

## An audit-based occupational health and safety recognition program: Is COR associated with lower firm-level injury rates in Ontario?

### Background

The Certificate of Recognition (COR) is a voluntary audit-based employer certification program intended to motivate employers to take a proactive role in occupational health and safety (OHS). In Ontario, the Infrastructure Health and Safety Association (IHSA) is the only organisation with the authority to grant COR™. COR™ was first introduced in 2012 and is a pre-bid requirement for many contracts for both public and private sector construction projects. In contrast to other provinces, the IHSA audit tool includes more elements (19 compared to 14) and a higher threshold to pass each element (65% or above compared to 50% or above). Furthermore, while some other provinces offer a small employer COR (SECOR) or Small COR audit that does not require external auditors for certification, maintenance, or recertification audits, all baseline and recertification audits for IHSA require an external auditor.

The objectives of this study are therefore:

1. To determine if COR™ is associated with lower firm-level injury rates when compared to similar firms.
2. To examine whether there is an association between the overall COR™ audit scores and audit element scores and firm-level injury rates.

Based on research presented in:

Macpherson R, McLeod C. (2022). [An impact evaluation of the Infrastructure Health and Safety Association Certificate of Recognition \(COR™\) program. Final Report to the Infrastructure Health and Safety Association and Workplace Safety and Insurance Board of Ontario.](#) Vancouver, BC: Partnership for Work, Health and Safety, University of British Columbia.

### Approach

We used an observational research design to address the first objective. Certification is voluntary and firms self-select into the program. Participating firms, by the very nature of choosing to become certified, are different than non-participating firms. Self-selection into voluntary programs is a challenge in assessing whether such programs have a “causal” effect (i.e., that any changes in the injury rate are due to participation in the program and not due to other factors). Because COR firms are different on average from non-COR firms, in that they are larger, have been in operation longer, and tend to come from higher risk industries, we used a matched difference-in-differences evaluation methodology that can identify change attributed to an intervention (COR™ certification).

This approach utilizes a control group of non-certified firms that have been matched to the intervention group of certified firms based on industry



classification unit, firm size, year of assessment, and lagged lost time injury claim rate pre-intervention, and identifies two differences in injury rates:

1. The difference between certified and similar non-certified firms, pre-intervention; and
2. The difference between certified and similar non-certified firms, post-intervention.

This allows us to identify the change in the injury rate attributable to participation in the COR™ program. We state the impact as a percent change in injury rate, for certified firms compared to non-certified firms. We evaluated the impact of COR™ overall, and by time period, firm size, and sector.

To address the second objective, we restricted the analysis to COR™ firms with passed external audits from 2012 to 2020 with up to three years of injury data per audit. We used regression models to examine the association between quartiles of the overall audit score and firm-level injury rates. For each of the 19 audit elements, regression models were used to examine the association between firms scoring less than 100%, compared to 100%, and the firm-level injury rates. All models were adjusted for firm-level characteristics.

**What are lost time injuries?**

Claims from a work-related injury/disease which results in: being off work past the day of accident, loss of wages/earnings, or a permanent disability/impairment.

**What are high-impact injuries?**

Lost time claims that have a big impact on employees and businesses: low back, shoulder, and fracture claims.

**What are no lost time injuries?**

Claims from work-related injury/disease where no time is lost from work, other than on the day of accident, but where health care is required.

**What we found: Intervention effect**

**Overall impact**

On average, in any given year, participation in COR™ was associated with a 28% reduction in the lost time injury rate, a 20% reduction in the high-impact injury rate, and no reduction in the no lost time injury rate, relative to the change in non-COR™ firms, adjusting for differences in firm characteristics and year (see Figure 1).

**Firm size**

When comparing small firms (<100 FTEs) and large firms (100+ FTEs), COR™ participation was not associated with greater reduction in the lost time or high-impact injury rates but was for no lost time rates.

**Figure 1 | Effect of COR certification on change in injury rate, by type of injury, overall and by firm size, 2012-2020**



A negative percent change in injury rate indicates that certified firms have a decrease in injury rate compared to non-certified firms. A positive percent change indicates that certified firms have an increase in injury rate compared to non-certified firms. Where confidence intervals cross zero, the change in the injury rate is more likely due to chance.

