already self-sustaining and they did not use Phase 2 funding for healthcare professional programs. Two counties reported that their main focus for Phase 2 funding was engaging healthcare professionals and that funding was crucial in order to get the programs implemented. Both of these counties acknowledged that aspects of their work with healthcare professionals rely on funding, so their ability to fully sustain the programs beyond Phase 2 funding remains unknown.

Even though Phase 2 funding helped the counties improve their ability to sustain their programs, most Coalitions reported at least one barrier to sustaining the programs beyond Phase 2. A few examples of identified barriers included limited staffing and staff time, financial resources/the need for on-going funding, downsizing and staff turnover in partnering organizations, and the ongoing need for trained volunteers to help carry out the programs in communities. Each county has reached a different level of sustainability across their programs, but every county should be able to sustain the majority of their programs beyond Phase 2 funding.

CONCLUSIONS

A comprehensive multi-county initiative can be an effective way to implement evidence-based falls prevention strategies and reduce fall risk factors for older adults, as well as to change health care providers' intentions to address falls. Participants demonstrated improvements in lower body strength, home hazards, beliefs about ability to reduce their and their patients' fall risk, and intentions to do something about falls.

- Step Up to Stop Falls activities were very effective at reaching females and those over the age of 80.
- Exercise programs were the most effective way to engage a large number of older adults in fall prevention behavior change activities. Exercise programs were moderately effective at reducing fall risk, and effectiveness was consistent with the evidence in the literature.
- Home modification programs seemed very well-received and potentially effective. However, the number of home hazards identified and targeted for change overall

was fairly small, though it was consistent with published evidence. Greater effectiveness might be achieved with more comprehensive home assessments.

- Older adult education programs were effective at increasing participants' beliefs that they could do things to reduce the risk falling, suggesting that the education increased their knowledge of the changes they could make or made them feel more confident in their ability to make the changes.
- Healthcare professionals were the most difficult group to engage; however, healthcare provider education seemed to be effective at increasing providers' intentions and ability to address fall risk.

RECOMMENDATIONS

Across the Collaborative, the counties have had success in reaching older adults and healthcare professionals, demonstrating an impact on fall risk, and developing sustainable programs. Future efforts may be even more effective by:

- Utilizing a more deliberate approach to reach to ensure that programs reach those older adults most in need. The answers to questions such as "Who might be at the highest risk for falls?" "What might be the best way to reach these subpopulations?" and "Where are programs needed to reach those at high risk?" might help to determine where programs should be implemented for maximum impact.
- Targeting exercise programs to those at higher fall risk in order to enhance the effectiveness of the programs.
- Increasing the comprehensiveness of home modification programs.
- Focusing educational efforts for both older adults and healthcare professionals on moving individuals from knowledge to behavior change. Additionally, providing easy pathways for participants in educational programs to move into behavior change programs may serve to capitalize on the effects of educational programs, and facilitate the ability of participants to put their intentions into actions.
- Continuing to engage healthcare professionals, and developing linkages for referrals between healthcare professionals and existing programs.

INTRODUCTION

Background

Funded by the Health Foundation for Western & Central New York (HFWCNY), the Step Up to Stop Falls Collaborative aims to prevent falls among older adults living in the community who are frail, or at risk of becoming frail, and reside in counties served by HFWCNY. The goal of Step Up is to help older adults continue living safely in the community for as long as possible by reducing falls.

As part of this ongoing initiative, in 2009, HFWCNY funded seven "diffusion" county coalitions to undertake a 6-month planning phase, followed by an 18-month implementation phase (Phase 1) to address falls in their counties. Early in the implementation phase, one county dropped out, leaving six counties remaining in the Collaborative. During the 6-month planning phase, each county developed a falls prevention plan. During the subsequent implementation phase, counties implemented a variety of fall-prevention programs to address several aims of their plans, using a quality improvement approach. These programs included exercise programs, home assessment programs, older adult education programs, health care provider educational activities, and medical management programs, and counties were encouraged to adopt the evidence-based strategies provided in the Step Up to Stop Falls Toolkit, which was based on previous work supported by this initiative. Following Phase 1, each county received additional Phase 2 funding from HFWCNY in order to continue and/or expand some of their Phase 1 activities.

HFWCNY supported a comprehensive evaluation of this phase of the Step Up to Stop Falls Collaborative that examined the role and effectiveness of Collaborative structures and processes, achievement of desired outcomes, and the impact, sustainability and spread of new programs resulting from Step Up. This evaluation had three parts: individual counties evaluated the process and outcomes of their own projects; Lisa Payne Simon conducted an evaluation of the collaborative approach to examine the impact of the structure and process of the Collaborative; and a team from the University at Albany led by Mary Gallant conducted a cross-collaborative evaluation, to evaluate reach, impact and sustainability across the Collaborative.

This report presents the results of the cross-collaborative evaluation, which was designed to address the following overall goals:

- Assess the reach, spread and impact of falls prevention practices in grantee communities;
- Assess the ability of the work to continue beyond the formal structure of the collaborative; and
- Compare the results of selected best practice interventions with published benchmarks.

To achieve these goals, a mixed method evaluation design was employed, which utilized both quantitative and qualitative data to address specific evaluation questions addressing aspects of reach, impact, and sustainability of the Step Up to Stop Falls Collaborative. The cross-collaborative evaluation was designed to complement the other evaluation components of this initiative, and was explicitly designed to minimize the burden on county coalitions for data collection, while still ensuring the collection of sufficient data for a meaningful evaluation.

It is important to note that the purpose of this cross-collaborative evaluation was not to evaluate the specific work of individual counties or the effects of specific projects; rather, it was an evaluation of the work of the entire Collaborative. It is intended to help the Foundation determine how successful the entire Collaborative was at reaching and impacting the lives of older adults. It should be recognized that each of the counties had different goals from the start, they focused on different projects, and they all had different starting points in terms of their involvement with older adults and their history and existing projects related to falls prevention. The number of participants ultimately reached by each county may not accurately reflect the amount of effort put into establishing new projects, developing working relationships among the collaborative organizations, or the specific impact the different projects had on older adults' lives.

Overall Evaluation Approach

The cross-collaborative evaluation was based on the RE-AIM model, a widely used, comprehensive planning and evaluation framework designed to assess the real-world impact of public health interventions (Glasgow, Vogt, & Boles, 1999). This framework focuses on five aspects of program evaluation, and includes elements of both process and outcome evaluation: reach, effectiveness, adoption, implementation, and maintenance.

- *Reach* refers to the number, proportion and representativeness of participants in a given program or initiative.
- *Effectiveness* refers to the impact of a program on outcomes of importance.
- *Adoption* refers to the extent to which potential implementation sites choose to implement a program.
- *Implementation* refers to the extent to which program
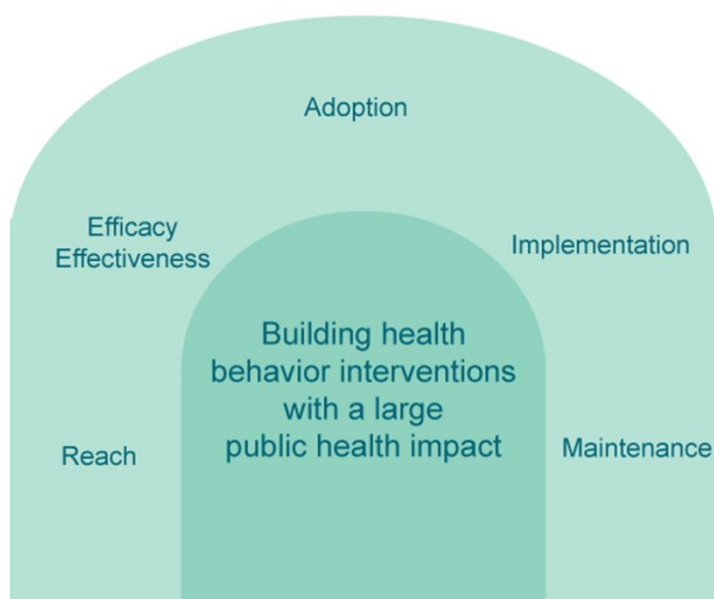
components are implemented with fidelity to original program design, as well as the extent to which individuals who participate in a program use behavior change strategies.

- *Maintenance* refers to the sustainability of specific programs and policies implemented as part of a program or initiative, as well as long-term effects on behavior change at the individual level.

The RE-AIM model is very well-suited to this evaluation because it was designed to be especially useful for translation projects in which evidence-based programs are translated and implemented in community settings to effect widespread change. A main thrust of this model is that to effect widespread community change, it is not enough to merely examine the effectiveness of programs. Rather, effective programs need to reach a large proportion of appropriate audiences, be widely adopted in appropriate settings, be implemented with fidelity to their underlying design, and lead to sustainable change in individuals and settings. Given its underlying goals, the cross-collaborative evaluation focused on the RE-AIM elements of *reach, effectiveness,* and *maintenance.*

Organization of Report

The remainder of this report is organized as follows:

- ✓ **Methods:** Details the specific methods that were used to address each evaluation question related to reach, impact, and sustainability.
- ✓ **Results**
  - o **Reach:** Presents findings on the reach of the Step Up to Stop Falls Collaborative, including characteristics of those reached and geographic representation of Step Up programs.
  - o **Impact:** Presents findings related to the overall impact of the Step Up to Stop Falls Collaborative. Findings are organized according to program type: exercise, home environment, older adult education, and health care professional practice change.
  - o **Sustainability:** Presents findings on the sustainability of the Collaborative's work, including information about the programs that continued after Phase 1 and the factors that influenced counties' ability to sustain their programs.
- ✓ **Conclusions and Recommendations:** Presents final thoughts on the success of the Step Up to Stop Falls Collaborative, limitations and lessons learned, and recommendations to improve the overall effectiveness of future falls initiatives.

METHODS

The cross-collaborative evaluation focused on the work of the Step Up to Stop Falls Collaborative during the 18-month Phase 1 implementation period, which occurred from May 2009 to November 2012. Follow-up data was collected one year after the Phase 1 implementation period ended. Beginning in November 2012, counties received additional Phase 2 funding to continue some of their work; thus, the follow-up data collection occurred during Phase 2. The evaluation plan was designed to address the following evaluation questions.

Evaluation Questions	

Reach	• To what extent did this Collaborative reach older adults?
	  ○ What proportion of the older adult target population participates in Collaborative activities?
	  ○ How representative are the older adults who participate in Collaborative activities?
	  ○ Where were older adults reached?
	
