



# USE 2017

## Understanding Small Enterprises: Proceedings from the 2017 Conference



Centers for Disease Control  
and Prevention  
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Safety and Health

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# **Understanding Small Enterprises: Proceedings from the 2017 Conference**

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DEPARTMENT OF HEALTH AND HUMAN SERVICES  
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## Foreword

The majority of the U.S. and global workforce works in firms with fewer than 250 employees, and these firms have a disproportionate share of all occupational injuries and illnesses. Consequently, there is a need for continued focus on small and medium-sized enterprises. The periodic conferences held under the auspices of the Understanding Small Enterprises (USE) collaboration serve to illustrate that focus. USE is a voluntary, international collaborative focused on addressing the occupational safety and health of workers in small enterprises.

The National Institute for Occupational Safety and Health (NIOSH) and the Center for Health, Work and Environment (CHWE) at the Colorado School of Public Health hosted the fourth international Understanding Small Enterprises (USE) Conference in Denver, Colorado, on October 25–27, 2017. This event represented a culmination of two decades of the NIOSH small business occupational safety and health research agenda and an opportunity to generate new ideas through collaboration with world experts, entrepreneurs, and small business leaders who are creating safe and healthy workplaces.

NIOSH, CHWE, and USE organized this conference because we know workers in small businesses are injured and killed on the job at a higher rate than workers in larger businesses. Over the years, NIOSH has expanded the research focus from identifying small businesses in high-risk sectors to understanding how community networks affect worker safety and health. Small businesses often have limited resources, and efforts must be adapted and solutions created that are accessible in these economic situations. Although these organizations are small, they can make a big impact on the well-being of the people they employ.

Small business leaders, researchers, safety and health professionals, and all those who share an interest in creating safe and healthy small workplaces are encouraged to continue the conversation to move worker well-being and sustainable business health from ideas to achievable reality.

John Howard, M.D.  
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National Institute for Occupational  
Safety and Health  
Centers for Disease Control and Prevention

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# Contents

Foreword . . . . .	iii
Introduction . . . . .	vii
Acknowledgments . . . . .	x
Occupational Health and Safety Vulnerability in Canadian Small Enterprises . . . . .	1
The Critical Success Factors for Eco-Industrial Park Projects in Thailand: A Case Study of Saha Group Industrial Park, Sriracha, Thailand . . . . .	11
Occupational Health and Safety Practices in a Small Metal Mechanic Company in Piura, Peru . . . . .	17
Coordination Between Stakeholders to Improve Risk Prevention in Micro and Small Enterprises (MSEs): Case Studies in Transport and Construction Programs . . . . .	21
Reducing Exposure to Harmful Dust by Implementing a Culture of Prevention in the Demolition Sector . . . . .	27
Examination of Corporate Social Responsibility and Sustainability Indicators in Small Brazilian Metallurgical Enterprises . . . . .	35
Vocational Colleges: Unique Opportunities to Enhance Safety and Health in Small Businesses—Findings from the Technical Education Curricula for Health and Safety (TECHS) Study . . . . .	45
Assessment of Psychosocial Policies in Small and Medium-Sized Enterprises . . . . .	51
Use of IDEWE’s General Prevention System (iGPS) to Implement and Manage Occupational Safety, Health, and Well-Being in Small Enterprises . . . . .	53
Working Successfully with Small Business Owners: Results and Lessons from the Collision Auto Repair Safety Study (CARSS) . . . . .	57
Occupational Health Nurse as an Alternative Resource in a Small-Scale Enterprise in Japan . . . . .	63
Applying Fundamentals of <i>Total Worker Health</i> ® Approaches: Essential Elements for Advancing Worker Safety, Health, and Well-being . . . . .	67
Total Worker Health in Childcare Centers: Preliminary Results from a Community-based Model . . . . .	73
Correlation between Weekly Exercise Duration & Light Duty and Lost Time: A Cross-Sectional Analysis of an Occupational Working Population . . . . .	81
Assessment of the Relevance and Impact of Promoting Marketable Skills for the Informal Sector in Addis Ababa, Ethiopia . . . . .	83
Overlapping Vulnerabilities and Immigrant Safety Training in Small Construction Firms . . . . .	91
Improved Safety Tools for Small Enterprises through Lean Start-up and Design Thinking . . . . .	97



