

Health and safety management and occupational hygiene: national and international perspectives

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March 1, 2016

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"We're moving you from payroll to fear and paranoia."

Nyberg et al. OEM 2009

Original article

Managerial leadership and ischaemic heart disease among employees: the Swedish WOLF study

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Accepted 22 August 2008

ABSTRACT

Objective: To investigate the association between managerial leadership and ischaemic heart disease (IHD) among employees.

Methods: Data on 3122 Swedish male employees were drawn from a prospective cohort study (WOLF). Baseline screening was carried out in 1992–1995. Managerial leadership behaviours (consideration for individual employees, provision of clarity in goals and role expectations, supplying information and feedback, ability to carry out changes at work successfully, and promotion of employee participation and control) were rated by subordinates. Records of employee hospital admissions with a diagnosis of acute myocardial infarction or unstable angina and deaths from IHD or cardiac arrest to the end of 2003 were used to ascertain IHD. Cox proportional-hazards analyses were used to calculate hazard ratios for incident IHD per 1 standard deviation increase in standardised leadership score.

Results: 74 incident IHD events occurred during the mean follow-up period of 9.7 years. Higher leadership score was associated with lower IHD risk. The inverse

interventions should be carried out. To help define the interventions required, we tested whether concrete managerial behaviours promoting a favourable psychosocial work environment were associated with a reduced risk of cardiovascular disease among employees.

Observational evidence on various general conceptualisations describing leadership as predictors of employee health is accumulating.³ For example, considerate behaviour on behalf of the leader, structures initiated with consideration for the employee, and transformational behaviours (communication of a vision, intellectual stimulation, consideration of individual employees) have all been found to be related to good employee health, job satisfaction and productivity.^{4–13} A high level of justice in managerial behaviours has been shown to be related to increased employee motivation and cooperation, decreased levels of negative emotions and sickness absence, and reduced risk of coronary heart disease (CHD).^{14–20} In contrast, perceived abusive, passive-avoidant and laissez-faire leader-

Items that comprise the Standardised Leadership score:

1. My boss gives me the information I need
2. My boss is good at pushing through and carrying out changes
3. My boss explains goals and subgoals for our work so that I understand what they mean for my particular part of the task
4. I have a clear picture of what my boss expects of me
5. My boss shows that he/she cares how things are for me and how I feel
6. I have sufficient power in relation to my responsibilities
7. My boss takes the time to become involved in his/her employees' professional development
8. My boss encourages my participation in the scheduling of my work
9. I am praised by my boss if I have done something good
10. I am criticised by my boss if I have done something that is not good

- **Cox proportional hazard model**

- Investigates risk (i.e. hazard) of an ischaemic heart disease incident for one standard deviation increase in the standardised leadership score, adjusting for other variables

- Interpretation:

1

HR > 1 → more likely to have IHD incident

HR < 1 → less likely to have IHD incident

Confidence Interval (CI) → level of certainty

Table 3 Association of standardised leadership score with incident IHD among employees after adjustment for different risk factors at baseline*

Adjustment variables in addition to age	Hazard ratio for IHD per 1 SD increase in leadership score (95% CI)
None	0.65 (0.49 to 0.87)
Education, supervisory status, social class, income and physical load at work	0.67 (0.49 to 0.90)
Smoking, physical exercise	0.65 (0.49 to 0.87)
BMI, systolic and diastolic blood pressure, total cholesterol, total/HDL cholesterol ratio, triglycerides, fibrinogen, diabetes	0.61 (0.46 to 0.82)
All of the above	0.63 (0.46 to 0.86)

*Only those with a minimum of 4-year exposure and no missing data in any of the predictors were included in these models (n = 1319, 40 events).
Ischaemic heart disease (IHD) included unstable angina. HDL, high density lipoprotein.

What do we mean by leadership?

- Leadership as a specific role or as influencers

“Leadership constitutes a process of social influence that is enacted by designated individuals who hold formal leadership roles in organizations”

Kelloway and Barling 2010, p. 261

Leaders and leadership styles

- Transactional or task oriented
- Transformational or change oriented
- Relationship oriented
- Laissez faire or passive
- Destructive or abusive

(Wegge et al 2014, Skakon, 2010)

How does leadership effect employee health and well-being?

- Person-focused action
 - Promoting or hampering individual employees health directly
- System-focused action
 - Initiating actions and policies that benefit or harm workers as a whole

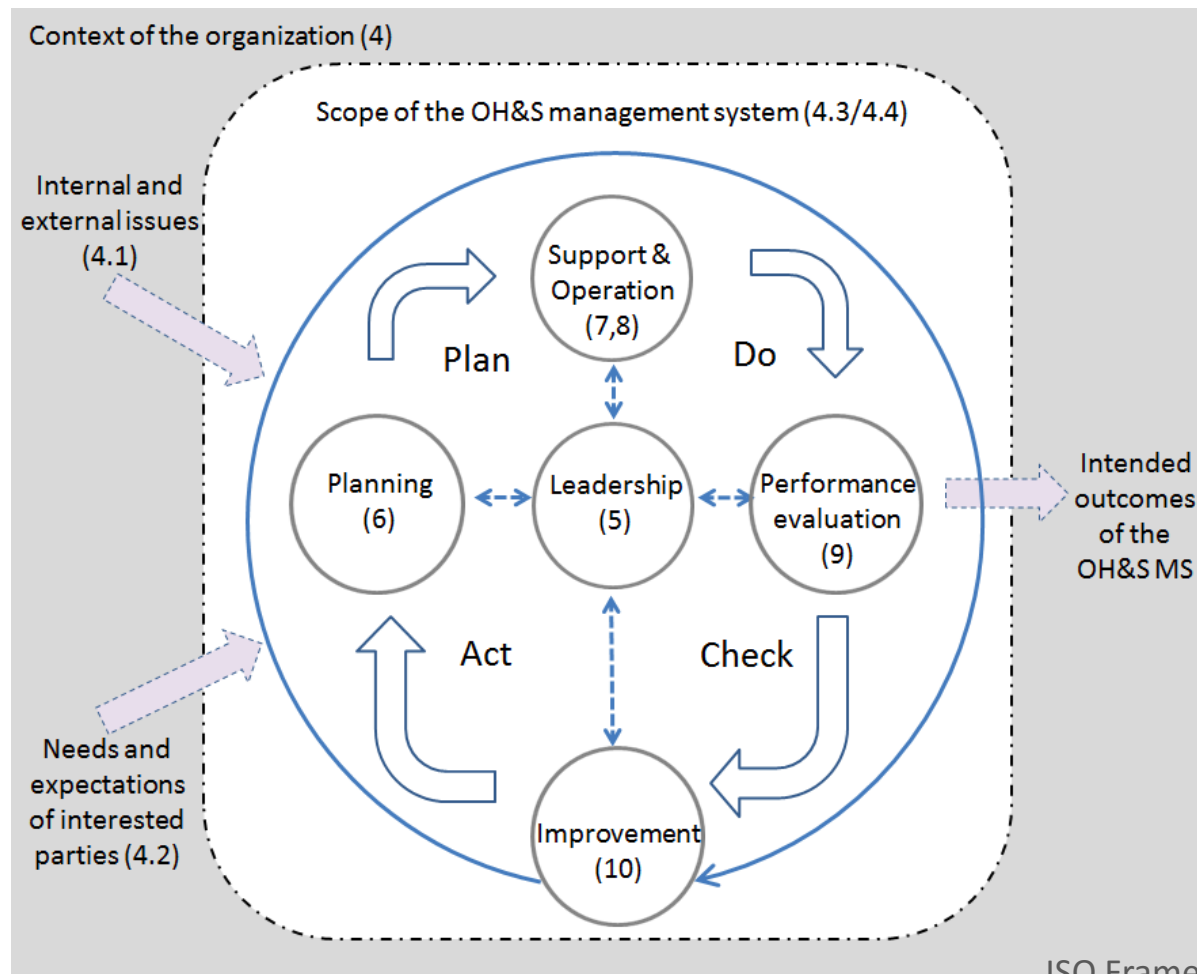
(Wegge et al, 2014)