	• To what extent did this Collaborative reach professional practice audiences?

Impact	• How effective, overall, was the Collaborative's work in changing fall-related outcomes among older adults? • How effective, overall, was the Collaborative's work in changing professional practice behaviors related to fall prevention?
Sustainability	• What programs were sustained one year after the Phase 1 implementation period? • What new programs have been implemented in the year following the Phase 1 implementation period? • What factors influenced whether programs were sustained or not after the Phase 1 implementation period ended?

To facilitate the assessment of these outcomes across the entire Collaborative, the faculty of the Collaborative developed a logic model diagram to illustrate the overall goals of the Collaborative as well as the underlying objectives that contributed to those goals. Program

activities were then categorized into one of five "drivers" of the overall outcome. These drivers include balance and exercise, home environment, healthcare professional practice change, older adult knowledge and awareness, and medical management. This driver diagram is included as Appendix A.

A variety of data sources were used. These included participation data, program site information, and participant outcome data collected by counties and submitted in bi-monthly and final reports, questionnaire and telephone interview data from counties and 2010 census data.

Methods for Assessing Reach among Older Adults

The reach and spread of the Step Up to Stop Falls Collaborative activities among older adults were examined in several different ways. These approaches included assessing the number of older adults reached by each type of program implemented, calculating the proportion of older adults reached, assessing the representativeness of participants in terms of age and gender, and developing GIS maps to illustrate the locations of programs compared to the proportion of older adults in the county.

To calculate the *number of older adults reached*, participation data for each individual program/activity was extracted from each county's final report. These were summed by driver (i.e. exercise, home environment, etc.) to estimate total reach for each driver.

The *representativeness* of participants was calculated with respect to age and gender. However, data on age and gender was only available for a subset of participants among whom outcome data was collected. (See further description in the section on methods for assessing impact.) Age and gender distributions among this subset of participants were compared with the demographic characteristics of the older adult population in the county, using 2010 census data, to assess representativeness.

To calculate the *proportion of the target population* that participated in program activities, the RE-AIM methodology of calculating proportion reach was utilized. The numerator for this proportion represents the number of older adults who participated in program activities; the denominator represents the number of older adults in the target population. As described by Gaglio, Shoup, and Glasgow (2013), reach proportions are not always easy to calculate because the appropriate denominator is not always obvious or known. Proportion reach was calculated using several different denominators, including the number of older adults that the coalition intended to reach, the number of older adults in the organization's service area, and the number of older adults (65+) in the county according to 2010 census data.

The original intent to calculate reach was to use participation data contained in bi-monthly reports submitted by the counties as the basis for quantitatively calculating overall reach. While some participation data, including basic demographic information about a subset of participants, was extracted from bi-monthly reports, overall reach data was not uniformly

available. Instead, specific reach questions were incorporated into the final report instructions. These questions included: How many people participated (for each driver)? How many participants did you intend to reach? Were there any intended participants that you were unable to reach? And, did you have any unexpected participants? We also worked with grantees to understand each county's defined target population of older adults as determined by their work plans, bi-monthly reports, final reports, and follow-up interviews. The size of that target population was then estimated using data that the grantees provided and available county-level data, as appropriate. Percent reach into the target population was then calculated as a simple proportion for each county.

A descriptive examination of *geographic reach* was conducted by graphically mapping program location data onto county maps. This was done by creating a Geographic Information System (GIS) map for each county that illustrated the locations of exercise programs in that county compared to the concentration of the older adult population across the county in order to determine if the activities were occurring in the areas with the highest proportion of older adults. Geographic reach was analyzed only for exercise programs, as these were the only activities that took place in distinct locations. To create the maps, each county was divided into census tracts, and 2010 census data was used to divide the census tracts for each county into quartiles based on the proportion of older adults in each tract. These quartiles were then represented in different colors on the county maps. The address of each exercise program was then used to determine program location, and these locations were superimposed onto the maps.

It is important to note that the numbers reported for reach by each county in their final reports were, in some instances, based on estimates and were not reflective of the exact number of participant. This is especially true for programs in the older adult education category, since it was not always possible for counties to track the exact number of participants who were exposed to such activities.

Methods for Assessing Reach among Healthcare Providers

Reach among health care providers was assessed using data collected from bi-monthly and final reports submitted by each county, and follow-up interviews conducted with the counties. Because each county's health care provider target audience was quite different, we worked with grantees to determine the extent to which they reached health care providers for each project.

It should be noted that the intent of the Step Up to Stop Falls initiative was not necessarily to reach all, or even a large proportion, of older adults or health care providers in each county. However, examining reach, both quantitatively and descriptively, is still useful to understand the extent to which the Step Up to Stop Falls work spread in the grantees communities.

Methods for Assessing Impact

To examine the impact of the Collaborative's work, a comprehensive inventory of projects by driver across the collaborative was developed, and a set of common outcome measures was established for each driver. Counties collected primary data for these common outcomes among the participants in their programs to the extent possible. This data was then summarized and analyzed across projects within each driver to understand cross-collaborative impact.

Common outcome measures for the exercise and balance driver included age, gender, type and location of exercise program, the number of sessions offered, the number of sessions each participant attended, Timed-Up-and-Go (TUG) scores pre- and post- intervention, and self-reported falls pre- and post-intervention. The TUG is a widely used and valid measure of dynamic balance, mobility, and lower body strength, which has demonstrated sensitivity and specificity for predicting falls (Podsiadlo & Richardson, 1991; Shumway-Cook, Brauer, & Woollacott, 2000). It involves timing an individual to stand up from a chair, walk three meters, then walk back and return to a seated position.

Common outcome measures for the home environment driver included age, gender, type of home assessment used, number of hazards identified, number of hazards the participant is willing to change, number of hazards resolved, and the number of days between the initial assessment and the post assessment.

Common outcome measures for the older adult education driver include type of education offered, number of sessions offered, the number of sessions each participant attended, as well as pre- and post- assessments of attitudes/beliefs and fall-prevention behavior change. There were two post-test options depending on the time of the post-test: either at program completion or three months post completion. Several of the measures were based on recommended measures that the National Council on Aging (NCOA) developed for evaluating the effect of activities undertaken by state coalitions on fall prevention.

Common outcome measures for the health care professional driver include type of health care provider, the type of training offered, number the sessions offered, the number of sessions each participant attended, attitudes/beliefs about falls, and practice behaviors. There were two post-test options depending on the time of the post-test: either at program completion or three months post completion. Several of these measures were based on recommended measures that the NCOA developed for evaluating the effect of activities undertaken by state coalitions on fall prevention.

Grantees were responsible for collecting data for the common outcome measures for each of their projects, to the extent possible. Some counties were not able to collect outcome data for all their participants, but instead collected data for a subset of programs and/or participants. Instructions for data collection and entry, questionnaires for older adults and health care providers, and Excel spreadsheets for recording data were developed and made

available on the Step Up to Stop Falls grantees' website. (The pre- and post-test questionnaires for older adults and health care providers are included in Appendix B.)

Counties submitted anonymous data on Excel spreadsheets as part of their bi-monthly reports sent to HFWCNY and the evaluation team. Counties were also encouraged to collect and submit data on additional outcomes that might be useful to examine for their respective projects, but no additional data was submitted. Excel data was imported into SPSS (Version 21), which was used for all data analysis.

A few counties had activities and/or established data collection systems that didn't entirely fit with the common outcome measures and data collection systems developed for this cross-collaborative evaluation. Therefore, we consulted with a few counties to develop alternatives that allowed us to incorporate their results into the cross-collaborative evaluation and/or alleviated some of the difficulty of data collection (i.e., collecting data from a sample of the total participants in programs; assessing one room in a home assessment).

For each driver, data for common outcomes were summarized to illustrate the range of change across the entire Collaborative. In addition, estimates of the overall magnitude of change in fall-related outcomes for each driver were developed and compared to published benchmarks to determine whether effect sizes were comparable to the falls prevention evidence base. When pre-post data were available, T-tests were used to determine whether pre-post changes were statistically significant.

Methods for Assessing Sustainability

Questions about sustainability were primarily answered with qualitative data collected through follow-up interviews with grantees, as well as from information contained in grantee's final reports.

Interview questions focused on identifying efforts to sustain work after the Phase 1 implementation period ended and plans for such sustainability following Phase 2 funding, the extent to which programs and activities implemented during Phase 1 were still in existence one year later, The identification of new programs that were implemented after the Phase 1 project period, system changes that would facilitate sustainability (e.g. implementation of new screening/referral practices or patterns, institutionalization of programs), and factors that influenced whether or not programs were sustained.

RESULTS

PROGRAM IMPLEMENTATION

Appendix C contains a brief inventory of the primary programs conducted by each county that were included in some way in this evaluation. As illustrated, every county implemented programs for each of the following four drivers: balance and exercise, home environment, older adult education, and healthcare professional practice change. There were too few programs that fit within the medical management driver to evaluate them across the Collaborative. In addition, a few counties implemented additional programs that didn't clearly fit within any driver category, and these unique programs were not included in this evaluation.

REACH

Number of older adults reached

Across all counties and types of programs, the Step Up To Stop Falls Collaborative reached more than 10,000 participants. Table 1 illustrates the total number of participants reached through various Step Up To Stop Falls activities.

Table 1. Number of older adults reached through Step Up to Stop Falls Activities

TOTAL REACH – 10,000+					
County	Exercise	Home Environment	Education/ Social Marketing	Older Adults via Healthcare Professionals	Healthcare Professionals
Allegany	274	23	301	164	18
Cattaraugus	200+	1500	223	76	112
Genesee	19	205	1061	228	232
Niagara		238 (Stay Well - Exercise, Home Modification, and Education)	1000s (Social Marketing)	56	10
Onondaga	181	263	617	623	70
Tompkins	349	23	1250	100+	132
Total	**1250**	**2250**	**4500+**	**1250**	**575**

Exercise programs reached approximately 1,250 older adults across a variety of exercise programs, which included Tai Chi, Chi Time, Growing Stronger, OTAGO, strength and balance, and yoga, to name a few. The most common programs were Tai Chi or Qigong, with 43% of participants taking part in some type of Tai Chi or Qigong program. All counties had at least one exercise program and several counties offered more than one type of exercise program.

