

Partnerships to Create Healthy & Energy Efficient Housing

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About us..

Environmental health consulting firm working at the intersection of health, housing and energy.

- Strategic planning and policy support
- Technical assistance to programs on the ground (e.g., One Touch)
- Policy relevant research and evaluation

Over 30 years of experience.

What we will cover

- Health benefits of energy efficiency in lower income households
- Leveraging the energy workforce to delivery injury prevention in Waterbury CT
- One Touch

66%

are at least somewhat
concerned about indoor air quality.

Source: Eco Pulse 2015

Gain a sustainable advantage

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84%

think energy-efficient homes
are healthier homes.

Source: Energy Pulse 2014

Gain a sustainable advantage

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Energy Touches With Fuel Assistance Improve Health



- Healthier babies - **20% less likely** to be underweight for age or length
- Reduced hospital stays in colder months - **30% less likely** to require admission after visiting emergency room.

Source: Frank et al, Heat or Eat, Pediatrics, 2006

Rx for Child Health: Lower Fuel Bills

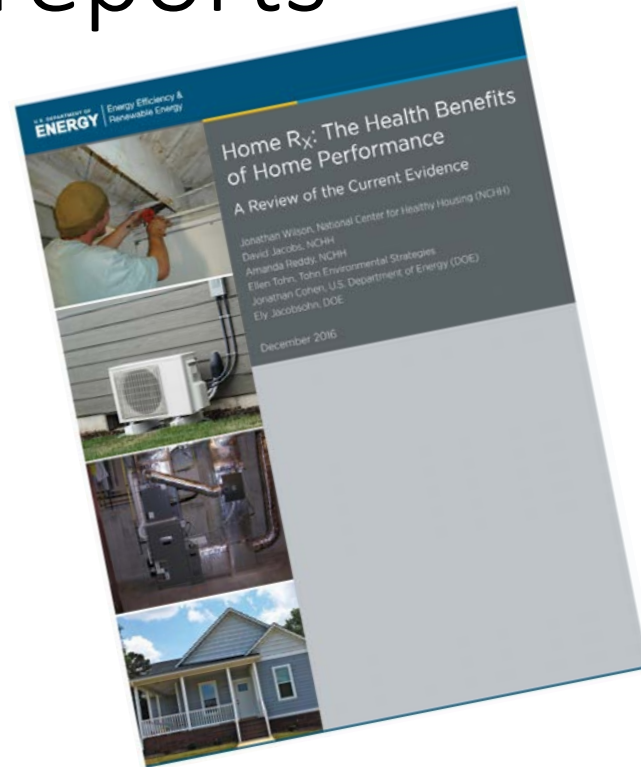


Young children receiving fuel assistance are healthier than their peers who do not get fuel assistance

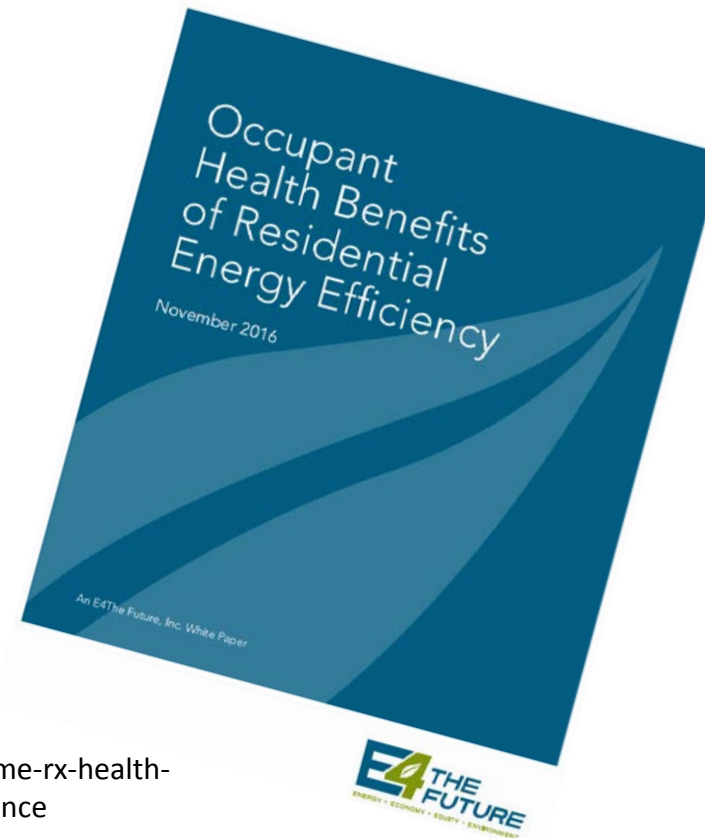
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New reports

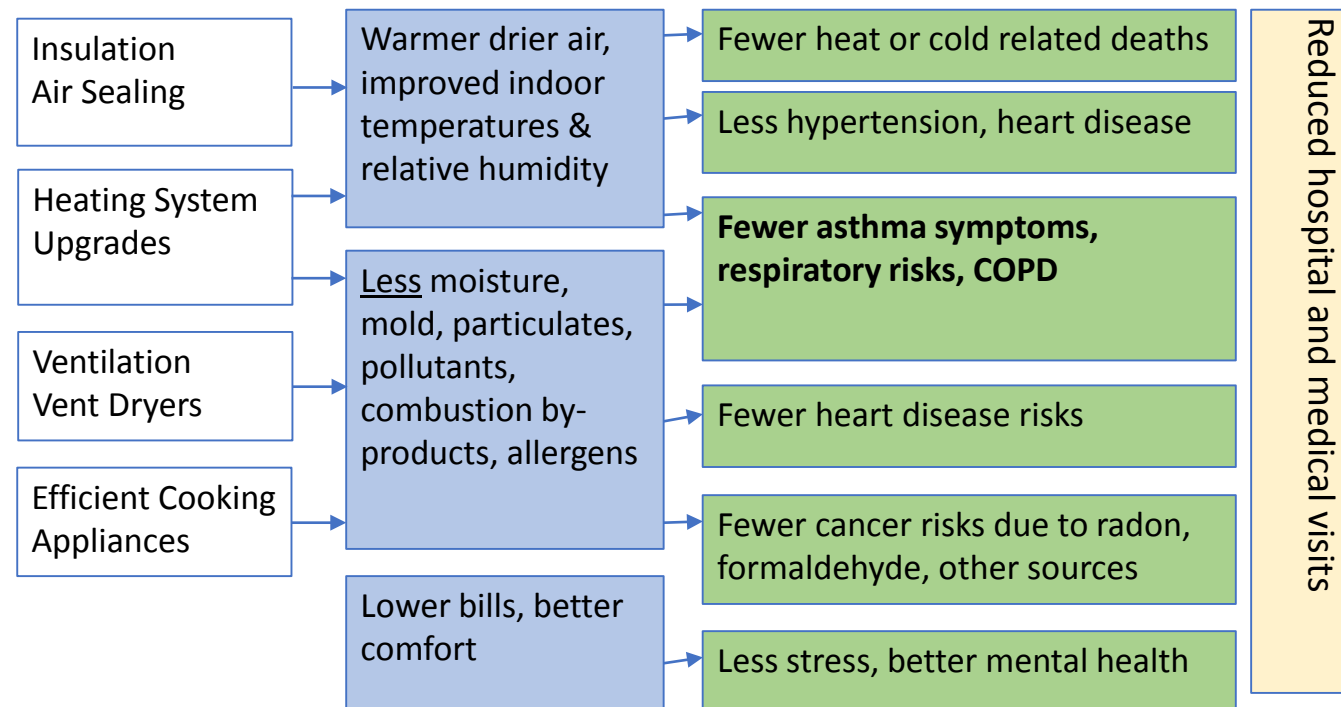


<https://energy.gov/eere/buildings/downloads/home-rx-health-benefits-home-performance-review-current-evidence>



