



A framework and measure to better assess and understand occupational health and safety vulnerability

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Research Team

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Overview

1. Background: Why are we interested in this area
2. Results from our current studies
3. How our measure might be used



Who do you think of, when you think of vulnerable workers?

Immigrants

Workers in small
business

New workers

Older workers

Young workers

Construction workers

Visible minorities

Temporary workers

Female workers



If this is how we define vulnerability

What do we think it is about these groups that make them vulnerable?

How do we know if vulnerability is increasing, decreasing or staying the same?

How do we know if primary prevention activities are working?



Developing a concept of OH&S vulnerability

Dimensions that lead to increased risk of injury at work

1. Level of hazards faced by the worker
2. Workplace/organisation-level protections and policies
3. Worker awareness of occupational hazards and rights and responsibilities
4. Worker empowerment to participate in injury prevention



Our definition of OH&S vulnerability

Where workers are exposed to hazards in combination with inadequate workplace policies and procedures and/or low OH&S awareness and/or a workplace culture that discourages workers participation in injury prevention



Developing a measure of OH&S vulnerability

Developing a pool of potential items

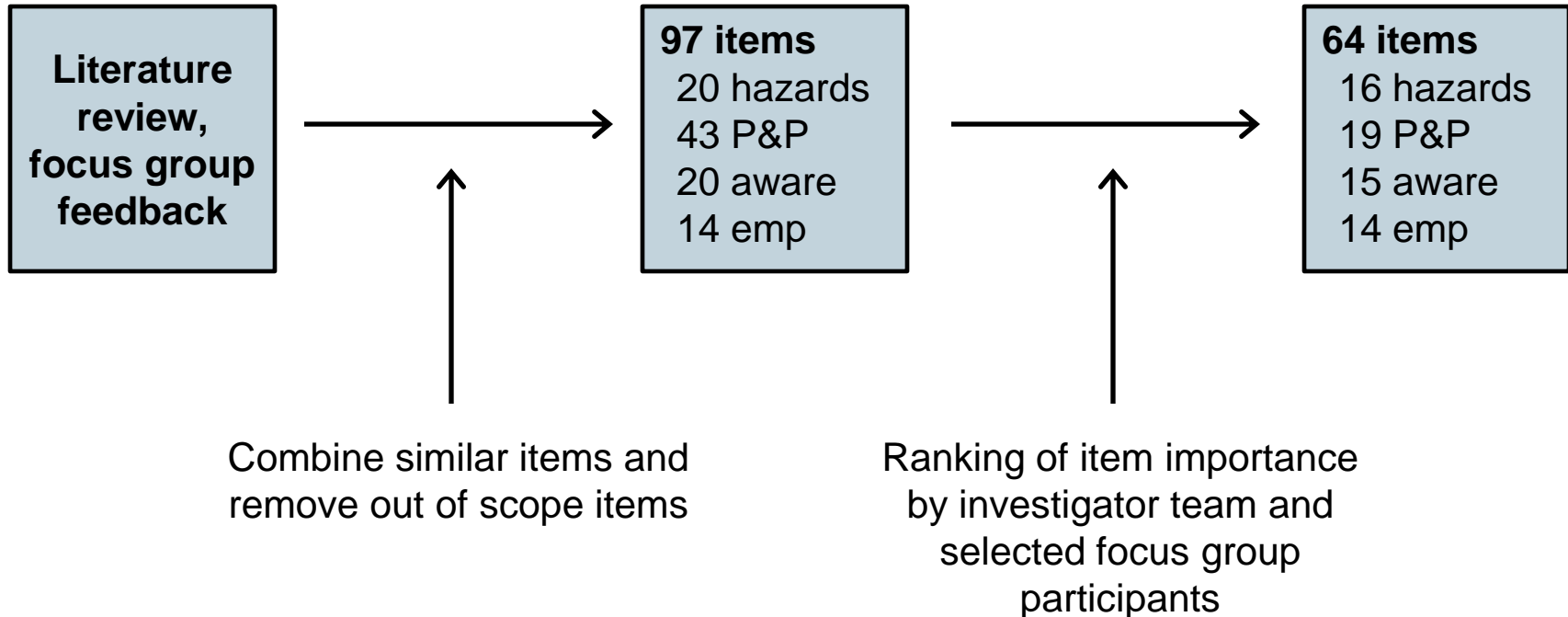
- Literature search
- Focus groups with relevant OH&S stakeholder groups