Home Modification programs reached over 2,000 participants. By far, the most common home assessment used was the Home Safety Self-Assessment Tool (HSSAT), provided in the Step Up to Stop Falls Toolkit, which was used in 90% of the home assessment activities.

Older Adult Education and social marketing programs reached over 4,000 participants with a variety of educational programs ranging from one-time sessions to on-going educational programs; however, the majority of participants (82%) attended one-time sessions.

Healthcare Professionals professional programs reached approximately 575 healthcare professionals from numerous different fields including occupational therapy, physical therapy, nursing, and physicians. The majority of the healthcare professional programs were one-time events such as conferences. In addition, over 1,000 older adults were reached indirectly through activities aimed at healthcare professionals.

Representativeness of Participants to the Older Adult Population

Based on the subset of participants for whom we have demographic and outcome data (n=2057), females and those over the age of 80 were over-represented in Step Up to Stop Falls Collaborative activities.

The percentage of participants who were female ranged from 72% to 85% across Collaborative activities, while according to 2010 census data, the percentage of females among the 65+ population in each county, ranged from 54% to 58%. It is quite common for health promotion programs to attract more female participants than males, but females were highly over-represented in these programs. Exercise programs had the highest percentage of female participants (85%), although home modification programs (72%) and education programs (80%) also had a high percentage of female participants.

Collaborative activities were also highly successful at reaching "older" age groups, or those over the age of 80. This is noteworthy as this age group has an increased risk for falls. Among the counties in the collaborative, the percentage of older adults aged 80+ in each county ranged from 27% to 36%, while the percentage of participants over age 80 ranged from 33% to 51%. Home modification had the highest percentage of participants were over the age of 80 (51%), while 33% of the exercise participants and 40% of the education participants were over the age of 80.

Proportion of Target Population Reached

Tables 2 through 4 illustrate the proportion of older adults reached through Collaborative activities within each driver, using varying estimates of the underlying target population, including the population intended to be reached, the county's service area, the total 65+ population in the county, and the total 80+ population in the county. In other words, this is the percent of the target population that was reached by coalition efforts.

As these tables illustrate, nearly all of the counties reported reaching 100% or more of the participants that they intended to reach for all drivers. However, the proportion of service area reached ranged widely. Much of the variation can be explained by differences in each county's definition of their service area. Several of the counties defined their service area as all of the older adults (65+) in their county, while others estimated their service area as a percentage of the older adults in their counties (e.g. 25%) and used that number for all of the drivers. Others developed a unique estimate for service area for each driver based upon the program and the number of older adults in the county. The counties were able to the reach the largest percentage of the overall older adult population with education and social marketing programs.

Table 3. Proportion of older adults reached – exercise programs

	Exercise Percent Reach			
County	Intended Target Population (%)	Service Area (%)	65+ Population (%)	80+ Population (%)
Allegany	171	15	4	4
Cattaraugus	100	2	2	1
Genesee	15	2	0	0
Niagara	100	1	1	1
Onondaga	100	24	0	0
Tompkins	387	3	3	1

Table 4. Proportion of older adults reached – home modification programs

	Home Modification Percent Reach			
County	Intended Target Population (%)	Service Area (%)	65+ Population (%)	80+ Population (%)
Allegany	77	1	0	1
Cattaraugus	789	12	12	1
Genesee	103	17	2	4
Niagara	100	1	1	1
Onondaga	100	100	0	1
Tompkins	115	1	0	0

Table 5. Proportion of older adults reached – older adult education programs

County	Intended Target Population (%)	Service Area (%)	65+ Population (%)	80+ Population (%)
Allegany	215	17	4	1
Cattaraugus	100	3	3	1
Genesee	106	12	11	4
Niagara	100	1	1	1
Onondaga	100	82	1	1
Tompkins	416	12	12	0

Geographic REACH

Figures 1 through 6 contain the Geographic Information System (GIS) maps that illustrate location of exercise programs in each county compared to the proportion of older adults in county census tracts. For each map, yellow dots indicate exercise program locations while the shaded areas indicate census tracts. The census tracts are shaded according to the proportion of adults aged 65 and older in that tract. The lightest shaded areas are the tracts with the lowest proportions of older adults while the darkest shading indicates those tracts with the highest percentage of older adults. The actual proportions that correspond to each shade are indicated at the bottom of each map.

These maps show that the geographic reach of exercise programs was broader in some counties than others. Additionally, the geographic reach into the areas with the highest proportions of older adult populations varied by county. Finally, there was a large variation among the counties in the number of different exercise program locations, ranging from 3 to 16.

These GIS maps only represent exercise programs for several reasons. First, every county had multiple exercise programs and the programs reached a large number of participants. Additionally, exercise programs are effective at reducing fall risk as standalone programs. Finally, other drivers were not feasible for mapping. For example, mapping home modification would remove anonymity from participants since the activities occurred in their homes.

Figure 1. Allegany County Exercise Programs and 65+ Population

QUARTILES   ☐ 0.0 - 13.2   ☐ 15.0 - 16.1   ☐ 16.2 - 16.5   ☐ 16.7 - 21.5
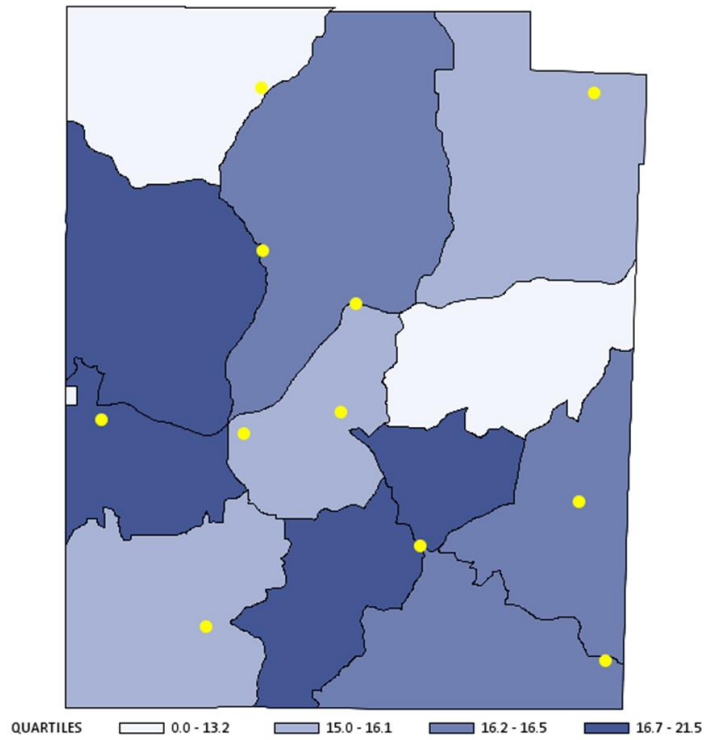
Figure 2. Cattaraugus County Exercise Programs and 65+ Population

QUARTILES   ☐ 6.7 - 12.7   ☐ 13.8 - 15.1   ☐ 15.7 - 17.1   ☐ 17.3 - 20.4
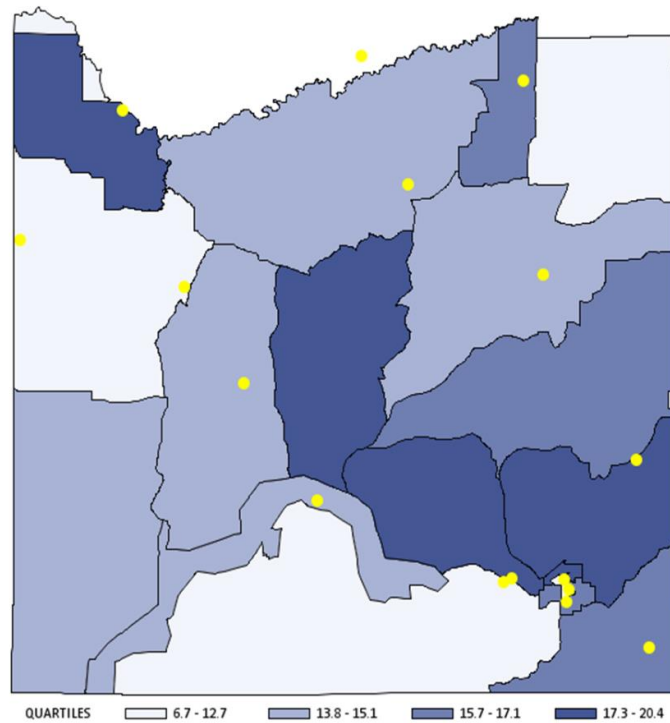
Figure 3. Genesee County Exercise Programs and 65+ Population

QUARTILES   ☐ 11.9 - 13.1   ☐ 14.2 - 15.1   ☐ 15.4 - 17.8   ☐ 18.7 - 22.5
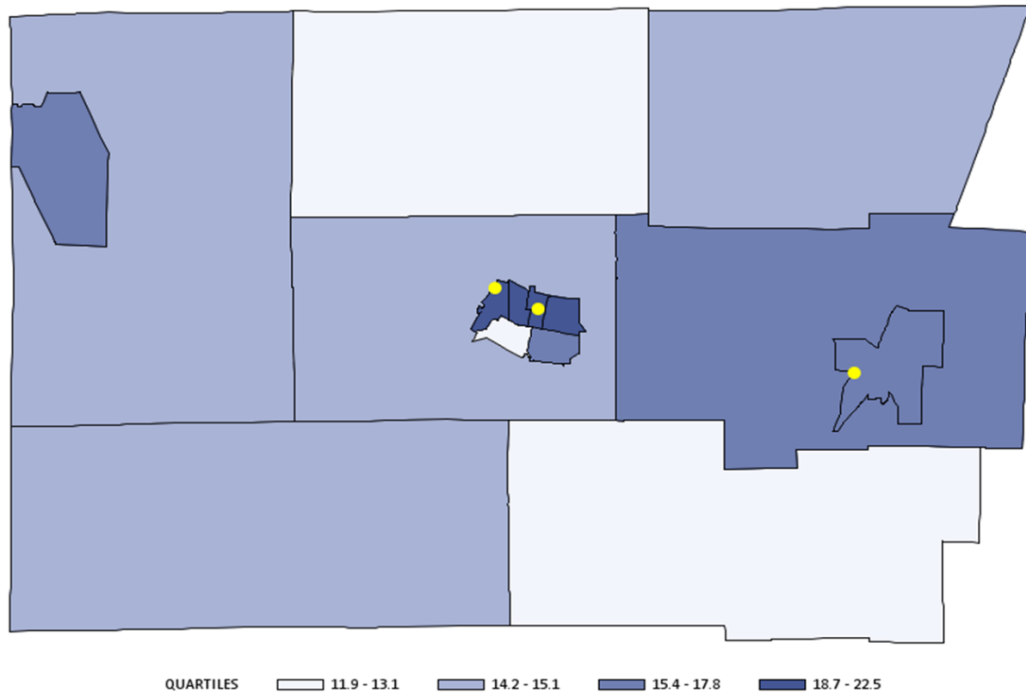
Figure 4. Niagara County Exercise Programs and 65+ Population

