



A systematic review of health and safety in small enterprises: Findings from quantitative and qualitative literature

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Acknowledgments: WSIB Prevention Reviews Initiative and Institute for Work & Health



IWH Systematic Review Program & Prevention Reviews

Reviews to date include:

- Effectiveness and implementation of health and safety in small enterprises: A systematic review of quantitative and qualitative literature
- Systematic review of the role of occupational health and safety interventions in the prevention of upper extremity musculoskeletal symptoms, signs, disorders, injuries, claims and lost time
- A systematic review of injury/illness prevention and loss control (IPC) programs
- Participatory ergonomic interventions: implementation and process
- Occupational health and safety interventions with economic evaluations
- Interventions in health-care settings to protect musculoskeletal health
- Factors associated with occupational disease among young people
- Risk factors for work injury among youth
- Workplace interventions to prevent musculoskeletal and visual symptoms and disorders among computer users
- The effectiveness of participatory ergonomic interventions
- The effectiveness of occupational health and safety management systems
- Occupational health and safety management audit instruments



Our 15-member multi-method, multi-disciplinary research team

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social work

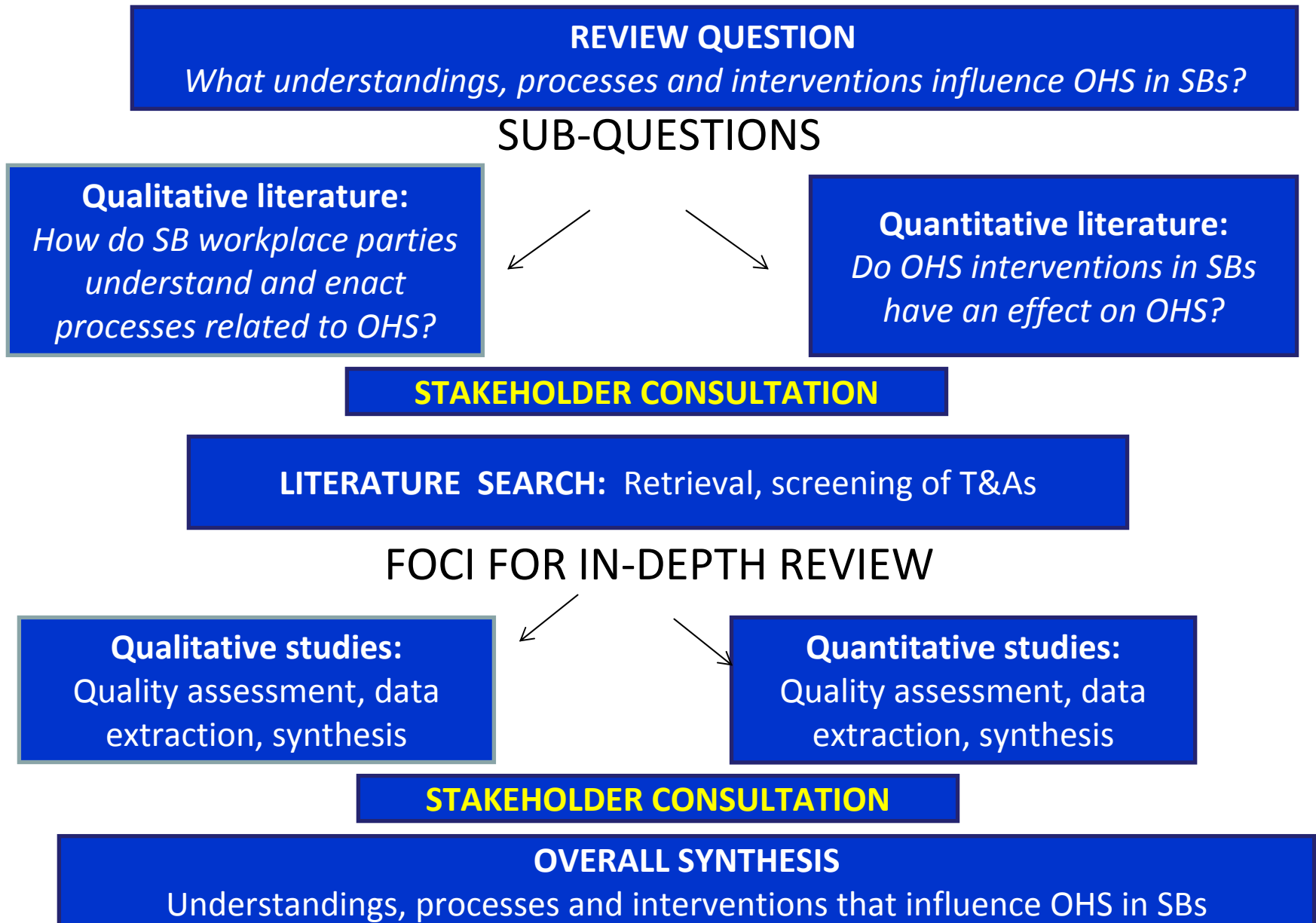
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Small Business Systematic Review Design



Small Business Systematic Review Design

REVIEW QUESTION

What understandings, processes and interventions influence OHS in SBs?

SUB-QUESTIONS

Qualitative literature:

How do SB workplace parties understand and enact processes related to OHS?

Quantitative literature:

Do OHS interventions in SBs have an effect on OHS?

STAKEHOLDER CONSULTATION

Industrial Accident Prevention Association
Ontario Safety Service Alliance
Construction Safety Association of Ontario
Canadian Auto Workers
Ministry of Labour
Workplace Safety and Insurance

T&As

ve studies:

ssment, data
synthesis

STAKEHOLDER CONSULTATION

OVERALL SYNTHESIS

Understandings, processes and interventions that influence OHS in SBs

Small Business Systematic Review Design

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LITERATURE SEARCH: Retrieval, screening of T&As

FOCI FOR IN-DEPTH REVIEW

Qualitative studies:

Quality assessment, data extraction, synthesis

Quantitative studies:

Quality assessment, data extraction, synthesis

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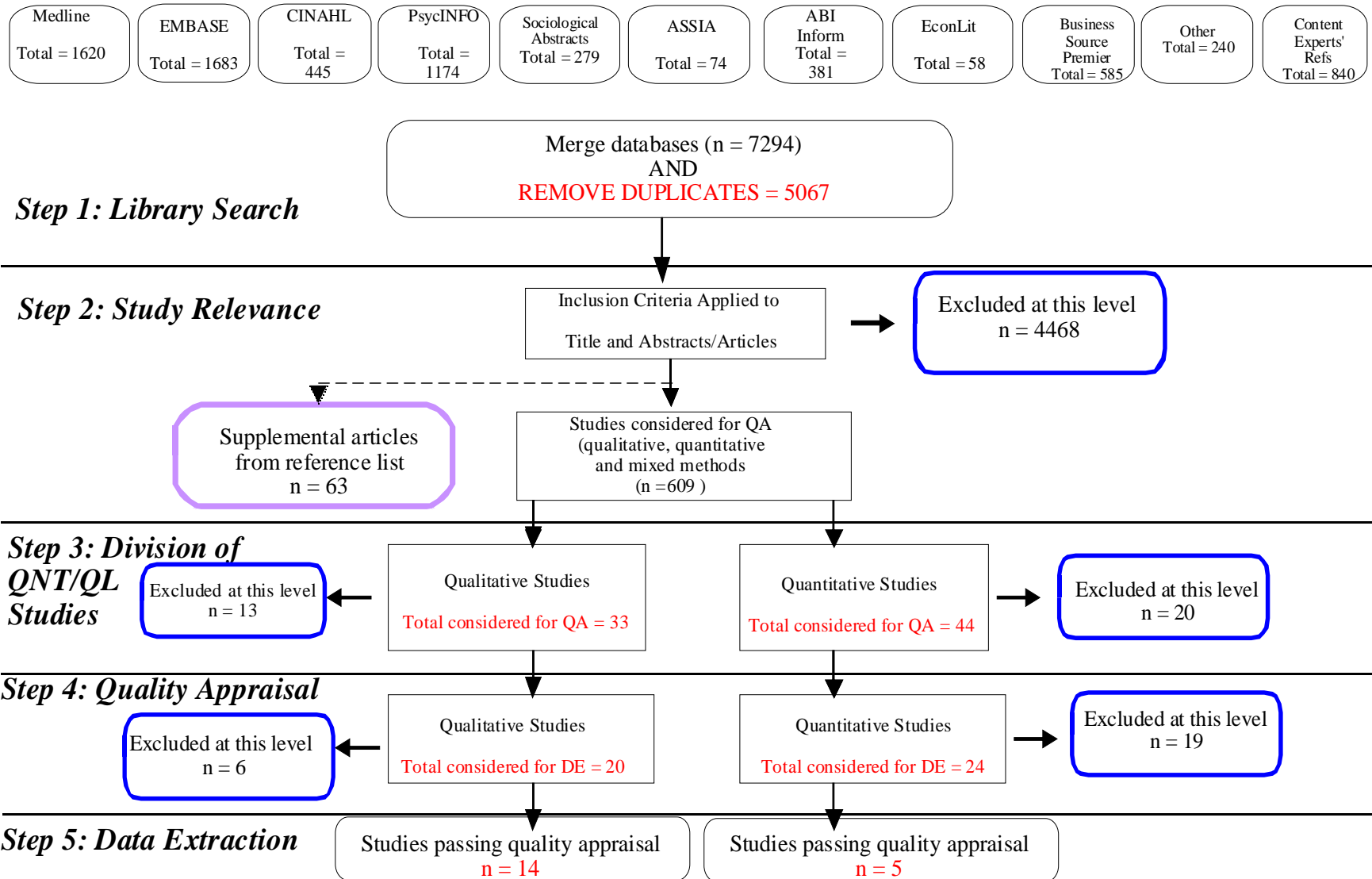
OVERALL SYNTHESIS