Aging Workforce Issues in Small Businesses: Preliminary Findings . . . . .	103
Conference Participants . . . . .	109
Conference Agenda . . . . .	114
Poster Presentations . . . . .	119

# Introduction

## Focus on Safety and Health in Small Businesses

Given the disproportionate burden of occupational injuries, illnesses, and fatalities experienced by small businesses in the United States and worldwide, small business occupational safety and health (OSH) is of increasing concern to the National Institute for Occupational Safety and Health (NIOSH). Although researchers in public health have addressed multiple OSH issues, the very large group of academics and researchers specializing in the area of OSH has not been very active in the area of small business OSH. The USE 2017 conference brought together experts in the area of small business OSH and researchers from public health to build connections and to move forward a research agenda for small business OSH.

This conference represents the leading thinkers in the small business OSH research community from around the world. The conference is relatively new, having convened three times since 2009, but it has already had a significant impact in moving the OSH community to focus on small businesses. The conference aims to enhance the work environment for people within small firms.

### What do we mean by small?

A “small” business is defined in many ways. The U.S. Small Business Administration considers 99.7% of all U.S. firms to be small businesses, with fewer than 500 employees. If we narrow the distinction further, then just over one-third of the U.S. workforce is employed by businesses with fewer than 100 employees. For discussions of workplace safety and health and for research purposes, the NIOSH Small Business Assistance Program considers small businesses as those having fewer than 50 employees. NIOSH researchers have also found that other than number of employees, it is important to consider factors such as age of the business, structure of the ownership, and availability of resources for workplace safety and health.

We know that in many cases, businesses are starting smaller and staying smaller. Given that small businesses often lack safety and health professionals, the need is increasing for simple, inexpensive ways to ensure safe and healthful working conditions (e.g., Total Worker Health and safety apps for employers). Tools that work for small businesses—designed for convenience and ease of use—help everyone. Small business needs can drive safety solutions to cost less and to be more effective.

While NIOSH continues to lead a research agenda focused on small business safety and health needs, we recognize that no single organization can effectively reach the millions of small businesses that could benefit from assistance. That is why we have expanded our research agenda to include a specific focus on understanding the role of intermediaries. Intermediaries might be organizations already engaging small businesses in occupational safety and health assistance, looking for new ways to engage small firms, or already well-connected to a small business network. The range of intermediaries includes suppliers of goods and services (equipment/material suppliers, insurance companies, legal and financial advisors, health providers), membership organizations (trade associations, chambers of commerce), education organizations (community colleges,

vocational schools), and government agencies. Several of the presenters at the 2017 USE conference are making great advances in this line of research, both as investigators studying ways to improve OSH among small businesses and as intermediaries sharing their stories of success with helping small employers and their workforces.

USE is the premiere small business occupational safety and health conference and provides a forum where researchers and other national and world leaders in the study of worker health convene to discuss ways to prevent workplace illnesses and injuries among small business employees. It provides a forum for critical reviews, discussions, collaborations, and education on issues of occupational exposures and their human health effects.

The 2017 program was a stimulating mixture of talks, discussion sessions, posters, and mini-symposia with contributors from all over the world, with a forward-looking emphasis on addressing challenges for occupational epidemiology in the 21st century. Holding this world-renowned conference in the United States (for the first time) provided an excellent opportunity for U.S. researchers and small business stakeholders to participate with and engage in significant ways with their global peers.

### **USE Conference History**

The different foci of the three previous Understanding Small Enterprises (USE) conferences reflect a progression in the study of managing safety in small and medium-sized enterprises (SMEs). The first Understanding Small Enterprises Conference (USE 2009) took place in October 2009 in Elsinore (Helsingør), Denmark. This initial conference focused on “understanding the issues (for practice).” The second conference (USE 2013) took place in February 2013 in Nelson, New Zealand, hosted by Massey University and AUT University. USE 2013 focused on “putting understanding into action.” The 2013 conference also yielded two special journal issues, focused on small business OSH. These were the *Safety Science Special Issue: Managing Safety in Small and Medium Enterprises* (<https://www.sciencedirect.com/journal/safety-science/vol/71/part/PC>) and *International Journal of Small Enterprise Research Special Issue: Understanding Small Enterprises: Healthy Lives in Healthy Businesses* (<https://www.tandfonline.com/toc/rser20/21/2>). The third meeting, USE 2015: A Healthy Working Life in a Healthy Business, was held in October 2015 in Groningen, The Netherlands. The three main subthemes were healthy and safe working environments at SMEs, health organizations as small businesses, and SMEs in a networked society. The specific topics addressed at each of the previous conferences, as well as the 2017 conference, are available on the conference website, [www.useconference.com](http://www.useconference.com).

