



# The union effect on safety in the ICI construction sector: study update

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# Outline

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- Background
- Methods
- Results
- Discussion
- Conclusion
- Q & A

# Objective

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- Determine the effect of unionization on an organization's injury incidence, within Industrial, Commercial and Institutional (ICI) construction, 2012-2018
- Update an earlier IWH study\*\* which used data from 2006-2012
  - *Amick III BC, Hogg-Johnson S, Latour-Villamil D, Saunders R. Protecting construction worker health and safety in Ontario, Canada: identifying a union safety effect. Journal of Occupational and Environmental Medicine 2015; 57(12):1337-1342.*

# Ontario Construction Secretariat (OCS)

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- Not-for-profit joint labour-management organization
- Created in 1993 under the Ontario Labour Relations Act
- Represents collective interests of the unionized ICI construction industry
- Promotes positive labour relations through
  - Developing relationships
  - Facilitating dialogue
  - Providing value-added research

# Research context (1): Union action to enhance safety

- At the level of workplaces, unions promote safe conditions through:
  - OHS provisions in collective agreements
  - Ensuring regulatory compliance
  - Enhancing enforcement by authorities
  - Providing OHS information and training to workers
  - Participation in JHSCs
  - Advocating for control of OHS hazards and risks
  - Empowering workers to exercise their rights:
    - to know about hazards; to participate in OHS; to refuse unsafe work

*Hagedom et al. (2016) The role of labor unions in creating working conditions that promote public health. American Journal of Public Health 2016; 106: 989-995.*

*Morantz (2009) The elusive union safety effect: toward a new empirical research agenda. LERA 61st Annual Proceedings, pp. 130-146.*

# Research context (2): Unexpected findings

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- Donado (2015) review of 25 studies published up to 2009
  - Unionization → lower risk of fatal injuries (expected)
  - Unionization → *higher* risk of nonfatal injuries (**unexpected**)
- Most common explanation across the studies for the unexpected findings is **differential reporting**:
  - Unionized workers/workplaces are more likely to report injuries

*Donado A. Why do unionized workers have more nonfatal occupational injuries? Industrial and Labor Relations Review 2015; 68: 153-183.*

# Research context (3): Support for the differential reporting theory

- Morantz (2013), U.S. coal mines, 1993-2010

Injury type	Incidence rate ratio (Union/non-union)
Total nonfatal	1.1

*Morantz AD. Coal mine safety: do unions make a difference? Industrial and Labor Relations Review 2013; 66: 88-116.*

# Research context (3): Support for the differential reporting theory

- Morantz (2013), U.S. coal mines, 1993-2010

Injury type	Incidence rate ratio (Union/non-union)
Severe traumatic nonfatal	0.76
Total nonfatal	1.1
Other nonfatal	1.4

*Morantz AD. Coal mine safety: do unions make a difference? Industrial and Labor Relations Review 2013; 66: 88-116.*

# Research context (3): Support for the differential reporting theory

- Morantz (2013), U.S. coal mines, 1993-2010

Injury type	Incidence rate ratio (Union/non-union)
Fatal	0.35
Severe traumatic nonfatal	0.76
Total nonfatal	1.1
Other nonfatal	1.4



Less susceptible  
to reporting bias

Greater apparent  
union safety  
effect

*Morantz AD. Coal mine safety: do unions make a difference? Industrial and Labor Relations Review 2013; 66: 88-116.*

# Research context (4): Few studies in construction

- Research in Donado (2015) review was conducted in mining, manufacturing or multiple sectors
- Early research in construction had simple designs
- Zullo (2010), construction, US states, 2001-2009
  - ↑ union density → ↓ fatal injury rate

- **Amick et al. (2015)**, Ontario ICI construction companies
  - Unionization → higher no-lost-time injury claim rate
  - Unionization → *lower* lost-time injury claim rate

