Heavy Vehicle Crash Study

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Overview

1. Background
2. Research Design
3. Summary of the Findings
4. Discussion

MONASH University
Accident Research Centre
A centre within the Monash University Injury Research Institute

BACKGROUND

AUSTRALIA TODAY

1,193 Fatalities
28,000 Serious Injuries
$ 27 Billion

AUSTRALIA 2020

Target: 30% reduction in Fatalities and Injuries

Fatalities on track for -25%

⬇ 3.1%pa *require* ⬇ 3.9%pa

Injuries on track for +15%

⬆ 1.6%pa *require* ⬇ 3.9%pa

HEAVY VEHICLE CRASHES TODAY

181 Fatalities ⬇ 3.2%pa

~1500 Injuries ⬆ 2.8%pa

BITRE – Road trauma involving heavy vehicles; crash statistics. 2014

- **18% of fatal crashes in Australia involve a heavy vehicle**

- **Heavy vehicle crashes cost ~ $2 billion pa**

- **Challenging work environment**

- **2-fold increase in road freight**

- **Call for action – National Heavy Vehicle Safety Strategy 2003-2010**

Study Objectives

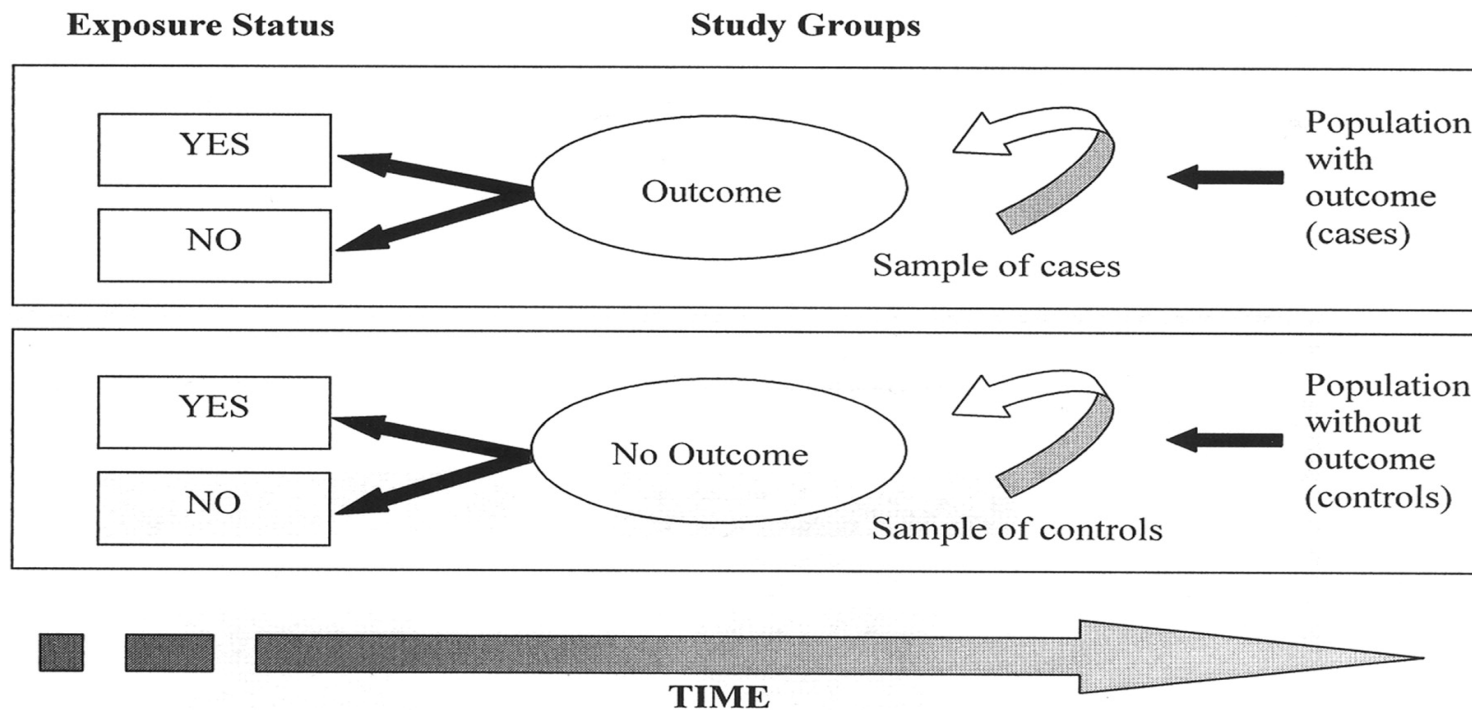**To determine the role risk factors namely...**

