



# Preventing falls from heights in construction: a long-term evaluation of Ontario's working-at-heights (WAH) training standard

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Institute for Work & Health

December 13, 2022

# More details on initial evaluation

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- Robson L, Mustard C. Implementation and effectiveness of the Ontario working at heights training standard – Final report. Toronto: IWH; February 22, 2019. Available from: <https://www.iwh.on.ca/scientific-reports/evaluation-of-implementation-and-effectiveness-of-ontario-working-at-heights-training-standard-final-report>
- Robson LS, Lee H, Amick III BC, Landsman V, Smith PM, Mustard CA. Preventing fall-from-height injuries in construction: Effectiveness of a regulatory training standard. *Journal of Safety Research* 2020;74:271-278.

# Acknowledgements

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- **Research Scientists:** Cameron Mustard (Co-Lead), Vicky Landsman, Peter Smith, Benjamin Amick III
- **Research, Administrative & Knowledge Transfer Support:** Dina Al-Khooly, Kristina Buccat, Mary Cicinelli, Sabrina Imam, Desiree Latour-Villamil, Hyunmi Lee, Sara Macdonald, Lyudmila Mansurova, Kay Nasir, Kathy Padkapayeva, Isabel Sousa, Echo Sun (practicum student), Sabrina Tonima
- **Collaborating Organization:** Infrastructure Health and Safety Association (IHSA)
- **Labour-Employer Advisory Committee:** Blair Allin, Peter Cressatti, Ellaline Davies, Michael Dauncey, Glen Drewes, Tim Fenton, David Frame, John Mandarino, Matt McCullum, Carmine Tiano, Rick Van Ihinger, Al Ververgaert
- **Funding source:** The Institute for Work & Health operates with the support of the Province of Ontario

# Outline

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- Background
- Highlights from initial evaluation results
- Findings from 2-year follow up
- Reflection & conclusion
- Questions & answers

# Background

# Falls from heights (FFHs) in construction

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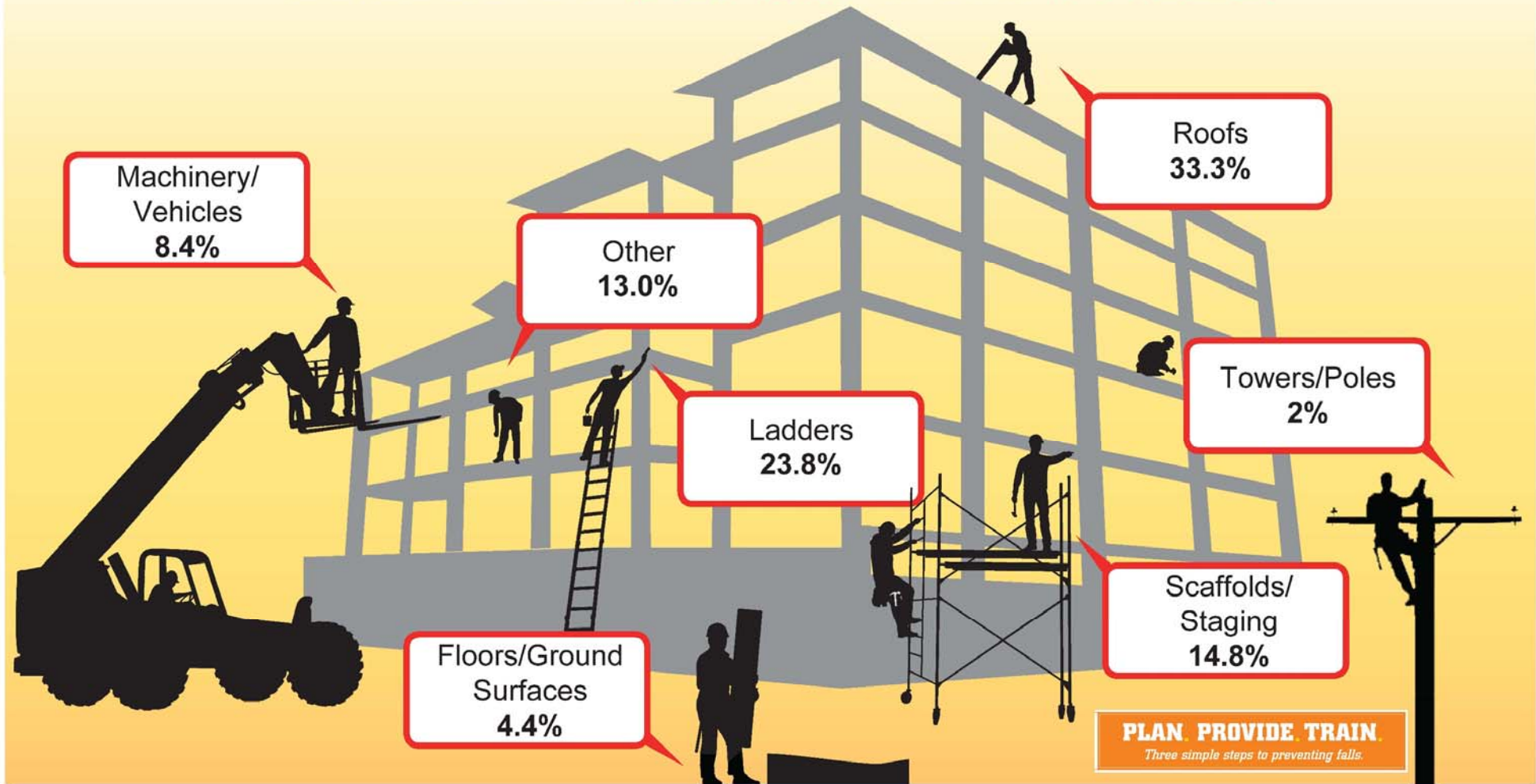
## Traumatic fatalities

