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MODELS IN FIRE PREVENTION

SYMPOSIUM 2012

Fire Prevention Education Delivered by On-Duty Fire Fighters

Cluster Randomised Controlled Study

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Presenting work done in partnership with

Fire Chief Len Garis, Surrey Fire Service, BC
Dr Darryl Plecas, University of the Fraser Valley, BC, and
Dr Charles Jennings, John Jay College, NY

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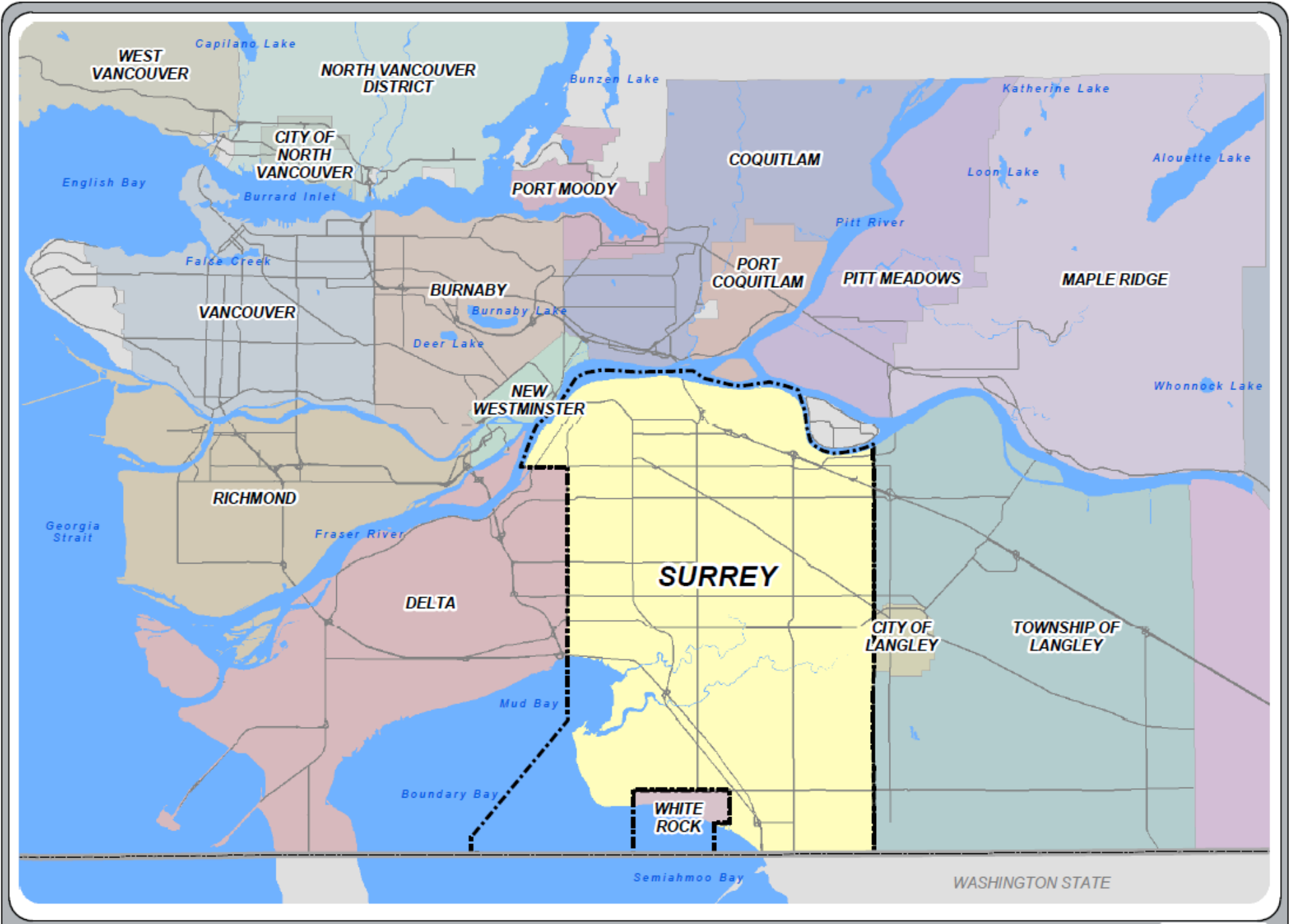
WHERE IS SURREY, BC?

RUSSIA
Arctic Ocean
Greenland
(DENMARK)
ICELAND
0 500 1000 km
0 500 1000 mi
Beaufort Sea
Baffin Bay
UNITED STATES
(Alaska)
Davis Strait
Dawson
Mackenzie
Whitehorse
Labrador Sea
Hudson Bay
peace
Churchill
St. John's
North Pacific Ocean
Edmonton
Surrey
Lake Winnipeg
Calgary
Vancouver
Québec
Regina
Winnipeg
Halifax
OTTAWA
Montréal
Lake Superior
Toronto
UNITED STATES
North Atlantic Ocean



