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# Evaluation of the Implementation and Effectiveness of the Ontario Working at Heights Training Standard

IWH Speaker Series

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# Background

- Falls from heights (FFH) are a major safety concern in Ontario's construction sector
  - Leading cause of fatalities
  - Major cause of lost-time injuries
- FFH of particular concern since swing stage collapse with multiple fatalities in 2009

# Background (2)

- Working at heights (WAH) training regulations came into effect on April 1, 2015
  - "Grandfathered" until October 1, 2017 for those with prior FP training
  - Since 2001, fall protection (FP) training required, but not specified
- Accompanied by 2 new standards:
  - WAH program standard
    - 3 hrs of theory and 3.5 hrs practical content
  - WAH training provider standard

# Overarching evaluation questions

1) To what extent is the target population for the WAH training being reached?

2) What impact has introduction of the WAH training requirements had on fall prevention on construction projects?

# Evaluation design

| Evaluation Element | Evaluation Question |
|---|---|
| Administrative data – training activity | 1 |
| Training provider survey | 1 |
| Construction employer survey | 1,2 |
| MOL inspector interviews | 1,2 |
| Learner follow up survey study (IHSA) | 2 |
| Administrative data – injury trends | 2 |

# Conclusions (1)

1) To what extent is the target population for the WAH training being reached?

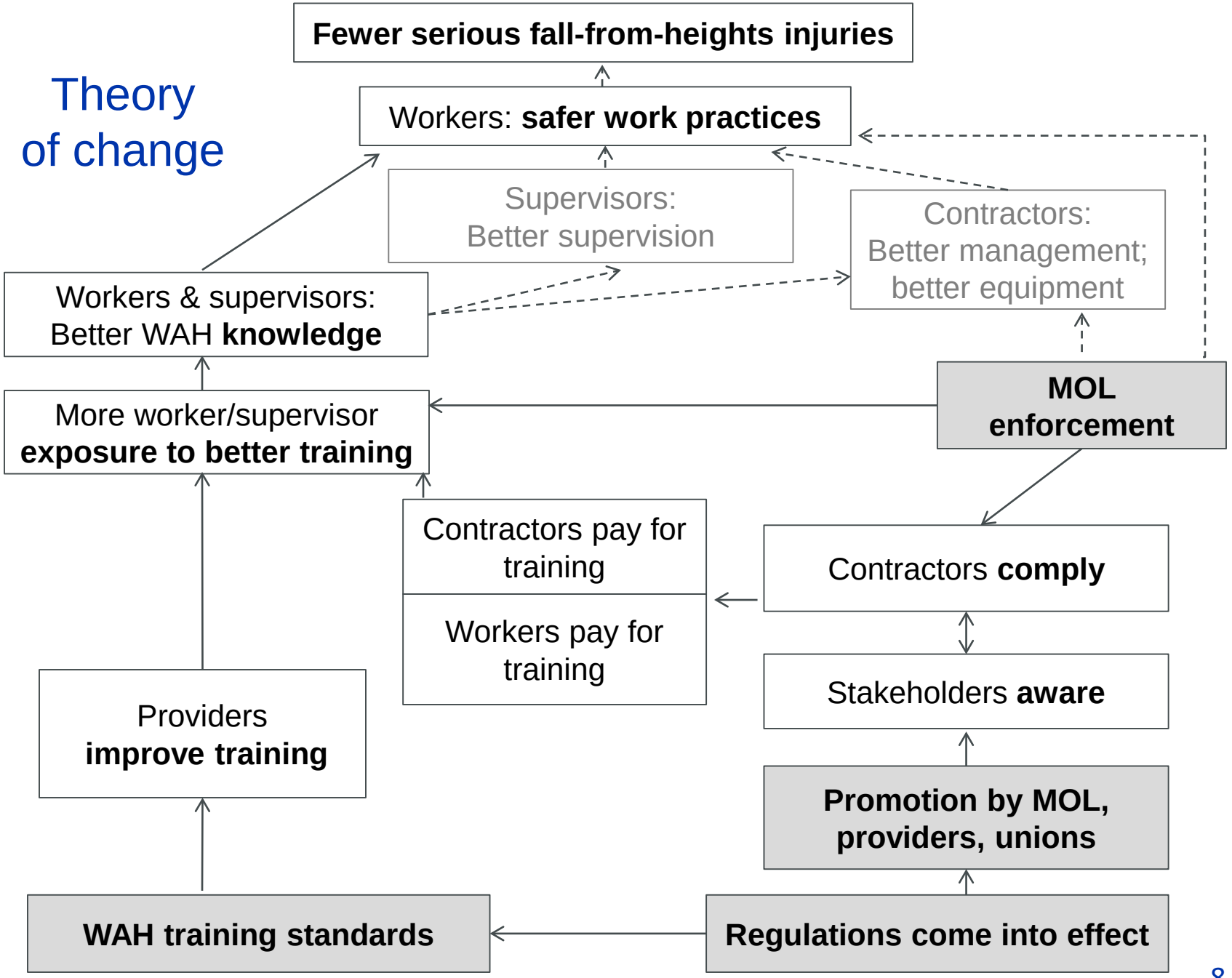
- **The IWH evaluation found consistently strong evidence that the mandatory WAH training program reached the target population.** Construction sector employers were aware of the training requirement and compliance with the training requirement was high (>90%) for both large and small employers. As the regulation came into full force, 420,000 Ontario workers had been trained.

# Conclusion (2)

## 2) What impact has introduction of the WAH training requirements had on fall prevention on construction projects?

- **The evaluation found consistent evidence that the training had an impact at the worksite.** Employers and learners reported substantial WAH training-attributable changes toward safer practices. **A statistically significant but modest impact on lost-time claims for targeted falls was found in 2017.** The full effect of the program on the prevention of injury cannot yet be measured.