### **USE 2017, Denver, USA**

The overall aim of the most recent USE conference was to enhance both the work environment for people within small firms and the business performance of small firms. This opportunity significantly contributed to advancing the NIOSH Small Business Assistance Program strategic goal to reduce injuries and illnesses in smaller businesses by better understanding intermediary organizations (their structure, operations, and networks) and by better understanding the work environment of smaller enterprises. Several of the keynote presentations and other selected papers from the conference have been published in a dedicated issue of the *Annals of Work Exposures and Health* [2018;62(S1), doi: 10.1093/annweh/wxy061]. This issue includes topics ranging from

suggestions for an overall OSH communication research strategy for reaching small employers to specific presentations of research findings from implementation of worksite health interventions with small employers and investigating the facilitators and barriers to effective interventions with small employers. Additional papers from the conference are published in these proceedings.

The papers included in this volume follow the various topic areas of the conference sessions: impact of business size; occupational safety and health in small industrial settings; prevention in high-risk industries; tools, resources, and systems for small enterprises; health services for small enterprises; Total Worker Health in small enterprises; informal economy; vulnerable workers; and workplace health and safety in construction. The variety of the conference presentations and discussions is illustrated by the variety of topics included here, from eco-industrial park projects in Thailand to childcare centers in the United States. Small businesses and the research aimed at finding better ways to help them are diverse and span across the globe.

## Acknowledgments

The convening of the Understanding Small Enterprises Conference in Denver, Colorado, was supported by the Small Business Assistance Program of the National Institute for Occupational Safety and Health (NIOSH) and its host, the Center for Health, Work & Environment at the Colorado School of Public Health. We greatly appreciate the many contributors to the conference planning and production. The core conference committee included Avery Artman, Carol Brown, Garrett Burnett, Thomas Cunningham, Michelle Haan, Brenda Jacklitsch, Lee Newman, Paul Schulte, and Liliana Tenney. Conference planning committee members included Lisa Brosseau, Chia-Chia Chang, Peter Hasle, Dennis Hudson, Heidi Hudson, Stephen Legg, Harm van Lieshout, Hans Jørgen Limborg, Bruce Lundegren, Kirsten Olsen, David Parker, Diane Rohlman, and Scott Schneider. The conference was sponsored by the American Society of Safety Professionals, Axion Health, Pinnacol Assurance, the Colorado Office of Economic Development & International Trade, Colorado State University, the International Commission on Occupational Health, and the International Social Security Association.

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# Occupational Health and Safety Vulnerability in Canadian Small Enterprises

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## Abstract

**Objective:** Occupational health and safety (OHS) vulnerability is often defined by demographic characteristics, such as young, new, or immigrant workers. We describe a novel conceptual approach to defining OHS vulnerability, on the basis of four characteristics of the enterprise: (1) workers' exposure to OHS hazards, combined with (2) the adequacy of OHS policies and practices, (3) workers' awareness of their rights and responsibilities, and (4) workers' perceptions of empowerment to participate in injury prevention. We estimate the extent to which differences in the risk of work injury among workers in small and large enterprises can be accounted for by differences in OHS vulnerability associated with workplace size.

**Methods:** We used a subset of respondents to a 27-item questionnaire administered to 1,835 working adults in the Canadian provinces of Ontario and British Columbia who worked in small (n = 505) or large (n = 525) enterprises. The survey instrument contained 9 items on OHS hazard exposure, 7 on organizational policies and practices, 6 on awareness, and 5 on empowerment. Survey respondents also self-reported the 12-month incidence of work injury requiring time off work and/or medical attention.

