

## An audit-based occupational health and safety recognition program: Does certification lead to lower firm work-injury rates in BC?

### Background

The Certificate of Recognition Program, established by WorkSafeBC, the workers' compensation system in BC, is a voluntary employer certification program intended to motivate employers to take a proactive role in occupational health and safety (OHS). WorkSafeBC first piloted the program in 2002 in the construction sector, then expanded to the oil and gas sector in 2004 and to all sectors in 2006. Employers who pass an audit of their OHS practices receive a Certificate of Recognition (COR) and are eligible for a rebate of 10% of their WorkSafeBC premium.

Voluntary audit-based certification as a way of recognizing or encouraging effective OHS practices is a common approach of regulators in Canada and internationally. However, little research has examined whether these programs lead to improved OHS outcomes. We assessed the effect of COR certification on firm-level injury rates in BC by comparing certified firms to similar, but non-certified, firms from 2002 to 2016.

An earlier version of this work provided to WorkSafeBC in 2015 found that COR certification was associated with lower injury rates. This update and extension adds several years of follow-up, uses a revised 2014 serious injury definition, and employs an improved analytical

### 2019 update

This brief presents the results of an updated and extended evaluation of the COR program. The original evaluation was published in 2015.

The findings in this brief are based on research presented in:

McLeod C, Quirke W, McLeod K, Aderounmu A. (2019). [Evaluating the effect of an audit-based occupational health and safety recognition program on firm work-injury rates in British Columbia, Canada, 2003-2016: a matched difference-in-difference approach. Final Report to WorkSafeBC.](#) Vancouver: Partnership for Work, Health and Safety, University of BC.

technique to better match certified firms to similar non-certified firms—in order to provide causal estimates of the effect of certification on injury rates.

### Approach

We used an observational research design. 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 central challenge in assessing whether participation has a “causal” effect (i.e., that any changes in 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 such as forestry



and construction, we used a matched difference-in-difference evaluation methodology that can identify change attributed to an intervention (the COR program).

This approach utilizes a control group of non-certified firms that have been matched to the intervention group of certified firms based on firm size, industry subsector and classification unit base rate, and identifies two differences in injury rates: (1) the difference between certified and similar but non-certified firms pre-intervention; and (2) the difference between the certified and similar but non-certified firms post-intervention. The impact of the intervention is the sum of these two differences. We state the impact as a percent change in injury rate, for certified firms compared to non-certified firms.

## What we found

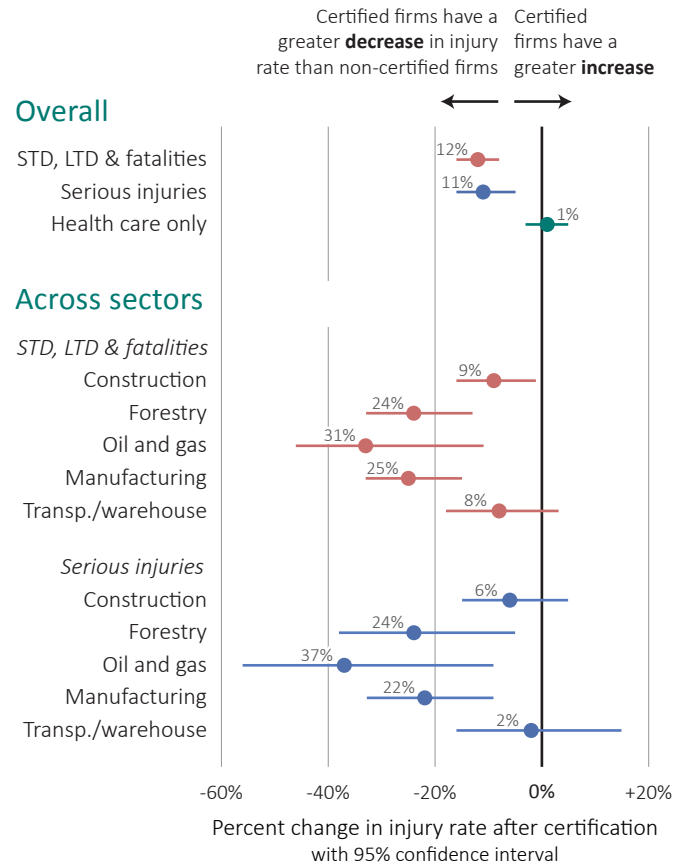
### Overall

Certified firms had, on average, a 12% decrease in the short-term disability, long-term disability and fatality (STD, LTD and fatality) rate between 2003 and 2016 compared to non-certified firms, and an 11% decrease in the serious injury rate. We found no difference in the health care only claim rate. (See Figure 1.)

