

Are plumbing apprentice graduates safer than their non-apprentice peers?

Workers' compensation claims among journey level plumbers by apprenticeship participation

Sara Wuellner, Epidemiologist

Washington State Dept. of Labor & Industries

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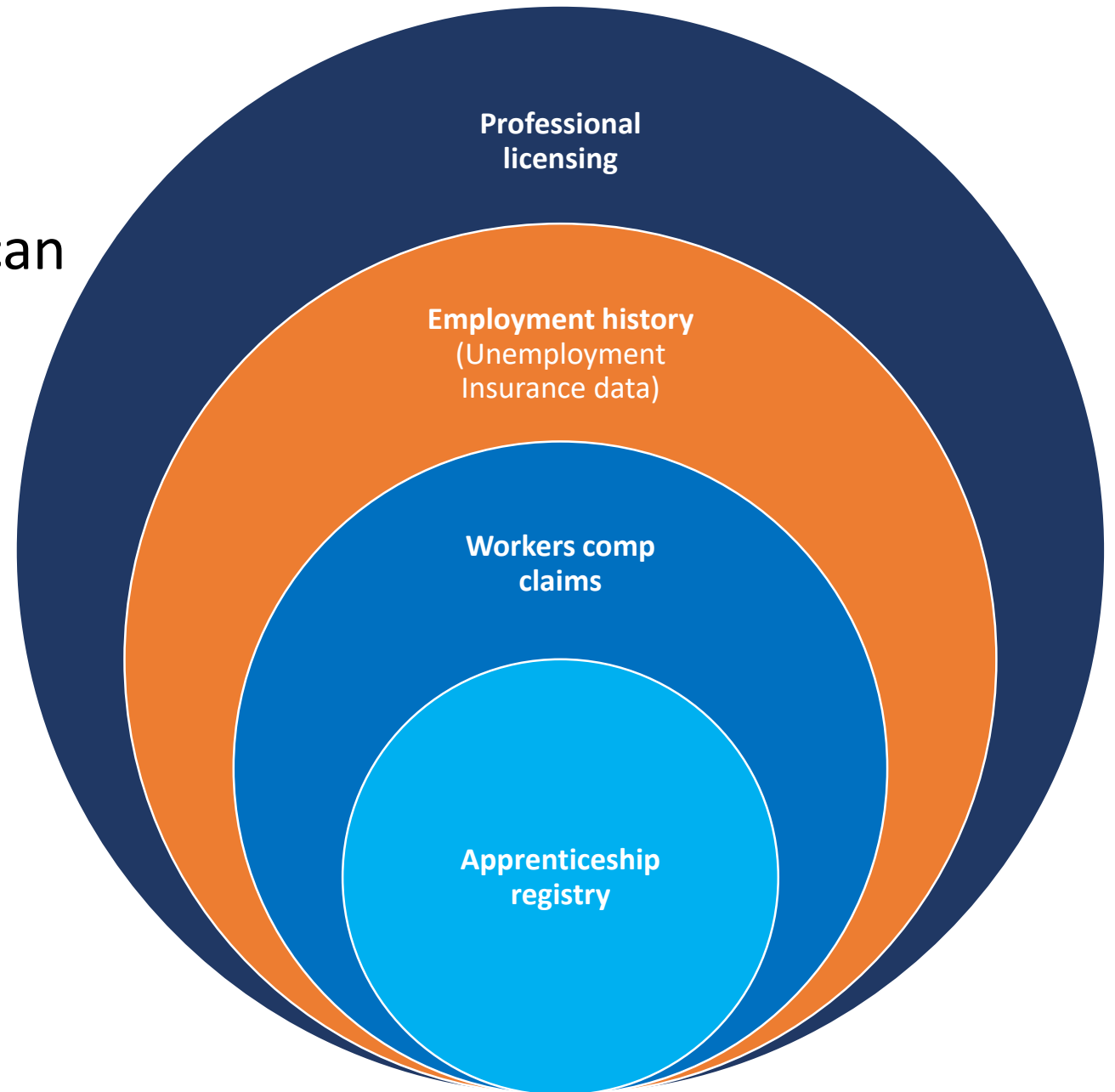
Fewer work injuries among apprentice grads?

- Plausible
 - Workplace safety – component of all apprentice training
- Unproven
 - Difficult to assess – disparate data sources



Why Washington?

