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MODELS IN FIRE PREVENTION

SYMPOSIUM 2012

An Evaluation of Smoke Alarm Installation and Community Risk Reduction Programs in Five U.S. Fire Departments

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Presentation Outline

- Formative Research
  - Global Research
  - CDC SAIFE Program
- Demonstration Projects
- Evaluation Objectives
- Evaluation Findings

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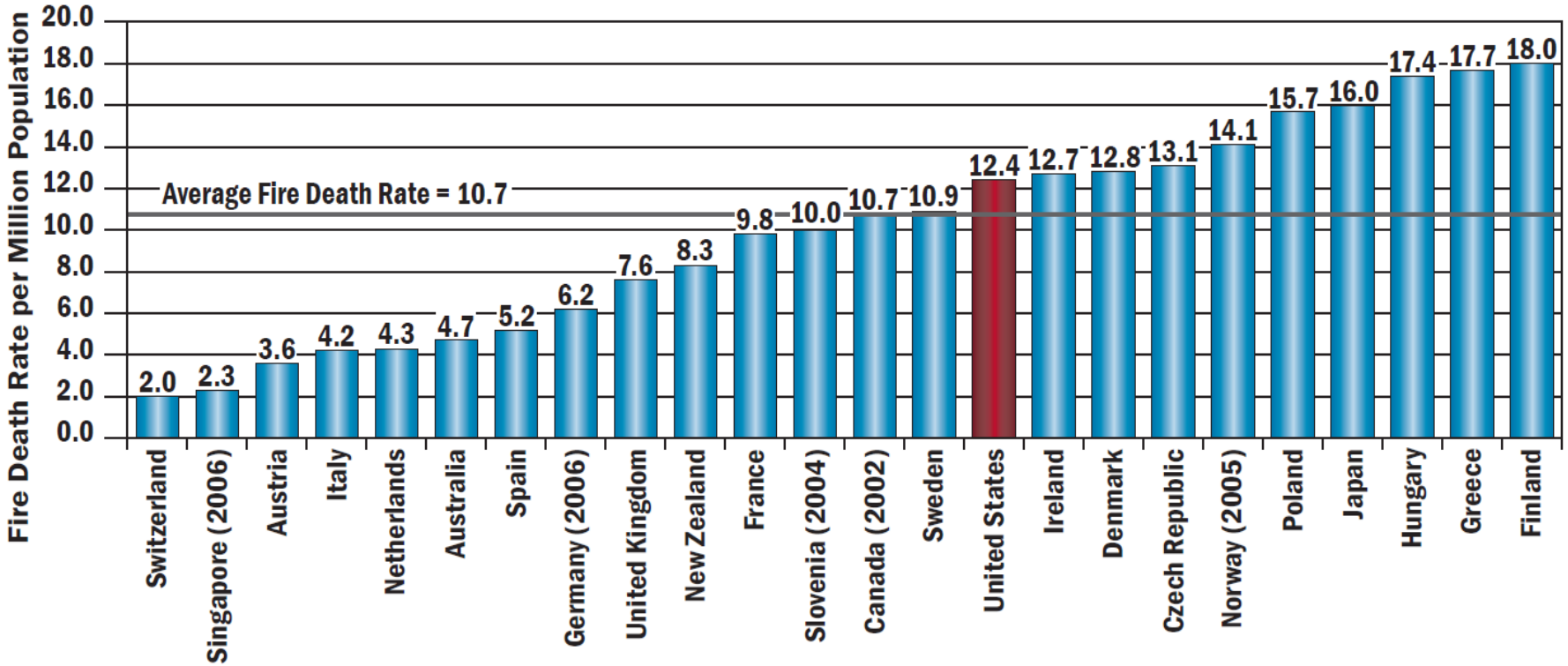
FORMATIVE RESEARCH

Select Global Comparisons

Figure 1. 2007 International Fire Death Rates per Million Population



Sources: World Fire Statistics Centre fire death data and the United Nations (U.N.) Demographic Yearbook population estimate data.
Note: Where 2007 data were unavailable, the death rate for the most recent year available is shown.