How does leadership effect employee health and well-being?

- Moderating action
 - Buffering workers from the impact of environmental stressors
- Climate control and identity management
 - Cultivating health related shared perceptions and actions
- Modeling

(Wegge et al, 2014)

Leadership and occupational health and safety



ISO Framework for OHSMS
(source: ISO/CD 45001, 2014)

Occupational health & safety management systems

“part of the overall management of the organization that addresses OHS hazards and risks associated with its activities” (CSA, 2006)

Occupational health & safety management systems

A health and safety management system is an infrastructure put in place by employers to minimize the incidence of injury and illness among their workers. This is accomplished through identifying, assessing, and controlling risks to workers in a workplace. The scope and complexity of a health and safety management system will vary according to the size and hazards of workplace and the nature of the work.

Source:

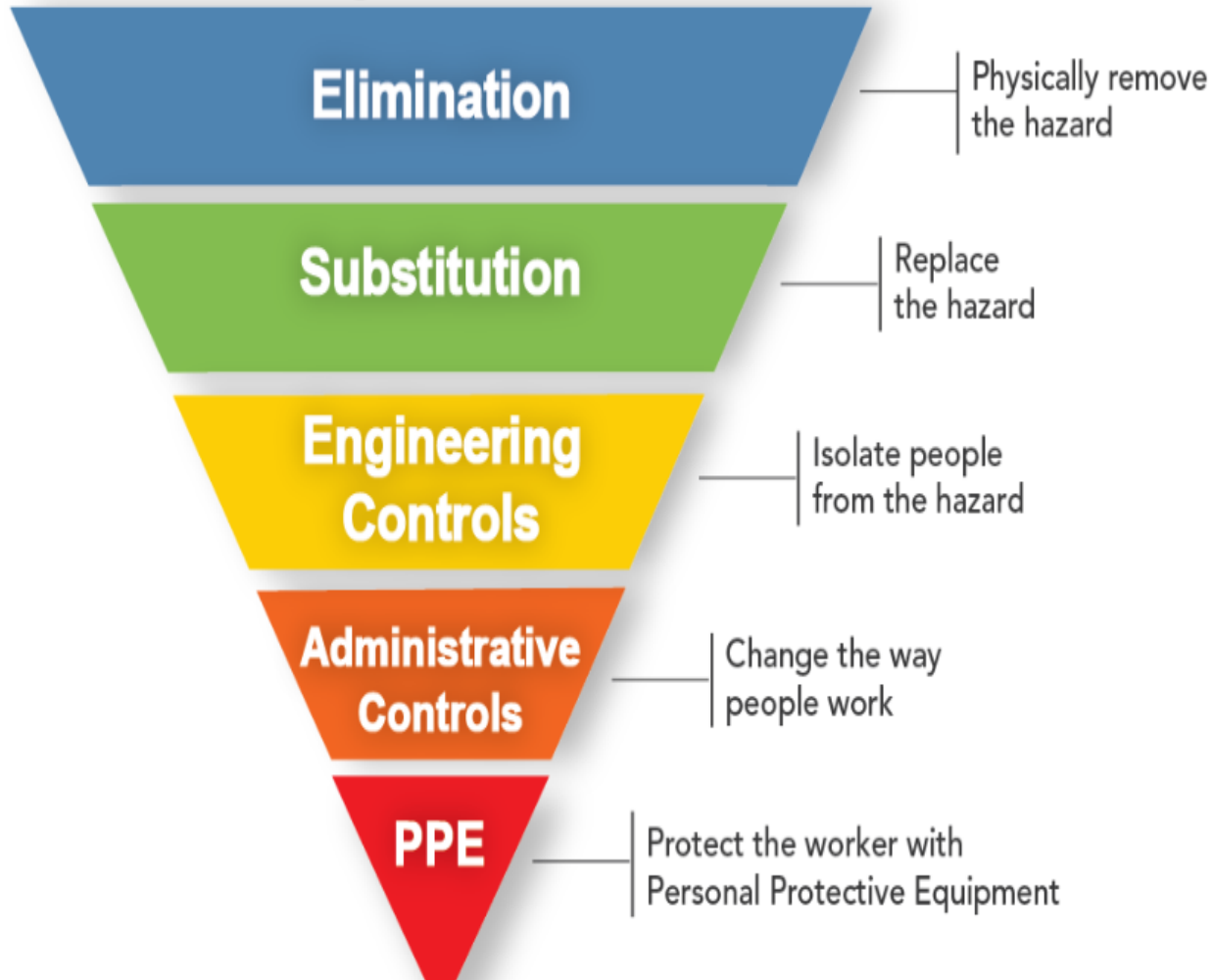
http://www.worksafebc.com/insurance/partners_program/assets/info_sheets/COR_Health_and_Safety_Management.pdf

Hierarchy of Controls

Most effective



Least effective



Early Recognition and Screening

(from NIOSH)

Occupational health & safety management systems

The OSHMS approach ensures that:

- the implementation of preventive and protective measures is carried out in an efficient and coherent manner;
- pertinent policies are established;
- commitments are made;
- all the workplace elements to assess hazards and risks are considered, and
- management and workers are involved in the process at their level of responsibility.

(ILO, 2011; p. 3 – 4)

Plan, Do, Check, Act

Plan:

- Identify goals, outputs, and expected outcomes. Identify how they are to be achieved.

Do:

- Implement the plan's objectives. Collect data to measure active and reactive performance.

Check:

- Compare “actuals” with targets. Analyze differences to determine root cause of deviation.

Act:

- Review performance. Take corrective action. Revisit plans and update/improve as necessary.