LOWER MAINLAND

0 1.5 3 6 9 km

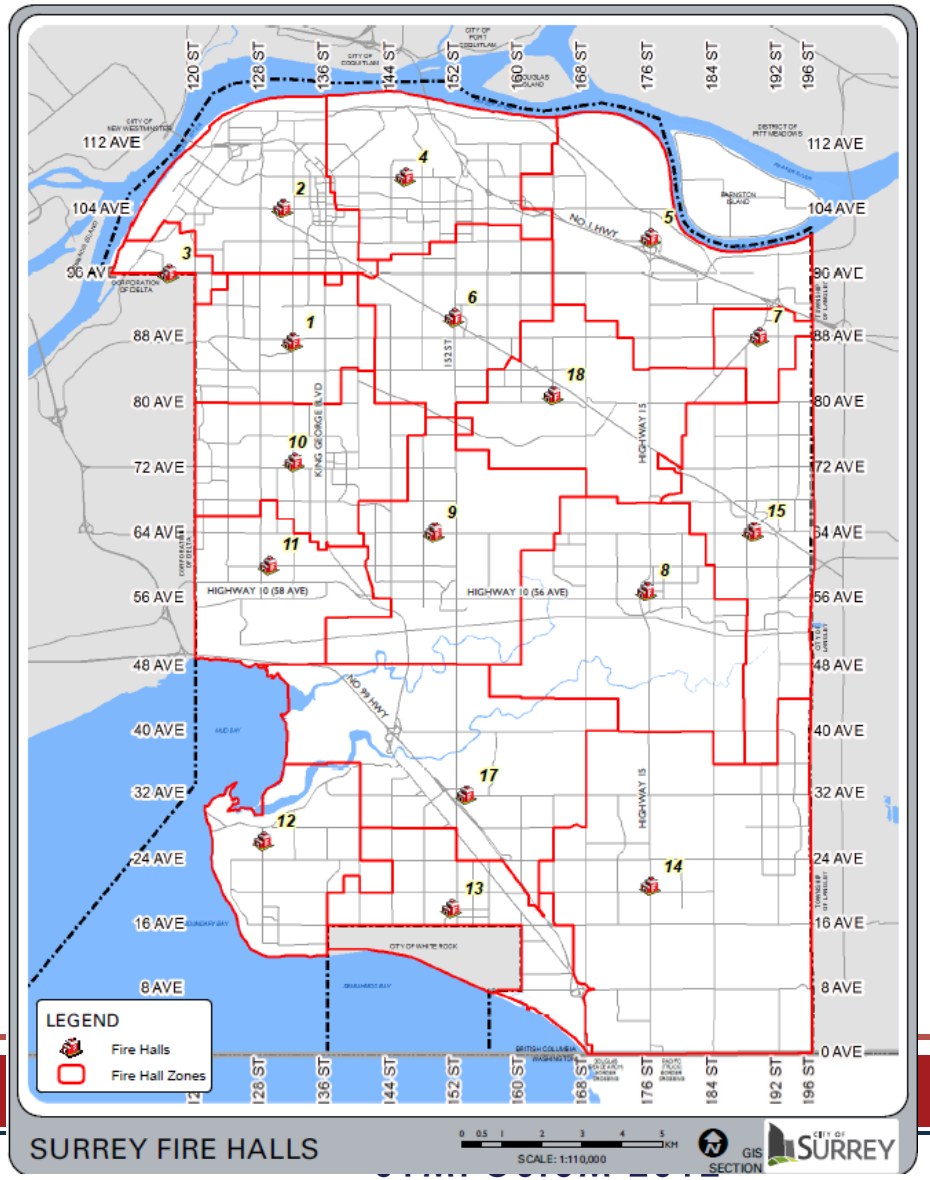
SCALE: 1:240,000

GIS SECTION

CITY OF SURREY

Surrey Fire Service

- 2nd largest city in BC
- 12th largest city in Canada
- 17 Fire Halls
- 317.4 km^2 coverage for ≈500,000 residents
- ≈30,000 calls for service per year



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OBJECTIVES

Smoke Alarms Work, but Not Forever

1. Working smoke alarms save lives
2. Not everyone has a smoke alarm, and smoke alarms don't last forever
3. It is possible to increase the likelihood of houses having working smoke alarms
4. This must be a process – there is no one-off quick fix

- Research Note available at: http://www.ufv.ca/Assets/CCJR/Reports+and+Publications/Smoke_Alarms_Work$!2c_But_not_Forever.pdf

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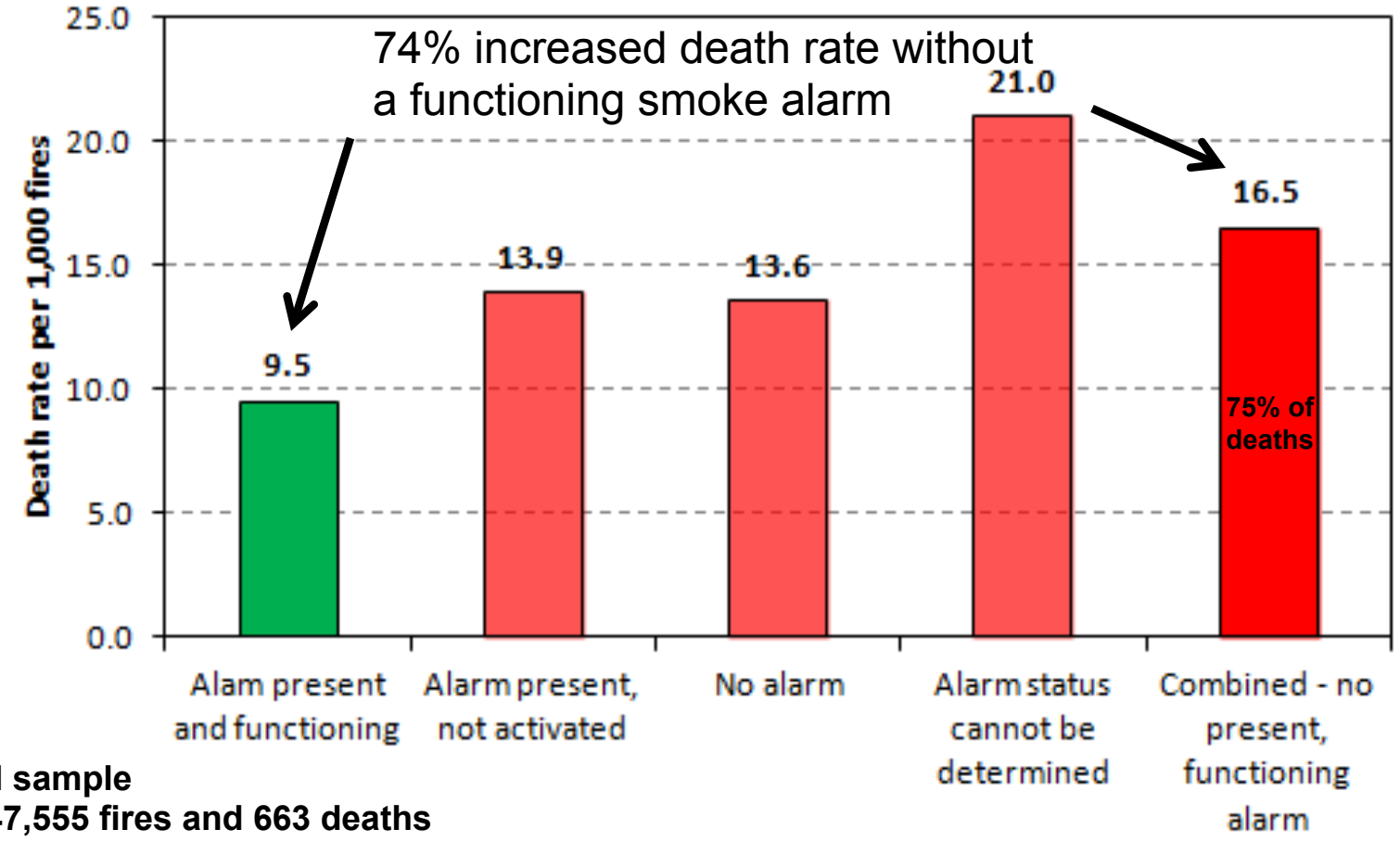
PROTOCOLS

Working Smoke Alarms Save Lives



Total sample
n = 47,555 fires and 663 deaths from AB, BC & ON

Not Everyone Has a Working Smoke Alarm

Smoke alarm status	Alarm status sub-category	# fires	% fires
Present and functioning		17,214	36.2%
Not present and functioning	Alarm present, not activated	8,210	17.3%
	No alarm	10,549	22.2%
	Cannot be determined	11,582	24.4%
	Sub-total	30,341	*63.8%*
Total		**47,555**	**100.0%**

