



# Repeat workers' compensation claims

A prospective analysis in Ontario, Canada and Victoria, Australia

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## Conclusions

- A large fraction of lost-time claims are repeat claims
- Risk of second claim varies by industry, occupation as for first claims
- Risk of second claim varies little by nature of injury
- A large fraction of repeat claims are with the same employer
- A large fraction of repeat claims are for a different nature of injury
- Risk of repeat claim depends on age & duration of previous claim
- The pattern of repeat claims in Ontario, Victoria and Alberta are similar
- Long-duration claims have lower re-injury risk
- Long-duration claims followed by re-injury had lower wage replacement and medical costs

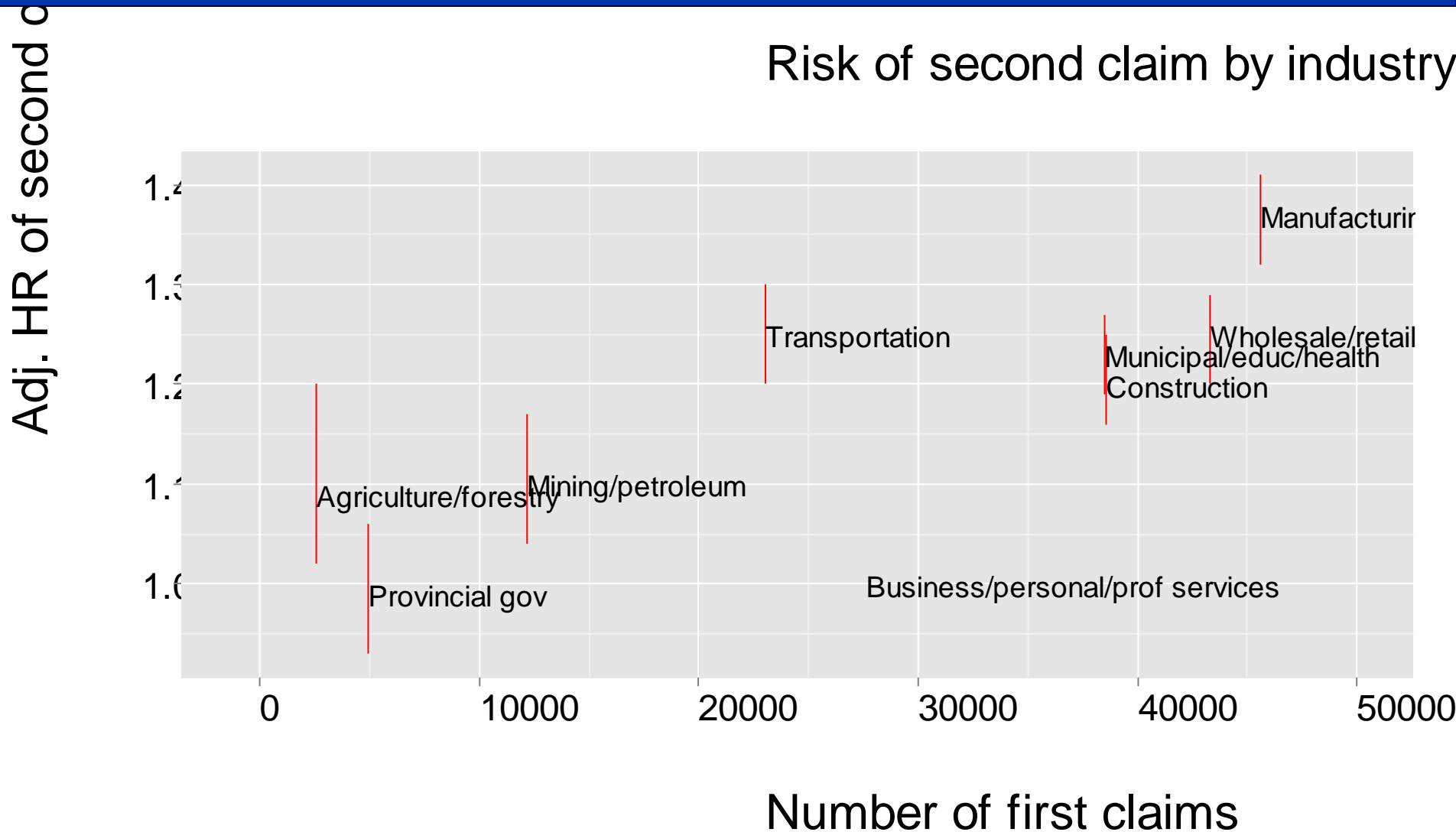


## Introduction

- WC claims often assumed independent events
- Alberta
  - Claim = LT + NLT, injury + disease
  - 54.0% of men filed second claim within 0-10 years
  - 37.9% of women filed second claim within 0-10 years
  - 67.6% of 1995 claimants filed second claim by end of 2004
  - 241,000 second claims (not re-opens)
- Victoria
  - First claim = LT (>10 days) + NLT (>\$500), injury only
  - 40.5% of men filed second claim within 9-14 years
  - 31.3% of women filed second claim within 9-14 years
  - 63,000 second claims (often re-opens)