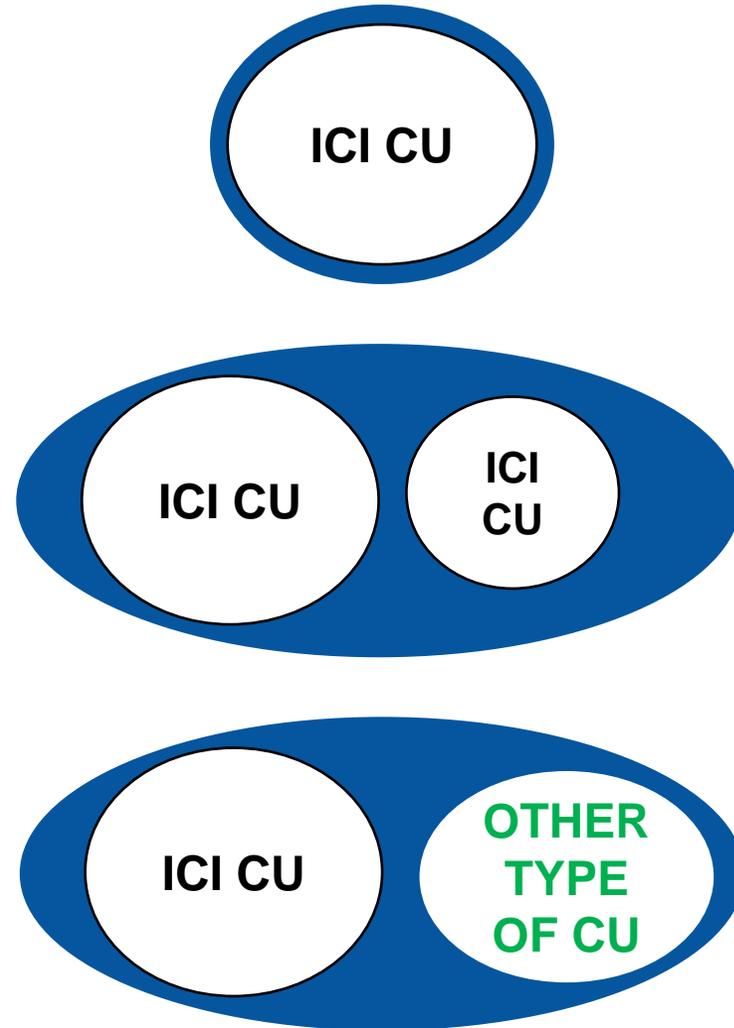
# Methods (1): Identify ICI companies in WSIB employer records

**INCLUSION:** Any company with largest payroll in one of 39 classification units (CUs) found in ICI

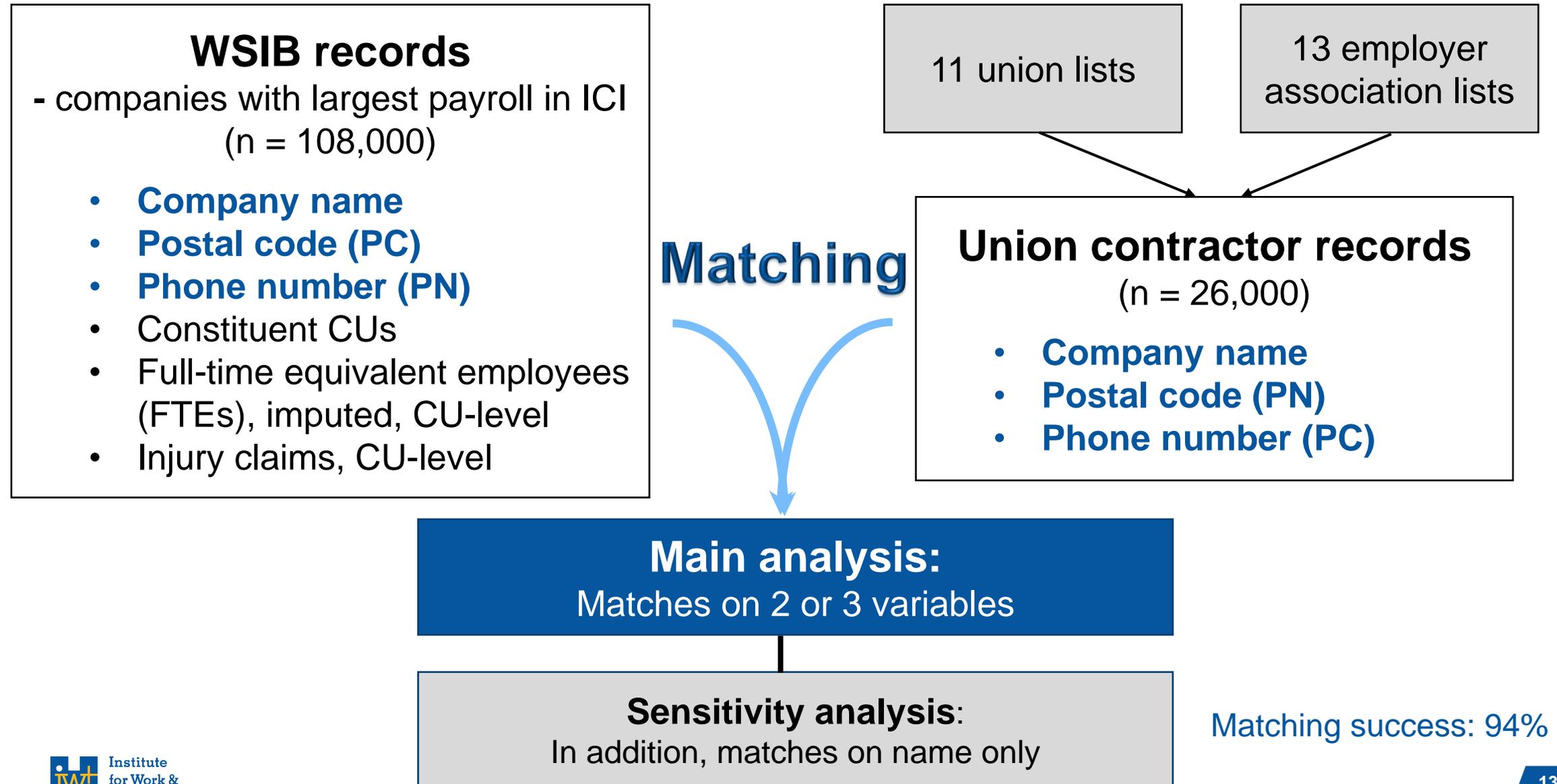
- Apartment & Condominium Construction
- Asbestos Abatement
- Carpeting & Flooring
- Caulking & Weatherstripping
- Concrete Cutting & Drilling
- Concrete Finishing
- Concrete Sealing
- Custom Welding Services
- Drain Contractors
- Electrical Work
- Equipment Rental (with Operator)
- Excavating & Grading
- Form Work (High-Rise)
- Glass & Glazing Work
- Heavy Engineering Construction
- Industrial Maintenance & Repair Contracting
- Industrial, Commercial & Institutional Construction
- Insulation Work
- Masonry Operations
- Millwright & Rigging Work
- Non-Structural Interior Demolition
- Ornamental & Fabricated Metal Installation
- Other Structural Work
- Other Trade Work
- Painting & Decorating
- Painting of Structures
- Piledriving Work
- Plaster, Drywall & Acoustical Work
- Plumbing, Heating & Air Conditioning, Installation
- Precast Concrete Installation
- Roof Shingling
- Sheet Metal & Built-Up Roofing
- Sheet Metal & Other Duct Work
- Siding Work
- Steel Reinforcing
- Structural Steel Erection
- Terrazzo & Tile Work
- Thermal Insulation Work
- Wrecking & Structural Demolition