Reducing the list of items to a feasible survey instrument

- Item review
- Stakeholder and investigator input
- Data analysis (pilot survey and test-retest analysis)



Reducing the pool of potential items: step one





Developing a measure of OH&S vulnerability

Final result: A 27-item measure that captures information on:
Hazards (9 questions); Policy and Procedures (7 questions)
Awareness (6 questions); Empowerment (5 questions)

Using these questions we can classify workers into four groups:

		Protections	
		Adequate	Inadequate
Hazards	No	Least Vulnerable	Somewhat Vulnerable
	Yes	Somewhat Vulnerable	Most Vulnerable



Data sources

Samples of employed labour force participants in BC and Ontario have been recruited through EKOS Research Associate's Probit survey panel (90%) and through RDD (10%)

- Panel of approximately 90,000 households who agree to participate in surveys from “time-to-time”.
- Covers both landline and cellular telephones
- Substantially cheaper than an RDD approach.
- Substantially easier than recruiting through workplaces

A sample of 195 recent immigrants were also recruited through four settlement agencies in Ontario



How representative is the EKOS panel?

Compared to Labour Force Survey, the Probit/RDD sample was

- Older;
- More likely to work in health, education, social or community services occupations;
- Less likely to be in sales and services occupations; and
- Less likely to be employed by a small business

Compared to a RDD sample, the Probit-based sample was

- Older;
- Less likely to have English as first language

Are dimensions of vulnerability distinct? Exploratory Factor Analysis (N = 1,492)

	P & P	Aware	Emp
Receives training	0.76	0.09	-0.03
Regular communication	0.84	-0.02	0.01
Prevention systems	0.79	0.07	0.02
Importance of OH&S	0.75	-0.04	0.14
OH&S committee	0.73	-0.003	0.03
Incidents investigated	0.76	-0.07	0.12
Communication	0.76	0.11	0.02
Personal R&R	0.08	0.87	-0.04
Employer R&R	0.09	0.82	0.002
Job Knowledge	-0.07	0.66	0.22
Reporting hazards	0.13	0.54	0.23
Responding to OH&S	0.14	0.67	-0.004
Know precautions	-0.003	0.72	0.11

Are dimensions of vulnerability distinct? Exploratory Factor Analysis (N = 1,492)

	P & P	Aware	Emp
Voice concerns	0.15	0.008	0.74
Point out hazards	-0.06	0.17	0.67
Can stop work	0.17	0.04	0.64
Would not speak out	-0.006	0.05	0.32
Have enough time	0.08	0.08	0.54