<https://e4thefuture.org/wp-content/uploads/2016/11/Occupant-Health-Benefits-Residential-EE.pdf>

Energy efficiency can reduce health risks



Source: E4TheFuture " Occupant Health Benefits of Residential Energy Efficiency

Energy efficiency can improve health

Reduced Respiratory & Allergy Symptoms	Other Health Improvements	Reduced Emergency Dept. Visits or Hospitalizations	Indoor Environmental Conditions
Allergies <i>Asthma*</i> Colds Sinusitis Throat irritation Wheeze	Headaches Hypertension Thermal stress Overall health Mental health	Asthma Other respiratory	Moisture Condensation VOCs <i>Formaldehyde</i> <i>Radon</i>

Italics: some negative outcomes VOCs: Volatile Organic Compounds

* The majority of studies reported asthma improvements; one study documented mixed results

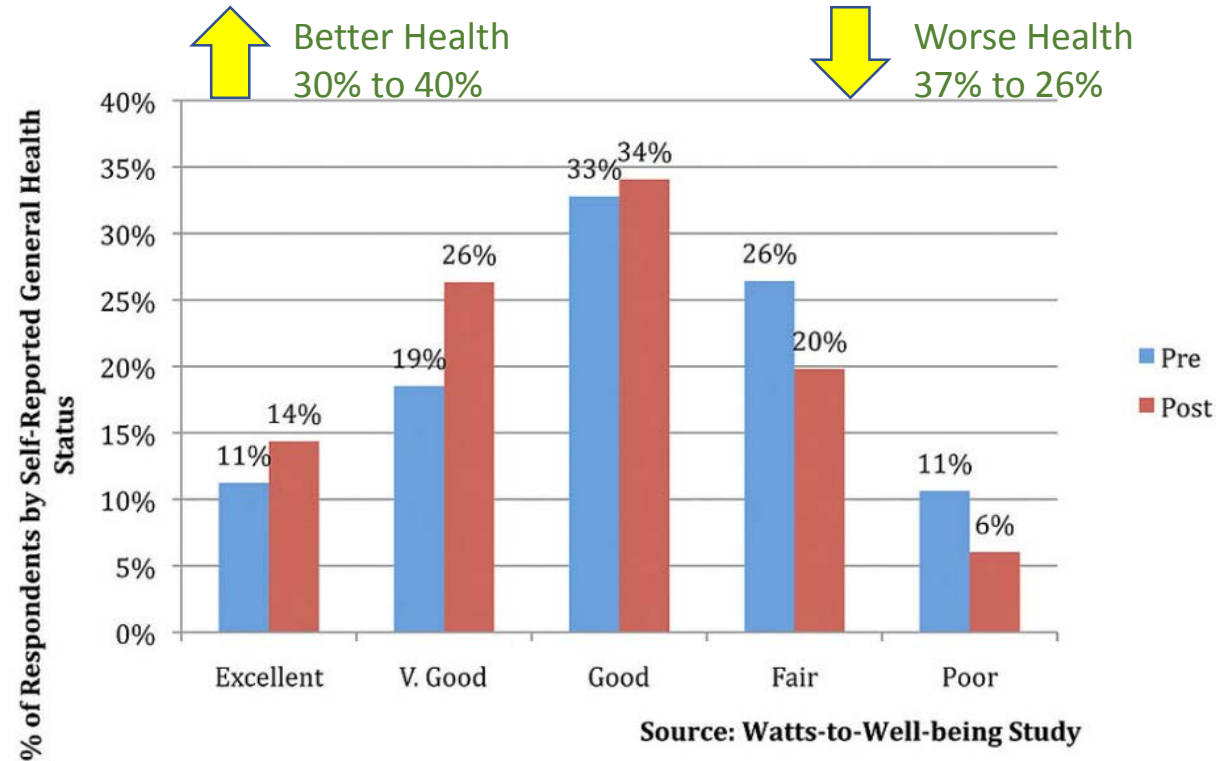


National weatherization evaluation results

Survey Question	Pre-WX	Post-Wx (1)	Change
Asthma emergency department visits past year	15.8%	4.3%*	-11.5%
Persistent cold symptoms lasting more than 14 days last year (% yes)	21%	12%***	-9%

Survey Question	Pre-WX	Post-Wx	Change
How often home too drafty (1= all the time, 4 = never)	2.86	3.60***	26%
How infested is home with cockroaches, other insects, spiders (1=extremely infested, 5=not infested at all)	4.19	4.37***	4%
How infested is home with mice (1=extremely infested, 5=not infested at all)	4.61	4.73*	3%
Frequent mildew odor or musty smell (1=yes, 0=no)	.30	.21***	-9%
How often have observed standing water in home (1= never, 5=always)	1.60	1.44**	-10%
Have seen mold in home (1=yes, 0=no)	.28	.19**	-9%

EE = Health Improvements

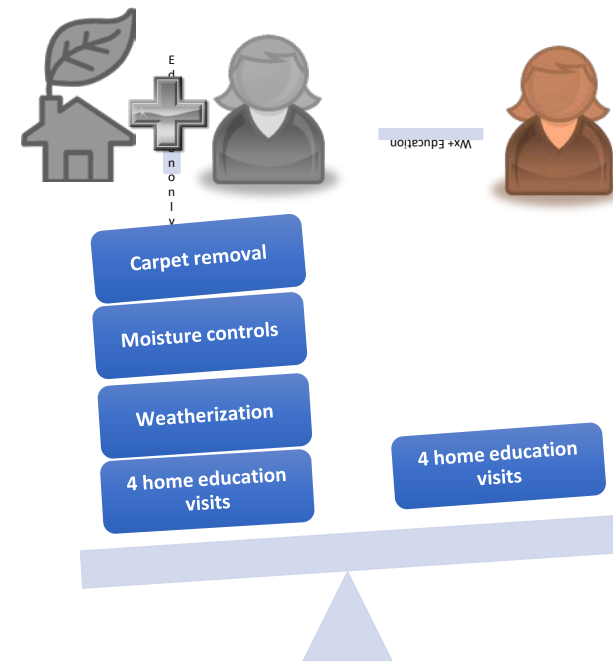


Source: Wilson J, Dixon SL, Jacobs DE, Breyse J, Akoto J, Tohn E, Isaacson M, Evens A, Hernandez J (2014). Watts-to-Wellbeing: does residential energy conservation improve health? *Energy Efficiency*, 7(1), 151.