FFHs #1 cause

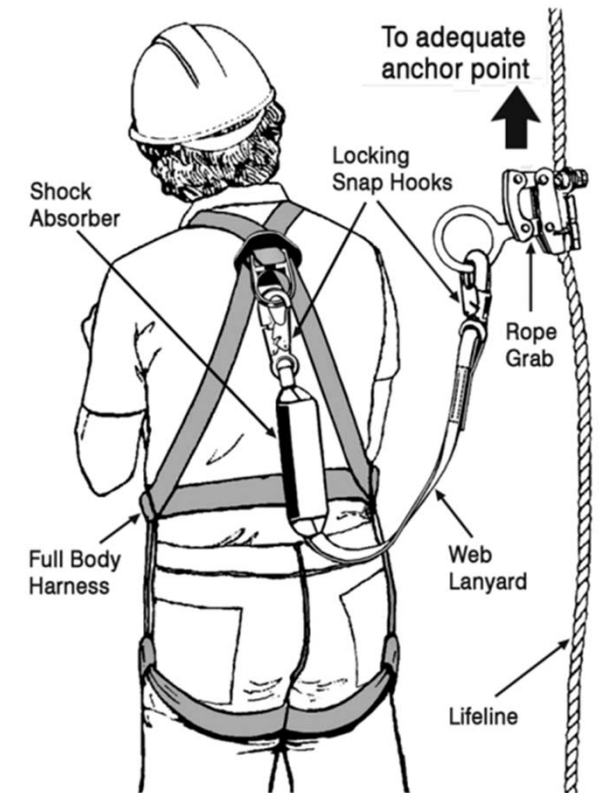
## Non-fatal injuries

FFHs major cause

# Causes of **DEATH** from **FALLS**



# One type of control of risks: fall protection systems



**Full Body Harness and Fall Arrest System**



## Disaster in 2009 brought attention to fall protection

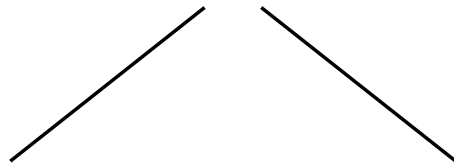


# Two new provincial WAH training standards

Regulatory Changes

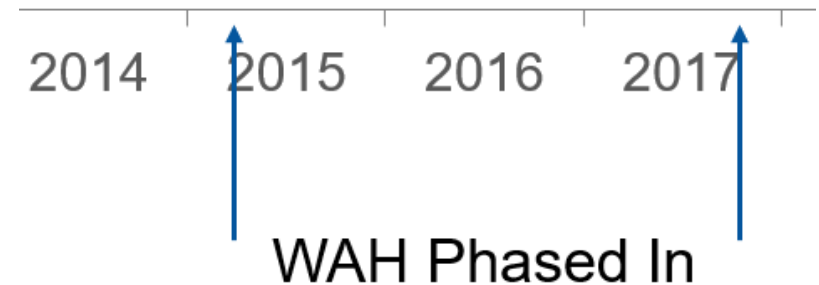


New Standards



Program

Training providers



<https://www.ontario.ca/page/program-standard-working-heights-training>

<https://www.ontario.ca/page/provider-standard-working-heights-training>

# Change in provincial training requirements for WAH

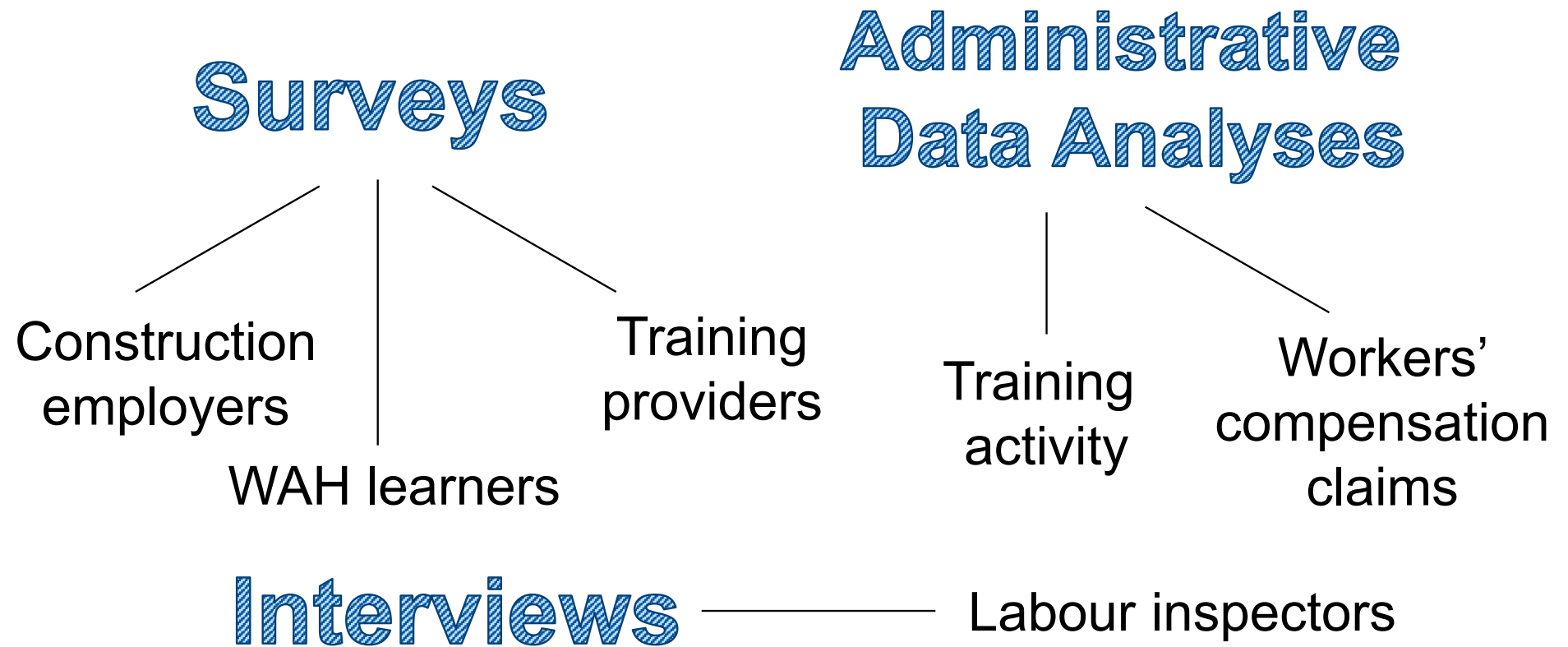
	<b>BEFORE: 2001 to 2014</b>	<b>AFTER: 2015 to present</b>
Training required?	<b>Yes</b>	<b>Yes</b>

# Change in provincial training requirements for WAH

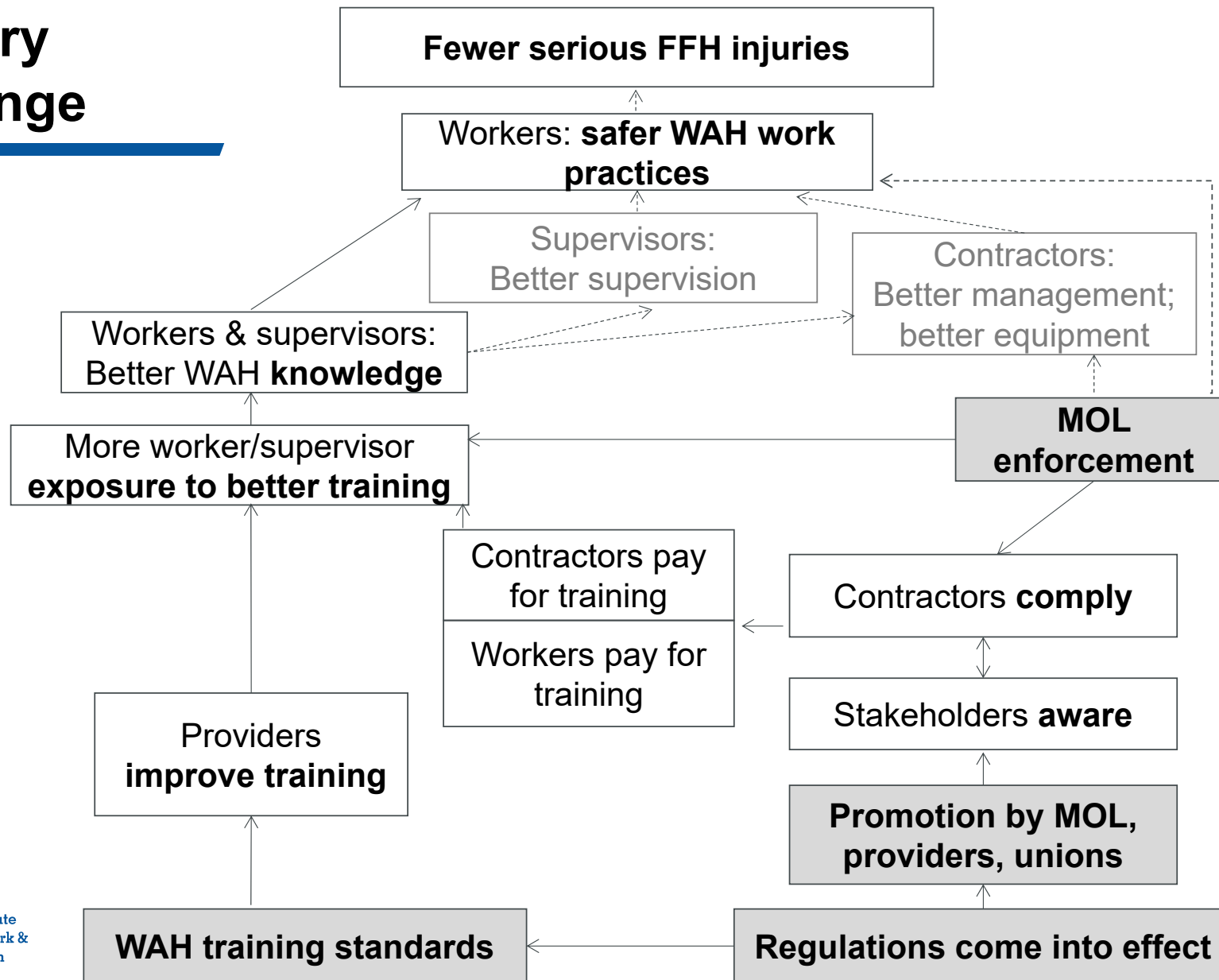
	<b>BEFORE: 2001 to 2014</b>	<b>AFTER: 2015 to present</b>
Training required?	<b>Yes</b>	<b>Yes</b>
Specified duration?	No	<b>Yes (1 day)</b>
Specified learning objectives?	No	<b>Yes</b>
Hands-on requirement?	No	<b>Yes</b>
Assessment?	No	<b>Yes</b>
Accredited training provider?	No	<b>Yes</b>
Refresher?	No	<b>Yes (after 3 yrs)</b>