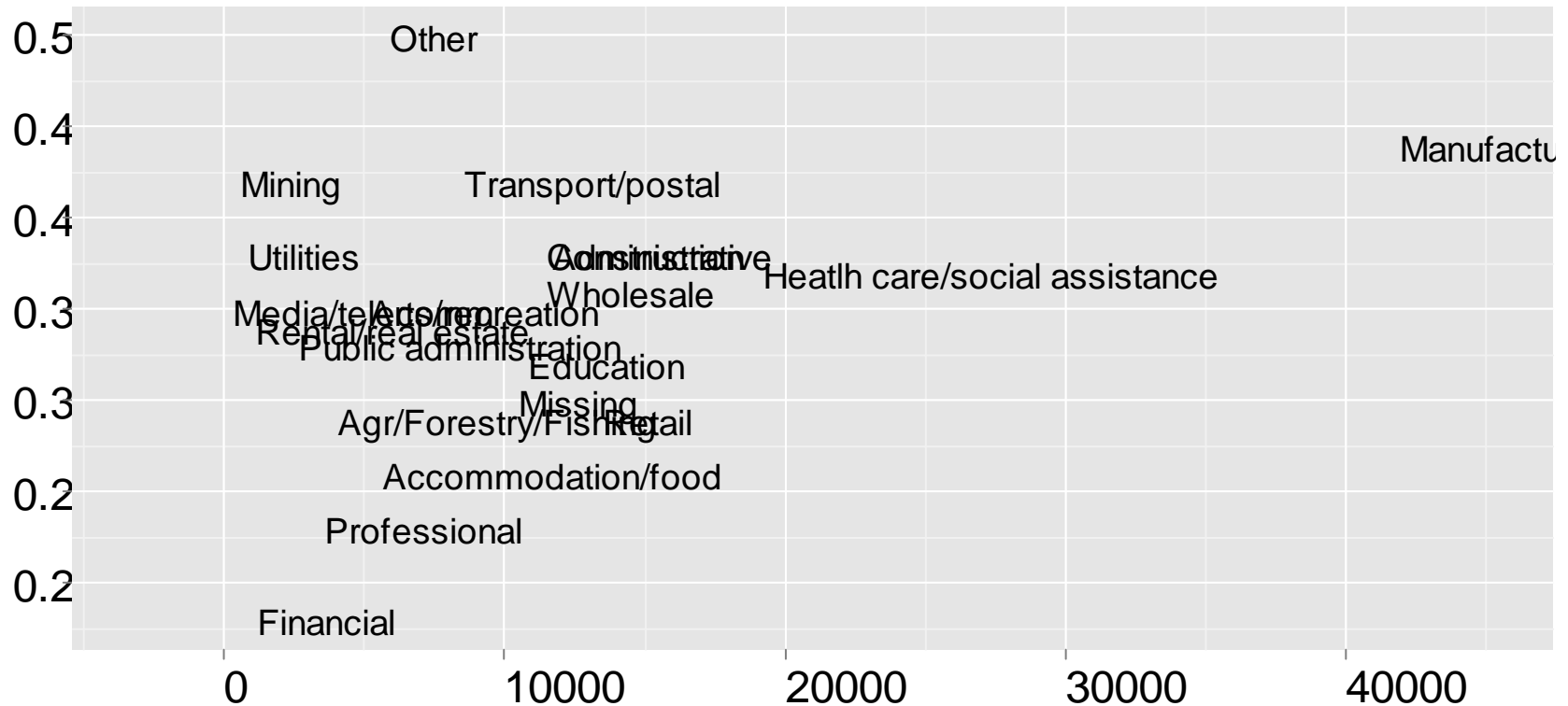
## Risk of second claim by industry





# Risk of second claim by industry

Probability of second claim

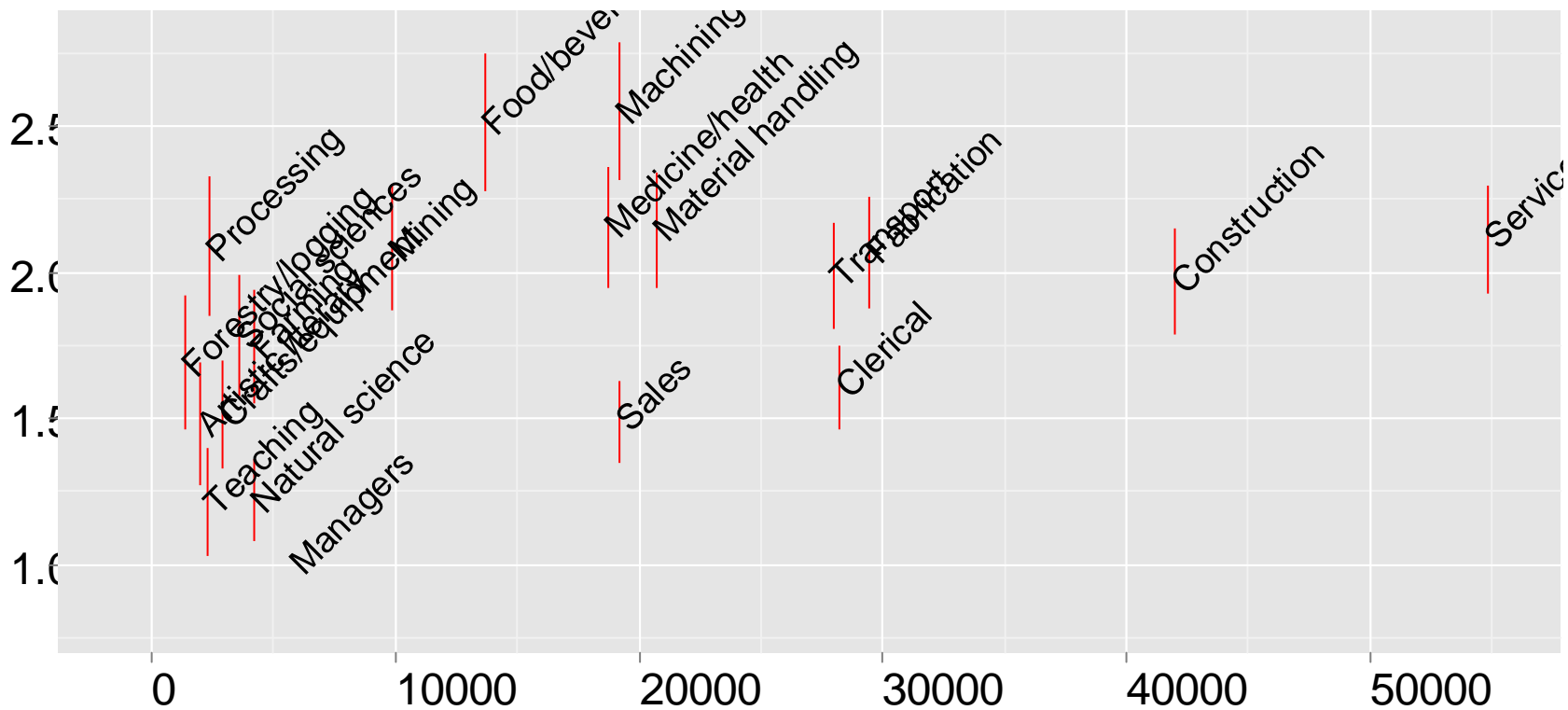


Number of first claims



# Risk of second claim by occupation

Adj. HR of second claim

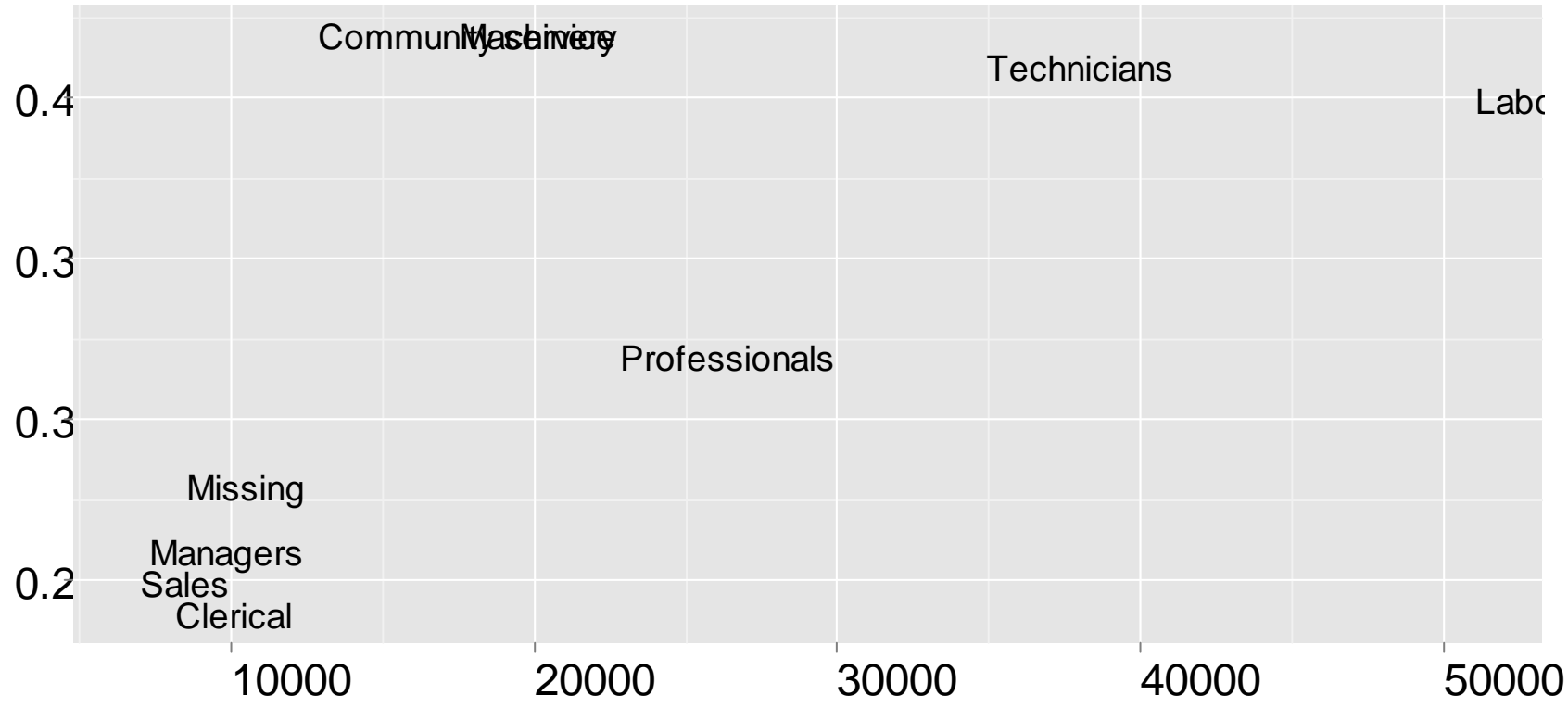


Number of first claims



# Risk of second claim by occupation

Probability of second claim

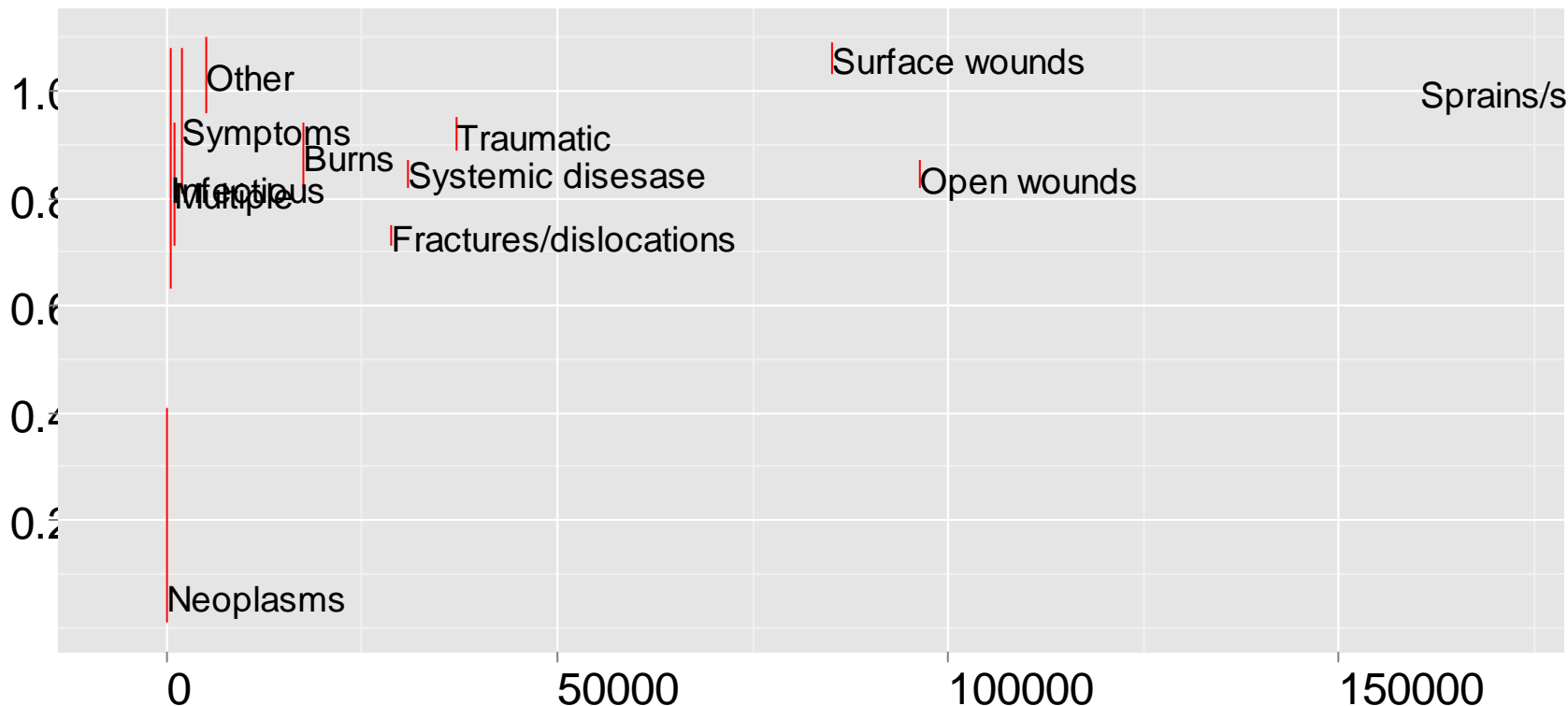


Number of first claims



## Risk of second claim by injury type

Adj. HR of second claim



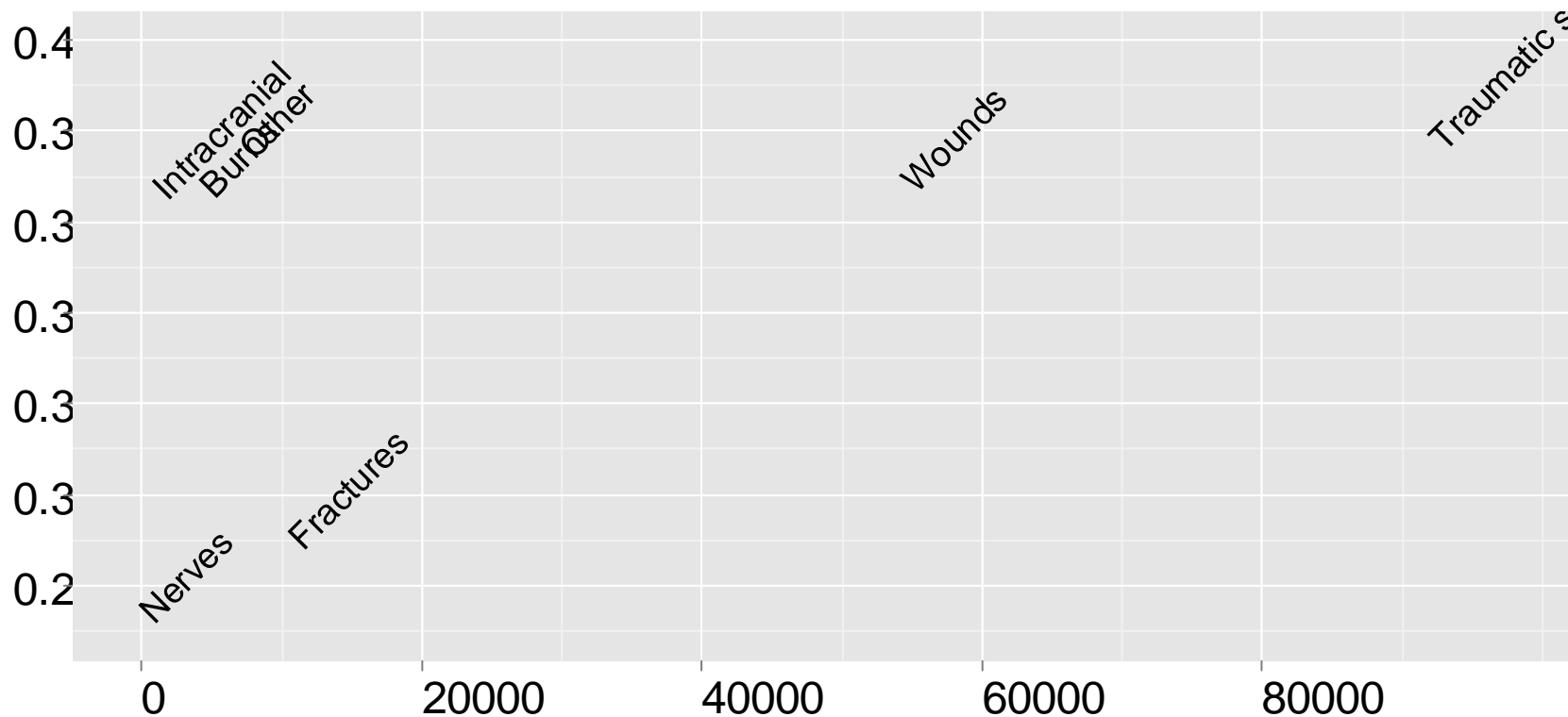
Number of first claims





## Risk of second claim by affliction

Probability of second

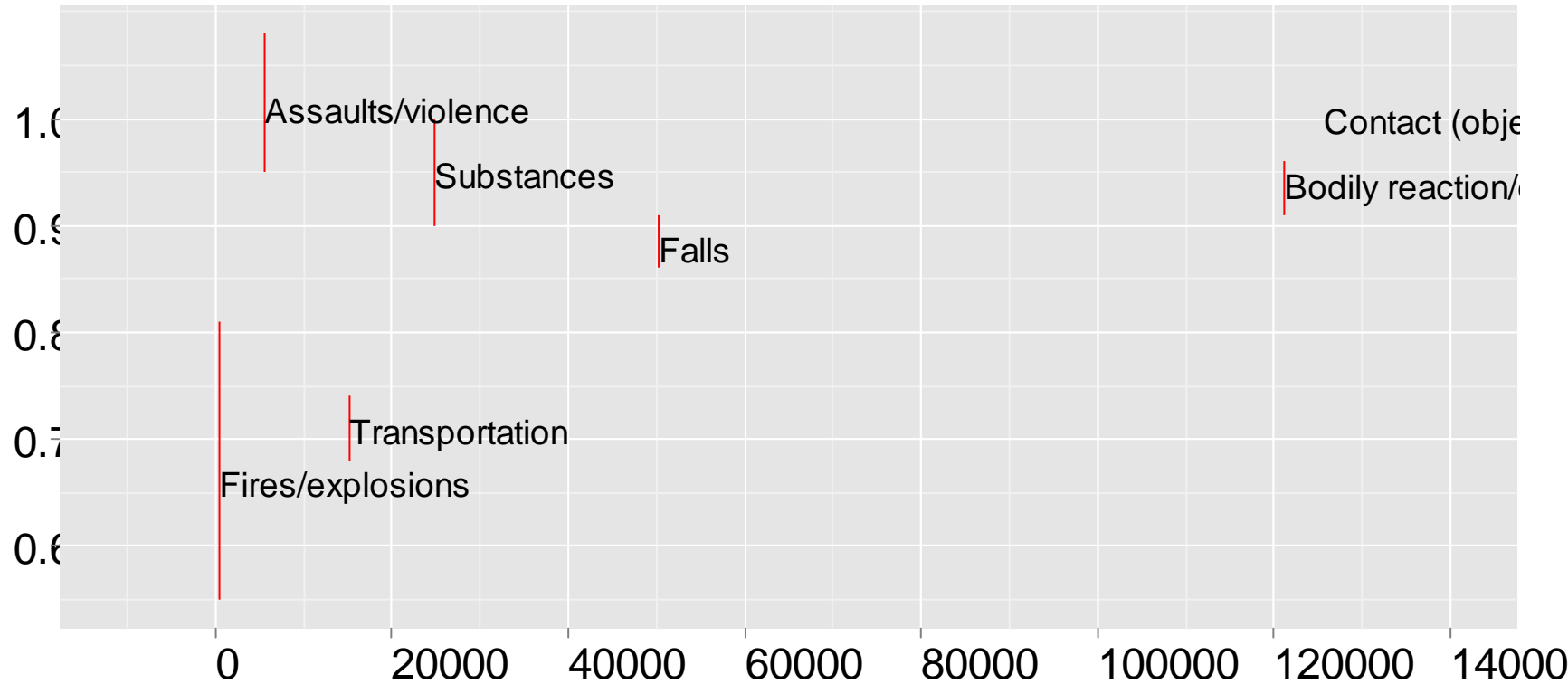