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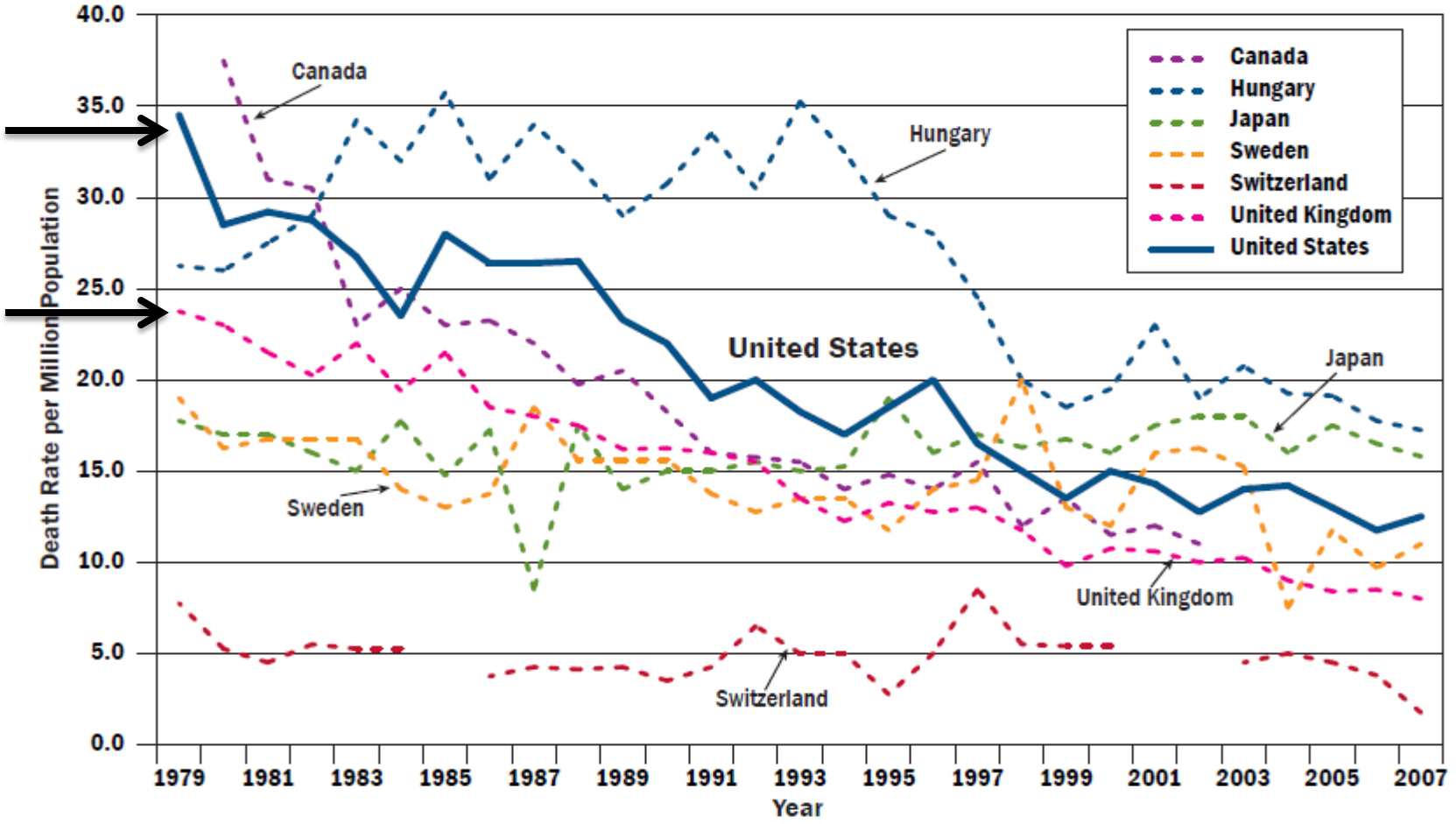
Trends in Civilian Fire Death Rates

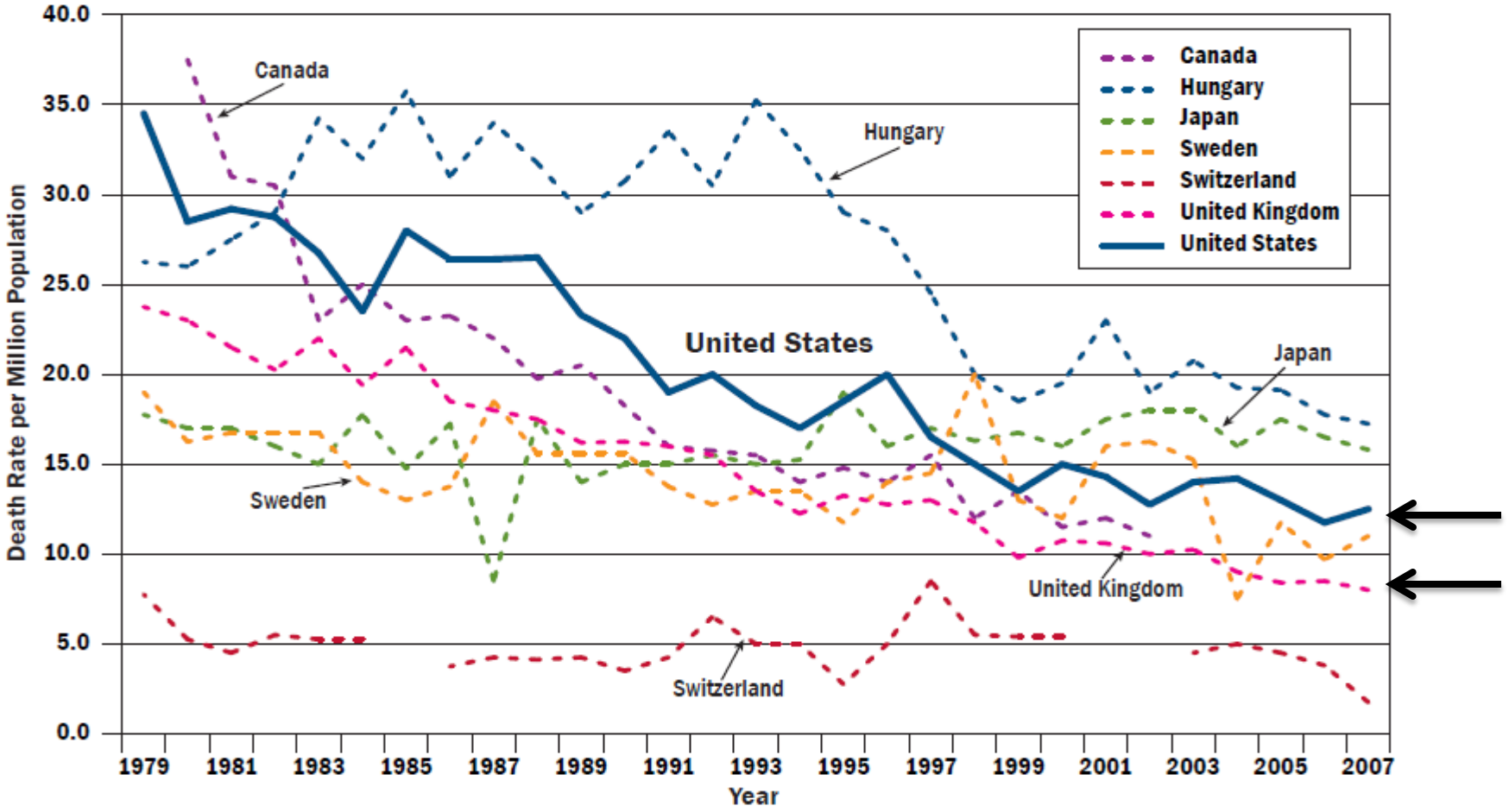
Figure 3. Fire Death Rates per Million Population by Selected Countries