# Methods (2): Illustration of 3 types of ICI companies

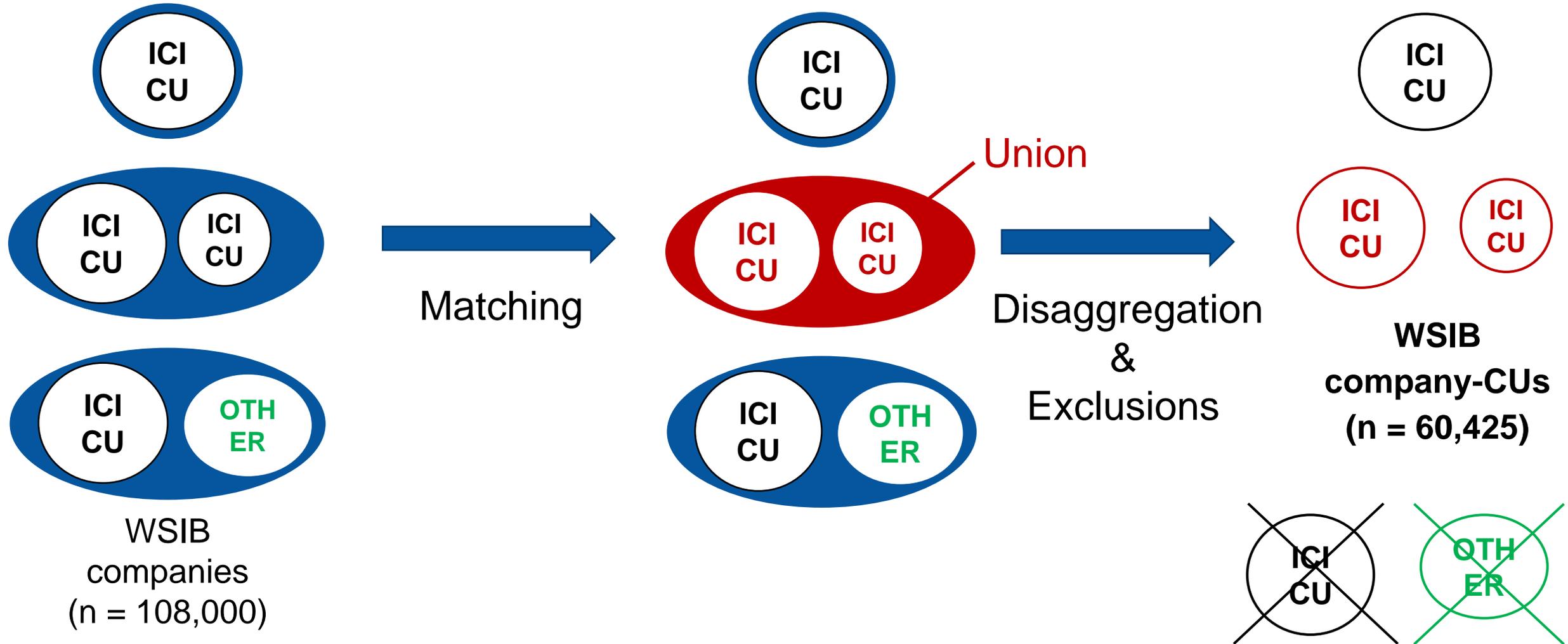
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# Methods (3): matching records from multiple sources