Number of first claims



## Risk of second claim by accident

Adj. HR of second claim

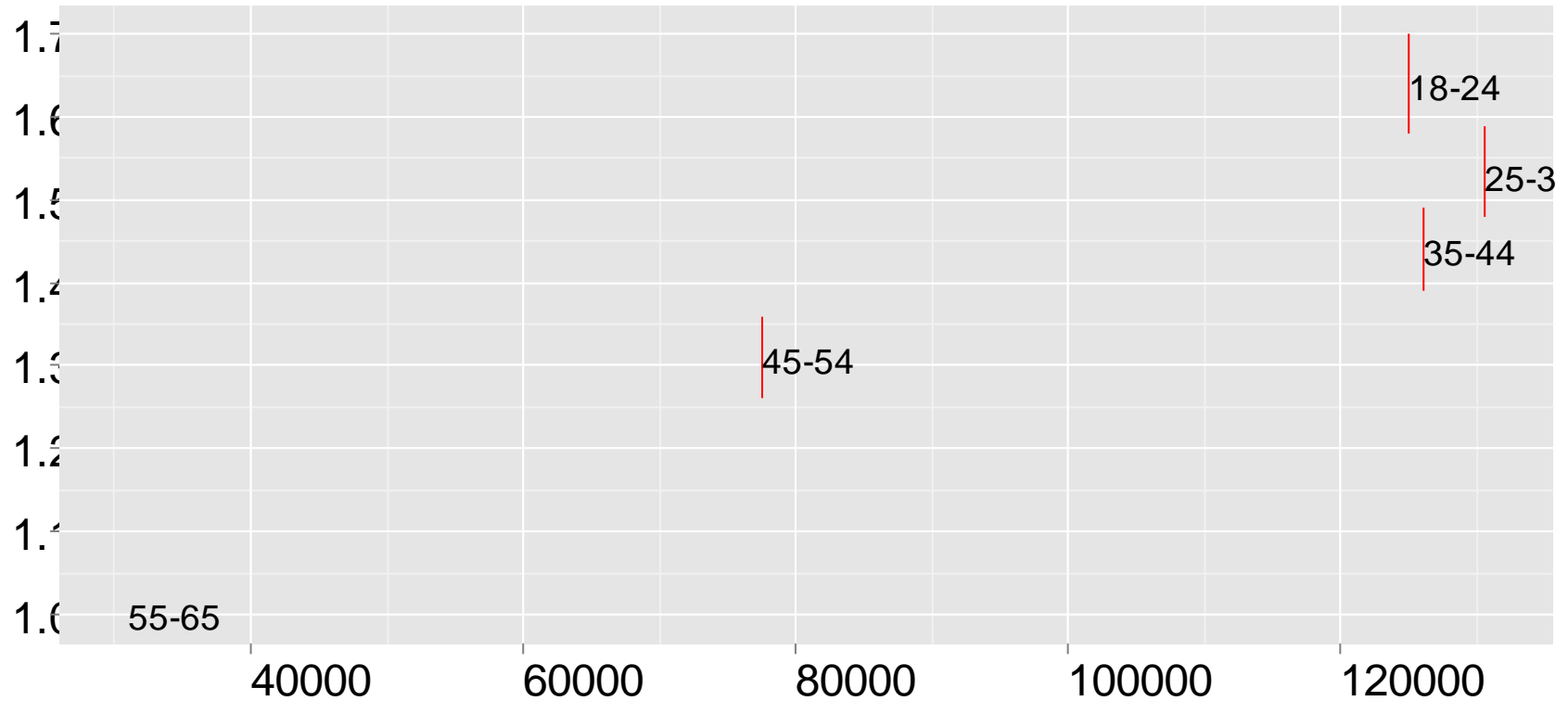


Number of first claims



## Risk of second claim by age at first claim

Adj. HR of second claim



Number of first claims



## First and second claims of repeat claimants (Victoria)

- Different affliction + different bodily location: 45.5%
- Same industry: 74.8%
- Same occupation: 45.6%
- Same employer: 65.6%
  - Dates of changes unknown



## Claim costs and duration (Victoria)

Impact	Single		First		Second	
	Mean	Std	Mean	Std	Mean	Std
Total cost	\$16,731	\$87,011	\$8,813	\$50,938	\$13,147	\$65,100
Total wage replacement	\$5,249	\$30,877	\$2,631	\$18,501	\$4,875	\$27,204