QUARTILES   ☐ 9.2 - 13.6   ☐ 13.6 - 15.5   ☐ 15.5 - 17.4   ☐ 17.8 - 28.1
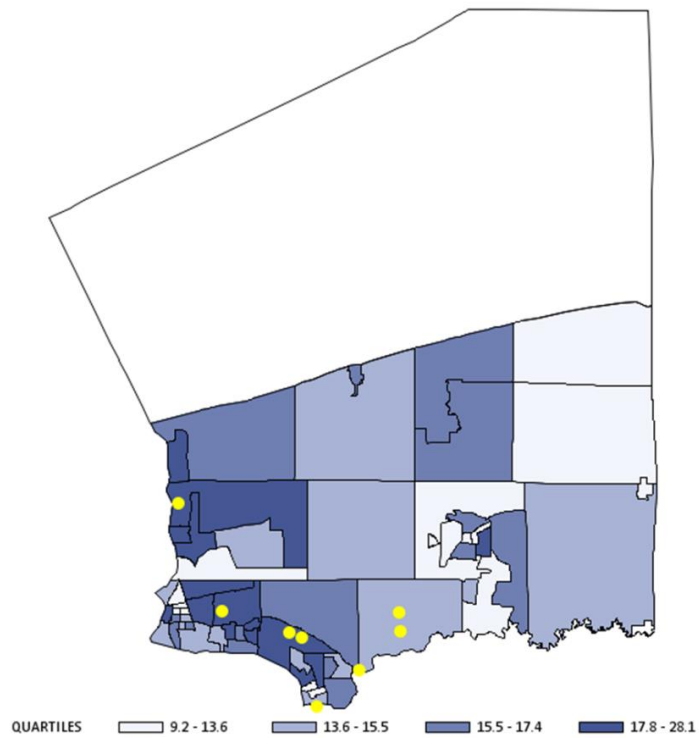
Figure 5. Onondaga County Exercise Programs and 65+ Population

QUARTILES 0.4 - 9.0 9.0 - 13.1 13.3 - 18.0 18.1 - 29.9
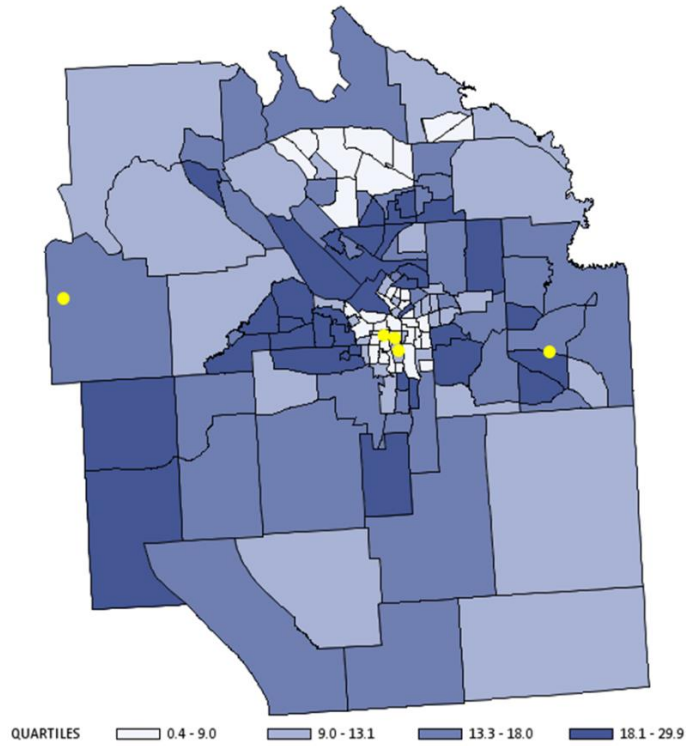
Figure 6. Tompkins County Exercise Programs and 65+ Population

QUARTILES 0.4 - 6.6 7.1 - 11.0 11.5 - 12.6 12.6 - 18.3
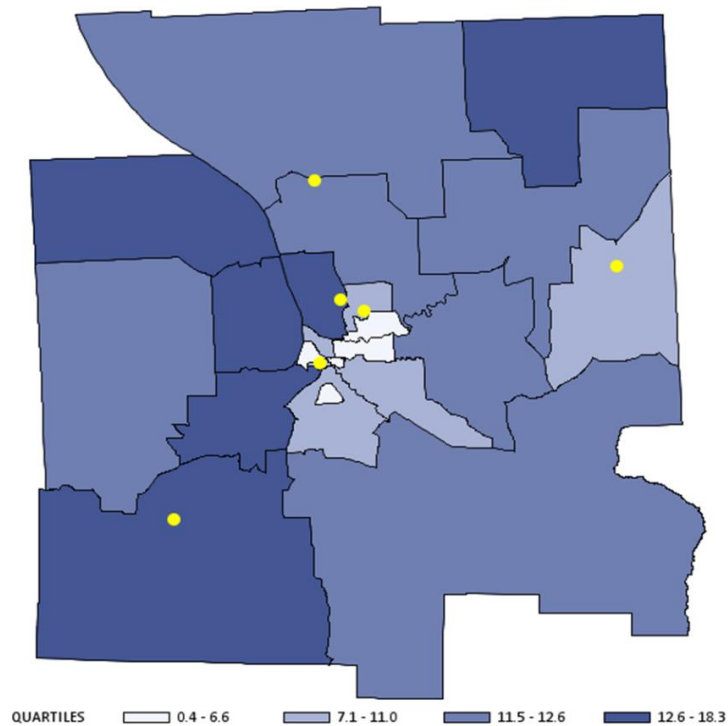
IMPACT

Exercise

Outcome data was received for 1018 participants in exercise programs. Participants came from all counties, and 86% were female. Figure 7 illustrates the age distribution for the 878 exercise participants for whom we have age information.

The Timed-Up-and Go (TUG) score was the primary outcome for exercise. After data collection was underway, it was discovered that some counties were assessing the 8-ft TUG while some were using the 10-ft TUG. Because these scores are not easily compared, results for each of these outcomes are presented separately here.

Across the collaborative, the average pre-test scores for both the 8-ft TUG (7.8 secs) and the 10-ft TUG (12.5 secs) were below the scores that have been linked with high fall risk, which are 8.5 and 13, respectively (Rose, Jones, & Lucchese, 2002; Shumway-Cook, Brauer, & Woollacott, 2000). This indicates that many of the participants were already at relatively high functional status.

Figure 7. Exercise participant age.

Average 8-ft TUG scores declined to 7.7 seconds at post-test (n=145). This was not a significant difference. However, as Figure 8 illustrates, the average 10-ft TUG score declined from 12.5 seconds at baseline to 11.0 seconds at follow-up; which is a statistically significant change (*$p < 0.05$). This indicates that exercise programs led to increased lower body strength and balance and a reduced risk of falling among participants.

The magnitude of change over time in TUG scores exhibited by these participants is consistent with the magnitude of change in TUG scores reported in randomized controlled trials of Tai Chi-based falls

Figure 8. Change in TUG scores.

prevention interventions, as well as in multicomponent falls prevention interventions (Freiberger et al., 2013; Li et al., 2005; Li et al., 2013).

It is also interesting the note the percent of participants that experienced a decrease (i.e. improvement) in their TUG scores following their exercise program. Figure 9 illustrates that 52% of participants demonstrated an improvement in 8-ft TUG scores, and 78% of participants demonstrated an improvement in 10-ft TUG scores. Of these, almost half demonstrated an improvement of 2 or more seconds.
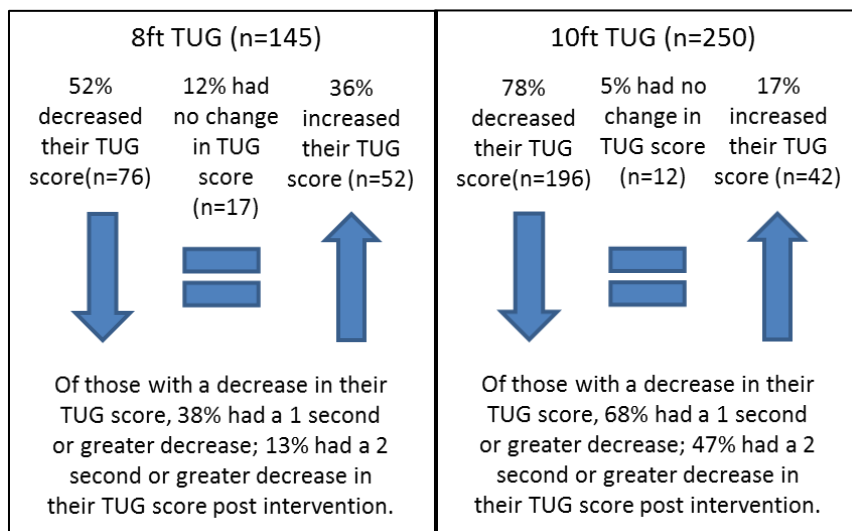
Figure 9. Percent of participants whose TUG scores decreased, increased or remained the same.

Home Modification

Outcome data was received for 591 participants of home assessment and modification programs, from five counties. The vast majority of programs (90%) utilized the Home Safety Self-Assessment Tool (HSSAT) from the Step Up to Stop Falls Toolkit. The remaining programs used the COMPASS tool or the Home Safety Checklist. Participants in home modification programs were largely female (72%) and "older" older adults. As Figure 10 illustrates, 51% of this sample were over the age of 80.

