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# Benchmarking organizational leading indicators for the prevention and management of injuries and illnesses

## Final report



**Institute  
for Work &  
Health**

Research Excellence  
Advancing Employee  
Health

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Institute for Work & Health

**Benchmarking  
organizational leading indicators  
for the prevention and management  
of injuries and illnesses**

**Final report**

This report is written by the Institute for Work & Health on behalf of the current and past members of the Organizational Indices Committee of the Occupational Health and Safety Council of Ontario (OHSCO). They include:

- Ben Amick, Institute for Work & Health
- Alec Farquhar, Occupational Health Clinics for Ontario Workers
- Kim Grant, Workplace Safety & Prevention Services
- Shannon Hunt, Electrical & Utilities Safety Association
- Kiran Kapoor, Workplace Safety & Prevention Services
- Kiera Keown, Institute for Work & Health
- Craig Lawrie, Ontario Safety Association for Community & Healthcare
- Chris McKean, Infrastructure Health & Safety Association
- Sandra Miller, Workplace Safety & Prevention Services
- Carolyn Murphy, Workplace Safety and Insurance Board
- Kathryn Nichol, Public Services Health & Safety Association
- Michael Roche, Occupational Health Clinics for Ontario Workers
- Carol Sackville-Duyvelshoff, Ontario Ministry of Labour
- Peter Shermer, Workplace Safety and Insurance Board
- John Speers, Workplace Safety & Prevention Services
- Michael Swift, Institute for Work & Health
- Monica Szabo, Public Services Health & Safety Association
- Ted Vandevs, Electrical & Utilities Safety Association
- Jody Young, Ontario Ministry of Labour

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## **Executive Summary**

Can a simple tool be developed that will predict a firm's workplace injury experience based on an assessment of its health and safety policies and practices? This was the question that a team of partners within Ontario's occupational health and safety system set out to answer, and it looks like the answer is "yes."

The team developed an eight-item questionnaire that was then administered to over 800 workplaces. One respondent in each workplace was asked to assess the degree to which their organization adhered to optimal occupational health and safety policies and practices. Respondents' answers were scored and matched to their organization's injury rates over the previous three-plus years.

Workplaces where respondents reported higher scores had lower injury claim rates.

Although more work needs to be done to determine the reliability and best use of this eight-item questionnaire, it is an important step in the development of a "leading indicator" measurement tool that could be of benefit to occupational health and safety stakeholders in Ontario and beyond.

## **Background**

In 2008, Tom Beegan, Chief Prevention Officer at the Workplace Safety and Insurance Board (WSIB), asked a committee of the Occupational Health and Safety Council of Ontario (OHSCO) to benchmark workplace health and safety practices in order to assess provincial performance in achieving zero workplace injuries and illnesses, as called for in the WSIB's "Road to Zero" plan. To that end, it asked the committee to develop two health and safety tools: one for assessing an organization's safety culture and another for assessing its hazards.

Two subcommittees were then set up, each including representatives of the Health and Safety Associations (HSAs), WSIB and Ministry of Labour (MOL). Alec Farquhar of the Occupational Health Clinics for Ontario Workers (OHCOW) led the subcommittee developing the hazard assessment tool. Ted Vandevs of the Electrical & Utilities Health & Safety Association (E&USA) headed the subcommittee developing the safety culture tool. (See page 12 for a list of original and current committee members.)

Both tools were expected to be questionnaires aimed at understanding health and safety practices in Ontario workplaces across all sectors. The Institute for Work & Health (IWH) was invited to participate in the work of the committee developing the safety culture tool.

(Note: The safety culture subcommittee began when OHSCO was an active organization and there were 14 HSAs. Therefore, the organizations listed in this document do not refer to the current amalgamated HSAs.)

### **Mission of the Safety Culture Subcommittee**

Develop and pilot a short questionnaire to quickly assess an organization's occupational health and safety performance.

### **Short-Term Goals**

- Provide a tool for consultants to engage firms in discussions about health and safety practices in order to help Ontario workplaces reduce injuries.
- Share with Ontario Prevention System partners the subcommittee's learnings about developing and implementing leading indicators.