Factor correlations

P&P and awareness: $r = 0.61$

P&P and empowerment: $r = 0.62$

Awareness and empowerment: $r = 0.63$



Operationalising OH&S vulnerability

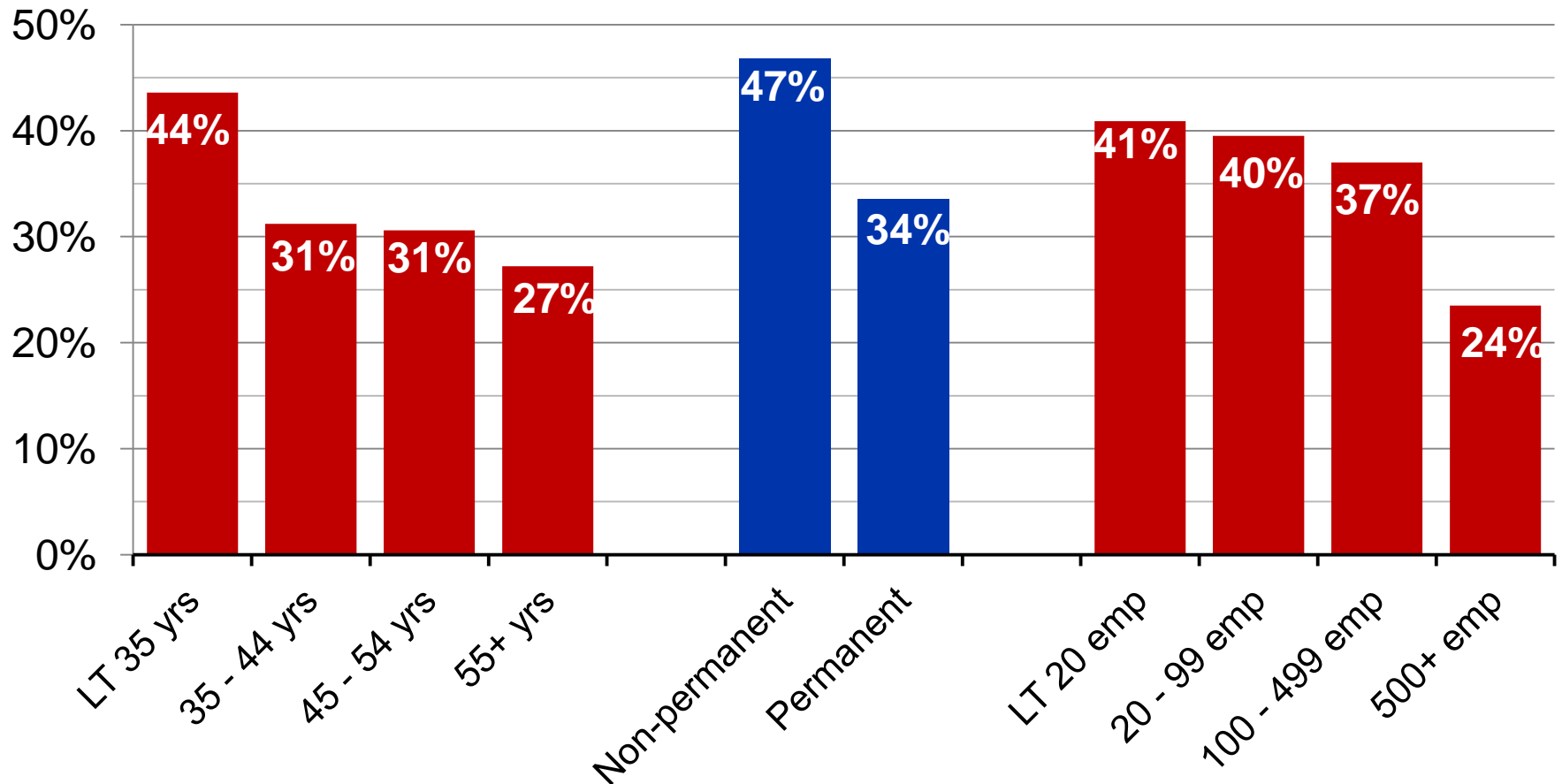
N = 1,492	Inadequate Policy and Proc		Inadequate Awareness		Inadequate Empowerment	
	No	Yes	No	Yes	No	Yes
Hazards						
No	28%	18%	35%	11%	34%	12%
Yes	26%	27%	40%	14%	32%	22%

