



Kawaabandizwin - "Looking Out for Everyone and Everything"

Drew Douglas • August 29, 2014

Abstract

Aaniin kina weya. Drew Douglas ndizhnikaaaz. Maang doodem miinwaa Mnjikaning ndoonjiba. Hello everyone. My name is Drew Douglas. I am of the Loon Clan and I am from the Chippewas of Rama First Nation (Rama).

A couple of years ago, our four health and safety committees began discussing the seven grandfather teachings and how they relate to our health and safety system. The grandfather teachings were set as a standing agenda item and we discussed what they each meant to us. Powerful conversations ensued. The health and safety department kept searching for ways to re-align our safety system with our traditional teachings and culture.

In the spring of 2014, we decided to build on the concept of the medicine wheel as the Rama Community Education Governance Circle had done. Community elders, language keepers, members of our senior management team and a member of Chief and Council all came together to spend a full day discussing health and safety and traditional First Nation concepts. As a result, traditional teachings and culture have been fused to create our vision of health and safety, which is represented by our Health and Safety Visioning Wheel recently named Kawaabandizwin, meaning "Looking out for everyone and everything." I will attempt to explain the basics starting at the centre of the Wheel and moving outward.

[READ FULL ARTICLE HERE](#)

The Value Proposition for the Occupational Safety and Health Professional: A Review of the Literature

David Borys • June 30, 2014

Abstract

This literature review was commissioned by the International Network of Safety & Health Practitioner Organisations with the purpose of reviewing the evidence in support of the value proposition for the occupational safety and health professional. As such, this report makes a small contribution to a range of activities currently being undertaken by the International Network of Safety & Health Practitioner Organisations designed to strengthen the occupational safety and health profession's international standing and acceptance as a profession. This literature review attempts to answer three research questions 1) what is the evidence that the occupational safety and health professional improves the occupational safety and health performance of an organization? 2) what knowledge, skills and attributes of the occupational safety and health professional might

be linked with the effectiveness of the occupational safety and health professional? 3) does the impact of the occupational safety and health professional vary depending on industry and organizational size? Of the 58 articles retrieved during the literature search, only two studies could be classified as providing strong evidence in support for the value proposition for the occupational safety and health professional. Two themes that emerged from the literature and which warrant further research are the importance of the line of report and the personal attributes of the occupational safety and health professional. This finding suggests that knowledge, without power and the ability to influence senior decisions-makers, may negatively impact the occupational safety and health professional's ability to add value.

[READ ABRIDGED ARTICLE HERE](#)

The Search for Leading Indicators of OHS Performance: IWH Eight-Item Questionnaire May Predict Future Claims Rates

Ben Amick and Michael Swift • June 30, 2014

Abstract

Identifying leading indicators in occupational health and safety (OHS) is gaining momentum. In a promising development, an eight-item questionnaire jointly developed by the Institute for Work & Health (IWH) and safety professionals at Ontario's health and safety associations has been found to be predictive of workers' compensation claims rates three years down the road in a sample of Ontario workplaces.

This has important implications. If the above results are duplicated in other samples, the questionnaire will provide OHS professionals with a simple tool they can use to help determine if their organizations are on the right track with respect to health and safety, or if changes need to be made to prevent workplace injuries and illness in the future.

The eight-item questionnaire, called the Institute for Work & Health Organizational Performance Metric (IWH-OPM), is the first tool to come out of the Institute's leading indicators research. Leading indicators are measures of organizational and management factors expected to affect outcomes in future, in this case OHS outcomes. They contrast with lagging indicators, which are measures of

organizational performance based on outcomes that have already happened. For example, in the OHS world, lagging indicators include work injury rates and workers' compensation claims rates.

When the IWH-OPM was first tested in 2009 at over 600 Ontario workplaces, researchers found a strong relationship between IWH-OPM scores and companies' past workers' compensation claims rates. Now, the team has found IWH-OPM scores may also be predictive of future claims rates. It's a strong relationship, and the team is confident it's a real relationship for this sample of Ontario firms.

There is one cautionary note: any Ontario workplace could join in the IWH-OPM study. Participants were not systematically selected to be representative of all Ontario workplaces (never mind workplaces across Canada) or even workplaces in their industrial sector. However, the researchers did look at whether the firms who chose to participate differed in any key way with a representative sample of Ontario firms and found no significant differences. Nonetheless, the findings need to be replicated in other workplace samples

[READ FULL ARTICLE HERE](#)

Kawaabandizwin - “Looking Out for Everyone and Everything”

Drew Douglas

Discussion

The four colours of the medicine wheel is a teaching tool passed down from traditional times. It is used to explain the four directions (East, South, West, North), the four elements (Fire, Earth, Water, Air), and countless other teachings. When viewing a wheel, know that it does not start at the top as many current circular health and safety models do. First Nations people view the east as the starting point because that is where the sun rises and the day begins.

Health and Safety Visioning Wheel

At the centre is our mission for health and safety at Rama. This is probably similar to the ideal view many organizations regard in terms of sharing health and safety among all of the stakeholders within the internal responsibility system. In Ojibwe, we say wiidookdaadwin, a powerful term that is much stronger than its literal translation of “working together”. It could also be defined as “helping each other”. In that, we don’t just work alongside each other, we come together to work with a good heart and a good soul and we actually raise each other to new heights. (Lorraine McRae, personal communication, 2014).

The first ring represents the four sacred medicines in traditional Ojibwe culture. These medicines directly apply to the health in health and safety.

Starting in the East, **Semaa** (Tobacco) is placed. It was the first medicine given to the Anishnaabe (First People) by the Creator. It is primarily used to give thanks and as a gift when seeking advice or assistance from another or the creator.

In the South, we place **Giizhik** (Cedar). It is a cleansing medicine and was used in teas and baths to cleanse the body and mind and bring the gift of safety to the Anishnaabe.

Shkodewaanzh (Sage) is placed in the West on the medicine wheel. Used traditionally for smudging, shkodewaanzh is used to bring positive energy to a place. It brings the gift of change and assists with clearing hearts and minds so that we may learn, grow and understand in a positive way.

The fourth medicine is **Wiingashk** (Sweetgrass) which is placed in the North. Wiingashk is also smudged at ceremonies providing balance, strength and positive energy. Traditionally, it is braided with each strand representing mind, body and spirit. Anishnaabe have used this braid as a teaching metaphor. As individual blades of grass we are weak; but united and braided we are strong. This teaching can be applied to a group or to the wholistic view of an individual.

Continuing our journey outward, the purple represents the Eight Basic Needs. These have been adapted from The Power Within People (1986). Similar to Maslow’s hierarchy of needs (1943), the eight basic needs represent what every individual needs to have in life; love, safety and security being among the principal needs. The application of the eight basic needs to health and safety is self-explanatory.

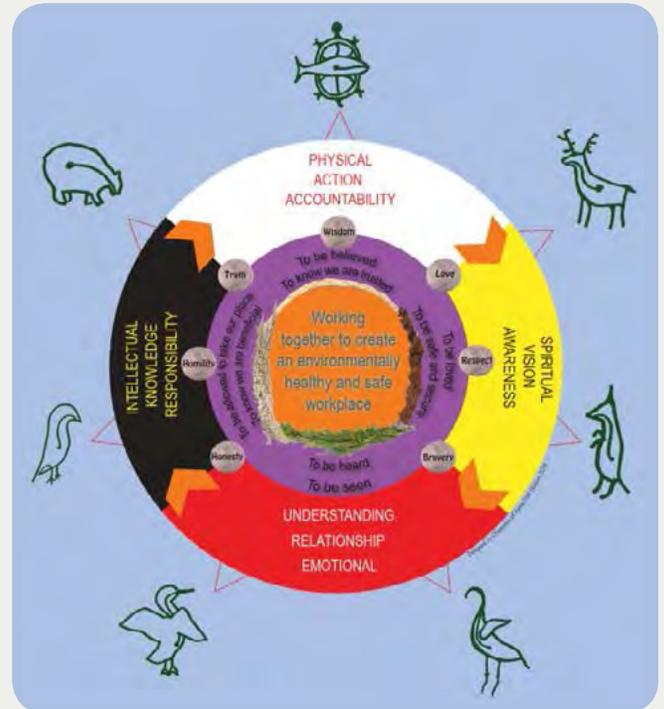
Between the purple circle and the four colours, the seven grandfather stones are placed. These stones are a teaching tool of the Anishnaabe. Traditionally, it is said that seven grandfathers took a young boy and gave him each of these teachings as a stone to carry through the four directions and pass along to the Anishnaabe. Living by these “grandfathers” is the way for Anishnaabe people to live in harmony with everything around them.

Zaagiwewin (Love) was the first gift from the seven grandfathers to the little boy. It is understood as our first teaching because a newborn child only understands the love for their mother. A workplace health and safety committee (committee) member once remarked that health and safety can be likened to a mother and the employees of an organization, her children. Like a mother, health and safety strives to teach, protect and care for the employees of an organization (Jensen, 2012). Much of what we do as safety practitioners is out of Zaagiwewin for our colleagues. We all wish for our employees and clients to go home safely and we implement management systems and prevention efforts in order to achieve this.

Mnaadendwin (Respect) is the next teaching gift. In the words of our committees, exposing and evaluating hazards is actually showing a sign of respect to our colleagues. A committee member stated that people have to respect health and safety. He went on to say that it was like a computer program that runs in the background. If it isn’t looked at once in a while, it could shut down (Yerex, 2012). Many of us strive to successfully integrate safety into our workplaces. It cannot be done unless there is a level of Mnaadendwin.

Zoongde’ewin (Bravery) was the next teaching stone received by the boy. It is easily tied to the employee rights of participation and work refusal. In the past, employees didn’t always have the courage to stand up for health and safety rights. In Canada, it wasn’t until 1974 and the uranium miners at Elliot Lake that we saw Zoongde’ewin in health and safety. In some cases today, it is still difficult for employees to exercise bravery when refusing unsafe work. At Rama, we tend to tie this teaching to emergency preparedness. Bravery is not being fearless, but rather being able to act systematically in an appropriate manner when afraid. Drills, tabletop exercises, etc. all help to ensure there is Zoongde’ewin among employees.