# Theory of change



# Outline of presentation: five quantitative elements

| Evaluation Element | Evaluation Question |
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| Administrative data – training activity | 1 |
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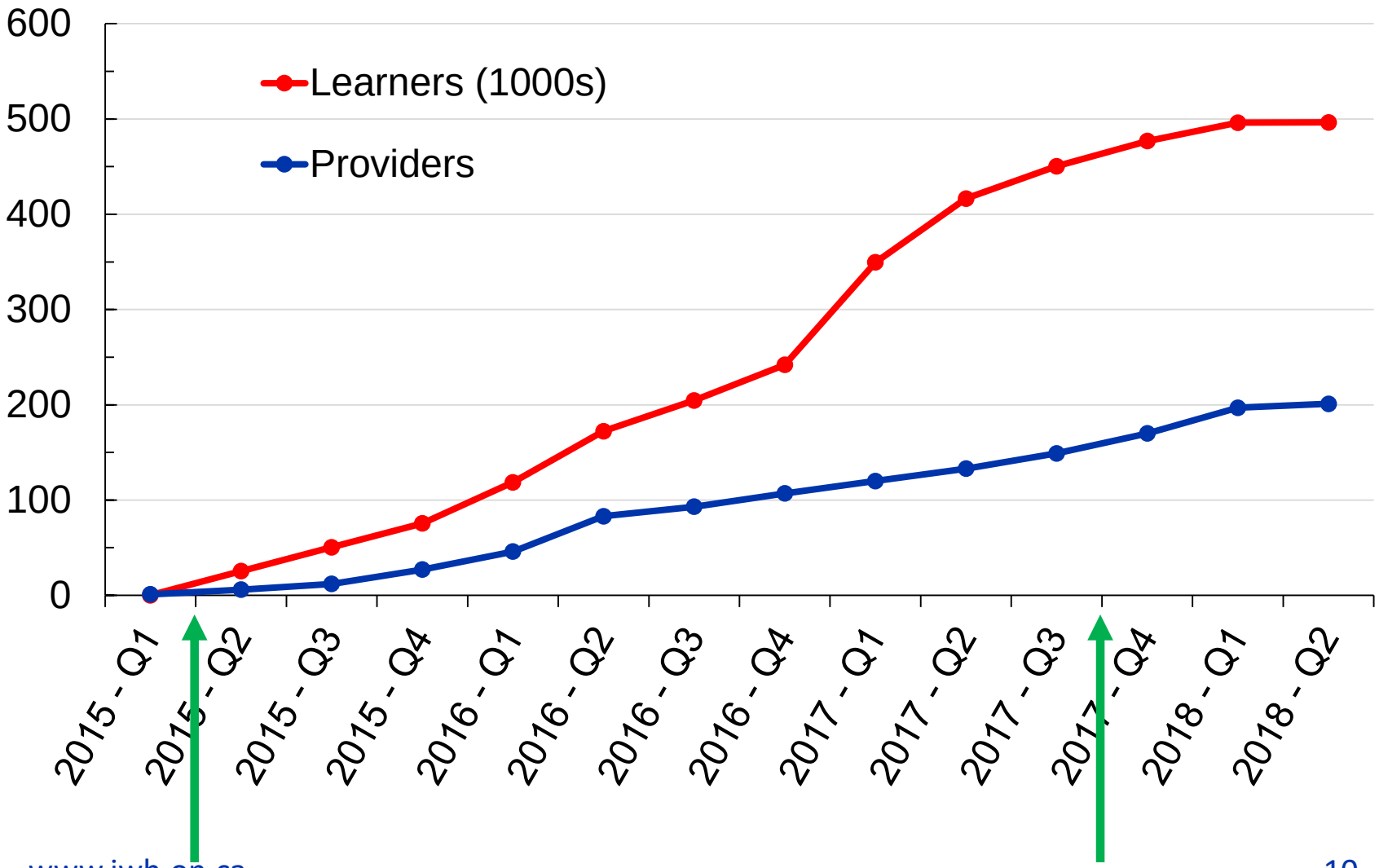
# Number of successful WAH learners and approved training providers, cumulative



# Provider survey: Estimate of sector distribution of WAH learners

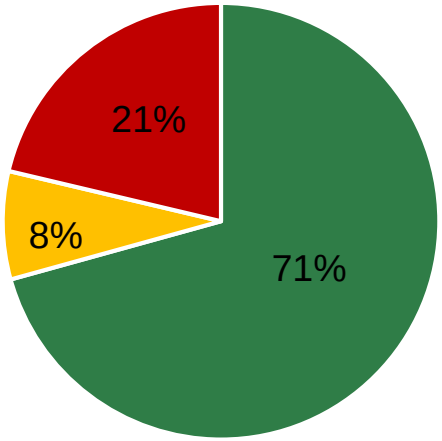
| Sector | Number of providers delivering to sector | Weighted average % (n = 84) |
|---|---|---|
| Construction | 83 | 77.6 |
| Utilities | 9 | 6.7 |
| Manufacturing | 32 | 3.7 |
| Transportation & warehousing | 3 | 3.3 |
| Repair & maintenance (non-construction) | 7 | 1.2 |
| Other | n.d. | 2.0 |
| *Unspecified* | *24* | *5.5* |

Based on 86 responses to “Which sectors do your WAH learners mostly come from (e.g. construction, manufacturing, utilities, etc.)?”

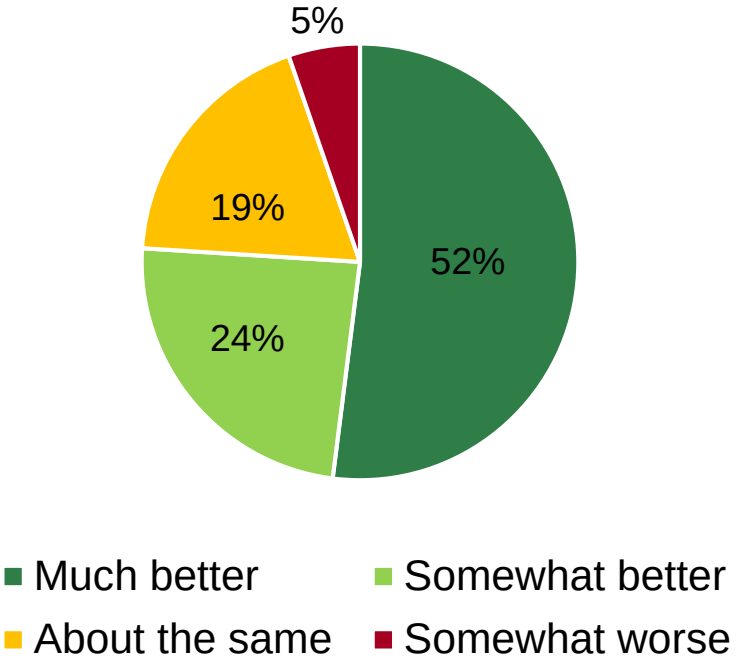
# Training provider survey

- Contacted only higher-volume providers (n = 124 of 199)
- 70% participated (n = 87)
- 87% offered fall protection (FP) training before regulation change