### **Long-Term Goals**

- Identify performance measures in addition to reductions in lost-time injury rates that can be used by Ontario Prevention System partners.
- Identify leading indicators that will enhance client service and effectiveness through the identification of appropriate health and safety interventions for firms.
- Gain an understanding of the cause-and-effect relationship between OHS performance and outcomes.
- Help move the province towards the "Road to Zero" by supporting a focus on changing leading indicators such as safety culture.

### **Objectives**

- Develop a short questionnaire to measure leading indicators of organizational occupational health and safety performance.
- Determine the face validity of questions for people who will need to administer the questions and those who will be using the information.
- Determine guidelines and recommendations to ensure data integrity.
- Define a clear process for administering the questionnaire, collecting data and generating reports, including specifics of the report.
- Collect data to assess the reliability and validity of the survey tool.
- Make recommendations to the Health and Safety Associations, WSIB and MOL on the tool's use and other next steps.

## Questionnaire Development

The group recognized that no scientifically valid safety culture tool existed that could be used across sectors and for all firm sizes. Furthermore, it recognized that many safety climate tools require multiple respondents, and the requirement for multiple respondents would not fit with the intent of this project to collect information from a single key informant within the workplace.

Therefore, the group felt it was more appropriate to develop a tool that would capture information about occupational health and safety programs, policies and practices and allow for a quick differentiation of occupational health and safety performance. This objective emphasized rapid assessment rather than a detailed audit. As a result, an eight-item questionnaire was developed to assess the occupational health and safety performance of organizations. The eight items, approved by the HSAs, WSIB and MOL, include the following:

- 
1. Formal safety audits at regular intervals are a normal part of our business

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  2. Everyone at this organization values ongoing safety improvement in this organization

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  3. This organization considers safety at least as important as production and quality in the way work is done

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  4. Workers and supervisors have the information they need to work safely

---

  5. Employees are always involved in decisions affecting their health and safety

---

  6. Those in charge of safety have the authority to make the changes they have identified as necessary

---

  7. Those who act safely receive positive recognition

---

  8. Everyone has the tools and/or equipment they need to complete their work safely

---

The questionnaire also collected information on firm size, the job title of the informant, whether the key informant worked in a health and safety role in the organization, whether the organization had a written commitment to zero injuries, and whether the questionnaire was completed over the phone, in a meeting or by mail. (See Appendix A on page 13 for the full questionnaire.)

## Data Collection

Once the survey questionnaire was developed, HSA representatives were trained how to administer it. They were also given access to all documentation via an intranet site. To improve the likelihood of obtaining employer responses, all data was stored and analyzed by IWH. Confidentiality agreements were signed with IWH by all HSAs involved to protect the data being collected.

The goal of the HSAs was to collect 100 questionnaires each from their respective employer members. This was accomplished in one of three ways: by telephone, in group meetings or in one-on-one interviews. HSAs attempted to get data from “easy to contact” firms.

It was expected that one person from each firm would be a reliable and valid report on the occupational health and safety performance of the organization. This person was called the key informant for the organization, and no standard procedure was used to determine the selection of the informant. Rather, the intent was to determine if the position of the key informant was an important part of the data collection process and, therefore, needed to be standardized.

In 2009, 808 questionnaires were received from nine HSAs:

- Education Safety Association of Ontario (ESAO)
- Industrial Accident Prevention Association (IAPA)
- Ontario Service Safety Alliance (OSSA)
- Electrical & Utilities Safety Association (E&USA)
- Ontario Forestry Safe Workplace Association (OFSWA)
- Farm Safety Association (FSA)
- Transportation Health and Safety Association of Ontario (THSAO)
- Ontario Safety Association for Community & Healthcare (OSACH)
- Occupational Health Clinics for Ontario Workers (OHCOW).



## Data Analysis

All data was housed and analyzed at the IWH. Firm numbers were used to link survey results to historical WSIB injury data for the years 2006 to 2008, and for nine months of 2009. Using firm numbers, IWH linked WSIB injury and illness data to survey data for 642 firms (less than the 808 questionnaires administered because 166 firms had duplicate firm numbers). In the case of multiple informants from one organization, a single informant was randomly chosen.