Linking data by worker SSN, we can estimate **injury rates** of apprentice grads **vs.** non-grads during post-apprenticeship **professional career**



Why Journey Level Plumbers?



- JLP licensed with state
- Plumbing apprentice program popular
 - But not *too* popular
 - Sufficient size of “intervention”, “control” groups
- Good starting point
 - Straightforward licensing data

Training requirements

- Journey Level Plumber (JLP)
 - 8,000 hours as trainee under JLP
 - 8 hours continuing education, annually
 - Passing grade on state exam
- Plumbing Apprenticeship
 - Hours of training for specific work processes
 - Ratio of apprentices to journey-level employees
 - Hours of related/supplemental instruction (RSI)
 - Content of safety training not specified
 - “Safety instruction is included in every quarter's curriculum of this craft”



Study Groups

2000-2018 JLP license data

Apprentice Grads

- Completed plumbing apprenticeship within 4 qtrs of JLP license

n=768 (23%)

Never Apprentice

- JLP with no record of apprenticeship participation

n=2202 (66%)

Some Apprentice

- Enrolled but did not complete (48%)
- Completed >4 qtrs of JLP license (34%)
- Completed other (non-plumbing) apprenticeship (18%)

n=357 (11%)

How do these groups differ?

Statistical models control/adjust for differences – isolate effect of apprenticeship from other risk factors

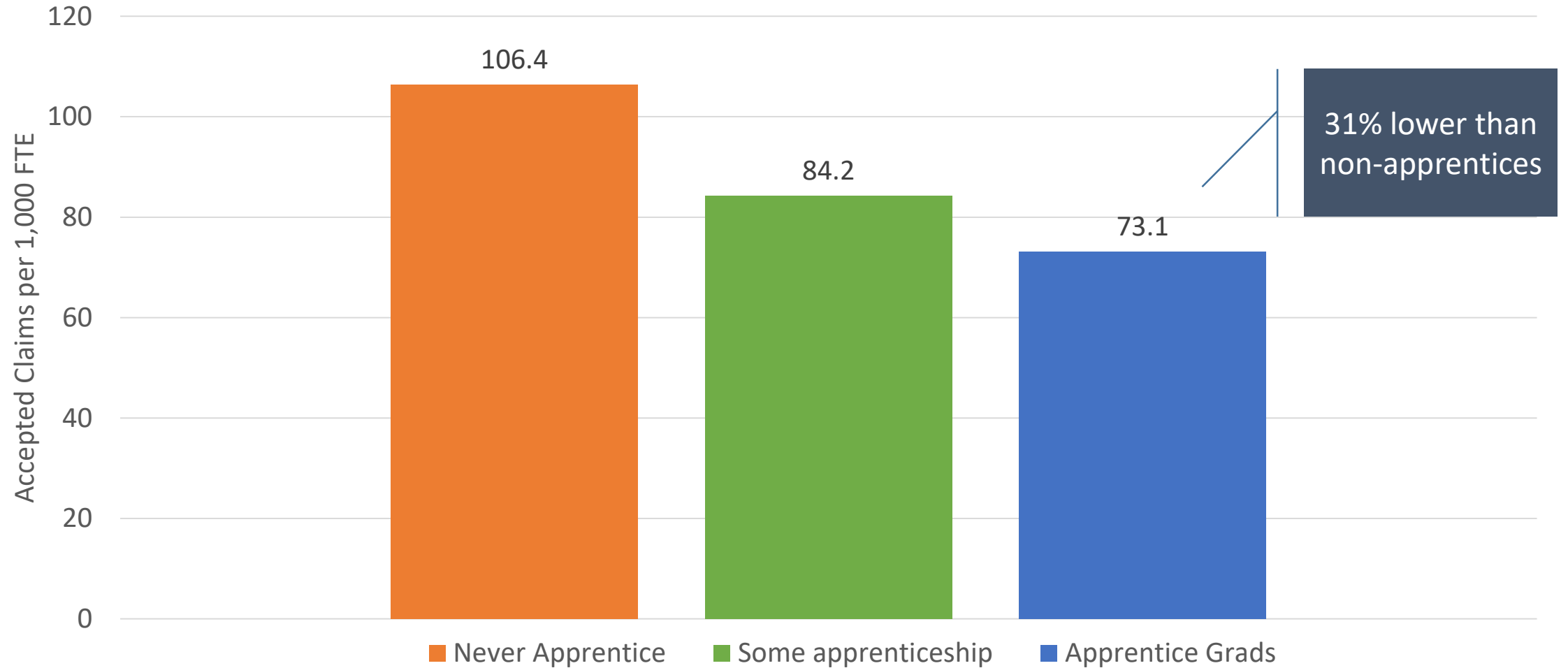
Apprentice Grads

- Younger at JLP certification (32 yrs)
- Recent JLP license
- Work more hours
- Larger employer
- More employers (3)
- Lower claim rate prior to JLP

