



Evaluating OHS Interventions: The Case Study of BC's Faller Certification Program

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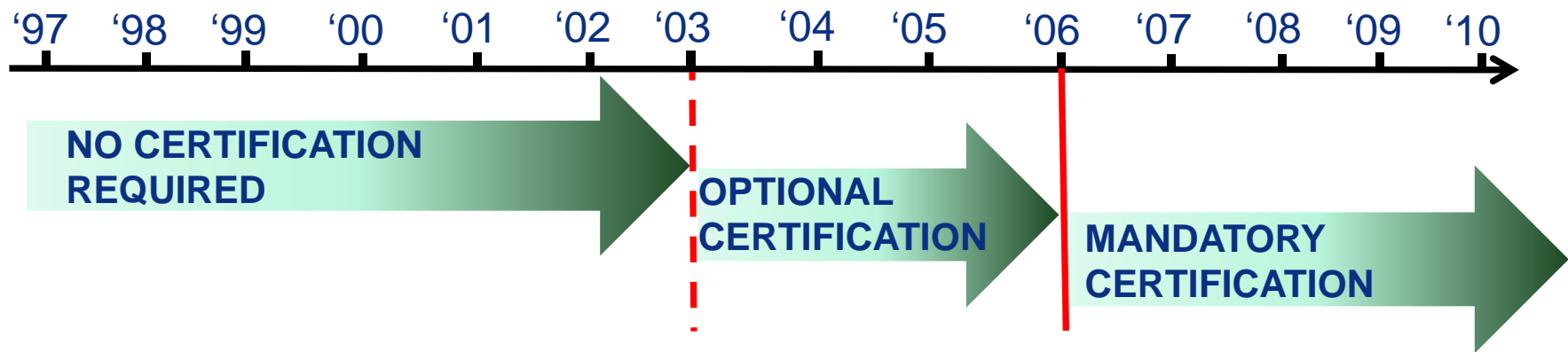
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The BC Faller Training Standard

- 26.21 Faller qualifications (WorkSafeBC)
 - A worker may not fall or buck trees unless qualified to do so to a standard that is acceptable to the Board
- 26.22 Forestry operation faller training (WorkSafeBC)
 - A worker may not work as a faller unless the worker receives training acceptable to the Board and is certified in writing as a competent faller
- Competent faller = BC Faller Training Standard certified

The BC Faller Training Standard



Objectives

- Injury Rates (Study1):
 - Determine the injury rates of manual tree fallers
 - Assess if changes in injury rates are associated with mandatory certification
- Risk of Injury (Study 2):
 - Determine the risk of injury for a cohort of manual tree fallers before and after skills certification