Total medical	\$3,447	\$29,128	\$2,034	\$9,996	\$2,886	\$13,025
Days lost	67	278	42	196	66	244

- Why are the durations and costs so much less for the first claims of repeat claimants?



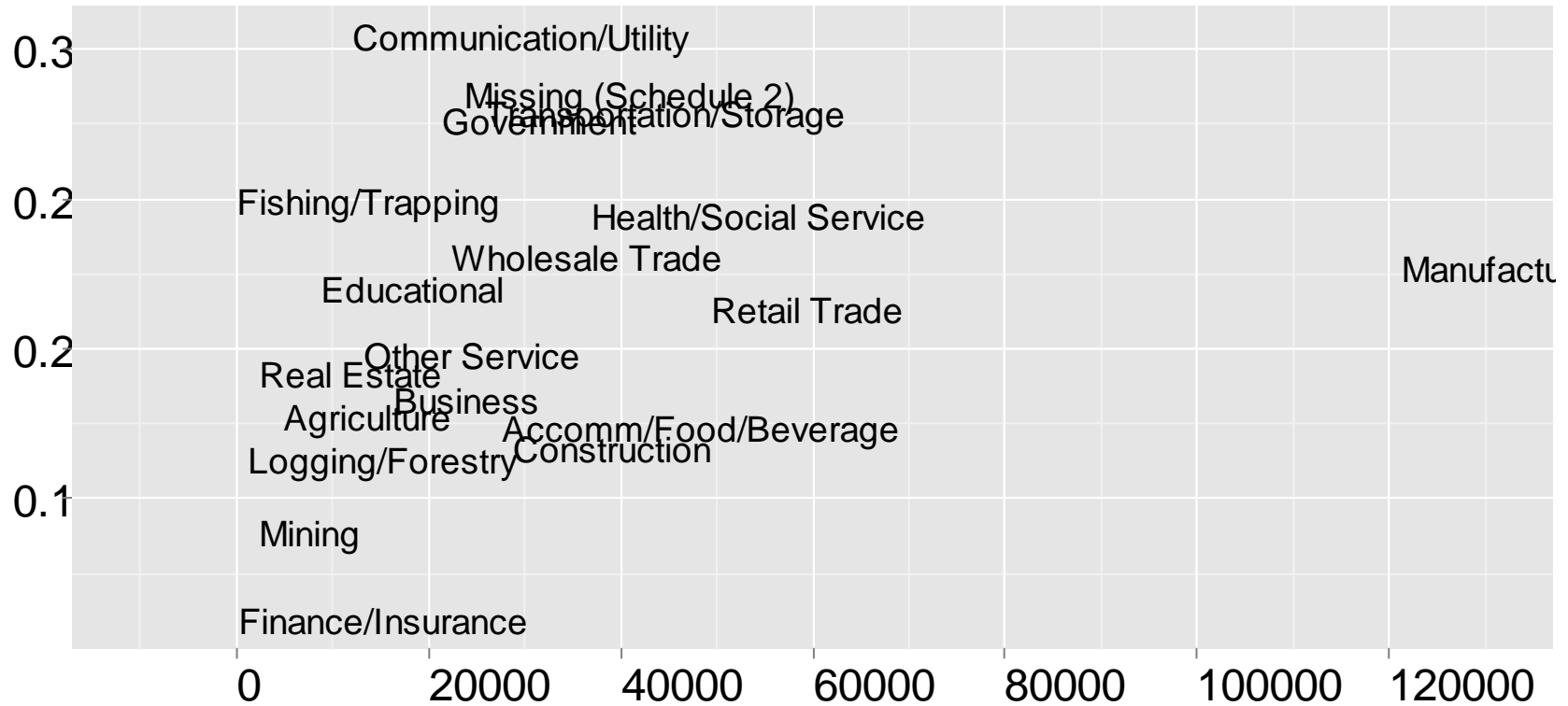
## Ontario

- All lost-time claims 2000-01-01 through 2009-12-31
- Injury + disease
- Design 1:
  - 5 year inception cohort 2000-2004, 5 year follow-up from first accident date
  - Similar to Victoria study: Ruseckaite & Collie (2011)
  - 23.6% of men filed second claim within 5 years
  - 21.0% of women filed second claim within 5 years
  - 96,000 second claims (mostly not re-opens)
  - Mostly trivial difference between post-accident date and post-benefit definition of 5 year follow-up