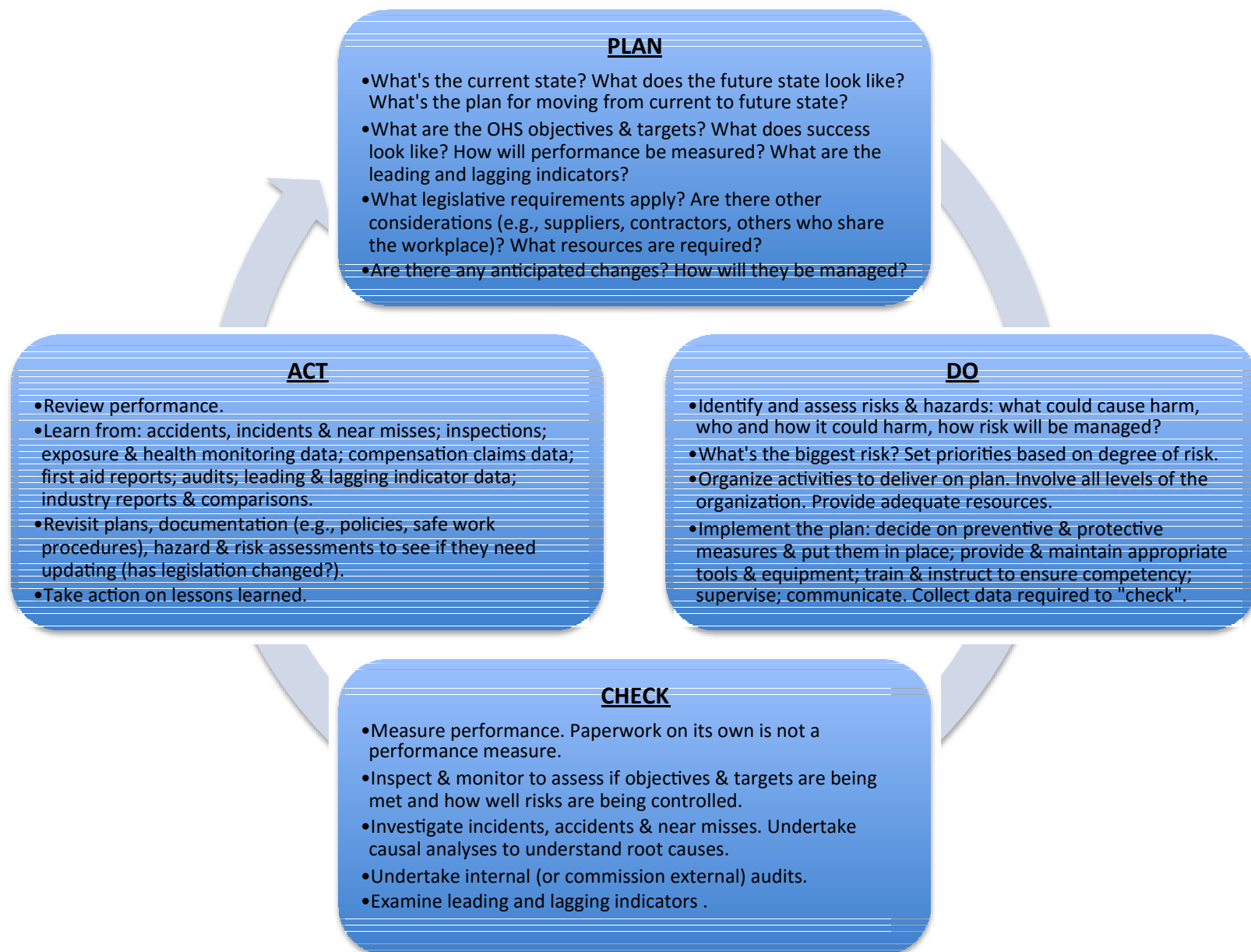


Figure 1: The “Plan-Do-Check-Act” Cycle for OHS (adapted from HSE, 2013; CSA, 2006; ISO, 2014)

Draft ISO 45001 OHSMS Standard

- Context of the organization
- Leadership
- Planning
- Support
- Operations
- Performance Evaluation
- Improvement



Examples

- Australia – Safety Map
- UK – Health and Safety Executive, British Safety Council
- Certificate of Recognition



Certificate of Recognition (COR) audit program

- Purpose
 - Decrease work injury rates and help injured workers make early, safe return to meaningful work
 - Encourage employers to elevate health and safety issues to a level consistent with other essential aspects of conducting business
- Occupational Health and Safety COR
 - 10% rebate on premiums
- Injury Management/Return to Work COR
 - 10% rebate on premiums
- Additional financial incentives proposed through experience rating system and base assessment rate

COR Certifying Partners

- Certifying Partners are organizations that guide employers toward earning a COR
 - Facilitate participation and provide resources
 - Maintain records of employer steps towards COR achievement
 - Ensure availability of auditors needed to verify compliance with program requirements
- Nine certifying partners established in a variety of BC industries