Practical hands-on skill acquisition (% responses)




Overall preparation -- WAH relative to FP (% responses)



# Construction employer survey – method & sample

- infoCanada list of construction employers (6+ employees)
- n = 390 respondents (response rate 15%)
- Telephone interview
- Diverse sample:
  - Large (20+ employees) and small (<20 employees)
  - GTA and non-GTA
  - General and specialty trade contractors
  - Residential and non-residential sectors
  - Unionized and non-unionized

# Construction employer survey: reach of WAH regulation

- **93%** of all employers (n = 390) were **definitely aware** of the WAH training requirement

- 79% had some **permanent** employees using FP equipment
  - Of those, **92% were in compliance** with WAH training reg.

- 25% had some **temporary** employees using FP equipment
  - Of those, **91% were in compliance** with WAH training reg. regulation

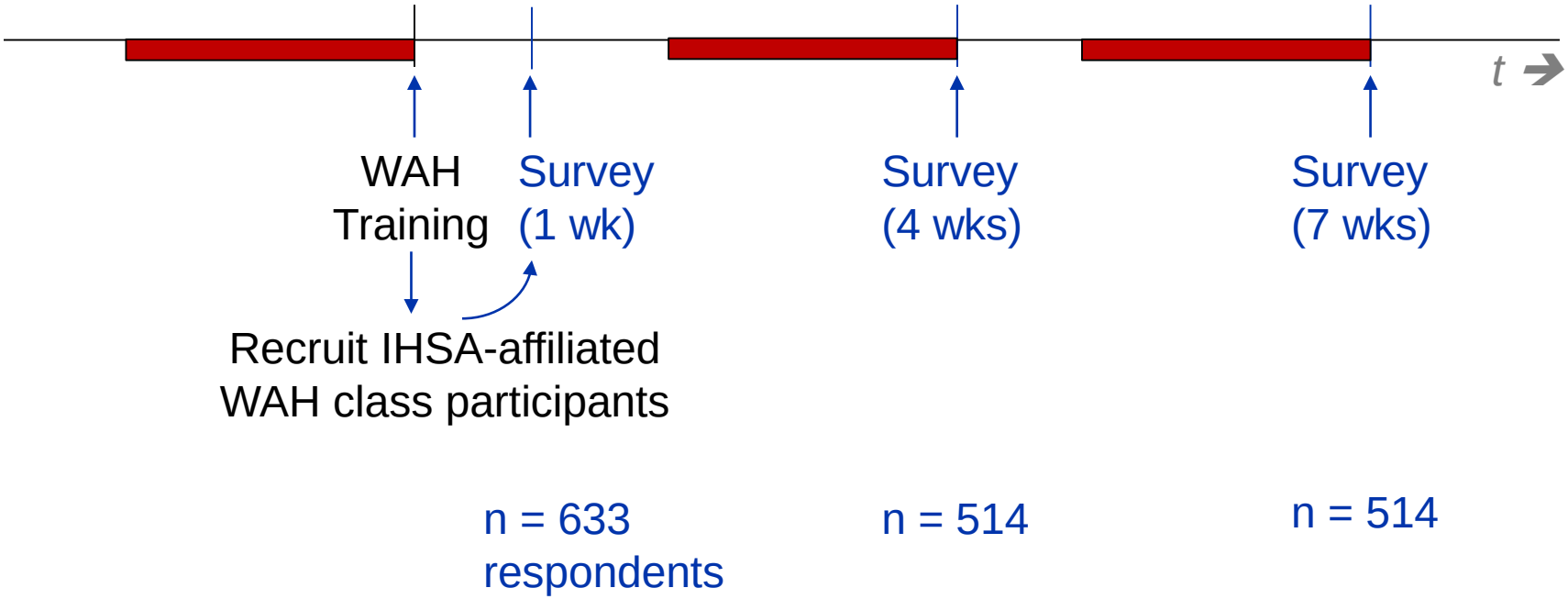
- Compliance was >90%, irrespective of :
  - sector (residential vs. non-residential)
  - size (<20 vs. 20+ employees)
  - location (inside vs. outside GTA)
  - unionization

# Construction employer survey: WAH training impacts

| Impact attributed to WAH training | % of companies |
|---|---|
| Purchased new equipment (harnesses, guardrails, other) | 40 |
| Modified/created fall rescue plan | 37 |
| Equipment inspected more often | 33 |
| Employees tie off more often | 28 |
| Supervisors take action to prevent falls more often | 27 |