Sources: World Fire Statistics Centre fire death data and the U.N. Demographic Yearbook population estimate data.

Trends in Civilian Fire Death Rates

Figure 3. Fire Death Rates per Million Population by Selected Countries



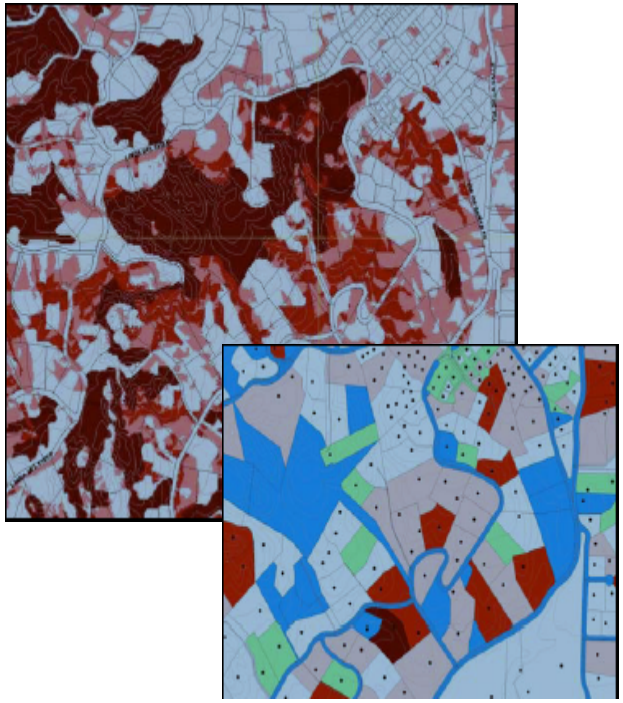
Sources: World Fire Statistics Centre fire death data and the U.N. Demographic Yearbook population estimate data.

Global Research

- Conducted by TriData
- Prior work in 1982-1983
- Recent research in 2006-2009
  - 2006/7: Europe
    - England, Scotland, Sweden, Norway
  - 2007/8: Pacific Rim
    - Australia, New Zealand, Japan
  - 2008/9: North America
    - Canada, Mexico, Puerto Rico, Dominican Republic

Global Research Findings

- Increase emphasis on prevention, especially for residential fire safety
- Drop mandatory standards of cover
- Adopt an integrated risk management (community risk reduction) approach
  - Business and prevention plans made and tracked by fire station
  - Target prevention to high-risk groups
    - Identified by GIS analysis and socioeconomic data



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Home Safety Visits: The Best "New Practice"

- **Visit high risk homes (50%-100%)**
  - Use firefighters and community volunteers or staff
  - Visit by appointment or cold calls after local publicity
  - Offer to install free smoke alarms.
  - Educate, test/install alarms, inspect/mitigate hazards

