

outwork



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Effective workplace return-to-work interventions are multi-faceted: IWH review

New systematic review finds evidence for return-to-work programs that incorporate some combination of health services, case coordination and work modification

Workplaces that offer multi-faceted return-to-work (RTW) interventions can help reduce time away from work for workers with musculoskeletal disorders (MSDs) and pain-related conditions, a new systematic review update has found.

The review, conducted by the Institute for Work & Health (IWH) and the Institute for Safety, Compensation and Recovery Research (ISCRR) in Melbourne, Australia, found strong evidence for the effectiveness of interventions that cut across at least two of three different areas:

(1) The injured worker is provided with **health services**, either at work or in settings linked to work. These may include physical therapy,



Dr. Kim Cullen

occupational therapy, psychological therapy, medical assessments or exercises aimed at restoring function (e.g. graded activity and work hardening).

(2) The injured worker is supported by **RTW planning and coordination**, which may take the form of case management, RTW plans, or improved communication between the workplace and health-care providers.

(3) The workplace addresses **work modification** in the form of work accommodation, ergonomics or other worksite adjustments, and supervisor training on work modification.

“This systematic review indicates that the grouping or packaging of interventions from the different domains makes them effective in a way that stand-alone interventions are not,” says the review’s lead author Dr. Kim Cullen, an associate scientist and knowledge exchange associate at the Institute.

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Dr. Kim Cullen named IWH associate scientist

Congratulations to Dr. Kimberley Cullen, who has been appointed an associate scientist at the Institute for Work & Health (IWH). Cullen, who also retains her role as a knowledge exchange associate, has been with the Institute since 2002. She holds a PhD in biophysics at the University of Guelph and an MSc in clinical rehabilitation science from McMaster University. She is also a registered kinesiologist in Ontario. Her current research activities at IWH include work in systematic reviews and synthesis of research evidence concerning effective workplace policies and practices in return to work, as well as the development of research protocols to evaluate the effectiveness of policy and program innovation in return to work in the Ontario disability prevention system.

New video on DASH Outcome Measure looks at reasons for its continued popularity

In 1996, IWH teamed up with the American Academy of Orthopedic Surgeons to develop the DASH Outcome Measure. More than 20 years later, the DASH is used across the world in more than 50 languages, making an impact in both research and clinical settings. In a new video, DASH developers talk about why they think the tool has stood the test of time. See the video on IWH's YouTube channel at: <https://youtu.be/GPC1uKL-xRY>

IWH recruiting for study on employer supports for workers with depression

The Bell Let's Talk campaign has raised levels of public awareness about depression, a condition that also impacts workers and workplaces. In a new project funded by WorkSafeBC, a team of researchers at IWH is conducting a survey to determine what workplaces are doing to help workers with depression.

"As work and health researchers, we are aware that many workplaces are doing innovative things to help those with depression stay at work. However, we also know there are challenges," says Dr. Dwayne Van Eerd, an IWH associate scientist and project lead. "This research proposes to bring together the research evidence along with the best practices so that all can benefit from the evidence."

If you are interested in participating in the survey please sign up at: https://iwca.co1.qualtrics.com/SE/?SID=SV_8Gh4mPcyAolsLqd. You'll be asked for your name, company, email, and consent to contact. Your participation would be most helpful in providing the best practices to a wider audience.

WHAT RESEARCHERS MEAN BY...

multiple regression

Multiple regression is a popular technique in statistics used to measure the relationship between many variables and an outcome

Last issue, we talked about the term **simple regression** – a statistical method used to describe the relationship between two factors. We asked you to take on the role of a researcher for a real estate agency trying to find a way to accurately price clients' homes based on house size.

Using simple regression, you came up with an equation to do so. However, you didn't advise the real estate agency to price clients' homes based on house size alone. You knew other factors also affect selling price. This is where multiple regression comes in.

Instead of looking at a one-to-one relationship, **multiple regression** looks at a one-to-many relationship. It is a statistical technique that allows researchers to examine the relationship between two or more factors (called independent variables) at the same time and analyze the extent to which each predicts or explains variations in the outcome of interest (called the dependent variable).

The end result is a model (which, in essence, is a mathematical formula) that can be used to explain or predict outcomes based on the presence of different factors.