n = 306

# Longitudinal survey of WAH training participants - design

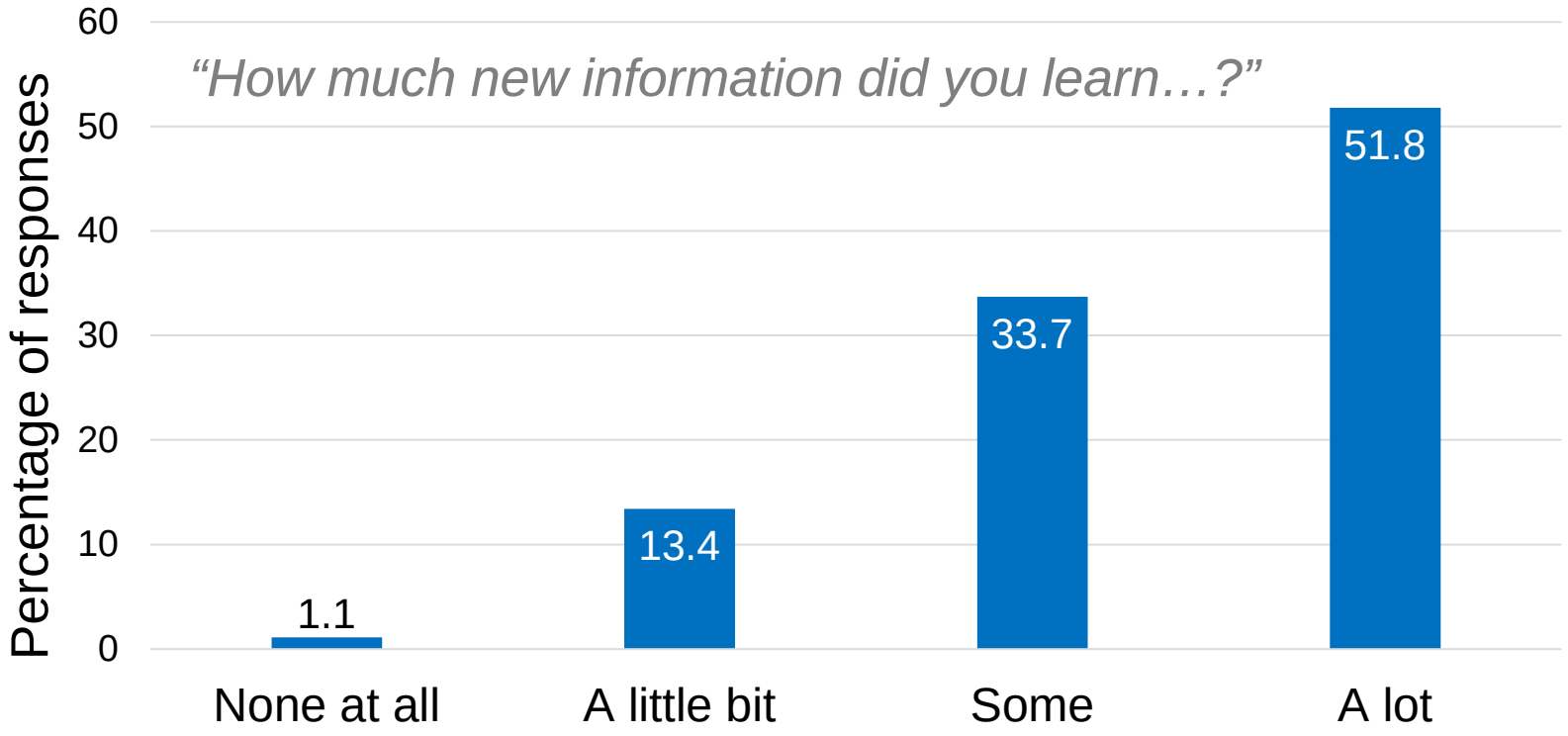



*= 12 WAH safety practices targeted by WAH training*

# Learner characteristics

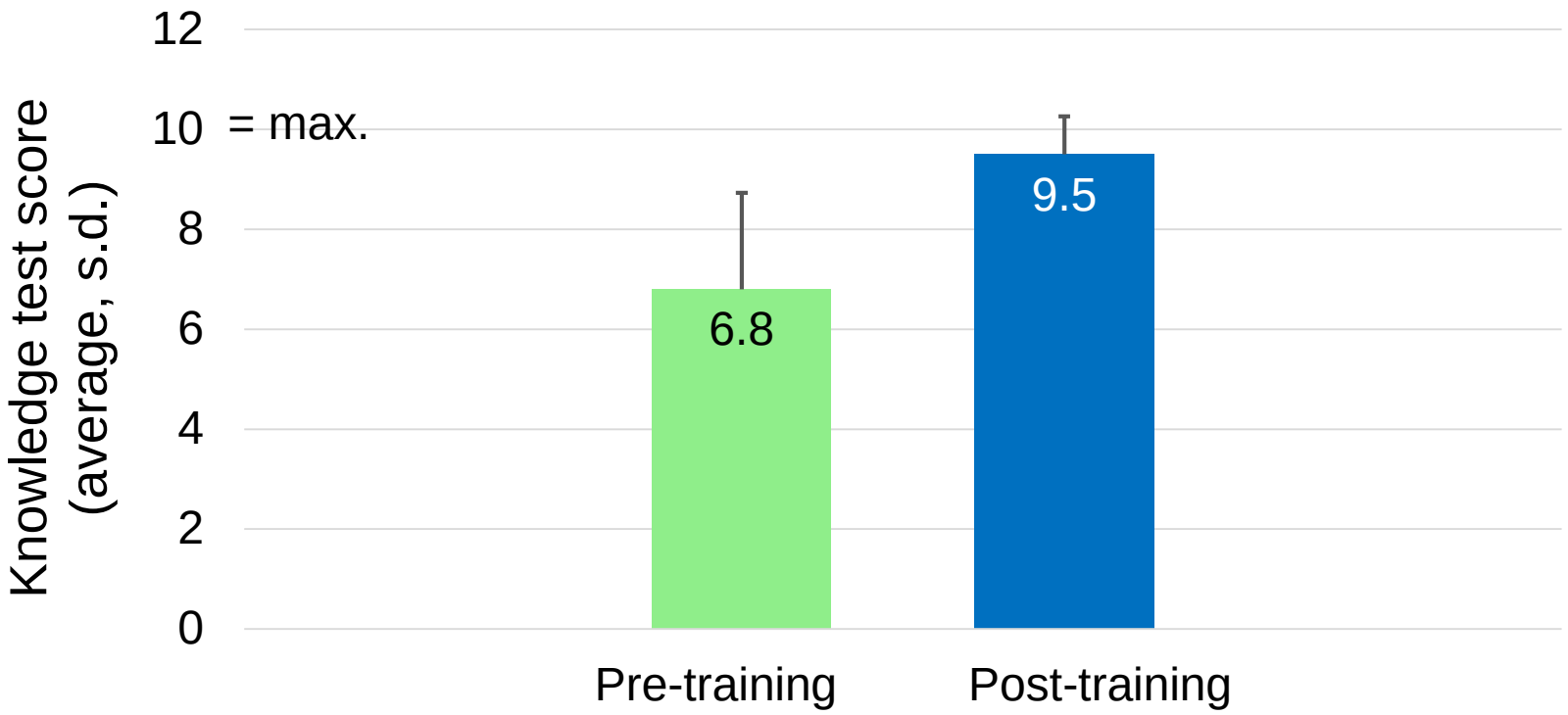
- Diverse with regards to:
  - Frequency of FP equipment use
  - Whether FP training taken previously
  - Residential/non-residential
  - Unionized
  - GTA/non-GTA
  - Work role
  - Years of construction experience
  - Age
  - IHSA staff/IHSA training partner