Images source: Western Fallers Association

STUDY 1: Manual Tree Faller Injury Rates

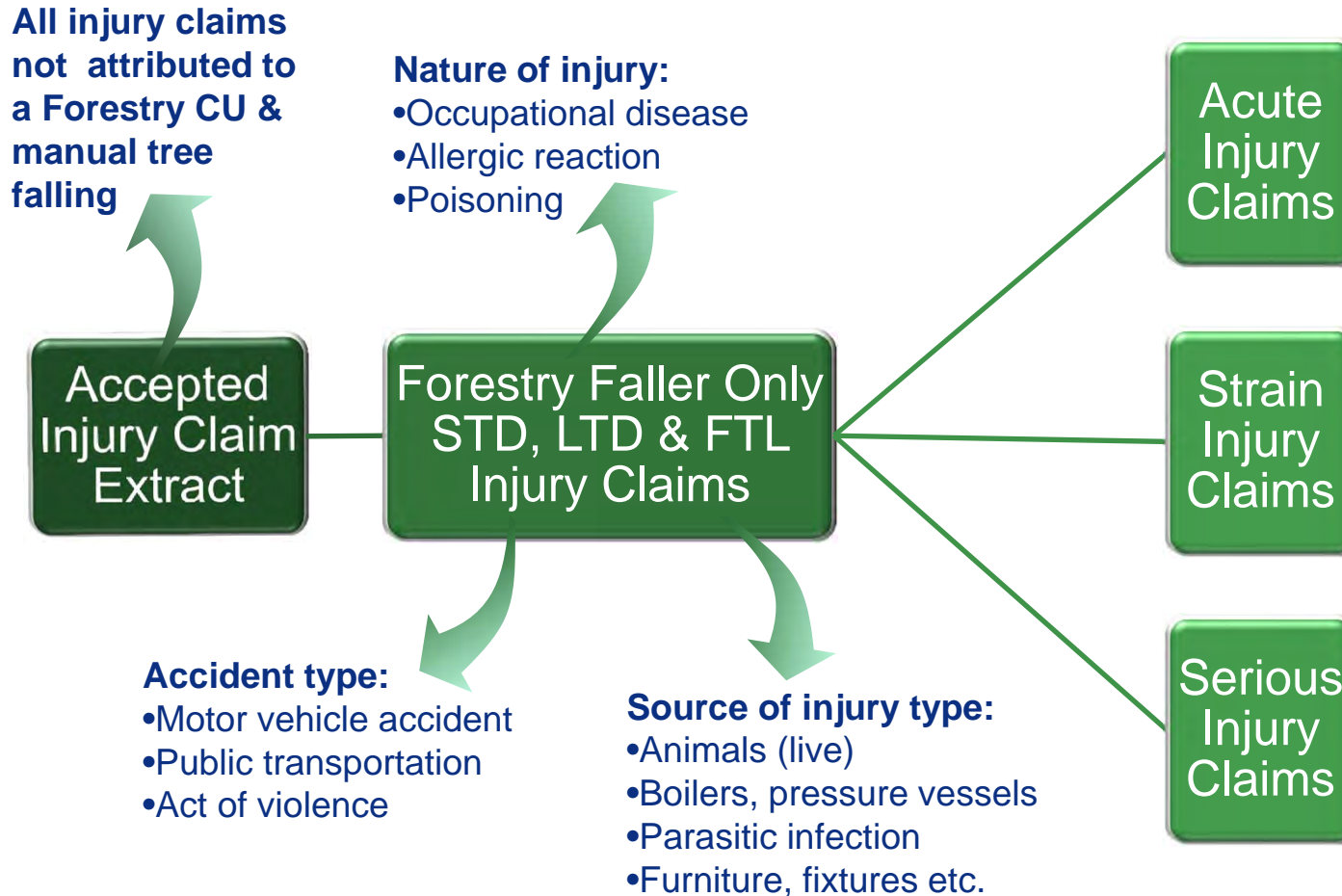
Methods

- Retrospective cross-sectional data analysis (1997-2008)
 - Injuries/m³ wood harvested
- Study population
 - All manual tree fallers in BC Forestry
- Data sources
 - WorkSafeBC
 - BC Ministry of Forests and Range