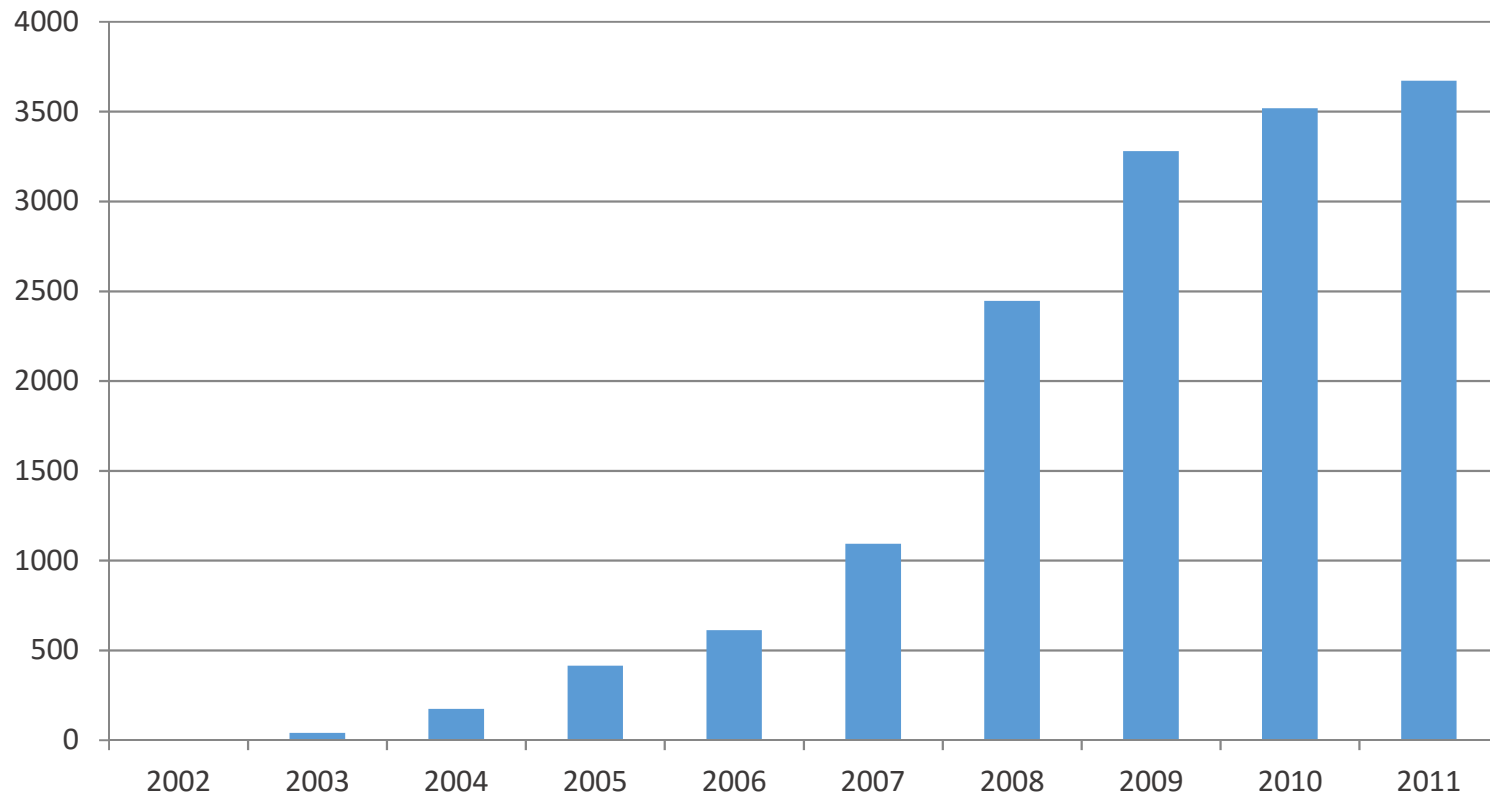
COR program audit

	Element	Parentage of total audit	Verification method
1	Management Leadership and Commitment	10 to 15	documentation, interviews, observation
2	Safe Work Procedures and Written Instructions	10 to 15	documentation, interviews
3	Training and Instruction of Workers	10 to 15	documentation, interviews
4	Hazard Identification and Control	10 to 15	documentation, interviews, observation
5	Inspection of Premises, Equipment, Workplaces, and Work Practices	10 to 15	documentation, interviews, observation
6	Investigation of Accidents	10 to 15	documentation, interviews, observation
7	Program Administration	10 to 15	documentation, interviews
8	Joint Health and Safety Committee	10 to 15	documentation, interviews

COR program audit

Greater than 20 employees – large employers (COR)		Auditor
1 st year	Qualifying Audit or re-certifying audit	External
2 nd year	Maintenance Audit	Internal or External
3 rd Year	Maintenance Audit	Internal or External
Less than 20 employees – small employers (SECOR)		
1 st year	Qualifying Audit or re-certifying audit	Internal or External
2 nd year	Maintenance Audit	Internal or External
3 rd year	Maintenance Audit	Internal or External

OHS COR program expansion - # of BC employers

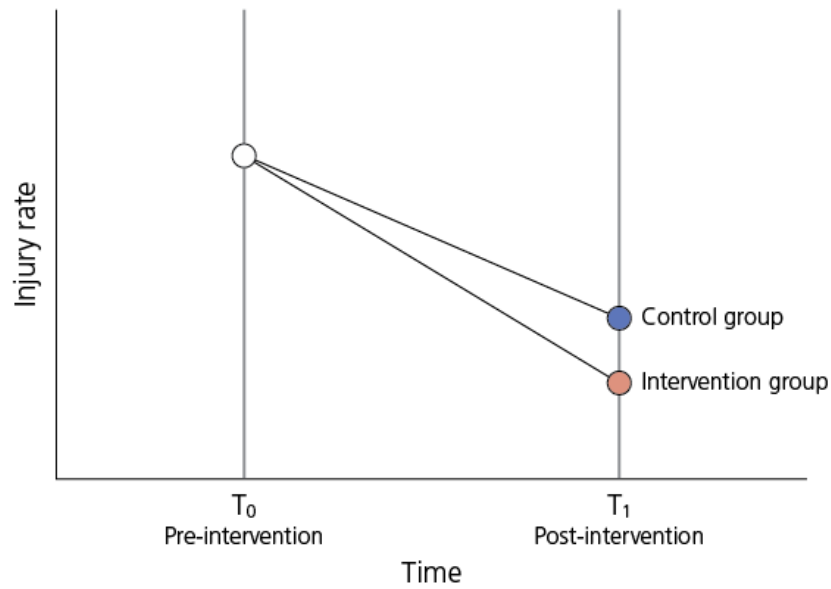


Research question

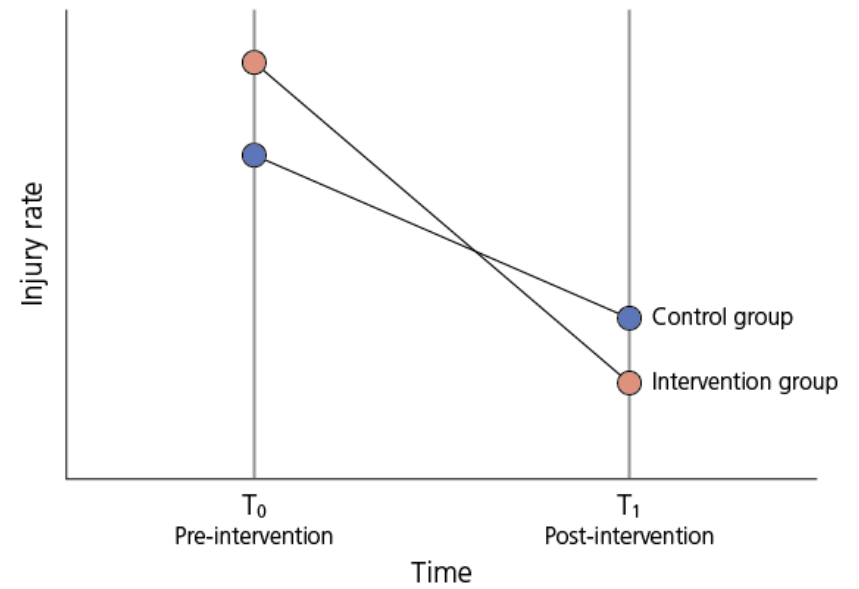
Is COR certification associated with lower firm-level injury rates?