**Results:** Exposure to one or more of nine OHS hazards was reported by 49% of the overall sample. Inadequate organizational policies and procedures were reported by 42% of the sample, inadequate awareness of rights and responsibilities by 22%, and inadequate empowerment by 34%. Relative to workers in large enterprises (>500 employees), respondents in organizations with 5 to 19 employees reported a higher prevalence of hazard exposure, a higher incidence of work-related injury and illness, and a higher exposure to inadequate policies and procedures. Adjustment for these differences in the adequacy of workplace policies and procedures accounted for the higher work injury incidence observed among employees in small workplaces.

**Conclusion:** This study recruited respondents from a wide range of occupational categories, employment relationships, and workplace sizes. Applying an approach to measuring three distinct categories of OHS vulnerability has highlighted important areas of priority focus for strengthening worker health protection in small enterprises.

## Introduction

Workplace injury and illness are responsible for a significant share of sickness and disability burdens in working-age populations. Among working-age adults, approximately 20% of traumatic injuries requiring medical care are caused by work exposures [Chambers et al. 2015]. The direct and indirect costs of fatal and non-fatal occupational injuries and illnesses in the United States are estimated to exceed \$250 billion annually [Leigh 2011]. In the North American economy, small businesses with fewer than 100 workers employ approximately 50% of the total private-sector labor force and have well-described challenges in protecting the health of their workers [Breslin et al. 2010].

There is longstanding recognition that smaller enterprises face unique challenges in complying with regulatory standards concerning worker health protection. The unique characteristics of small enterprises include a limited knowledge of occupational health and safety (OHS) regulatory standards, generally weak or non-existent organizational policies and procedures concerning OHS practices, and a tendency to perceive the management of workplace health and safety risks to be the responsibility of individual employees [Breslin et al. 2010].

Here we apply a novel approach to measuring OHS vulnerability to describe differences between the smaller and largest employers in workplace characteristics that shape individual workers' risk of injury [Smith et al. 2015]. This approach contrasts with much previous research that has focused on demographic or occupational characteristics to identify vulnerability, such as young workers [Breslin and Smith 2005], new workers [Breslin and Smith 2006], workers in temporary employment [Quinlan 2001], recent immigrants [Premji and Smith 2013; Smith and Mustard 2010], and those in high-hazard industries [Dembe et al. 2004]. The approach we describe focuses on the role of workplace characteristics in determining the vulnerability of individual workers to the risk of injury or illness. The measurement method collects information reported by individual workers on four dimensions of OHS vulnerability: (1) exposure to workplace hazards; (2) workplace safety policies and procedures; (3) workers' awareness of health and safety-related rights and responsibilities; and (4) workers' empowerment to act to protect themselves and colleagues. The premise of this framework is that vulnerability arises from exposure to on-the-job hazards in conjunction with inadequate access to resources (policies and procedures, awareness, or empowerment) to mitigate the effects of these risks.

In previous work, we reported a higher incidence of injury requiring medical attention and/or days off work among employees who were exposed to workplace hazards and who reported poor access to protective policies and procedures, poor awareness of workplace rights and responsibilities, or low empowerment to act to make their workplace safer [Lay 2017]. Previous work has also shown higher hazard exposure and weaker protective policies and procedures among employees in smaller enterprises than in medium and large enterprises [Lay 2016]. The objective of this study was to determine the degree to which the elevated hazard exposure in smaller enterprises was associated with a higher risk of work injury and to estimate the extent to which a difference in injury risk could be accounted for by workplace differences in protective policies and procedures, awareness of workplace rights and responsibilities, and perceived empowerment to act to make the workplace safer.

## Methods

Data for this study were collected through a cross-sectional survey in April and November 2015 from a sample of working adults (18 years or older) employed at least 15 hours a week at firms with five or more workers in British Columbia and Ontario, Canada. The majority of participants were recruited by a commercial survey provider from a panel of 90,000 Canadian households who had agreed to participate in surveys “from time to time.” In this report, we compare worker respondents in the smallest enterprises (5–19 employees:  $n = 505$ ) to worker respondents in the largest enterprises (greater than 500 employees:  $n = 525$ ).

### Outcome Measure: Workplace Injury or Illness

This report focuses on respondents’ self-reported frequency of work-related injury or illness in the past 12 months. Participants were considered to have experienced a work-related physical injury if they responded “yes” to this question: “In the past 12 months, have you sustained a physical injury or illness due to your work?”