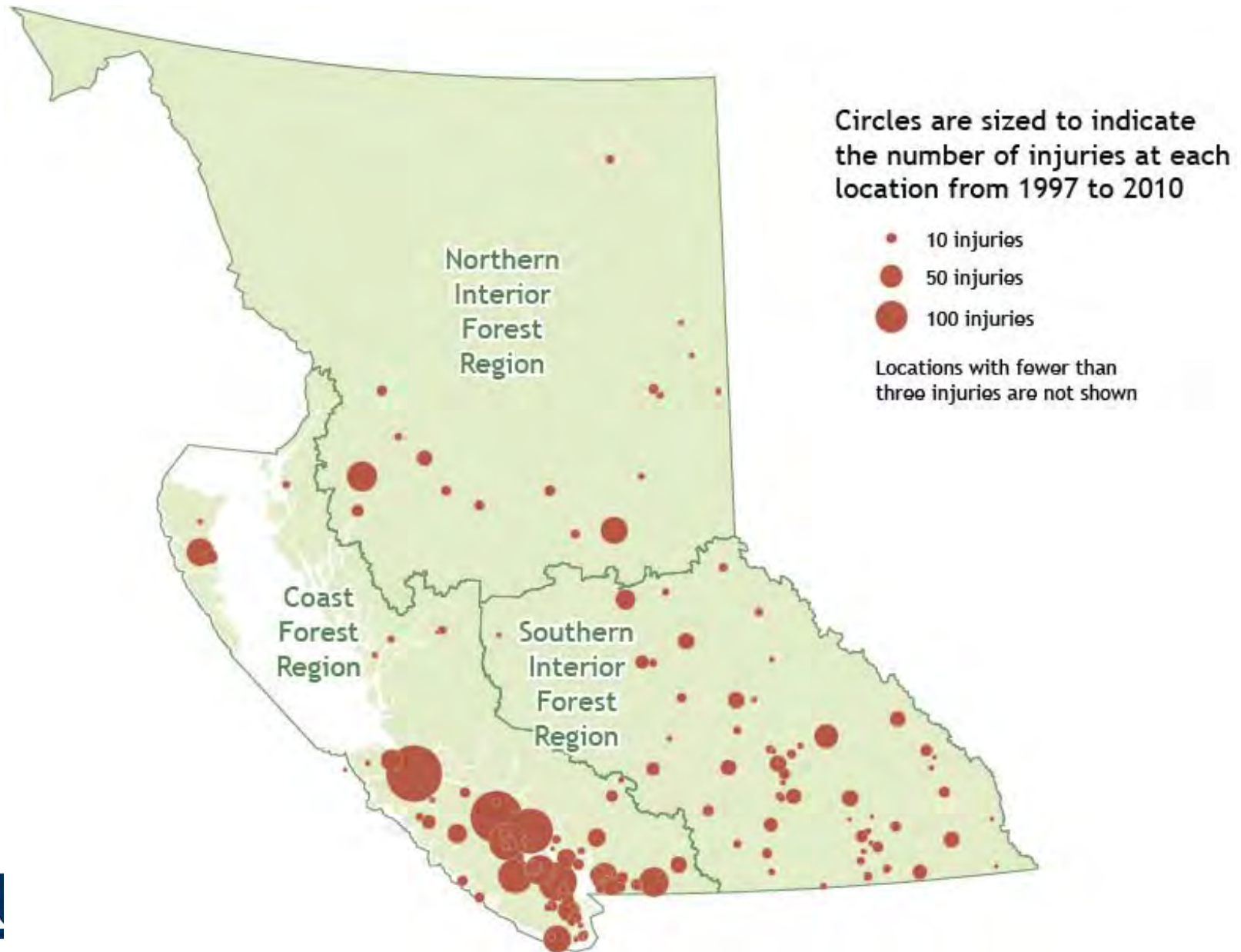


Image courtesy of Hans Peter Meyer

Cleaning and Aggregating Injury Type

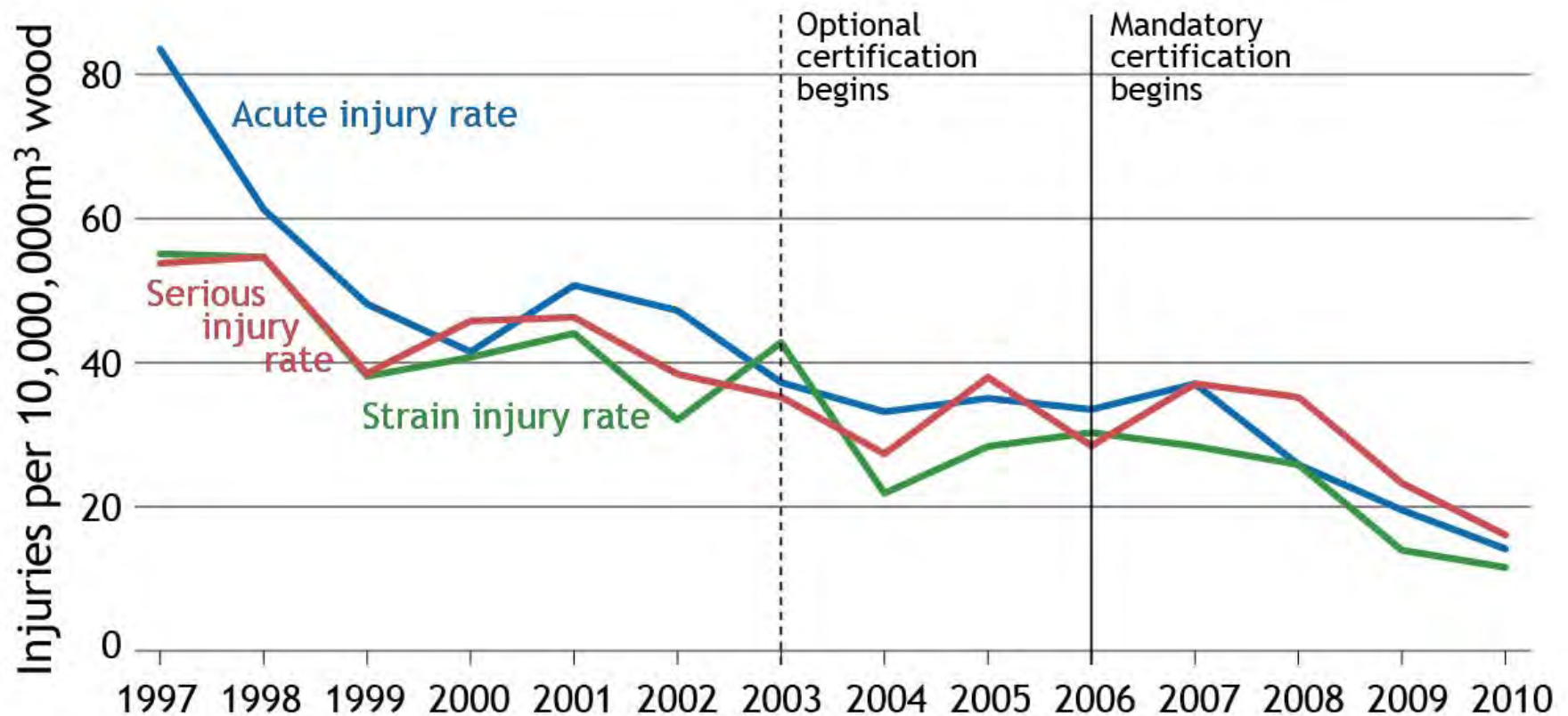


Faller injuries, by forest region



Faller injury rates

Manual tree faller injury rates in the Coast Forest Region



STUDY 2: Manual Tree Faller Risk of Injury

Methods

- Discrete time survival analysis (2002-2008)
 - Relative risk (RR) of manual tree falling injury
 - Multivariate statistical modeling
- Study population
 - BC Forest Safety Council certified manual tree fallers
- Data sources
 - BC Forest Safety Council
 - WorkSafeBC