### Over time

The effectiveness of COR™ has not changed much since 2012 but the precision of estimates suggest that the overall effectiveness has been driven by more recent years, particularly for high-impact injuries where no reduction was observed in 2012-2015 but a 24% reduction was observed in 2016-2020.

### Sector

The majority of the overall COR™ intervention effect was driven by construction firms whereas no effect was observed for non-construction firms.

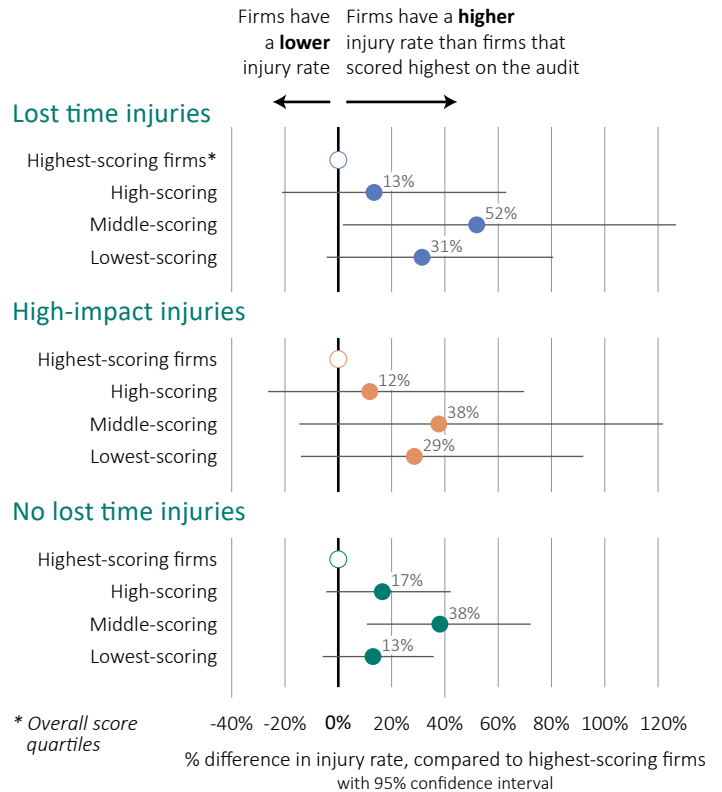
### What we found: Audit and element scores

Audit scores displayed a natural distribution, with firms achieving a median score of 91% (interquartile range of 88-94%). Firms with lower overall audit scores were associated with higher lost time and no lost time injury rates, especially firms scoring in the bottom two quartiles (91% or less) (see Figure 2). Similar findings were found for construction firms, albeit with larger effect estimates (not shown).

Ten of the 19 audit elements were identified as having high score variation (less than 50% of audits achieving 100% on the element score), including: 2 (hazard assessment, analysis and control), 19 (management review), 11 (emergency preparedness), 3 (safe work practices), 10 (investigations and reporting), 4 (safe job procedures), 14 (occupational health), 8 (training and communication), 7 (preventative maintenance), and 12 (statistics and records) (see Figure 3).

When compared to firms scoring 100% on the element, firms scoring less than 100% were associated with higher lost time injury rates for four of these: 2 (hazard assessment, analysis and control), 10 (investigations

**Figure 2 |** Effect of overall audit score on injury rate, by type of injury, for passed certification and recertification audits, 2012-2020



**Figure 3 |** Elements and proportion of audits scoring 100%, for passed certification and recertification audits, 2012-2020