Weatherization “Plus”

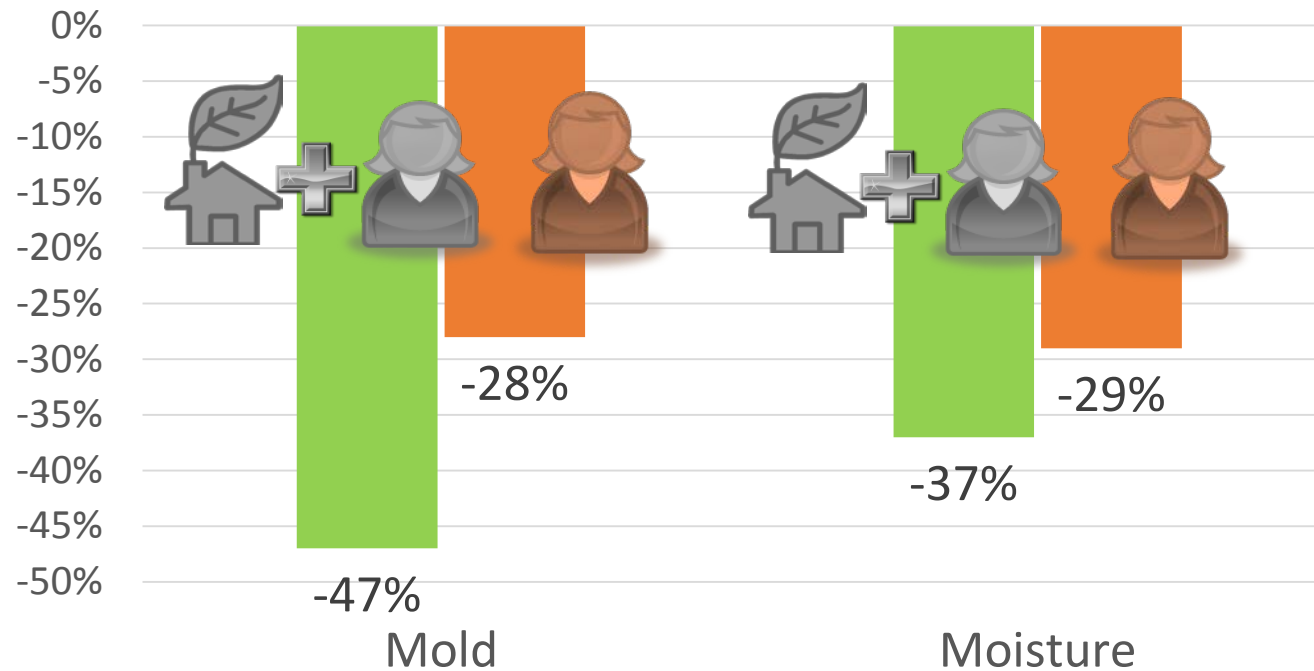
Highline Communities, King County, WA

- Standard weatherization +
- 61% new bath fans - most with timer
- 61% carpets removed
- 26% vapor barriers in crawl space
- 24% kitchen range fans
- Other measures as needed
- \$4200/apartments (11)
- \$6300/duplex or homes (23)

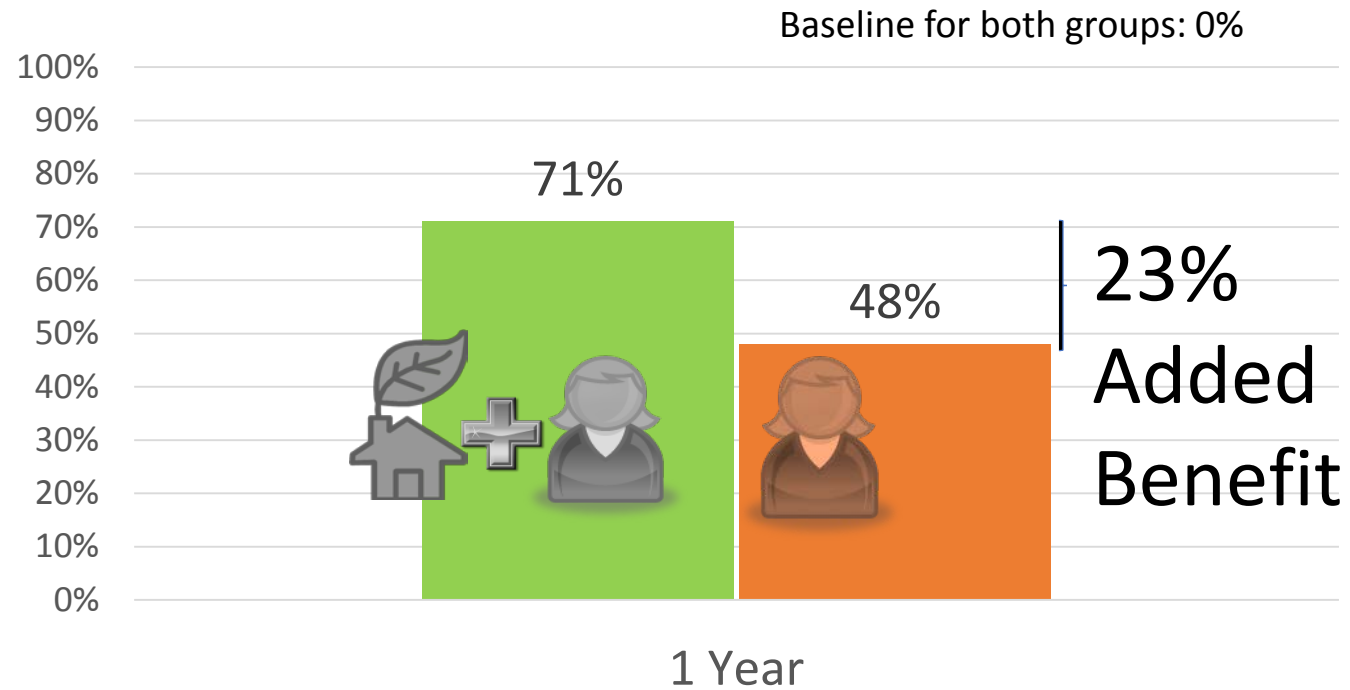


Source: Breysse J, Dixon S, Gregory J, Philby M, Jacobs DE, Krieger J. (2014). Effect of weatherization combined with community health worker in-home education on asthma control. *American Journal of Public Health*, 104(1), 57.