Table 6 illustrates data for the number of hazards identified, targeted for change, and resolved. On average, participants identified 2.5 hazards. Among participants who identified at least 1 hazard, an average of 2.6 hazards was targeted for change, and 1.7 were resolved.
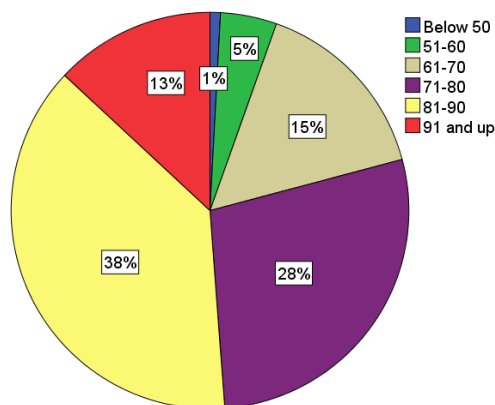
Figure 10. Home modification participant age.

Table 6. Summary of home modification outcomes.

Home Modification (n=591)			
	N	Range	Average
Number of hazards identified	591	0 – 20	2.5
Number of hazards targeted for change	434	0 – 20	2.6
Number of hazards resolved or modified	376	0 – 11	1.7
Time between pre and post-test (days)	373	0-266	27.1

Note. The sample size decreases in rows 1 to 3 because each successive row only includes those participants who didn't have a value of 0 for the preceding outcome. In other words, 434 participants identified at least 1 hazard, and 376 targeted at least 1 for change.

In-depth examination of this data reveals that 27% of the participants identified no hazards, 27% identified 1 hazard, and the remaining participants identified 2 or more. Almost half (43%) chose 1 hazard to target for change, while only 9% chose to target no hazards to change. Half (48%) of the participants who targeted any hazards for change ultimately resolved one hazard, and only 18% resolved no hazards. Nearly 60% of participants resolved all of the home hazards they identified and targeted to change. Most of these changes were made within 60 days of the original assessment.

These data are consistent with available evidence about home assessment and modification programs. For example, Pighills and colleagues (2011) reported averages of either 1.6 or 3.6 hazards identified and 0.9 or 2.3 hazards resolved, depending on the type of assessor (trained assessor or occupational therapist, respectively). Furthermore, in this study between 45 and 60% of the recommendations for change were adhered to. Thus the results received from Step Up to Stop Falls participants are very consistent with this evidence.

Older Adult Education

Outcome data was received for 464 older adult participants of educational programs. Although every county did some type of community education, only three counties submitted data from participants, 82% of whom attended one-time sessions, and 18% of whom attended multiple-session programs. Seventy-eight percent of participants were female and 42% were over the age of 80, as illustrated in Figure 11.

At pre-test, 70% of participants indicated they had done something in the past three months to reduce their risk of falling. These activities were: 50% had their vision checked;

45% made changes in their home; and 41% began strength and balance exercise; 38% had their medications reviewed; 18% talked to a family member; 13% talked to a health care provider; and 11% participated in a fall prevention activity in their community. Examination of these data by age and gender revealed that women were more likely to have done something in the past year to prevent falls (24% of women vs 14% of men), and those aged 61to 70 were the most likely to have taken steps to prevent falls.
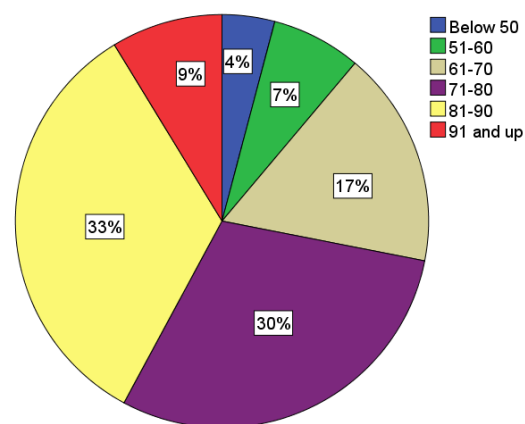
Figure 11. Education participant age.

Table 7 presents data obtained from participants before and immediately after participating in educational programs. As illustrated, there was little change in how they rated the priority of taking steps to reduce falls. This is not surprising since even at pretest, most people rated the priority as very high, so there was little room for change over time. However, there was a statistically significant change between the pre- and post-test in the extent to which participants agreed that they could do things to reduce the risk of falling. At post-test, participants were more likely to strongly agree that they could do things to reduce the risk of falling. (An additional 24 participants completed a post-test three months following the educational program. Among these participants, the priority given to fall prevention increased over time, while their belief that they could do things to prevent falls did not significantly change. However, given the extremely small sample size, it is difficult to draw conclusions from this.) In addition, after participating in the educational program, 22% of participants indicated that they planned to do something to reduce their fall risk within the next month, and 16% indicated they planned to do this within the next six months.

Table 7. Summary of educational program outcomes.

Participants' Rating of Importance of Fall Prevention and Belief about Fall Prevention (n = 177)			
	Pre-test Mean (s.d.)	**Post-test Mean (s.d.)**	***p*-value**
Importance of taking steps to reduce falls[1]	9.18 (1.51)	9.26 (1.52)	0.40
I can do things to reduce my risk of falling[2]	1.34 (0.86)	1.16 (0.60)	0.01*

s.d. = standard deviation; [1] Higher score indicates greater importance; [2] Lower score indicates more agreement with this statement; * Statistically significant at the .05 level.

Healthcare Professionals

Outcome data was received from 183 participants of healthcare professional education. While several counties engaged healthcare professionals in educational activities, only two counties reported data. All of the healthcare professional programs for which data was submitted were one-time events such as conferences; therefore, there were no long-term post-test scores for healthcare professionals. About half of the participants (56%) were physical therapists, physical therapy assistants, or physical therapy students; 24% were nurses (LPNs or RNs); and the remainder were other types of health care professionals.

Health care professionals reported low levels of referrals to community-based fall prevention programs. When asked the question, "When working with an older adult identified as being at risk for a fall, which of the following do you typically do?" approximately 90% of health care providers reported that they provide direct fall prevention interventions; 52% reported that they refer to other health care professionals for further evaluation or intervention. Only 37% reported that refer to community-based organizations or programs to reduce the patients' risk of falling.

Healthcare providers reported high rates of evaluating fall-related features of their patients when performing a history and physical exam. Specifically, 83% assessed balance, 80% assessed gait and mobility levels, 76% assessed lower extremity muscular strength; 72% assessed feet and footware; 70% assessed neurological function; 62% assessed cardiovascular status; and 52% assessed visual acuity. However, only 40% reported that they always or nearly always reviewed their patient's prescriptions, while 29% reported that they sometimes did this, and 16% said they seldom or never did this. In addition, almost none of these participants reported billing CMS for falls screening using the Medicare code V15.88 (History of Fall).

Table 8 illustrates healthcare professionals' attitudes about fall prevention and their practices and intentions about fall screening before and immediately after participating in fall prevention education. Overall, health care providers demonstrated a significant increase in their rating of the importance of fall prevention in the clinical care of older adults, and the extent to which they agreed they could do things to reduce their patients' fall risk. Additionally, compared to the reported pre-test frequency, after participating in the educational session, healthcare providers were significantly more likely to report that they intended to initiate conversations about falls and to obtain falls history among their patients.

Table 8. Educational program outcomes among healthcare professionals.

Attitudes and Practices/Intentions about Fall Prevention (n = 165)			
	Pre-test Mean (s.d.)	Post-test Mean (s.d.)	*p*-value
Importance of fall prevention in the primary clinical care of community-dwelling older adults[1]	9.30 (1.46)	9.61 (1.41)	0.000*
I can do things to reduce the risk of falling of my patients/clients [2]	1.43 (1.08)	1.16 (0.68)	0.002*
How often do you (intend to) initiate conversations with your older adult patients/clients about their fall risk?[3]	1.80 (0.80)	1.15 (0.38)	0.000*
How often do you (intend to) obtain a history of falls and relevant fall risk factors?[3]	1.73 (0.95)	1.13 (0.35)	0.001*

s.d. = standard deviation; [1] Higher score indicates greater importance; [2] Lower score indicates more agreement with this statement; [3] Lower score indicates higher frequency of doing, or intending to do, this practice;* Statistically significant at the .05 level.

Although the objective of this evaluation was to examine results across the entire Collaborative, a summary of county-specific outcomes and a comparison to overall results was prepared and shared with individual counties so that they could evaluate their results within the context of the larger collaborative. This summary is provided in Appendix D.

SUSTAINABILITY

One year following the end of Phase 1 implementation, qualitative and quantitative data were examined to assess the status of Phase 1 programs and the sustainability of the Collaborative's work. It should be noted that all of the counties received a second phase of funding to continue some of their work shortly after Phase 1 ended. Thus results and conclusions about sustainability are influenced by the receipt of this additional funding. Although planning for sustainability was included in the Coalition process and program design from the beginning of Phase 1, several of the counties did not have sustainable programs at the end of Phase 1 funding. However, during Phase 2, these counties were able to embed many programs and procedures into their organizations. Thus, it appears that Phase 2 funding had a major impact on the sustainability of some programs.

Exercise

One year following the end of Phase 1, all six counties continued to offer various exercise programs. Several counties are offering the same exercise programs in the same locations that they offered in Phase 1. A few counties were unsure of the extent to which the exercise programs from Phase 1 are continuing because their programs were focused on training a trainer or healthcare professional to continue the exercise programs without much oversight from the county, and therefore they are no longer directly involved in implementation.

All of the counties have engaged new participants within their on-going programs, and have expanded their exercise programming to new locations. Over 30 new exercise classes were offered and several hundred new participants were engaged during Phase 2. Four counties reported that it would have been challenging to sustain exercise programs without the Phase 2 funding. Several counties

> "During Phase 2, more than thirty new exercise classes were started, and several hundred new participants were engaged."

have been able to embed components of their exercise programs within other organizations. For example, the Tai Chi DVDs that were distributed can be used within any facility without the need for a class instructor or additional funding. Additionally, the OTAGO program has been taught to physical therapists that can choose to use the exercises with their patients as they see fit.

Although most counties relied on Phase 2 funding to continue their previous exercise programs and to expand to new locations or participants, the majority of counties now have plans and procedures in place to ensure the sustainability of their exercise programs.

Home Modification

All six counties continue to implement home assessment and modification programs, mainly the HSSAT, during Phase 2. A few counties also include home safety checklists as

> "All counties are confident in their ability to continue home assessment programs after Phase 2 funding concludes."

an integral part of other programs, such as multiple component programs that incorporate exercise, home safety, and education. Over 100 home assessments were completed in Phase 2; however, the exact number of new assessments completed is unknown because the assessment is not a stand-only program in several counties and data collection is not part of the process.