1. Employer/company-related factors such as scheduling and payment of drivers
2. Driver characteristics such as sleepiness, sleep disorders and health status
3. Vehicle characteristics (truck configuration and modifications)
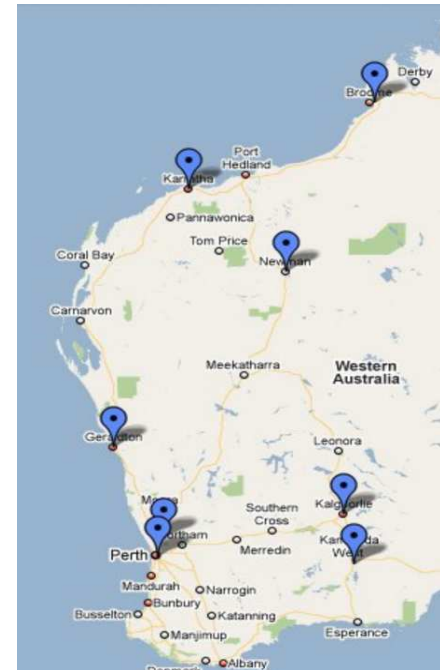
...play, in heavy vehicle crashes.
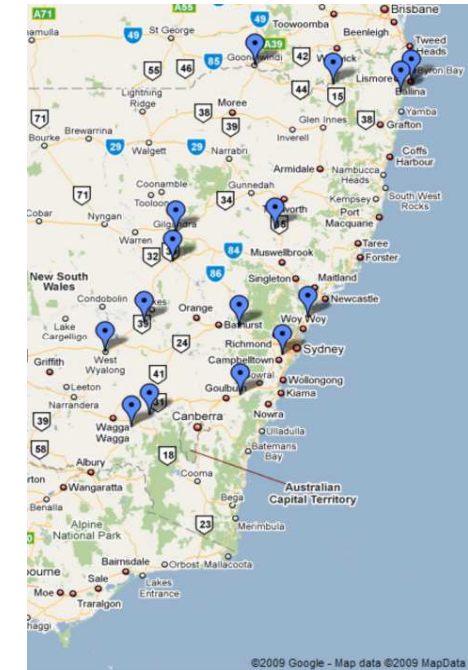
RESEARCH DESIGN

Research Design

Research Design

Distribution of Control Sites

- 15 sites in NSW

- 8 sites in WA

- 66 different interviewing occasions

WA Interview Sites   NSW Interview Sites

Research Design

Instrument

- **Driver demographics**
- **Work scheduling and payment**
- **Work/rest schedule**
- **Travel distance and time per week**
- **Vehicle characteristics**
- **Sleep-related questions**
  - o **Epworth Sleepiness Scale**
  - o **Sleep Quality**
  - o **Diagnosis of Sleep Apnoea**

SUMMARY OF FINDINGS

Findings

Demographic Details

- **99% of drivers were male**

- **Average age of Drivers**
  - Case Drivers   44 years
  - Control Drivers   46 years

- **Average take home pay per week**
  - Case Drivers $1176
  - Control Drivers $1253

Factors	Case %	Control %
Driver Employment Status		
Employee	83	77
Owner-driver	14	20
Other	03	03
Years of Driving		
< 10 years	41	20
≥ 10 years	59	80
Payment Rate in Last Week		
Non Piece Rate: Flat hourly rate	18	17
Non Piece Rate: Flat daily rate	03	02
Non Piece rate: Flat weekly rate	13	06
Piece Rate: Single-time rate	13	03
Piece Rate: Trip rate	07 45%	28 67%
Piece Rate: Rate based on Km's	25	36
Other	30	08

Findings

Factors	Case %	Control %
Average Hours Per Week		
Median	50 hours (range 1-130)	60 hours (range 1-126)
Truck Configuration		
Rigid	09	04
Articulated	91	96
Loads Carried At Time of Crash/Index Trip		
General Freight	68	76
Time Critical Freight	10	11
Dangerous Goods	03	04
Empty	19	04
Sleep Apnoea		
Diagnosed via Monitor	19	16
Diagnosed via MAPI	38	47

Findings

Factors Associated with a Crash	Crash Risk
Years of Heavy Vehicle Driving < 10 years	⬆ **3.0 x**
Type of Load Carried Empty	⬆ **2.6 x**
Truck without Cruise Control	⬆ **1.6 x**
Truck without Anti-Lock Breaking	⬆ **1.4 x**

Time Since Last Break
    2-4 hours
    > 4 hours
	⬆ **2.4 x**

Crash Time Midnight – 6am	⬆ **3.4 x**
Use of Caffeinated Drinks	⬇ **0.3 x**
Hours of Sleep on Previous Day	⬇ **0.9 x**

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DISCUSSION

Discussion

Employer/Company Factors

- Time since last break

- Risk of crash greatest between midnight – 6.00am. Opportunity for Scheduling?

- Payment Rates?

Discussion

Driver Factors

- Experience of drivers

- Hours of Sleep 24 hours before trip

- Use of Caffeinated drinks

Discussion

Vehicle Factors

- Type of load carried

- Cruise Control and antilock braking systems

Thank You

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