Overall vulnerability = 35% of sample

Sample of 1,492 workers in Ontario and BC

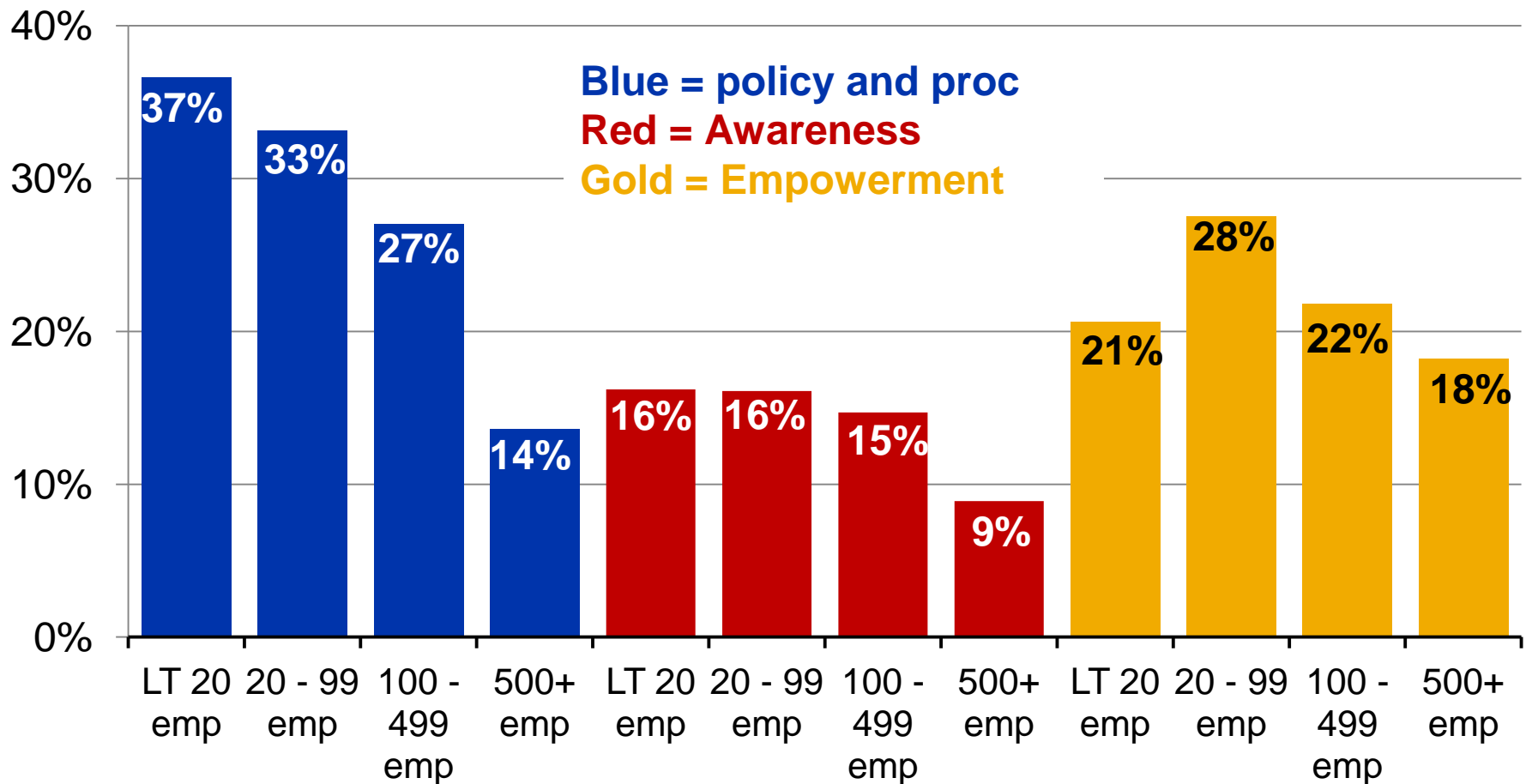


Demographic, occupation and workplace variables associated with increased risk of overall OH&S vulnerability (N = 1,492)