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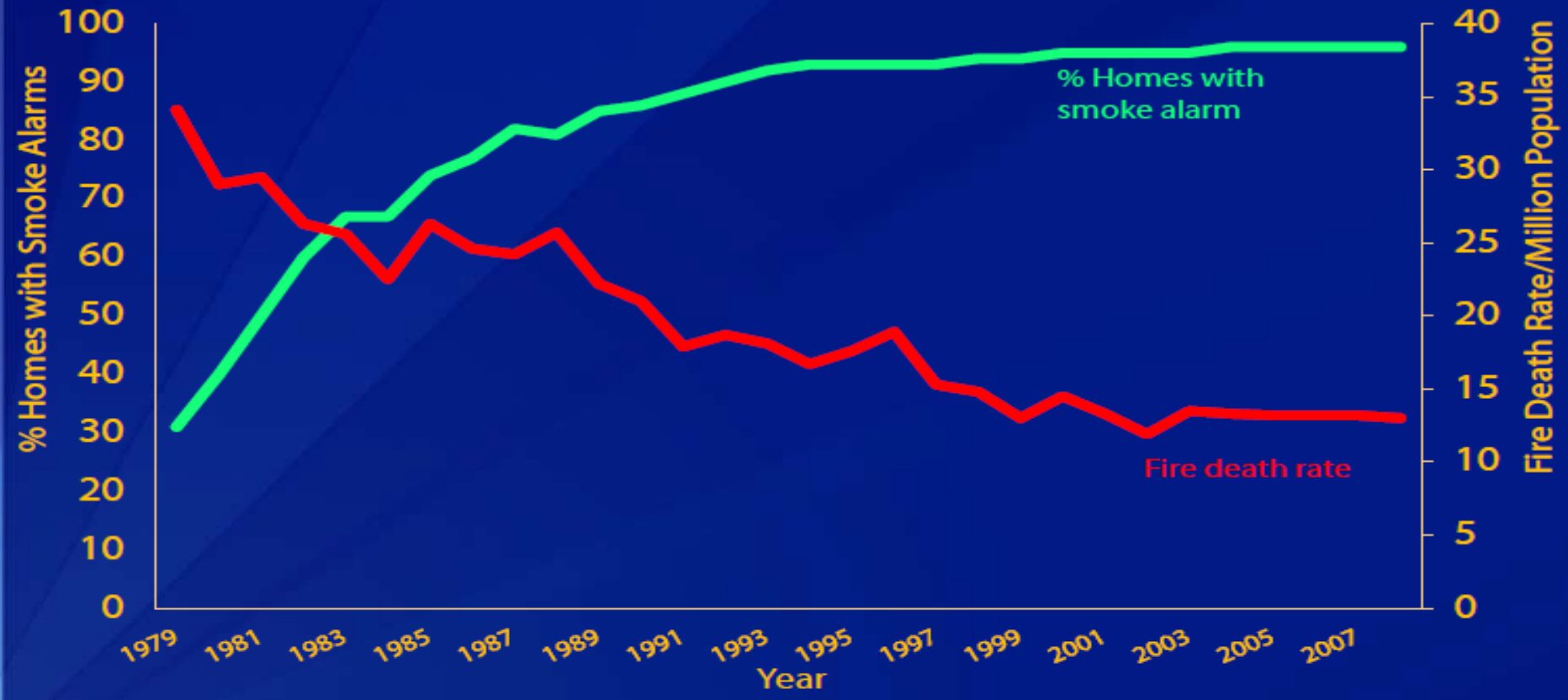
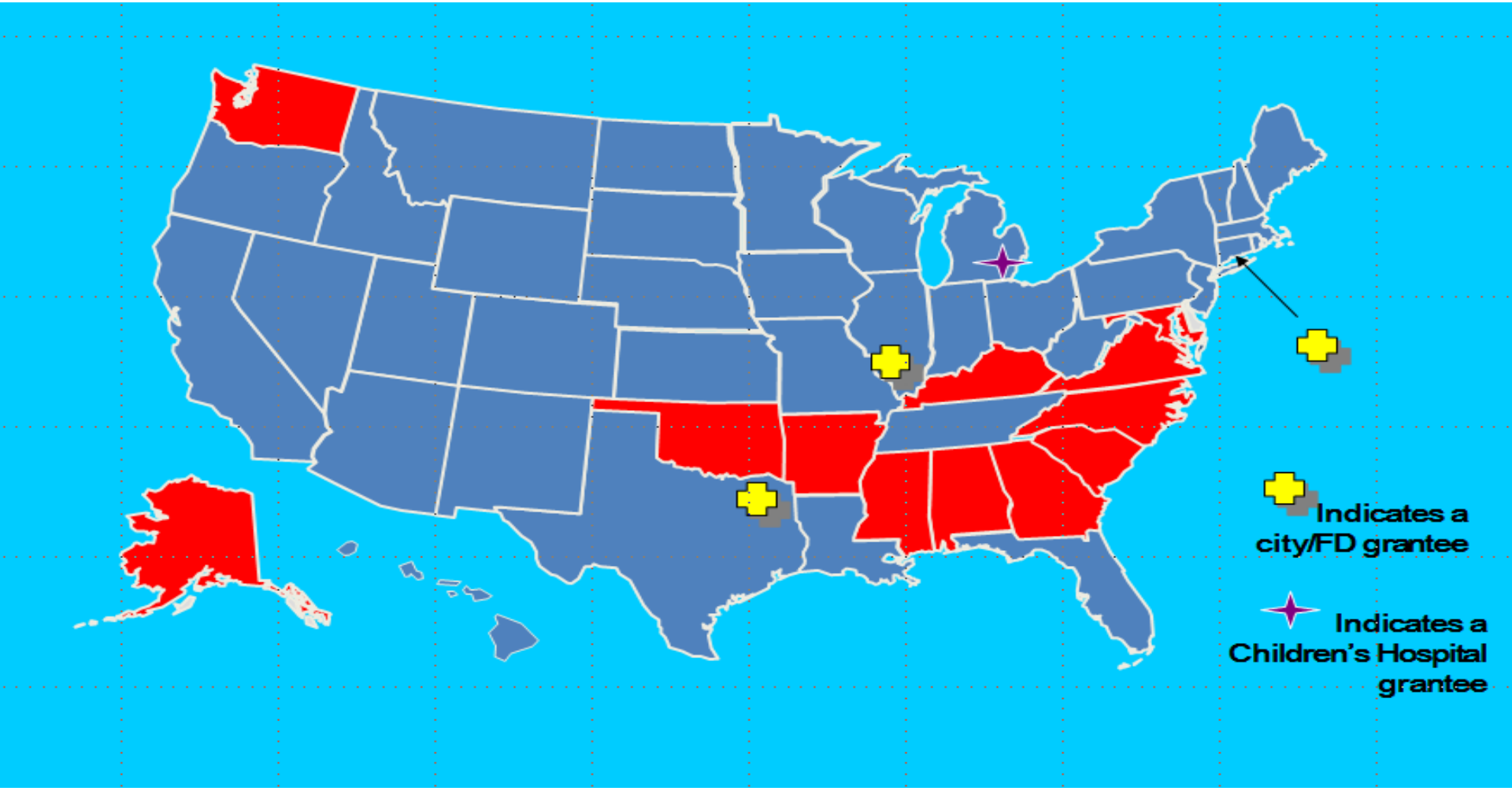
US Fire Death Rate Declines as Smoke Alarm Ownership Increases