Most of the counties expanded their reach with respect to home modification programs in

Phase 2 by engaging healthcare professionals (e.g. ER, EMS, PERS, primary care) and working with them to refer their patients for home assessments. The counties have also been quite successful at embedding the assessments into the regular tasks of volunteers, case managers, and home health workers; by doing this, the necessary funding and ongoing support is now provided by the sponsoring organizations within the coalition. Additionally, referral systems have been put into place to ensure that at-risk older adults will receive an assessment. A few counties relied on Phase 2 funding to expand or sustain their home assessment programs, but all of the counties are confident in their ability to continue the home assessment after Phase 2 funding concludes.

Older Adult Education

All counties continued older adult education and community outreach activities in Phase 2. These activities range from social marketing efforts to community presentations to presentations within other programs (e.g. medication presentation in an exercise class). Since these programs include social marketing, they have reached large segments of the population; during Phase 2 funding, over 3,000 community members were reached across the Collaborative.

Most of the counties reported needing Phase 2 funding in order to continue adult education and outreach programs because they are producing educational materials and booklets to be distributed, and the funding is necessary to support production costs of these materials. One county (Tompkins) used Phase 2 funding to support personnel that carried out community outreach activities. A few counties have worked to embed their older adult education programs into their organizations and will be able to continue certain aspects of their community outreach. For example, Genesee and Niagara counties have created websites as repositories for their educational materials and other falls information, such as exercise and home assessments, which can then be downloaded by other organizations and end users. Several counties remained unsure if, how, and to what extent they will be able to sustain the adult education and community outreach programs beyond Phase 2 funding.

Healthcare Professionals

Every county attempted to work with healthcare professionals during Phase 1; however, healthcare professionals proved to be the most difficult group to engage across the entire collaborative. Two counties (Niagara and Onondaga) decided to end their work with healthcare professionals at the end of Phase 1. Niagara County was able to implement a new healthcare professional program during Phase 2, which is a falls training module for first year nursing students that will be sustained beyond Phase 2 funding. The other four counties continued their Phase 1 work in Phase 2. Genesee and Tompkins counties reported that their healthcare professional programs were already self-sustaining and they did not use Phase 2 funding for healthcare professional programs. Allegany and Cattaraugus counties reported that their main focus for Phase 2 funding was engaging healthcare professionals and that funding was crucial in order to get these programs implemented.

Both of these counties acknowledged that aspects of their work with healthcare professionals rely on funding, so their ability to fully sustain the programs beyond Phase 2 funding remains unknown.

Facilitators and Barriers for Sustainability

Although Phase 2 funding helped the counties improve their ability to sustain their programs, counties identified other factors that facilitated sustainability as well. These include the ability to embed programs within other programs or organizations, the ability to embed programmatic work as part of the usual role of other professionals, and the identification of a champion for a program within an organization. Most county coalitions also reported at least one barrier to sustaining their programs further. These barriers include limited staffing and staff time, financial resources and the need for on-going funding for certain types of programs, downsizing and staff turnover in partnering organizations that limits their ability to adopt or continue programs, and the ongoing need for trained volunteers to help carry out the programs in communities. Although the level of sustainability has varied across counties and across programs, it appears that every county should be able to sustain the majority of their programs beyond Phase 2.

> "Every county should be able to sustain the majority of their programs beyond Phase 2."

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This cross-collaborative evaluation of the Step Up to Stop Falls Collaborative indicates that a comprehensive multi-county initiative can be an effective way to implement evidence-based falls prevention strategies and to reduce fall risk factors among older adults, as well as to change health care providers' intentions to address falls in their practice.

During a relatively short implementation phase, the Collaborative reached an impressive number of older adults with exercise programs and home modification activities. The Collaborative was very successful at reaching females and notably, adults over the age of 80. The geographic reach of exercise programs was broader in some counties than others. The intent of Step Up to Stop Falls was not necessarily to reach a large proportion of older adults in each county; thus the fact that all counties reached nearly all of the population that they intended to reach is notable. Now that fall prevention efforts have been established in these counties, however, it may be appropriate in the future to broaden reach

to targeted groups or to broader geographic areas. Reach to the healthcare professional audience was relatively unsuccessful in Phase 1; however, focused efforts in Phase 2 seem to have been more successful.

Across the collaborative, older adult participants demonstrated improvements in lower body strength, home hazards, beliefs about their ability to reduce their fall risk, and their intentions to do something about falls. Healthcare professionals who participated in Collaborative activities demonstrated increased intentions to address fall risk among their patients and clients.

Exercise programs were the most effective way to engage large numbers of older adults in fall prevention behavior change activities. The results reported here suggest that across the collaborative, exercise programs were moderately effective at reducing fall risk, and the level of effectiveness was consistent with published evidence about the effectiveness of Tai Chi and other exercise programs reducing fall risk. These results also suggest that many exercise participants had relatively good lower body strength/functional status before they started the exercise programs, indicating that programs were recruiting older adults at relatively low fall risk.

Home modification programs seemed very well-received and potentially effective. It is noteworthy that nearly 60% of participants resolved most of the home hazards they identified and targeted for change and only 17% of participants resolved no hazards. Although the number of home hazards identified and targeted for change overall was fairly small, it was consistent with the evidence in the literature about the impact of home assessment and modification programs. The success of these programs across the collaborative suggests that even greater effectiveness might be achieved with more comprehensive home assessments.

The collaborative was quite successful at reaching a substantial number of older adults through community education and awareness activities. Most older adults who participated in such programs already had a high awareness of falls as a priority problem. This suggests that either these programs were recruiting individuals for whom falls was already a salient issue, or it suggests that previous fall prevention efforts in these counties had been successful at raising awareness about falls as a problem. Either conclusion means that future community awareness activities should go beyond raising awareness of falls as a high-priority problem, and emphasize behavior change strategies to reduce fall risk.

Older adult education programs were effective at increasing participants' beliefs that they could do things to reduce the risk falling suggesting that the education increased their knowledge of the changes they could make or made them feel more confident in their ability to make the changes. This is a notable finding, because although participants seemed to come to these programs already believing that taking steps to reduce falls is important, they might not have known how to make such changes, or have felt very confident about their ability to do so. Future educational efforts might be most effective if they emphasized

the actual steps that participants should take to reduce fall risk. Furthermore, educational programs could capitalize on participants' positive intentions by facilitating participants' development of an action plan to reduce fall risk, or by linking them to other activities (e.g. exercise or home modification programs) in which they would have the opportunity to actually carry out their intentions.

As noted, healthcare professionals were the most difficult group to engage in Step Up to Stop Falls activities across the Collaborative. However, healthcare provider education seemed to be effective at increasing providers' intentions and perceptions of their ability to address fall risk among their patients and clients. Healthcare provider activities revealed that referral to community-based fall prevention programs are low. Thus it seems that county coalitions might consider leveraging the community-based work they are already doing by emphasizing the creation of linkages between healthcare providers and those community-based activities.

Sustainability results indicate that for the most part, programs in all categories are being sustained. In addition, results suggest that, not surprisingly, financial resources are the most important influence on the sustainability of programs. However, there are other important facilitators and barriers to sustainability that are distinct from funding. For example, staff time and availability emerged as another important barrier to sustainability. In addition, it seems especially important to look for ways to embed fall prevention programs and programmatic activities within other ongoing activities of organizations. In this way, programs become sustained through institutionalization, and the need for separate and distinct funding for these fall prevention activities is reduced.

Limitations and Lessons Learned

There are a few limitations of this evaluation that must be kept in mind when interpreting the results and drawing conclusions. In addition, the enactment of this evaluation revealed a number of lessons learned.

First, this evaluation was designed to assess, in a practical way, the overall results of a real-world initiative; it was not designed to be a carefully controlled evaluation research project. Thus the results are useful to understand the overall outcomes of the Step Up to Stop Falls Collaborative and to serve as a basis for comparison with the evidence about the effectiveness of fall prevention programs. But the results are not generalizable beyond this initiative.

Second, the underlying quality improvement emphasis of the Collaborative was sometimes at odds with the goals and objectives of an ideal cross-collaborative evaluation. The quality improvement approach emphasizes starting projects small and tweaking programs to better fit local needs and situations when they don't initially appear to be feasible or effective. This sometimes resulted in relatively small sample sizes when counties were able to collect outcome data from only a subset of participants. In addition, counties were encouraged to

revise programs during the implementation period to enhance implementation, but this resulted in programmatic changes over time, and an inability to assess the extent to which programs maintained fidelity to evidence-based strategies. (For example, when home assessments proved to be less than feasible, some counties adapted their strategy so that only one room in a home was assessed for hazards.) A highly rigorous cross-collaborative evaluation would have required implementing evidence-based programs with fidelity and maintaining strict consistency in programs across the Collaborative and over time. This is not a criticism of the quality improvement approach, which was an important and integral part of the Collaborative framework and approach. But it should be recognized that the evaluation methods at times needed to be modified to fit with the quality improvement approach. This is another reason why the results are not generalizable to the general population and not perfectly comparable to the results of evidence-based programs that were evaluated in randomized controlled trials.

Third, the evaluation was deliberately designed to minimize the burden on counties for data collection. As a result, outcome data is only available for a subset of participants. This outcome data is useful to assess the overall effectiveness of the collaborative but because it doesn't include all participants, the results are not a definitive statement of the exact effectiveness of the Collaborative on fall-related outcomes.

Although attempts were made to standardize data collection across every driver, it was brought to our attention during a learning session that the counties were using both the 8-foot and 10-foot TUG tests. After determining which counties were using the 8-foot or 10-foot TUG, changes were made to the SPSS databases and data analysis was grouped according to the two different TUG lengths. However, this did have an impact on the results of the exercise data as it reduced the number of participants in each group.

Finally, although the original intent was to examine actual falls as an outcome measure for exercise programs, the sample size and time frame for data collection were both too small to reasonably expect to observe any change in the actual number of falls. However, the TUG score is a well-established measure of fall risk, and an appropriate outcome to examine instead of actual falls.

Recommendations

The Step Up to Stop Falls Collaborative appears to have been an effective way to implement evidence-based falls prevention strategies and to reduce fall risk factors among older adults, as well as to change health care providers' intentions to address falls in their practice. Across the Collaborative, counties have had success in reaching older adults and healthcare professionals, demonstrating an impact on fall risk, and developing sustainable programs. The results reported here suggest some recommendations by which future efforts may be even more effective.