Debweyendaagozi (Honesty) came next. It can be explained through such examples of incident and “close-call” reporting. It is understood by Anishnaabe that those not exercising Debweyendaagozi will eventually have to face it. Some safety practitioners may have had experience investigating bogus workplace incidents or providing return-to-work plans for employees quite capable of performing their pre-injury duties. It is difficult to learn from our own mistakes unless we are honest with ourselves. Are reported safety metrics completely accurate? Proper two-way communication of all metrics, hazards, issues, concerns, etc. between management and employees fosters Debweyendaagozi.



Dbasendmowin (Humility) is the next teaching gift. There is difficulty in translating this Ojibwe term. It could be loosely translated to mean heart and measurement. Thus, Dbasendmowin doesn't mean to lower yourself as many commonly think, but rather to know your true self. (Quarrington, 2012). I know a 30-year safety veteran with multiple designations who still attends chapter meetings. She is the epitome of Dbasendmowin. When we think of new and young workers coming into the workforce, we need to empower them with this teaching; that way they will ask about the hazards related to a new task, rather than attempting to perform the activity with little instruction.

Debwewin (Truth) was the second last teaching received. It is understood that Debwewin comes from living all seven of these grandfather teachings. At Rama, these teachings are incorporated into our core values as an organization. They are our guiding principles and are clearly outlined in our Employee Handbook. The committees have also included them directly into their Terms of Reference. Understanding Debwewin is also about understanding that all of these teachings are interconnected like the elements of a management system. For example, it is difficult to understand or practise respect without understanding and practising love, or honesty, or humility.

Nbwaakaawin (Wisdom) was the final (and the first) teaching passed on. As this wheel is arranged in a circle, so too are the seven grandfather teachings. Like Plan-Do-Check-Act, these teachings were meant to be shared in a circular format not a linear one. Wisdom starts when we are young and grows our entire life. This teaching is about cherishing knowledge. Nbwaakaawin is the reason that incidents are reported and investigated. We want to learn from mistakes and prevent them from occurring again. Anishnaabe respect their elders because of their Nbwaakaawin. It was once remarked to me that our profession is a lifelong journey of learning (Dylan Short, personal communication, 2014).

Within the Health and Safety Visioning Wheel, after the seven grandfathers comes the four colours. The orange chevrons between each of the sections represent the fact that there is no end, only continual improvement. Reflected in the four colours are what we identified as being the four cornerstones of health and safety: Awareness, Understanding, Responsibility, and Accountability. A successful safety management system is built on these caveats.

Beginning in the East, **Awareness** is the first thing that health and safety requires. In terms of hazards, we say recognition and in terms of incidents, we say reporting. A great deal of the safety practitioner's role and the committee's role is simply promoting health and safety. One could say, creating an awareness of it. Toolbox talks, health and safety bulletin boards, committee meeting minutes, and of course North American Occupational Safety and Health (NAOSH) Week are all methods of creating awareness. A management system must be built after awareness exists. The reason management systems have communication as a fundamental element is because communication creates awareness. A successful internal responsibility system will not exist unless all parties have basic awareness of their roles and responsibilities within it.

In the South, **Understanding** comes after awareness. In terms of hazards, we say assessment; in terms of incidents, we say investigation. Understanding is why there is the provision of health and safety training. We can't expect employees to enter a confined space or work at a height until they fully understand the potential ramifications of that highly hazardous work. Understanding implies that the health and safety training was engaging for the participants. Unengaged training would simply be awareness. Whether understanding is attributed to a procedure or a regulation, it arms our employees and clients with the knowledge required to return home safely.

Moving to the West, once we have awareness and understanding in health and safety, we then have **Responsibility**. In terms of hazards, we say controls. In terms of incidents, we say prevention and protection measures. Responsibility must be taken on by a workplace stakeholder to ensure that these controls and protection measures are implemented. Responsibility is thrown around quite often in safety. Responsibility cascades down through the organizational hierarchy. Every stakeholder within the organization has responsibility. For instance, whenever a motion is raised at a committee meeting, a committee member must take responsibility for carrying out the action item associated with it. We tend to use the word commitment a lot when developing policies, programs and procedures. Responsibility could be likened to commitment. Once an initiative is committed to, responsibility for undertaking the initiative must be taken by the person committing to it.

In the North, **Accountability** follows responsibility. In terms of hazards, we say evaluate and in terms of incidents, we say follow up. Whoever has accepted or been delegated responsibility for an initiative must be held accountable for completion of the initiative. This is the premise behind due diligence. Each workplace party must be diligent in their actions and held accountable. Accountability leaps up the organizational hierarchy. A successful management system has a review or audit element. This is in place to ensure that the development, implementation, and maintenance of the elements within the system are evaluated and accounted for.

Moving to the next layer of the Health and Safety Wheel, the visioning wheel itself is represented. This is a fundamental teaching of the medicine wheel. It has practical applications in fields such as education, social work, and government but it is also a very important teaching for the safety practitioner. Vision, Relationship, Knowledge, Action are within each of the four directions. Traditional management systems tend to jump from vision to action (Plan-Do). One model that mirrors the Anishnaabe visioning wheel is the World Health Organization's model for a healthy workplace which includes Mobilize and Assemble prior to the traditional Plan-Do-Check-Act (Burton, 2010). These could be interpreted to align with the relationship aspect of the visioning wheel.

Becoming aware of your organization's **Vision** of health and safety is key. It is the driver to reduce incidents and control hazards. The vision is the reason we write a policy that commits to a healthy and safe workplace. Whether it is a fully functioning and externally audited management system or a damn good safety program, we will not achieve it without first envisioning it. Why do we make health and safety objectives SMART? We want to ensure there is a clear vision to achieve them. From Heinrich to Petersen to "An advocate for safety in every workplace", nothing is accomplished without their first being a vision of it.

After the vision is clearly established, a team must be formed and a strong **Relationship** developed. Tuckman (1965) very clearly explained this in the breakdown of team formation: forming, storming, norming and performing. In order for a team to "perform" they must first weather the "storm". You cannot accomplish anything unless a relationship has been developed. Even a chapter meeting starts with a round of basic introductions. When I started in health and safety, as a trainee, the first morning of my first day, my mentor sat with me and explained that relationships were integral to our work in health and safety. He said that if we want to achieve anything at our organization, we have to develop and nurture our relationships with all of the stakeholders here (Rick Donato, Personal Communication, 2011). My father once told me that when he was young and my grandfather was chief, he would sometimes be dragged along to council meetings. The meetings were in the evening

and he didn't understand at the time why all of the councilors would stand outside of council chambers chatting and drinking coffee. He never understood why they didn't just go into the formal meeting and get it over with. Now he realizes that they were ensuring that they nurtured their relationships with one another. From the health and safety committee, to all of the supervisors, to the senior management team, it is imperative that the safety practitioner forms a healthy relationship with all of the organizational stakeholders.

Once the relationships are developed, it is easier to share and receive the **Knowledge** required to accomplish the vision. No actions worth accomplishing can be achieved without gaining knowledge. It is said in the traditional visioning wheel that knowledge also implies the reasoning behind that knowledge. Management systems have training elements to ensure that knowledge is shared. A competent person must have knowledge of hazards and applicable health and safety legislation in addition to knowledge, training and experience to be deemed competent. A three-part definition and each part references knowledge. Responsibility for the provision of knowledge to the workplace stakeholders ultimately lies with the employer, which is often delegated to the supervisor or health and safety practitioner to coordinate and facilitate.

Action is only achieved after these three fundamental steps.

As we create an action plan, we need to know where to begin. We can brainstorm all of the actions that we need to take and begin to prioritize them in a time line. It is important to assign these actions to individuals or small groups who will be accountable for accomplishing these actions and reporting back to the organization for more input, review and ensuring that what is being done reflects the true nature of the vision, relationships and knowledge. As we take action we continuously travel in a clockwise direction around the medicine wheel again to the vision in the east, the relationship in the south and the knowledge in the west and back again to the action in the north. (Community Education Governance Circle, 2013).

This is the way to true ownership of health and safety and ensuring that we work together to create an environmentally healthy and safe workplace.

The outermost wheel of terms is also a traditional medicine wheel teaching in regards to the wholistic view of a person. Anishnaabe believe that everyone is comprised of four sides: physical, spiritual, emotional, and intellectual. It was only recently that the health and safety world became abuzz with the mental health issue. It was important enough for employers to create a psychologically safe workplace that the Canadian Standards Association made their standard (2013) on this topic free. Anishnaabe have known since traditional times how important mental health is to a person and the interconnectedness between our mental health and our physical health. They further broke out "mental" to encompass emotions, intelligence and spirituality. It is only when all of these things are in synch and in balance that we are considered healthy. Including this wholistic view on our wheel shows our commitment to creating and maintaining an environment of positive mental health.

Finally, the seven-pointed star with our clan system is shown outside of the medicine wheel. I'm not going to get into the clan system of traditional governance used for generations but I will say that it was built on two key concepts that the safety practitioner should utilize, the first being consensus and the second allowing every voice to be heard. The clan system ensured that every family was represented when the First Nation decided on initiatives that would impact the entire community. In the workplace, we need to ensure that every stakeholder is present at the table when decisions are being made. Not only should they be present, but each should have a chance to voice concerns, comments, suggestions, etc. Every committee meeting should end with a roundtable discussion so that each member has a chance to say anything on their mind.

Between the time of crafting and creating this Health and Safety Visioning Wheel and press time, one of our health and safety committees held a naming contest for this wheel. Of the many names suggested, one stood out: **Kawaabandizwin**, which, as mentioned previously, translates roughly to "Looking out for everyone and everything." What a perfect description of health and safety.

I will end this discussion as I started, by reminding you that I am from the Loon clan. The Loon was responsible for the internal relations and affairs of the community. The Loon is a helper, ensuring everyone is safe, healthy and happy within the community. No wonder I became a safety practitioner.

Miigwech (thanks) for your time.