# Highlights from initial evaluation

# Evaluation design: multi-method and multi-stakeholder

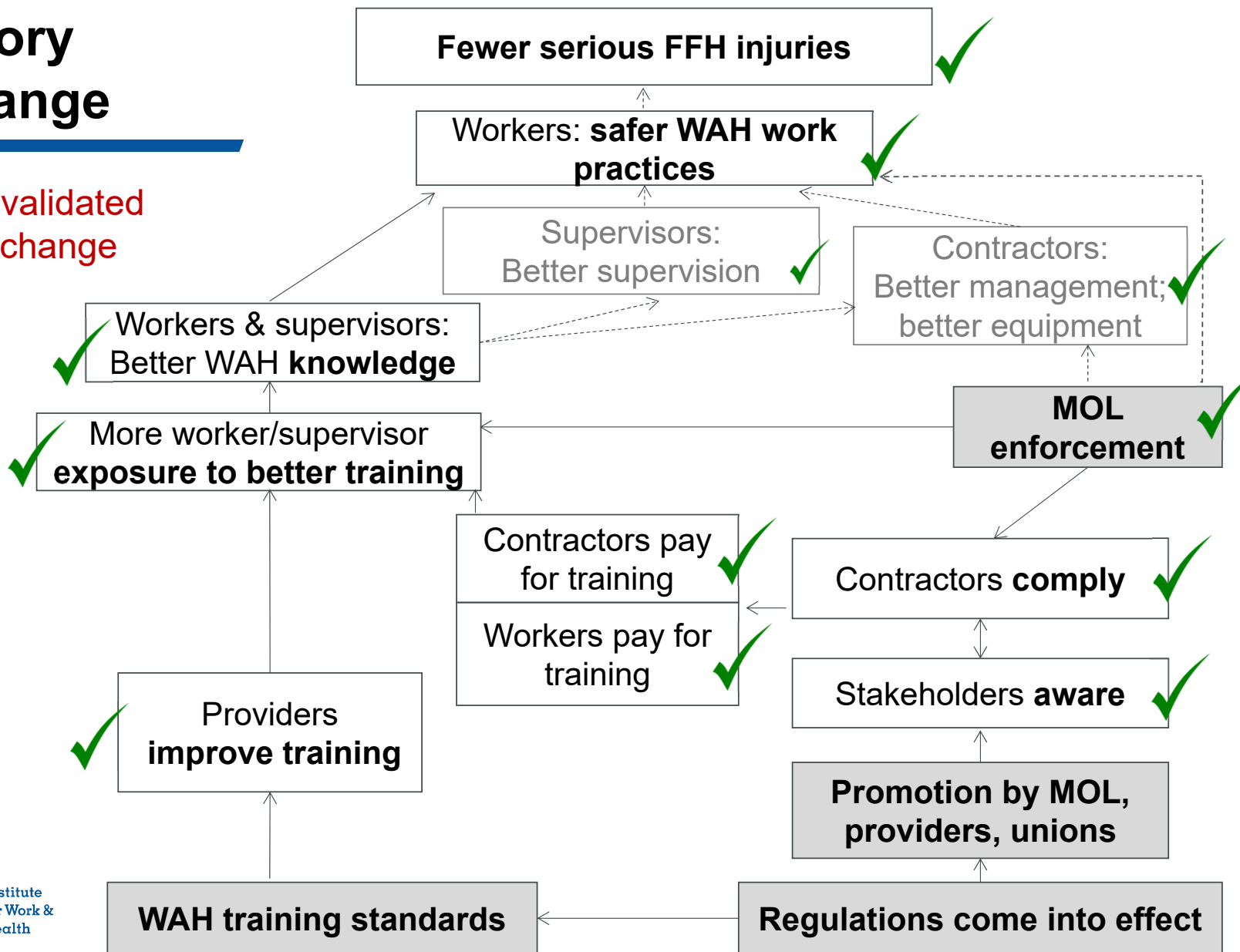


# Theory of change



# Theory of change

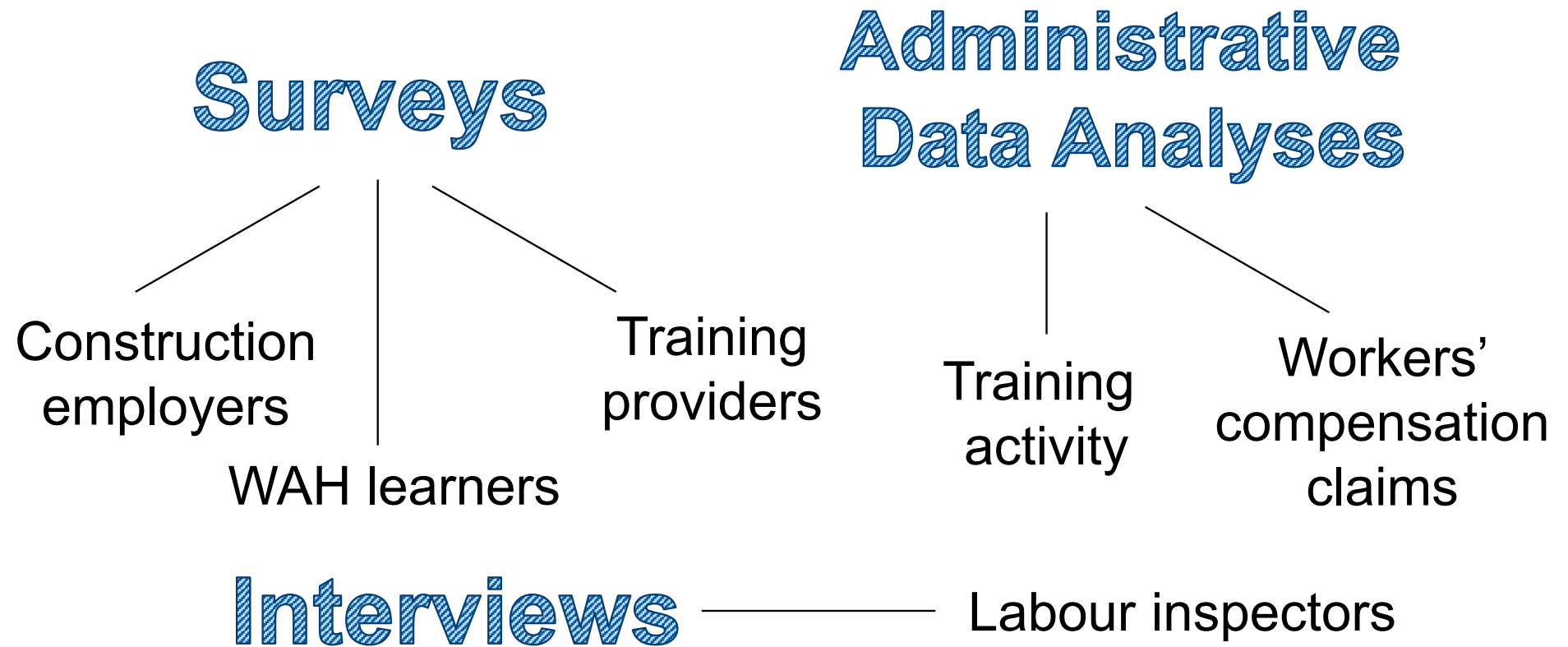
Evaluation validated theory of change





# Findings from 2-year follow up

# Data collection in follow up study



# Data collection in follow up study

Surveys