Understandings, processes and interventions that influence OHS in SBs

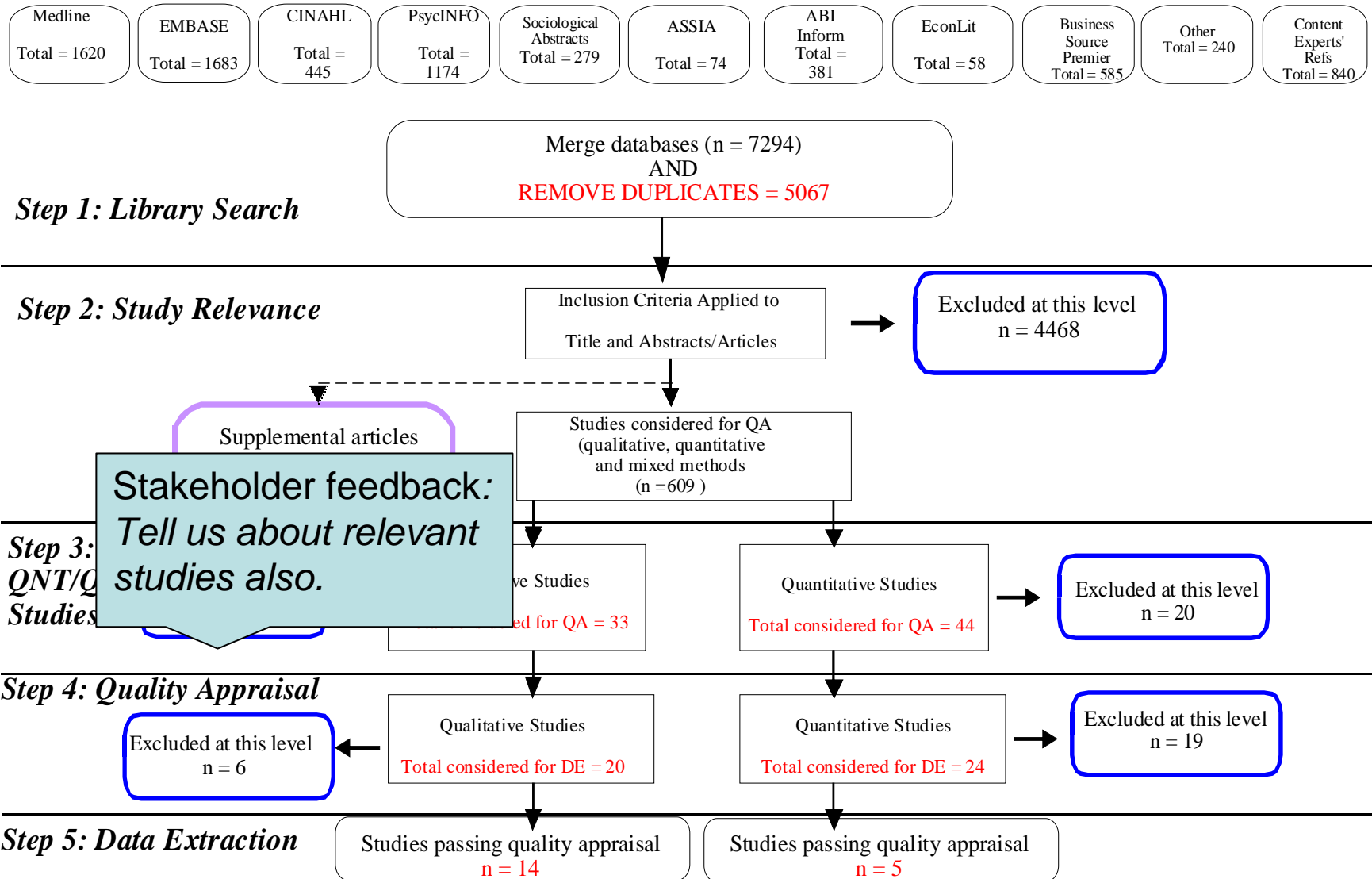
Inclusion Criteria

Small business & workplace health studies	Business size & health are considered in study design, e.g. sampling, analytic focus
Business is small	100 or less, and more than 1
Publication Types	Peer reviewed
Dates	Not restricted, search concluded February 2008
Languages	<ul style="list-style-type: none">- English, French, German, Polish, Spanish, Portuguese, and Japanese- Articles from other languages will be documented
Study Design	<ul style="list-style-type: none">- Quantitative intervention studies- Qualitative studies
Measurements (Quantitative)	<ul style="list-style-type: none">- Individual occupational health data is collected- Outcome is behaviour, work-related injury, symptoms, or disorder

FLOWCHART OF SB SYSTEMATIC REVIEW PROCESS



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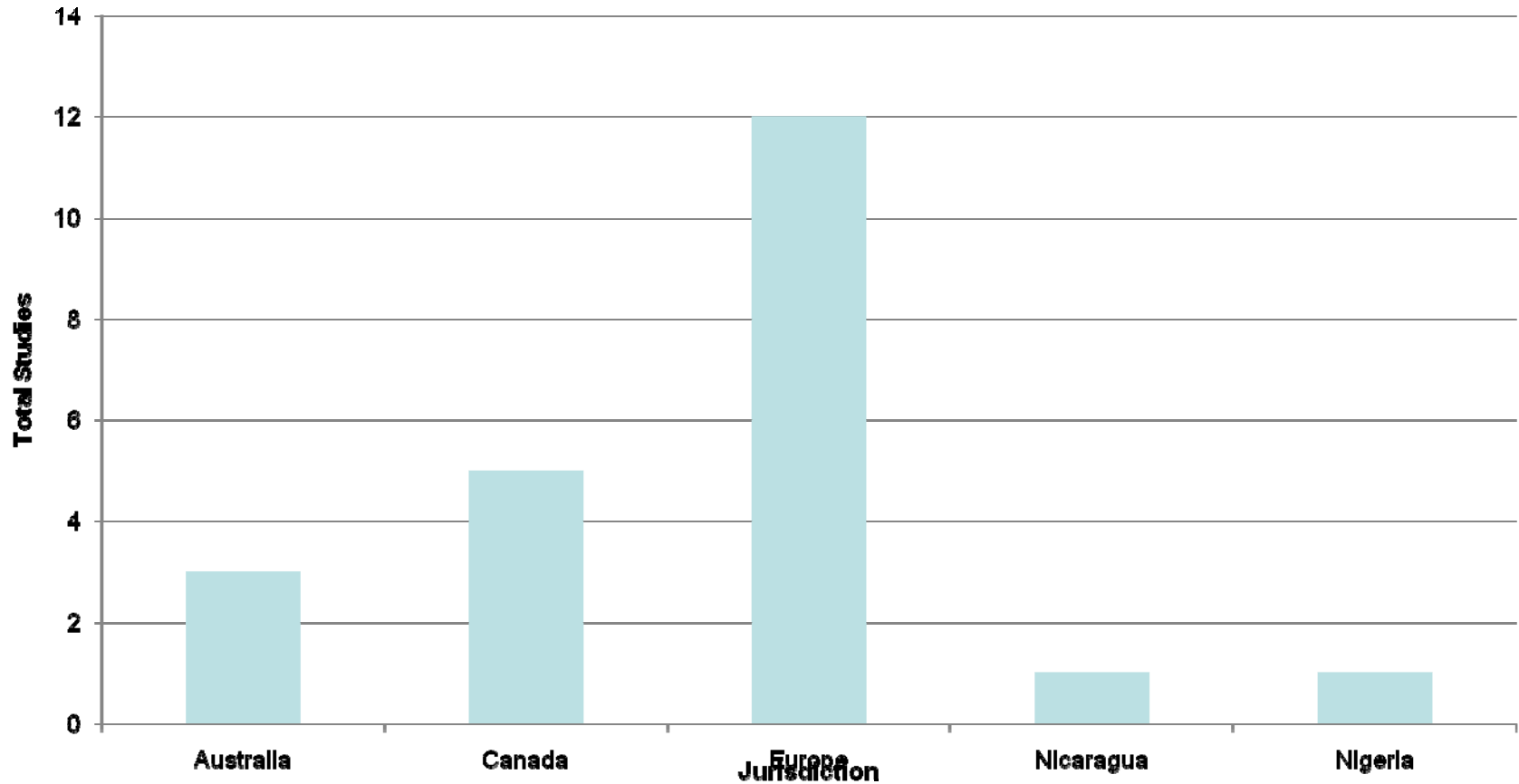
Qualitative understanding & process studies

How do SB workplace parties understand and enact processes related to OHS?