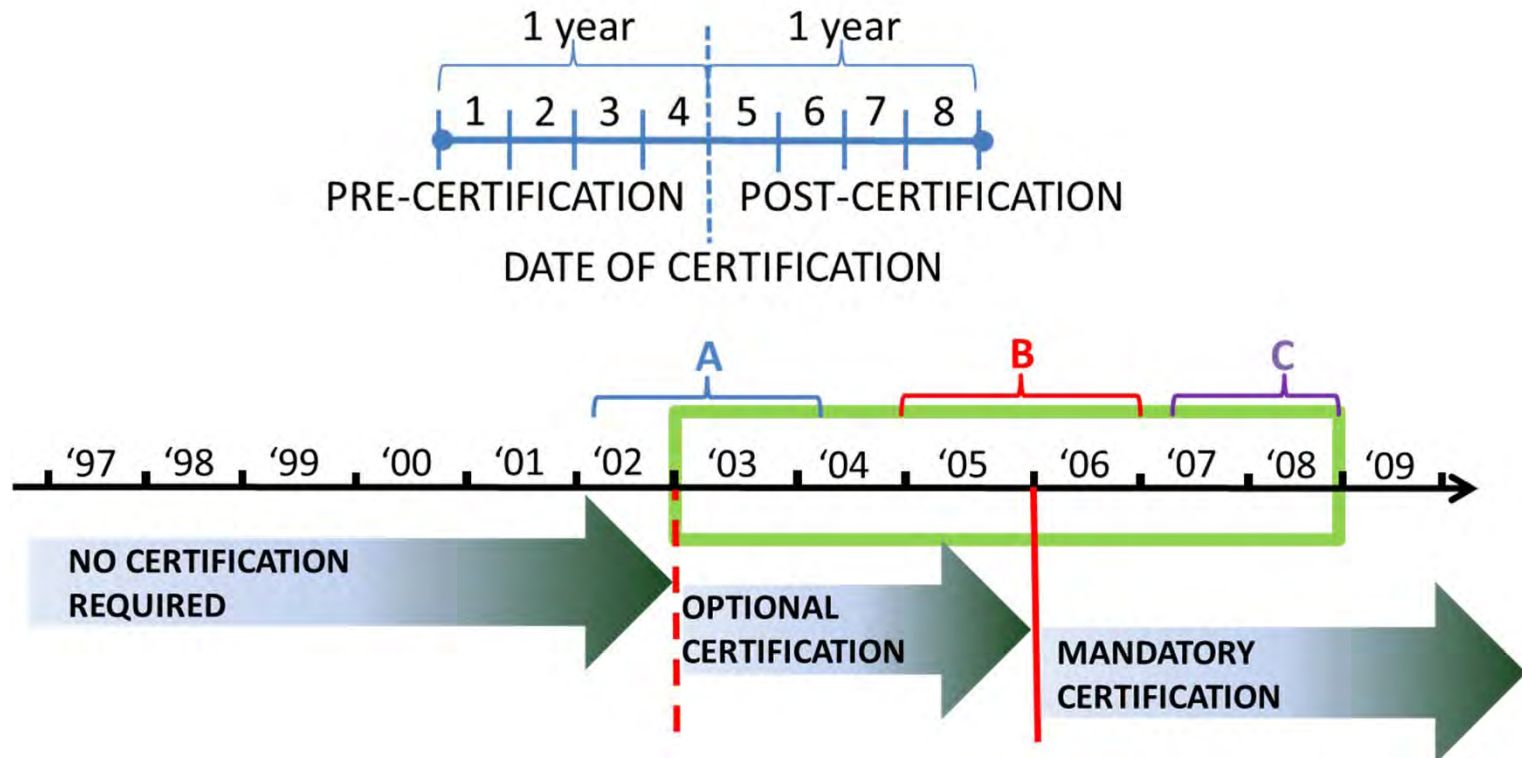
Image courtesy of Hans Peter Meyer

Methods: Data Linkage



Methods: Survival Analysis

- Time
 - 1 year before and 1 year after certification date
 - Discrete time (quarters)



Manual Tree Faller Cohort

- Total number of BC Forest Safety Council registered tree fallers = 3721
 - “linked” = 3317
 - “unlinked” = 404 (12%)
- 99% male
- Work in a variety of forestry settings

Type of Manual Tree Faller

- Tree falling occupation type at time of certification

Faller Type	Percent of Cohort (%)
Production	83.8
Missing	8.3
Spacers	3.7
Fire Suppression	1.8
Arborists	1.3
Seismic	0.9
“Other”	0.2

“non-production”