Weatherization Plus Health: Reduced moisture/mold

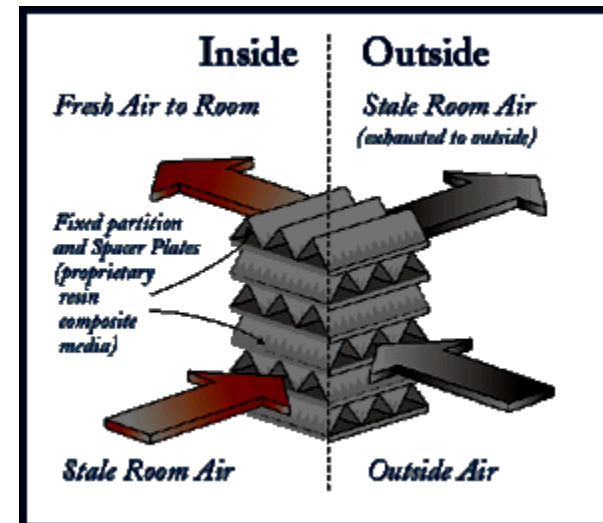


Asthma better controlled for children



HRVs/ERVs can improve asthma symptoms

- Installation of HRV/ERVs associated with fewer asthma respiratory symptoms
- 3 studies – all controlled trials with at-risk children or children with asthma
- Studies also observed improvements in CO₂, VOCs, and airborne mold



ASHRAE 62.2 exhaust ventilation can improve environmental conditions

- Fewer headaches among children in 62.2 2010 vs. 1989 homes
- Homes in both groups had lower CO₂ and formaldehyde
- 62.2 2010 homes had some declines in radon in first floor



Waterbury Weatherization Plus Injury Prevention

- Managed by New Opportunities Inc, Waterbury CT
- Purpose to reduce falls in the home for persons who had fallen in the past 6 months and with a low SES
- Home assessment provided by an occupational therapist on environmental and functional risks
- Individualized recommendations based on ability, disease progression and daily routine
- Home modifications provided with funding Department of Social Services

Common Recommendations

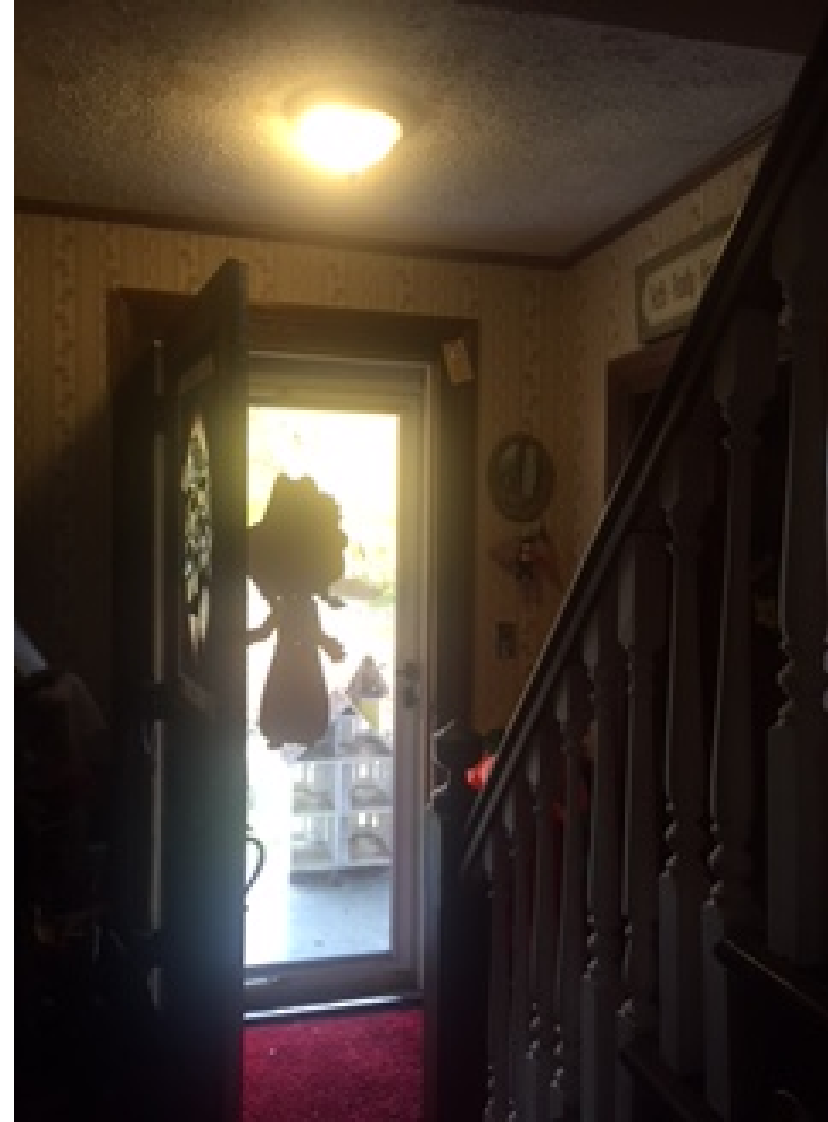
- Grab bars in bathroom
- Tub seats
- Raised toilets
- Enhanced lighting
- Safe flooring
- Combination shower head with hand held