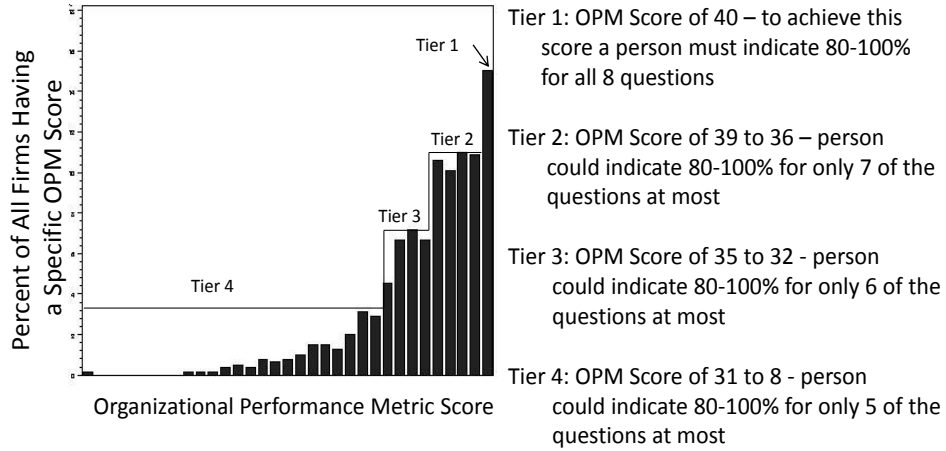
Using the data from the pilot survey, the group sought to answer three questions:

1. Are all eight items required to measure a leading indicator of organizational performance?
2. Are the eight items related in expected ways with system indicators of OHS performance?
3. Are there important implementation issues to consider in collecting information on leading indicators?

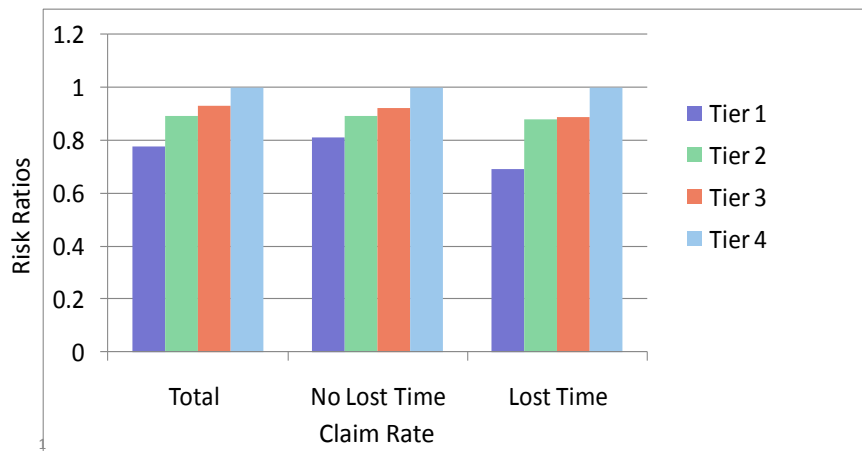
## Findings

1. All eight questions were required to measure occupational health and safety performance. No one item was sufficient. The eight items together provided a reliable measure. (A more detailed description of the data analysis is available upon request from the Institute for Work & Health.)
2. Therefore, these eight questions were able to provide a single measure of health and safety leading indicator performance. This measure has been termed the Organizational Performance Metric (OPM).
3. A summative measure is recommended that adds the answers to all eight questions together, yielding a low score of eight (all ones) and a high score of 40 (all fives).
4. As shown in the figure on the next page, the answers were distributed reasonably; that is, not everyone reported positively.
5. The OPM score had an inverse relationship with historical injury experience; that is, the greater the score, the lower the injury rate during the previous 3.75 years. The total range in OPM scores reflected a 25 per cent difference in total injury rates. OPM scores did not vary in meaningful ways across sectors; it did not matter what sector the firm was in. As well, OPM scores did not vary in meaningful ways across firm size; they applied in both large and small firms.
6. Having a written commitment to zero was not associated with past injury and illness outcomes.
7. The OPM score did not depend on who answered the survey (worker, supervisor, manager, owner or other). A worker was just as likely as a CEO to report the organization was performing well or poorly.
8. People with health and safety responsibilities in their organization scored their organizations higher on the OPM compared to others.
9. How data was collected appears to make a difference. If data was collected over the phone, the firm was more likely to score higher on the OPM. If the data was collected in a meeting, the firm was more likely to score lower. Collecting the data in person was not related to the OPM score.