NFPA, *Fire Loss in the United States During 2009, by Michael J. Karter, Jr., NFPA, Quincy, MA, 02169*

CDC SAIFE Program



CDC SAIFE Program

As of September 2011

Homes Canvassed	**611,047**
Homes Enrolled	**278,872**
Smoke Alarms Installed	**553,167**
Lives Potentially Saved	**3,755**

“The future is here.
It is just not widely distributed yet.”

William Gibson - Novelist

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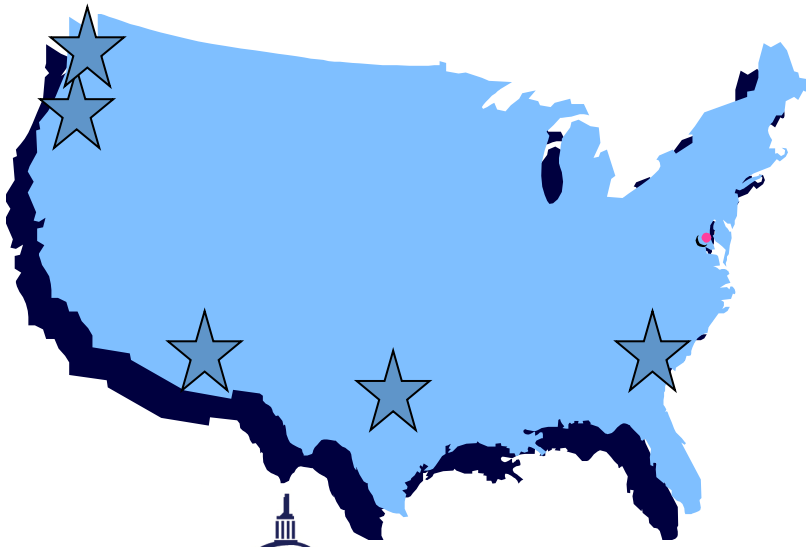
DEMONSTRATION PROJECTS

Demonstration Projects

- FEMA-funded 2009-2011
- Administered by Washington State Association of Fire Marshals
- Evaluated by University of Washington PRC
- Five implementation sites
  - Dallas
  - Portland
  - Tucson
  - Wilmington
  - Vancouver



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Approach

- Phase I – Smoke Alarm Installation
  - Targeted approach to high risk neighborhoods
  - Installation and Education
  - Follow up and Evaluation

- Phase II – Community Risk Reduction
  - Identify and prioritize community risks
  - Develop appropriate strategies and tactics
  - Prepare and Implement plan
  - Monitor and Evaluate program

Community Risk Reduction (CRR)

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EVALUATION OBJECTIVES

Evaluation Framework

- Process evaluation conducted with each site
- Data collected in homes to establish baseline and measure improvement
- Fire incidence and census data used to begin tracking impact on reported home fires & deaths
- Results intended to demonstrate value of prevention programs

Evaluation Objectives

Purpose of evaluation:

- Describe the programs (*Program Descriptions*), their implementation (*Process Evaluation*), and associated costs (*Program Costs*)
- Describe the short- and long-term outcomes (*Impact & Outcome Evaluations*)
- Summarize the *Lessons Learned*
- Identify the *Key Program Components*

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EVALUATION FINDINGS

Program Descriptions

Tucson	Medium-sized, career fire department; installations completed by community partner (SERI)
Vancouver	Small-sized, mixed fire department; union; experience with CRR; installations completed in pairs of volunteer firefighters and community volunteers
Dallas	Large-sized, career fire department; 20+ year history of smoke alarm installation efforts; installations completed in pairs of firefighters and volunteers
Portland	Medium-sized, career fire department; installations completed by firefighters
Wilmington	Small-sized, career fire department; installations completed by firefighters

Site Specifics

Tucson	(Phase I) – Smoke Alarm Installation (Phase II) – Community partnership, CRR computer training for FD's
Vancouver	(Phase I) – Smoke Alarm Installation (Phase II) – All stations included, School based approach
Dallas	(Phase I) – Smoke Alarm Installation (Phase II) - Station based approach, Produced educational DVD's
Portland	(Phase I) – Smoke Alarm Installation (Phase II) – Crew based approach, Community radio campaign
Wilmington	(Phase I) – Smoke Alarm Installation (Phase II) – Community partnerships, College student PSA's