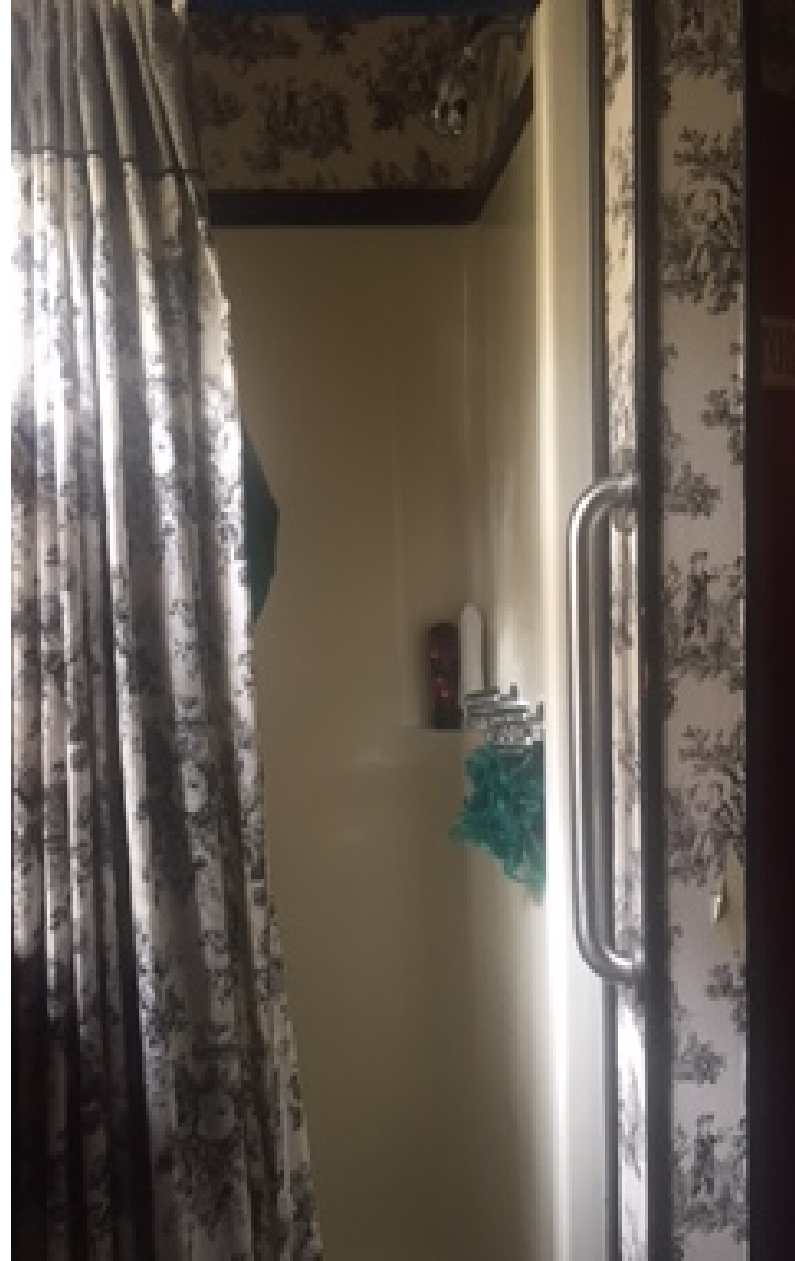


Partners

- New Opportunities, Inc. - Community Action Agency and pilot program implementer, Michael Gurecka project manager
- Funding for this work was provided by Connecticut Department of Social Services and the Connecticut Department of Energy and Environmental Protection.
- CT Department of Energy and Environmental Protection (DEEP) - USDOE Weatherization Assistance Program funds for energy conservation measures
- Eversource - Home Energy Solutions - Income Eligible funding thru the Energy Efficiency Board - Rate Payer funding for energy conservation measures
- Occupational Therapist - IP Risk Assessor, Tracy Van Oss, DHSc, MPH, OTR/L
- National Center for Healthy Housing - Evaluation Team member
- Tohn Environmental Strategies, Inc. - Evaluation Team member













Efforts reduced fall risks

	Baseline – All (49)		Baseline – Matched (35)		Follow-Up – Matched (35)		Baseline to Follow-Up (p-value)
Fell (prior 6 months)	49	47 (96%)	35	33 (94%)	35	3 (9%)	<0.001*
Fell and Called for Assistance	49	15 (31%)	35	8 (23%)	35	1 (3%)	0.02*
Fell and Transported to Hospital	41 ^a	7 (17%)	31 ^a	4 (13%)	35	1 (3%)	0.180

a Question not completed by all respondents with falls

* Statistically significant @ $p < 0.10$

It's a smart investment

At a median cost of \$2,058/home, the addition of injury prevention component led by an occupational therapist offers the potential to avoid expensive fall related medical costs (lift assistance, hospital transport and admission, long term care).

Integration of injury prevention into weatherization work, which targets lower income seniors with high energy use, offers potential to reduce costly hospitalizations and poor health outcomes.

The Need: Better Coordination

- Home visiting programs have limited scope and family needs are broad.
- Programs do not have effective ways to connect families to other health, housing and energy services.
- Opportunities exist to reduce program costs (e.g., intake, wasted visits).
- We need to build effective cross sector collaborations.



Families “Touched” Each Year

Issue	NH	Omaha	Vermont	Minn.
Health	3000	2200	7,000	3400
Energy	1800 (1,000 low income)	1150 (400 low income)	4,000	2500
Housing	800	200	1300+	1600

Typical One Touch Partners



Health

Lead
Asthma
Visiting Nurses
Smoking Cessation



Housing

Government Rehab
Habitat for Humanity
Rebuilding Together
Community Programs



Energy

Weatherization
Utility Programs
Home Performance



One Touch Sites

Omaha NE

Vermont

New Hampshire

Kansas City – in progress

Rhode Island – in progress

Hartford CT

Waterbury CT – in progress

One Touch Check Up

Help local programs:

1. Make effective referrals
2. Provide helpful client engagement & services
3. Reduce intake and outreach time

Designed locally using our template

Typically takes 10 min with a client

Generates accessible data on health, housing and energy conditions and needs



Home Visit Information

1. Home Visitor *

First Name

Last Name

Email Address

Phone Number

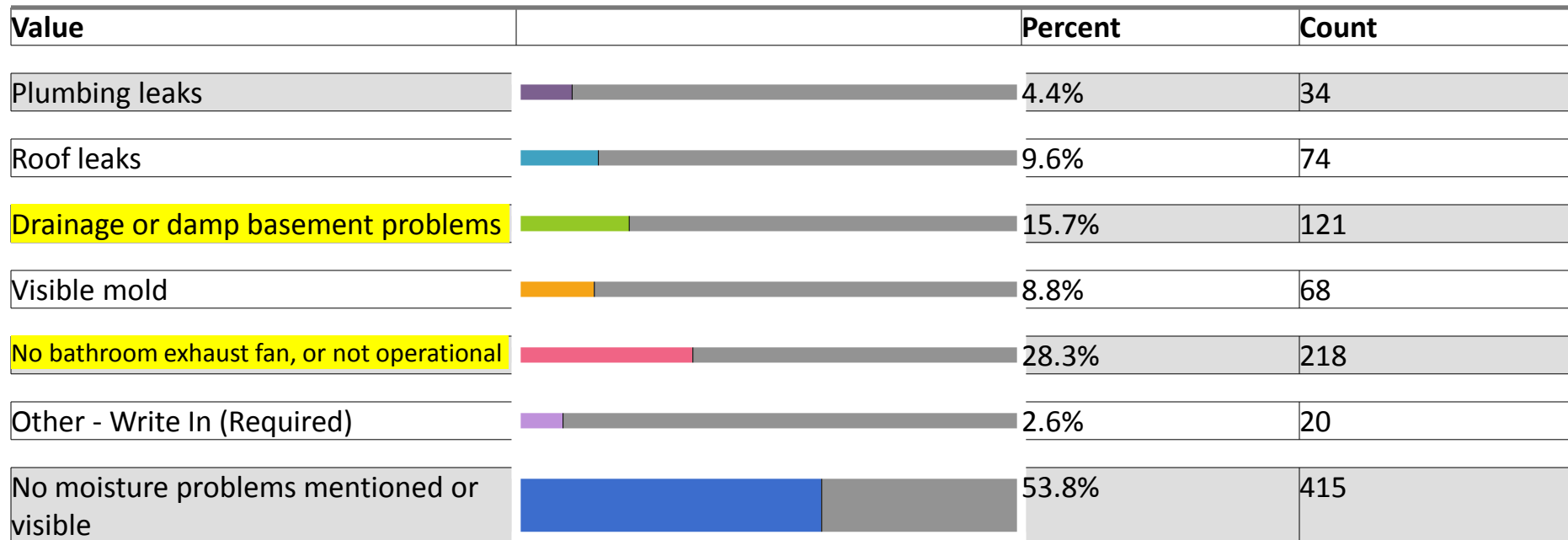
2. Home Visiting Organization *

- Weatherization - BROC – Community Action in Southwestern VT
- Weatherization - Capstone
- Weatherization - CVOEO
- Weatherization - NETO – Northeast Employment and Training