Administrative  
Data Analyses

WAH learners

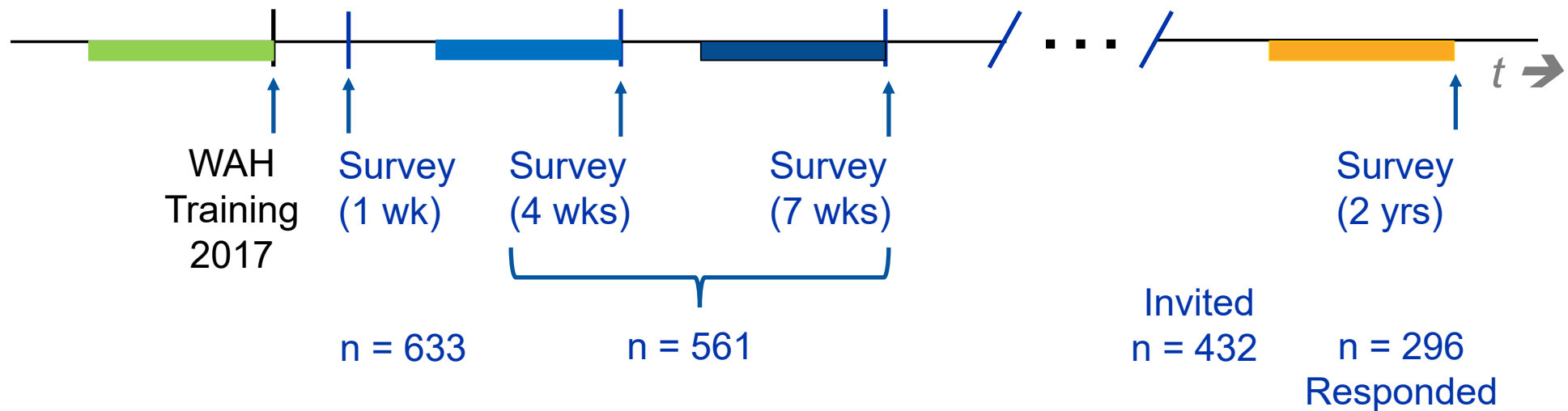
Workers'  
compensation  
claims

WAH knowledge

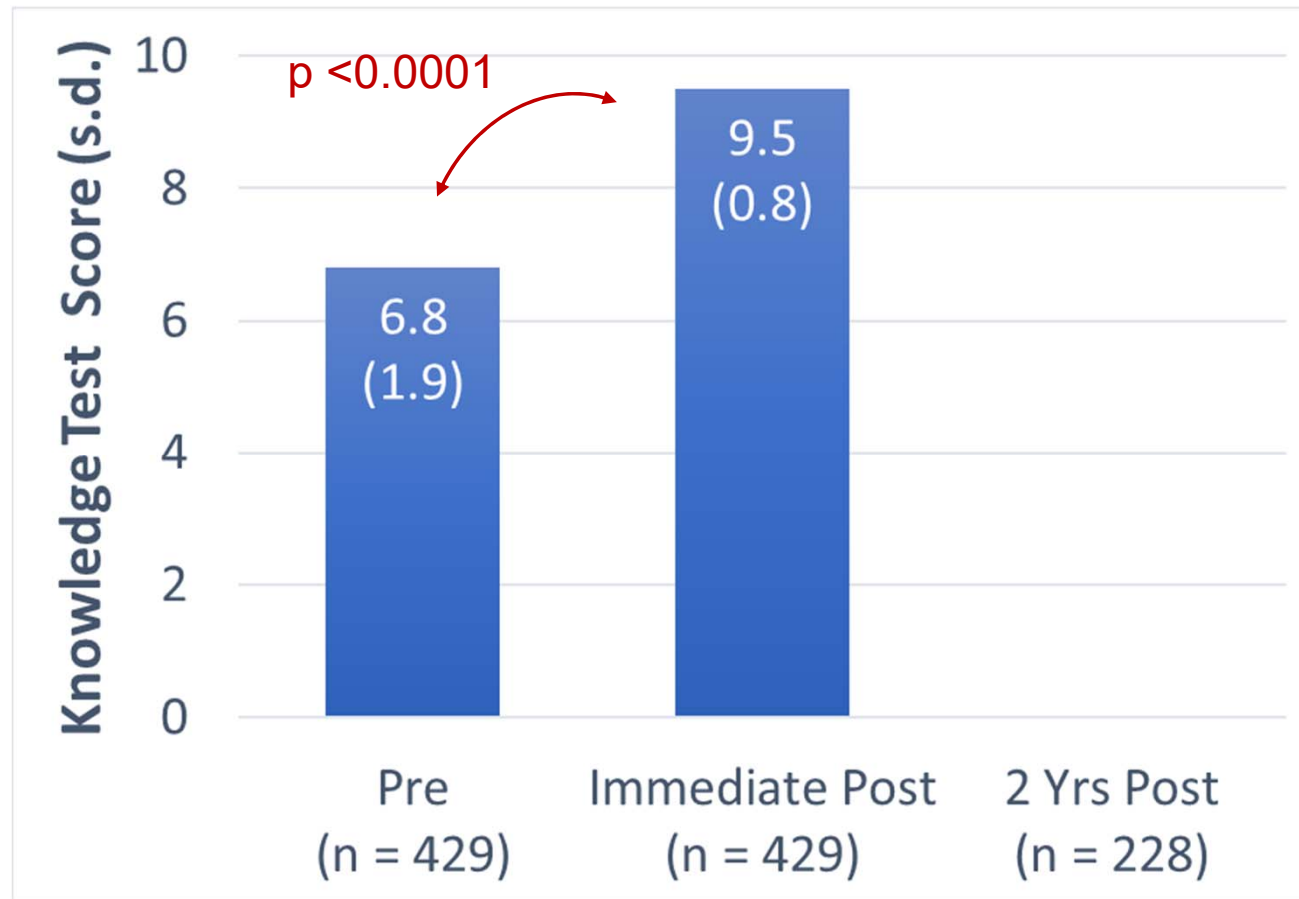
WAH safe work practices

# WAH learners survey

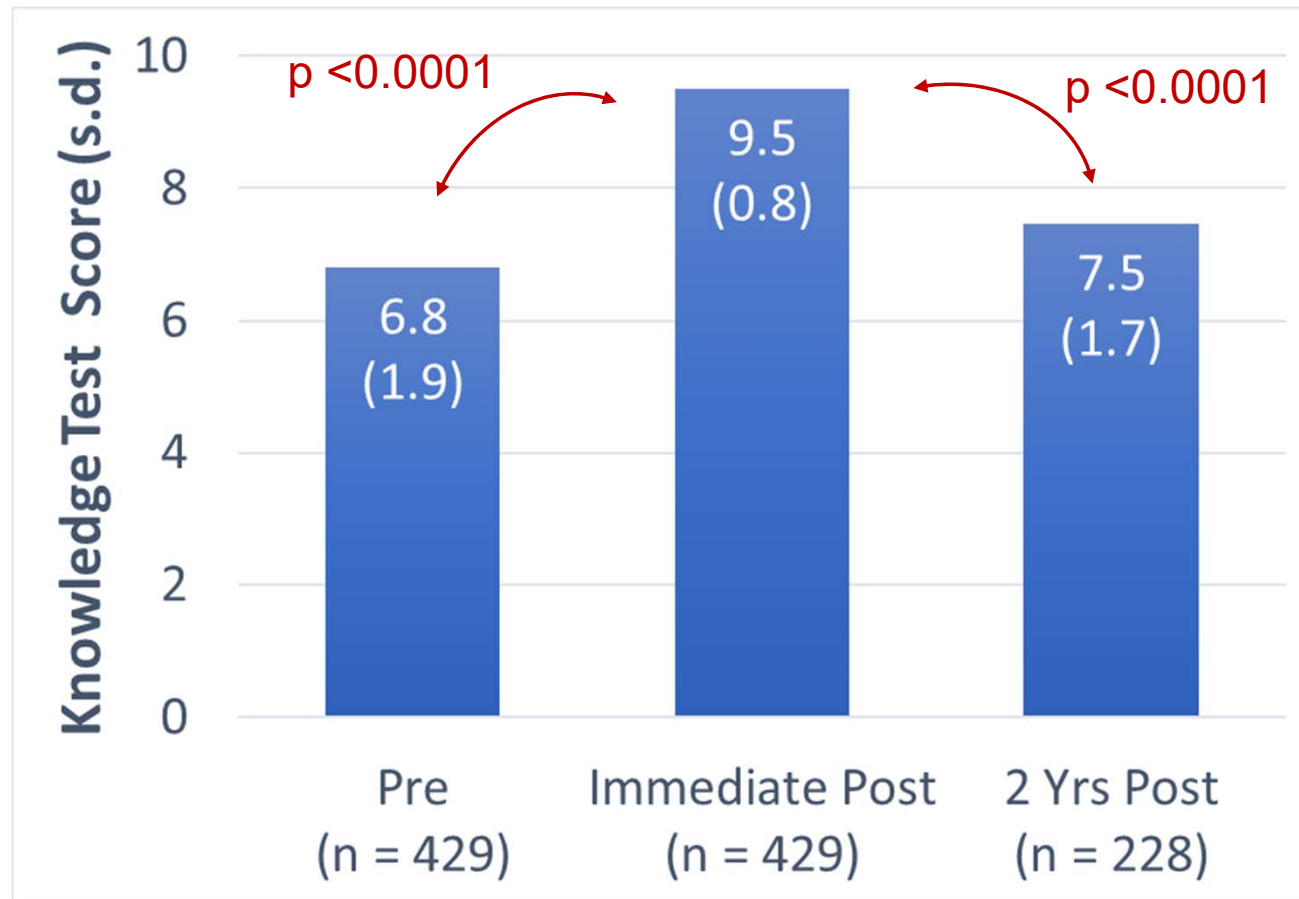
- Learners in IHSA-affiliated classes in fall 2017
- Learners diverse regarding sector, unionization, experience, etc.