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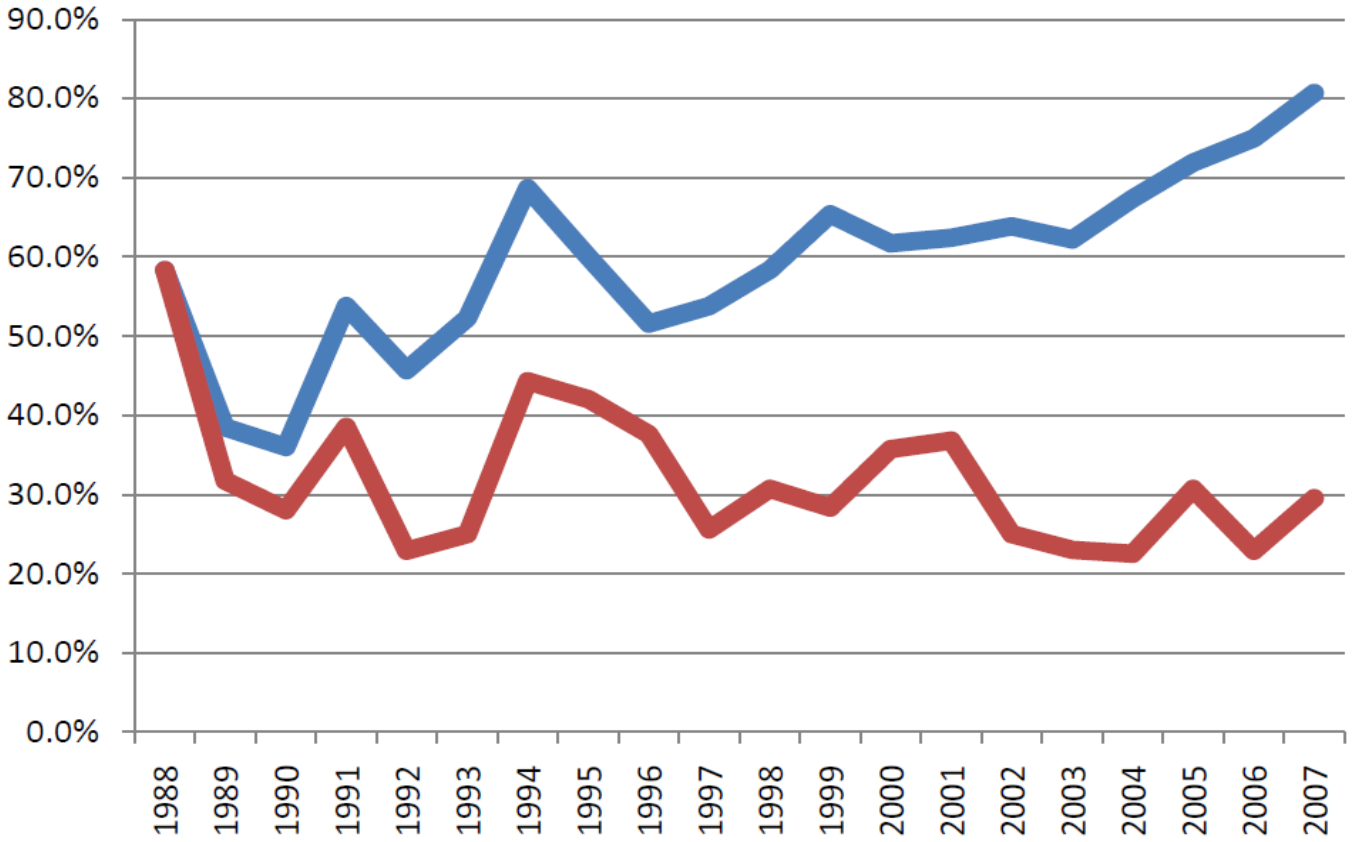
Smoke Alarms Stop Working With Time



Surrey fire trends 1988-2007

McCormick (2009)

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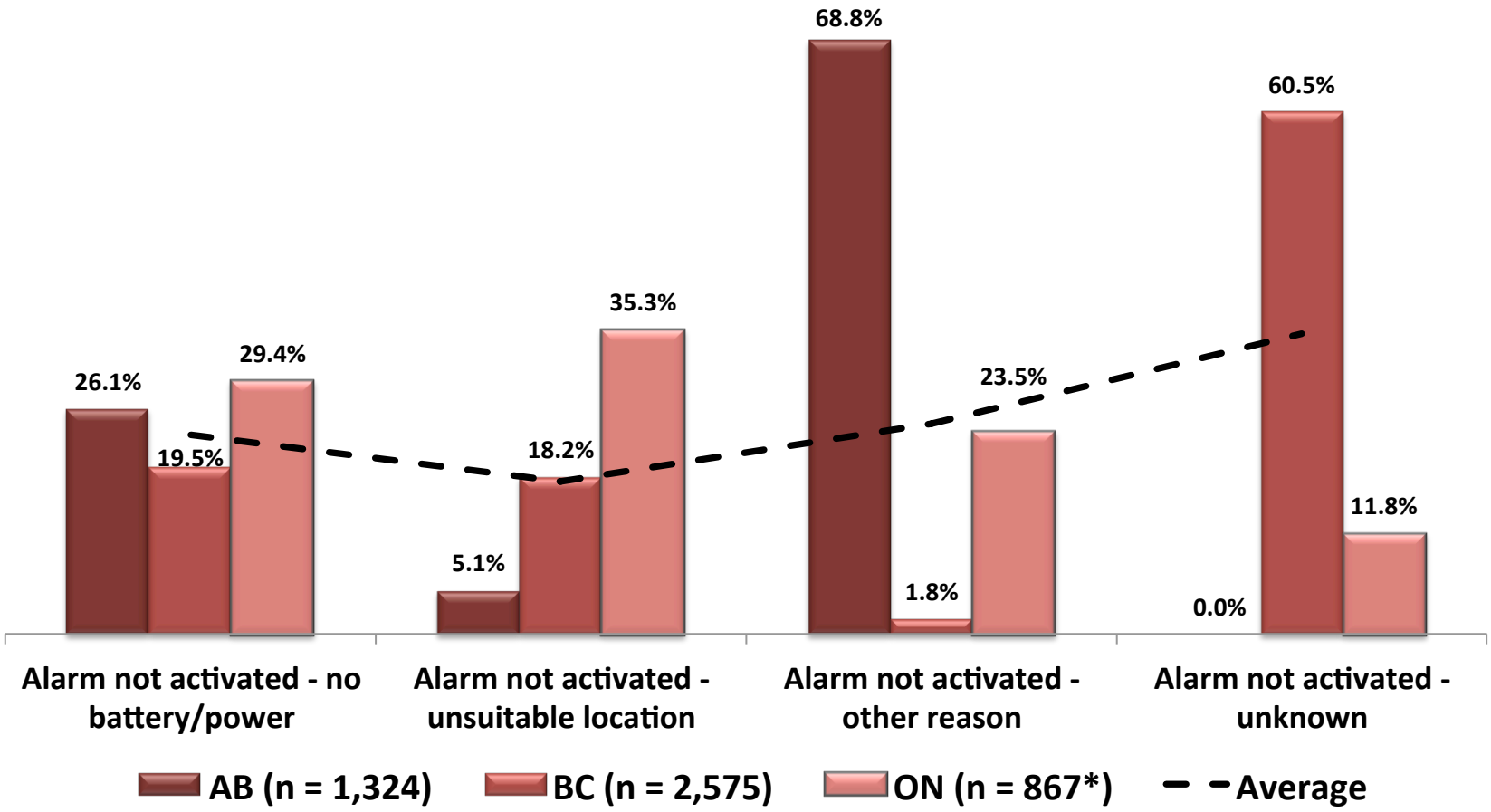
The Reasons Why Alarms Stop Working