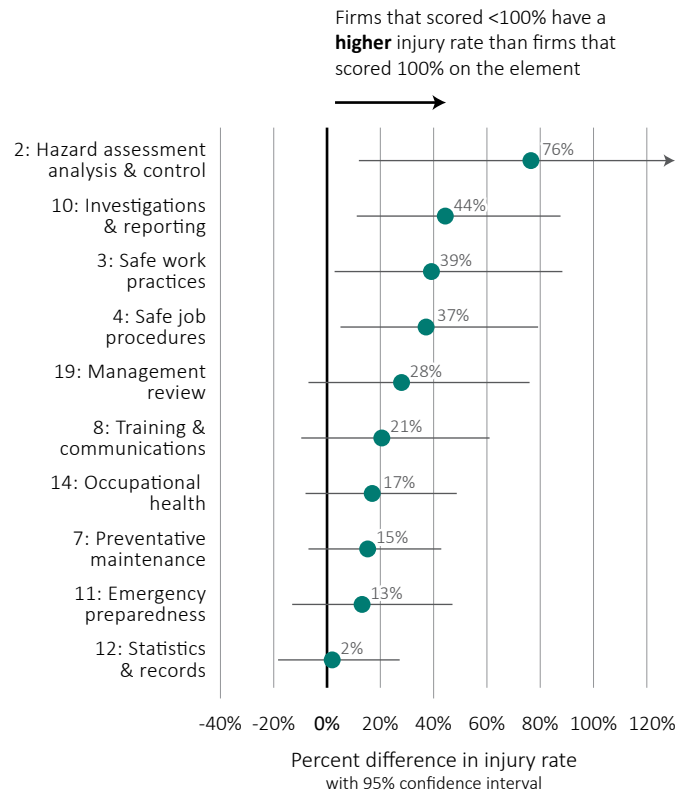
and reporting), 3 (safe work practices), 4 (safe work procedures) as well as element 6 (personal protective equipment) among the low score variation elements (see Figure 4).

## What this means

COR™ certification is associated with lower firm-level injury rates but the strength of this association is dependent on context, such as type of injury, size of firm, and sector. The overall reduction in the lost time and high-impact injury rates were driven by more recently certified, larger construction firms. Using the most comparable effect estimates across separate PWHS studies, COR™ participation in the construction sector has been associated with lost time injury rate reduction of 9% in BC and Alberta, 19% in Saskatchewan, and 28% in Ontario, relative to the change in non-COR™ firms. The larger effect estimates in Ontario may be driven by differences in the program and types of firms it typically enrolls. For example, COR™ firms in Ontario are much larger than observed in other provinces. This may be a reflection of the pre-bid qualification requirements for contracts in public and private sector construction projects. Furthermore, there is no SECOR or Small COR program in Ontario compared to other provinces, therefore all baseline and recertification audits are conducted by external auditors. Lastly, the IHSA COR™ audit requires a higher score threshold in order to pass (65% and above on each element as opposed to 50% or above elsewhere).

Overall, a firm's score on the IHSA COR™ audit is associated with its injury rate, but the strength of this association is not as strong as that observed for COR™ audit scores in BC and Alberta. The five elements whereby scores were associated with firm-level lost time injury rates account for 27% of the overall audit score. This finding is similar for BC, where elements

**Figure 4 |** Effect of scoring below 100% on lost time injury rate, for high variation elements, for passed certification and recertification audits, 2012-2020



2 (hazard assessment and control), 8 (training and communications), and 10 (investigations and reporting) were the most important in predicting firm injury performance.

Expansion of the COR™ program should focus on recruiting firms with less than 50 FTEs given that COR™ firms already account for one tenth, one fifth, and one third of firms that met the cohort criteria of this study with 50-99 FTEs, 100-499 FTEs, and 500+ FTEs, respectively. Future research should examine whether the introduction of the new audit tool (with fewer elements) and financial incentives result in different effectiveness of COR™. Similarly, understanding how COR™ certification can lead to a reduction in no lost time injuries should be an objective in improving the certification program.

## Disclaimer

All inferences, opinions, and conclusions drawn within this publication are those of the authors, and do not reflect the opinions or policies of the data stewards.

## About us

The Partnership for Work, Health and Safety (PWHS) is an innovative research unit that combines rigorous work and health research with effective knowledge translation.

PWHS brings together policy-makers, researchers and data resources from national and international organizations to address current and emerging issues of work-related health in Canada. Our research is aimed at improving understanding of the causes and consequences of injuries and illness, identifying high-risk industries and occupations, and investigating the effectiveness of interventions that improve worker health, prevent occupational illness and injury, and reduce work-related disability.

Our collaboration, based on best practices of knowledge transfer, enables researchers and decision-makers to work together to identify relevant questions, understand data, and produce useful information to effectively inform policy and practice.

## More information

Please contact Chris McLeod, Partnership for Work, Health and Safety Co-Director, at [chris.mcleod@ubc.ca](mailto:chris.mcleod@ubc.ca) with questions about the methods, results, or interpretation of this evaluation, or to request a copy of the full report. General enquiries should be directed to Suhail Marino, Partnership for Work, Health and Safety Director of Privacy and Operations, at [suhail.marino@ubc.ca](mailto:suhail.marino@ubc.ca).