References

- Antone, Robert A., Hill, Diane L., & Myers, Brian A.** (1986). *The Power Within People: A Community Organizing Perspective*. Peace Tree Technologies.
- Burton, Joan.** (2010). *WHO Healthy Workplace Framework and Model: Background and Supporting Literature and Practices*. World Health Organization.
- Canadian Standards Association.** (2013). *Psychological Health and Safety in the Workplace – Prevention, promotion, and guidance to staged implementation*. CSA Z1003-13. Mental Health Commission of Canada and the Standards Council of Canada.
- Community Education Governing Circle.** (2013). *Terms of Reference*. Chippewas of Rama First Nation.
- Jensen, Franny.** (2012). Retail Workplace Health and Safety Committee meeting. Chippewas of Rama First Nation.
- Maslow, A.H.** (1943). "A theory of human motivation". *Psychological Review* 50 (4): 370-96.
- Quarrington, Nemke.** (2012). Administration Workplace Health and Safety Committee meeting. Chippewas of Rama First Nation.
- Tuckman, Bruce.** (1965). "Developmental sequence in small groups". *Psychological Bulletin* 63 (6): 384-99.
- Yerex, Doug.** (2012). Administration Workplace Health and Safety Committee meeting. Chippewas of Rama First Nation.

The Value Proposition for the Occupational Safety and Health Professional: A Review of the Literature

David Borys

1. Introduction

There has been a long-standing interest in the value of the occupational safety and health professional (OSHP) (see for example Adams, 2000; Greer, 2001; Lawrence, 2008). This interest has been generated in the recent past by the Global Financial Crisis (GFC) although Hill (2006) suggests that interest in the need to demonstrate the business value of the OSHP can be traced back to at least 2000 due to downturns in the economy triggered by other financial crises. The GFC had a significant impact on the United States economy in particular, resulting in a range of cost-cutting measures; measures from which occupational safety and health professionals were not immune. As a result, OSHPs today are under increasing pressure to demonstrate their relevance and value. Professional bodies, in particular the American Society of Safety Engineers, have responded to this challenge through a structured campaign to demonstrate the value proposition for the OSHP (Lawrence, 2008). Reflecting this trend, a recent article by Seabrook (2014) continues the call for OSHPs to demonstrate safety's business value in delivering sustainable and profitable organizations. While in a similar vein, Curtis (2014) questions if OSHPs are able to explain to top managers how safety practices contribute to the "bottom-line."

The aim of this research is to review the literature in an effort to identify the current evidence, and the strength of that evidence, in support of the value proposition for the OSHP, by answering the following research questions:

- 1 What is the evidence that the OSHP improves the OSH performance of an organization?
- 2 What knowledge, skills and attributes of the OSHP might be linked with the effectiveness of the OSHP?
- 3 Does the impact of the OSHP vary depending on industry and organizational size?

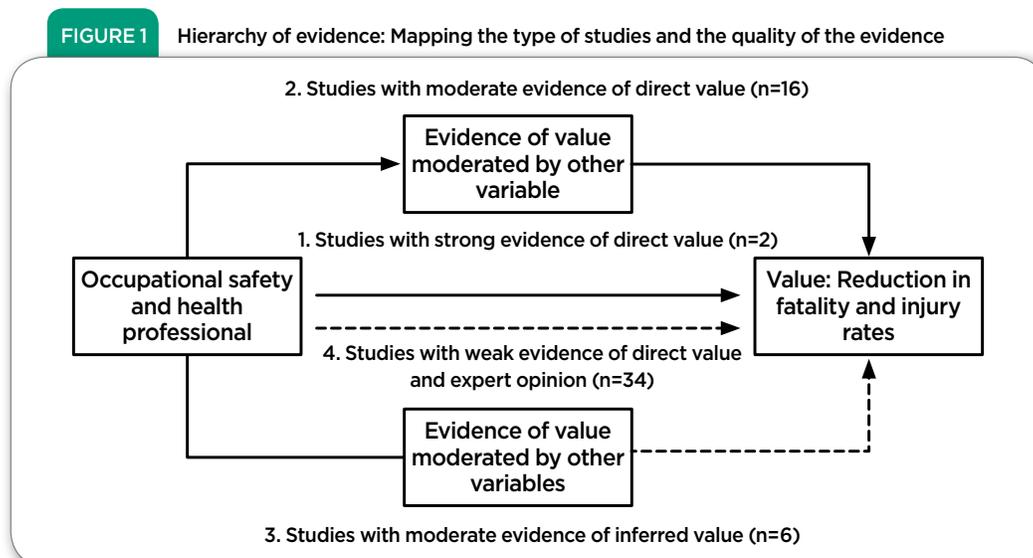
2. Methodology

An exhaustive search of the peer-reviewed using EBSCOhost as the host database was undertaken using 36 combinations (search strings) of the following search terms: "safety officer", "safety manager", "safety manag*", "safety professional", "safety practitioner", "safety coordinator", "safety specialist", "improve*", "org*", "comp*", "effect*", "value", "value proposition of the safety professional", "value proposition", "cost effectiveness", "return on investment", "impact of", "safety performance", "performance", "safety climate", "safety professionals strategies", "successful, safety, prog*", "influence."

A total of 58 articles were retrieved, read, classified for relevance and categorized according to themes. Papers were classified according to a hierarchy of evidence as shown in Figure 1 designed specifically for this research and informed by other hierarchies of evidence, for example, those used by the Cochrane Collaboration and the Canadian Institute for Work and Health. Hierarchies of evidence are used to classify studies and to answer the question: "how strong is the evidence?" (Institute for Work and Health, 2006, p. 60). According to Davies and Crombie (2001), double-blind randomized controlled trials sit at the top of the hierarchy and provide the strongest evidence. Case-control studies sit in the middle of the hierarchy providing moderate evidence; while expert opinion sits at the bottom of the hierarchy and provides the weakest evidence. The studies retrieved for this literature review fell well short of the methodological rigour called for in a traditional hierarchy of evidence. Traditional hierarchies of evidence, however, are used to decide which intervention studies are included or excluded from a systematic review or meta-analysis. Given that the focus of this research is a literature review and not a systematic review in the pure sense and, that the majority of studies retrieved were not intervention studies, it was deemed appropriate to develop a hierarchy of evidence that would reflect the range of studies retrieved for this review in order to capture as much of the current evidence on the value of the OSHP as possible. As a result, a four-tier hierarchy of evidence based upon the methodological quality of the studies retrieved for this literature review was devised:

- 1 Studies with strong evidence of direct value (n=2).
- 2 Studies with moderate evidence of direct value but where the evidence is moderated by other variables (n=16)
- 3 Studies with moderate evidence of inferred value but where the evidence is moderated by other variables (n=6)
- 4 Studies with weak evidence of direct value and expert opinion (n=34).

This hierarchy of evidence in Figure 1 will be used to present the results of the literature review.



3. Results

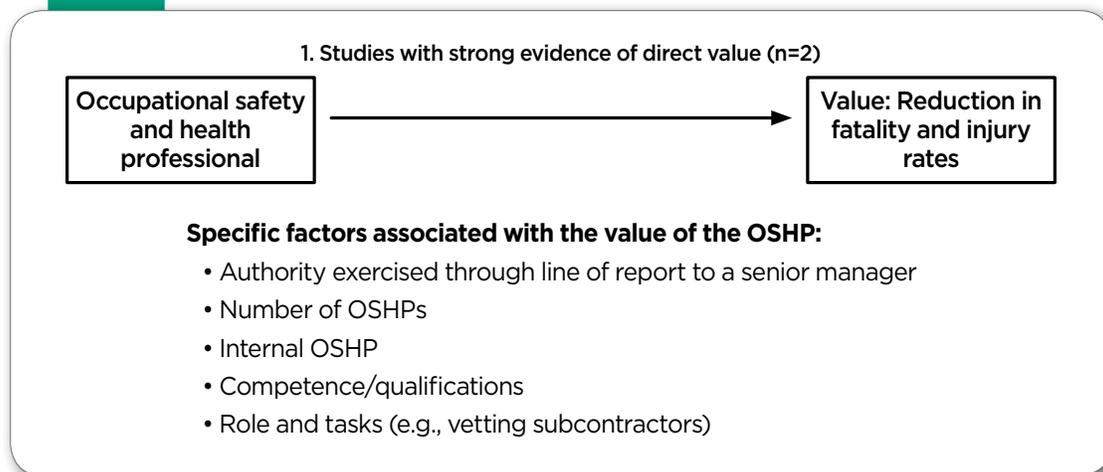
3.1 Studies with strong evidence of direct value

To date, only two studies (Cameron, Hare and Duff, 2007; Rebbitt, 2012) have investigated if there is a direct relationship between OSHPs and value, where value is measured by lower injury rates (Cameron, Hare and Duff, 2007) and lower fatality rates (Rebbitt, 2012). Both studies were conducted in the construction industry. Cameron, Hare and Duff (2007), in a study conducted on behalf of the Institution of Occupational Safety and Health (IOSH) in the UK, found organizations that employed an in-house OSHP had an accident frequency rate (AFR) 60% lower than those using only external consultants. Furthermore, construction companies that gave their OSHP management authority in terms of their line of report (the higher up the organization the better) had an AFR that was 60% lower than those where the OSHP gave advice only and presumably had a lower level line of report.

Rebbitt (2012) compared the number of OSHPs with fatality rates in the US, UK and Canadian construction industry. Unlike the IOSH study, Rebbitt confined the measure of OSH performance to fatality rates due to the lack of reliability inherent in measures of injury frequency rates. Rebbitt (2012) also studied the relationship between OSH professionals and OSH practitioners and their respective impact on fatality rates. Rebbitt found that higher numbers of safety professionals employed was significantly correlated with lower fatality rates. No correlation was found between the number of safety practitioners and reductions in fatality rates.

The findings from these studies are summarized in Figure 2.

FIGURE 2 Strong evidence for the factors related to the direct value of the OSHP



3.2 Studies with moderate evidence of direct value in which evidence of value is moderated by other variables

Two types of studies fall within this category. First, studies with high methodological quality using matched pairs of companies with higher and lower accident rates (Cleveland et al., 1978, Cohen, 1977; Smith et al., 1978). Second, studies of weaker methodological quality typically relying on a sample of all companies in a specific industry sector (most often the construction industry). These studies investigate a range of safety management factors associated with lower injury rates (see for example Jaselskis, Anderson and Russell, 1996). The exception is an intervention study conducted across industry sectors in the Netherlands (Hale, Guldenmund, van Loenhout, and Oh, 2010). Leaving aside the issues associated with varying methodological quality, this group of studies provides moderate evidence of direct value in which evidence of value is moderated by other variables.