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Public Fire Education Works

- International best practices also demonstrate
  - Fire risk is non-random: high-risk people, properties, and places
    - Understand the problem in your community (e.g., McCormick, 2009, for Surrey)
    - Not a shot-gun, lucky-dip approach – data drives these decisions
  - Fire-prevention home visits and education do make a difference

- Reduce fires, reduce death, reduce loss, reduced damage
  - Portland, Oregon
  - Louisville, Kentucky
  - Rock Island, Illinois
  - Montgomery County, Maryland

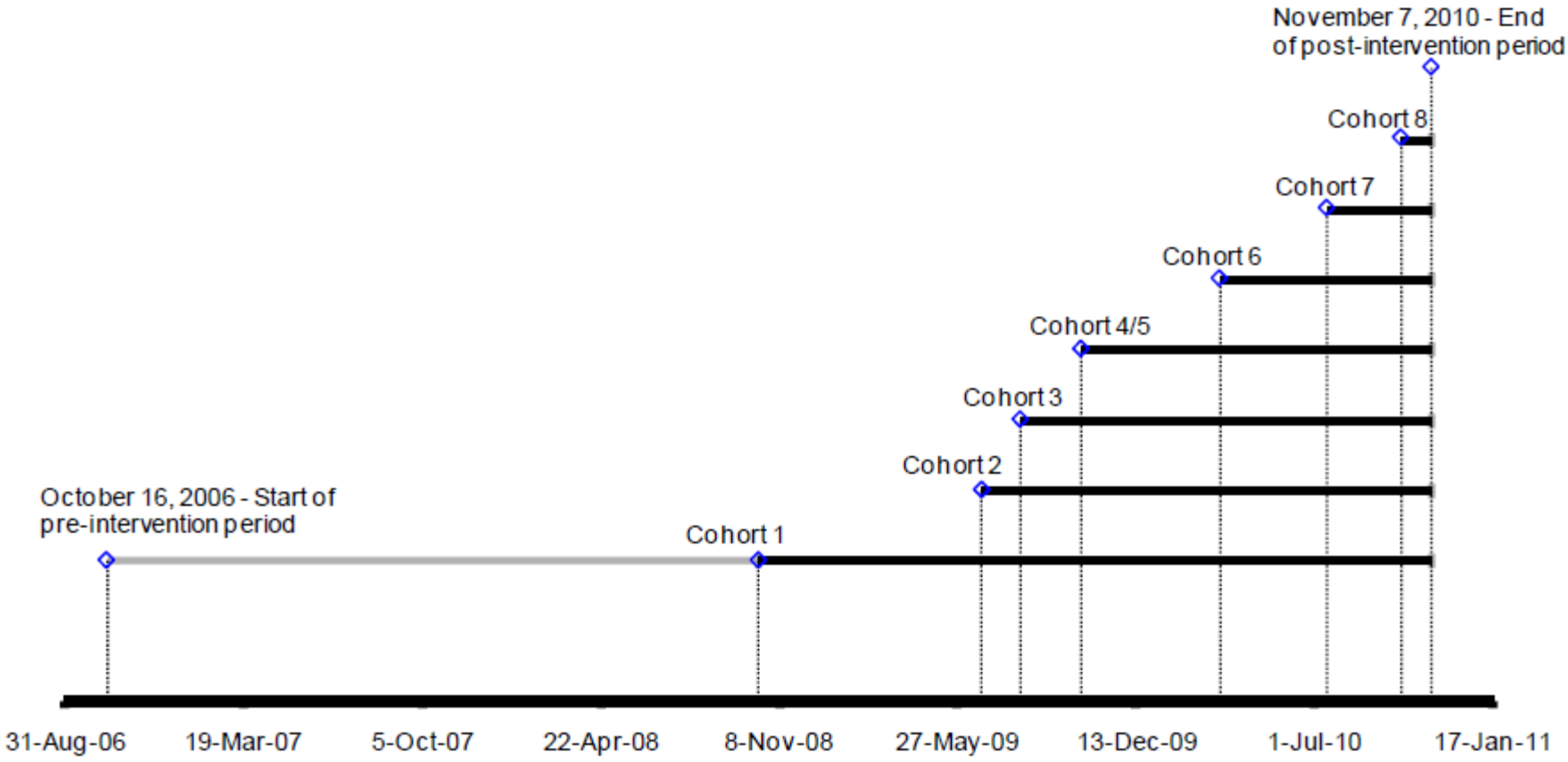
  (Case studies taken from *Proving Public Fire Education Works*, TriData, 1990)

- Fundamental limitation is lack of randomised cluster control evaluation

Filling the Void

- Commenced in 2008, Surrey Fire Service undertook a series of door-to-door, on-duty fire fighter delivered, public education visits
  - Established a cluster randomised control group
- At the time of evaluation (Nov 2010) 18,473 dwellings visited
  - Increased to over 30,000 visits end 2011, and will be 40,000 by June 2012
- Fire-prevention information packages distributed and smoke alarm checks undertaken where possible
  - Letter from the Surrey Fire Chief offering a no-charge home safety inspection and installed smoke alarm upon request
  - Smoke alarms
  - Home fire escape plans
  - Children and fire
  - Senior fire safety
  - Kitchen fire safety