### Exposure Measures: OHS Vulnerability

Exposure to OHS vulnerability was assessed with a 27-item questionnaire. A full account of the development of the tool can be found elsewhere [Smith et al. 2015]. Survey participants responded to statements related to four dimensions of OHS vulnerability: their self-reported exposure to workplace hazards, the existence of protective policies and procedures in the workplace, their awareness of workplace rights and responsibilities, and their sense of empowerment to protect themselves in the workplace. The questions used to measure each of these dimensions are listed in Table 1.

Workers were defined as vulnerable if they reported weekly exposure to one or more workplace hazards *and* they indicated inadequate access to at least one type of resource to mitigate the exposure risk (workplace policies and procedures, awareness, or empowerment). We defined three specific types of vulnerability: policy and procedure vulnerability (exposure to hazards and inadequate policies and procedures), awareness vulnerability (exposure to hazards and inadequate awareness), and empowerment vulnerability (exposure to hazards and inadequate empowerment).

Respondents were classified as having inadequate access to a specific mitigating resource (policies and procedures, awareness, or empowerment) when they disagreed or strongly disagreed with at least one of the related statements. The adequacy of policy and procedure resources was evaluated with statements such as “There is an active and effective health and safety committee and/or safety representative” and “Incidents and accidents are investigated quickly in order to improve workplace health and safety.” Awareness was measured by statements about knowledge of worker rights and responsibilities in relation to health and safety, awareness of how to perform job tasks in a safe manner, and knowledge of how to contribute to safety and health in the workplace. Finally, empowerment was measured through five questions related to whether individuals feel free to voice concerns about health and safety issues and whether workers would act to correct an unsafe situation.

For each measure of OHS vulnerability (overall vulnerability, policy and procedure vulnerability, awareness vulnerability, and empowerment vulnerability), we classified



participants into four categories, according to those who were exposed to (1) no hazards and had adequate mitigation resources (considered the least vulnerable); (2) no workplace hazards but had inadequate access to mitigation resources; (3) workplace hazards and had adequate mitigation resources; and (4) workplace hazards and insufficient mitigation resources (considered the most vulnerable).

### **Covariates**

Socio-demographic variables included in the multivariate analysis were gender (male or female), age (<35, 35–44, 45–54, or 55 years and older), and industry of employment (nine categories).

### **Analysis**

Descriptive statistics contrasted the prevalence of hazard exposure and the 12-month prevalence of physical work injury between employees of small and large enterprises. These prevalence estimates were stratified by the adequacy of mitigation resources. Multivariate logistic regression models estimated the crude and adjusted risk of work injury among employees of small enterprises compared to large enterprises. Multivariate models adjusted for age, gender, industry, and the adequacy of policies and procedures, OHS awareness, and empowerment.

## **Results**

Exposure to OHS hazards was reported by 49% of the analytic sub-sample. Self-reported hazard exposure was higher among workers in small enterprises (56.9%) versus large organizations (40.8%) (Table 2).

Inadequate organizational policies and procedures were reported by 42% of respondents, inadequate awareness of rights and responsibilities was reported by 22%, and inadequate empowerment was reported by 34% (Table 2). Relative to those in large enterprises (500 or more employees), respondents in organizations with 5 to 19 employees had a higher prevalence of vulnerability due to inadequate policies and procedures (33.7% versus 17.8%). Smaller differences were observed in the prevalence of inadequate awareness vulnerability and inadequate empowerment vulnerability between larger and smaller employers.

Relative to respondents in large enterprises, respondents in smaller enterprises reported a higher 12-month incidence of work-related physical injury (18.4% versus 12.7%) (Table 3). In both large and small enterprises, the risk of work injury was strongly graded by hazard exposure and the adequacy of mitigation measures. For example, among respondents reporting adequate OHS policies and procedures in their workplace and no hazard exposure, the 12-month incidence of injury requiring medical attention was 5.4% in small enterprises and 5.3% in large enterprises. In contrast, the 12-month incidence of injury requiring medical attention among respondents reporting exposure to hazards and inadequate workplace OHS policies and procedures was 31.2% in small enterprises and 31.1% in large enterprises.