Never Apprentice

- Older at JLP certification (38 yrs)
- Earlier JLP license
- Work (slightly) fewer hours
- Smaller employer
- Fewer employers (2)
- Higher claim rate prior to JLP

Workers' compensation claim rates among JLP by apprenticeship participation



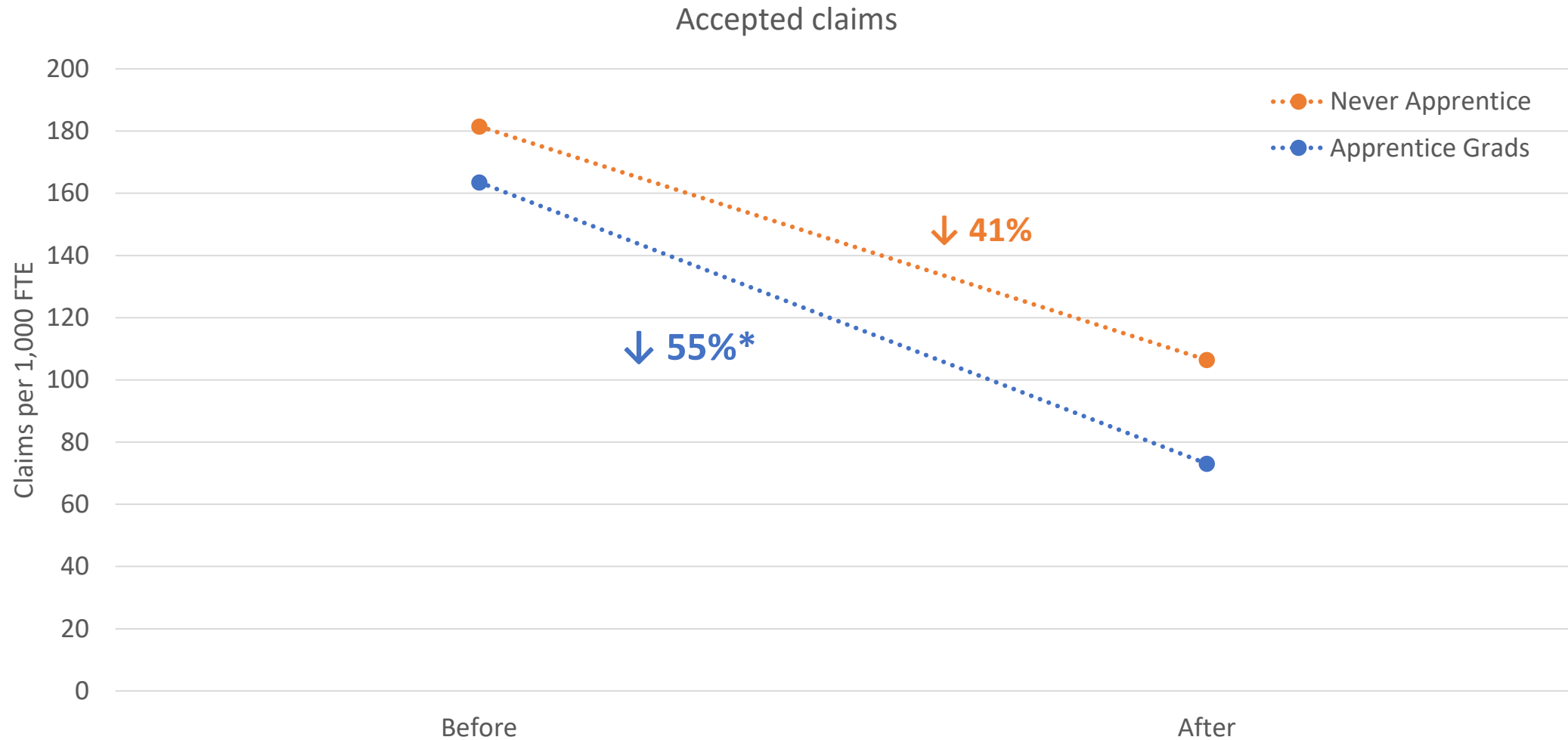
Apprentice graduates have fewer injuries

But...