3.2.1 Studies of matched pairs of companies with higher and lower accident rates

The seminal work in this area was undertaken by the National Institute for Occupational Safety and Health (NIOSH) in the United States, comprising a series of three studies that commenced in 1974 (Cleveland et al., 1979; Cohen, 1977; Smith et al., 1978). The aim of this three-phase study was to determine the factors in successful safety programs. These studies drew on six prior research studies dating back to 1964. In a summary of these earlier studies, Cohen (1977) identified nine general factors associated with safety performance. One of the nine general factors, "management commitment", included the sub-category "safety officer holds high staff rank". Of the six earlier studies, four identified safety staff as one factor associated with good safety performance. For example, a study by Davis and Stahl (as cited in Cohen, 1977) studied safety program practices in 12 coal mines that had won awards for reducing work-related injuries. This study found daily interactions between "safety officials", supervisors and workers as being most important in their efforts to reduce injuries. Furthermore, this study found that the safety officer reporting directly to the mine manager was a significant factor. Of these six earlier studies, the study by Shafai-Sahrai (as cited in Cohen, 1977) was used as the basis for the NIOSH study with the aim of verifying and expanding upon Shafai-Sahrai's results.

In summarizing the NIOSH study, Cohen (1977) states that one of the eight factors associated with low accident rate companies was management commitment reflected in the "rank and stature of the company safety officer" (p. 174).

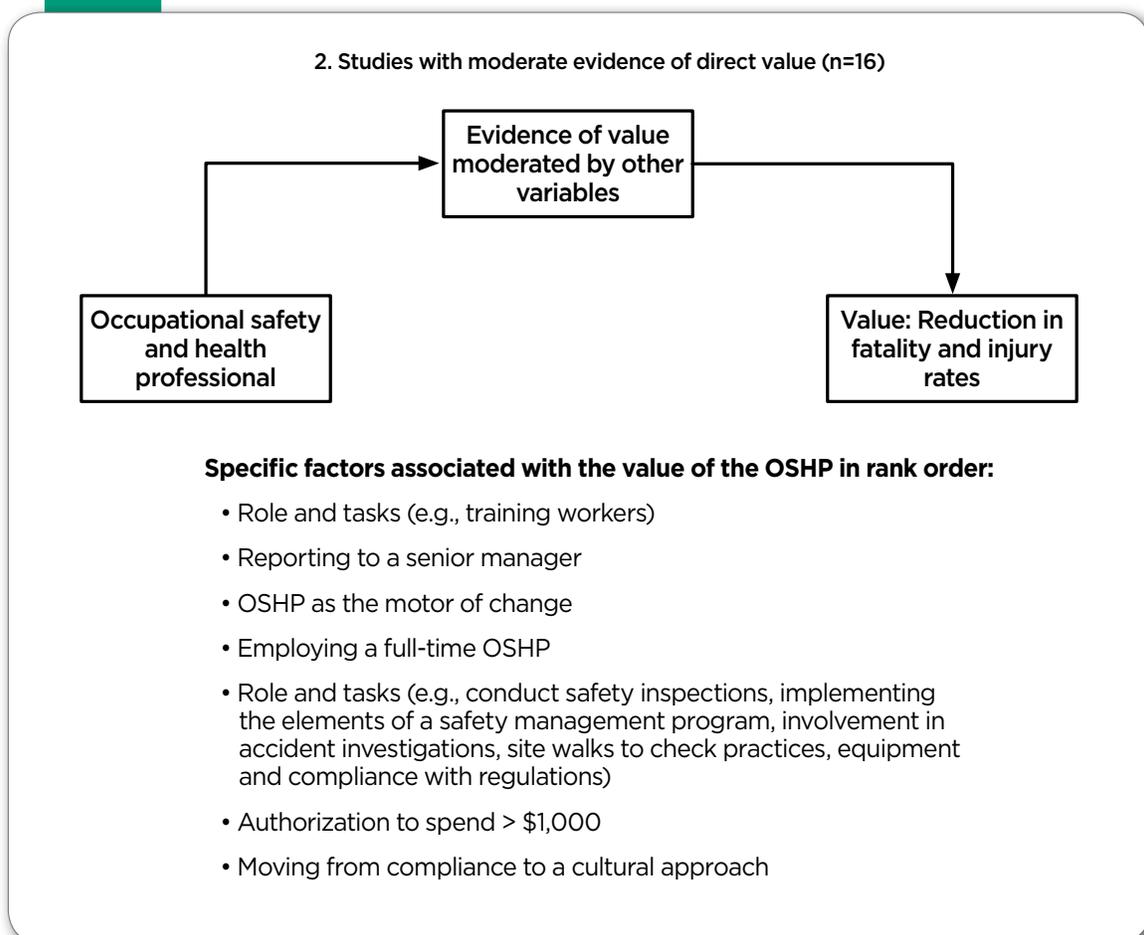
3.2.2 Studies of a sample of companies within an industry sector or across industry sectors and injury rates

This group of studies found that employing an OSHP is one, among a number of safety management factors, associated with lower injury rates. These studies also found that it is critical that the OSHP reports to a senior manager (Abudayyeh, Fredericks, Butt and Shaar, 2006; Findley, 2004; Hallowell and Calhoun, 2011; McDonald et al., 2009). Conversely, other studies either failed to identify employing an OSHP as a safety management factor associated with well-performing companies (Hinze and Wilson, 2000) or that employing an OSHP was less cost-effective than investments in management commitment to safety (Hallowell, 2010). In a study exploring the diffusion of injury prevention strategies in the construction industry, Esmaeili and Hallowell (2012) found that employing a site safety manager was one of three innovations less frequently implemented. They conclude that the industry has reached saturation point with respect to safety innovations, which presumably includes employing a site safety manager. A study of the management practices that contribute to a safe work environment in 62 hospitals in the US healthcare industry found that the OSHP had no impact on injury rates (Vredenburg, 2002). Despite this finding, Vredenburg proposes that one implication of this study is that the OSHP should hold a “management-level classification” (p. 259).

An intervention evaluation study conducted in the Netherlands investigated 17 projects across 29 companies, this time drawn from different sectors of industry (Hale, Guldenmund, van Loenhout, and Oh, 2010, see also Guldenmund and Hale, 2012; Guldenmund, Hale, van Loenhout, and Oh, 2008; Hale, Jacobs and Oor, 2010). This study found that the OSHP was central to the successful implementation of a range of safety initiatives. Hale et al. (2010) found that a distinguishing factor in successful interventions was “the amount of energy and creativity injected by top managers and, above all, by the coordinator (safety professional)” (p. 1026). They found that the OSHP or the top manager were the “active motor to make the change” (p. 1033). When interventions were not being driven by these motors, particularly the OSHP, companies were five times more likely to be unsuccessful in implementing OSH initiatives.

The findings from these studies are summarized in Figure 3.

FIGURE 3 Moderate evidence for the factors related to the direct value of the OSHP

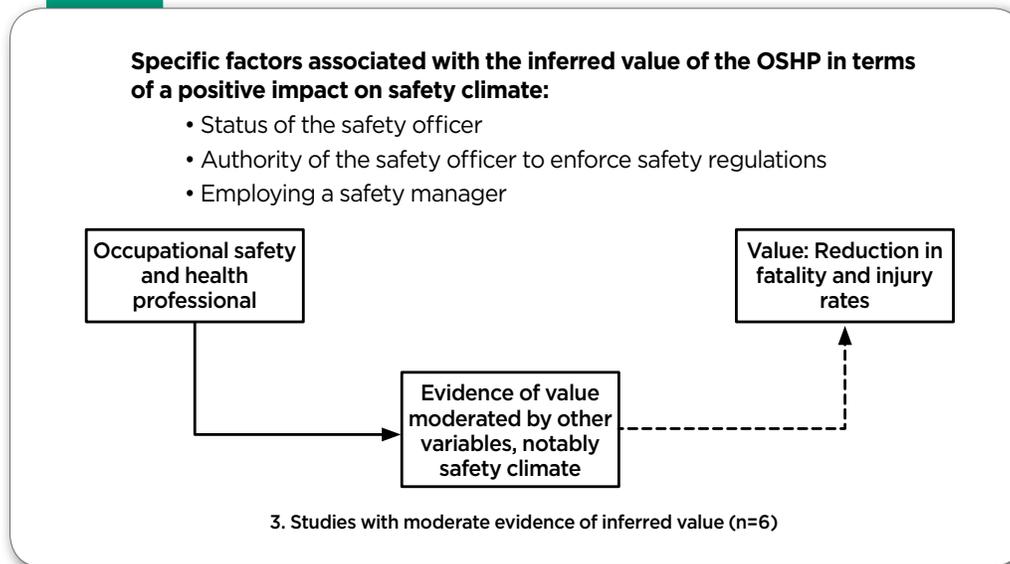


3.3 Studies with moderate evidence of inferred value in which evidence of value is moderated by other variables

Some studies of safety climate and safety culture suggest that companies employing an OSHP have better safety climate scores, with better safety climate scores associated with lower injury rates (Cameron and Duff, 2007; Smith and Wadsworth, 2009a; Smith and Wadsworth, 2009b; Wu, Lin and Shiau, 2010; Wu, Liu, and Lu, 2007; Zohar, 1980) A UK study of safety culture conducted by Smith and Wadsworth (2009a) on behalf of IOSH explored the relationship between safety culture, competent safety and health advice and safety performance. This study found a significant relationship between “favourable” safety cultures and better safety performance. Smith and Wadsworth (2009b) also found a significant, yet independent, relationship between OSHP advice and safety performance, although the “relationship between advice and performance is more complicated and there’s no clear pattern” (p. 8). They found that “less positive corporate safety performance was associated with more competent safety and health advice” (Smith and Wadsworth, 2009a, p. 64), which is, on the face of it, a negative finding about the value of well-trained OSHPs. In considering this finding, however, the researchers suggest that high-risk industries are more likely to employ more highly qualified OSHPs. The findings of this study are difficult to interpret with no clear pattern emerging for the value or otherwise of the OSHP. As a result, the findings of this study and how to interpret them remain unclear.

The findings from these studies are summarized in Figure 4.

FIGURE 4 Moderate evidence for the factors related to the inferred value of the OSHP



3.4 Studies with weak evidence of direct value and expert opinion

There have been a number of studies that have returned ambiguous and often difficult to interpret findings on the relationship between the OSHP and value. Indeed some of these studies seem to suggest a negative, or at best ambiguous, relationship between OSHP and value (Mearns, Whitaker and Flin, 2001; Shannon, Mayr and Haines, 1997).