Visits Undertaken in Temporal Cohorts



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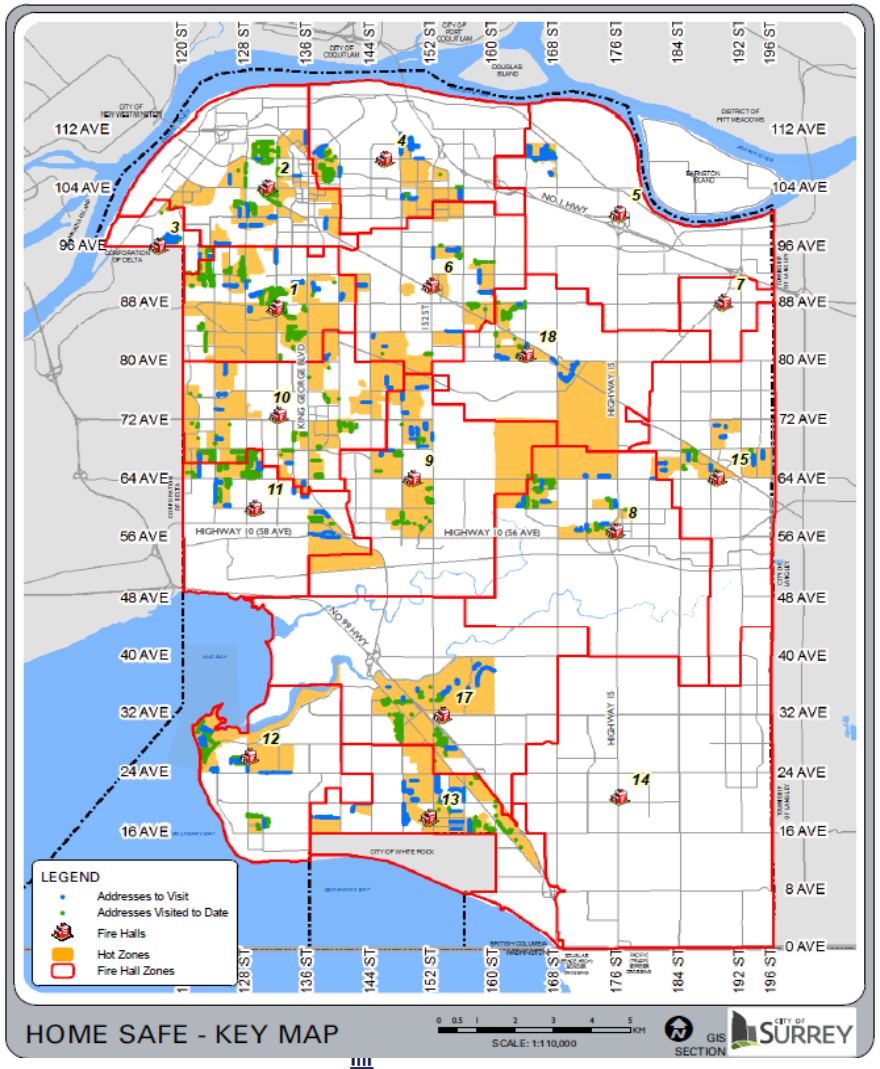
Risk-Based Deliveries

Top 10% for the following:

- High proportion of elderly citizens (over 64 yrs)
- High proportion of young children (under 6 yrs)
- Disadvantaged
  - Unemployed
  - Single-parent families
- High residential mobility

Combined with *hot-spots* for recent fire incidents



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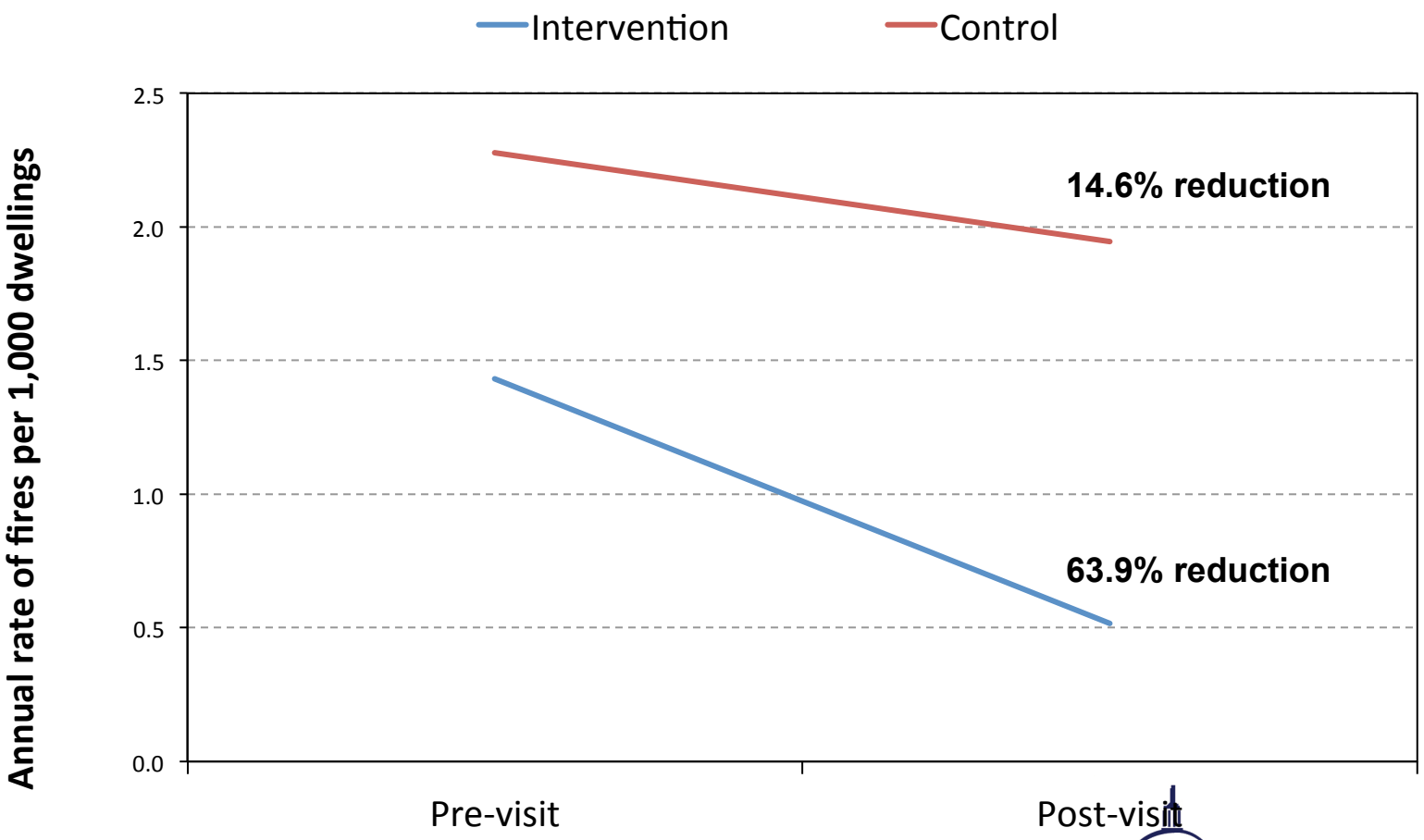
FINDINGS