Multiple regression analysis is hard. It's an elaborate process, involving many steps and usually requiring sophisticated software. Let's go back to our example to take a look at some of the main steps in doing a multiple regression—most of them preparatory to ensure you are feeding the best information into the software program.

1. Determine the independent variables you want to include in your model. These variables need to make sense. Drawing on your understanding of the real estate market, you decide to include house size, neighbourhood average income, proximity to good schools, lot size, and number of bedrooms and bathrooms.
2. Collect information on each of the variables. You now randomly select, say, 100 houses that recently sold in the city. For each, you collect information on its size, neighbourhood income, proximity to good schools, lot size, number of bedrooms and bathrooms and, of course, its selling price.

3. Explore the relationship between each independent variable being considered and the dependent variable. Using the information collected, you look at the relationship between house size and house price, average neighbourhood income and price, proximity to good schools and price, and so on. You use statistical techniques to determine if a clear (i.e. **statistically significant**) relationship exists between the factor and house price. If yes, you are more likely to keep the factor in your model. If not, you may or may not decide to use it depending on the nature of the problem you are trying to address.

4. Explore the relationship among the independent variables. Using the same methods above, you may decide to look at how the different factors relate to each other; e.g. between house size and neighbourhood income, neighbourhood income and proximity to good schools, and so on. You may find two factors are so closely related that it would be hard to tell which is contributing to differences in house prices. This is called "multicollinearity." Again, depending on the nature of the problem you are trying to address, you may or may not decide to keep both factors. You may also decide to look at how each factor relates to house price taking the other factors into account and, if the factor is no longer related, you may decide to remove it from your model.

5. Perform the multiple regression. For the factors you've included in your model, you enter the related information into your software program, do a lot of other statistical prep work (to take into account errors, deviations and so on), then run your program. You end up with an equation that lets you answer questions like: To what extent do each of the factors (neighbourhood income, proximity to good schools, lot size, number of bedrooms and bathrooms) account for variations in home price? What is the predicted price of a particular home knowing the value of all the variables in the model? Multiple regression lets you answer these questions and more. That's why it's a powerful tool.

OHS vulnerability as defined by IWH tool linked to self-reported injury rates

Study lends support to concept of OHS vulnerability as combination of hazards and inadequate protection

Occupational health and safety (OHS) vulnerability as assessed by a 27-item worker questionnaire has been found in a new study to be linked to higher rates of self-reported work injuries and illnesses.

The study, conducted by the Institute for Work & Health (IWH), provides support to the underlying premise of IWH's OHS Vulnerability Measure that workers are not vulnerable to work injury because they belong to a certain group of people (e.g. young worker, newcomer) or do a particular type of work (e.g. temporary work, work in a small business).

Instead, the measure proposes that workers face health and safety vulnerability when they're both exposed to hazards and report inadequate protection in at least one of three areas: OHS practices and policies, awareness of OHS rights and responsibilities, and empowerment to act to protect themselves. (An article about the measure can be found at: www.iwh.on.ca/at-work/80/what-makes-workers-vulnerable.)

"Workers who are vulnerable, as defined by this measure, are at a much higher risk of injury than the least vulnerable

workers—those who have adequate protections and no hazard exposures," says Morgan Lay, an IWH research associate and lead author of the study. The article, now online, is published in the April 2017 issue of *Safety Science* (doi:10.1016/j.ssci.2016.12.021).

"The risk of injuries that result in time off work or need medical attention can be three to four times higher among the most vulnerable workers than among the least vulnerable."

Respondents asked about injury

This study is based on survey responses, collected in the spring of 2015, from over 1,500 adults in Ontario and British Columbia who were working at least 15 hours a week. In addition to the 27 questions that make up the measure, respondents were asked whether they experienced a work-related injury—either mental or physical—in the previous 12 months and, if so, if the injury resulted in time off work or medical attention. They were also asked if they worried about getting injured at work.

Nearly 90 per cent of respondents were recruited from a pool of people who were

willing to be contacted for surveys. The remainder were reached via random telephone dialing. The inclusion of this smaller group allowed the research team to compare the two samples and consider the extent to which the findings could be generalized to a broader population.