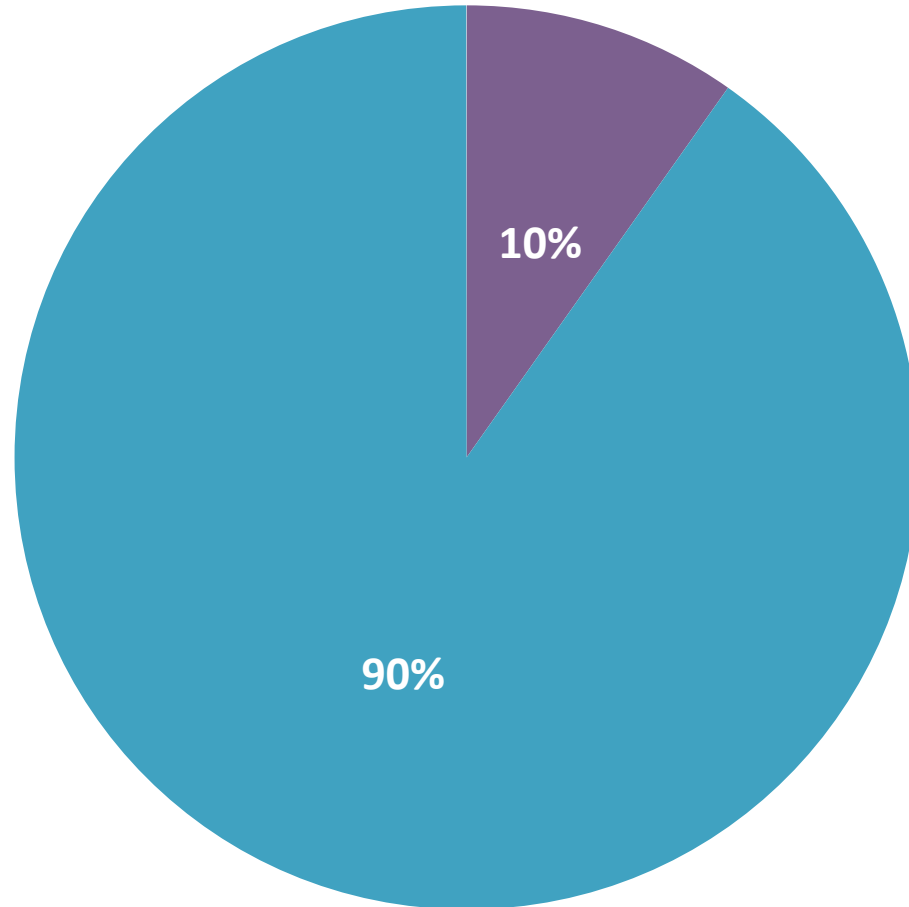


Software produces wonderful data

For example, 43% VT homes had moisture issues



10% VT households worry about falling

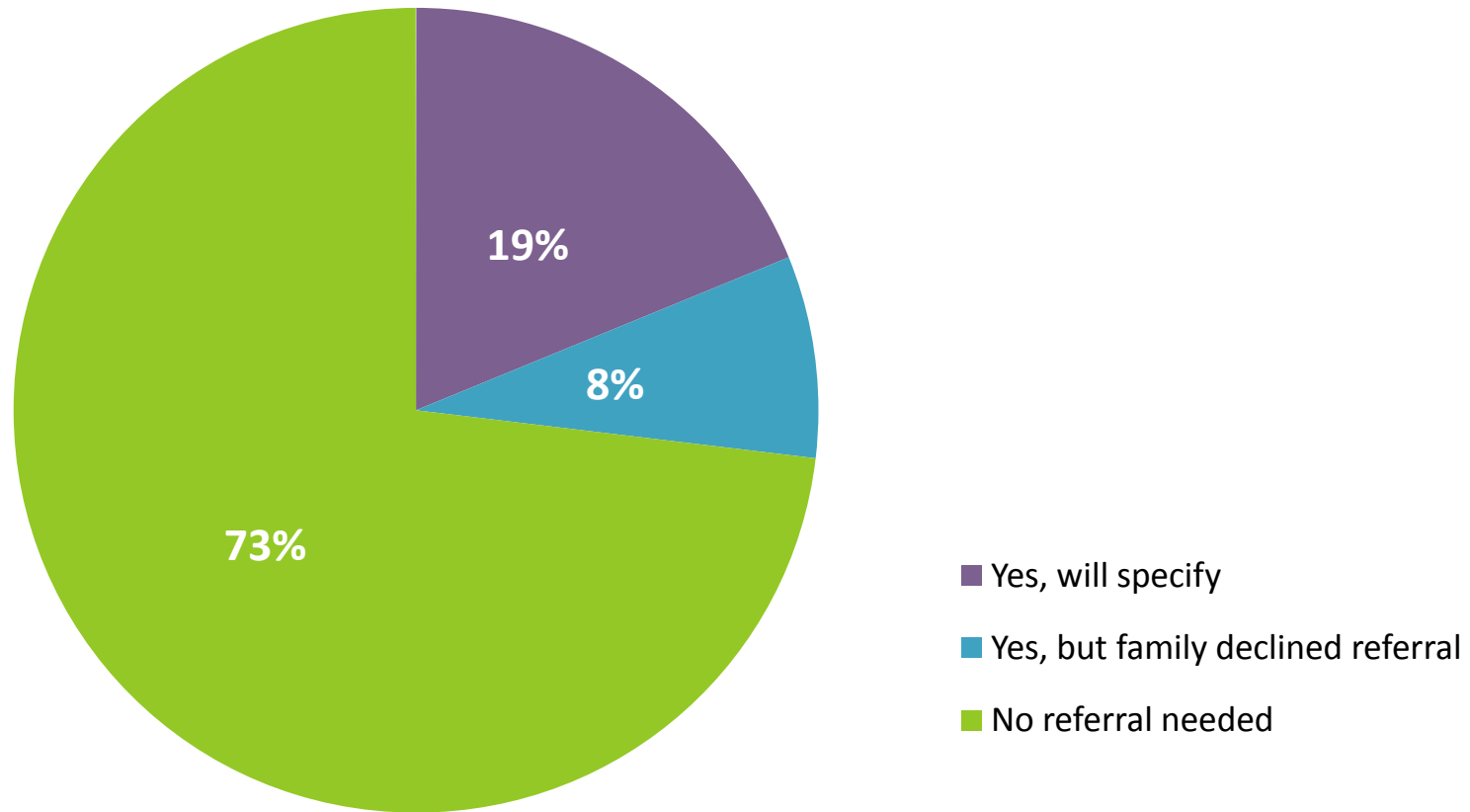


AND 6% households had someone who fell in the last year in their home

■ Yes [Refer to Dept of Health Falls Prevention]

■ No

1/5 VT homes (19%) need a referral





Most common referrals

Making E-
referrals is
easy

referrals

26. The family could benefit from a referral to the programs listed below (check all that apply)

- Asthma educational outreach – Dept of Health
- Child nutrition and health – WIC
- Child parenting concerns or developmental delays – Childrens Integrated Services
- Head Start – XX Community Action Agency
- Hoarding -- (if local resource exists)
- Injury Prevention–Mobility Repairs – Local Hospital or City Program
- Nurse home visit – Visiting Nurses Association
- Lead hazard repairs – Lead Hazard Control Program
- Lead educational outreach – Dept. of Health
- Smoking cessation – 802Quit
- Smoke free housing & second hand smoke risks – Dept of Health
- Housing Code – City Code Enforcement
- Housing repairs, low income families – Local non profit
- Housing repairs, low income families –City Dept.
- High energy use, low income family – Weatherization Agency
- High energy use, low income family – Utility Program
- High energy use – Utility or city/state efficiency program
- No Referrals Needed

Automated E-Referrals & Follow up

You have a One Touch referral for asthma education. The referral was made by Child and Family Services.