Reductions in Fires



Reduction was 4.4 times greater for the *Home Safe* group

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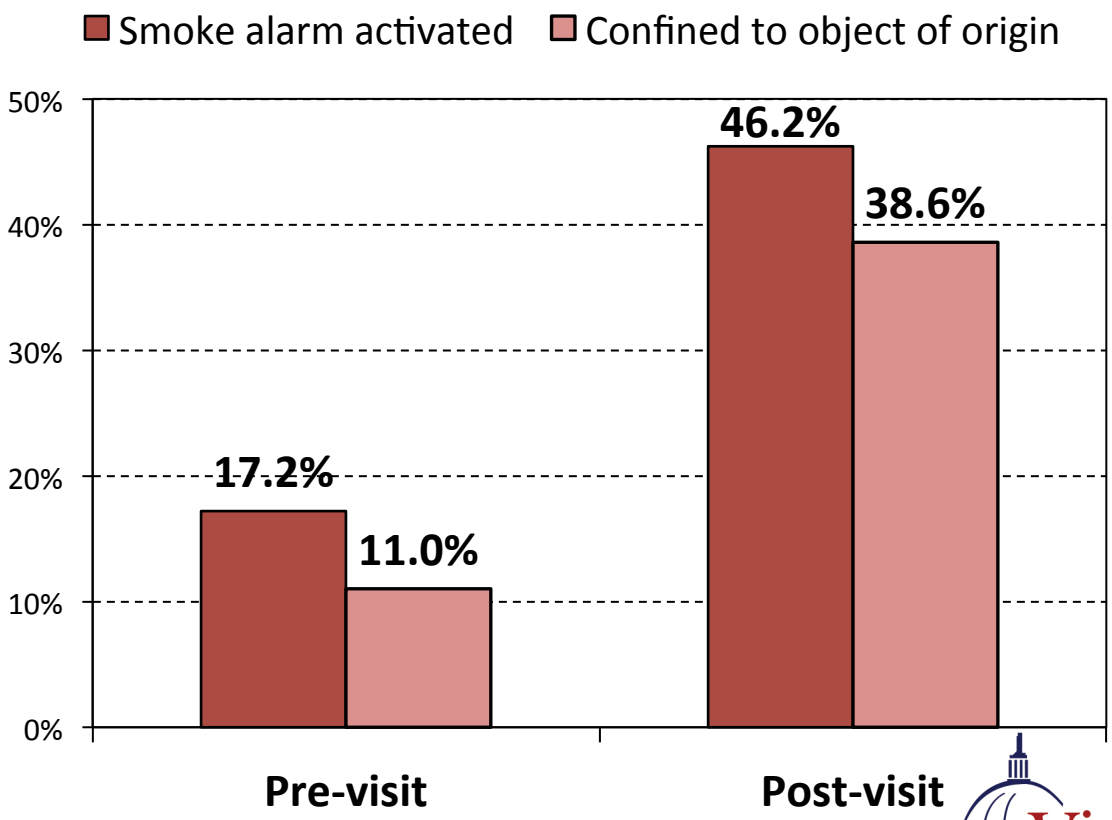
Increased Activation of Alarms and Reduced Fire Spread



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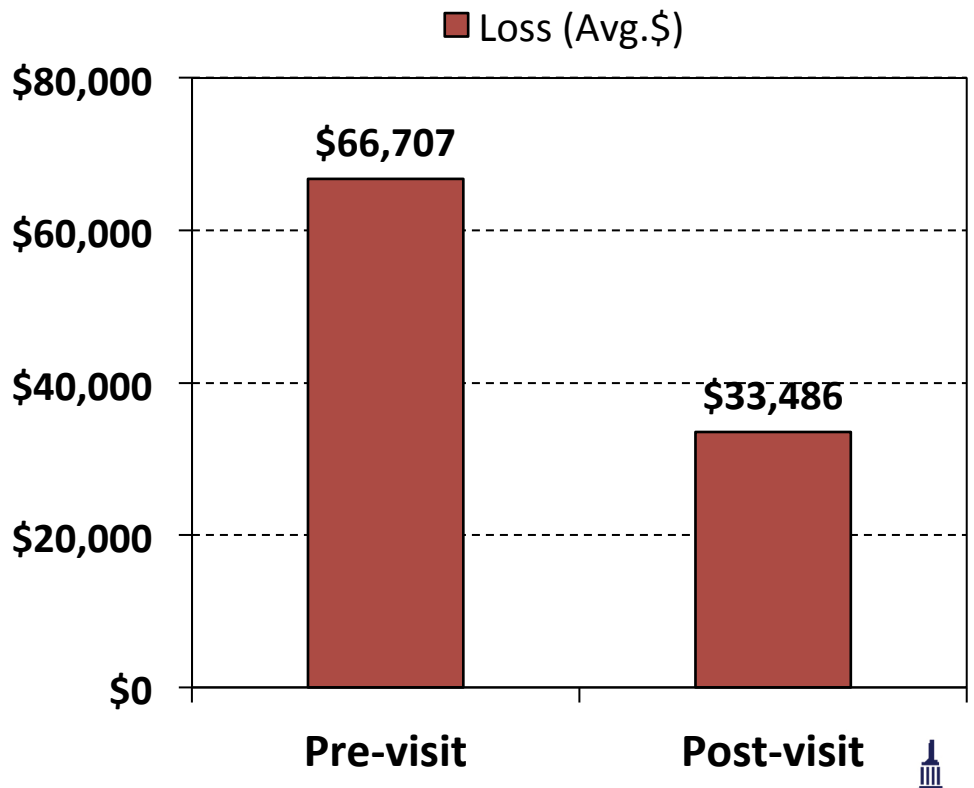
Trends Consistent with Reduced Damage



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Evaluation Summary

- Relative to cluster randomised controls
  - Fewer fires as a result of visits
  - When fires did occur post-visit
    - More activated smoke alarms
    - Less fire spread
    - Trends suggestive of less damage
- In press, *Journal of Safety Research* (http://www.sciencedirect.com/science/article/pii/S0022437512000230) available online since April 12, 2012
- SFS is committed to this process in an on-going manner and is exploring new options for success

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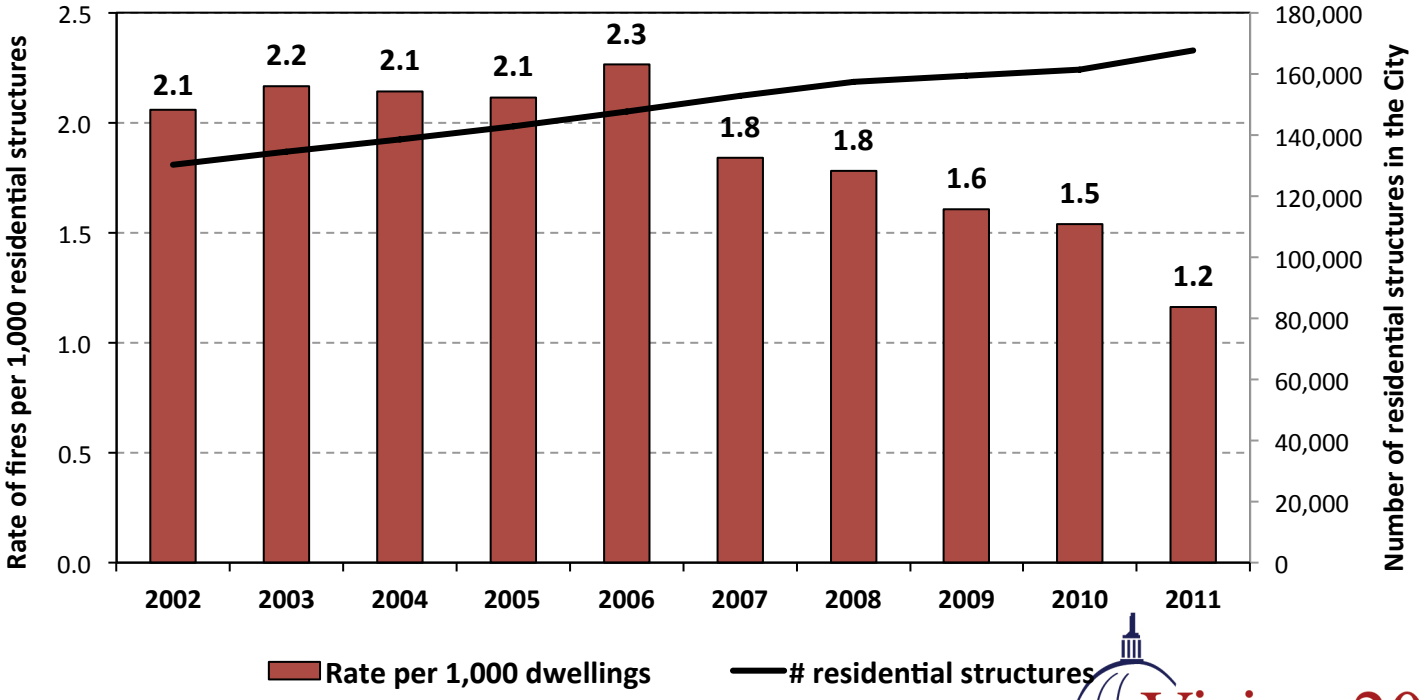
Broader Implications of Data-Driven Prevention in Surrey