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Process Evaluation

Home Visits

No. Fire Departments…….. 5

Duration of Program……. 2 years*

homes visited……. 5,249

No Alarm Present…….. 40%

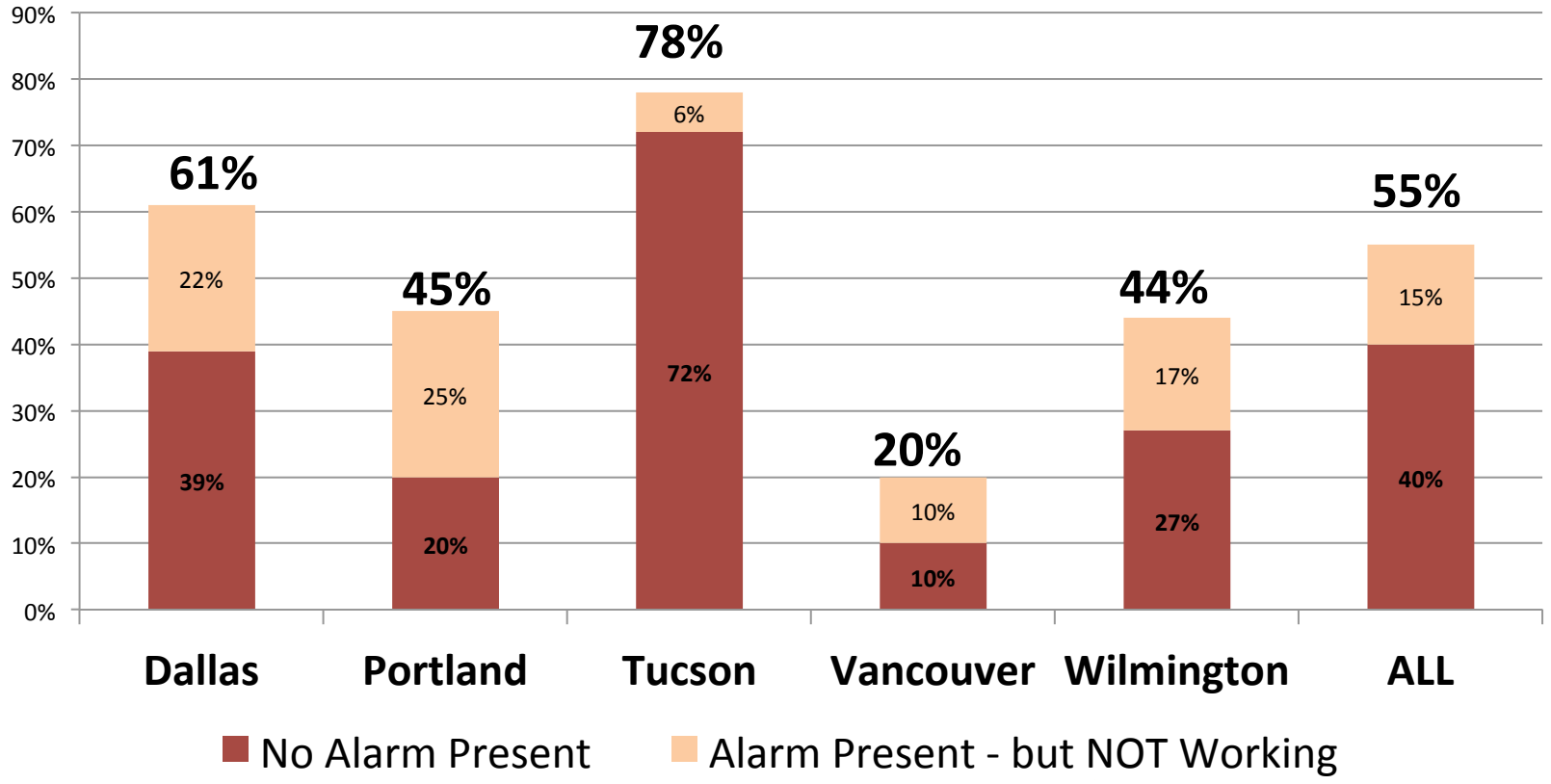
No Functioning Alarm Present…… 55%

No Home Escape Plan…… 74%