# Risk of second claim by industry

Probability of second claim

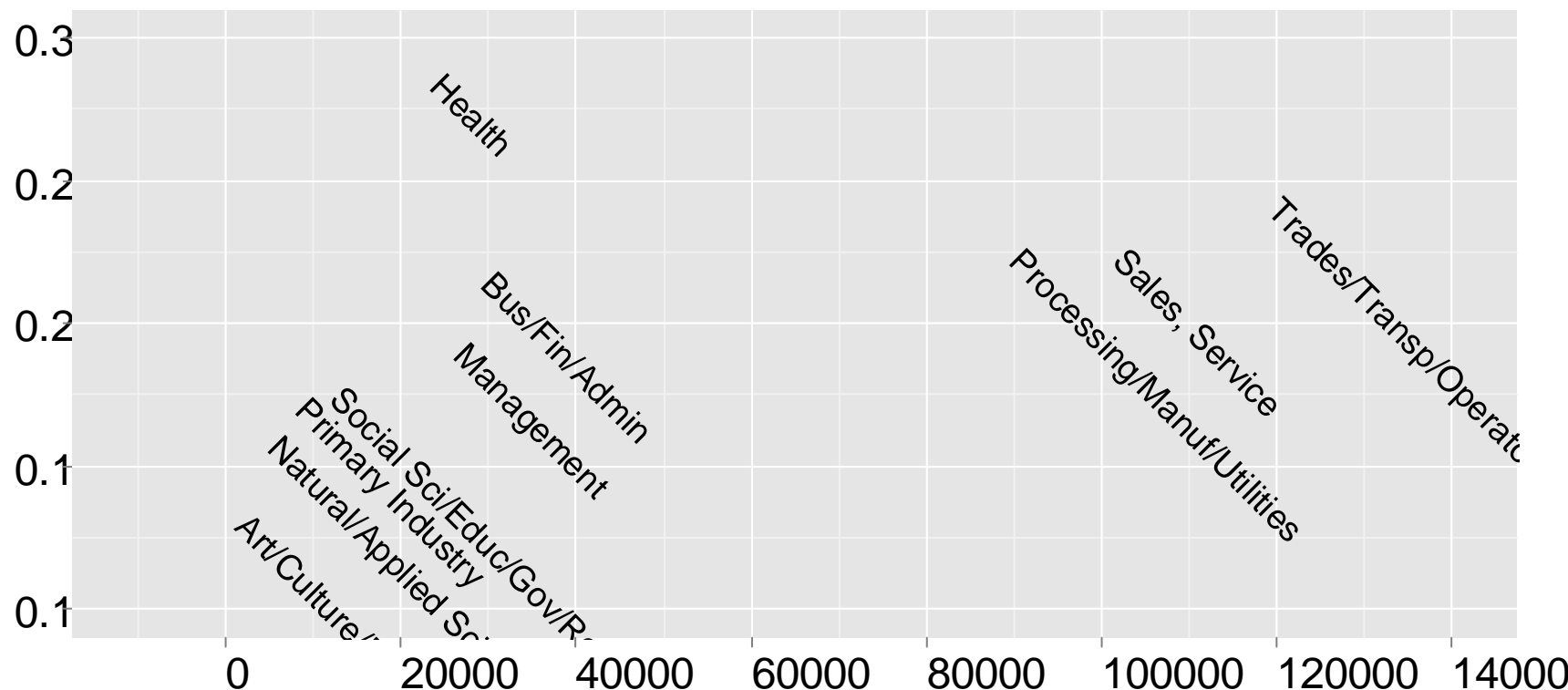


Number of first claims



## Risk of second claim by occupation

Probability of second claim



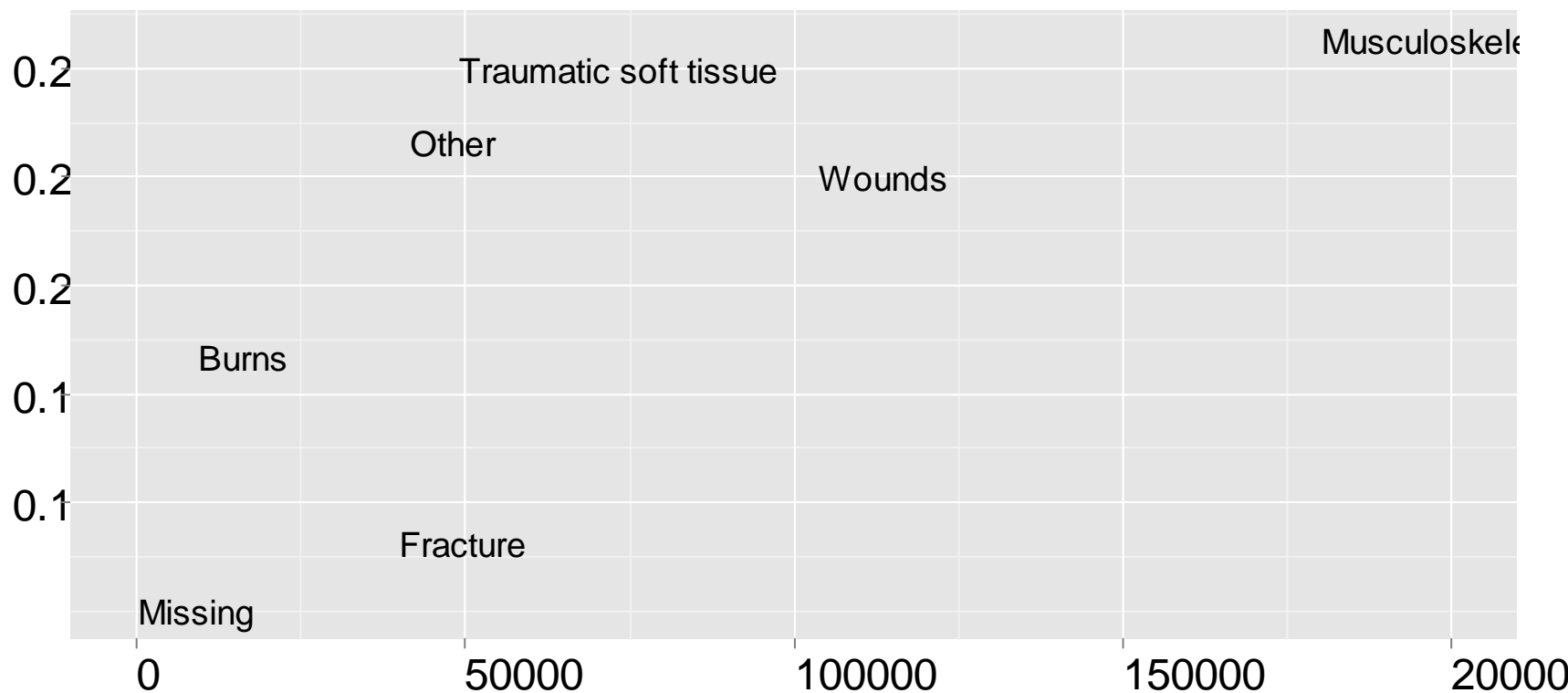
Number of first claims





## Risk of second claim by affliction

Probability of second claim



Number of first claims



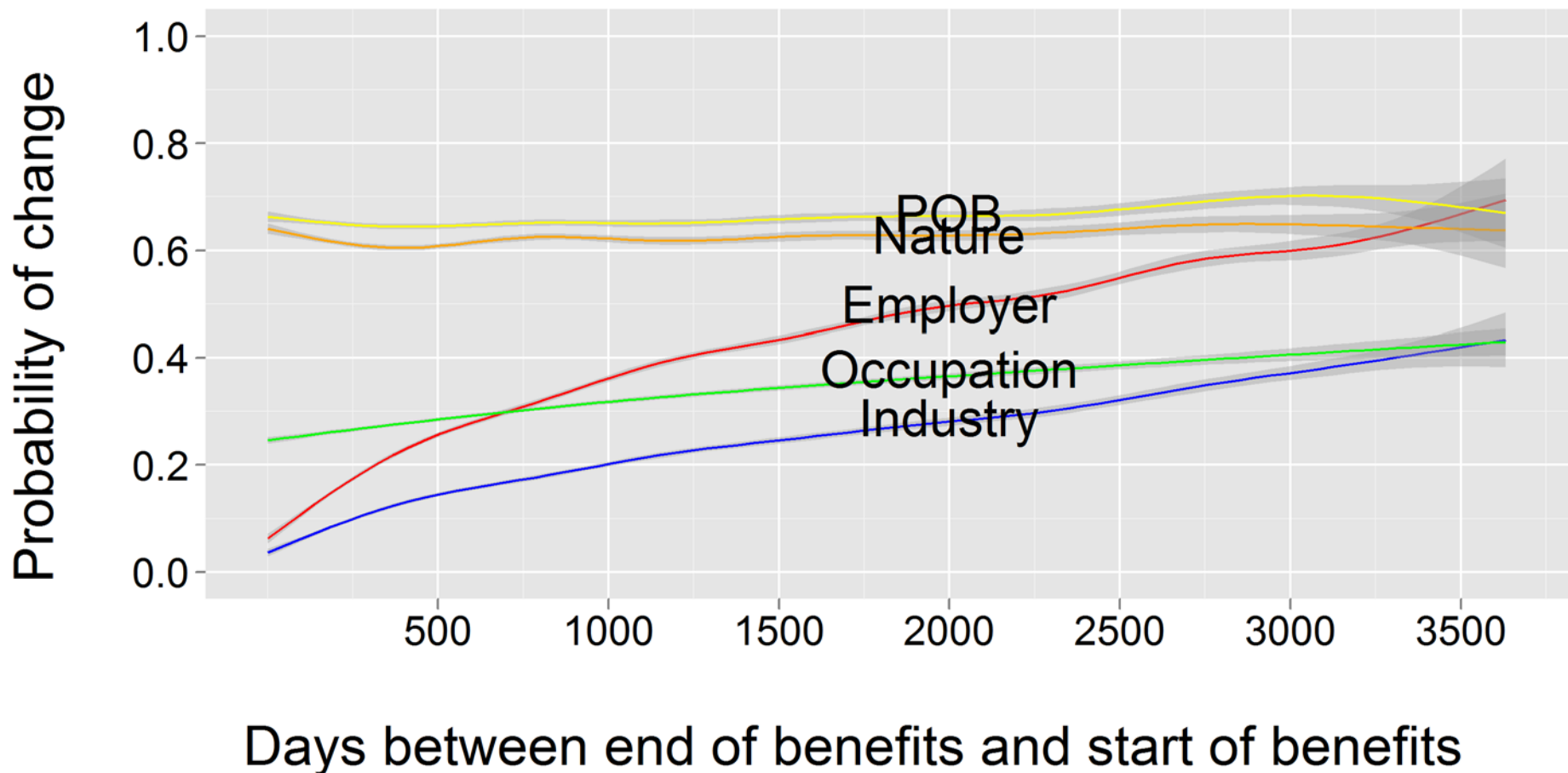
## First and second claims of repeat claimants (Ontario)

	Ontario	Victoria
Different nature + different bodily location	47.1%	45.5%
Same industry	83.9%	74.8%
Same occupation	69.7%	45.6%
Same employer	71.3%	65.6%

- Dates of changes unknown
- Ontario: 5 year follow-up
- Victoria: 9-14 year follow-up



## Probability of second claim being different from first (Ontario)





## Measures of agreement between Part of Body codes on first and second claims (Ontario)

Kappa: 0.11 (0.10,0.11)

Test	Chi-square	DF	p
Independence	4095	36	< 0.0001
Quasi-independence	285	29	< 0.0001
Symmetry	241	21	< 0.0001
Quasi-symmetry	34	15	0.003
Marginal homogeneity	207	6	< 0.0001

Number of claim pairs = 96,000



## Measures of agreement between Nature of Injury codes on first and second claims (Ontario)

Kappa: 0.11 (0.10,0.11)

Test	Chi-square	DF	P
Independence	3825	25	< 0.0001
Quasi-independence	313	19	< 0.0001
Symmetry	523	15	< 0.0001
Quasi-symmetry	34	10	0.0002
Marginal homogeneity	489	5	< 0.0001

Number of claim pairs = 96,000