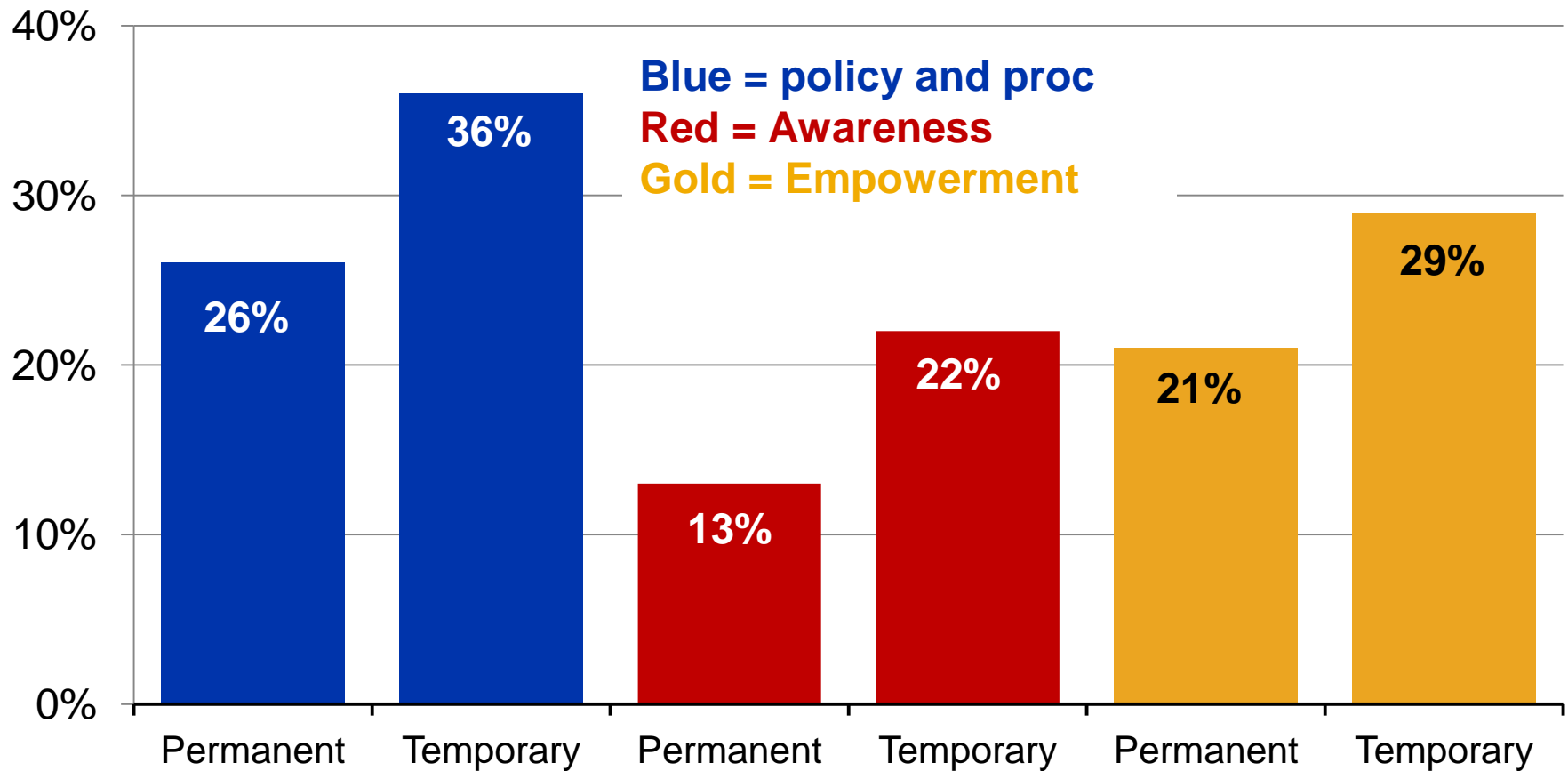


Different groups may experience OH&S vulnerability differently



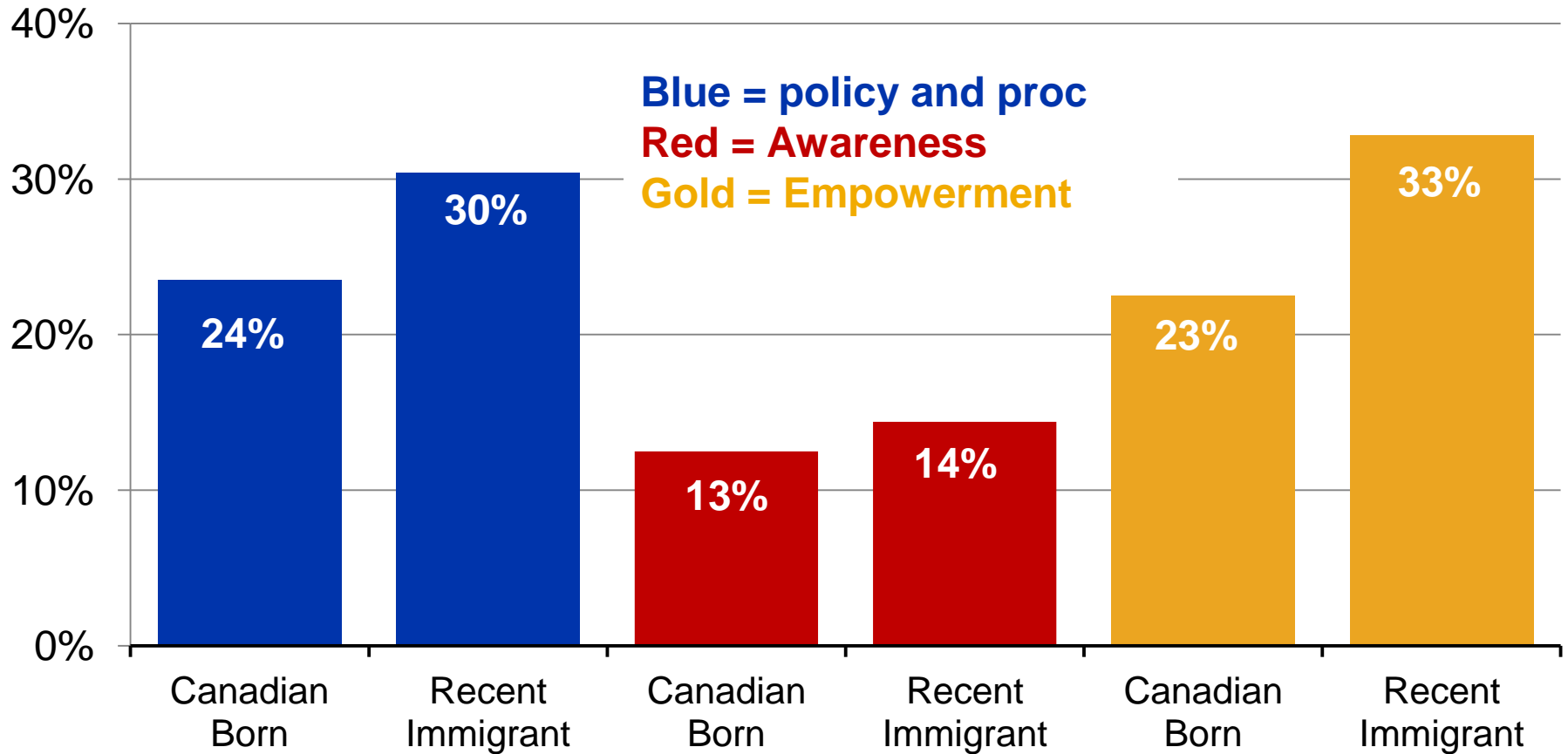


Different groups may experience OH&S vulnerability differently

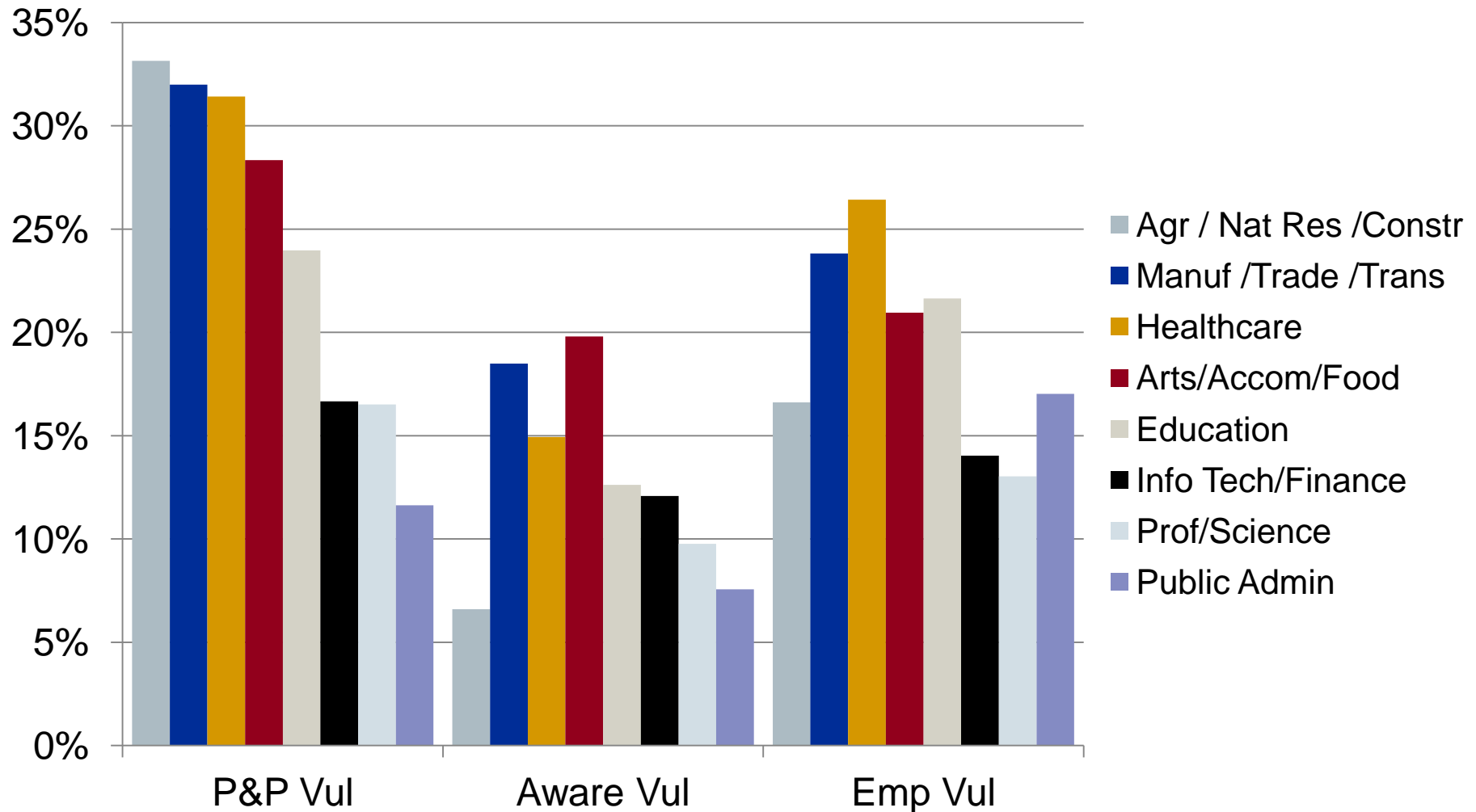




Different groups may experience OH&S vulnerability differently

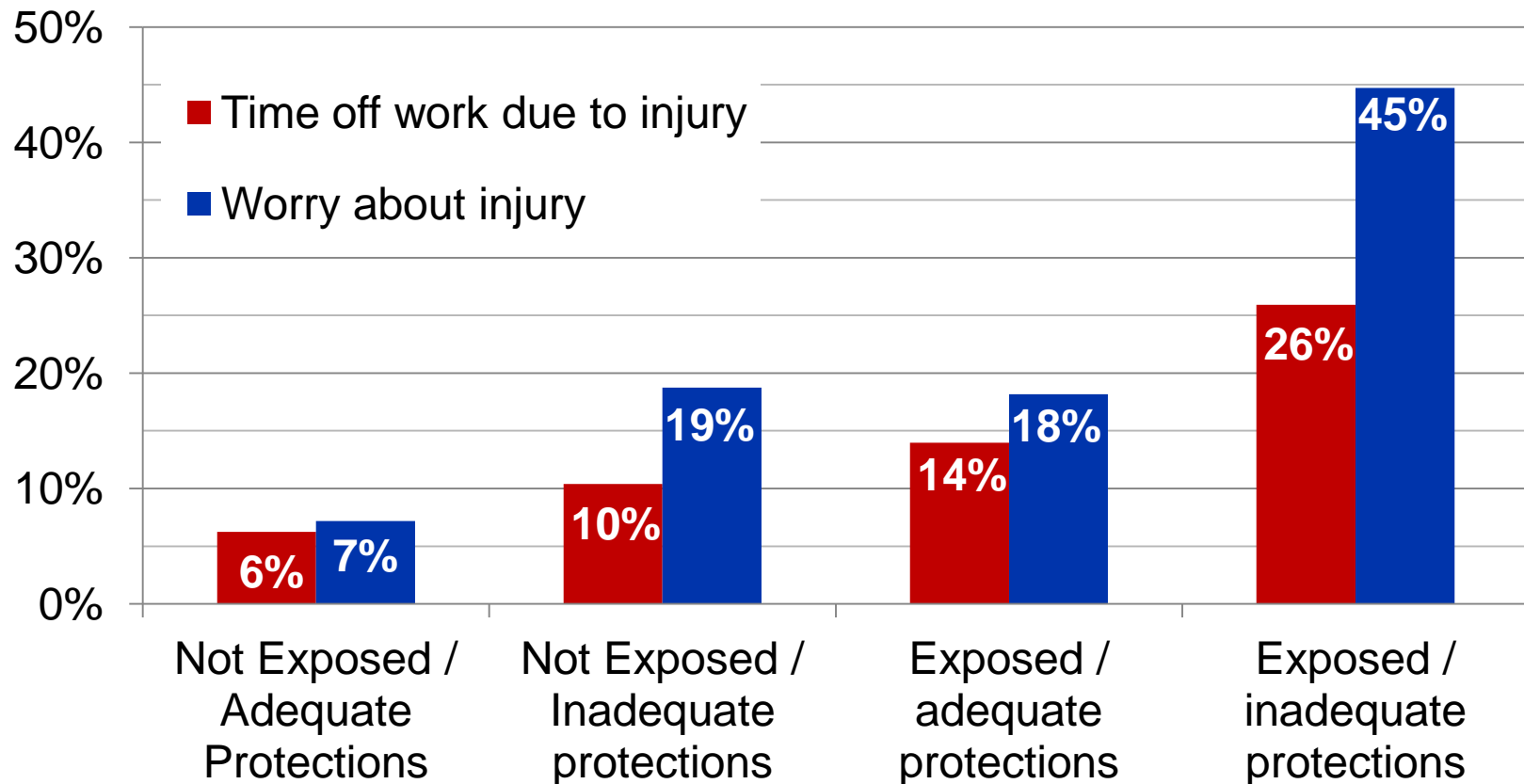


Prevalence of different types of OH&S vulnerability across Industry groups in Ontario (N = 1,954)





Relationship between our categorisation of OH&S vulnerability and work injury





Key messages

- Our 27-item measure can be used to assess different dimensions of OH&S vulnerability at the level of the worker