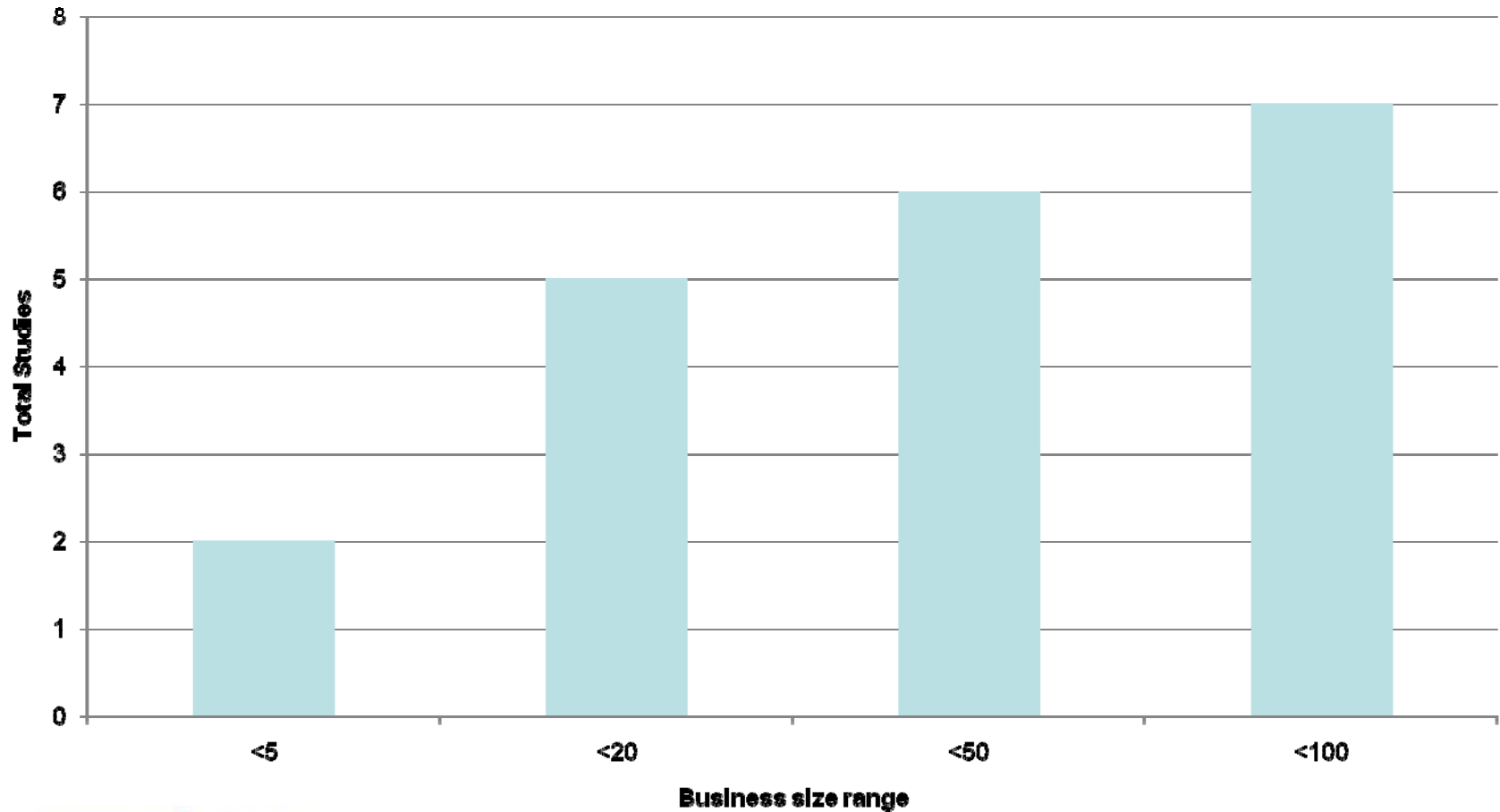


20 Relevant studies- Qualitative Jurisdiction



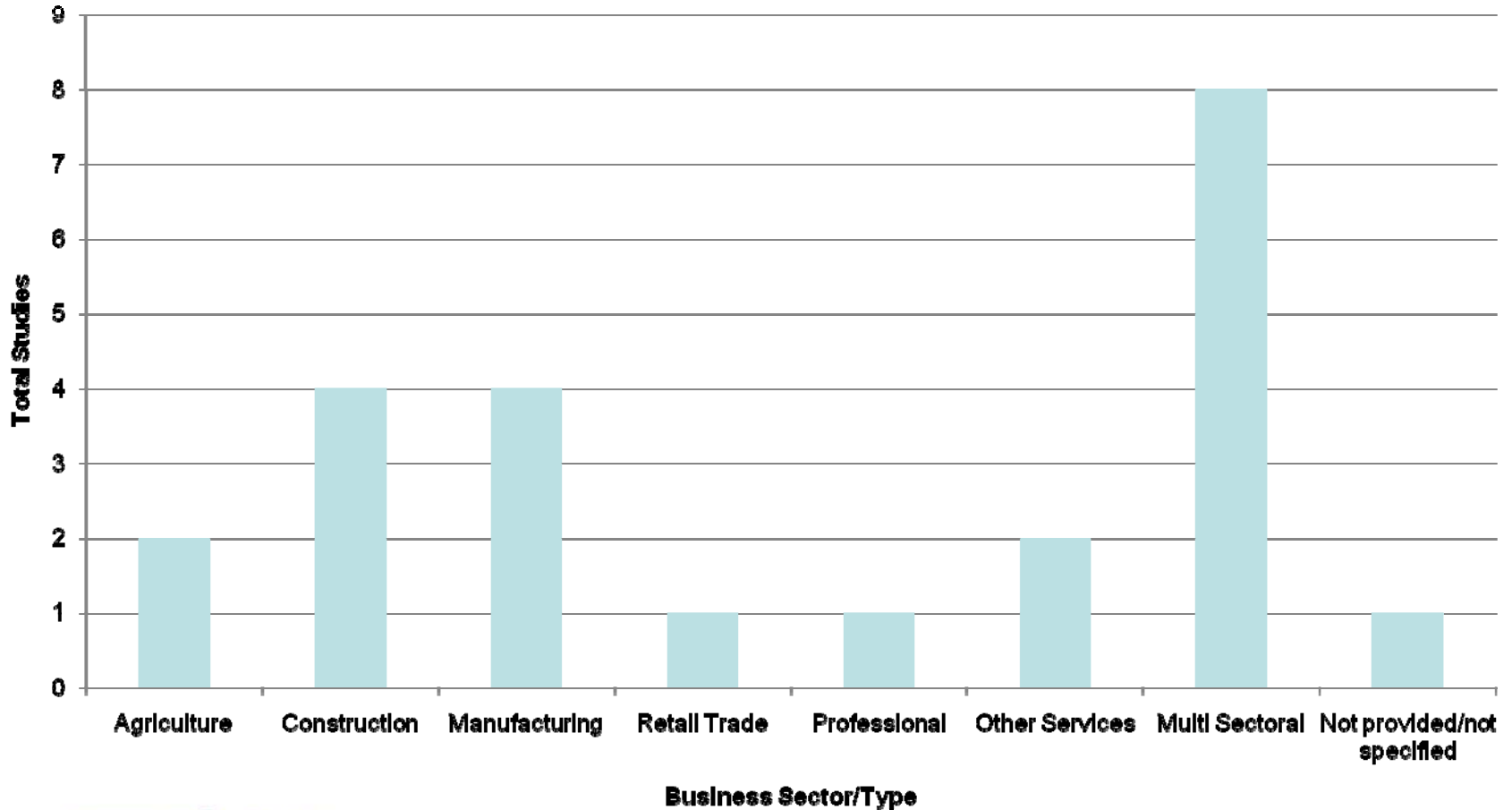


20 Relevant studies- Qualitative Size range





20 Relevant studies – Qualitative Business Sector/Type





Quality Assessment-Qualitative

17 criteria evaluated issues such as:

- Sampling
- Data collection processes
- Nuance & context
- Depth & complexity
- Links between data, interpretation & conclusions
- Credibility

These criteria contributed to a score of 'low' (flawed, inconsistent), 'medium' (descriptive) or 'high' (findings situated in rich context, explanatory).

High quality: 4 studies

Medium quality: 10 studies

Low quality: 6 studies

14 Included QL Studies	Jurisdiction	Business Size	Industries of Sample	Quality
Andersen et al. (2007)	Denmark	<19	Construction, Manufacturing (Metal)	M
Aragon et al. (2001)	Nicaragua	<5	Agriculture	M
Corneliusson (2005)	Scotland & Norway	5-30	Professional/ Scientific/ Technical Services; (Biotechnology)	H
Eakin (1992)	Canada	<40	Multiple industries	H
Eakin & MacEachen (1998)	Canada	<50	Multiple industries	H
Eakin et al. (2001)	Canada	<100	Multiple industries	M
Eakin et al. (2003)	Canada	<100	Multiple industries	H
Holmes et al. (1999)	Australia	<10	Construction	M
Mayhew & Quinlan (1997)	Australia	<5	Construction	M
Niewohner et al. (2004)	United Kingdom	<25	Sales & Services (dry cleaning); Manufacturing (electrical)	M
Shain et al. (1998)	Canada	< 50	Multiple industries	M
Walters (1987)	United Kingdom	<60	Printing industry	M
Walters (1998)	United Kingdom	<20	Agriculture	M
Wulfhorst et al. (1996)	Germany	<20	Other services (hair salon)	M



Qualitative Findings - 8 Themes

What is a SR theme?

Qualitative studies focus on issues of: how and under what circumstances?

There is a focus on process (how & why) rather than outcomes (statistical effectiveness).

Concepts in studies led to *themes* across studies.

A theme was comprised of concepts from at least *three* studies.

CUT OUT: QL THEMES