## Claim costs and duration (Ontario)

Impact	Years*	Single		First		Second	
		Mean	Std	Mean	Std	Mean	Std
Wage replacement (\$)	5	8,523	26,401	2,641	9,821	7,499	23,628
	1	3,164	6,373	1,770	3,794	3,127	6,352
Medical benefits (\$)	5	2,125	16,893	715	2,286	1,810	10,003
	1	1,171	6,411	545	1,424	1,081	4,843
Days of benefits (days)	5	176	452	73	247	150	397
	1	70	117	43	85	66	113

\* Dollar amounts accrued during the first year or first 5 years of the claim.



## Why are first claims far shorter for repeat claimants?

1. Immortal time bias
  - No, bias is small
2. Labour-force exit
  - Maybe, we don't have the data to test this
3. Effect of prior claim history
  - No, Victoria saw the same pattern using true “first” claims
4. Long-duration claims have lower repeat claim risk
  - Yes, costs and durations for claims < 365 days similar for repeat and non-repeat claimants
  - Labour force exit?
  - Changed occupation/task?



## First year claim costs and duration (Ontario)

		Single			First		
		Median	Mean	Std	Median	Mean	Std
Duration < 365	Benefit days	8	33.6	59.1	8	29.7	53.5
	Wage replacement	418	1,611	3,136	413	1,431	2,775
	Medical	143	562	2,071	138	443	1,023
Duration > 365	Benefit days	365	365	0	365	365	0
	Wage replacement	15,380	15,964	10,607	8,335	11,074	9,901
	Medical	3,176	6,249	18,049	2,223	3,227	4,609

- Probability of second claim within 5 years:
  - Duration < 365 = 0.23
  - Duration > 365 = 0.12