No Practice of Escape Plan…… 88%

*2 years in the field

Homes With No Functioning Alarm



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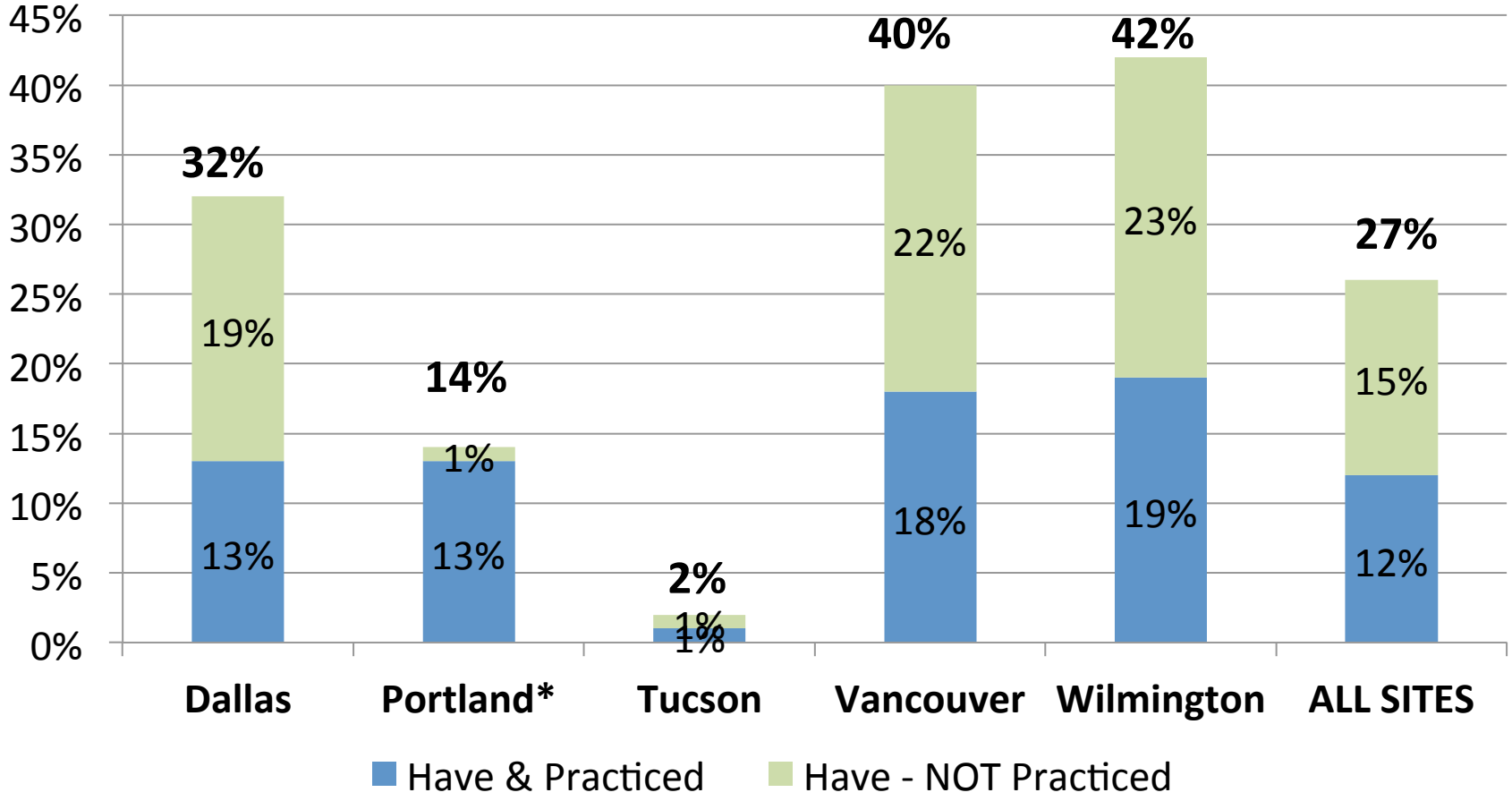
Escape Plan and Practice



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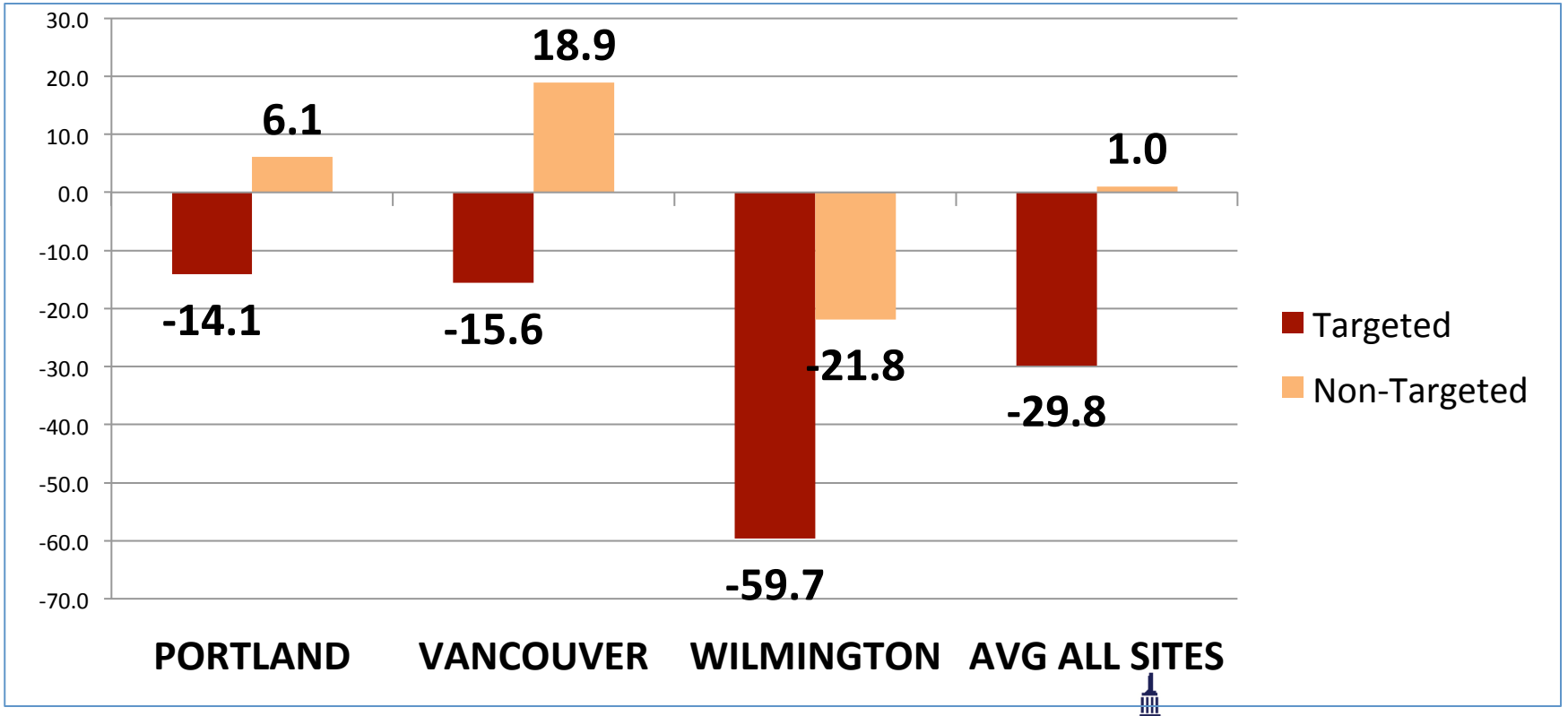
Impact Evaluation