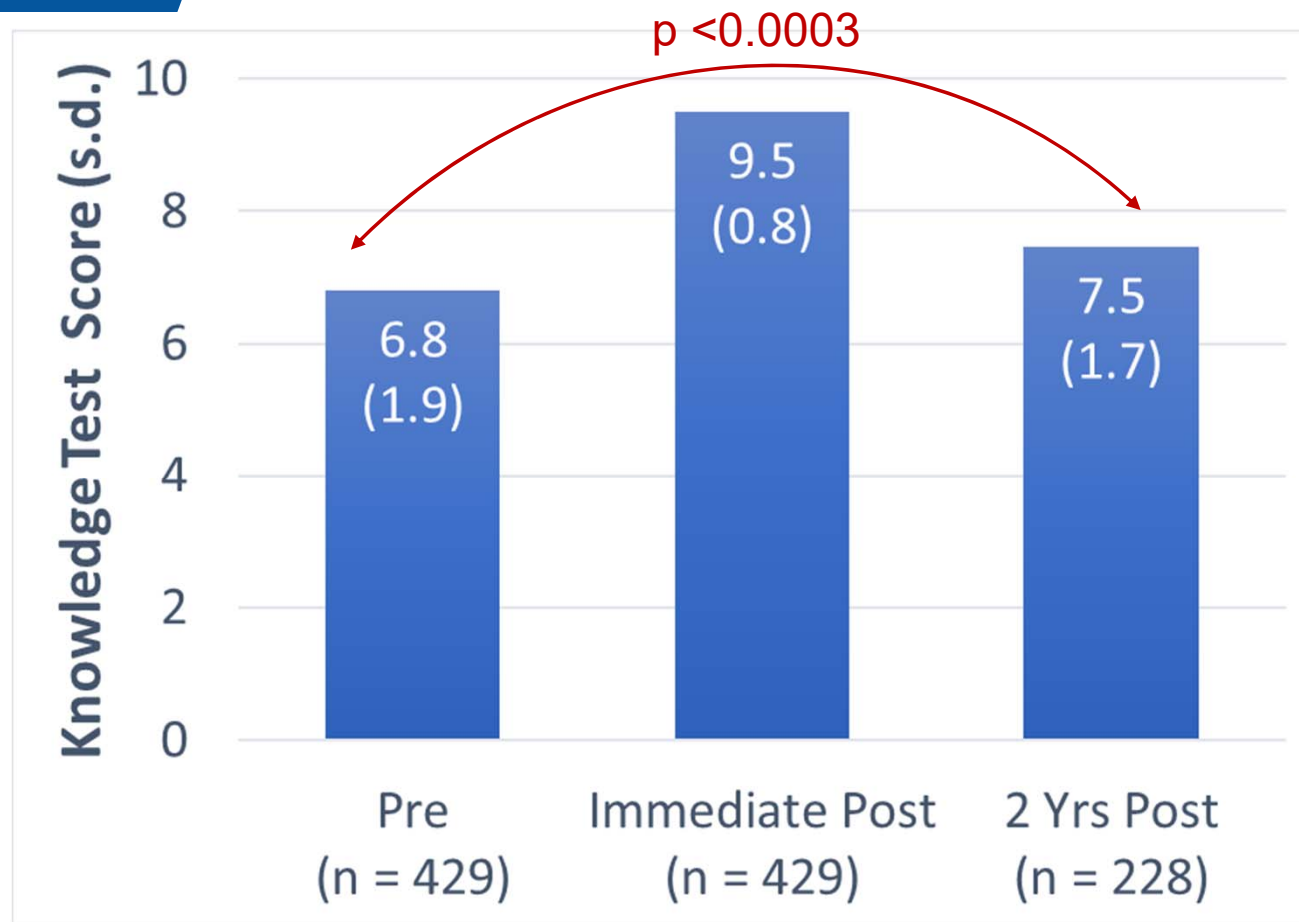
# Knowledge gained through training



# Knowledge gained through training eroded over 2 yrs



# Knowledge gained through training eroded over 2 yrs



# What type of knowledge eroded?

## Knowledge items eroded

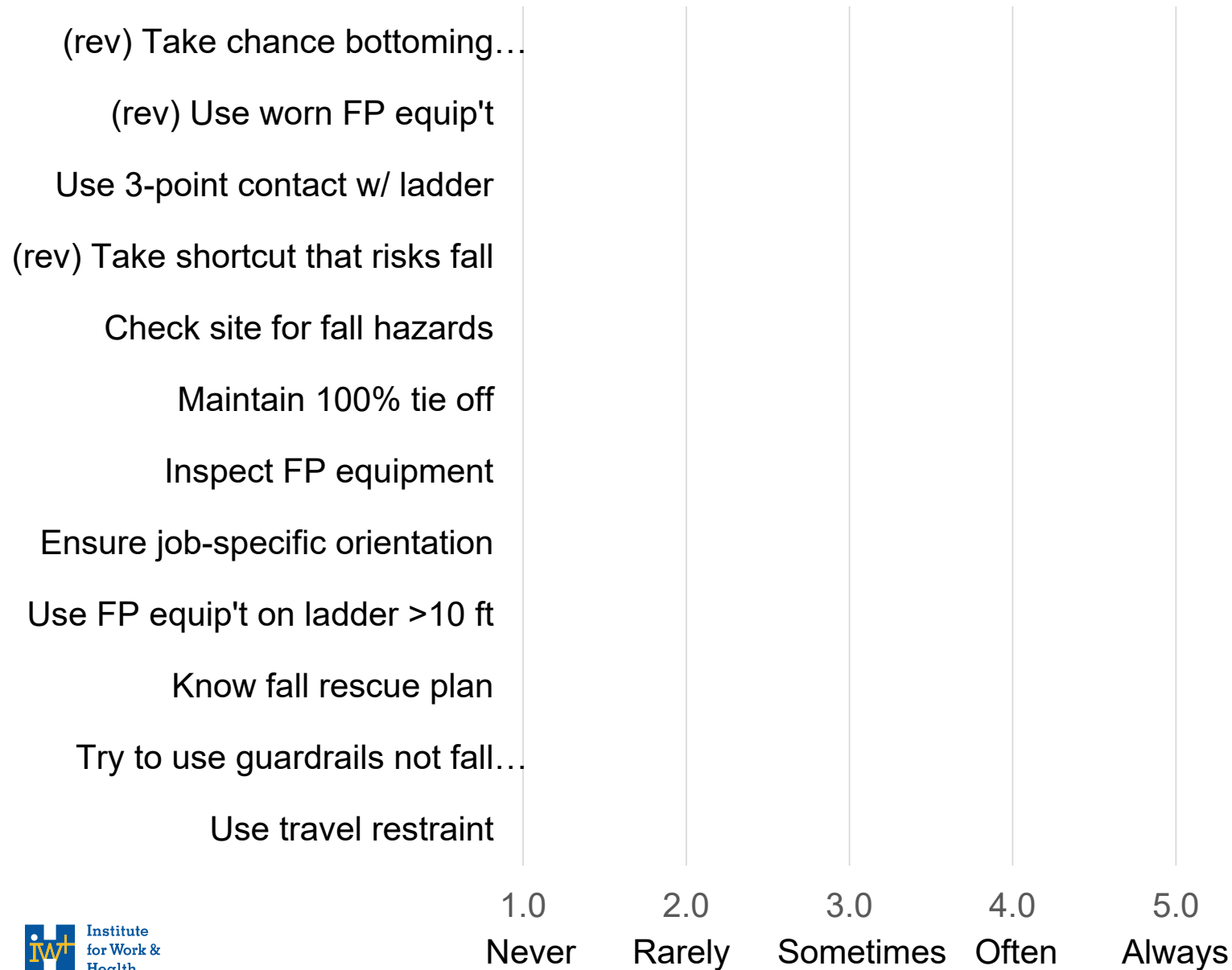
- Which is not an Ontario regulation?
- Which section of Construction regulation pertains to fall protection?
- Which organization sets minimum standards for personal fall protection equipment?
- Which are key components of a fall rescue plan?

## Knowledge items retained

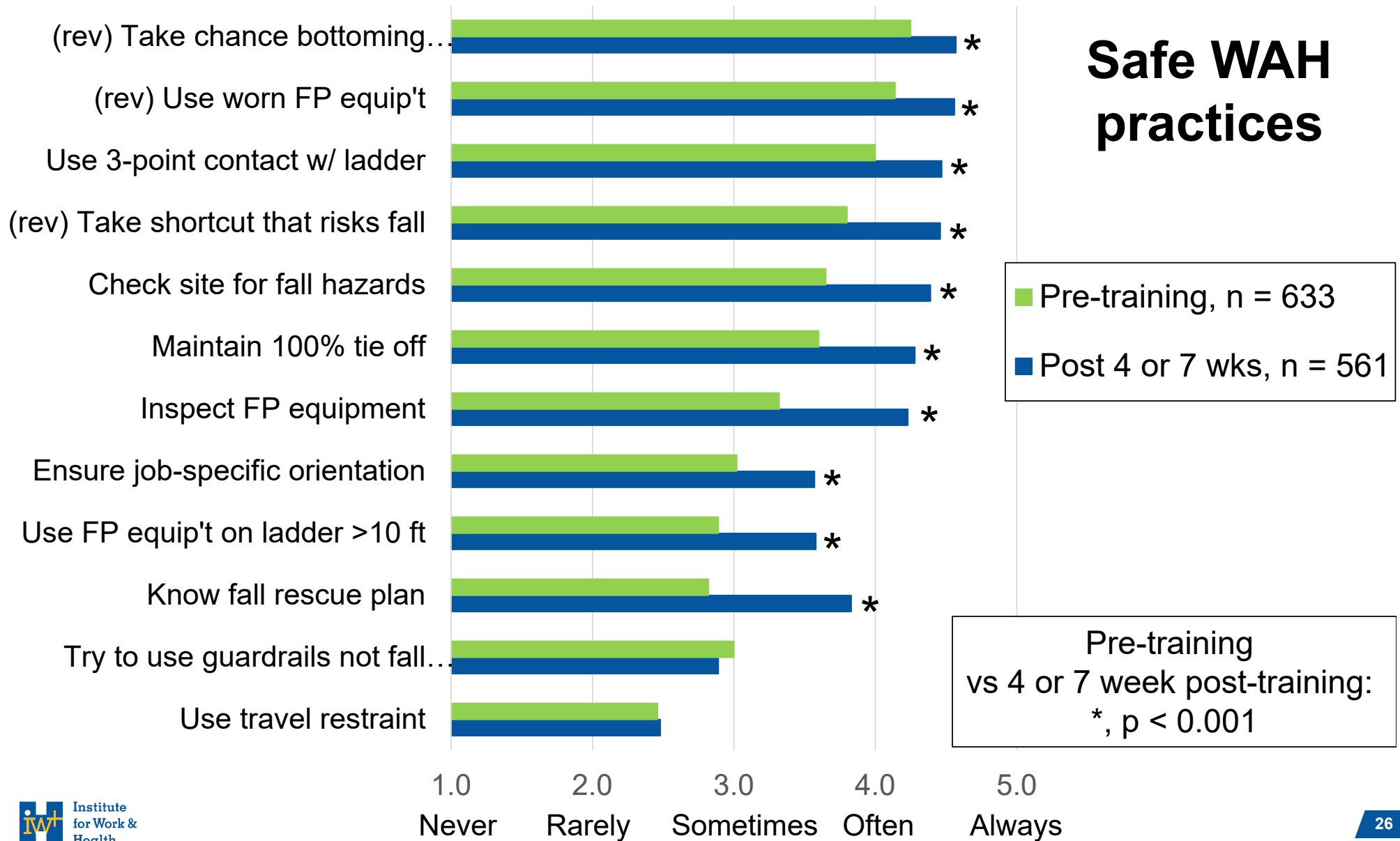
- What do you do before starting work?
- Which is not a common cause of fall from heights?
- Which is properly built guardrail?
- What does 'bottoming out' mean?
- Type of ladder needed for construction?
- Which are 3 worker rights?