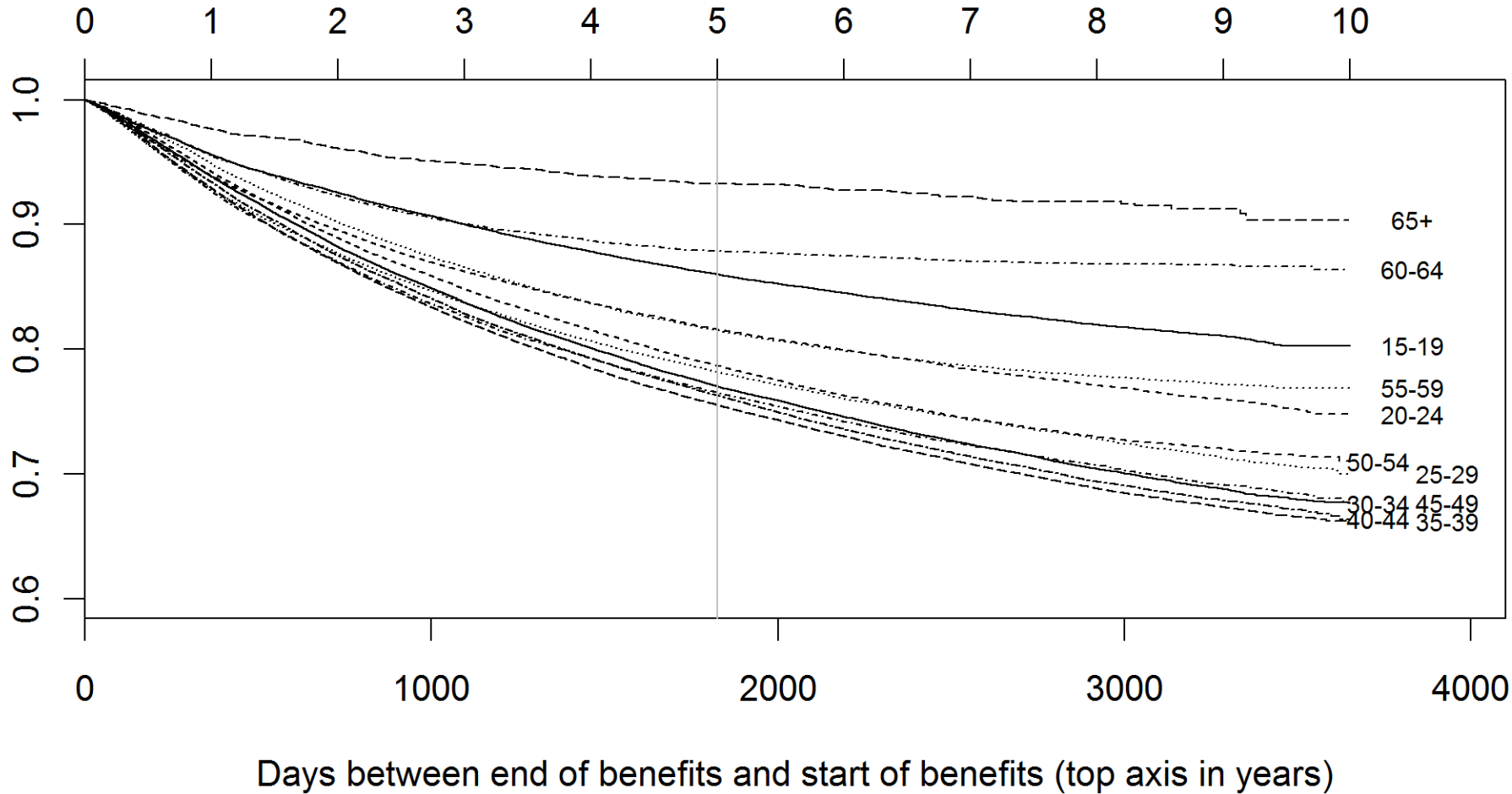
## Ontario

- Design 2:
  - 10 years of time-to-event data
  - Two alternating time-to-event processes
    - Time-to-RTW
    - Time-to-next-claim
  - Unmeasured competing risk: insured labour market exit
    - School
    - Home keeping
    - Non-WC disability benefit
    - Retirement
    - Self-employment
    - Emigration
  - Similar to Alberta study: Cherry et al. (2011)



### Reinjury by age at first claim

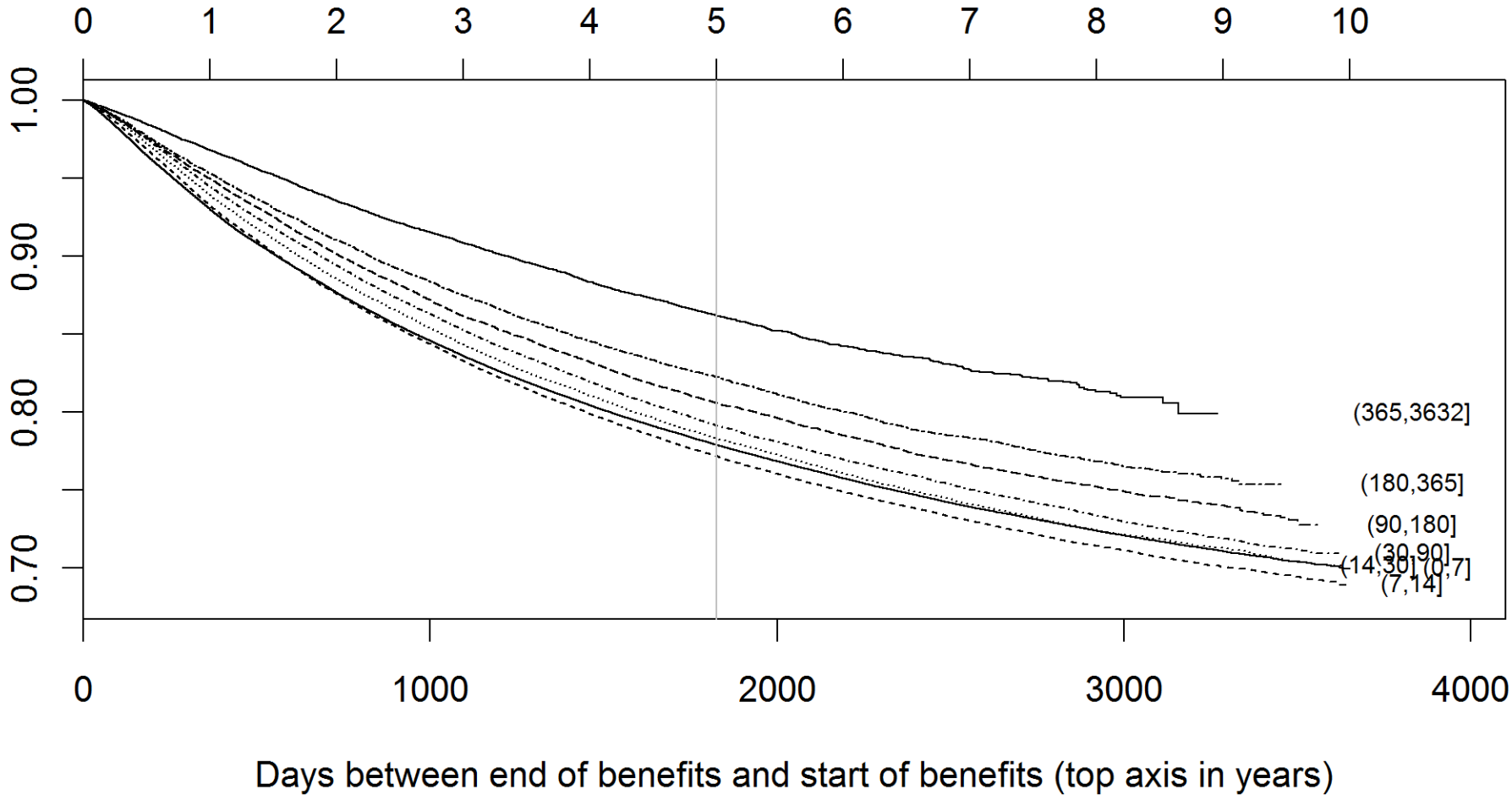
$S(t)$  = Probability of not being reinjured at time  $t$