# Knowledge gain – subjective measure from survey



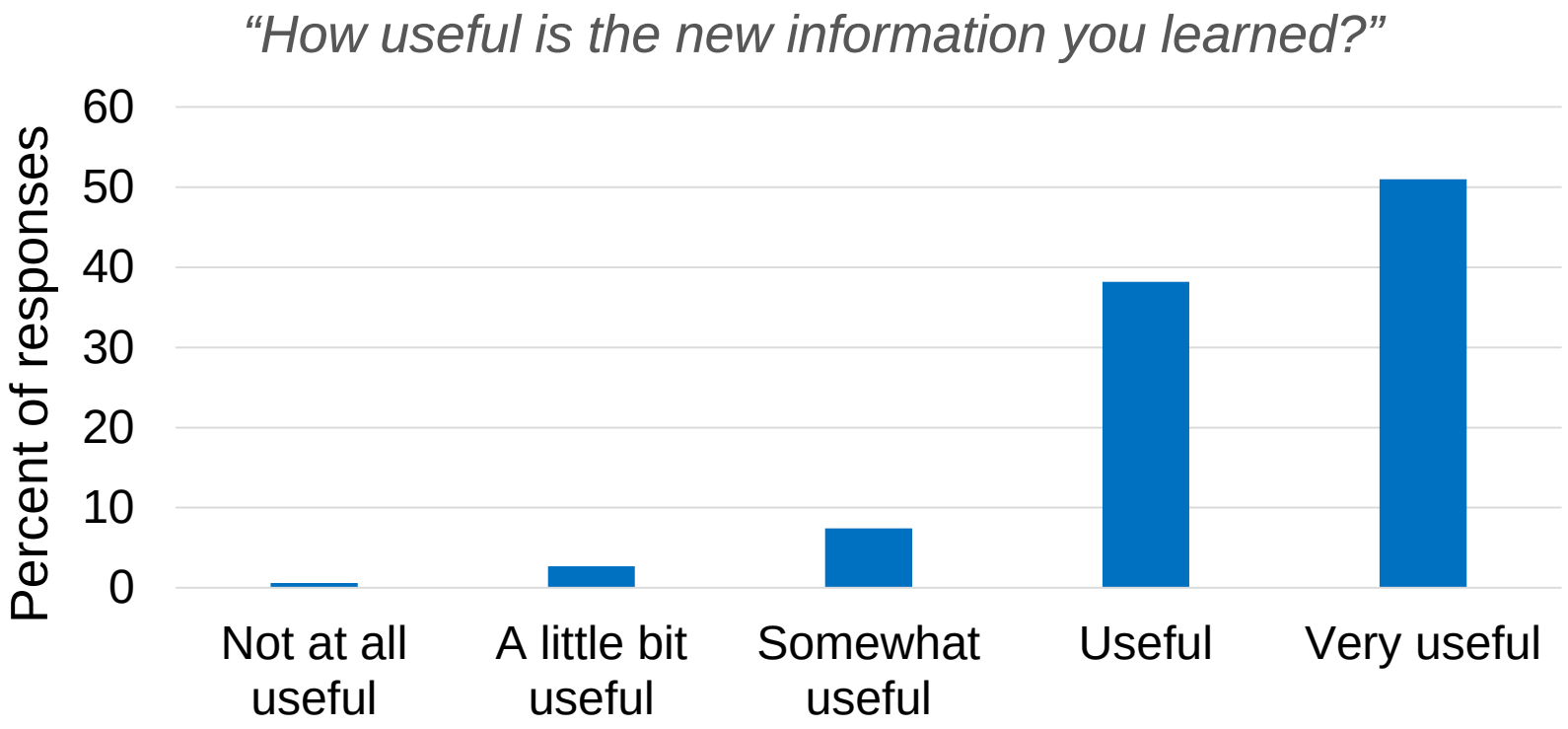

*n = 633*

# Knowledge gain – objective measure – IHSA tests




*n = 429*

# Usefulness of new information from WAH training

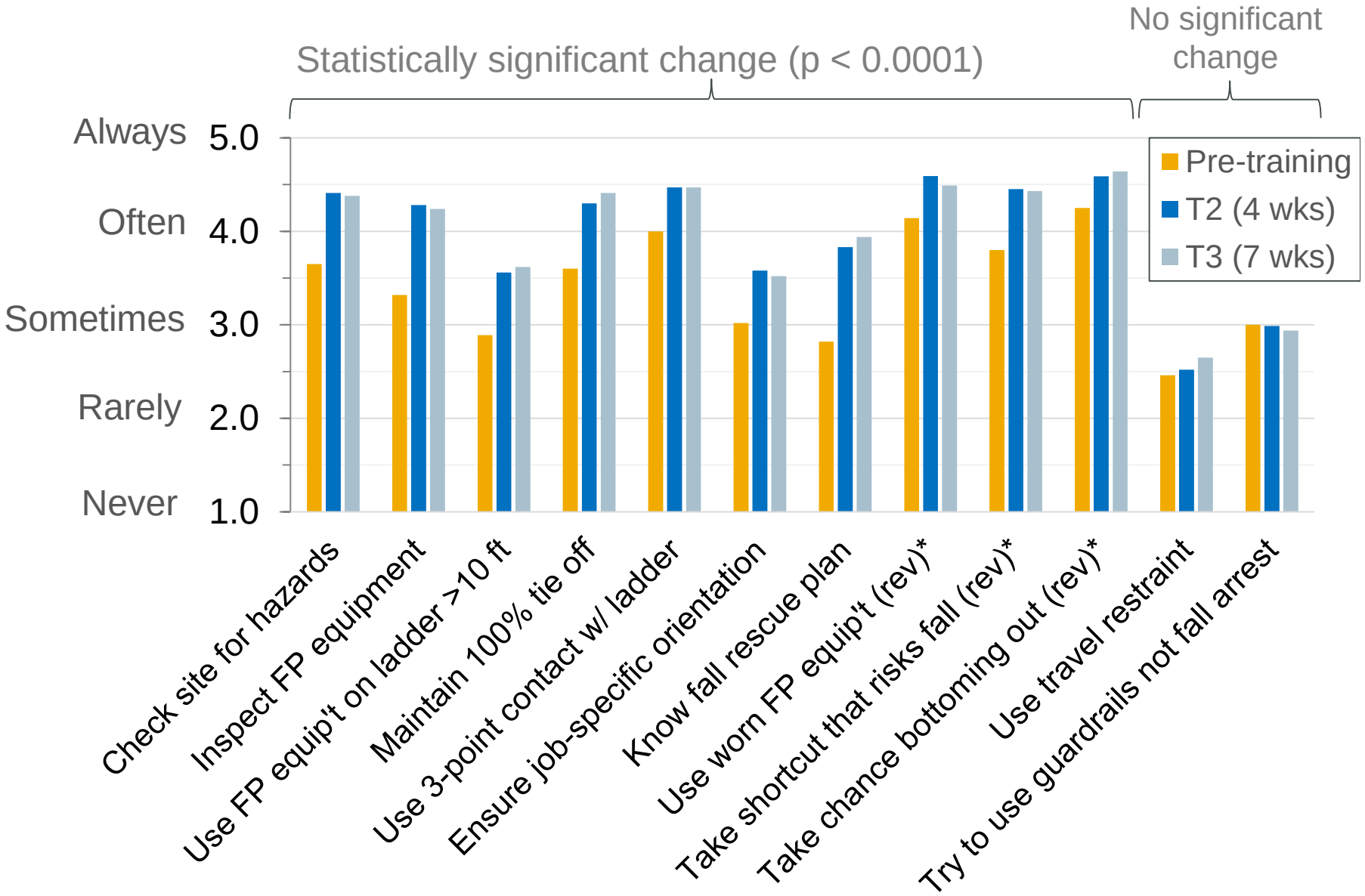



*n = 633 respondents*