First, given the maturity of the Step Up to Stop Falls initiative, it may now be time to utilize a more deliberate approach to reach to ensure that future programs reach those most in need and that limited funds are leveraged to lead to the greatest impact. The answers to questions such as "Who might be at the highest risk for falls?" "What might be the best way to reach these subpopulations?" and "Where are programs needed to reach those at high risk?" might help to determine what population groups should be especially targeted or where programs should be implemented. It may also be helpful for grantees to think deliberately about their catchment or service areas to maximize the reach and spread of their programs, and to not overlook an area in their county that may be especially high risk.

Given that exercise programs had positive results but the participants, on average, were of relatively low fall risk, a second recommendation would be to target future exercise programs to those at higher fall risk in order to enhance the effectiveness of the programs and to have the maximum impact on falls. This could be done with targeted recruitment strategies, offering programs at different locations, or establishing direct linkages with healthcare providers so that individuals who are assessed as being at high fall risk are connected with exercise programs.

Third, home modification programs appeared to be quite well-received and successful. Increasing the comprehensiveness of home modification programs may deepen their effectiveness.

Fourth, future educational efforts for both older adults and healthcare professionals should focus less on knowledge and awareness and emphasize moving individuals to actual behavior change.   Both older adults and healthcare professionals seemed receptive to the issue of falls, and receptive to making changes to prevent falls, so facilitating their ability to actually implement these activities would capitalize on their positive intentions. This could be done by ensuring that educational programs include a specific focus on skills for how to prevent falls or how to screen for falls. This could also be accomplished by ensuring that older adults in community education programs have an easy way to find and join exercise, home modification, and other fall prevention programs. Similarly, facilitating the adoption of screening tools by healthcare providers, and developing strong linkages for referrals between healthcare professionals and existing programs could help to accomplish this aim.

Finally, providing explicit assistance to counties for identifying and addressing non-financial barriers to sustainability and identifying and enhancing facilitating factors may be an effective way to ensure that the substantial investments made by HFWCNY in fall prevention continue to enhance the lives of older adults in western and central New York for many years to come.

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Appendix A

Outcomes	Primary Drivers	Secondary Drivers
		1. Tai Chi 2. Matter of Balance 3. Home Based Exercise 4. SAFE Exercise Program 5. OTAGO 6. Stepping On
Through the use of a multidimensional approach older adults in: Allegany County Cattaraugus County Chautauqua County Erie County Genesse County Niagara County Onondaga County Tompkins County will experience fewer falls, be at a lower risk for falls, and improve their fear of falling leading to deferred frailty and improved ability to reside in the community	Balance and exercise interventions are available to older adults and improve their balance and gait	
	Home environments of older adults are assessed and modified to minimize falls risk while preserving personal choice and preference	1. Home Safety Self Assessment Tool (HSSAT) 2. CDC Falls Brochure
	Healthcare professionals working with older adults conduct competent and comprehensive assessments of falls risk	1. Falls Prevention Screening and Competency 2. Digital Interface form 3. Primary Care Provider Tools 4. Interdisciplinary Service Learning Course
	Older adults understand the causes and impact of falls and are empowered to minimize this risk and improve their health outcomes	1. Falls Prevention Community Education Presentation 2. Falls Prevention Brochure
	Older adults medical history is managed in a manner that care plans for how these conditions impact their risk of falls	1. Prescriptions review with pharmacist/ PCP 2. Vision checked annually 3. EMS data reviewed 4. PCP office screens for falls risk

Appendix B

Questionnaires for Older Adults and Healthcare Providers

Community Education and Awareness Programs for Older Adults

Pre-Test

Name: _____

AGE

☐ Below 50   ☐ 51 – 60   ☐ 61 – 70   ☐ 71 – 80   ☐ 81 – 90   ☐ 91+

GENDER

☐ Male   ☐ Female

Please answer the following questions about your health. Circle the number that best represents your answer.

1. On a scale of 1 to 10, with 1 being the lowest priority and 10 being the highest priority, rate how important you think it is for older adults to take steps to reduce falls. Circle the number below:

   1   2   3   4   5   6   7   8   9   10
   Lowest   Highest
   priority   priority

2. I can do things to reduce my risk of falling. <u>Rate how strongly you agree or disagree with this statement.</u>
   1 Strongly agree
   2 Somewhat agree
   3 Neutral
   4 Disagree
   5 Strongly disagree

3. In the past 12 months, have you done things to reduce your risk of falling?

    1 Yes
    2 No
    3 Don't know / unsure

4. In the past 12 months, what have you done to reduce your risk of a fall? Circle all that apply.

    1 Talked to a family member or friend about how I can reduce my risk of falling
    2 Talked to a health care provider about how I can reduce my risk of falling
    3 Had my vision checked
    4 Had my medications reviewed by a health care provider or pharmacist
    5 Participated in a fall prevention program in my community
    6 Made changes in my home to reduce my risk of falling (for example, secured rugs or improved lighting)
    7 Began doing strength and balance exercises
    8 I have not made any changes
    9 Other. Please describe:

    _____

Thank you for completing this survey

Community Education and Awareness Programs for Older Adults

Post Test 1

Name: _____

AGE

☐ Below 50   ☐ 51 – 60   ☐ 61 – 70   ☐ 71 – 80   ☐ 81 – 90   ☐ 91+

GENDER

☐ Male   ☐ Female

Please answer the following questions about your health. Circle the number that best represents your answer.

1. On a scale of 1 to 10, with 1 being the lowest priority and 10 being the highest priority, rate how important you think it is for older adults to take steps to reduce falls. Circle the number below:

   1   2   3   4   5   6   7   8   9   10
   Lowest   Highest
   priority   priority

2. I can do things to reduce my risk of falling. <u>Rate how strongly you agree or disagree with this statement.</u>
   1 Strongly agree
   2 Somewhat agree
   3 Neutral
   4 Disagree
   5 Strongly disagree

3. Please read the following statements and circle the number next to the statement that best describes you (Choose ONLY one)

   1   I don't intend to do anything to reduce my risk of falling within the next 6 months.

   2   I plan to do things to reduce my risk of falling within the next 6 months.

   3   I plan to do things to reduce my risk of falling within the next month.

   4   I have done things to reduce my risk of falling within the last six months.

   5   I have been doing things to reduce my risk of falling for more than 6 months.

(Thank you for completing this survey)

Community Education and Awareness Programs for Older Adults

Post Test 2

Name: _____

AGE

☐ Below 50 ☐ 51 – 60 ☐ 61 – 70 ☐ 71 – 80 ☐ 81 – 90 ☐ 91+

GENDER

☐ Male ☐ Female

Please answer the following questions about your health. Circle the number that best represents your answer.

1. On a scale of 1 to 10, with 1 being the lowest priority and 10 being the highest priority, rate how important you think it is for older adults to take steps to reduce falls. Circle the number below:

1	2	3	4	5	6	7	8	9	10
Lowest priority									Highest priority

2. I can do things to reduce my risk of falling. <u>Rate how strongly you agree or disagree with this statement.</u>

    1 Strongly agree
    2 Somewhat agree
    3 Neutral
    4 Disagree
    5 Strongly disagree

3. Since you attended *(insert the name of your education session here)*, have you done things to reduce your risk of falling?

    1 Yes
    2 No
    3 Don't know / unsure

4. Since you attended *(insert the name of your education session here)*, what have you done to reduce your risk of a fall? Circle all that apply.

    1 Talked to a family member or friend about how I can reduce my risk of falling
    2 Talked to a health care provider about how I can reduce my risk of falling
    3 Had my vision checked
    4 Had my medications reviewed by a health care provider or pharmacist
    5 Participated in a fall prevention program in my community
    6 Made changes in my home to reduce my risk of falling (for example, secured rugs or improved lighting)
    7 Began doing strength and balance exercises
    8 I have not made any changes
    9 Other. Please describe:

       _____

(Thank you for completing this survey)

Education and Awareness Programs for Health Care Providers
Pre-Test

Name _____

Email Address:_____   Type of Professional:_____

If your profession includes care of adults 65 or over, please answer the following questions. Circle the number or check the box that best represents your answer.

1. On a scale of 1 to 10, with 1 being the lowest priority and 10 being the highest priority, rate the importance of fall prevention in the primary clinical care of community-dwelling older adults. Circle the number below.

   <div align="center">

   1   2   3   4   5   6   7   8   9   10
   Lowest priority   Highest priority

   </div>

2. I can do things to help reduce the risk of falling of my community-dwelling older adult patients/clients. <u>Rate how strongly you agree or disagree with this statement.</u>

   1 Strongly agree
   2 Somewhat agree
   3 Neutral
   4 Disagree
   5 Strongly disagree

3. How often do you initiate conversations with your older adult patients/clients about their fall risk?

   1 Always
   2 Nearly always
   3 Sometimes
   4 Seldom
   5 Never

4. When working with older adults, how often do you obtain a history of falls and relevant fall risk factors?

   1 Always
   2 Nearly always
   3 Sometimes
   4 Seldom
   5 Never

5. When working with an older adult identified as being at risk for a fall, which of the following do you typically do? Check all that apply.

    1   Provide direct fall prevention interventions

    2   Generate referrals to other health care providers for further evaluation and/or intervention of fall related risk factors

    3   Refer patients/clients to community-based organizations or programs to reduce their risk of falling

The following questions may or may not be relevant to your work with older adults. If the question does not apply to your work please mark "not applicable."

6. When working with an older adult, how often do you review his or her prescriptions and over-the-counter medications for fall risks?

    1   Always
    2   Nearly always
    3   Sometimes
    4   Seldom
    5   Never
    6   Not applicable

7. When performing a history and physical with an older adult patient, which of the following do you typically evaluate? Check all that apply.

1	Gait and mobility levels	5	Cardiovascular status
2	Balance	6	Orthostatic hypotension
3	Neurological function	7	Visual acuity
4	Lower extremity muscle strength	8	Feet and footwear
		9	Not applicable

8. How often do you bill CMS for fall screening using the Medicare code V15.88 History of Fall (at risk for falling)?

    1   Always
    2   Nearly always
    3   Sometimes
    4   Seldom
    5   Never
    6   Not applicable

Thank you for completing this survey

Survey of Health Care Providers – Post Test 1

Name: _____

Email Address:_____   Type of Professional:_____

1. On a scale of 1 to 10, with 1 being the lowest priority and 10 being the highest priority, rate the importance of fall prevention in the primary clinical care of community-dwelling older adults. Circle the number below.