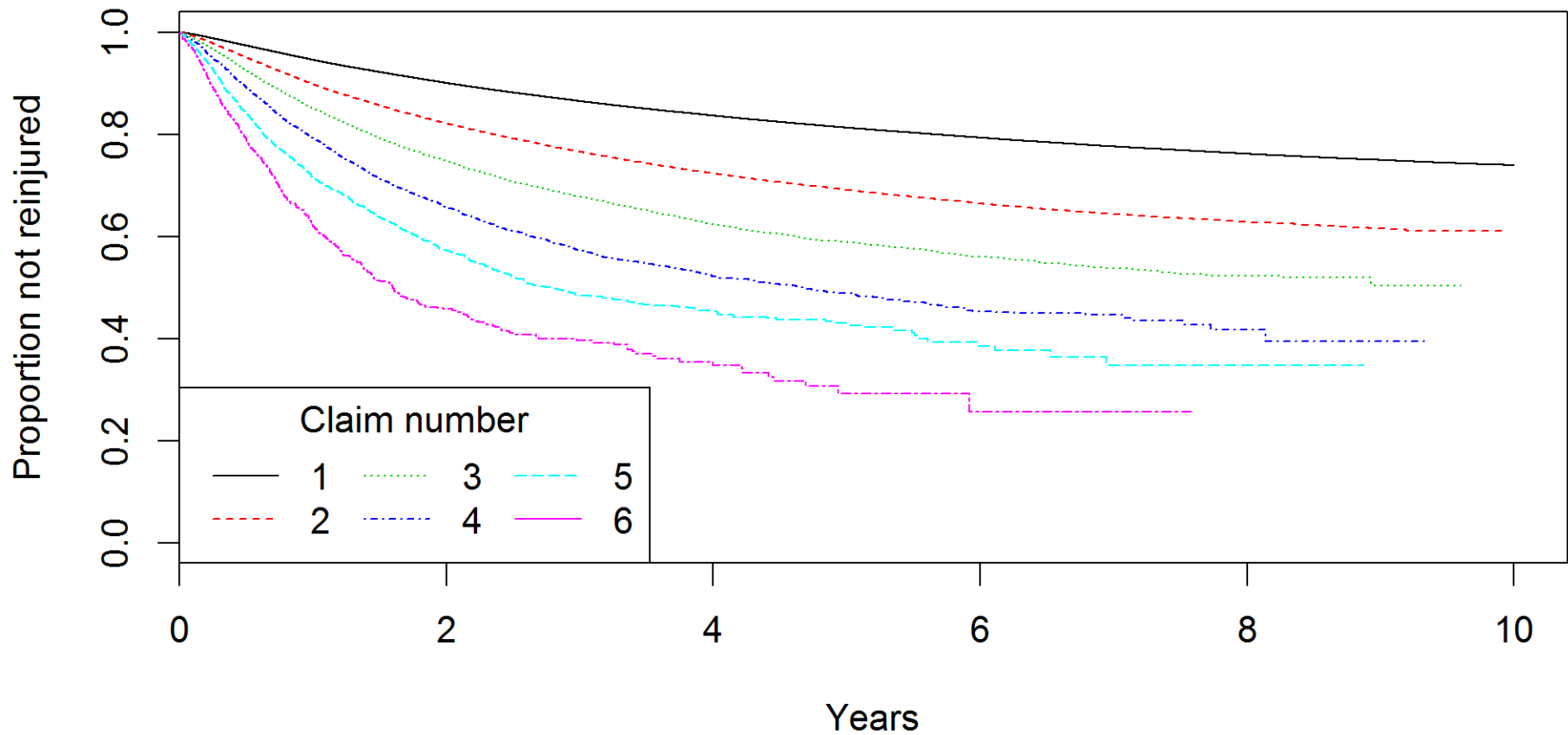
## Reinjury by duration of first claim

$S(t)$  = Probability of not being reinjured at time  $t$





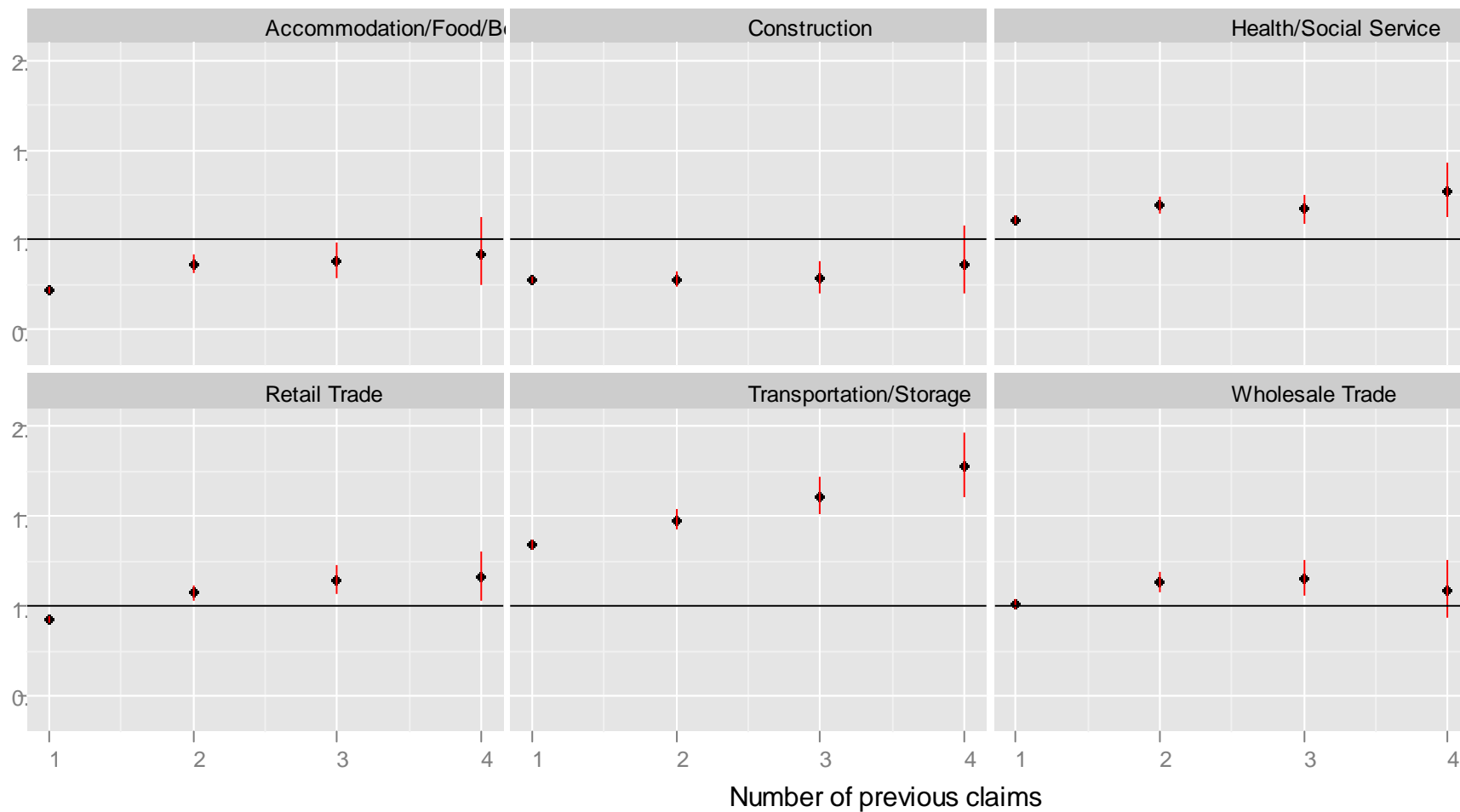
## Reinjury by number of previous claims





## Risk of lost-time claim by industry of previous claim and

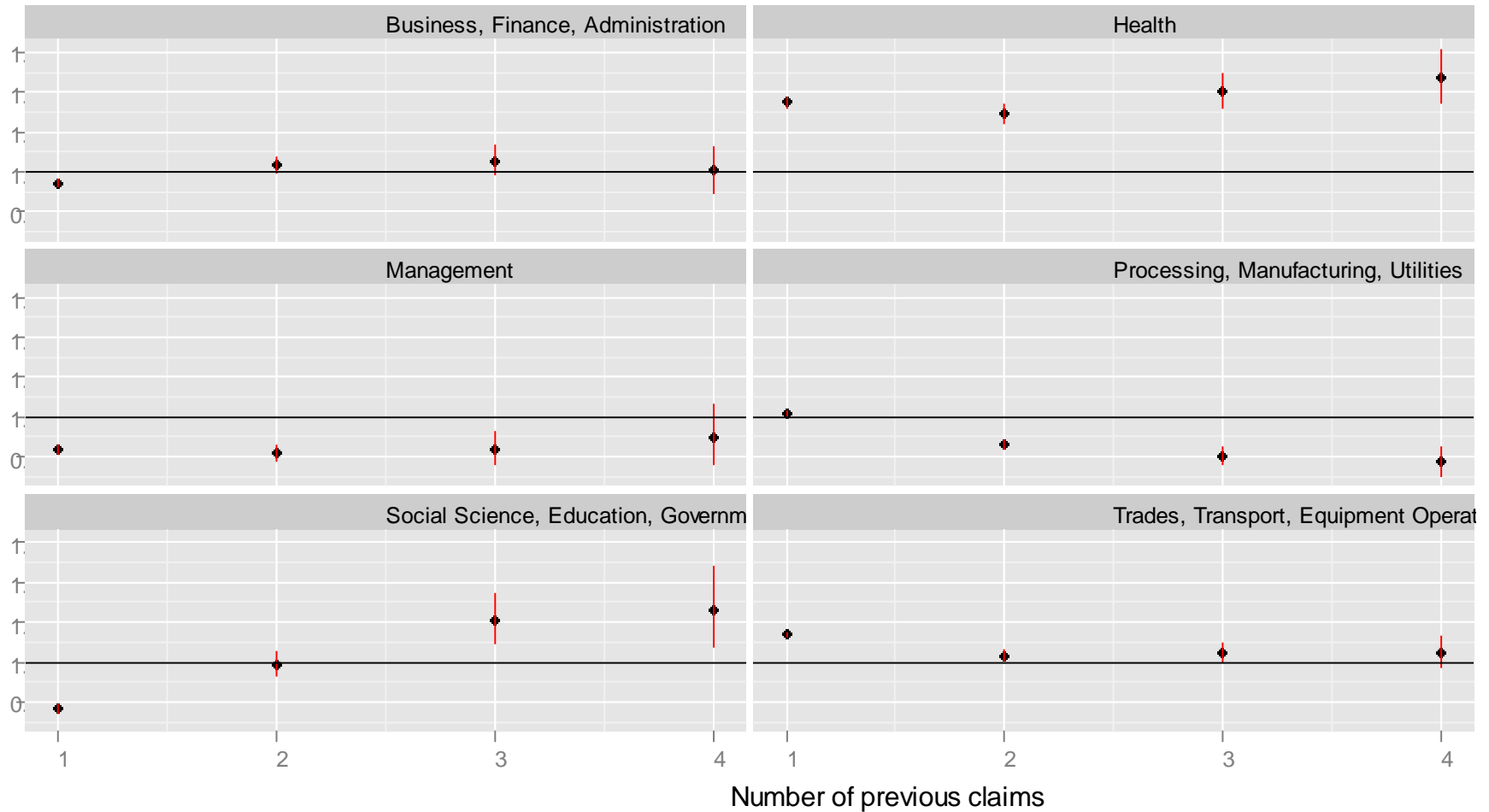
Hazard ratio relative to manufacturing





### Risk of lost-time claim by occupation of previous claimant

Hazard ratio relative to sales and service





## Conclusions

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