# Impact of training on confidence on WAH safety skills


*n = 633 respondents*

# Average WAH safety practice scores before & after training




*(rev) = answers are "reverse-scored" so higher values means better safety

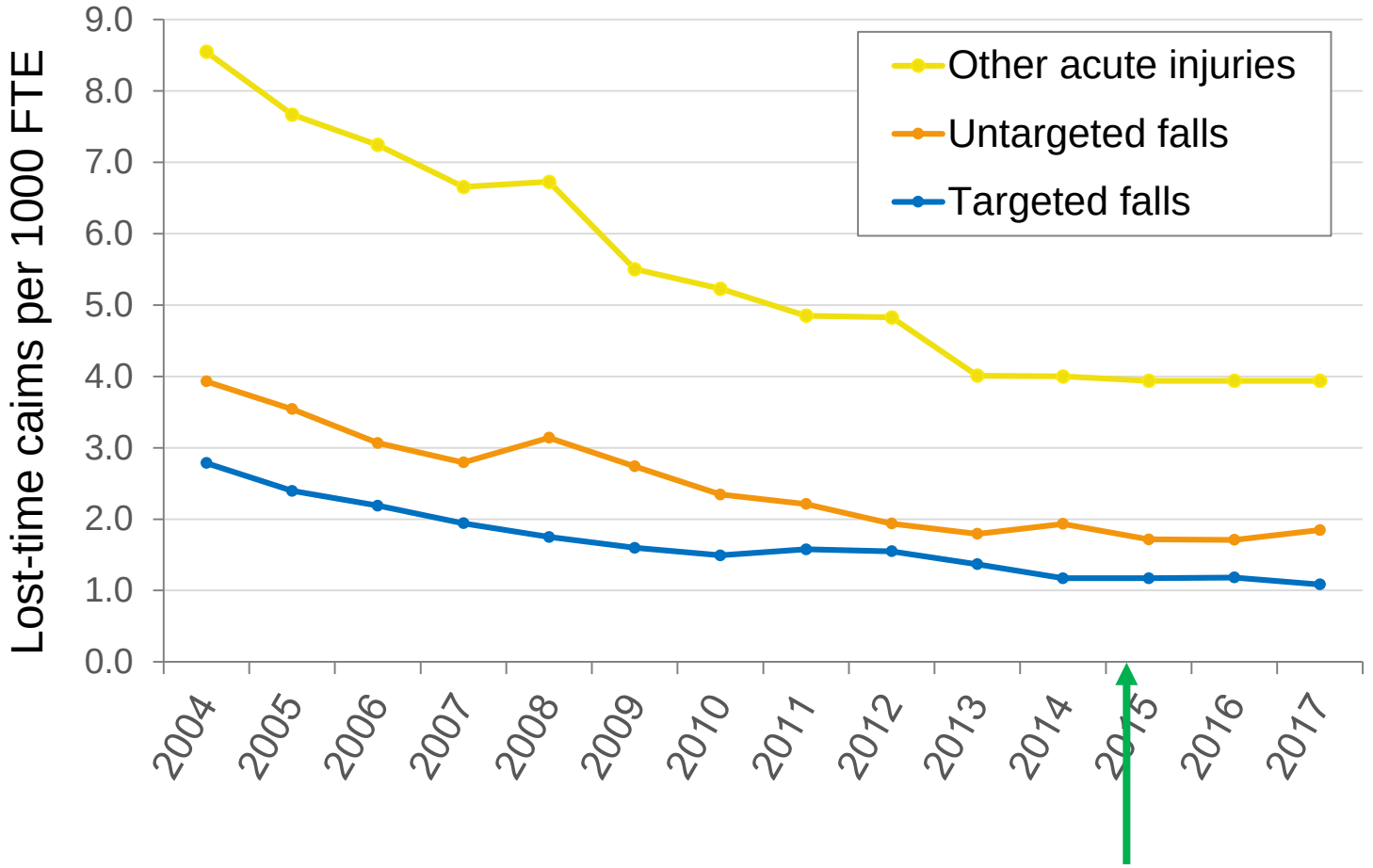
# Analysis of WSIB lost-time claim records: 3 injury categories