### Across sectors

We examined construction; forestry; oil and gas; manufacturing; and transportation and warehousing firms separately (see Figure 1), and found reductions in the STD, LTD, and fatality injury rate for each sector, except transportation and warehousing, for which we found no statistically significant effect. Certified firms in forestry, oil and gas, and manufacturing had, on average, 24%, 31% and 25% reductions in the STD, LTD and fatality rate and 24%, 37% and 22% reductions in the serious injury rate compared to non-certified firms, respectively. Certified firms in construction had

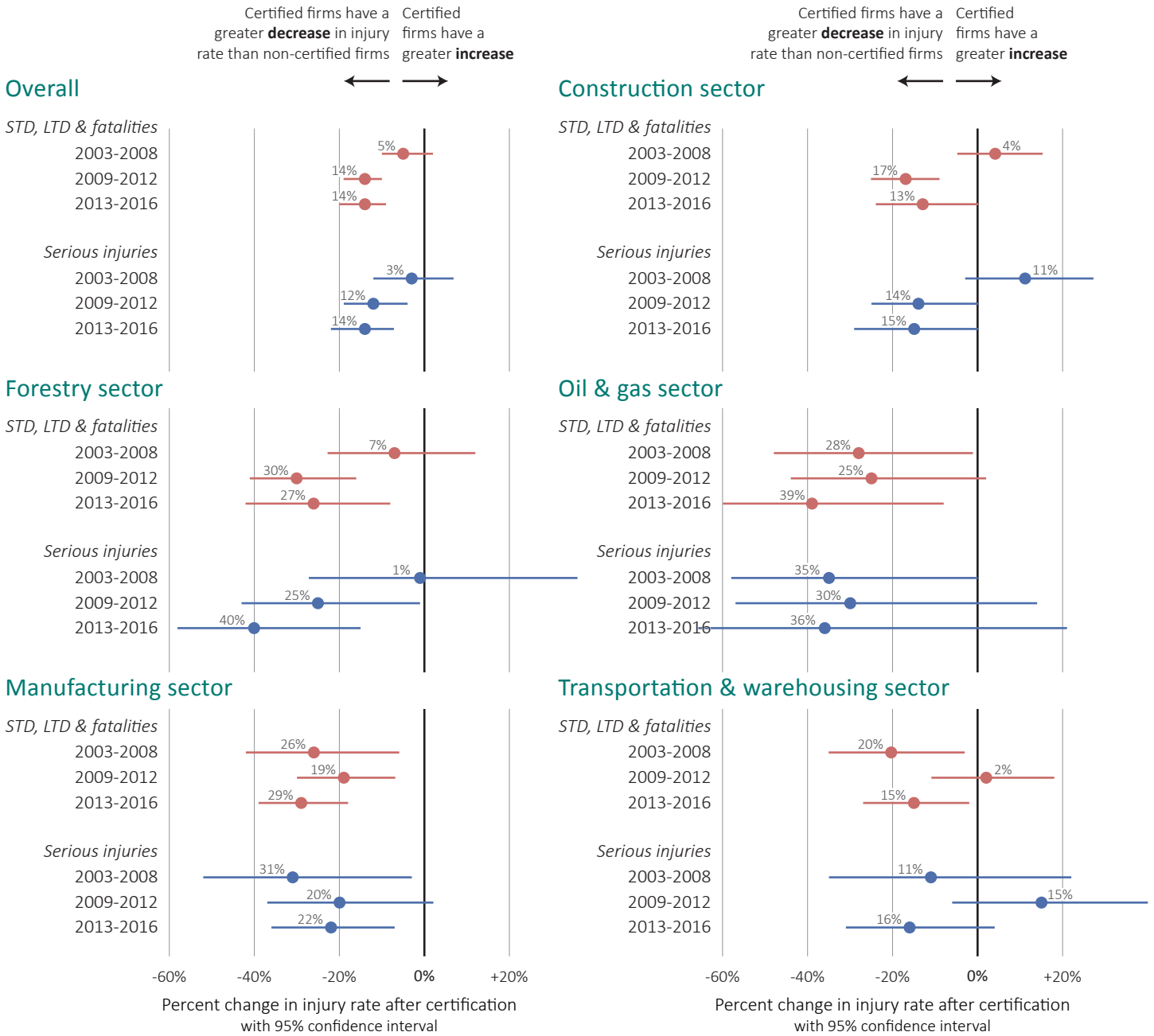
**Figure 1 | Effect of COR certification on change in injury rate, by type of injury rate, overall and across sectors, 2003-2016**