The following referrals were made by the home visitor:

Asthma educational outreach - Dept of Health, Child parenting concerns or developmental delays – Children’s Integrated Services, Lead hazard repairs - Lead Hazard Control Program, High energy use, low income family - Weatherization Agency,

The following comments were provided by the home visitor:

Moisture and standing water in basement; very cold in winter; at least one child with breathing issues, more mice this year than usual. Peeling paint on porch and in kitchen.

A copy of the One Touch Checkup responses is provided below.

Thank You
One Touch Partners



Referrals are working

“I have to tell you I really like the One Touch program, I get many referrals and follow-up on all that are in my 3 counties. Make sure you thank them for me and keep up the good work.”

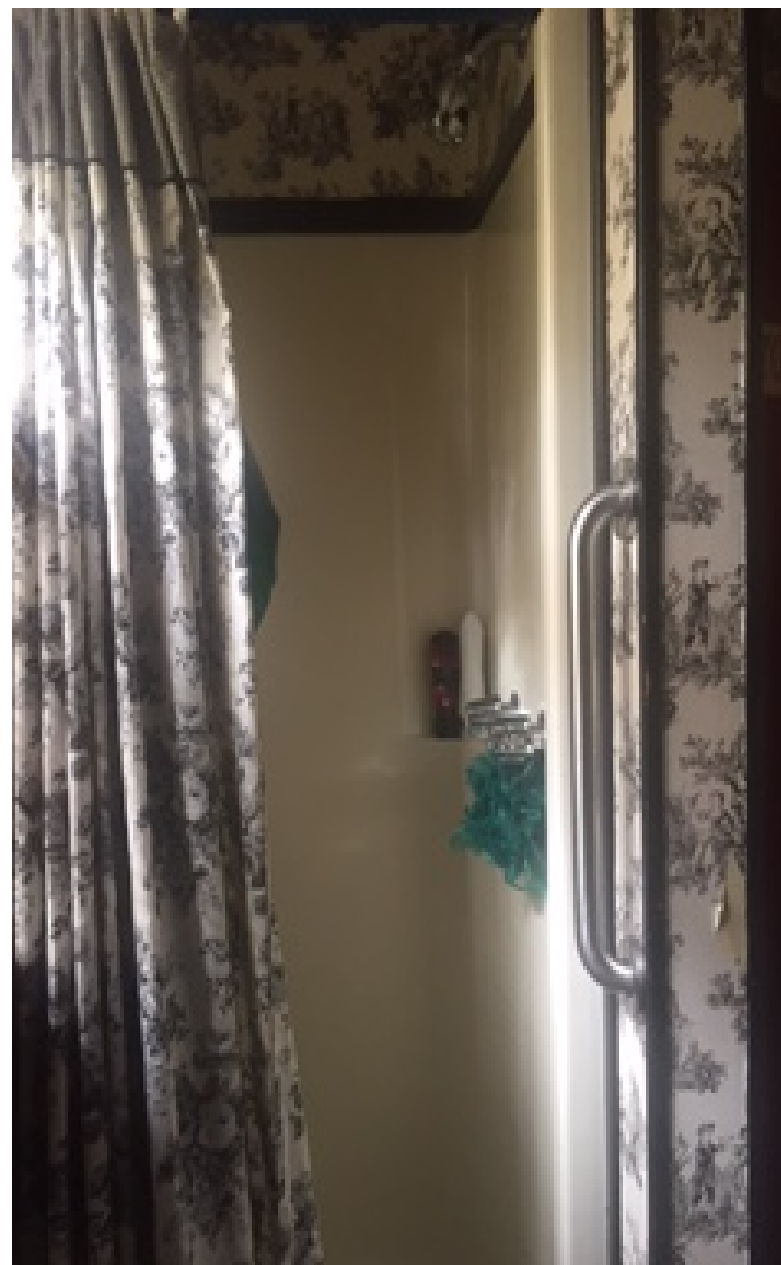
Lynette Over, NeighborWorks of Western Vermont

35% of referrals are resulting in services provided

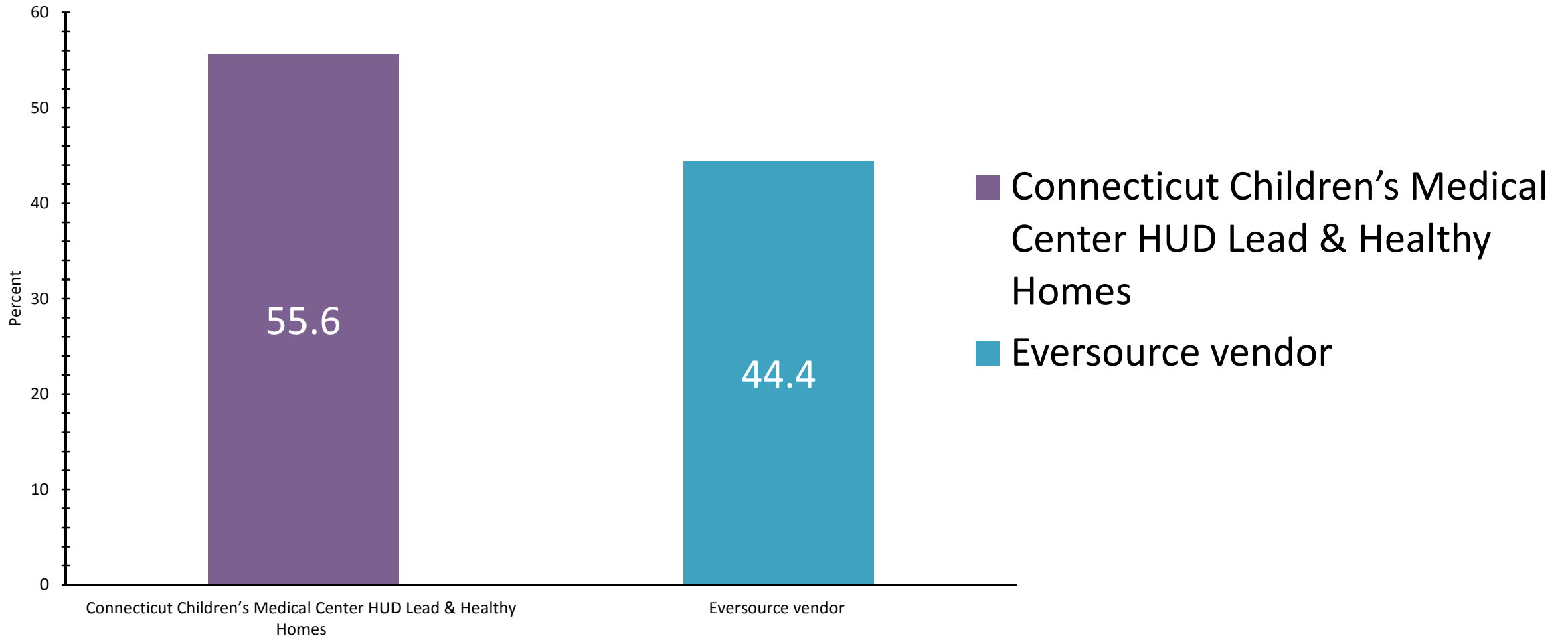


The high number of fall prevention requests led us to work with our Department of Health and UVM Medical Center to develop a pilot program to add injury prevention repairs to our weatherization jobs for clients with fall risks.