# Methods (4): From companies to company-CUs



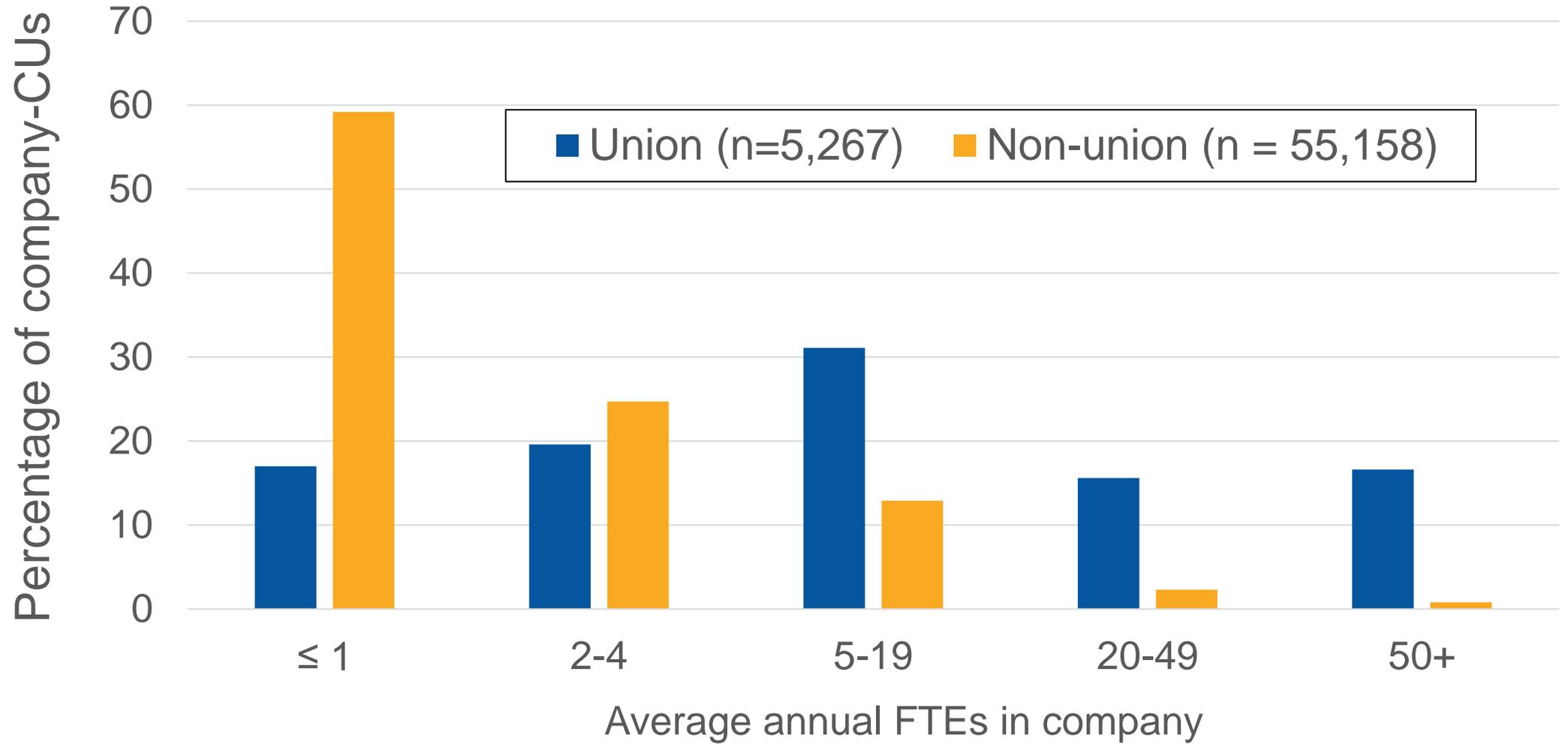
# Numbers of company-CUs, companies, FTEs and claims

	Unionized		Non-unionized	
	Number	Row %	Number	Row %
Company-CUs	5,267	8.7	55,158	91.3
Companies	4,713	8.0	54,124	92.0
Annual full-time equivalent employees (FTEs), cumulative, 2012-2018	772,797	44.6	958,186	55.4
Lost-time allowed (LTA) claims, 2012-18	5,873	31.0	13,089	69.0
No-lost-time allowed (NLTA) claims, 2012-18	34,904	51.7	32,589	48.3