Approaches to program evaluation

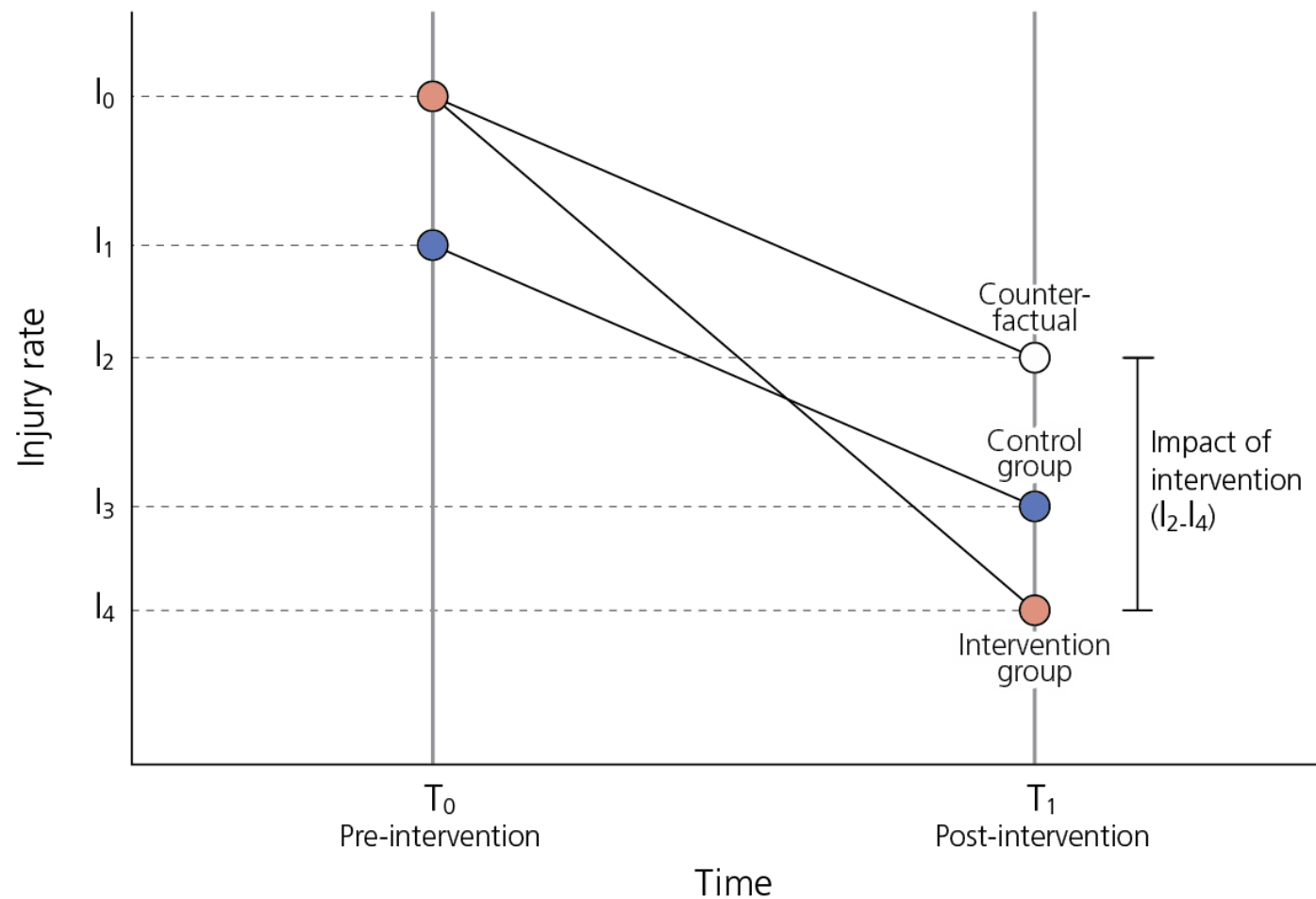
Randomization



Observational



Difference-in-difference evaluation methodology



Adapted from Khandker 2010 p. 74

Study cohort

Table 1: Study cohort by sector

Sector	COR Firm	Non-COR Firm	Total
Primary Resources	1,650	9,709	11,359
Manufacturing	247	10,784	11,031
Construction	1,130	49,569	50,699
Transportation and Warehousing	902	26,254	27,156
Trade	56	23,810	23,866
Public Sector	15	618	633
Service Sector	1,016	84,290	85,306
Total	5,016	205,034	210,050

Table 2: Number of COR firms

Year	Number of COR Firms
2003	30
2004	157
2005	365
2006	593
2007	1,164
2008	2,416
2009	3,429
2010	4,064
2011	4,295
2012	3,943
Total	20,456

Methods

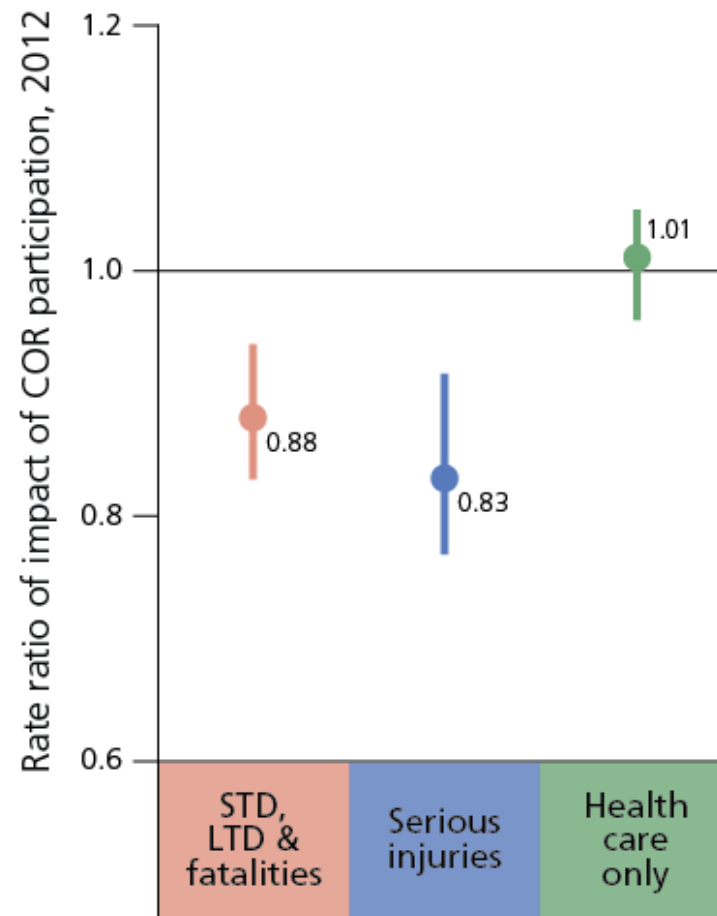
- All active firms (1998 to 2012)
- CUs covered by COR program
- Firms with at least three years of assessable data
- Firms with positive payroll included in a given year
- Firms with only one year of COR participation excluded

- **Intervention** group – all firms who became COR certified between 2003 and 2010;
- **Control** group – all firms never in COR and meeting above requirements