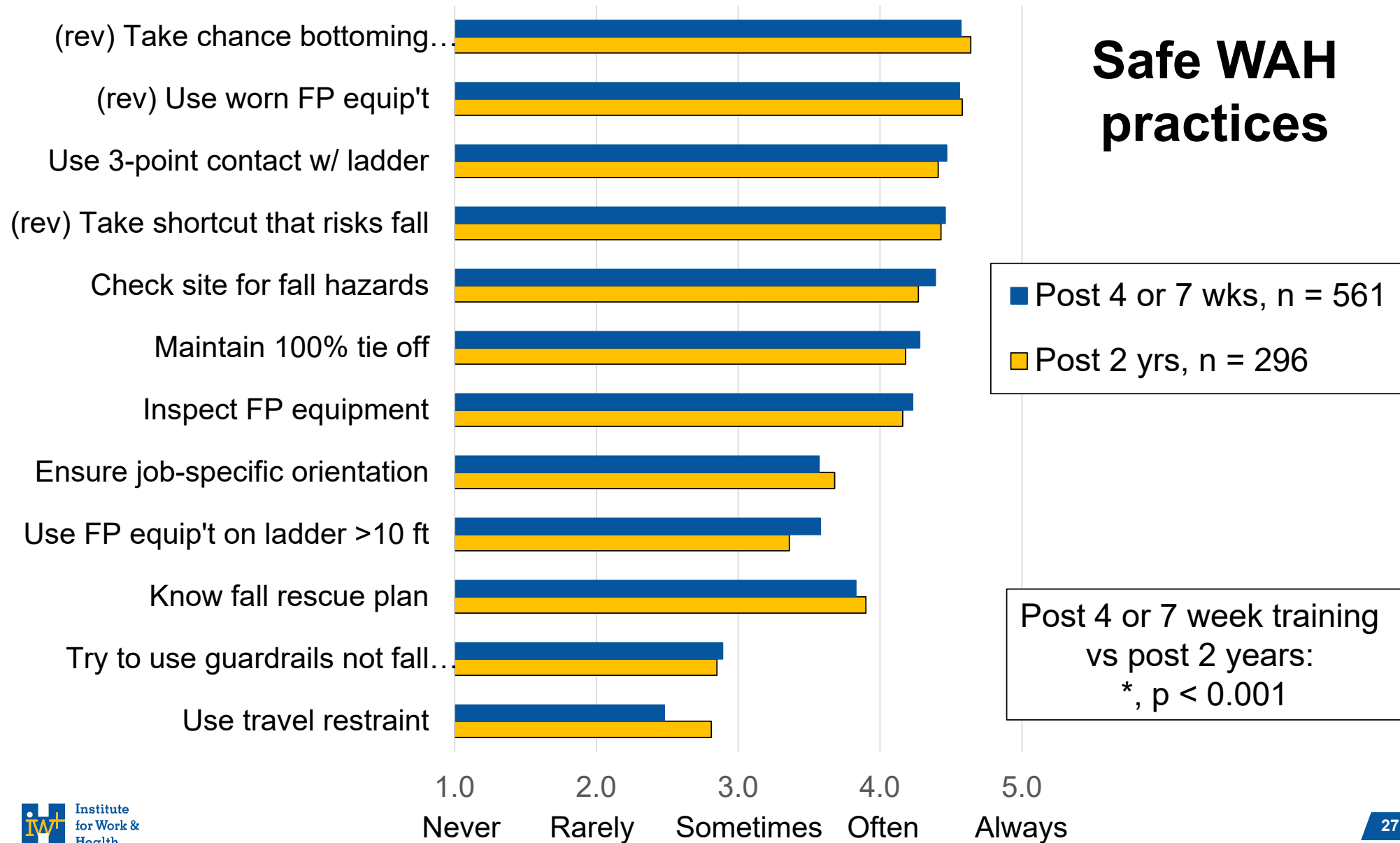
# Safe WAH practices



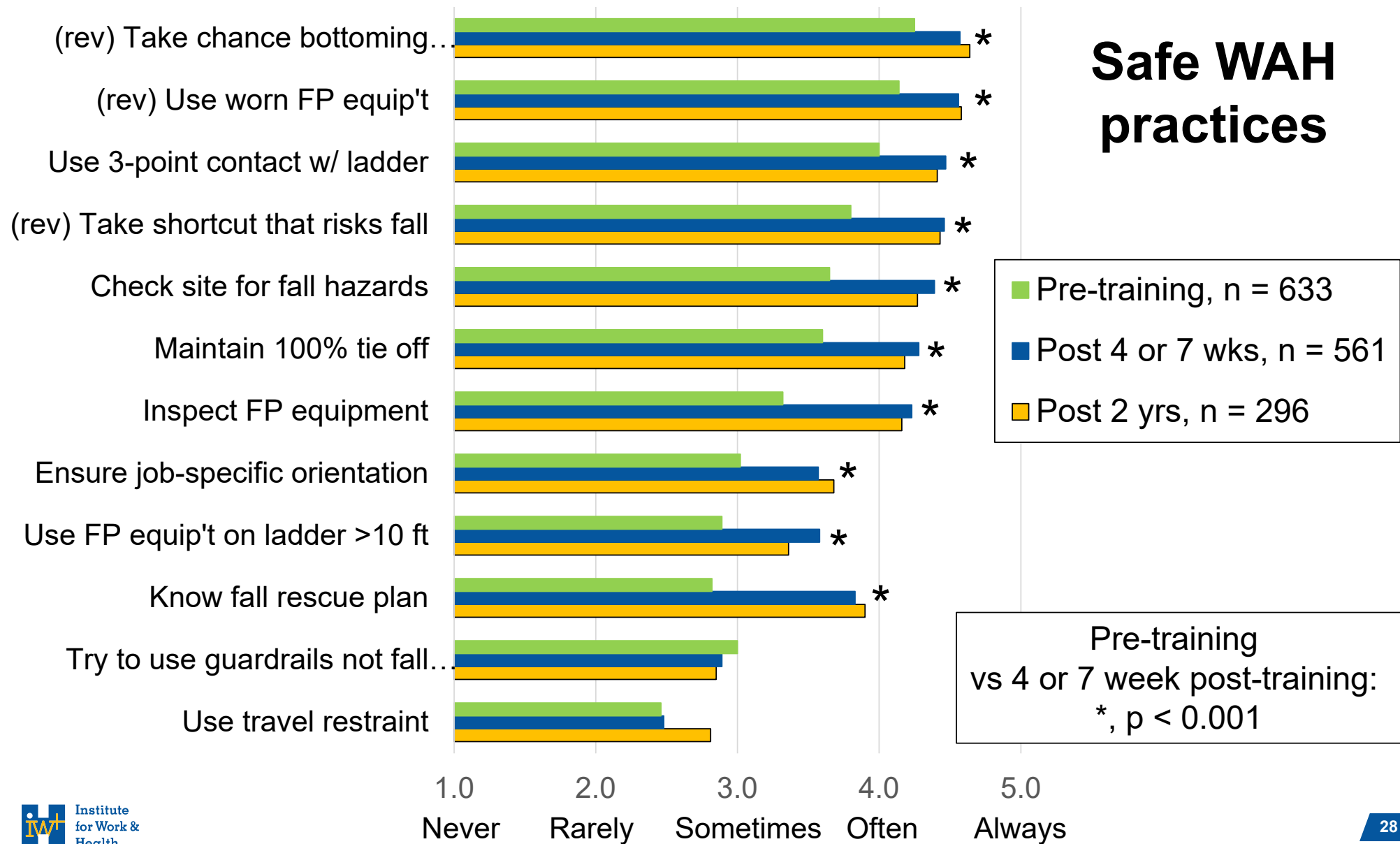
# Safe WAH practices



# Safe WAH practices



# Safe WAH practices



# Question

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“How often should refresher training be?”

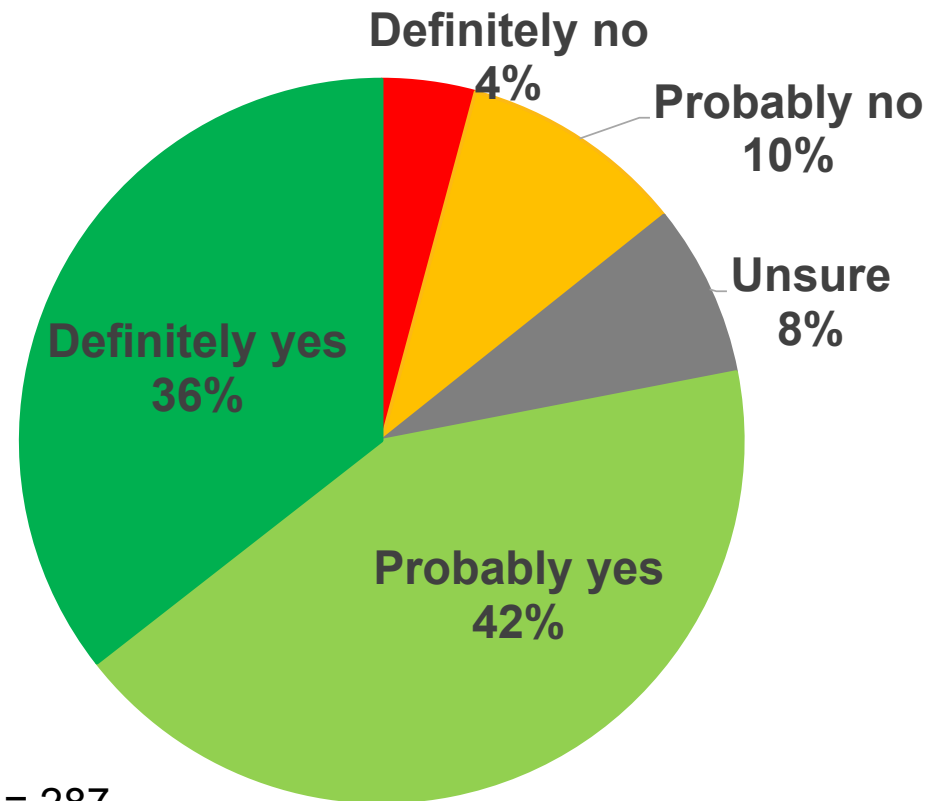


# WAH learners' opinion in 2019 on refresher training

## QUESTION:

“Would taking a half-day WAH refresher training in 2020 benefit your safety?”

## ANSWER:



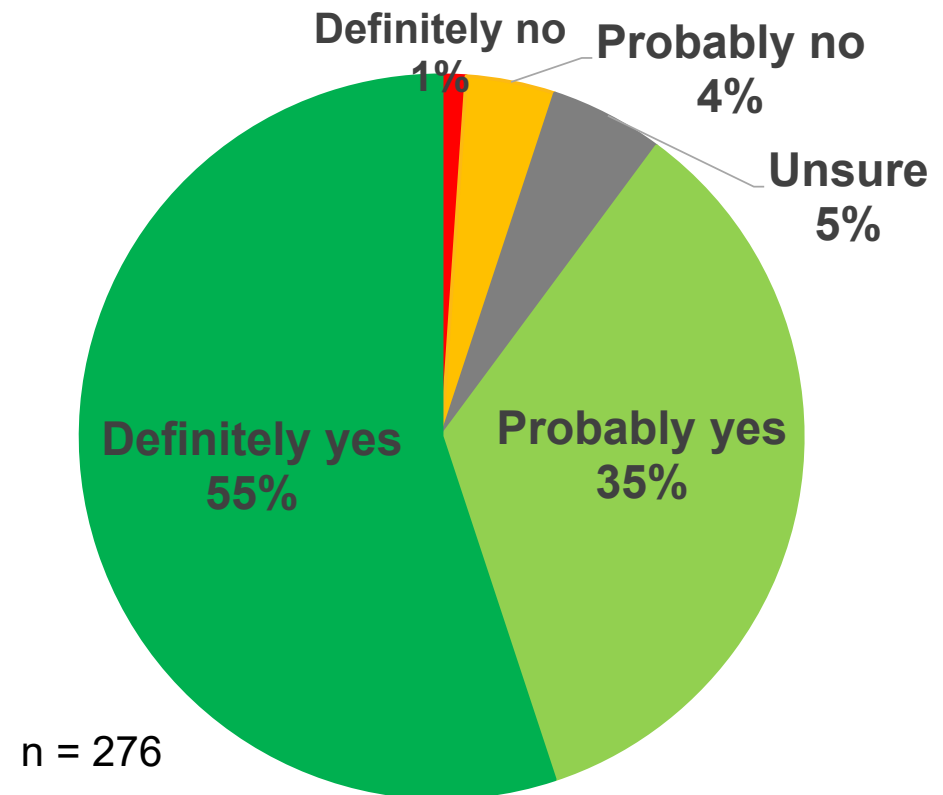
n = 287

# WAH learners' perception of training effectiveness

## QUESTION:

“Based on ... the past 5 years, has the mandatory WAH training made working at heights on construction projects safer?”