In multivariate analysis, the crude relative risk of work injury among employees in small enterprises was 1.44 (95% confidence interval: 1.08–1.93) (Table 4). Adjustment for age, gender, and industry did not attenuate this risk. In a regression model additionally

adjusting for the adequacy of OHS policies and procedures, awareness, and empowerment, the relative risk observed for workers in small enterprises was no longer statistically significant, with the large majority of the relative risk accounted for by weaker OHS policies and procedures in small enterprises. Descriptive and analytic estimates were weighted to match the age, gender and provincial labour market distributions.

## Discussion

The objective of this study was to estimate the extent to which differences in the risk of work injury among workers in small and large enterprises can be accounted for by differences in OHS vulnerability. Consistent with previous literature on OHS risk identification and control in relation to employer size, workers in small enterprises reported higher hazard exposure and weaker workplace OHS policies and procedures than did workers in larger enterprises. In multivariate analysis, the higher risk of work injury reported by workers in small enterprises was accounted for by differences in the adequacy of workplace OHS policies and procedures.

We acknowledge the following limitations to this study. The cross-sectional design cannot exclude the possibility of reverse causation, whereby a respondent who has experienced a workplace injury adopts a more critical assessment of one or more dimensions of workplace vulnerability. The study sample may also be affected by recall bias, in that those reporting recent injuries provide a more careful appraisal of workplace conditions than non-injured counterparts. Our study also had a relatively low response rate. Among the strengths of this study is its use of a large sample that includes respondents from a broad cross-section of occupations and industries. Additionally, whereas previous studies have examined the impact of workplace hazards and concepts of organizational climate on injury [Leitao and Greiner 2016; Smith et al. 2006], this is one of the first to formally test the influence of these factors on risk of injury relative to employer size.

This study recruited respondents from a wide range of occupational categories, employment relationships, and workplace sizes. Applying an approach to measuring three distinct categories of OHS vulnerability has highlighted important areas of priority focus for strengthening worker health protection in small enterprises.

## Acknowledgments

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**Table 1. Questions Used to Measure Four Dimensions of Occupational Health and Safety Vulnerability**

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<b>Hazards: How often do you ...</b>
<ol style="list-style-type: none"><li>1. Have to manually lift, carry, or push items heavier than 20 kg at least ten times a day?</li><li>2. Have to do repetitive movements with your hands or wrists (packing, sorting, assembling, cleaning, pulling, pushing, typing) for at least three hours during the day?</li><li>3. Have to perform work tasks or use work methods that you are not familiar with?</li><li>4. Interact with hazardous substances such as chemicals, flammable liquids, and gases?</li><li>5. Have to work in a bent, twisted, or awkward posture?</li><li>6. Work at a height that is 2 meters or more above the ground or floor?</li><li>7. Work in noise levels that are so high that you have to raise your voice when talking to people less than one meter away?</li><li>8. Have you been bullied or harassed at work?</li><li>9. Have to stand for more than two hours in a row?</li></ol>
<b>Policies and Procedures: At my workplace...</b>
<ol style="list-style-type: none"><li>1. Everyone receives the necessary workplace health and safety training when starting a job, changing jobs, or using new techniques.</li><li>2. There is regular communication between employees and management about safety issues.</li><li>3. Systems are in place to identify, prevent, and deal with hazards at work.</li><li>4. Workplace health and safety are considered to be at least as important as production and quality.</li><li>5. There is an active and effective health and safety committee and/or health and safety representative.</li><li>6. Incidents and accidents are investigated quickly in order to improve workplace health and safety.</li><li>7. Communication about workplace health and safety procedures is done in a way I can understand.</li></ol>
<b>Awareness: At my workplace...</b>
<ol style="list-style-type: none"><li>1. I am clear about my rights and responsibilities in relation to workplace health and safety.</li><li>2. I am clear about my employer's rights and responsibilities in relation to workplace health and safety.</li><li>3. I know how to perform my job in a safe manner.</li><li>4. If I became aware of a health or safety hazard at my workplace, I know who (at my workplace) I would report it to.</li><li>5. I have the knowledge to assist in responding to any health and safety concerns at my workplace.</li><li>6. I know what the necessary precautions are that I should take while doing my job.</li></ol>
<b>Empowerment: At my workplace...</b>
<ol style="list-style-type: none"><li>1. I feel free to voice concerns or make suggestions about workplace health and safety at my job.</li><li>2. If I notice a workplace hazard, I would point it out to management.</li><li>3. I know that I can stop work if I think something is unsafe, and management will not give me a hard time.</li><li>4. If my work environment was unsafe I would not say anything and hope that the situation eventually improves. (*reverse scored)</li><li>5. I have enough time to complete my work tasks safely.</li></ol>