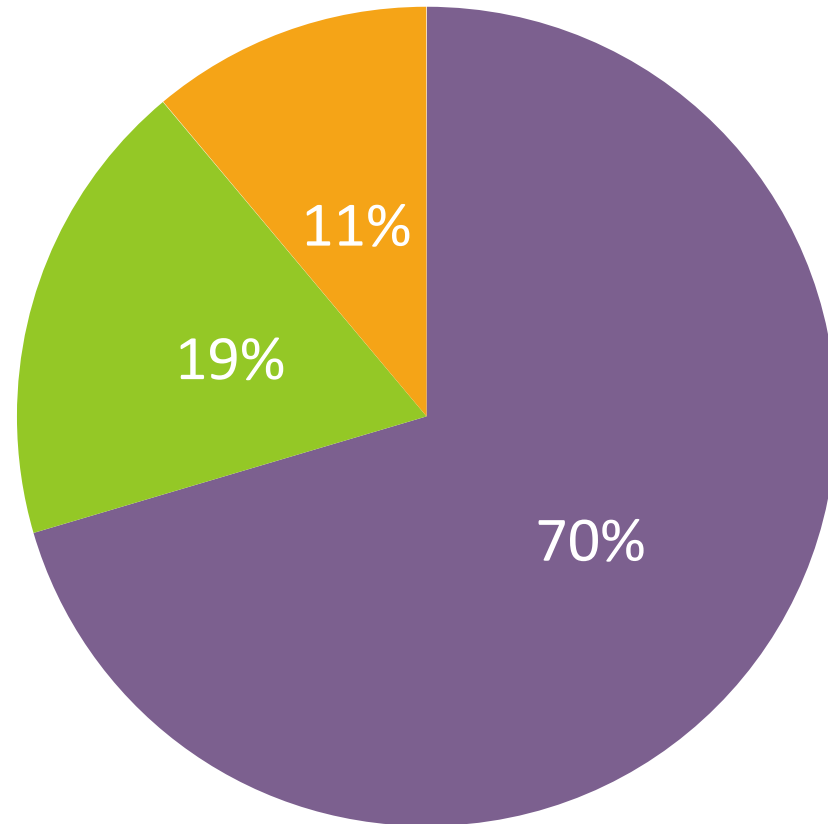
Geoff Wilcox, VT Weatherization



Hartford Users: Health & Energy

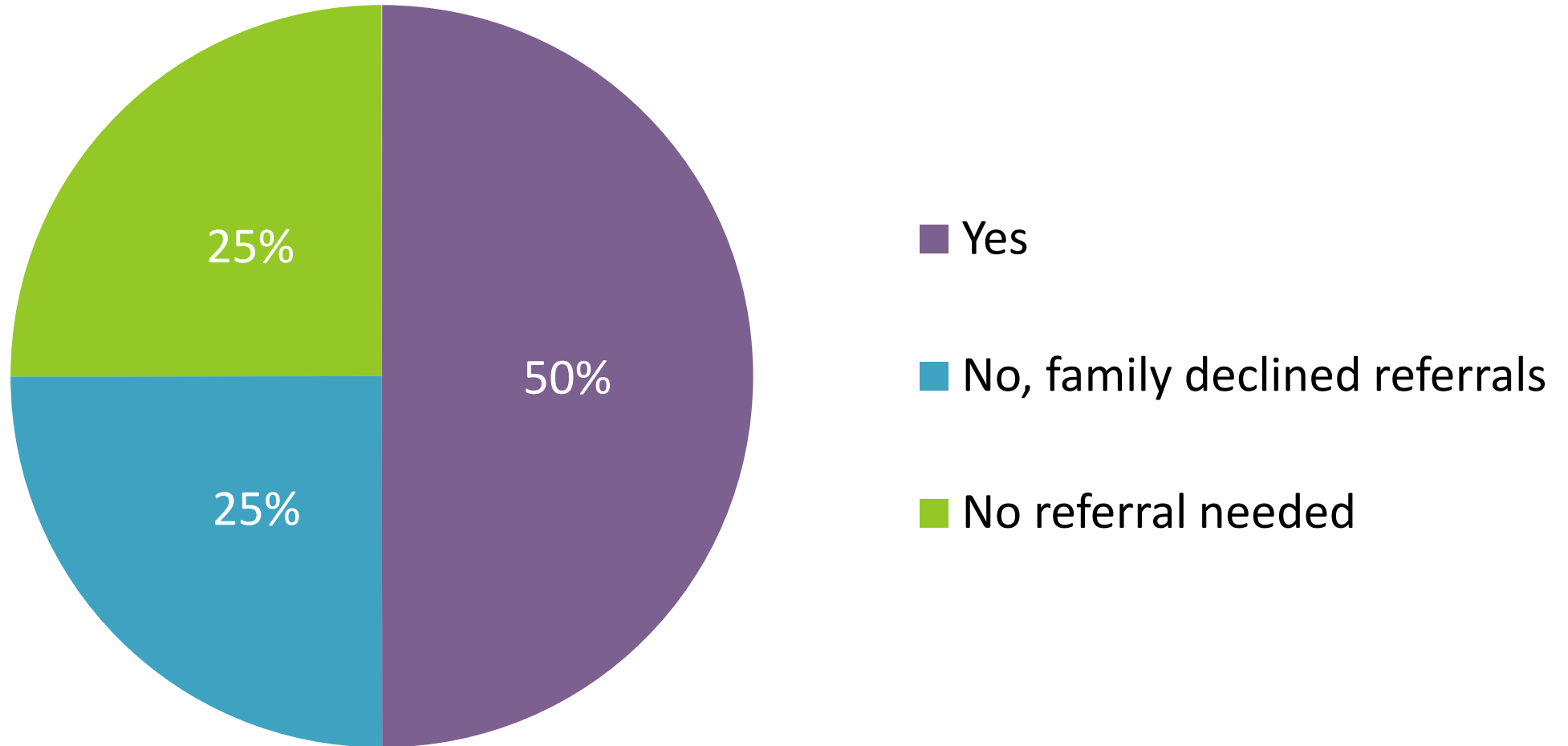


Early Lead Data From Hartford One Touch



- Peeling, cracked, or spidering paint, in pre 1978 home
- NO peeling, cracked or spidering paint, housing built before 1978

50% Hartford Surveys Generated a Referral



Questions and Discussion

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