As expected, injury outcomes were lowest for respondents who experienced no hazards and had access to adequate protection (i.e. the "least vulnerable" group). Injury rates were higher across the board among workers who reported hazard exposure or weak protection in any of the three areas of vulnerability (i.e. inadequate policies and procedures, awareness or empowerment).

For those reporting both hazard exposure and inadequate protection (i.e. the "vulnerable" group), the effect on injury outcomes was even greater. "One important finding from this study is the combination of hazard exposures and poor OHS protections is particularly detrimental to injury risk," says Dr. Peter Smith, lead investigator of the project.

"This elevated risk is greater than what you would expect based on the risks associated with inadequate protections alone. This suggests gains can be made by focusing on improving protections, in addition to controlling hazards. But the greatest gains, from a public health perspective, are found when you focus on both."

Also notable were the higher rates of mental health injury among the most vulnerable. Workers who were both exposed to hazards and reported low empowerment or inadequate policies and procedures had mental health injury rates that were seven times higher than those not vulnerable.

"This finding might reflect the psychological stress associated with being vulnerable," says Smith. "If workers are exposed to hazards and do not have workplace policies and procedures to protect them, or do not feel that they can speak up about conditions, they may not only end up being physically injured, but also psychologically injured because of the prolonged stress." ■

PREVALENCE AND LIKELIHOOD OF INJURY

The prevalence and likelihood of injury resulting in day off or medical attention

Vulnerability status	Percentage of respondents in sample (%)	Prevalence of self-reported injury (%)	Likelihood of self-reported injury*
No hazard exposure and adequate protection	18.5	6.25	1.00
No hazard exposure and inadequate protection	27.7	10.05	1.57
Hazard exposure and adequate protection	19.6	14.28	2.25
Hazard exposure and inadequate protection	34.2	26.29	4.19

*The figures in this column indicate the likelihood of injury requiring a day off or medical attention, when compared to workers with no hazards and no inadequate protection (the reference group, for whom the likelihood of injury outcome is 1.00). These results have been adjusted for gender, age, employment relationships, location of birth, occupational group and province.

Health professionals report uncertainty over roles in RTW of workers with complex injuries

Study in four Canadian provinces finds some confusion and areas for potential improvement



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Most health-care professionals, when treating patients with visible, acute physical work-related injuries, find the workers' compensation system and the return-to-work (RTW) process relatively straightforward.

However, they face challenges when treating workers with multiple injuries, complex or gradual-onset illnesses, chronic pain or mental health conditions, a study by the Institute for Work & Health (IWH) has found. These complex cases are estimated to represent less than 10 per cent of lost-time claims administered by provincial workers' compensation boards.

In complex cases, health-care providers describe the workers' compensation system as opaque and confusing. They also report a lack of clarity about their role in contributing to the return-to-work process. In this respect, their views are similar to those of case managers, who are also unclear

about the role and degree of involvement of health-care providers in RTW.

"We went into this study with the goal of investigating how health-care providers could be more engaged in workers' compensation and return to work, which research suggests results in better RTW outcomes," says IWH Scientist Dr. Agnieszka Kosny, lead researcher on this two-year project.

"However, it quickly became clear that there's significant confusion among both health-care providers and workers' compensation case managers about what the role of health-care providers should be in the management of complex cases."

Case managers, health providers interviewed

For this study, Kosny's team interviewed 97 health-care providers and 34 case managers in British Columbia, Manitoba, Ontario, and Newfoundland and Labrador. The

health-care providers were mostly general practitioners in a range of settings, but also included 19 allied health-care providers such as occupational therapists, chiropractors and psychologists, and 19 specialists such as surgeons, physiatrists and rehabilitation specialists.

The study identified the challenges faced by health-care providers and case managers when it came to the role of health-care providers in return to work. These challenges were grouped along six themes:

(1) Disagreements about timing and appropriateness of return to work:

While health-care providers and case managers agreed that return to work has many benefits, they also sometimes disagreed about the timing of RTW. Case managers sometimes felt that health-care providers were delaying return to work because they were following patients' wishes instead of appreciating the benefits of RTW. On the other hand, health-care providers sometimes felt case managers were predominantly interested in cost-containment and were pushing workers back too soon without understanding their individual circumstances.