| Injury Category | Examples |
|---|---|
| Targeted falls | Falls from roofs, ladders, scaffold; falls through floor openings |
| Untargeted falls | Falls same level; falls down stairs |
| Other acute injuries | Contact with objects & equipment (excl. bodily reaction & exertion, burns, environmental conditions, diseases) |

- Based on:
  - event and nature of injury codes (CSA Z795)
  - WAH learning objectives
  - Input from two IHSA content experts

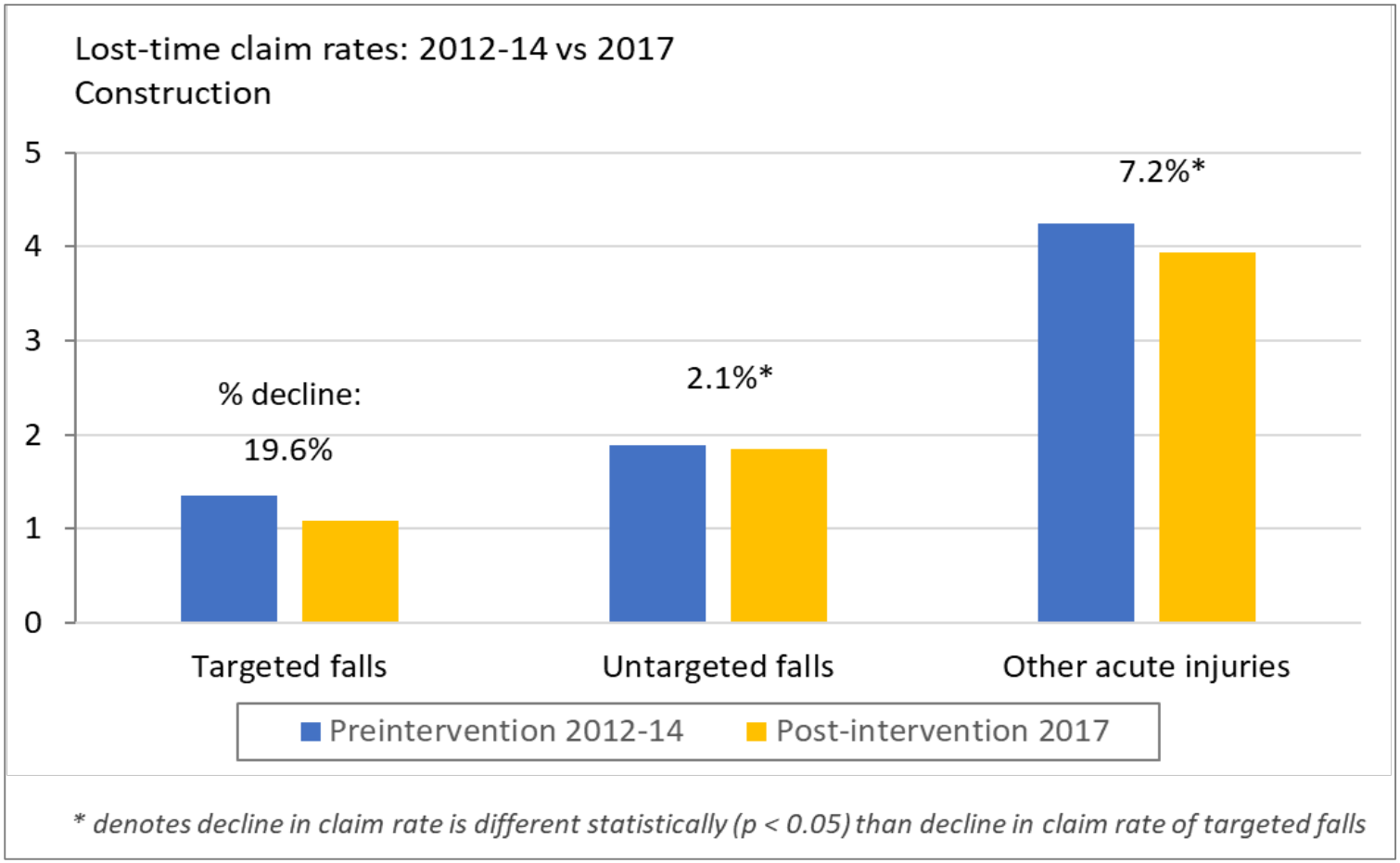
# Three prior hypotheses about injury rate patterns over time; Hypothesis 1

*A change in trend will be seen the in the lost-time claim rate of targeted falls following the Apr 2015 introduction of WAH training, in construction.*



# Three prior hypotheses about injury rate patterns over time: Hypothesis 2

*The reduction in LT claim rate of targeted falls will be greater than the reduction of each of untargeted falls and other acute injuries, in construction*



# Apparent WAH intervention effect in construction is greatest in smallest firms

| FTE employees (WSIB imputed) | % change in lost-time claim rates | | |
|---|---|---|---|
| | Targeted falls | Untargeted falls | Other acute injuries |
| < 5 | -36.7 | -4.2* | -21.9* |
| 5-49 | -6.8 | +2.9 | +1.2 |
| 50+ | -12.3 | -11.5 | -9.5 |