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**Table 2. Prevalence of Hazard Exposure and Adequacy of Mitigation Resources at Small vs Large Employers**

Dimension	Small employers: 5–19 workers ( <i>n</i> = 505)		Large employers: >500 workers ( <i>n</i> = 520)		<i>P</i> value for test for difference (small vs large employers)
	Strata <i>n</i>	Column %	Strata <i>n</i>	Column %	
<b>Policies/Procedures</b>					
Adequate; no hazard	126	24.9	227	43.7	<0.001
Inadequate; no hazard	92	18.2	80	15.5	
Adequate; hazard	117	23.2	120	23.0	
Inadequate; hazard	170	33.7	93	17.8	
<b>Awareness</b>					
Adequate; no hazard	172	34.2	258	49.6	<0.001
Inadequate; no hazard	45	8.9	50	9.6	
Adequate; hazard	216	42.8	151	29.1	
Inadequate; hazard	72	14.1	61	11.7	
<b>Empowerment</b>					
Adequate; no hazard	168	33.4	233	44.9	<0.001
Inadequate; no hazard	49	9.7	74	14.3	
Adequate; hazard	169	33.5	105	20.1	
Inadequate; hazard	118	23.4	108	20.7	
<b>Overall</b>					
Adequate; no hazard	102	20.2	164	31.6	<0.001
Inadequate; no hazard	115	22.9	144	27.6	
Adequate; hazard	85	16.8	75	14.4	
Inadequate; hazard	203	40.2	137	26.4	

**Table 3**  
**Prevalence of physical injury requiring medical attention / day off work, past 12 months**  
**Small vs large employers**

	Small employers (5-19) N=505		Large employers (>500) N=520		p-value
	Strata N	Injury Prevalence (% of row)	Strata N	Injury Prevalence (% of row)	
<b>Total for size strata</b>		18.4		12.7	0.01
<b>Policies / Procedures (PP)</b>					
No Hazard, adequate PP	126	5.4	227	5.3	
No hazard, inadequate PP	92	14.9	80	9.7	
Hazard, adequate PP	117	16.4	120	14.8	
Hazard, inadequate PP	170	31.2	93	31.1	
<b>Awareness (AW)</b>					
No Hazard, adequate AW	172	5.3	258	5.9	
No hazard, inadequate AW	45	25.3	50	9.0	
Hazard, adequate AW	216	21.7	151	16.9	
Hazard, inadequate AW	72	35.6	61	34.4	
<b>Empowerment (EM)</b>					
No Hazard, adequate EM	168	7.0	233	4.1	
No hazard, inadequate EM	49	17.6	74	13.8	
Hazard, adequate EM	169	18.4	105	10.7	
Hazard, inadequate EM	118	34.8	108	32.8	
<b>Overall</b>					
No Hazard, adequate	102	3.7	164	4.0	
No hazard, inadequate	115	14.4	144	9.2	
Hazard, adequate	85	19.2	75	8.4	
Hazard, inadequate	203	27.6	137	29.2	

**Table 4. Crude and Adjusted Relative Risk of Being Physically Injured in the Last 12 Months: Small vs Large Employers**

Size of Employer	Model 1		Model 2		Model 3 Adjusted for Policies and Procedures Vulnerability		Model 3 Adjusted for Awareness Vulnerability		Model 3 Adjusted for Empowerment Vulnerability		Model 3 Fully Adjusted	
	RR	95%CI	RR	95%CI	RR	95%CI	RR	95%CI	RR	95%CI	RR	95%CI
Small: 5–19 Employees	1.44	1.08, 1.93	1.39	1.04, 1.86	1.12	0.84, 1.48	1.37	1.02, 1.82	1.33	1.00, 1.75	1.22	0.92, 1.60
Large: 500+ Employees	ref.		ref.		ref.		ref.		ref.		ref.	

Model 1: crude.

Model 2: adjusted for age, gender, and industry.

Model 3: further adjusted for Policies and Procedures vulnerability, Awareness vulnerability, and Empowerment vulnerability.

CI = confidence interval; RR = relative risk.