### Distribution of Organizational Performance Metric



### Risk Ratios for Claim Rates by OPM Tier Levels with Tier 4 as Reference



## Lessons Learned

1. Health and safety professionals can develop a reliable and valid eight-question survey on occupational health and safety leading indicators.
2. Applied research introduces unique limitations (i.e. response bias). Survey response bias is influenced by:
  - a. the forum in which the data is collected (i.e. in person, over the phone, in group meetings); and
  - b. the relationship between the individual collecting the information and the respondent.

Consequently, more work needs to be done to understand these sources of bias and the degree to which they influence the OPM score.

3. The availability of ethics documentation to respondents helps ensure higher compliance and less bias, as reported by the HSA consultants collecting the data.
4. The current work is a good first step in the development of a tool that could potentially have predictive capability (i.e. the potential of a high OPM score to predict future lower injury experiences). Future work needs to:
  - a. Look at whether the 2009 OPM score predicts future injury and illness rates.
  - b. Better understand sources of bias, as described above.
  - c. Determine what respondents are thinking about when answering the questions and how that relates to what is happening in the organization.

## Recommendations

1. Establish a team to further investigate the practical applications of the tool. This investigation should include the following:
  - a. Conduct a needs assessment with consultants to better understand their perspectives related to the tool's application.
  - b. Gather insight from clients about how they might use or apply the information provided by the tool to improve their health and safety programs.
  - c. Assess how the tool might fit within and support the Ontario Prevention System's engagement and leading-indicator measurement strategies.
  - d. Assess the feasibility of developing, administering and using an Ontario-wide database that would allow Health and Safety Associations and workplaces to benchmark performance using leading indicators to measure improvements in the workplace on an annual basis.
2. Use the findings from the needs assessments to determine if a particular OPS application could benefit from the use of the tool and database.
3. Develop a business case for implementing the OPS application if there is an identified need.

## **Members of the Organizational Indices Committee**

### Original members:

- Ted Vandervis, E&USA
- Shannon Hunt, E&USA
- Ben Amick, IWH
- Michael Roche, OHCOW
- John Speers, IAPA
- Carolyn Murphy, WSIB
- Peter Shermer, WSIB
- Carol Sackville-Duyvelshoff, MOL
- Craig Lawrie, OSACH
- Sandra Miller, OSSA
- Alec Farquhar, OHCOW

### Current members:

- Chris McKean, IHSA
- Ben Amick, IWH
- Kiera Keown, IWH
- Michael Roche, OHCOW
- John Speers, WSPS
- Peter Shermer, WSIB
- Jody Young, MOL
- Kathryn Nichol, PSHSA
- Kim Grant, WSPS
- Alec Farquhar, OHCOW
- Kiran Kapoor, WSPS
- Michael Swift, IWH
- Monica Szabo, PSHSA
- Sandra Miller, WSPS

Thank you to all system partners who provided feedback on the survey and process during the development phase.

## APPENDIX A: Survey of Organizational Health and Safety Leading Indicators

### Benchmarking Health & Safety Practices along the Road to Zero

WSIB Firm Number \_\_\_\_\_

Firm Name \_\_\_\_\_

**Join us as we work towards zero injuries.** Participating in this survey will allow us to identify health and safety practices across Ontario. With this information you can benchmark your health and safety practices with others in your sector. It will also help your health and safety association identify tools that may be beneficial to your organization.

The completed surveys will be analyzed and stored at the Institute for Work & Health. Only a summary will be shared with the WSIB and MOL and your HSA and it will not be used for enforcement purposes. You will have access to your sector’s results through your health and safety association. All information will be kept confidential. Your WSIB Firm number and firm name will allow us to correlate your responses with your WSIB statistics. This will be done to validate the survey questions and will be used for research purposes only.

Please answer the following questions based on your organization’s health and safety practices. If your organization has many locations, please base your answers on the site you work from regularly.