Ander- sen et al. 2007 (<20)	Aragon et al. 2001 (<5)	Corneliu- ssen 2005 (<50)	Eakin 1992 (<50)	Eakin & Mac- Eachen 1998 (<50)	Eakin et al. 2001 (<50)	Eakin et al. 2003 (<100)	Holmes et al. 1999 (<20)	Mayhew & Quinlan 1997 (<50)	Niew- ohner et al. 2004 (<20)	Shain et al. 1998 (<50)	Walters 1987 (<100)	Walters 1998 (<20)	Wulf- horst et al. 1996 (<100)
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Lack formal workplace systems & resources for OHS

Lack systems	X	X	X		X	X		X	X		X		
Too busy for OHS						X		X					
Contracts complicate OHS								X					
Owners don't feel responsible								X	X				
Responsibility is obscured						X		X	X		X		
Varied workplace perspectives on health responsibility					X								
Systems not always determinant of safe OHS			X										

Information, policies and legislation don't fit small businesses

OHS info not relevant or useful								X	X				
Regulations difficult to implement					X								
Policy out of step with small business contract realities								X					



How do small business workplace parties understand and enact processes related to OHS?

Qualitative Findings - 8 Themes

1. **SBs lack knowledge of OHS rules and approaches**

General lack of unionisation

Relative freedom from OHS regs, safety inspections

2. **SBs lack formal systems & resources for OHS**

SBs lack time, resources, structure for OHS systems

Construction sector & subcontracting—blurred roles

3. **Information, policies and legislation do not always fit SB reality**

Legislation can be out of step with SB reality e.g. subcontracting in construction

Policies may not fit working relationships, e.g. ERTW

Information sheets not tailored to SB needs



Qualitative Findings – 8 Themes

4. **SBs can downplay risks or not use OHS knowledge**

Owners & workers see risks as ‘par for the course’

Workers can resist OHS measures if it interferes with their work

Owner economic concerns

5. **SB OHS views shaped by social relations at work**

Minimised ‘we-they’ dichotomies

Injury attributions shaped by workers’ relationship with employer

6. **SB OHS risk as individually navigated**

Workers feel need to ‘take greater care’