- 15,983 smoke alarms installed

Home Fires per 100,000: Change between Pre & Post Intervention



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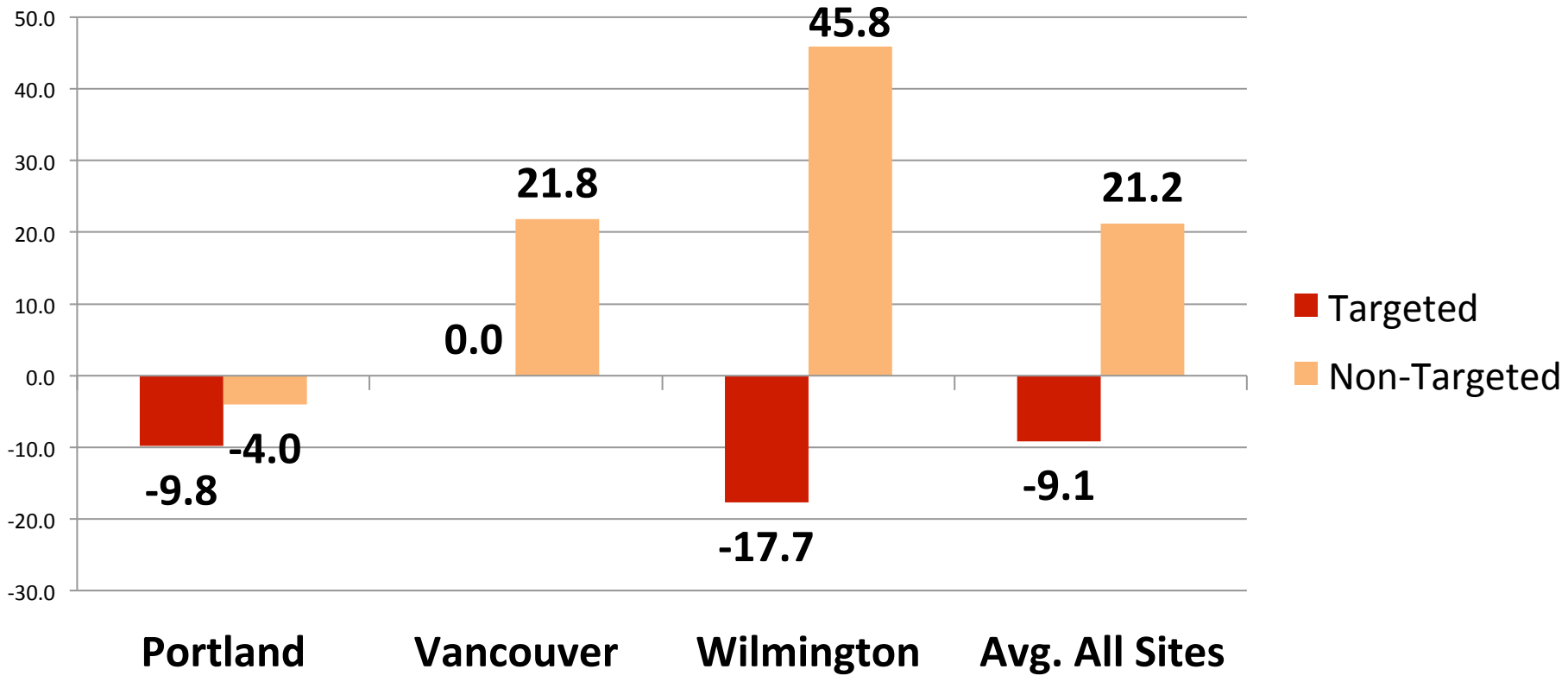
Outcome Evaluation

Deaths per 1,000 Home Fires
Change between Pre & Post Periods



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Program Costs

	Present Study		Other Studies
	Avg. Cost	Range	Range
Per Installed Alarm:	$34	$20-$78	$53-126
Per Home Visit:	$107	$85-$269	$135-$242

Lessons Learned

- Phase I – Smoke Alarm Installation
  - Emphasize need and department's commitment
  - Develop accountability systems for alarms & forms
  - Plan in advance for follow-up w. residents not home
  - Choose times when people are likely home & receptive
  - Not all volunteer groups are equal
  - Address common firefighter concerns
- Phase II – Community Risk Reduction
  - Involve entire station(s)
  - Developing community partnerships take time

Key Program Components
Phase I and Phase II

- Clear Vision
- Reasonable expectations
- Buy-in Senior Management
- Knowledge of FMAs
- Point Person
- Adequate Resources/Tools
- Knowledge of Community Resources
- Training for staff/volunteers

Conclusions

- Potential to:
  - Increase the presence of working smoke alarms
  - Change culture towards prevention
  - Substantially reduce fires deaths and injuries

- Further Research:
  - Implement larger scale programs
  - Assess CRR impact on perceptions
  - Enhance alarm technology
  - Address human behavior
    - Escape planning, alarm maintenance

Thank You

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