A second group of studies and expert opinion speculate on the status or line of report of the OSHP and value (Hopkins, 2007; IOSH, 2012; Mearns, Whitaker and Flin, 2001; Minnick, 2013) with no clear picture emerging on who the OSHP should report to. A recent salary and attitude survey, however, conducted by IOSH (2012) of 3,939 OSHPs and titled “The Value of Health and Safety,” found that 55% of OSHPs already report directly to the board. Disturbingly, however, the IOSH survey found also that respondents were unable to articulate the value of their proposed safety interventions. This finding is supported by a study of Australian Chief Executive Officers (Peter Wager and Associates, 2010, p. 110) and a study on the return on investment of the environmental health and safety function in the US (BLR, 2006). The OSH profession is not immune to these criticisms and has taken it upon itself to promote the need for OSHPs to be able to argue the business case for safety and health (see for example Byrne, 2013; Hill, 2006; Veltri, 1992; Veltri et al., 2007; Veltri et al., 2013 and Williamson et al. nd). Various proposals for arguing the business case for safety and health include the use of cost-benefit analysis (see for example Behm, Veltri and Kleinsorge, 2004; Deshkar, 2010). Indeed, the need to evaluate the business value of the safety function was recognized over 20 years ago by Veltri (1992), who proposed a conceptual model for evaluating the safety function. Veltri argued that OSHPs must demonstrate the strategic value of what they do. Instead of focusing solely on regulatory compliance, Veltri argues that OSHPs must also contribute to productivity and business performance.

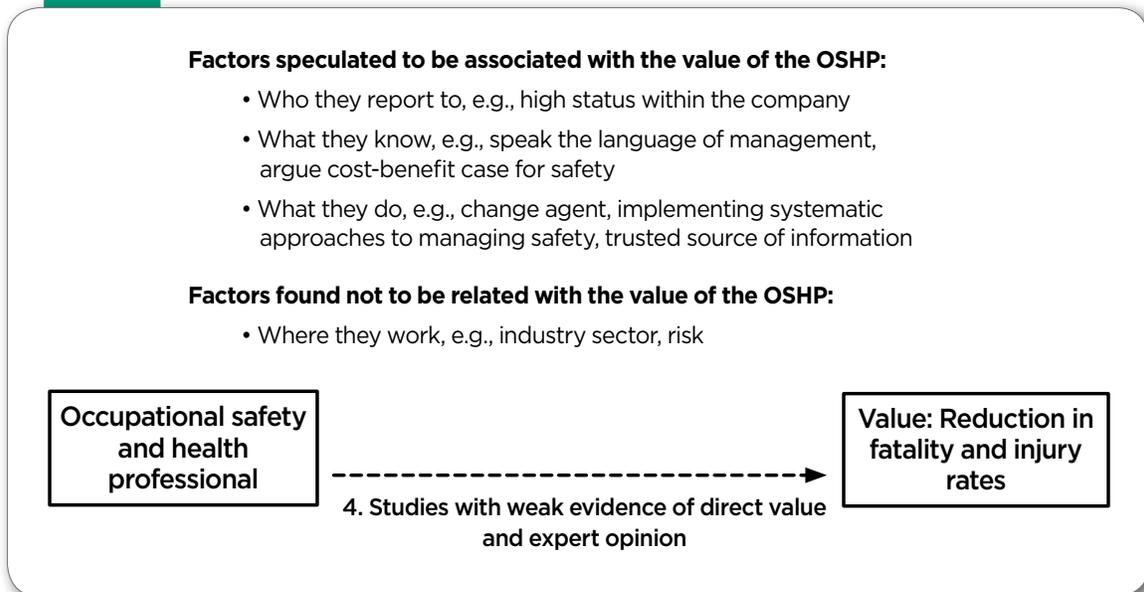
This perceived inability of the OSHPs to articulate the business value of safety calls into question whether or not educational programs are providing OSHPs with the necessary competencies to fulfill their roles. OSHP competencies have been the subject of much conjecture (see for example Blair, 2000; Chang et al., 2012; Leeman, 2005). Leemann (2005) proposes a matrix showing the relationship between OSHPs’ roles, functions and competencies, linked to the core competencies and products of an organization. An interesting inclusion in this framework is the interpersonal skills of the OSHP, the latter being an area that is overlooked in the safety science literature. Pryor (2014), however, in a grounded theory study of exploring the strategic influence of the OSHPs in Australia found that trust was central to the OSHPs being able to influence the strategic decision-making of their senior manager. Although Leemann’s framework and Pryor’s findings fall short of demonstrating the value of the OSHP in direct terms, a picture starts to emerge that an OSHP who enjoys high status (power) would benefit from complementing their role and functions with business competence (business knowledge) and a set of personal attributes (influence).

A third group of studies explore the role and tasks/functions of the OSHP but fall short of correlating these with the value they may (or may not) add (Borys, Else, Pryor and Sawyer, 2006; Brun and Loiselle, 2002; DeJoy, 1993; Hale and Ytrehus, 2004). The role of the OSHP is variously described as one of a “politically reflective navigator” (Broberg and Hermund, 2004; Olsen, 2012), “change agent” (see for example Brown and Larson, 1998; Brun and Loiselle, 2002; Hasle and Jensen, 2006; Hill, 2006; Limborg, 1995; Swuste and Arnoldy, 2003) or “compliance agent” (Hopkins, 2007).

The fourth group of studies failed to find a relationship between industry sector, size of organization and the functions of an OSHP (DeJoy, 1993), and safety climate scores based on organizational size and location (Wu, Liu and Lu, 2007).

The findings from these studies are summarized in Figure 5.

FIGURE 5 Weak evidence for the factors with speculated value of the OSHP



4. Discussion

To date, only two studies have been conducted that provide strong evidence in support of the value proposition of the OSHP. These studies are important because the value of the OSHP is not moderated by other variables or factors investigated to have a relationship with lower injury rates. Of concern is that all the studies included in this literature review measure the value of the OSHP in terms of either a reduction in fatality or injury rates. There are no similar studies that explore the rates of disease and ill health. This is a glaring omission. Furthermore, the methodological quality of all the studies weakens the strength of the evidence. The early NIOSH study (Cleveland et al., 1979; Cohen, 1977; Smith et al., 1978) represents the highest methodological quality by using matched pairs of companies with high and low accident rates. Unfortunately this study investigated the value of the OSHP as one among many variables resulting in only moderate evidence for the value of the OSHP. Furthermore, this study is over 40 years old and few if any studies have replicated this study design. This represents a lost opportunity and one that should be addressed now. The study with arguably the second highest methodological quality is the intervention evaluation study conducted by Hale et al. (2010). This study employed a before and after design, but like the NIOSH study, investigated the value of the OSHP as one among many variables resulting in this study being classified as providing only moderate evidence for the value of the OSHP.

A recurring theme in the literature is the importance placed on the status and line of report for the OSHP. Although there is no strong evidence to support this claim, the pervasiveness of this idea in the literature should not be overlooked and represents an area for further research. Another emerging area of research interest is the personal attributes of the OSHP. The study by Pryor (2014) suggests that the line of report, role and tasks and qualifications/competence of the OSHP will only be effective to the extent to which the OSHP is influential with senior decision-makers. Conversely, OSHPs who lack the personal skills to engage senior managers may be missing out on the opportunity to add value, irrespective of their knowledge and skills. This is an area that warrants further research.

Based on this literature review, the relationship between the OHSP and business value is conceptualized as a value pyramid (Figure 6) with the strength of the evidence for the value proposition of OSHP mapped against the value pyramid elements in Table 1.



TABLE 1 Strength of the evidence mapped against the value pyramid elements

Value pyramid elements \ Strength of the evidence	Strong evidence for the factors associated with business value	Moderate evidence for the factors associated with business value	Weak evidence for the factors associated with business value
Personal attributes			<ul style="list-style-type: none"> Trusted source of information
Line of report		<ul style="list-style-type: none"> Reporting to a senior manager Status of the safety officer 	<ul style="list-style-type: none"> High status within the company
Role and tasks (functions)	<ul style="list-style-type: none"> Vetting subcontractors 	<ul style="list-style-type: none"> Training workers OSHP as the motor of change Conducting safety inspections Implementing the elements of a safety management program Involvement in accident investigations Site walks to check practices, equipment and compliance with regulations Authorization to spend > \$1,000 Moving from compliance to a cultural approach Authority of the safety officer to enforce safety regulations 	<ul style="list-style-type: none"> Speak the language of management Argue the cost-benefit case for safety Change agent Implementing systematic approaches to managing safety
Professional certification	<ul style="list-style-type: none"> Membership of a professional body 		
Experience			
Qualifications	<ul style="list-style-type: none"> Competence/qualifications 		
Safety and health professional (including number of and employed in-house)	<ul style="list-style-type: none"> Number of OSHPs Internal OSHP 	<ul style="list-style-type: none"> Employing a full-time OSHP Employing a safety manager 	
Safety and health body of knowledge			

The aim of this literature review was to explore the evidence in support of the value proposition for the OSHP and to provide answers to three research questions:

1. What is the evidence that the OSHP improves the OHS performance of an organization?
There is strong evidence from the construction industry that employing an in-house OSHP results in lower fatality and injury rates.
2. What knowledge, skills and attributes of the OSHP might be linked with the effectiveness of the OSHP?
There is strong evidence from the construction industry that the knowledge, skills and attributes of the OSHP, expressed through qualifications, professional certification and the role and tasks they perform, result in lower fatality and injury rates.
3. Does the impact of the OSHP vary depending on industry and organizational size?
There is no evidence that the impact of the OSHP varies according to industry, organizational size or levels of risk.

5. Conclusion

OSHPs are facing increasing pressure to justify their value to their organizations, driven in part by a struggling global economy, which is placing pressure on organizations to cut costs wherever they can. Being forced to justify one's value, however measured, is never easy. The sole purpose of the OSH profession must be to assist organizations to protect the safety and health of people at work. This is a moral measure of value from which economic benefits will flow to individual workers, organizations and society. In tough economic times it is easy to marginalize the role of the OSHP. The purpose of this literature review was to determine the strength of the evidence in support of the value proposition for the OSHP. While many studies have investigated a range of safety management factors associated with better safety performance, only two studies bring into sharp relief the value of the OSHP in reducing workplace fatalities and injuries. This finding is at once disappointing and encouraging – disappointing due to the dearth of studies on such an important topic, encouraging because there is at least a modicum of evidence for the value proposition of the OSHP. The challenge before the profession and safety researchers is to work together to conduct further research on this topic so as to strengthen the evidence in the hope that in the future, the OSHP will be immune to the knock-on effects of a struggling global economy.