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.

a 9% decrease in the STD, LTD and fatality rate and a 6% decrease in the serious injury rate (not statistically significant) compared to non-certified firms—although these reductions were much larger when we restricted to later time periods. (See Figure 2.) Certified firms in transportation and warehousing had an 8% decrease in the STD, LTD and fatality rate, compared to non-certified firms (not statistically significant), and no change in the serious injury rate. Health care only injury rates were slightly reduced in each sector, except construction, but did not generally reach statistical significance. (Not shown).

**Figure 2 | Effect of COR certification on change in injury rate, by type of injury rate, across sectors and over time**



**Over time**

The time period of COR certification had an impact on the effect of certification on injury rates. (See Figure 2.) Overall, the reductions in the rates of STD, LTD or fatal injuries and serious injuries with COR participation were lesser in the 2003–2008 period and greater in the 2009-2012 and 2013-2016 periods. STD, LTD, and fatality injury rates decreased by 5% for COR firms in 2003–2008, and 14% in the periods 2009-2012 and 2013-2016. The serious injury risk decreased 3% in 2003–2008, 12% in 2009-2012, and 14% in 2013-2016.

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**What are serious injuries?**  
 Short-term (at least one day of time loss) or long-term disability claims with at least one of: serious medical diagnosis; potentially serious medical diagnosis with 50 or more work days lost; or fatality.

For health care only claims, a 9% increase in risk was observed in 2003–2008 but not in the other time periods. (Not shown.)

### Across sectors over time

In the construction sector, the STD, LTD and fatality rate decreased by 17% and 13% in 2009-2012 and 2013-2016, respectively, for certified firms compared to non-certified firms, and the serious injury rate decreased by 14% in 2009-2012 and 15% in 2013-2016. Decreases in injury rate were not observed in the 2003-2008 period. In the forestry sector a similar pattern was observed, with STD, LTD, and fatality rates reduced by 30% and 27% in 2009-2012 and 2013-2016, respectively, and serious injury rates reduced by 25% and 40%.

In the oil and gas sector, reductions of 25% to 39% were observed across all three time periods and for both STD, LTD and fatalities and serious injuries, although some estimates did not reach statistical significance. Similarly, in the manufacturing sector, reductions of 19% to 31% were observed for certified firms across all three time periods, and both injury rates. Statistically significant effects of certification were generally not found for transportation and warehousing, or for health care only claims. (Not shown.)

### What this means

COR program participation is associated with lower injury rates, particularly in the manufacturing, construction and forestry sectors, and the strength of the effect is larger in more recent years. Our updated analysis supports our 2015 finding that COR certified firms have lower injury rates than non-certified firms.

The new analysis suggests a causal interpretation of the effect of COR certification on firm injury rates. The evaluation approach adjusts for pre- and post-certification differences between COR certified and non-COR certified firms and matches by the year of COR certification to make COR firms similar to non-COR firms. However, we cannot rule out that there may be other important factors not controlled for in the analysis that may be associated with differences in injury rates between COR certified and non-certified firms. Nevertheless, in the absence of the ability to evaluate the COR program prospectively, these analyses represent the most rigorous assessment of the impact of COR program on injury rates to date.

### 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).