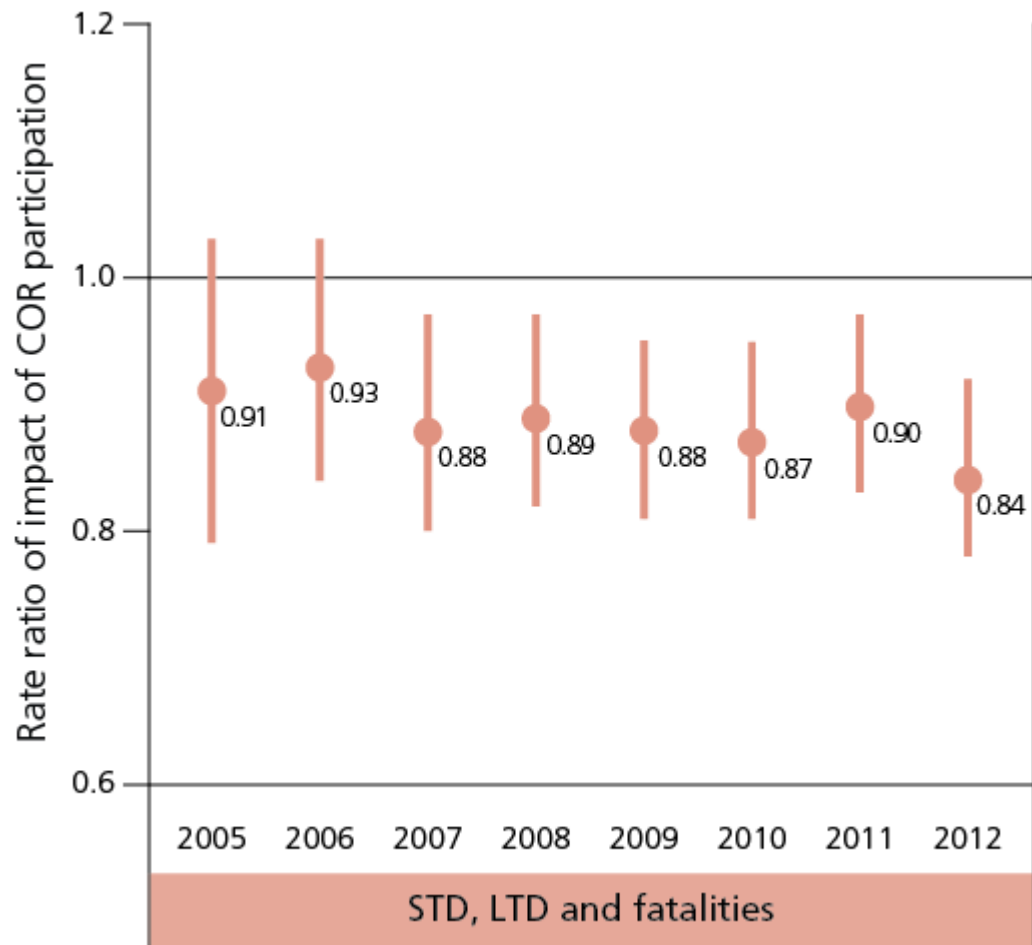
Methods – statistical model

- Intervention variables
 - COR indicator (yes or no for participation)
 - Controls for differences in baseline risk
 - Indicator of the years of participation in COR
- Control variables
 - Year, Firm size, Sector (4 digit CU), employer tenure in CU, Rate group base rate
 - Balances differences in injury risk between COR firms and controls

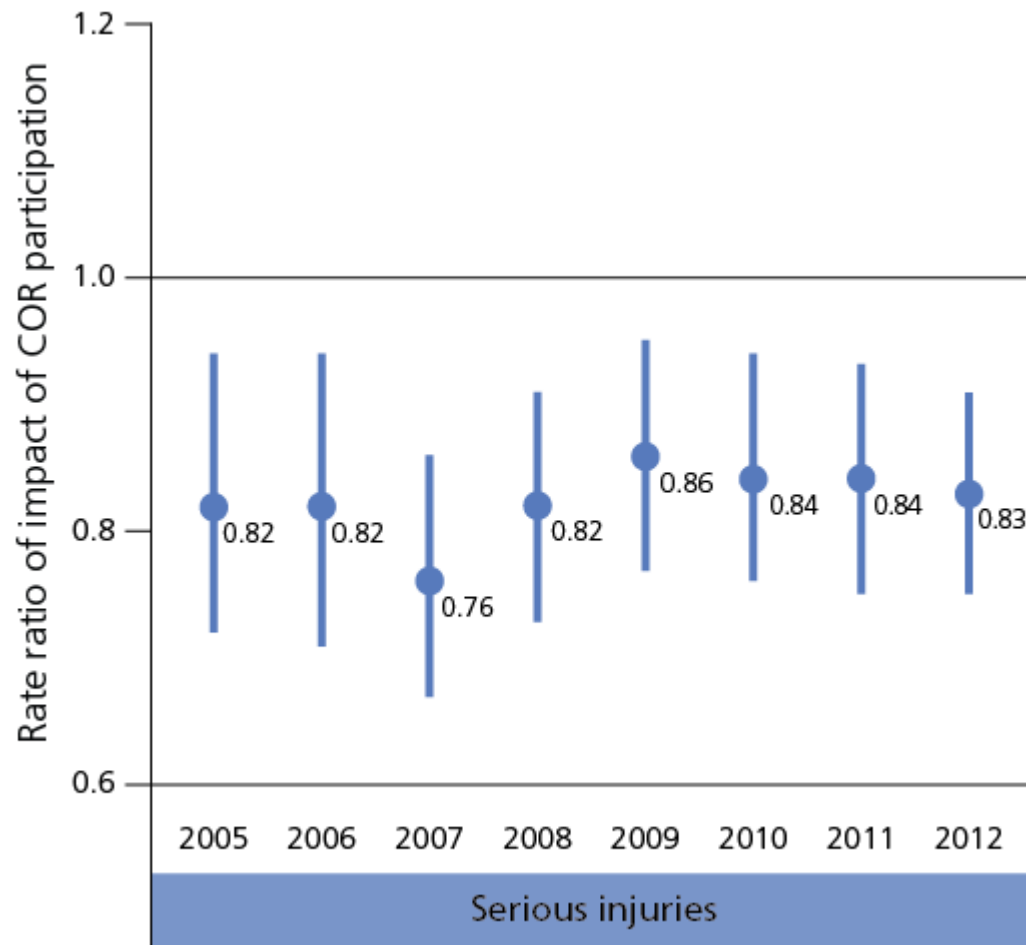
Effect of COR participation – full cohort