(2) **Lack of understanding of the workers' compensation system:** Both health-care providers and case managers talked about the lack of knowledge that doctors, in particular, had of the workers' compensation system. Most doctors reported receiving little training in medical school about workers' compensation, occupational health, work injury management and return to work. Several health-care providers talked about the difficulties they faced when trying to determine patients' functional limitations or assess workers' readiness to return to their job. This lack of knowledge led to misunderstandings among both health-care providers and case managers, making collaboration difficult.

(3) **System rigidity:** Health-care providers described instances where workers' compensation rules and procedures seemed to lack flexibility needed to accommodate

the circumstances of workers with complex injuries and conditions. Some said their patients' conditions did not conform to the recovery guidelines that some workers' compensation boards applied to assess how long workers should take to recover from a particular illness or injury. They felt that the guidelines failed to consider co-morbid conditions and were sometimes unsuitable for complex injuries arising from multiple causes.

(4) Communication: Health-care providers sometimes described difficulties reaching case managers when they had questions or needed information. For their part, case managers also reported difficulty getting information from health-care providers,

such as when they received forms that lacked detail and their phone calls to doctors' offices were not returned.

Several health-care providers said it was common for them to submit an assessment to the workers'



Dr. Agnieszka Kosny

compensation board but never hear about the outcome of the claim. Many also noted that, as a result of communication barriers between health-care providers and case managers, injured workers played the role of the go-between. Some participants pointed out that using injured workers to relay information could result in misunderstandings, delays and incorrect information being conveyed to key decision-makers.

(5) Exclusion from the workers' compensation and RTW process: Health-care providers described instances of feeling alienated from the workers' compensation system and RTW process, especially when their recommendations were overturned.

This feeling of exclusion was made worse for some health-care providers by the use of internal medical consultants by workers'

compensation boards. Although some health-care providers found these consultants helped in the process because they "spoke the same language," others were concerned about consultants' independence and the determination of assessments without seeing injured workers in person. Case managers, for their part, said consultants helped them understand medical recommendations and provided a double-check for proposed treatment recommendations.

(6) Issues related to the broader health-care system: Both health-care providers and case managers talked about lack of access to the health-care system as a problem in RTW. They noted that many injured workers, especially those in northern and remote communities, did not have family doctors. As a result, these patients depended on walk-in clinics or emergency

rooms for their primary care—settings that are not appropriate for dealing with RTW issues. Health-care providers and case managers also spoke about wait times for tests and appointments with specialists, and the challenges these created for patient recovery and RTW.

"The challenges we heard are not going to be easy to solve, but we heard many good ideas for improving the system," says Kosny. "I'm encouraged by the feedback I've heard from different group stakeholders—feedback indicating to me that many share the goal of improving the workers' compensation and return-to-work experience for injured workers."

The full study report is available at: www.iwh.on.ca/other-reports. A plenary presentation on this study will be available at: www.iwh.on.ca/plenaries/2017-feb-07. 

POTENTIAL OPPORTUNITIES FOR IMPROVEMENT

In the study on health-care professionals, Dr. Agnieszka Kosny and her research team pointed to a number of opportunities for improvement:

1. Health-care providers need greater clarity and more consistent messages about their role in RTW and the workers' compensation system more broadly. More information about the workers' compensation system, aimed specifically at health-care providers, could be delivered during medical training, on workers' compensation websites and through continuing medical education courses. Also, workers' compensation policy-makers, health-care providers and other stakeholders such as injured workers, employers and unions could engage in a dialogue to identify clear guidelines about the role of health-care providers in the system.
2. Discussion is needed between health-care providers and workers' compensation decision-makers about the appropriateness of early return to work for certain types of injuries and illnesses, and about strategies for helping patients with complex and prolonged injuries.
3. Case managers could benefit from receiving additional training related to mental health and chronic pain to ensure that workers with these conditions are supported appropriately.
4. Changes could be considered to help health-care providers who treat patients with complex injuries, including revising forms to allow for a greater degree of elaboration when injuries are complex, as well as offering additional services (including mental health counselling) when healing is not progressing as expected.
5. Mechanisms could be put into place to allow health-care providers to easily get additional support with RTW when claims become complicated.
6. Internal medical consultants could be used to better communicate and collaborate with treating health-care providers. Treating health-care providers—typically general physicians—are in a good position to understand factors that will complicate recovery and return to work, and their insights should be integrated into return-to-work planning.