# Methods (5): Analyze data

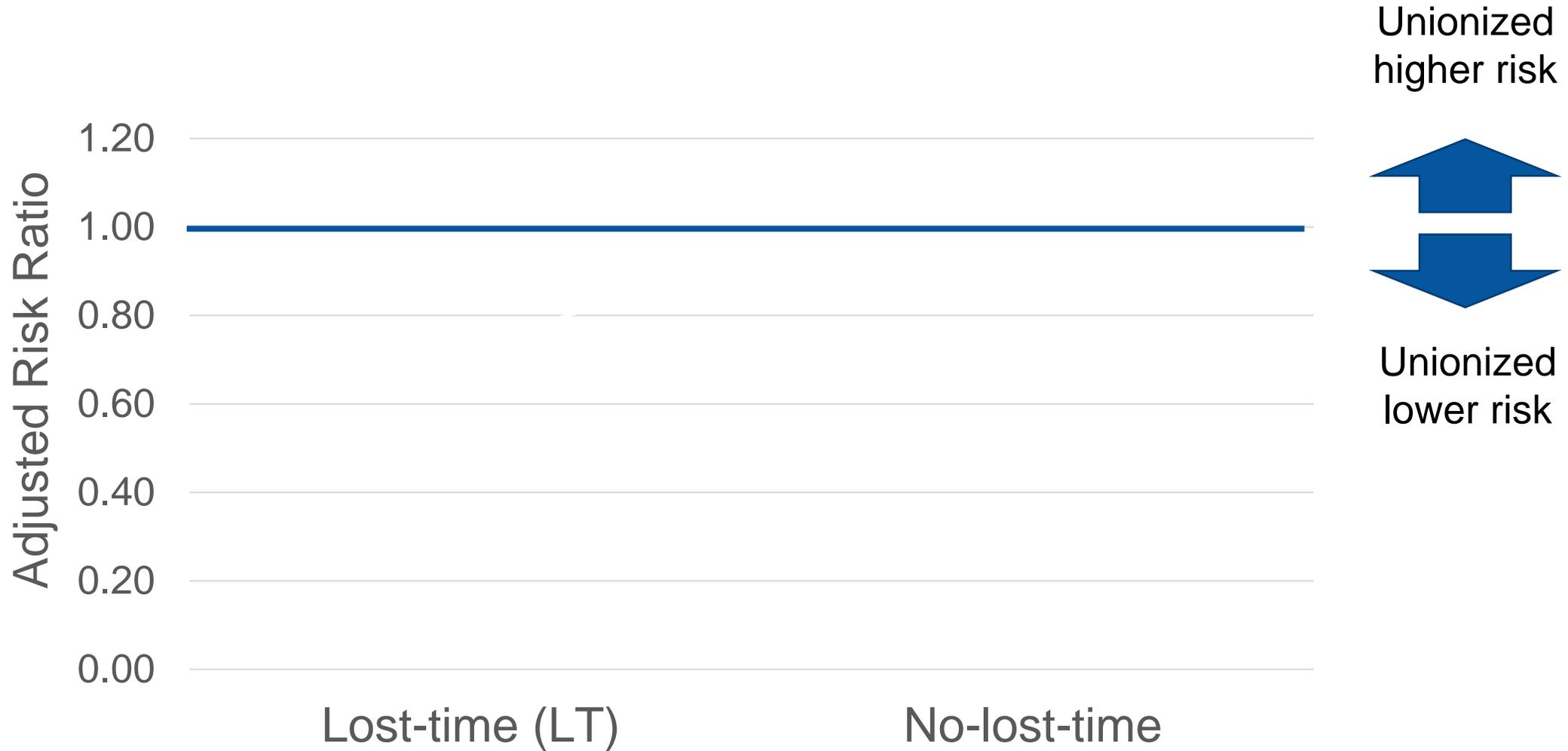
- Multivariable negative binomial regression models of the relationship between unionization and injury claim rate
  - Main predictor – unionization of company-CU (binary)
- Adjusted for the influence of other factors, to get an “apples-to-apples” comparison of union vs. non-union
  - Company size (full-time equivalent employees (FTEs); 5 categories)
  - Complexity (# of CUs in company; 5 categories)
  - Type of construction activity (CU type; 39 categories)
  - Geographical location (first letter of postal code)