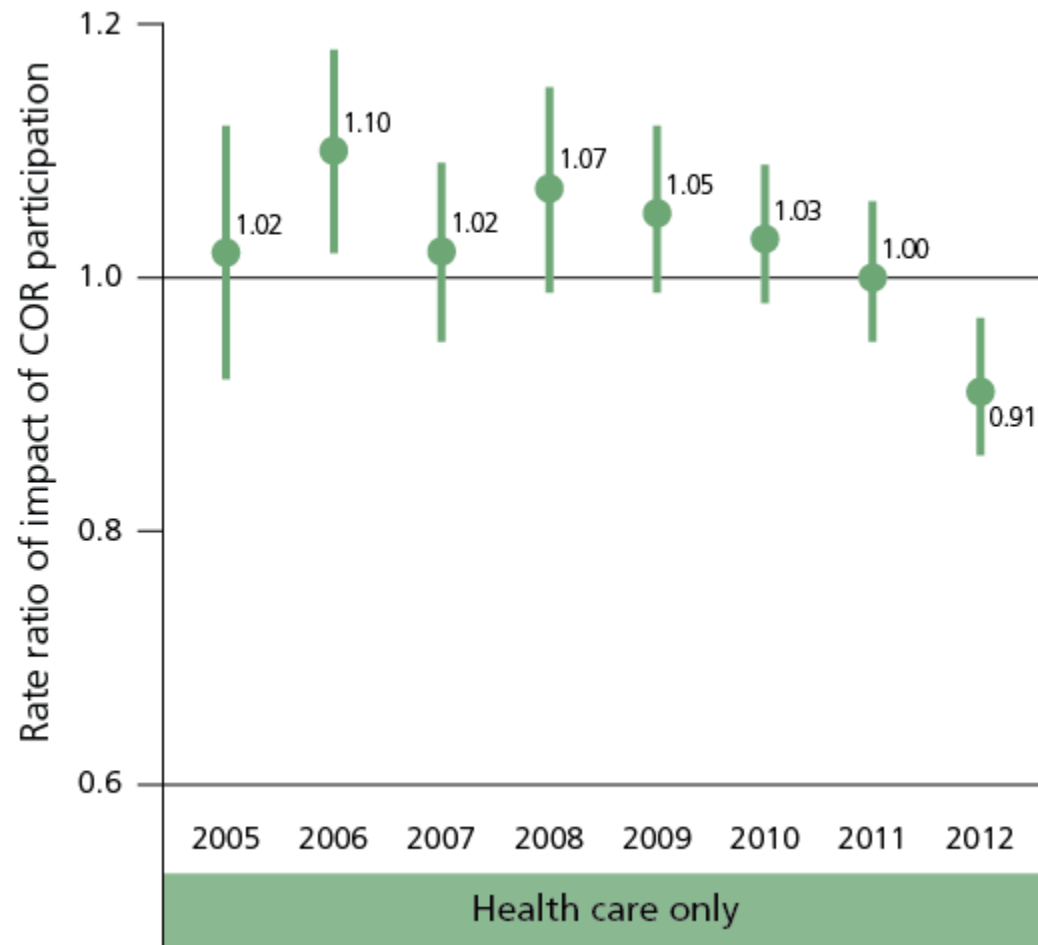
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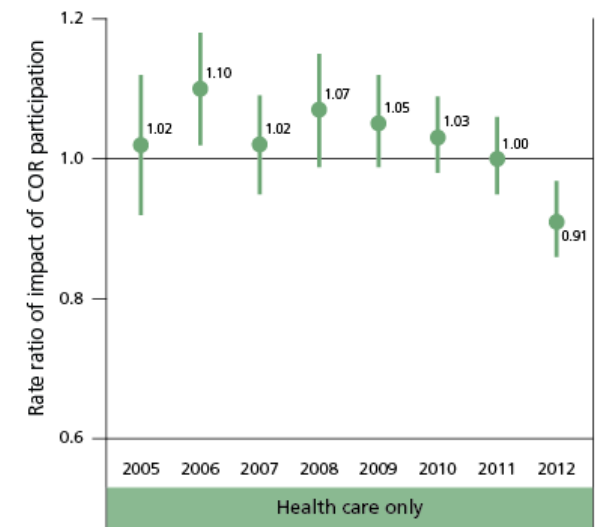
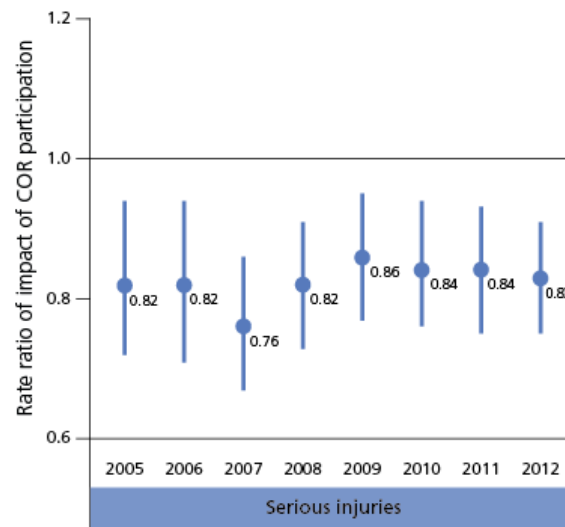
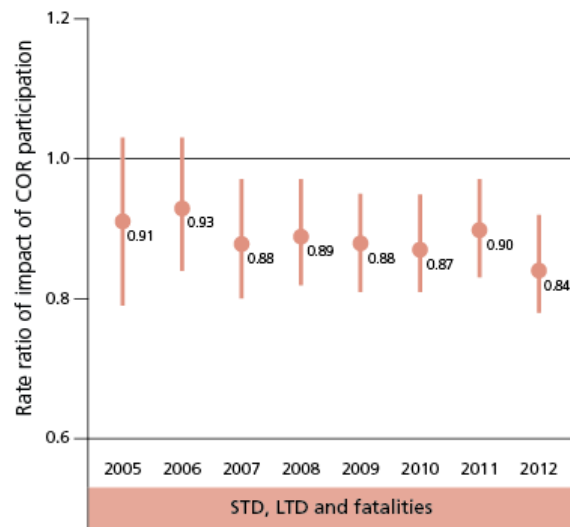
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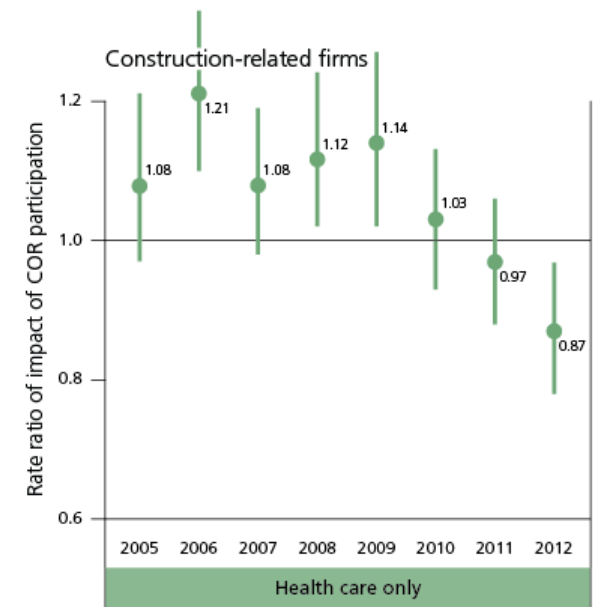
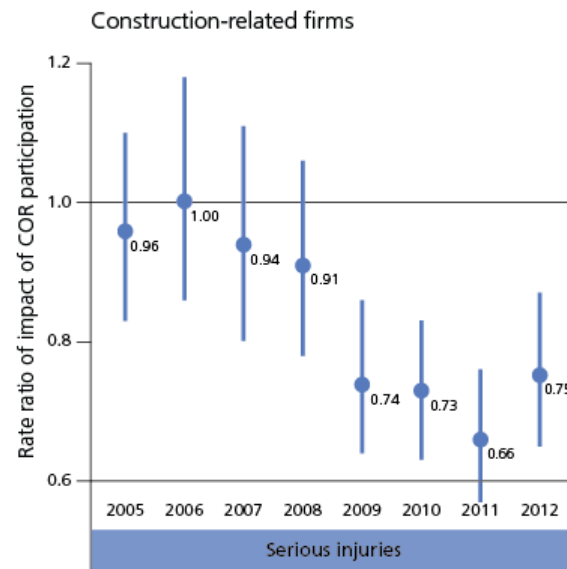
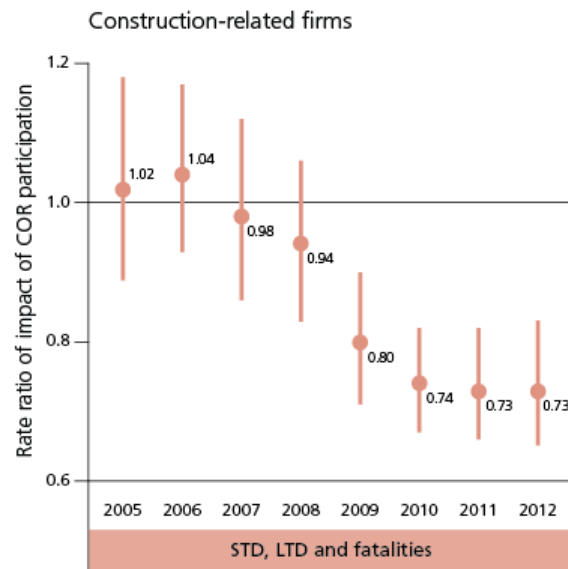
Effect of COR participation – full cohort