- Groups labelled as vulnerable experience vulnerability differently. More specific interventions may be required
- OH&S vulnerability as assessed by our measure is related to risk of injury and worrying about injury at work



How might this measure be used at a provincial level?

Conduct (regular) surveys of workers to examine different types of OH&S vulnerability (by sector, by geographical area etc.)

Survey results could be used to:

- inform the content and targets of primary prevention and enforcement activities
- evaluate impact of different interventions/activities that occur between surveys

We could focus on reducing OH&S vulnerability as the primary goal of prevention activities (rather than using claim rates)



Current Work

- Evaluating the impact of mandatory awareness training in the province of Ontario (repeated cross-sectional surveys in Ontario and BC)
- Evaluation of OH&S vulnerability among recent immigrants (in partnership with Ontario immigrant settlement agencies)
- Evaluation of literacy training program that integrates OH&S in British Columbia (in partnership with WorkSafe BC)
- Assessing OH&S vulnerability in Ontario workplaces (in partnership with Workplace Safety & Prevention Services)
- Measure recently included in National Workplace Health and Safety Survey in Australia



For more information

Smith et al (2015) The development of a conceptual model and self-reported measure of occupational health and safety vulnerability, *Accident Analysis and Prevention*, 82, 234 – 243

Lay et al (2016) Individual, Occupational, and Workplace Correlates of Occupational Health and Safety Vulnerability in a Sample of Canadian Workers. *American Journal of Industrial Medicine*, 59 (2), 119 -- 128.

<https://www.iwh.on.ca/ohs-vulnerability-measure>



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