RTW systematic review update includes interventions for mental health conditions

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“Even groups of interventions from a single domain—for example, a package of health-focused services—are found in this review to have limited or no effect,” Cullen adds.

Graded activity and work accommodation are two exceptions to this pattern. The systematic review found moderate evidence that either of these two interventions, on their own, can have a positive effect on reducing lost time. “If workplaces have to offer a stand-alone intervention, work accommodation and graded activity are the only interventions we would suggest,” says Cullen.

Mental health studies included

This systematic review update, accepted for publication in the *Journal of Occupational Rehabilitation*, also covered workplace RTW interventions for mental health conditions. It found a strong level of evidence that traditional cognitive behavioural therapy (CBT) has no effect on reducing lost time. However, it also found a strong level of

evidence supporting CBT programs that are focused on work challenges. According to the systematic review, these work-focused CBT programs have a positive effect on reducing lost time and associated costs.

“The key message when it comes to mental health conditions is that generic CBT doesn’t improve return-to-work outcomes,” says Cullen. “What does work is cognitive behavioural therapy that addresses the specific difficulties that the worker faces in returning to his or her job.”

Implications for Seven Principles

The review is an update of a 2004 systematic review by IWH. The 2004 findings, which have been synthesized into what’s now commonly known as the Seven Principles of Successful Return-to-Work, found lost time and associated costs are reduced by: employer commitment to health and safety; a work accommodation offer; an RTW plan that supports the returning worker without disadvantaging co-workers

and supervisors; supervisor training in work disability prevention and RTW planning; early and considerate contact with the worker by workplace; the presence of an RTW coordinator; and contact between health-care provider and workplace.

“Although we may revisit the Seven Principles as a result of this work, the update would at least suggest that these practices should be offered together and not isolation,” says Cullen.

How the review was conducted

The question guiding this systematic review was: What workplace-based return-to-work and work disability management/support interventions are effective in assisting workers with musculoskeletal, mental health, and pain-related conditions with return to work and recovery after a period of work absence? (The paper to be published in the *JOR* addresses only RTW outcomes; recovery outcomes will be reported in a later paper.)

KEY FINDINGS FROM THE RETURN-TO-WORK SYSTEMATIC REVIEW UPDATE

There’s strong evidence that...

- For MSDs and pain disorders, implementing a multi-domain intervention (with components in at least two of the following domains: health services, case coordination or work modification) can help reduce lost time.
- For mental health conditions, implementing a work-focused cognitive behavioural therapy (CBT) intervention can help reduce lost time and costs associated with work disability.
- For mental health conditions, a traditional CBT intervention has no effect on reducing lost time.



There’s moderate evidence that...

- Graded activity and work accommodations can help reduce lost time.
- For MSD conditions, multi-domain interventions can improve work functioning and cost.
- For mental health conditions, work-focused CBT can help improve work functioning.



There’s not enough evidence to guide current practices and policies on...

- Work hardening alone
- Physician training alone
- Return-to-work plans alone
- Case management alone
- Worker education/training alone
- Supervisor training alone

Three return-to-work outcomes examined in the review are:

- Lost time
- Work functioning
- Costs

Paper on aging and MSDs draws on WHO framework

A systematic literature search covering 1990 to April 2015 resulted in 8,898 unique references. After screening abstracts and full articles for relevance, the team retained 36 unique studies of workplace-based interventions. Of these, 26 examined interventions for MSDs and pain-related conditions, and 10 were focused on mental health conditions.

The team then assessed the 36 studies for quality and found 18 were high quality and 18 were medium quality. No studies were rated as low quality. In comparison, the original review in 2005 included only 11 studies.

Return-to-work outcomes covered by the systematic review fell into three categories:

1. **Lost-time measures** approximated the amount of time spent away from the workplace or the rate of RTW over a given time period. These included outcomes such as days from injury until first return to work, total duration of sick leave over a given time period, work status (working or not working) at a point in time, and recurrences of sick leave/work absence. These measures were self-reported or collected from organizational or system records.

2. **Work functioning measures** assessed workers' function in the workplace and health-related lost productivity. These included outcomes such as self-rated work limitations and estimates of productive working hours.