Sector specific results



Sector specific results – Construction-related firms



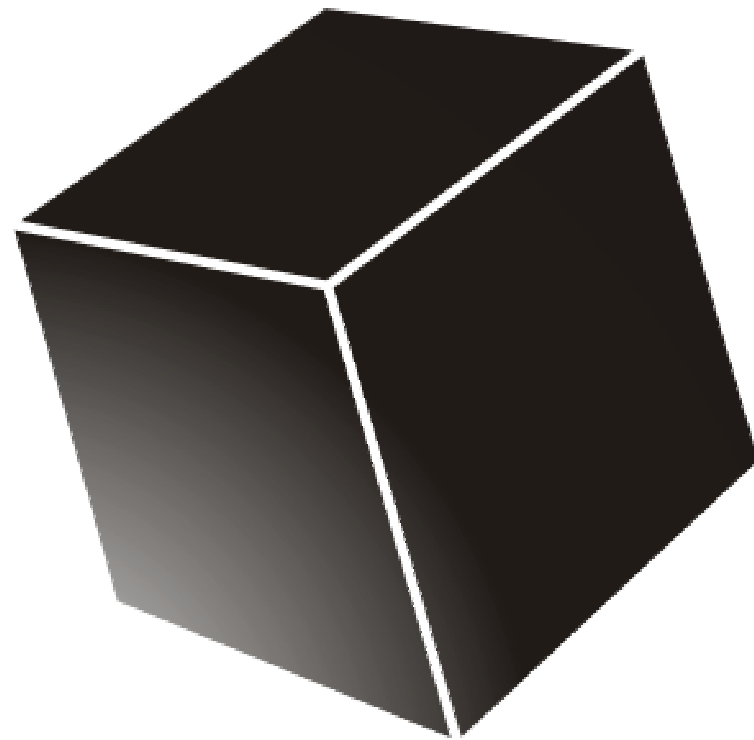
Sector specific results – Forestry-related firms



Conclusions

- COR participation associated with a lower injury rate
- COR appears to be identifying good performers
- COR may be associated with other factors driving the injury rate reduction

Future directions

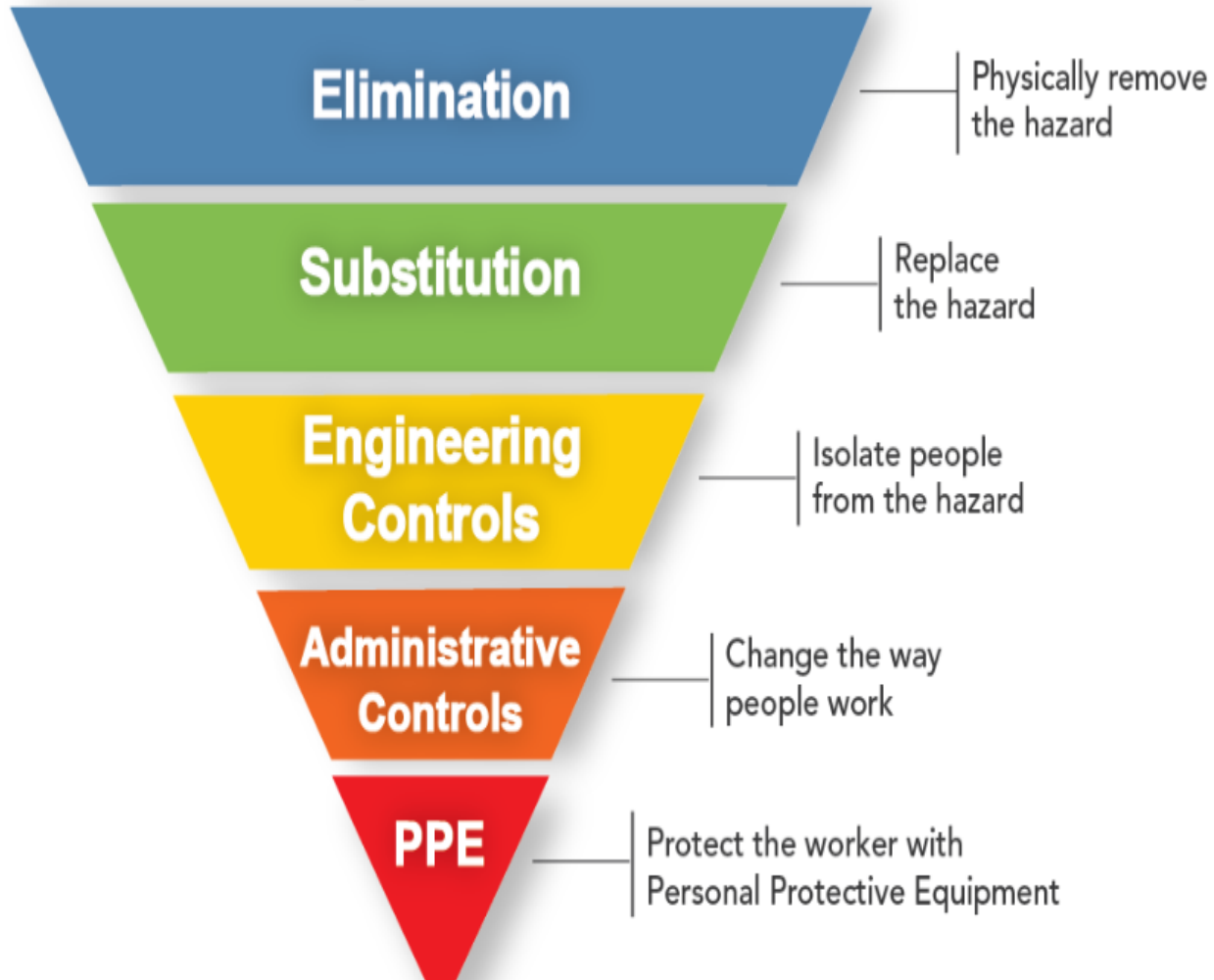


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