Relations of autonomy & self-reliance



Qualitative Findings – 8 Themes

7. The social disruption of injury in SBs

Difficult to replace workers

Administrative headache

Injury can prompt re-evaluation of worker-employer relationship

8. SB strategies for managing health

SB entrepreneurialism--‘proxy’ safe behaviours & employer strategies



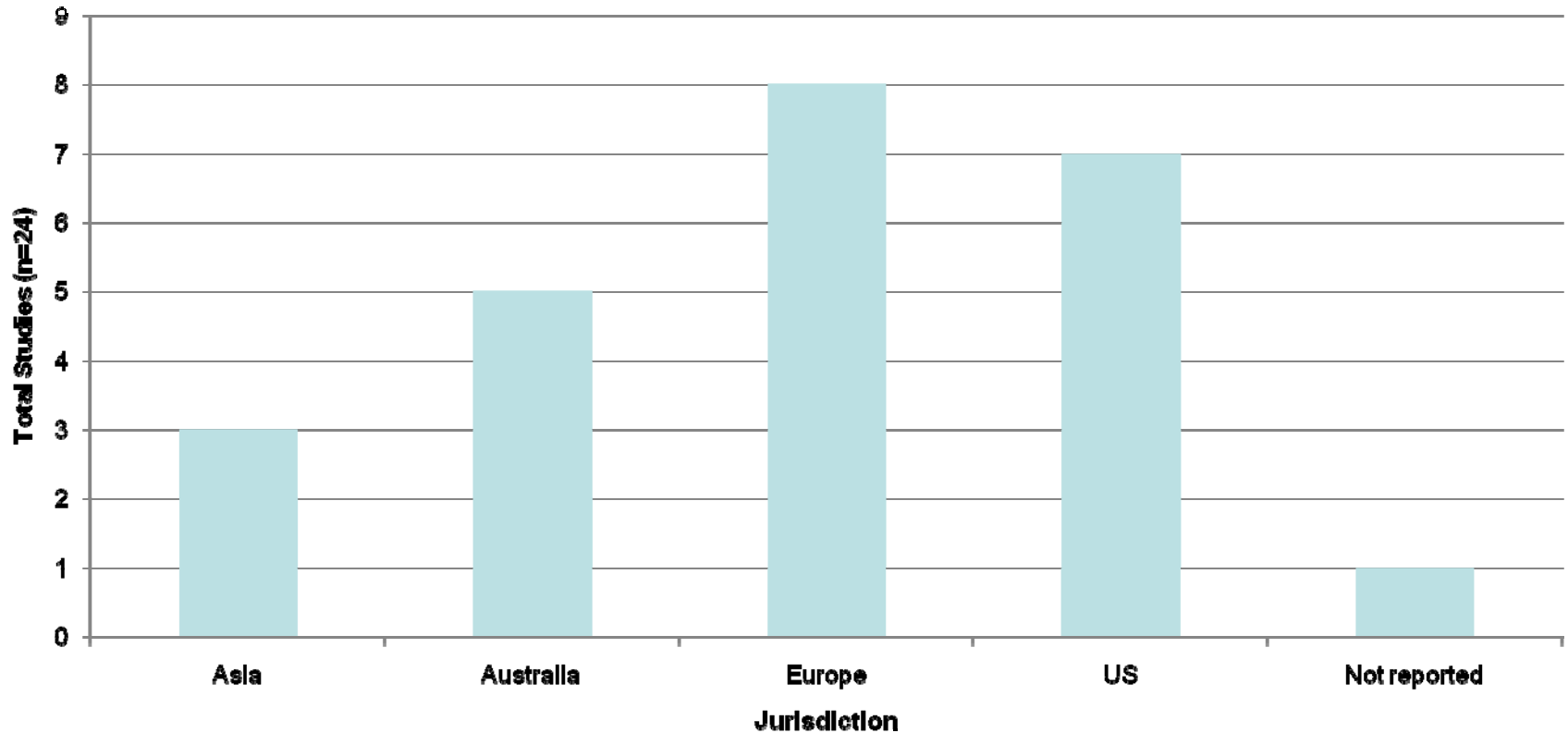
Quantitative intervention findings

Do OHS interventions in SBs have an effect on OHS outcomes?