- Targeting high-risk homes, vacant houses, and indoor marijuana grow operations since 2007-ish



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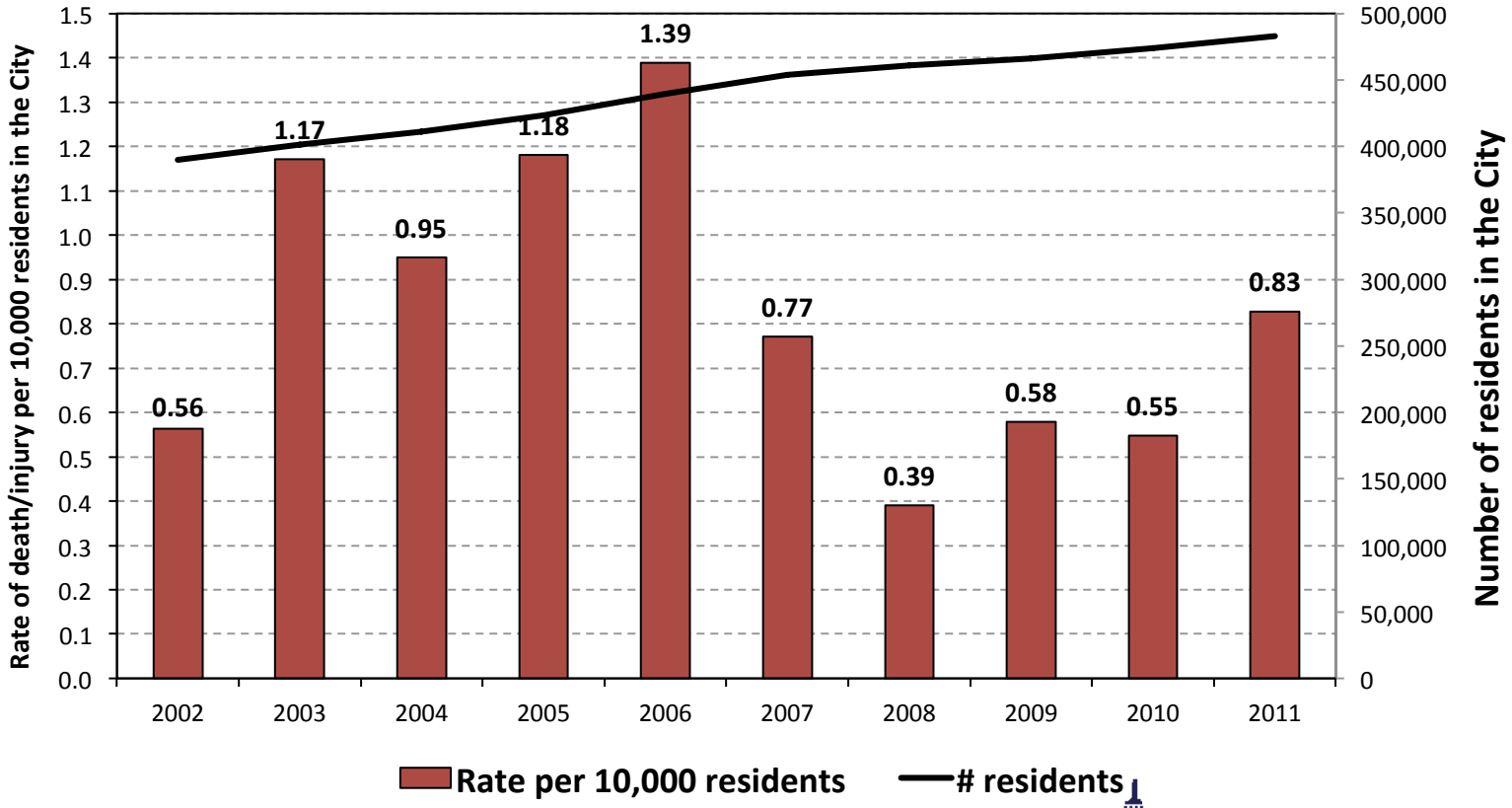

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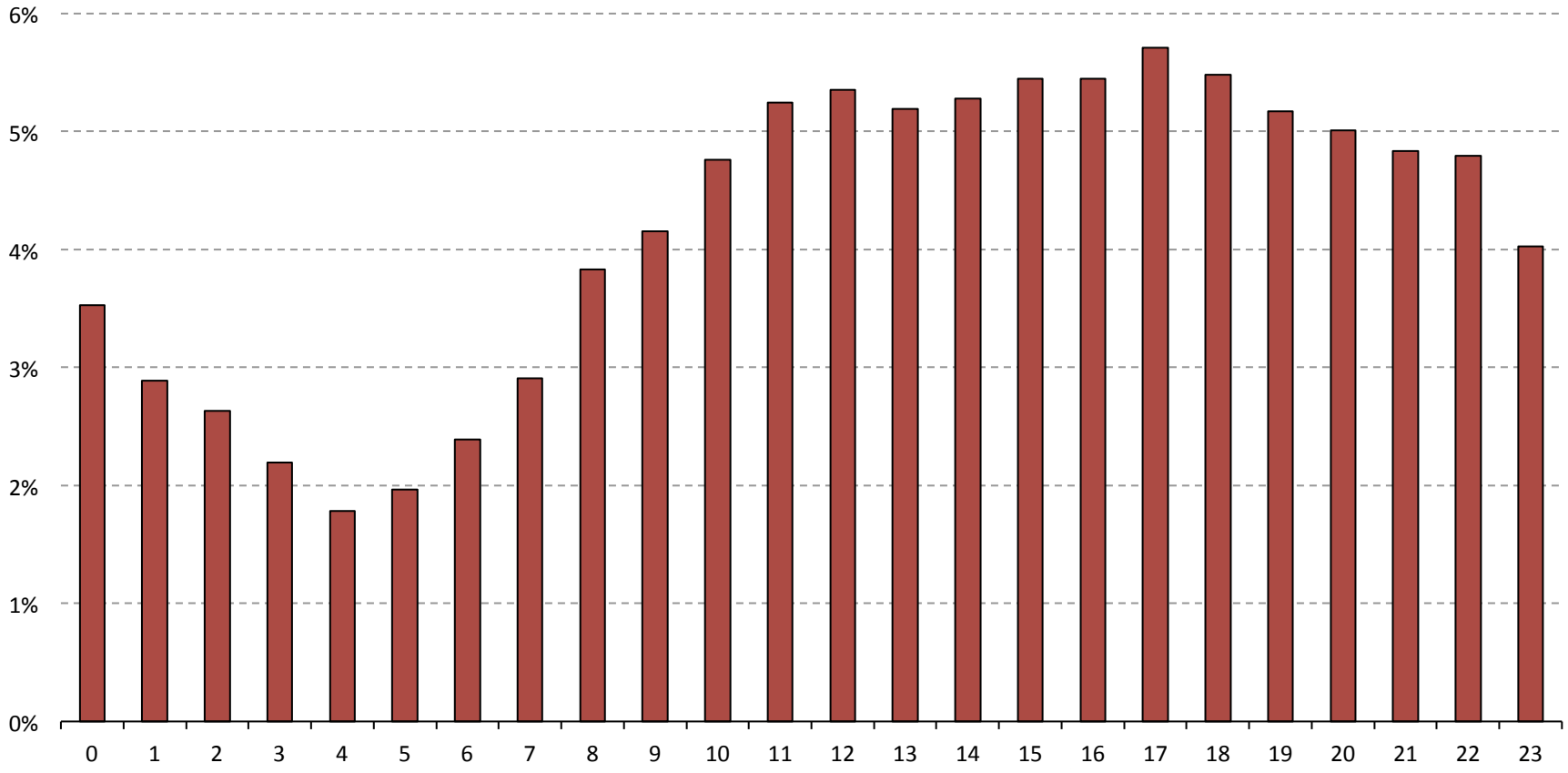
LOGISTICS