[FOR FULL ARTICLE, PLEASE CLICK HERE](#)

Acknowledgements

The author would like thank Professor Emeritus Dr. Andrew R. Hale (UK), Pam Pryor (Australia) and Dennis Hudson (USA) for their support and critical comments during the writing of this report. Thank you too to the Canadian Society of Safety Engineering for sponsoring this research. The full report is available from www.inshpo.org

References

- Abudayyeh, O., Fredericks T. K., Butt, S. E. & Shaar, A.** (2006). An investigation of management's commitment to construction safety. *International Journal of Project Management*, 24(2), 167-174.
- Adams, S.** (2000). Today's safety professional: Manager or engineer? *Safety Professional*, June, 24-27.
- Behm, M., Veltri, A., Kleinsorge, I.** (2004). The cost of safety: cost analysis model helps build business case for safety. *Professional Safety*, 49(4), 22-29.
- Blair, E. H.** (2004). Critical competencies for SH&E managers: Implications for educators. *The Journal of SH&E Research*, 1(1), 1-13.
- BLR.** (2006). The ROI of EHS: Practical strategies to demonstrate the business value of environmental, health and safety functions. Business & Legal Reports Inc.: Old Saybrook, CT, USA.
- Borys, D., Else, D., Pryor, P. & Sawyer, N.** (2006). Profile of an OHS professional in Australia in 2005. *The Australia and New Zealand Journal of Occupational Health and Safety*, 22(2), 175-192.
- Broberg, O. & Hermund, I.** (2004). The OHS consultant as a 'political reflective navigator' in technological change processes. *International Journal of Industrial Ergonomics*, 33, 315-326.
- Brown, H. & Larson, T.** (1998). Making business integration work: A survival strategy for EHS managers. *Environmental Quality Management details*, Spring, 1-8.
- Brun, J. P. & Loiselle, C. D.** (2002). The roles, functions and activities of safety practitioners: The current situation in Québec. *Safety Science*, 40, 519-536.
- Byrne, R.** (2013). Costing accidents. *The RoSPA Occupational Safety & Health Journal*, January, 13-15.
- Cameron, I. & Duff, R.** (2007). Use of performance measurement and goal setting to improve construction managers' focus on health and safety. *Construction Management and Economics*, 25, 869-881.
- Cameron, I., Hare, B. & Duff, R.** (2007). *Superior safety performance: OSH personnel and safety performance in construction Full Report*, IOSH: UK.
- Chang, S., Chen, D. & Wu, T.** (2012). Developing a competency model for safety professionals: Correlations between competency and safety functions. *Journal of Safety Research*, 43, 339-350.
- Cleveland, R., Cohen, H. H., Smith, M. J. & Cohen, A.** (1979). Safety program practices in record-holding plants. NIOSH: USA.
- Cohen, A.** (1977) Factors in successful occupational safety programs. *Journal of Safety Research*, 9(4), 168-178.
- Curtis, L.** (2014). Should we change our professional title? *Professional Safety*, 59(2), 9-10.
- Davies, H. T. O. & Crombie, I. K.** (2001). What is a systematic review? 1(5), 1-6. Retrieved from www.evidence-based-medicine.co.uk
- DeJoy, D. M.** (1993). Development of a work behavior taxonomy for the safety function in industry. *Accident Analysis and Prevention*, 25(4), 365-374.
- Deshkar, S.** (2010). Ergonomics investment: Making the case in any economy. *Professional Safety*, October, 48-50.
- Esmaili, B. & Hallowell, M. R.** (2012). Diffusion of safety innovations in the construction industry. *Journal of Construction Engineering and Management*, 138(8), 955-963.
- Findley, M., Smith, S., Kress, T., Petty, G. & Enoch, K.** (2004). Safety program elements in construction: Which ones best prevent injuries and control related workers' compensation costs? *Professional Safety*, 49(2), 14-20.
- Greer, M. E.** (2001). SHE: A value-added function. *Professional Safety*, July, 7.
- Goldendmund F. W. & Hale A. R.** (2012). *The tricks of the trade: lessons from the program improving safety*. In Podgorski D. (Ed). Proceedings of 6th International conference of Working on Safety Network: Towards safety through advanced solutions. Central Institute for Labour Protection, Warsaw, Poland. 8 pages
- Goldendmund, F. W., Hale, A.R., van Loenhout, P & Oh, J.** (2008). *The secret of successful safety interventions*. Crete, 4th International Conference Working on Safety 2008.

- Hale, A. R., Jacobs, J. & Oor, M.** (2010). *Safety culture change in two companies*. Proceedings of the 10th International Probabilistic Safety Assessment and Management Conference (PSAM10) Seattle, Washington
- Hale, A. R., Guldenmund, F. W. van Loenhout, P. L. C. H. & Oh, J. I. H.** (2010). Evaluating safety management and culture interventions to improve safety: Effective intervention strategies. *Safety Science*, 48, 1026-1035.
- Hale, A. & Ytrehus, I.** (2004). Changing requirements for the safety profession: Roles and tasks. *The Australia and New Zealand Journal of Occupational Health and Safety*, 20(1), 23-35.
- Hallowell, M.** (2010). Cost-effectiveness of construction safety programme elements. *Construction Management and Economics*, 28, 25-34.
- Hallowell, M. & Calhoun, M.** (2011). Interrelationships among highly effective construction injury prevention strategies. *Journal of Construction Engineering and Management*, 137(11), 985-993.
- Hasle, P. & Jensen, P.** (2006). Changing the internal health and safety organization through organizational learning and change management. *Human Factors and Ergonomics in Manufacturing*, 16(3), 269-284.
- Hill, D.** (2006). Time to transform? Assessing the future of the SH&E profession. *Professional Safety*, December, 62-71.
- Hinze, J. & Wilson, G.** (2000). Moving toward a zero injury objective. *Journal of Construction Engineering and Management*, 126(5), 399-403.
- Hopkins, A.** (2007). Beyond compliance monitoring: New strategies for safety regulators. *Law & Policy*, 29(2), 210-225.
- Institute for Work and Health**, (2006). Systematic reviews help users keep up with expanding volume of research evidence. *J Can Chiropr Assoc*, 49(1), 56-62.
- IOSH.** (2012). The value of health and safety. IOSH: UK.
- Jaselskis, E. J., Anderson, S. D., Russell, J. S.** (1996). Strategies for achieving excellence in construction safety performance. *Journal of Construction Engineering and Management*, 122(1), 61-70.
- Lawrence, T.** (2008). Championing the SH&E professional. *Professional Safety*, November, 40-42.
- Leemann, J. E.** (2005). Delivering business value by linking behavioral EHS competencies to corporate core competencies. *Corporate Environmental Strategy: International Journal for Sustainable Business*, 12(1), 3-15.
- Limborg, H. J.** (1995). Qualifying the consultative skills of the occupational health and safety service staff. *Safety Science*, 20(2-3), 247-252.
- McDonald, M. A., Lipscomb, H. J., Bondy, J. & Glazner, J.** (2009). "Safety is everyone's job." The key to safety on a large university construction site. *Journal of Safety Research*, 40(1), 53-61.
- Mearns, K., Whitaker, S. M. & Flin, R.** (2001). Benchmarking safety climate in hazardous environments: A longitudinal, interorganizational approach. *Risk Analysis*, 21(4), 771-786.
- Minnick, W.** (2013). Understanding the antecedents of role stressors in the safety professional. *Journal of Workplace Behavioral Health*, 28, 134-157.
- Olsen, K.** (2012). Occupational health and safety professionals strategies to improve working environment and their self-assessed impact. *Work*, 41, 2625-2632.
- Peter Wagner & Associates.** (2010). Safety - A wicked problem. Peter Wagner & Associates.
- Pryor, P.** (2014). *Towards an understanding of the strategic influence of the occupational health and safety professional*. Unpublished Masters by Research Thesis, Federation University Australia.
- Rebbitt, D.** (2012). *The value proposition of the safety professional: Do safety professionals actually reduce fatalities?* Unpublished Masters Thesis Athabasca University.
- Seabrook, K.** (2014). Connecting the dots: Demonstrating safety's business value. *Professional Safety*, 59(2), 8.
- Shannon, H. S., Mayr, J. & Haines, T.** (1997). Overview of the relationship between organizational and workplace factors and injury rates. *Safety Science*, 26(3), 201-217.
- Smith, M. J., Cohen, H. H., Cohen, A. & Cleveland, R. J.** (1978). Characteristics of successful safety programs. *Journal of Safety Research*, 10(1), 5-15.
- Smith, A. P., & Wadsworth, E. J. K.** (2009a). *Safety culture, advice and performance*. Full Report IOSH: UK.
- Smith, A. P., & Wadsworth, E. J. K.** (2009b). *Safety culture, advice and performance*. Research Summary. IOSH:UK.
- Swuste, P. & Arnoldy, F.** (2003). The safety advisor/manager as agent of organizational change: A new challenge to expert training. *Safety Science*, 41, 15-27.
- Veltri, A., Pagell, M., Behm, M. & Das, A.** (2007) A data-based evaluation of the relationship between occupational safety and operating performance. *The Journal of SH&E Research*, 4(1), 1-22.
- Veltri, A.** (1992). Evaluating the safety function: A conceptual model. *Journal of Safety Research*, 23, 27-38.
- Veltri, A., Pagell, M., Johnston, D., Tompa, E., Robson, L., Amick III, B. C., Hogg-Johnson, S. & Macdonald, S.** (2013). Understanding safety in the context of business operations: An exploratory study using case studies. *Safety Science*, 55, 119-134.
- Vredenburgh, A. G.** (2002). Organizational safety: Which management practices are most effective in reducing employee injury rates? *Journal of Safety Research*, 33, 259-276.
- Williamson, A., Fister, D. & Ramchandra, R.** (nd) Evolving role of EHS manager in industrial sustainability programs: Case studies incorporating a pollution prevention approach to problem solving.
- Wu, T., Liu, C. & Lu, M.** (2007). Safety climate and college laboratories: Impact of organizational and individual factors. *Journal of Safety Research*, 38, 91-102.
- Wu, T., Lin, C. & Shiau, S.** (2010). Predicting safety culture: The role of employer, operations manager and safety professional. *Journal of Safety Research*, 41, 423-431.
- Zohar, D.** (1980). Safety climate in industrial organizations: Theoretical and applied implications. *Journal of Applied Psychology*, 65(1), 96-102.