## ANSWER:



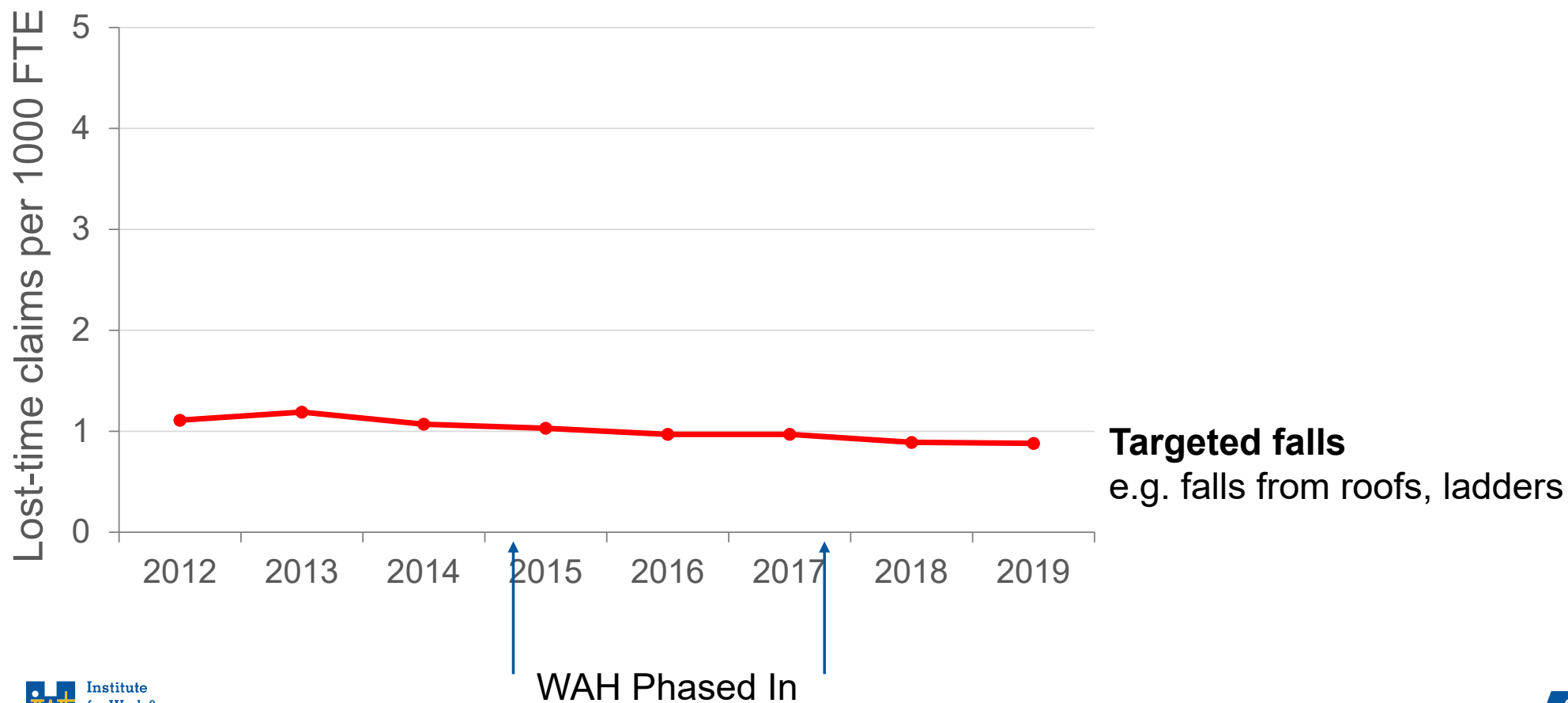
# Injury measurement

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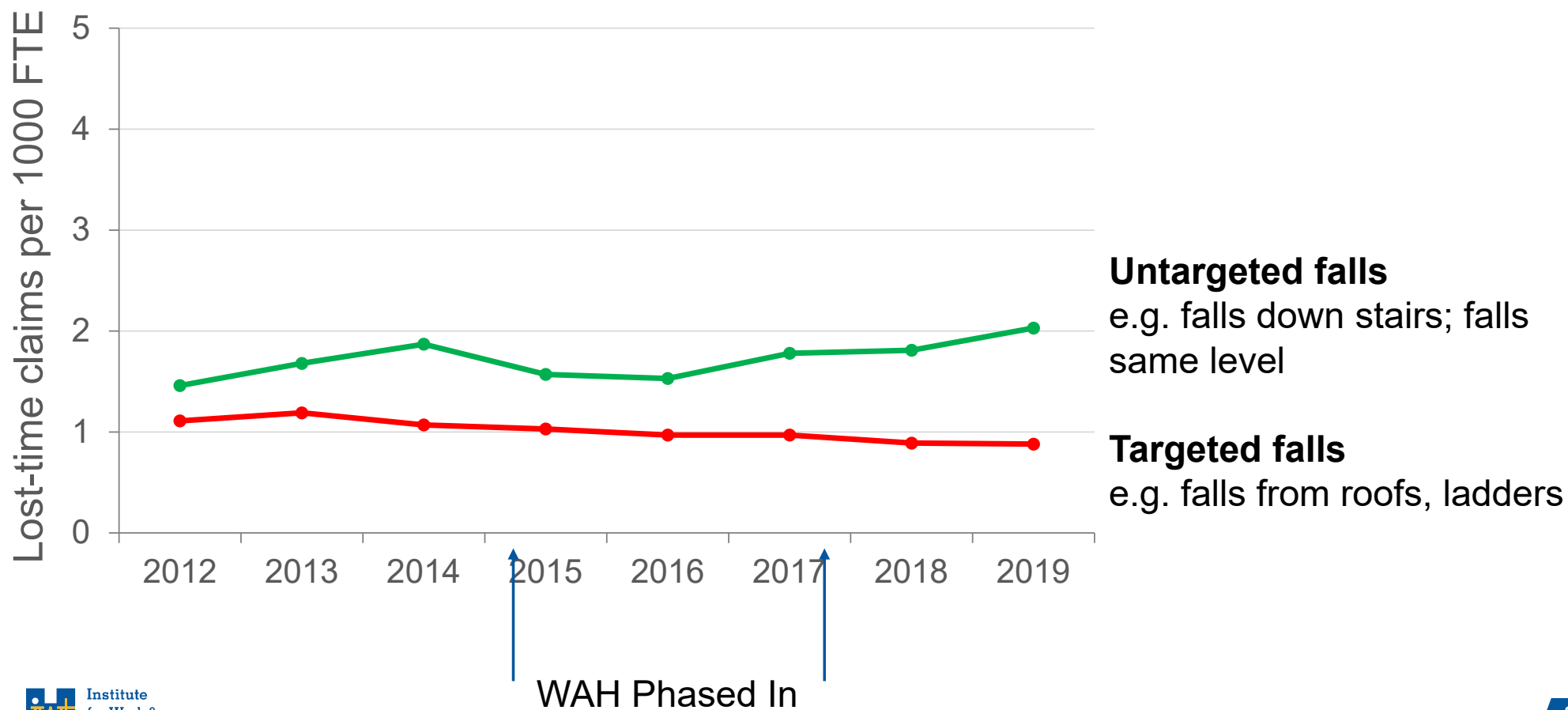
- **Lost-time injury claim frequencies** from the Association of Workers' Compensation Boards of Canada (AWCBC)
  - Construction sector (NAICS)
- **Employee hours worked** from Statistics Canada Labour Force Survey
  - Construction sector (NAICS)



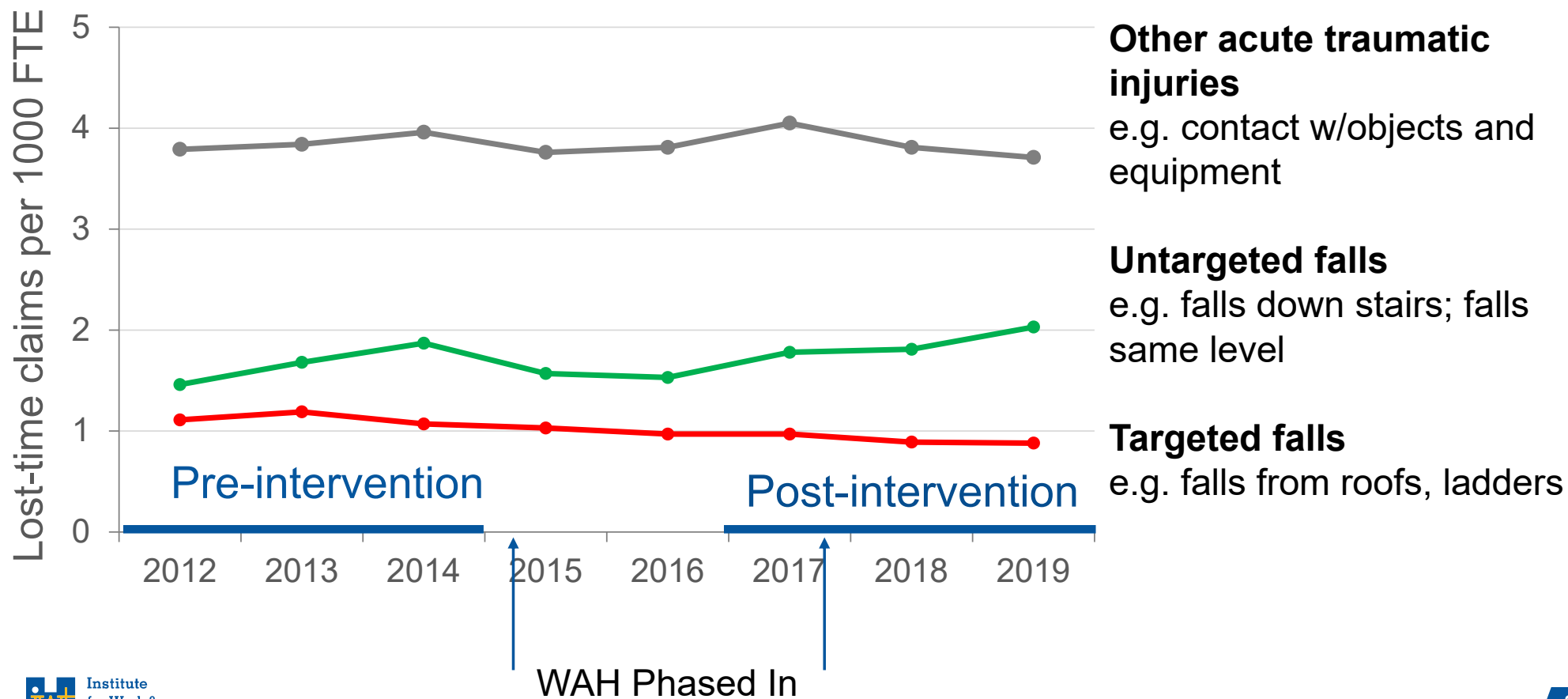
# Lost-time injury claim rates for targeted falls and two comparators, 2012-2019