Finding Time to Make a Difference

- Calls for service and workloads are clustered non-randomly across time and space
- Home Safe was undertaken by on-duty fire fighters as part of their regular duties at no additional cost

Calls Cluster Over Time



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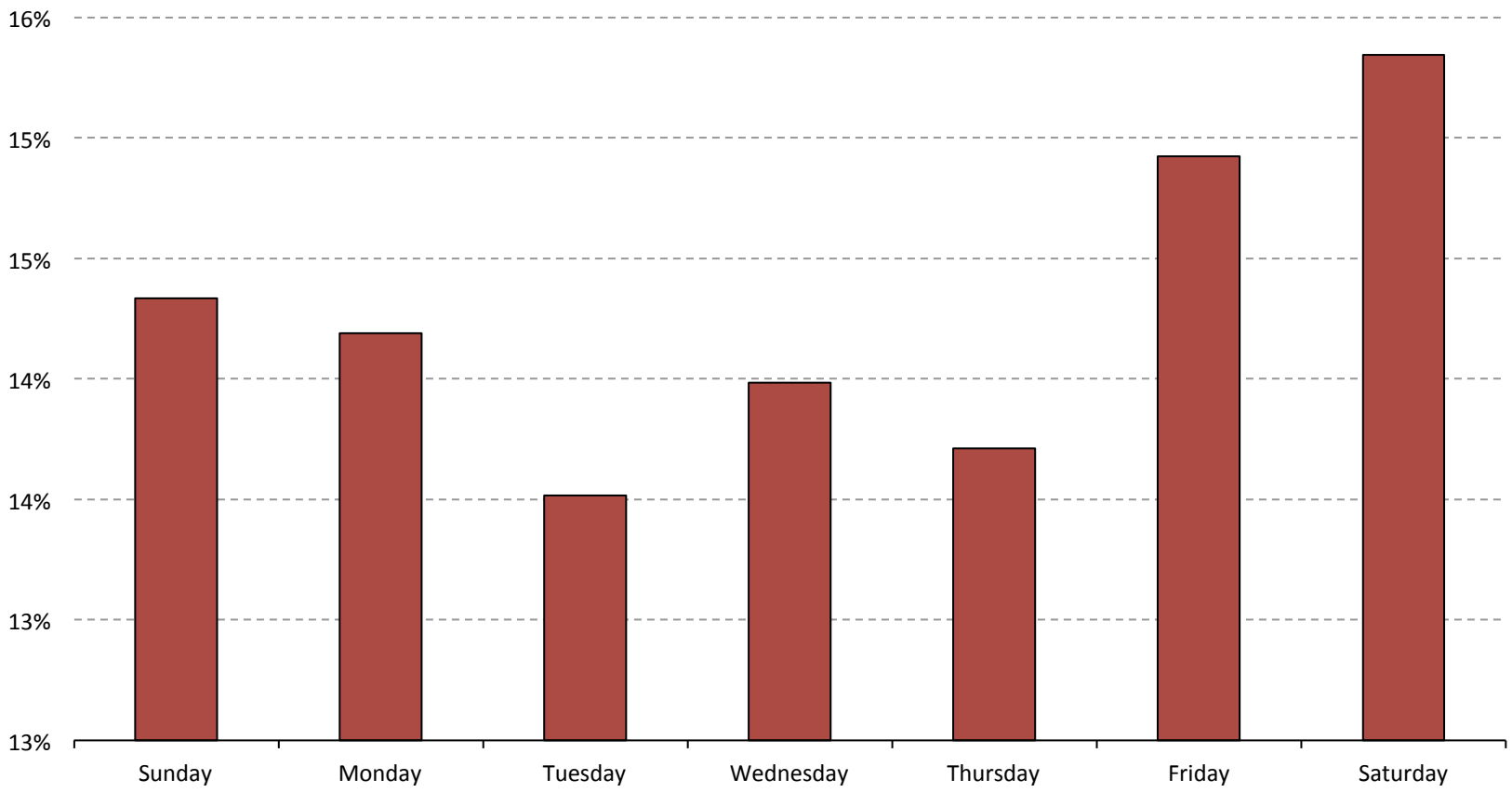
Calls Cluster Over Time



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Risk-Driven Intervention Produces the Greatest Return

- Fire prevention education and smoke alarm interventions do work
- Focus on your highest risk areas
- Pick a methodology that works for you
- Identify opportunities within normal working routine
- Start somewhere
- There is no excuse for not doing something

- Encourage community responsibility for their own safety
  - An ideological shift that crime prevention made 20 years ago

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MOVING FORWARD

Home Safe is Just the Beginning

- Generating creative approaches to ongoing testing of alarms in high-risk homes
  - Partnerships with police, city volunteers, etc.
- Monitoring cohorts as routine part of analysis
- BC Minister of Justice, BC Office of the Fire Commissioner and the Fire Chiefs' Association of BC are spearheading a movement
  - *A working smoke alarm in every Canadian home*
- Coordinated, sustained, and multi-faceted approach building on the Three E's of injury prevention
  - Education
  - Enforcement
  - Environment

Thank you to Vision 20/20 for the opportunity to present here today

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CONTACT DETAILS

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