# Unionized versus non-unionized: distribution of company size is very different



# Injury claim risk for unionized relative to non-unionized

$$\frac{\text{Risk ratio: Unionized risk}}{\text{Non-unionized risk}}$$

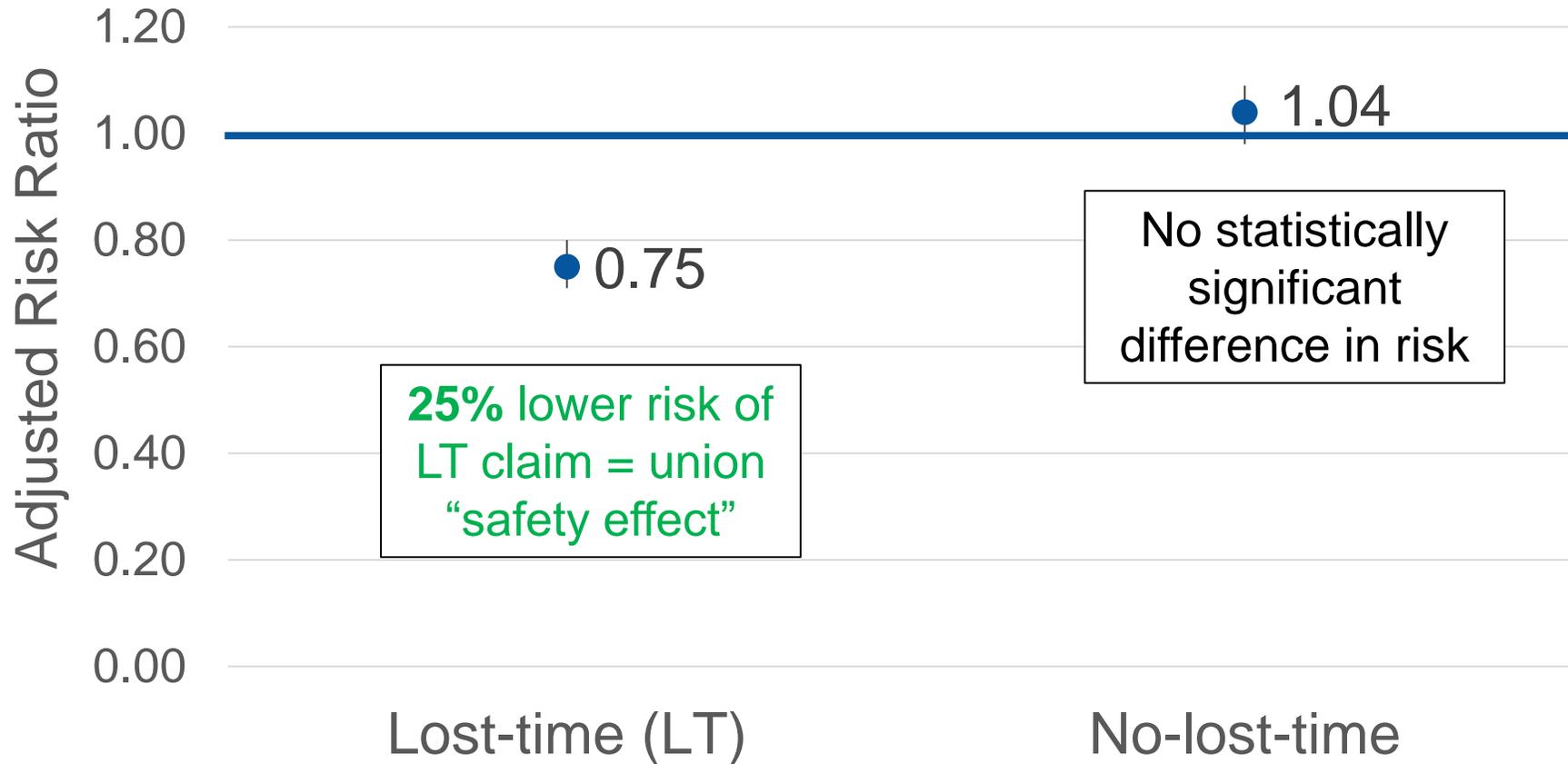


# Injury claim risk for unionized relative to non-unionized

Amick et al. (2015) values: 0.86 (0.82 – 0.98)

1.28 (1.23 – 1.34)

Risk ratio:  
Unionized risk  
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Non-unionized risk