**If you do not know the answer to the question please leave the question blank**

**Please answer the questions in regards to the percent of time that each practice takes place.**

Health and Safety Practices	80%- 100%	60%- 80%	40%- 60%	20%- 40%	0%- 20%
1. Formal safety audits at regular intervals are a normal part of our business.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Everyone at this organization values ongoing safety improvement in this organization.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. This organization considers safety at least as important as production and quality in the way work is done.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Workers and supervisors have the information they need to work safely .....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Employees are always involved in decisions affecting their health and safety.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Those in charge of safety have the authority to make the changes they have identified as necessary .....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Those who act safely receive positive recognition. ....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Everyone has the tools and/or equipment they need to complete their work safely.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For the purpose of this survey an audit means a formal process of evaluating and reporting on how the organization manages health and safety in accordance with a recognized standard (ie: CSA Z1000, OHSMS 18001 or a Health and Safety Association audit). Regular means that an audit is repeated at regular intervals. For example, once every year or once every 2 years.

<b>Please tell us....</b>		
<p>What is your role within this organization?</p> <p> <input type="checkbox"/> Owner/CEO/President/Senior Management (VP)                        <input type="checkbox"/> Team lead/ Supervisor                        <input type="checkbox"/> Manager                        <input type="checkbox"/> Administrative Staff  <input type="checkbox"/> Professional Staff                        <input type="checkbox"/> Skilled/trades staff                        <input type="checkbox"/> Worker                        <input type="checkbox"/> Unionized Representative  <input type="checkbox"/> Other _____                 </p>		
<p>Have you been working as a Health and Safety professional for this organization?</p> <p><input type="checkbox"/> Yes    <input type="checkbox"/> No</p> <p>How long have you been working in a Health and Safety role for this organization?</p> <p> <input type="checkbox"/> Less than 1 year                        <input type="checkbox"/> 1 to 5 years                        <input type="checkbox"/> More than 5 years                        <input type="checkbox"/> Not Applicable                 </p>		
	<b>Yes</b>	<b>No</b>
This site has a written commitment to achieving zero injuries in the workplace. ....	0	0
<p>Who do you report to?</p> <p> <input type="checkbox"/> Owner/CEO/President/Senior Management (VP)                        <input type="checkbox"/> Foreman/Supervisor                        <input type="checkbox"/> Manager                        <input type="checkbox"/> Director  <input type="checkbox"/> Professional Staff                        <input type="checkbox"/> Skilled/trades staff                        <input type="checkbox"/> Other _____  <input type="checkbox"/> Not Applicable                 </p>		
<p>How many employees does your organization have at this site?</p> <p> <input type="checkbox"/> &lt;5                        <input type="checkbox"/> 5-10                        <input type="checkbox"/> 11-19                        <input type="checkbox"/> 20-50                        <input type="checkbox"/> 51-100                        <input type="checkbox"/> 101-150                        <input type="checkbox"/> 151-300                        <input type="checkbox"/> 301-500  <input type="checkbox"/> 501-1,000                        <input type="checkbox"/> 1,001-5,000                        <input type="checkbox"/> 5,001-10,000                        <input type="checkbox"/> 10,000 – 25,000                        <input type="checkbox"/> 25,000 or larger                 </p>		
<p>How many employees does your organization have at this corporation?</p> <p> <input type="checkbox"/> &lt;5                        <input type="checkbox"/> 5-10                        <input type="checkbox"/> 11-19                        <input type="checkbox"/> 20-50                        <input type="checkbox"/> 51-100                        <input type="checkbox"/> 101-150                        <input type="checkbox"/> 151-300                        <input type="checkbox"/> 301-500  <input type="checkbox"/> 501-1000                        <input type="checkbox"/> 1,001-5,000                        <input type="checkbox"/> 5,001-10,000                        <input type="checkbox"/> 10,000 – 25,000                        <input type="checkbox"/> 25,000 or larger                 </p>		
<b>For HSA Consultants – Please tell us....</b>		
<p>How was this survey completed?</p> <p> <input type="checkbox"/> In person                        <input type="checkbox"/> Over the phone                        <input type="checkbox"/> At a meeting including other organizations                 </p>		