       1   2   3   4   5   6   7   8   9   10
Lowest priority   Highest priority

2. I can do things to help reduce the risk of falling of my community-dwelling older adult patients/clients. Rate how strongly you agree or disagree with this statement.

       1 Strongly agree
       2 Somewhat agree
       3 Neutral
       4 Disagree
       5 Strongly disagree

3. Over the next 6 months, how often do you intend to initiate conversations with your older adult patients/clients about their fall risk?

       1 Always
       2 Nearly always
       3 Sometimes
       4 Seldom
       5 Never

4. Over the next 6 months, how often do you intend to obtain a history of falls and relevant fall risk factors from your older adult patients/clients?

       1 Always
       2 Nearly always
       3 Sometimes
       4 Seldom
       5 Never

Thank you for completing this survey

Survey of Health Care Providers

Post Test 2

Name : _____

Email Address:_____   Type of Professional:_____

1. On a scale of 1 to 10, with 1 being the lowest priority and 10 being the highest priority, rate the importance of fall prevention in the primary clinical care of community-dwelling older adults. Circle the number below.

1	2	3	4	5	6	7	8	9	10

   Lowest priority   Highest
   priority

2. I can do things to help reduce the risk of falling of my community-dwelling older adult patients/clients. <u>Rate how strongly you agree or disagree with this statement.</u>

   1 Strongly agree
   2 Somewhat agree
   3 Neutral
   4 Disagree
   5 Strongly disagree

3. How often do you initiate conversations with your older adult patients/clients about their fall risk?

   1 Always
   2 Nearly always
   3 Sometimes
   4 Seldom
   5 Never

4. When working with older adults, how often do you obtain a history of falls and relevant fall risk factors?

   1 Always
   2 Nearly always
   3 Sometimes
   4 Seldom
   5 Never

5. When working with an older adult identified as being at risk for a fall, which of the following do you typically do? Check all that apply.

   1 Provide direct fall prevention interventions
   2 Generate referrals to other health care providers for further evaluation and/or intervention of fall related risk factors
   3 Refer patients/clients to community-based organizations or programs to reduce their risk of falling

The following questions may or may not be relevant to your work with older adults. Circle the number that best represents your answers. If it does not apply to your work please mark "not applicable."

6. When working with an older adult, how often do you review his or her prescriptions and over-the-counter medications for fall risks?

   1 Always
   2 Nearly always
   3 Sometimes
   4 Seldom
   5 Never
   6 Not applicable

7. When performing a history and physical with an older adult patient, which of the following do you typically evaluate? Check all that apply.

   1 Gait and mobility levels
   2 Balance
   3 Neurological function
   4 Lower extremity muscle strength
   5 Cardiovascular status
   6 Orthostatic hypotension
   7 Visual acuity
   8 Feet and footwear
   9 Not applicable

8. How often do you bill CMS for fall screening using the Medicare code V15.88 History of Fall (at risk for falling)?

   1 Always
   2 Nearly always
   3 Sometimes
   4 Seldom
   5 Never
   6   Not applicable

Thank you for completing this survey

Appendix C
Inventory of Programs by Driver

Exercise:

County	Exercise Program
Allegany	Growing Stronger*
	A Matter of Balance
Cattaraugus	Tai Chi – Chi Time*
Genesee	OTAGO*
Niagara	Stay Well on Your Feet (Qigong, Tai Chi)*
Onondaga	Strength and Balance*
Tompkins	Enhance Fitness*
	Tai Chi*
	Yoga*

* indicates that impact data was submitted for this program

Home Environment:

County	Home Environment Program
Allegany	Train 15 Certified Aging in Place (CAPS) Professionals (who will conduct home assessments)
	Home Safety Self-Assessment Tool (HSSAT)*
	Matter of Balance Home Safety Checklist*
Cattaraugus	Education about home safety and fall prevention--HSSAT performed*
Genesee	Train case managers, home visitors, etc. to conduct HSSAT (one room)*
	COMPASS*
Niagara	Stay Well on Your Feet Program—sent home HSSAT as homework
Onondaga	Training for Aging service professionals—to perform HSSAT*
Tompkins	WRAP program will conduct HSSAT for clients*

* indicates that impact data was submitted for this program

Older Adult Education:

County	Older Adult Education Program
Allegany	Social Marketing Program—public programming and increase referrals into Growing Stronger program)
Cattaraugus	Education about home safety and fall prevention (HSSAT* and falls awareness presentation)
Genesee	Social marketing and community outreach
Niagara	Stay Well
	Social Marketing—posters, cable TV shows, community presentations, press releases, workshops*
Onondaga	Medication presentation within the exercise group
	Social Marketing—print, TV, and radio
Tompkins	EMS giving out brochures to older adults who called because of a fall
	Falls prevention presentations in the community*

* indicates that impact data was submitted for this program

Health Care Professional:

County	Health Care Professional Program
Allegany	EMS providers successfully complete GEMS training
	Create a referral system including toolkit items
	Physician Office—falls risk assessment for patients over 60
Cattaraugus	Train service providers to use HSSAT
	Olean General Rehab Services training---falls screening tools*
Genesee	Health fairs—educate future health care professionals about fall risk screening and prevention
	Include fall risk assessment methods into RN and PTA coursework
Niagara	VNA OT's will use Step Up to Stop Falls booklet for initial patient assessment
Onondaga	Train physicians to do fall risk assessment*
Tompkins	Train HHAs, PCAs to help clients reduce falls—leave a DVD and training packet

* indicates that impact data was submitted for this program

Appendix D: Step Up to Stop Falls Evaluation Results
County Data Summary and Comparison with Collaborative Results

This summary compares some of counties' results to the results from the entire collaborative. Included here are only those drivers for which we received outcome data. Within each driver, a few major outcome measures are highlighted.

Exercise

10 Foot TUG Scores

Region (n=number of participants)	Pre-test Score (average time in seconds)	Post-test Score (average time in seconds)
Cattaraugus (n=64)	12.59	12.35
Genesee (n=8)	19.45	14.23
Niagara (n=92)	11.40	9.81
Onondaga (n=86)	13.01	10.88
Entire Collaborative (n=250)	12.50	11.00

Scores >13 seconds are associated with being a frequent faller*

Across the collaborative, the average pre-test scores for the 10-ft TUG were below the cut-off for high fall risk which indicates that many of the participants were already at relatively high functional status. Many participants in the 10-foot TUG started out with very good scores, so there was not much room for improvement; however, there was a statistically significant improvement on the 10-foot TUG post-test scores, indicating a reduced risk of falling.

*Shumway-Cook, A., Brauer, S., & Woollacott, M. (2000). Predicting the Probability for Falls in Community-Dwelling Older Adults Using the Timed Up & Go Test. *Phys Ther, 80*(9), 896-903.

8 Foot TUG Scores

Region (n=number of participants)	Pre-test Score (average time in seconds)	Post-test Score (average time in seconds)
Allegany (n=67)	7.09	7.30
Chautauqua (n=51)	8.81	8.02
Tompkins (n=27)	7.72	7.85
Entire Collaborative (n=145)	7.80	7.70

Scores >8.5 seconds are associated with high fall risk in community-dwelling older adults.*

Across the collaborative, the average pre-test scores for the 8-ft TUG were below the cut-off for high fall risk which indicates that many of the participants were already at relatively high functional status. The average 8-foot TUG post-test scores were slightly lower, indicating a reduced risk of falling. However, because many participants in the 8-foot TUG started out with very good scores, there was not much room for improvement.

* Debra J. Rose, C. Jessie Jones, Nicole Lucchese. (2002). Predicting the Probability of Falls in Community-Residing Older Adults Using the 8-Foot Up-and-Go: A New Measure of Functional Mobility. *Journal of Aging and Physical Activity*, 10 (4).

Home Hazard Assessment and Modification

Percent of Home Hazards Resolved

Region	Number of participants	Average percent of home hazards resolved compared to home hazards targeted for change
Allegany	20	66%
Cattaraugus	57	48%
Genesee	145	76%
Onondaga	130	78%
Tompkins	22	54%
Entire Collaborative	374	60%

Distribution of Percent of Home Hazards Resolved

Region	0	25	50	75	100	Total
Allegany	4	0	2	6	8	20
Cattaraugus	19	2	13	4	19	57
Genesee	25	6	7	2	105	145
Onondaga	16	4	12	10	87	129
Tompkins	1	4	5	8	4	22
Total	65	16	39	30	223	373

On average, participants were able to resolve 60% of the home hazards that they targeted for change. Of the 373 total participants, 65 people did not resolve any of the hazards targeted for change, 16 people resolved 25%, 39 people resolved 50%, 30 people resolved 75%, and 223 people resolved 100% of the hazards that they targeted for change.

Older Adult Education

Have you done things in the past 12 months to reduce your risk of falling (Pretest Q3)

Region	Yes	No	Don't know
Cattaraugus (n=208)	70%	15%	15%
Niagara (n=47)	53%	28%	19%
Tompkins (n=177)	75%	16%	9%
Entire Collaborative (n=432)	70%	17%	13%

Percent of participants who made specific changes in the past year (Pretest Q4)

Region	Talked to family member	Talked to health care provider	Had vision check	Medication reviewed	Participated in fall prevention in community	Changes in my home	Began exercises	Have not made changes
Cattaraugus (n=195)	13	9	44	33	6	41	37	18
Niagara (n=47)	17	17	68	43	9	36	32	21
Tompkins (n=178)	23	16	52	42	18	51	46	12
Entire Collaborative (n=464)	18	13	50	38	11	45	41	16

Seventy percent of participants in the entire collaborative report having done things in the past 12 months to reduce their risk of falls.

- Overall, there was little change on the priority of taking steps to reduce falls between the pre and post test. (Q1)   --- Both pre and post test scores were high.
- Overall, there <u>was</u> a statistically significant change between the pre and post test in regards to the extent to which participants agreed that they could do things to reduce the risk of falling. (Q2)

Healthcare Professionals

Number of Healthcare Professionals engaged

Region	Number of Participants (n=183)
Cattaraugus	27
Onondaga	156

- Overall, healthcare providers demonstrated a significant increase in the extent to which they agreed they could do things to reduce their patients' fall risk. (Pre/post-test question 2)
- Overall, there was a statistically significant change between the pre and post test in the providers' intent to initiate conversations about falls and to obtain falls history among their patients. (Pre/Post questions 3 and 4)