The Search for Leading Indicators of OHS Performance: IWH Eight-Item Questionnaire May Predict Future Claims Rates

Ben Amick and Michael Swift

The first phase: correlating IWH-OPM with past performance

Since about the early 1990s, Canadian OHS researchers have been trying to identify leading indicators of work injury and illness. They have looked at several distinct (though related) influences, including safety culture, safety climate, the operation of joint labour-management health and safety committees, organizational policies and practices, and occupational health and safety management systems. (For a definition and discussion of these different influences, as well as an overview of the challenges to date in developing leading indicators, see the Institute for Work & Health's (IWH) October 2013 Issue Briefing.) Click [here](#).

At IWH, the work to identify and validate OHS leading indicators has been going on since 2008. In the fall of that year, a group of representatives from Ontario's health and safety system worked with IWH to begin developing a short questionnaire that would quickly assess an organization's health and safety performance. Representatives came from the province's sector-based health and safety associations (HSAs), Occupational Health Clinics for Ontario Workers and the Workplace Safety and Insurance Board (WSIB).

The group recognized that no scientifically valid safety culture tool existed that could be used across sectors and all firm sizes. (Safety culture refers to an organization's set of shared values and beliefs specific to safety that leads to observable behaviours.) It also recognized that many safety climate tools require many respondents within an organization, and it wanted to find a tool that would allow information to be collected from a single key informant within the workplace. (Whereas safety culture refers to durable values and beliefs, safety climate refers to employee perceptions about safety at a point in time.) The group wanted a tool that allowed for rapid assessment rather than a detailed audit. In the end, the group, along with all sector-based health and safety associations in Ontario, agreed on eight items that captured information about a workplace's OHS programs, policies and practices, described in the following statements:

- 1 Formal safety audits at regular intervals are a normal part of our business.
- 2 Everyone at this organization values ongoing safety improvement in this organization.
- 3 This organization considers safety at least as important as production and quality in the way work is done.
- 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.

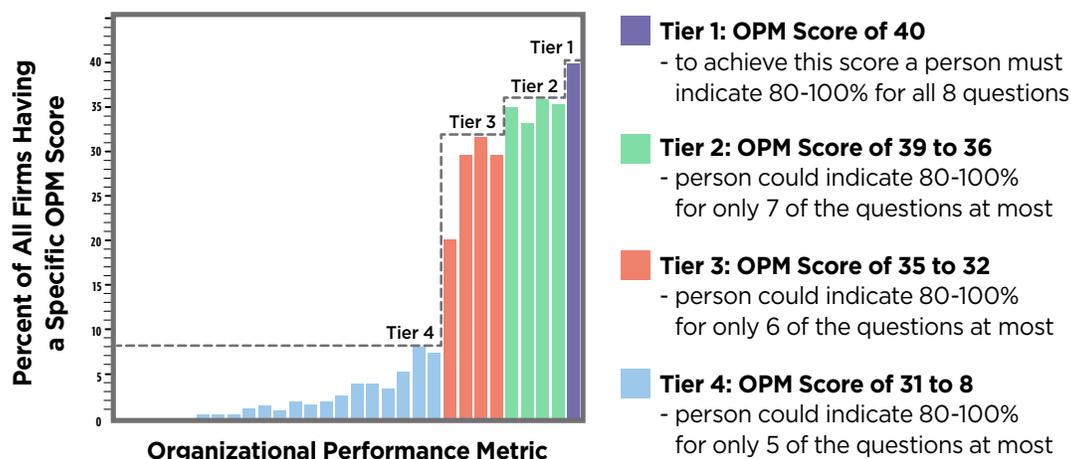
A tool was then developed based on these eight items. The tool asks the respondent to indicate the amount of time his or her organization/workplace engages in each of the eight practices, choosing one of the five following categories: (a) 80-100 per cent of the time; (b) 60-80 per cent of the time; (c) 40-60 per cent of the time; (d) 20-40 per cent of the time; or (e) 0-20 per cent of the time. The item scores are added up to produce a total that falls between eight (the lowest score of all ones) to 40 (the highest score of all fives).

Once the eight-item metric was developed, HSA consultants were trained to administer it to their members, which they did in 2009. In total, questionnaires were completed by 642 firms, which spanned across Ontario and varied in size and sector. All questionnaires were returned to IWH, where researchers determined firm scores.

Firm scores were distributed reasonably evenly (see Figure 1). That is, although the scores skewed to the right (representing higher scores), not everyone reported positively on their organization; lower scores and higher scores were both likely.

FIGURE 1

Distribution of total IWH-OPH scores in the first phase of research



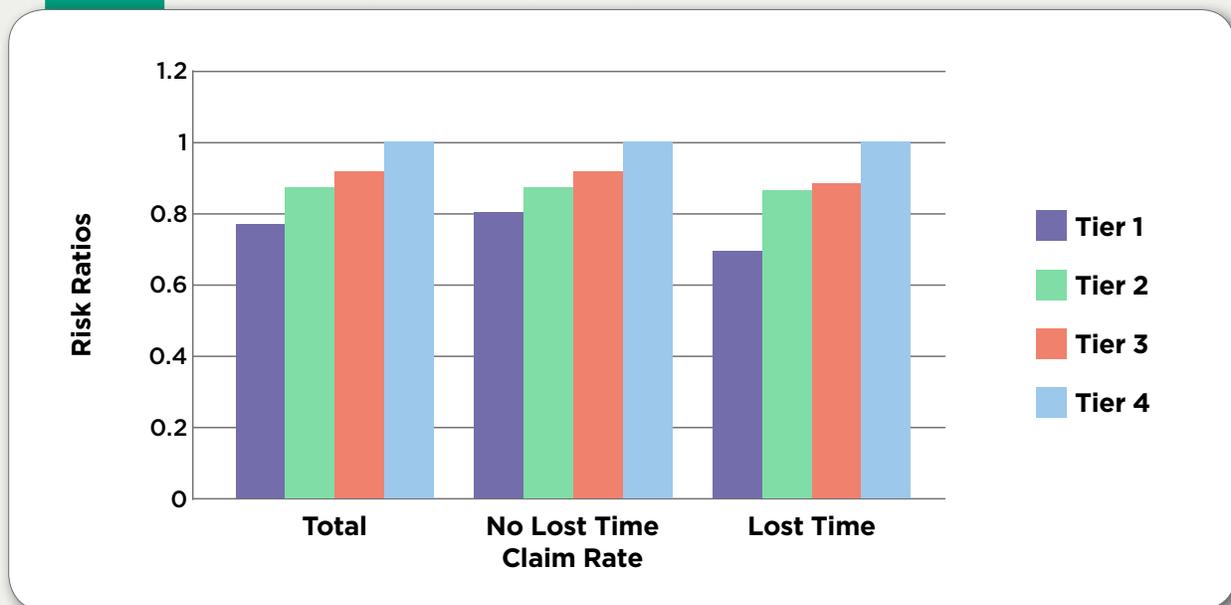
When the researchers looked across the scores, they could see four distinct levels or tiers. They decided to sort the distribution of scores into these four tiers in order to be able to describe relationships between the tiers and the significance of moving from one to the other. In other words, the tiers were not developed based upon a strict scientific method, but upon observed natural groupings.

IWH-OPM scores were then linked to each firm's past injury experience. This injury experience was based on information provided by the province's workers' compensation agency, the Workplace Safety and Insurance Board. The information included both a firm's lost-time and no-lost time claims for the years 2006 to 2008, and for nine months of 2009.

(In Ontario, lost-time claims are considered more severe in that workers are absent from work after the day of injury or onset of illness, or not absent from work but earning less pay as a result of, for example, reduced hours of work or lower wages. No-lost-time claims, on the other hand, are considered less severe in that workers require health care, but not time off work, or sustain injuries where they can't return to their normal duties the next day, but can do another job or their own job with modifications, while remaining on full pay.)

After linking IWH-OPM scores with injury experience, the researchers found that the lower the IWH-OPM score, the poorer the firm's injury experience. When results were distributed across the tiers, for example, firms in Tier 1 with the best scores had a 30 per cent lower likelihood of experiencing lost-time claims compared to firms in Tier 4 with the worst scores (see Figure 2). Stated another way, if you moved a workplace's IWH-OPM score from Tier 4 to Tier 1, you would see a 30 per cent reduction in lost-time claims.

FIGURE 2 Risk ratios for claim rates by IWH-OPM tier levels, with Tier 4 as the reference in first phase of research (correlation with past claims)



The correlation between IWH-OPM scores and past claims rates stood regardless of the firm's sector or size. It also stood no matter who in the workplace filled out the survey. That is, the IWH-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.

The first-phase pilot results were exciting, in that the answers to a simple eight-item tool correlated with a firm's previous injury experience. But could this tool predict future injuries; in other words, would the answers to the eight items also correlate with a firm's future claims experience and act as a leading indicator? That's what the IWH research team set out to find next.

The second phase: correlating IWH-OPM with future performance

The research team undertook a fresh analysis of the IWH-OPM scores of Ontario workplaces that took part in the first phase of the research. In the second phase, the team obtained the claims rates of 325 of the original participating organizations for the three years after the survey to determine how their IWH-OPM scores correlated with future WSIB claims.

During this phase, the IWH-OPM scoring mechanism changed somewhat. This was the case for two reasons: (1) to allow for benchmarking among participating firms, and (2) to allow for easier integration with the scales being used in another leading indicators study at IWH called the Ontario Leading Indicators Project (OLIP). Therefore, the original "1" to "5" scores in the IWH-OPM were rescaled to "0" to "4." As well, the final score was calculated by adding up the scores to each item and dividing by eight (see Figure 3).