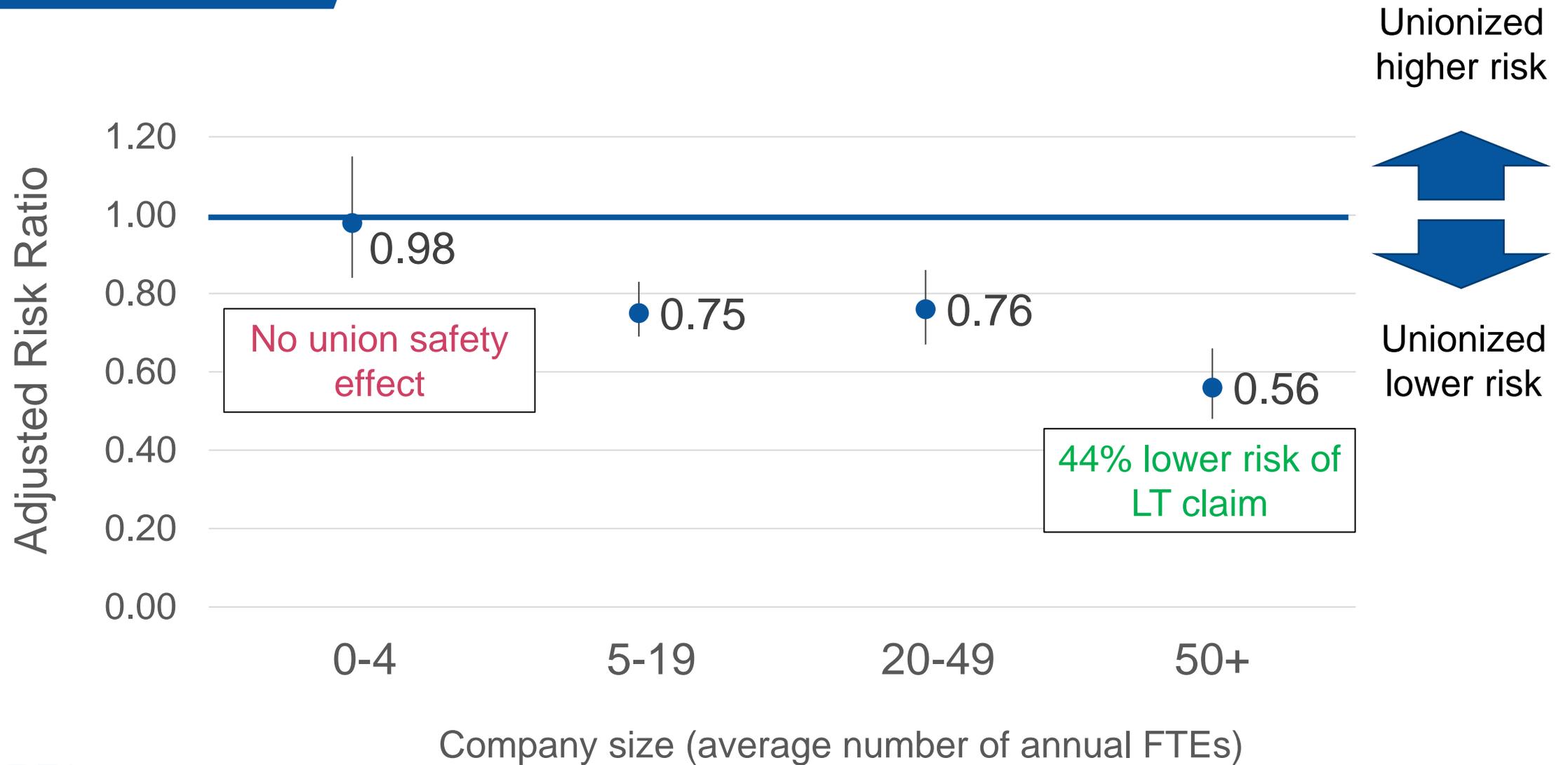


Unionized higher risk



Unionized lower risk

# Union safety effect on LT claims varies by company size



# Union safety effect on LT claims varies by CU type

Classification unit name	Adjusted risk ratio (95% CI)
Industrial Maintenance & Repair Contracting	<b>0.28</b> (0.14 – 0.57)
Millwright & Rigging Work	<b>0.33</b> (0.22 – 0.50)
Sheet Metal & Built-Up Roofing	<b>0.48</b> (0.33 – 0.71)
Plumbing, Heating & Air Conditioning, Installation	<b>0.63</b> (0.55 – 0.72)
Excavating and Grading	<b>0.69</b> (0.52 – 0.92)
Electrical Work	<b>0.75</b> (0.64 – 0.88)
Industrial, Commercial & Institutional Construction	0.82 (0.66 – 1.02)

*Boldface for adjusted risk ratio indicates statistical significance*

# Sensitivity tests using LT injury claim data

Sensitivity test	Number of company-CUs		Adjusted risk ratio
	Unionized	Total	
Main analysis (base case)	5,267	60,425	<b>0.75</b> (0.71 – 0.80)
1. Looser union definition - add name-only matches	6,224	60,425	<b>0.77</b> (0.72 – 0.81)
2. Restricted to single-CU companies	3,061	50,096	<b>0.82</b> (0.75 – 0.89)
3. Restricted to seven CUs entirely in ICI	909	4,873	<b>0.71</b> (0.60 – 0.84)

# Limitations

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- Cannot definitively explain the basis of the union effect on lost-time injuries
  - likely not an artifact related to company size, complexity, CU profile, geography
- Other unmeasured variables might influence the estimates:
  - injury claim underreporting, general contractor role, demographic variables (e.g. job tenure)
- FTEs are imputed from employer payroll, using average wage
- Limited to the ICI construction sector

# Strengths

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- Large sample size
- Lists of union contractors available for all ICI sub-sectors, with union-sourced lists for the largest
- High rate of matching
- Statistical control for several variables, including company size, complexity, CU type, geographical location
- Main finding robust to sensitivity tests
- Little prior research on the union effect in construction

# Conclusions

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- Unionization is associated with lower workers' compensation lost-time injury claim incidence in ICI construction in Ontario
- We have a high degree of confidence in this association
- Variation in the association by company size and by industrial sub-sector
- This association is not found in companies with fewer than five employees
- Unionization is *not* associated no-lost-time claim incidence

# Acknowledgements

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- Ben Amick, Sheilah Hogg-Johnson (former IWH) – methodological groundwork
- Peter Smith, IWH -- custom tabulations of Statistics Canada Labour Force Survey
- Kathy Padkapayeva, IWH – research and admin support
- Katherine Jacobs, OCS, Research Director – study concept; facilitated access to lists of unionized contractors
- Unions & employer associations – lists of unionized contractors
- Province of Ontario – provides core funding to IWH