3. **Cost measures** estimated work disability and lost-time costs, including income replacement, as well as the total compensation paid (where such costs included income replacement costs). +



With an aging workforce in Canada, there may be concerns that musculoskeletal disorders (MSDs) may be more prevalent and costly. While the evidence on this question is inconclusive, some current research suggests that supporting healthy aging in workplaces will benefit society in general.

That's the message from a recent position paper prepared by a team of researchers from the Institute for Work & Health (IWH) for the Centre of Research Expertise for the Prevention of Musculoskeletal Disorders (CRE-MSD). In the paper, the team examined a framework for healthy aging set out by the World Health Organization (WHO).

That framework includes strategies for creating age-friendly environments, strategies that the IWH team suggests can be adapted and applied to workplaces. They include combatting ageism; enabling autonomy, and supporting healthy aging in policy.

"While our focus was on MSDs and aging, we realized early on that we needed to go beyond the occupational health and safety literature to find out how workplaces were addressing the aging workforce," says Dr.

Dwayne Van Eerd, IWH associate scientist and lead author of the position paper.

"The WHO framework was helpful in providing strategies and a starting point for finding the additional literature."

On combatting ageism, the team said the current research literature does not support a link between aging and lower productivity, lower work ability or higher MSDs. On enabling autonomy, the team found research on key approaches such as flexible work arrangements and customized employment contracts called "I-deals" for "idiosyncratic deals."

Regarding workplace policies to provide support for healthy aging and older workers, the team found inconsistency in the research literature. Perhaps the greatest challenge to workplace policy is the heterogeneity among older workers, note the authors.

"Overall, the link between aging and MSDs is not clear," says Van Eerd. "We think age is just one of many factors to address when it comes to reducing MSDs."

The position paper can be found at: <http://uwaterloo.ca/centre-of-research-expertise-for-the-prevention-of-musculoskeletal-disorders/resources/position-papers/aging-and-msd-strategies-older-workers>. +

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Employers wanted for study on OHS spending

Institute's Ontario study on employer investments in OHS first of its kind in Canada

How much do Ontario employers spend to prevent work-related injuries and illnesses? A team of researchers at the Institute for Work & Health (IWH) has set out to answer this question in the first study of its kind in Canada.

Preliminary findings from a sample of 60 organizations suggest that the amount spent ranges widely—from around \$400 to nearly \$6,500 per worker per year.

These estimates take into account the costs related to management and supervision time, staff training, personal protective equipment, external occupational health and safety (OHS) professional services, and the share of capital investments in facilities, vehicles and equipment related to safety.

The research team is now seeking other Ontario employers to join the study. The goal is to recruit 350 organizations across different sectors, in proportions representative of the labour force in the province.

"It would be helpful to have information on what organizations spend on health and safety to support the dialogue between employers and regulators about protecting workers," says Dr. Cam Mustard, IWH president and senior scientist, and lead researcher on the project.

"I also expect this kind of information would be useful if employers want to have conversations within their sectors about what the right level of investment should be."

The study draws on a method developed and used by the International Social Security Association (ISSA)—an international grouping of national social security agencies—and German Social Accident Insurance (DGUV)—an umbrella organization of accident insurance institutions for Germany's industrial and public sectors.

This method asks participating organizations to estimate their investments in five categories:

- organizational management and supervision—including time spent by the joint health and safety committee and by front-line supervisors and senior management on OHS policies and procedures;
- staff training in occupational health and safety—including OHS training hours and per-worker training costs for new hires and regular staff;
- personal protective equipment—for example, hearing protection, gloves, footwear, respirators and emergency response equipment;
- OHS professional services—for example, the cost of external consulting services; and
- capital investments related to OHS—for example, the portion of spending on new or renovated facilities, vehicles, equipment and tools that relates to health and safety improvements.

As part of the study, participants will be asked to complete the Organizational Policies and Practices (OPP) questionnaire that was developed as part of IWH's Ontario Leading Indicator Project. The goal will be to find if there is a link between the level of expenditures and OPP scores.

Later in the project, the research team hopes to also use Workplace Safety and Insurance Board (WSIB) administrative data to examine the link between firm-level OHS investment and injury claim outcomes.

Recruitment for this study is expected to continue through the spring of 2016. Organizations interested in taking part are asked to contact Morgan Lay, research associate on the project, at: mlay@iwh.on.ca. ■