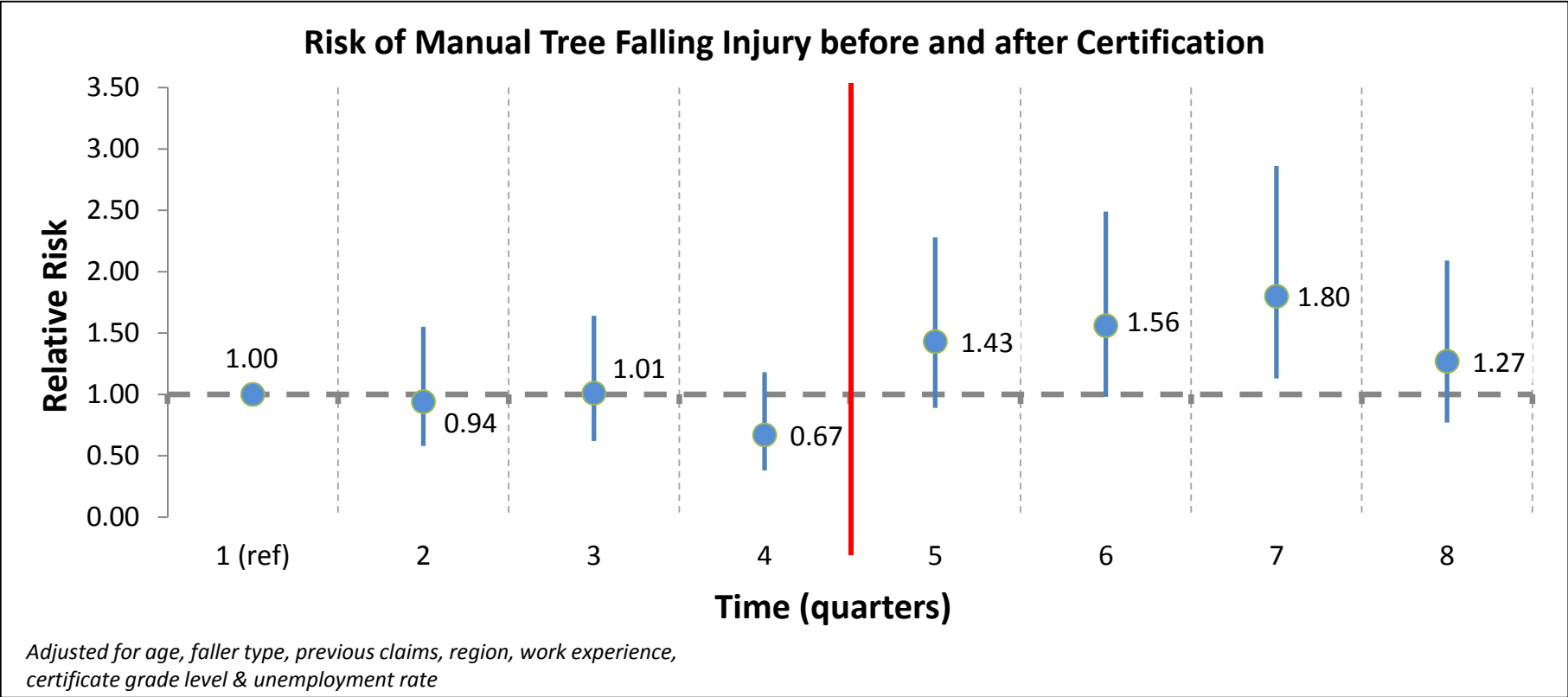


Image courtesy of Hans Peter Meyer

Registered Fallers by Region



Risk of Manual Tree Falling Injury



- Relative risk with 95% confidence intervals
- N=3251

Covariates

Age Group	RR	95% CI
15-24	2.93	1.56 – 5.49
25-34	1.48	0.99 – 2.23
35-44	1.34	0.96 – 1.87
45-54 (ref.)	1.00	-
55-64	1.16	0.75 – 1.81

Faller Type	RR	95% CI
Production	2.09	0.92 – 4.76
Not production (ref.)	1.00	-

Previous Claims	RR	95% CI
Yes	2.87	2.18 – 3.76
No (ref.)	1.00	-

Grade Level	RR	95% CI
1 (ref.)	1.00	-
2	1.24	0.83 – 1.84
3	2.02	1.33 – 3.07
4	2.18	1.44 – 3.31
5	2.15	1.24 – 3.71

Region	RR	95% CI
Coast	5.48	2.80 – 10.79
Southern Interior	2.43	1.22 – 4.84
Northern Interior (ref.)	1.00	-

Work Experience	RR	95% CI
1 – 2 years	1.61	0.97 – 2.67
3 – 5 years (ref.)	1.00	-
6 – 10 years	1.43	0.94 – 2.19
11 – 20 years	1.33	0.87 – 2.05
21+ years	1.35	0.82 – 2.20

Unemployment Rate	RR	95% CI
0 – 6 % (ref.)	1.00	-
6 – 9 %	1.13	0.80 – 1.61
9 – 12 %	1.16	0.78 – 1.71
12 – 32 %	1.77	1.11 – 2.83



Risk of Manual Tree Falling Injury

- Greater risk of injury for specific groups of tree fallers:
 - Young workers
 - Previous claims
 - Coast Forest Region
 - Advanced certificate grade levels
 - Working during periods of high unemployment rates



Images source: Western Fallers Association

Policy Relevant Outcomes

- Lowest injury rates 2008 – 2010
 - Exclusion of un-qualified tree fallers from industry
- Slight increase in risk of injury 1 year after certification
 - Safety intervention with grandfathering clause did not reduce the risk of injury for qualified tree fallers
- Not able to evaluate the effect of training on new fallers due to small numbers

Discussion

- Injury Rates (Study1)
 - Challenges with the denominator
 - Manual vs. mechanical tree felling
 - Scaled harvest volume
- Risk of Injury (Study2)
 - Missing 12% of registered fallers due to “unlinked” status
 - Exclusion of new faller trainees



Image courtesy of WorkSafeBC

Future Work

- Evaluation of new faller trainees?
 - Need sufficient number of trainees
 - Revised research design
 - Evaluation of new faller trainee?
- Exploration of faller claims not linked to registered fallers

Questions?



Image courtesy of Hans Peter Meyer