# Thank you

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Final report available at:

<https://www.iwh.on.ca/scientific-reports/updating-study-on-union-effect-on-safety-in-ici-construction-sector>

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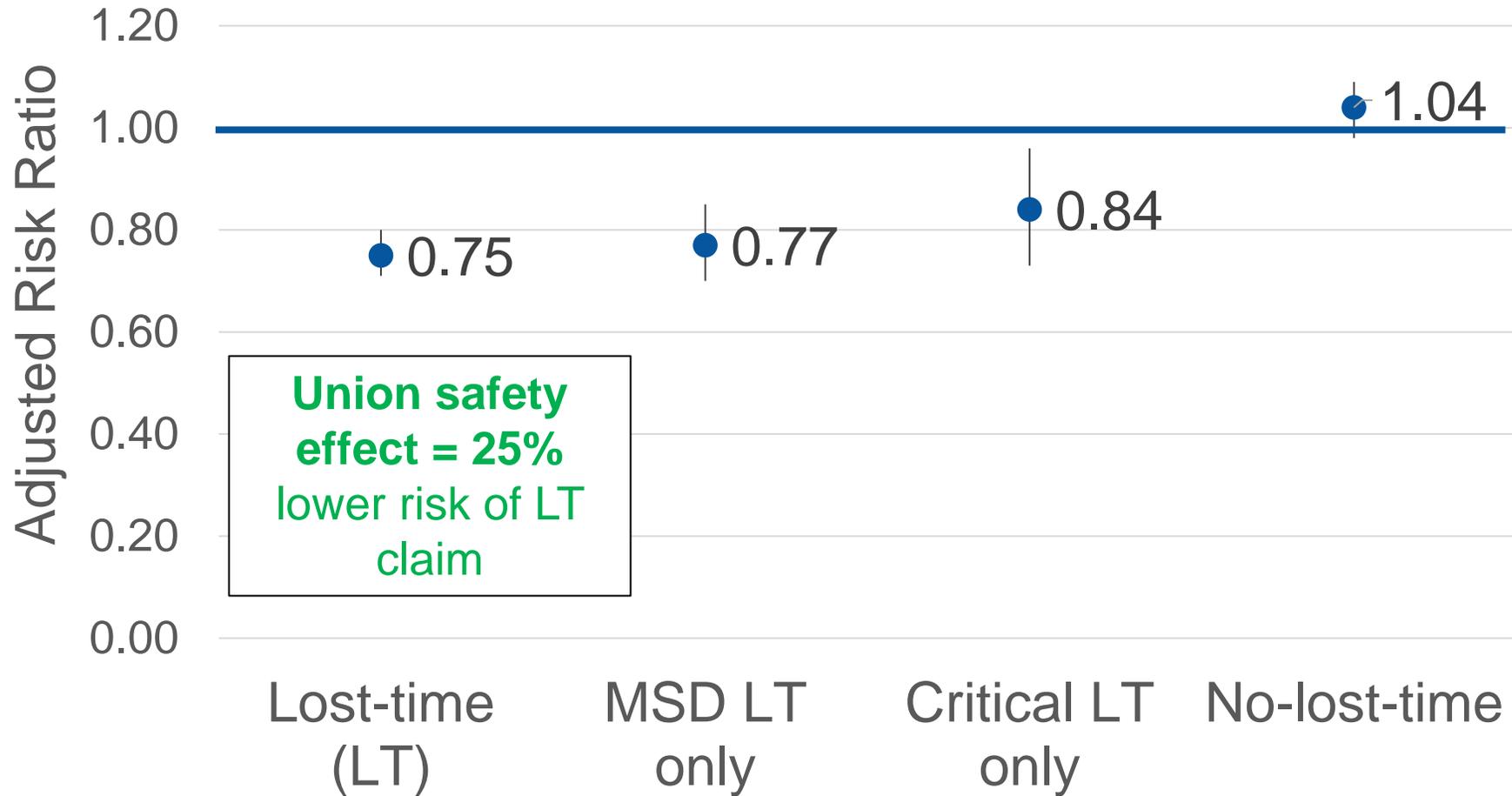
# Injury claim risk for unionized relative to non-unionized

**Risk ratio:**

Unionized risk

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Non-unionized risk



Unionized higher risk



Unionized lower risk

# Numbers of company-CUs, companies, FTEs and claims

	Unionized		Non-unionized	
	Number	%	Number	%
Company-CUs	5,267	8.7	55,158	91.3
Companies	4,713	8.0	54,124	92.0
Annual full-time equivalent employees (FTEs), cumulative, 2012-2018	772,797	44.6	958,186	55.4
Lost-time allowed (LTA) claims	5,873	31.0	13,089	69.0
Musculoskeletal LTA claims	1,923	33.3	3,853	66.7
Critical (severe) LTA claims	547	34.3	1,047	65.7
No-lost-time allowed (NLTA) claims	34,904	51.7	32,589	48.3

# Union versus non-union: average company-CU lost-time injury claim incidence

