Work-related MVTC fatalities in New Zealand: occupational risks & opportunities

PROVISIONAL ANALYSIS

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Research team

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Introduction

- NZ’s workplace fatality record has been shown to be very poor compared to similar countries.

- Under recent scrutiny following mine explosion

- Reasons for substandard performance are highly debated - in-depth analysis to inform this debate is limited by a dearth of detailed fatality data.
## Data sources

<table>
<thead>
<tr>
<th></th>
<th>ACC Compensation</th>
<th>WorkSafe Notification</th>
<th>StatsNZ (ACC + WorkSafe)</th>
<th>WRFIS Coronal</th>
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</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Bystanders</td>
<td>-</td>
<td>Some</td>
<td>-</td>
<td>Y</td>
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<tr>
<td>Road</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Commuters</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Y</td>
</tr>
<tr>
<td>Children</td>
<td>-</td>
<td>Some</td>
<td>-</td>
<td>Y</td>
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<tr>
<td>Maritime (sea)</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Civil Aviation (air)</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>ChCh Earthquake</td>
<td>Y</td>
<td>-</td>
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</tbody>
</table>

Coronial data however offer opportunity to capture burden beyond political and legislatively constrained definitions of work-relatedness.

Allows us to capture the true community burden of work-related fatal injury.
Coronial records

- Coronial findings
- Police report
- Toxicology report
- Pathology report
- Expert reports (i.e., NZTA vehicle reports)
- Witness statements
Our current study covers the period 1995-2014 for workplace & 1999-2014 for road fatalities.
Work-related road safety

- Rarely captured in national Work Related Fatal Injury (WRFI) figures
- Driving a common occupational activity
- Fatalities on public roads an important contributor to overall burden of WRFI 1985-94*:
  - Adds an additional 106 fatalities per year
  - Of total burden, contributes 29% of worker fatalities

* McNee et al., NZMJ 2005: 118 (1227)
Overall aim

The study aims to accurately inform work-related injury prevention efforts for NZ for the period 1995-2014 (WRFIS-3) by:

i) comprehensively documenting and enumerating the work-related fatal injury burden; and

ii) identifying high risk groups and circumstances to prioritise and target preventive action.
Study design: WRFIS-3

- Mortality review of cases with external underlying cause of death identified using Mortality Collection
- MC cases matched to Coronial records
- Full case audit of Coronial records held by:
  - Archives NZ (1995-99)
  - Ministry of Justice (2000-07)
  - National Coronial Information Service (2007-14)
Eligible cases: WRFIS-3

- Working, commuting or a bystander to another person's work activity or processes
- Sustained in NZ or its territorial waters
- Deaths up to 1 year following injury event
- Excludes:
  - Suicides
  - Occupational disease
  - Unpaid home duties
  - Those aged >85 years
Provisional analysis

Final published figures may differ from those presented here.
Provisional results: 1999-2014

Injury deaths

- Medically certified
- Coronal record identified + reviewed
  - Work related 23%
  - Not working 56%
  - Indeterminate 19%
  - Ineligible 2%

New cases
Burden of work-related fatal injury (WRFI) occurring on public roads: 1999-2014
Provisional data

Provisional analysis. Final published figures may differ from those presented here.
Provisional.
Total WRFI by work setting, 1999-2014

On-road traffic (including bystanders) are the largest contributor to the total burden of work-related fatal injuries in NZ making the road a major setting for work-related fatalities.
Provisional.
On-road WRFI, by work-context

- Bystanders: 61%
- Commuters: 21%
- Workers: 17%

NB: Likely undercount
Provisional. On-road WRFI, contribution to road toll
Workers, aged 15-84 yrs

Provisional analysis. Final published figures may differ from those presented here.
Provisional.  
On-road WRFI, by age

Workers

• Highest burden in workers aged:
  • 20-24 yrs
  • 35-59 yrs.

• Highest rates in workers aged:
  • 70-84 yrs
  • Elevated rates 20-24 years and from age 55 yrs onwards.
Provisional.
On-road WRFI, by sex

- Predominantly a male worker problem:
  - 98% of on-road WRFI in males
  - Males have 8 times the rate of on-road WRFI compared with females
Provisional.
On-road WRFI, by work characteristics

- Employment arrangements (*where able to be determined*)
  - 14% Self-employed
  - 82% Employees
- Working structure (*where able to be determined*)
  - 93% full time
  - 7% casual workers
- Work schedule (*where able to be determined*)
  - 63% permanent days, 25% irregular shifts, 11% permanent nights, 4% rotating shift
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On-road WRFI, by time variables

Workers
Time of day
  • Spikes in incidence at 6-7am, 9am-4pm, 11pm-1am.

Day of week
  • Fairly consistent pattern Mon-Fri, lowest burden on Sunday

Time of year
  • Spike in incidence in Nov-Jan. No real pattern for the rest of the year.
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On-road WRFI, by vehicles involved…

Workers

• 53% single vehicle collision
  • Of which majority involve a “heavy” vehicle (eg truck, tractor etc), a third involve “light” working vehicles (eg car, van, utility)

• 42% multiple vehicle collision
  • Of which 21% of workers in a “heavy” vehicle, 68% in a “light” vehicle.

• 5% not in a vehicle collision (ie drowned, hit by moving vehicle on public road)
Provisional
Most common contributing factors, on-road WRFI

Workers
- Worker driving behaviours/actions
- Worker impairment (ie. health, fatigue, alcohol, drugs)
- Site conditions (ie. slippery road conditions)
- Not wearing seatbelt
- Condition of equipment (ie. load security, brake condition)
- Site layout (ie road design, steep slope)

- Little information available on workplace/system factors
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On-road WRFL, by occupation

Workers

Burden - Top 3
• Machinery operators & drivers (50%) – *includes truck drivers*
• Labourers (12%)
• Managers (incl farmers) (11%)

Rates (2005-2014 only)
• Machinery operators & drivers (9 times the rate of next closest occupation group)
Provisional.
On-road WRFI, by industry

Workers

Burden - Top 3
- Transport, Postal & Warehousing (57%)
- Agriculture, Forestry & Fisheries (8%)
- Construction (6%)

Rates (2005-2014 only) – Top 3
- Transport, Postal and Storage
- Electricity, Gas & Water Supply
- Agriculture, Forestry & Fisheries
### Comparison over WRFIS studies – on-road

**1985-1998**
- Highest burden
  - 25-34 yrs
  - Males
  - Transport sector
  - Drivers & mobile machine ops
  - 10am-4pm
  - 5% alcohol or drugs

**1999-2014**
- Highest burden
  - 20-25yrs + 35-59 yrs
  - Males
  - Transport sector
  - Drivers & mobile machine ops
  - 9am-4pm
  - Worker impairment still prominent

*McNoe et al., NZMJ 2005: 118 (1227)*
Comparison over WRFIS studies – on-road

1985-1998*
- 1.1 deaths per 100,000 workers
- Highest rates
  - Older workers (65-84 yrs)
  - 15% Self, 57% employees
  - Transport Sector
- Drivers & mobile machine ops

1999-2014
- 1.2 deaths per 100,000 workers
- Highest rates
  - Older workers (70-84 yrs)
  - 14% Self, 82% employees
  - Transport sector – closely followed by Utilities sector
  - Drivers & mobile machine ops

* McNee et al., NZMJ 2005: 118 (1227)
Future analyses

Traffic Crash Report data linked to WRFI data (eg. fault, vehicle factors, driver behaviours, contributing factors)

Sub-group analyses

Trends over time & impact of policy changes

Systems level analysis possible
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