FIGURE 3 IWH-OPM scoring in second phase of research

The IWH-OPM questionnaire has eight items that are scored from 0.0 to 4.0. The total score is determined by adding up the score for each item and then dividing the total by eight. For example:

Item	Score
1. Formal safety audits at regular intervals are a normal part of our business	3
2. Everyone at this organization values ongoing safety improvement in this organization	3
3. This organization considers safety at least as important as production and quality in the way work is done	2
4. Workers and supervisors have the information they need to work safely	3
5. Employees are always involved in decisions affecting their health and safety	2
6. Those in charge of safety have the authority to make the changes they have identified as necessary	2
7. Those who act safely receive positive recognition	4
8. Everyone has the tools and/or equipment they need to complete their work safely	3

The calculation would be $3 + 3 + 2 + 3 + 2 + 2 + 4 + 3 = 22 / 8$

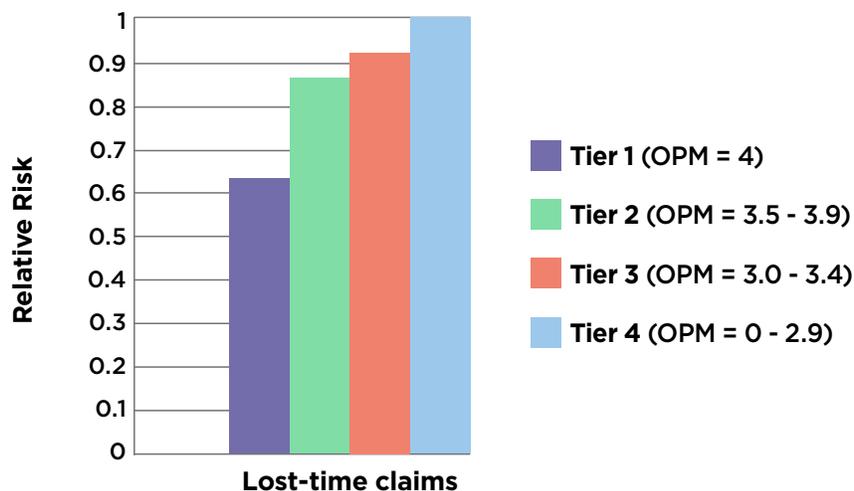
Final total score = **2.75**

This final total score relates to one of four tiers:

- Tier 1:** Total score = 4.0
- Tier 2:** Total score = 3.5 to 3.9
- Tier 3:** Total score = 3.0 to 3.4
- Tier 4:** Total score = 0 to 2.9 (example score: 2.75)

The researchers found that firms with higher IWH-OPM scores had a lower risk of claims in the future, whereas firms with lower IWH-OPM scores had a higher risk of claims in the future compared to Tier 1 firms (see Figure 4).

FIGURE 4 Relative risk of tier levels of IWH-OPM score, with Tier 4 as the reference, in second phase of research (correlation with future claims)



To be more precise:

- If an organization's score landed in Tier 4 (score of 0 to 2.9), it had a greater number of lost-time claims in 2010 to 2012 than organizations in Tiers 1 to 3.
- If an organization's score landed in Tier 3 (score of 3.0 to 3.4), it likely had six per cent fewer lost-time claims than organizations in Tier 4.
- If an organization's score landed in Tier 2 (score of 3.5 to 3.9), it likely had 16 per cent fewer lost-time claims than organizations in Tier 4.
- If an organization's score landed in Tier 1 (score of 4.0), it likely had 36 per cent fewer lost-time claims than organizations in Tier 4.

Again, this observed relationship occurred even after taking into account the organization's size, industrial sector, region of Ontario and workers' compensation claims history from 2006-2009. It also occurred independent of who within an organization answered the eight questions.

It's worth noting here that the relationship between IWH-OPM scores and past and future claims rates is "statistically significant" when scores are not broken down into tiers. However, in order to be able to describe relative risk, the research team decided to group scores into tiers, even though the differences among the tiers are not statistically significant. The researchers felt confident doing this because the gradient in relative risks is what one would expect to see if IWH-OPM scores are correlated with claims rates.

Going forward: What's up next for the IWH-OPM

Although these findings are certainly promising with respect to the ability of the IWH-OPM's predictive abilities, more work is needed to be able to say that IWH-OPM scores are indicative of future claims rates in workplaces beyond those included in the second phase. This work is already underway at IWH, using data from OLIP.

OLIP is measuring and validating leading indicators of OHS performance through a survey that includes five different measurement tools, one of them being the IWH-OPM. Work is currently ongoing to assess whether this larger survey—or which parts of it—also has predictive ability when it comes to workers' compensation claims.

Unlike IWH-OPM participants, the nearly 2,000 workplaces that took part in the first three phases of OLIP testing were randomly selected to represent all workplaces in Ontario. That has enabled the research team to develop meaningful benchmarks for most industrial sectors and subsectors in the province.

Other IWH-OPM-related research is also ongoing. At IWH, researchers have almost completed a study that will help it understand if those who complete the IWH-OPM interpret the questions in a similar way and in the way the questions were meant to be interpreted. This research is based on "cognitive interviews" with health and safety professionals.

Dr. Chris McLeod, an IWH associate scientist and University of British Columbia School of Population and Public Health assistant professor, is launching a research project using the IWH-OPM in private long-term care facilities. Funded by WorkSafeBC, his project is expected to be broadened to include a sample of organizations in the service and manufacturing sectors as a next step.

And with a two-year grant from the Ontario Ministry of Labour Research Opportunities Program, the IWH research team, in partnership with two HSAs—Workplace Safety and Prevention Services (WSPS) and the Public Services Health & Safety Association (PSHSA) is asking OHS practitioners how they use leading indicators. The team will draw on what they learn to build real-time tools—such as apps and dashboards—to help organizations manage health and safety change in the workplace.

In the meantime, a number of organizations are already using the IWH-OPM. For example, WorkSafeNB, the body responsible for both workers' compensation and health and safety enforcement in New Brunswick, adopted it as a benchmark tool to measure occupational health and safety culture among employers in the province. WorkSafeNB will use the IWH-OPM with a suite of more comprehensive tools to observe changes in workplaces that are part of its Focus Firm program.

The program targets firms with 40 or more employees that have a high accident count or an accident frequency greater than their industry counterparts. WorkSafeNB will use the IWH-OPM to get a baseline assessment of a participating firm's safety culture and internal responsibility systems. It will work with these firms over the next three years to help them develop an integrated health and safety system and reduce injuries. The Workers' Compensation Board (WCB) of Prince Edward Island recently invited the province's employers to complete the IWH-OPM as part of an initiative to measure the safety climate in PEI workplaces. The WCB says it will use the results of the survey, which closed on October 1, to identify "our workplace safety culture and set a course for a safer future."

The Workers' Compensation Board of Nova Scotia is pilot-testing the IWH-OPM in the province. Alberta's OHS Policy and Program Development Branch in the Ministry of Jobs, Skills, Training and Labour is using it in a leading indicators toolkit project, and the Prevention Committee of the Association of Workers' Compensation Boards of Canada is exploring its use for cross-jurisdictional comparative research.

If you are interested in taking the IWH-OPM and/or OLIP surveys and benchmarking with other firms, both surveys are available on IWH's website. For the IWH-OPM click [here](#). For the OLIP survey and benchmark results click [here](#).

If you have questions about the development, implementation, interpretation and use of the IWH-OPM, or are interested in taking part in leading indicators research at IWH, please contact [Dr. Ben Amick](#). If you have questions about the statistical methods and analysis surrounding the development and interpretation of IWH-OPM scores, please contact [Michael Swift](#).

To keep abreast of further results from IWH on leading indicators (and other research), sign up to receive [IWH News](#). For more information on the Institute click [here](#).

Dr. Ben Amick is a senior scientist and Michael Swift is a data analyst at the Institute for Work & Health (IWH), a not-for-profit research organization based in Toronto, Ontario. Amick, who is also chair of the Department of Health Policy and Management at Florida International University in Miami, leads IWH's work on developing and validating leading indicators. Michael Swift leads the analysis of leading indicators research data at IWH.

References

Amick B, Saunders R.

Developing leading indicators of work injury and illness.

Issue Briefing. Toronto: Institute for Work & Health, October 2013.

Available from: www.iwh.on.ca/system/files/documents/iwh_briefing_leading_indicators_2013.pdf

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

Final report. Toronto: Institute for Work & Health, January 2011.

Available from: www.iwh.on.ca/system/files/documents/benchmarking_organizational_leading_indicators_2011.pdf

Examining the IWH-OPM as a leading indicator: A supplement to your benchmarking report.

Toronto: Institute for Work & Health, September 2014.

Ontario Leading Indicators Project (OLIP) [Internet].

Toronto: Institute for Work & Health [cited 2014 October 10].

Available from: www.iwh.on.ca/olip

Organizational Performance Metric (OPM) [Internet].

Toronto: Institute for Work & Health [cited 2014 October 10].

Available from: www.iwh.on.ca/opm

Interested in submitting an article?

Click [here](#) for the **CSSE Canadian Occupational Health & Safety Author Guidelines.**

To enquire about advertising opportunities click [here](#).

Journal Subcommittee

Cathy Denomme (Chair), Algoma University

Dan Trottier, Tatonga Consulting

David Howe, Site Safety Inc.

David Hunt, Carleton University

Gene Shematek, GMS & Associates

Manobhram Nellutla, FIOSA-MOISA Safety Alliance of B.C.

Sandra Wilson, Fanshawe College

Renzo Pella, CSSE

Andrea Szametz, Editor

Publisher:

Canadian Society of Safety Engineering, Inc.

a federally chartered not-for-profit corporation

39 River Street, Toronto, ON M5A 3P1

• Tel: 416 646-1600

• Fax: 416 646-9460

contactnewsletter@csse.org



CSSE Canadian Journal
of
OCCUPATIONAL HEALTH & SAFETY

The Canadian Journal of Occupational Health & Safety is published twice yearly by the Canadian Society of Safety Engineering, Inc. Contents of the Canadian Journal of Occupational Health & Safety are protected by copyright, except for (i) advertising or other copyrighted materials belonging to other persons or organizations and included herein by permission, and (ii) forms contained within this publication. Permission is granted for CSSE members-in-good standing to reproduce contents which are copyrighted by CSSE, subject to the condition that such material is to be used on a not-for-profit basis only, and that acknowledgement is granted to CSSE. Information contained in this publication has been compiled from sources believed to be reliable. No warranty, guarantee nor representation is made by CSSE as to the absolute correctness or sufficiency of any representation contained in this publication. Opinions expressed are those of the authors and should not be taken to constitute any official or unofficial policy of the CSSE or any government body.