Did the apprenticeship impact safety?

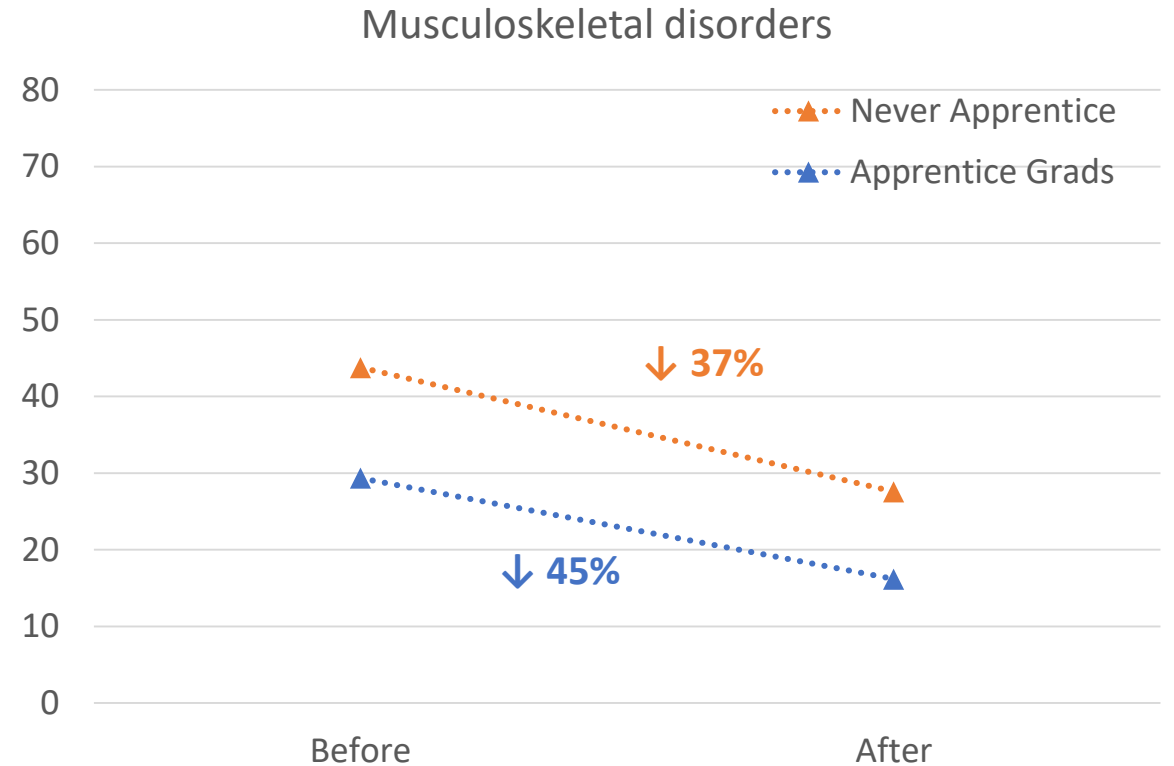
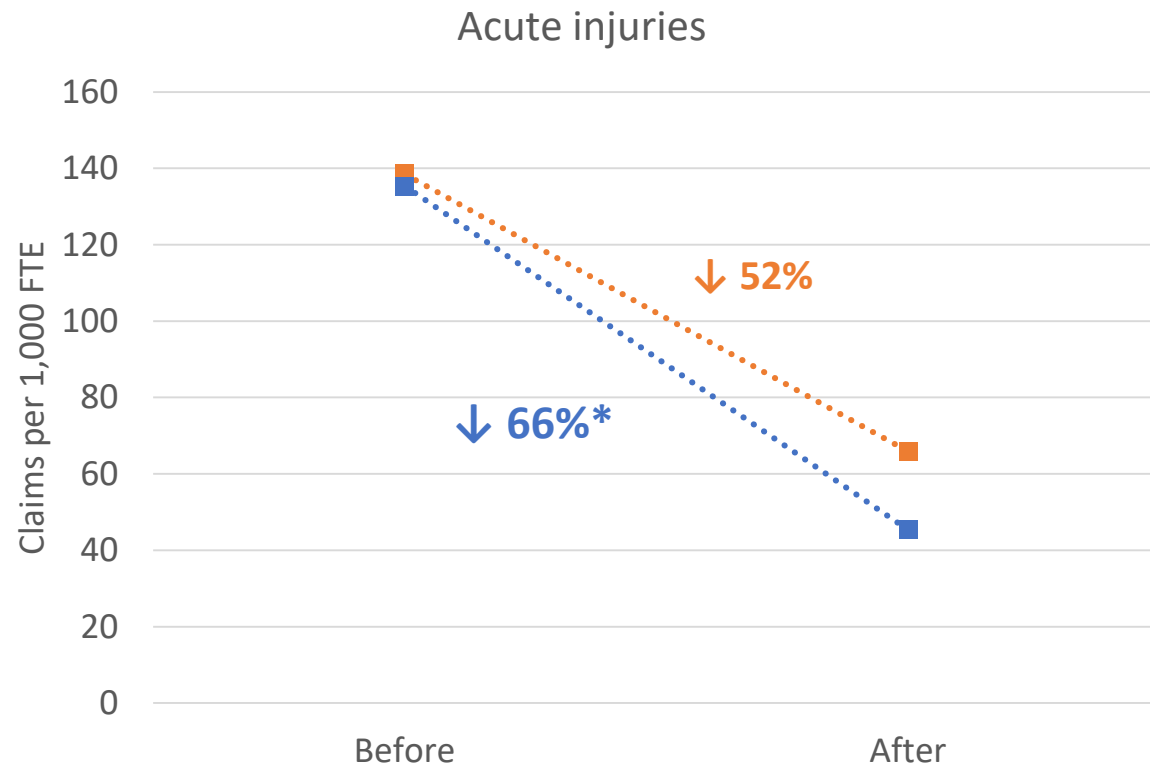
Workers' compensation claim rates:

5 years before JLP certification (during apprenticeship) vs. after

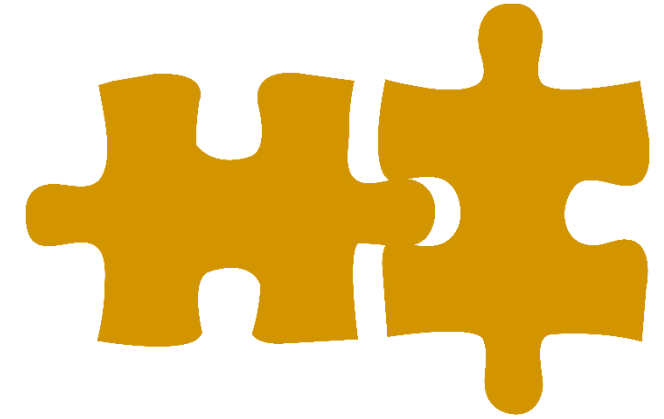


Workers' compensation claim rates: 5 years before JLP certification vs. after

By Injury Type



Limitations



This study did not:

- Control for all underlying differences across worker groups
 - Self-selecting (non-randomized) groups
 - Education
 - Unionization
- Account for all differences in employer characteristics
 - Safety program, safety climate
- Evaluate effectiveness of specific apprenticeship programs

Reliance on workers' comp data:

- Incomplete work-injury data
- Assume equally incomplete for apprentices, non-apprentices

In Summary...

- Apprenticeship graduates experience fewer work-related injuries
- Apprenticeship plays a role in preventing injuries
 - Acute injuries > musculoskeletal disorders
- Possible explanations?
 - Apprentice programs impart workplace safety competencies
 - Workers with propensity for safety join apprenticeships
 - Apprentice grads hired by safer employers

Next Steps

1. Similar findings for other occupations?

- Assuming same hypothesized mechanisms result in lower injury rates
- Magnitude of effect may differ

2. Identify mechanisms for injury reduction

- Mentorship
- Related/supplemental instruction
- Relationship with employers/unions

3. Reduce injuries among *apprentices*



Questions?

Contact:

Sara Wuellner

Safety & Health Assessment and Research for Prevention (SHARP) Program

Washington State Dept. Labor & Industries

sara.wuellner@lni.wa.gov