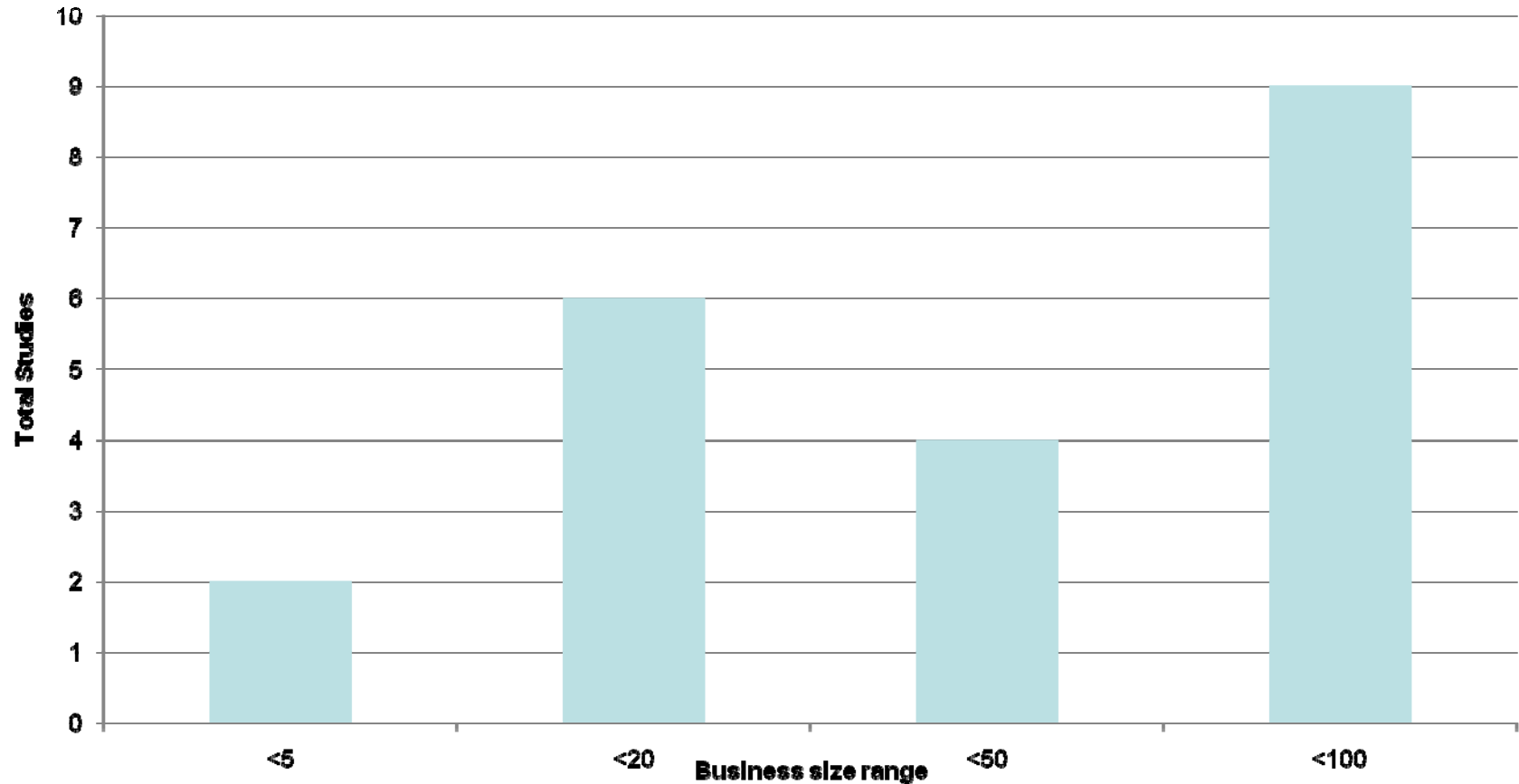


24 Relevant studies – Quantitative Jurisdictions



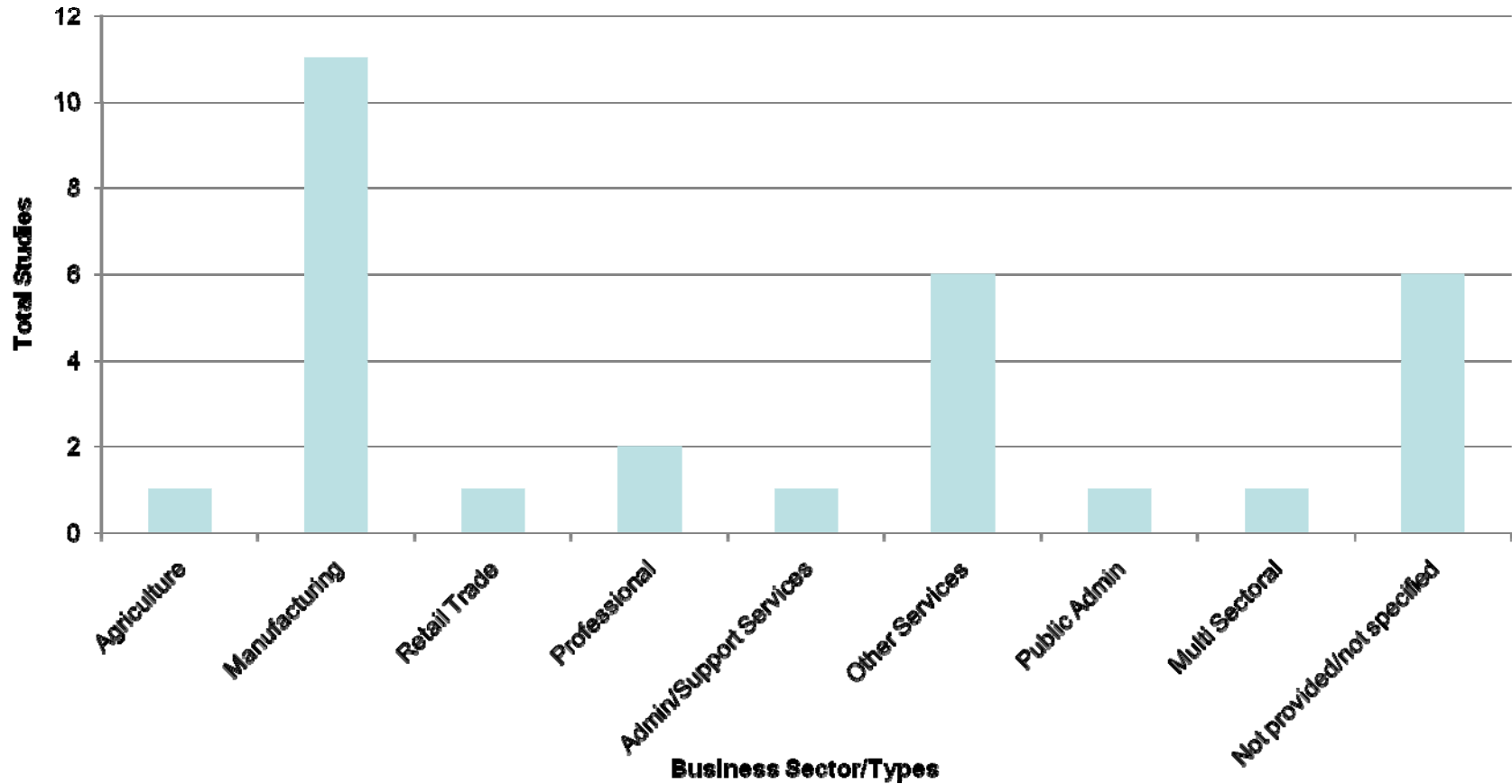


24 Relevant studies – Quantitative Size range



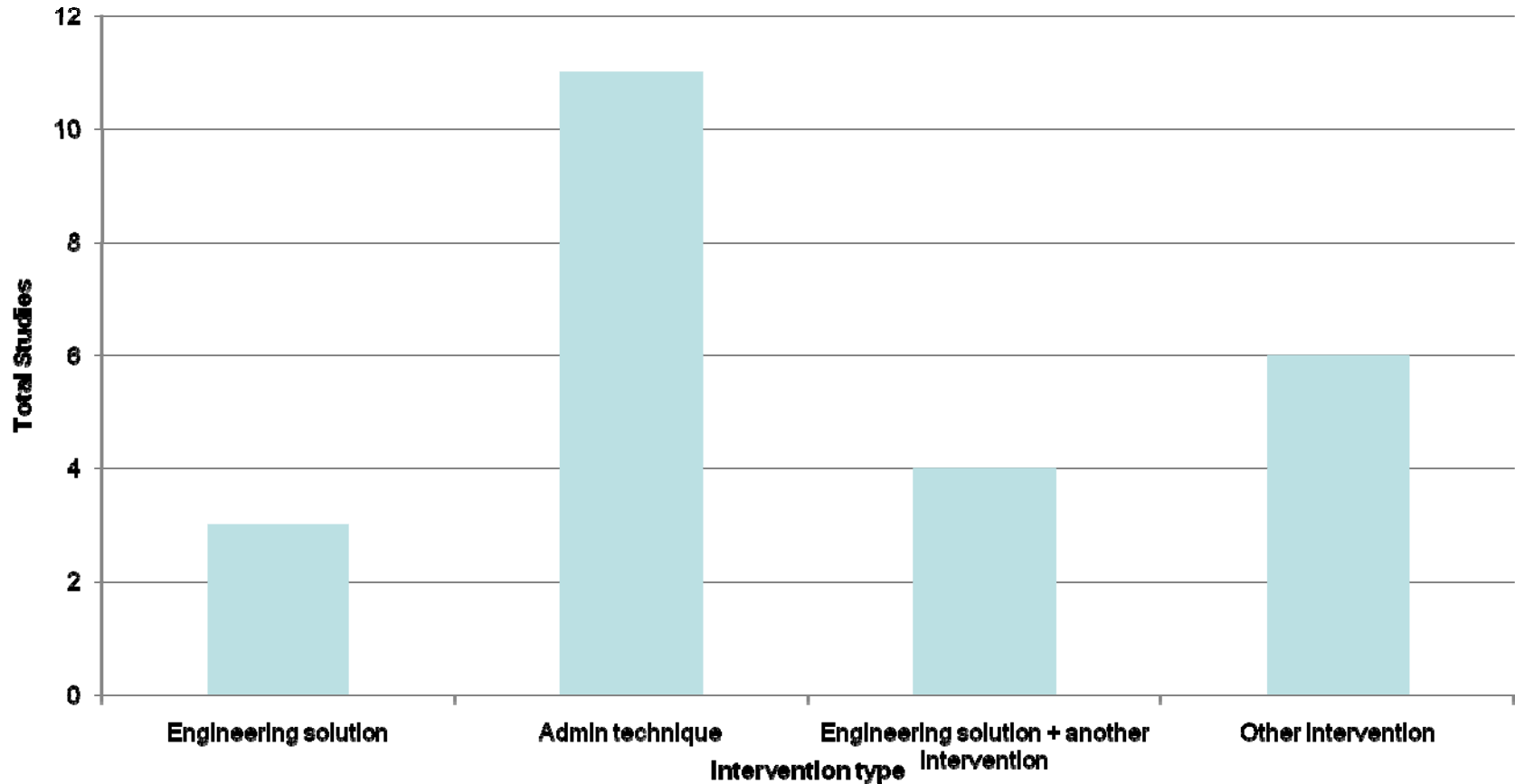


24 Relevant studies – Quantitative Business sector/types





24 Relevant studies – Quantitative Intervention type





Quality Assessment-Quantitative

22 Quality Assessment criteria evaluated issues such as:

- Study design
- Recruitment
- Intervention allocation
- Selection/attrition bias
- Statistical analysis

The weighted criteria were used to develop a normalized quality score for each study

High quality

2 studies

Medium quality

3 studies

Low quality

19 studies

Best evidence synthesis guidelines

Level of Evidence	Minimum quality	Minimum quantity	Consistency
Strong	High (>80%)	>=3 studies	Three high quality studies agree. If more than three studies, $\frac{3}{4}$ of the medium and high quality studies agree.
Moderate	Medium (50-79%)	>=2 studies	Two high quality studies agree. OR Two medium quality studies and one high quality study agree. If more than three studies, more than $\frac{2}{3}$ of the medium and high quality studies agree.
Limited	Medium (50-79%)	One high quality OR two medium quality OR one medium quality and one high quality	If two studies (medium and/or high quality), the studies agree. If more than two studies, more than $\frac{1}{2}$ of the medium and high quality studies agree.
Partial	Low (0-49%)	>=2 studies	Findings from medium and high quality studies are contradictory.
Insufficient	No high quality studies, only one medium quality study, and/or any number of low quality studies.		



Intervention Components	Author, Year	Quality rating	Business Size	Setting	Country
Engineering, Training, incentive	Lazovich et al., 2002	High	5-25	Woodworking	USA
Training Safety audit	Torp, 2008	Medium	2-140	Car garage	Norway
Training safety audit	Rasmussen et al., 2003	High	<5	Farm	Denmark
Training	Wells et al., 1997	Medium	2-500	Multisectoral	USA
Engineering	Crouch et al., 1999	Medium	10	Printing shop	USA



Description of outcome categories

Environmental exposure

Measures such as wood dust concentration.

Behaviour

Specific actions taken related to safety (e.g., personal protective equipment use).

Attitudes and beliefs

Cognitive or psychological variables hypothesized in several theoretical models of preventive behaviour to influence the likelihood of action.

Health

Work related indices of injury, disability, or pain.



Do OHS interventions in small businesses have an effect on OHS outcomes?

Engineering, training, safety audit, incentive

Limited evidence (one high quality study)

Training plus safety audit