** denotes change in claim rate is different statistically ($p < 0.05$) than change in claim rate of targeted falls*

# Apparent WAH intervention effect is greatest in higher incidence rate firms

| High/low incidence WSIB rate groups | % change in lost-time claim rates | | |
|---|---|---|---|
| | Targeted falls | Untargeted falls | Other acute injuries |
| High | -22.2% | +5.2%* | -7.7%* |
| Low | -17.8% | -12.3% | -9.4% |

** denotes change in claim rate is different statistically ($p < 0.05$) than change in claim rate of targeted falls*

# Three prior hypotheses about injury rate patterns over time: Hypothesis 3

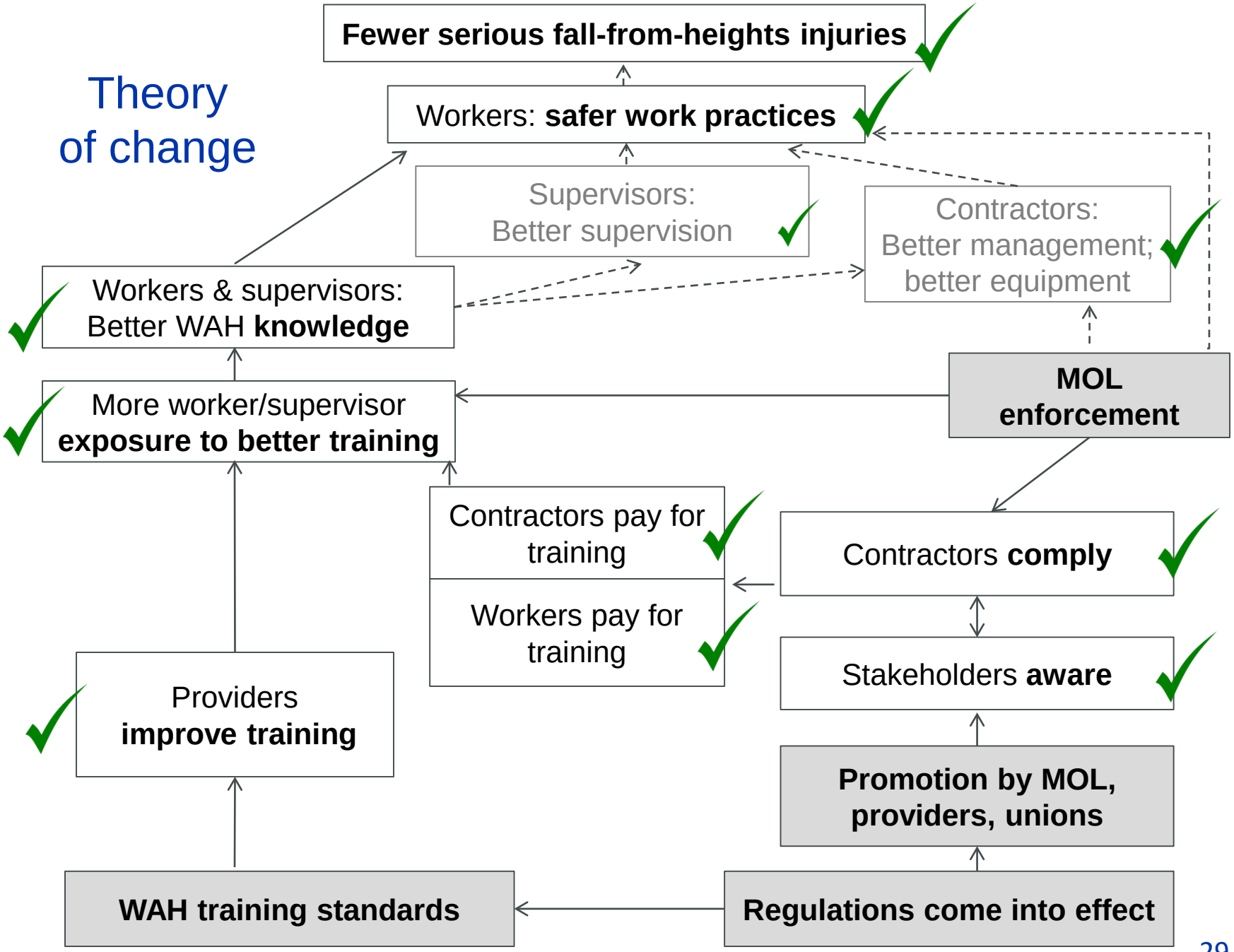
*The pre-post reduction in LT claim rate of targeted falls in construction will be greater than in other economic sectors*

| | % change in lost-time claim rates | | |
|---|---|---|---|
| | Targeted falls | Untargeted falls | Other acute injuries |
| **Construction** | -19.6 | -2.1* | -7.2* |
| **Manufacturing** | -27.2 | -5.3 | +3.0* |
| **Retail & Wholesale Trade** | -27.9 | -4.6* | +5.9* |
| **Other Schedule 1** | -17.4 | -4.3 | +7.8* |

** denotes change in claim rate is different statistically ($p < 0.05$) than change in claim rate of targeted falls*

- No cross-sector differences in % change in rates targeted falls
- Pattern of rate changes similar across sectors: i.e., targeted falls > untargeted falls/other acute injuries

# Theory of change



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- **Study Participants:** construction employers, WAH learners, WAH training providers, MOL labour inspectors

# Project labour-management advisory committee

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| **Peter Cressatti**<br>Choinard Brothers Roofing | **Blair Allin***<br>International Brotherhood of Boilermakers |
| **Ellaline Davies**<br>GVCA Safety Group | **Glen Drewes***<br>IBEW |
| **Mike Dauncey**<br>Mattamy Homes | **Tim Fenton**<br>Ont. Sheet Metal Workers' & Roofers' Conference |
| **David Frame**, OGCA | **John Mandarino**, LiUNA |
| **Matt McCullum**<br>AlumaSafway/HHCA Safety Group | **Carmine Tiano**<br>Ontario Building Trades |
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