# Lost-time injury claim rates for targeted falls and two comparators, 2012-2019

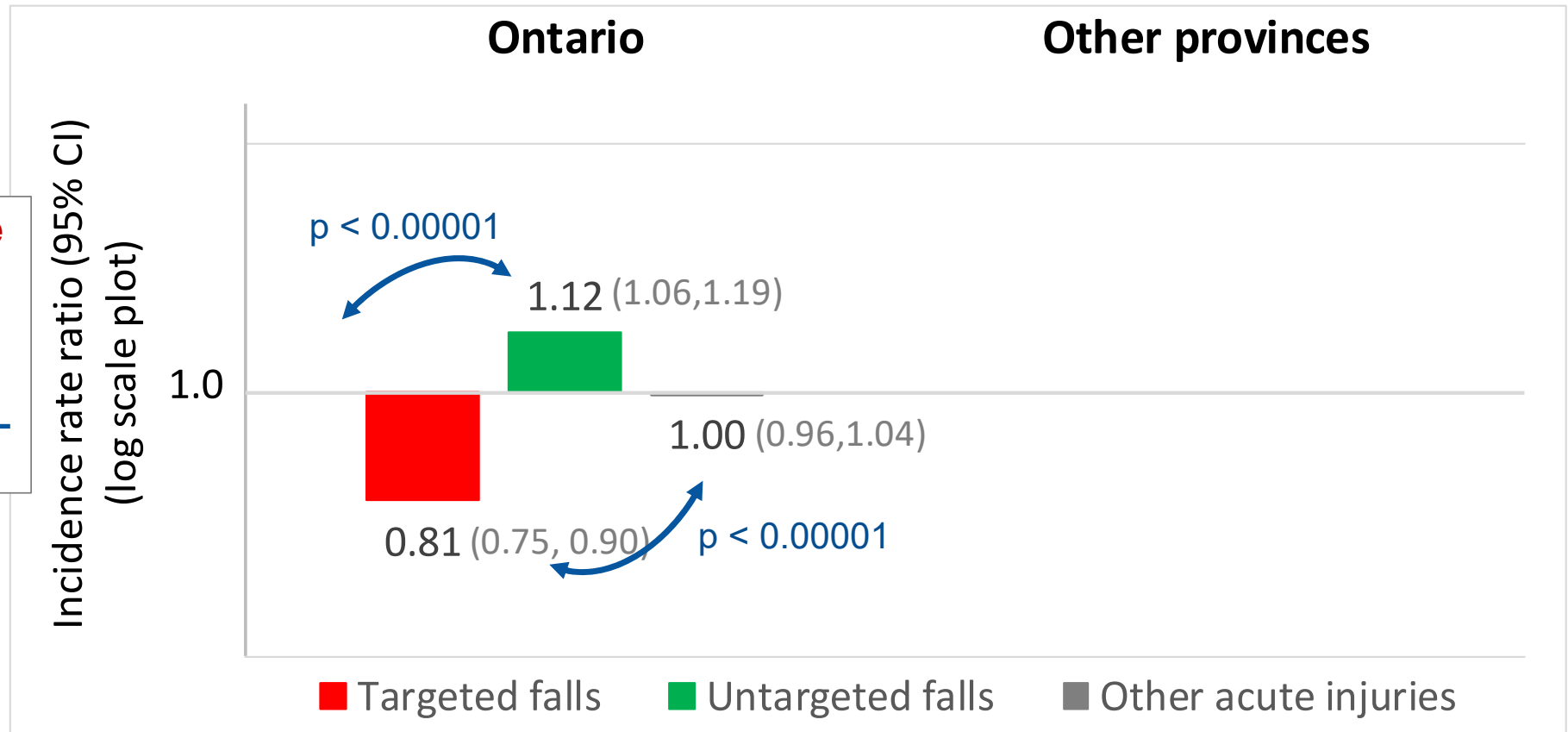


# Lost-time (LT) injury claim rates for targeted falls and two comparators, 2012-2019



# LT injury claim incidence rate ratio: 2017-19 vs 2012-14

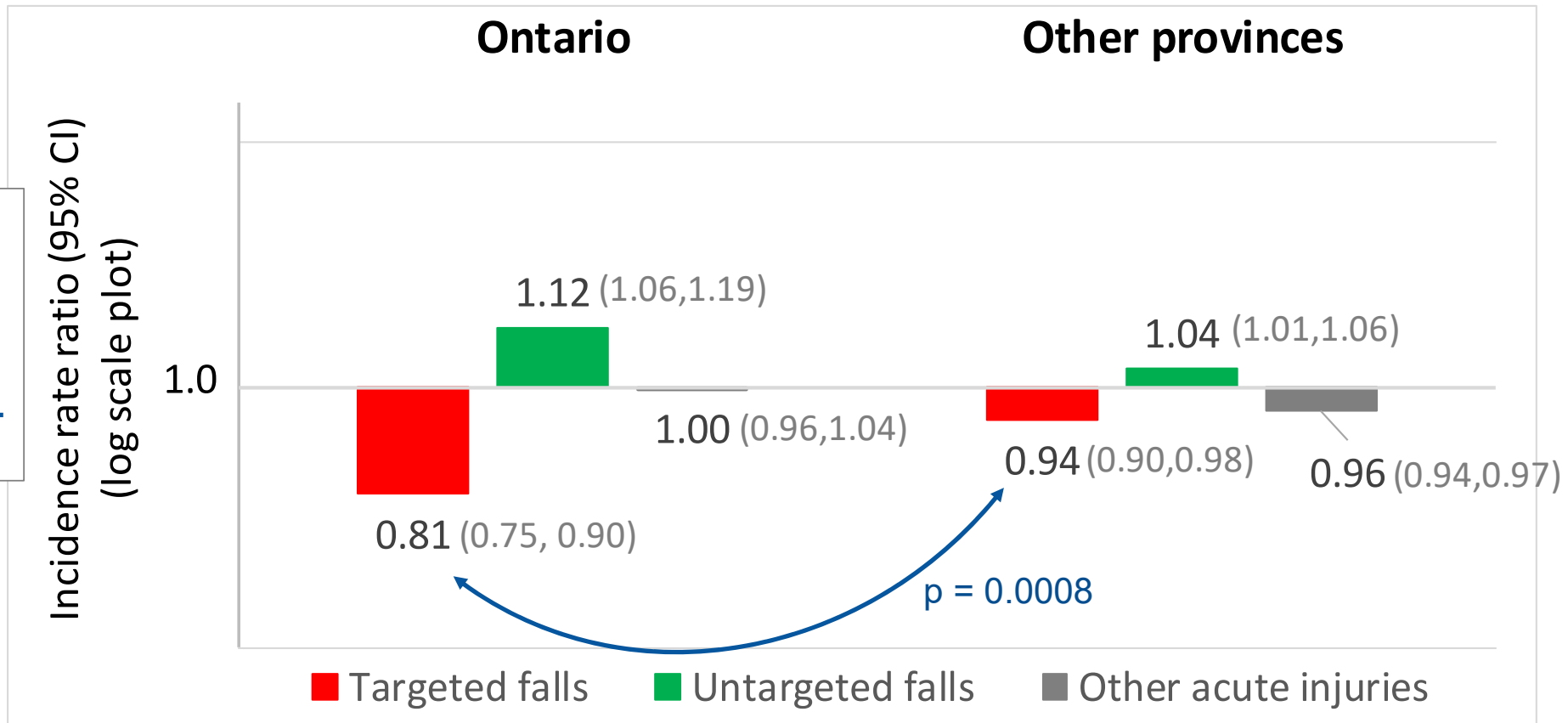
**Incidence rate ratio**  
=  $\frac{\text{2017-19 rate}}{\text{2012-14 rate}}$



# LT injury claim incidence rate ratio: 2017-19 vs 2012-14

**Incidence rate ratio**  
 =  

$$\frac{\text{2017-19 rate}}{\text{2012-14 rate}}$$



# Key messages from the 2 year follow up

## *From follow up of learners*

- Some WAH knowledge eroded after 2 years
- Safe WAH practices maintained after 2 years



## *From workers' compensation claims analysis*

- 19% decline in LT injury rate for targeted falls
- Versus 6% decline in other Canadian provinces



# Reflection & Conclusion

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- Follow up study strengthens the initial evaluation methods by adding 2 yrs of observation and a comparison with other provinces
- **Conclusion: Follow up study provides further evidence of the WAH training standard being effective in reducing FFH injuries**
- Work continues to explore other potential contributing factors
- Effect of 19% decline in targeted injury incidence is modest, but typical of training research
- Estimate 320 fewer LT FFH injuries in 2017-19 resulted
- Other approaches to preventing FFH incidents should continue to be considered too

# Thank you

**Lynda Robson**  
Scientist

Manuscript on 2-yr follow up submitted to  
*American Journal of Public Health.*



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