Limited evidence (one high & one medium quality study)



Some reflections on SB interventions based on overall synthesis findings

Pay attention to intervention context

Legislative context (QL)

SBs exemptions

Industry sector context (QL & QN)

High tech biotechnology hazards vs construction hazards vs chemical exposure hazards

Social context (QL & QN)

Risk as individually navigated, personalised social relations;
Intervention studies with interactive problem solving component,
attitudes & behaviours



Reflections (cont'd)

Complexity of SBs and intervention designs

Complexity of work process and social relations (QL)

Knowledge alone is insufficient

Cost constraints, quality of workplace social relations, uncertainty about OHS responsibility, SB insularity

Most interventions were multi-component (QN)

Engineering, training (e.g. knowledge, also 'train the trainer') and safety audits

Small business OHS change and improvements dependent on ***series of inter-related factors***



The synthesis of QL and QN literatures suggests that small businesses might:

- require support for developing OHS rules and approaches.
- require occupational health support that considers the personal social working relationships in small firms, which can prompt an overlooking of hazards.
- require finely tailored workplace health support that considers issues related to sector, size (e.g. affordability, informal task division) and jurisdiction (e.g. cultural norms, legislative requirements).
- benefit from multi-component interventions involving safety audits and training.



SB research gaps

High quality SB intervention studies exist and are possible. More attention needs to be focused on the methodological quality of interventions.

- Concurrent control group
- Increase number of SBs recruited
- Increase intervention duration

Qualitative studies should provide greater detail about sampling and analysis

Consider impact of legislative, economic, geographic contexts

Consider under-researched areas: disability management & RTW in SBs, new forms of modern SBs (e.g. high tech).



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You can find the full report of this systematic review at:

<http://www.iwh.on.ca/systematic-reviews>



Upcoming talk related to this review

QUIG: Seminars in Qualitative Research at the University of Toronto

Ellen MacEachen (Institute for Work & Health) and Scott Reeves (Li Ka Shing Knowledge Institute of St Michael's Hospital)

Meta-analysis and systematic reviews in qualitative research: Mission impossible?

March 27th, 12 noon to 1:30 p.m., Room HS208



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THANK YOU

Questions? Comments?



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