

Dr Michael Lenné
19 October 2007
Road Safety Conference, Melbourne – Alcohol Workshop

Serious injury crashes involving Alcohol: Crash Types and a potential treatment for intoxicated pedestrians

Overview

- 1. Data from 2004 fatal crashes involving alcohol and other drugs**
- 2. A trial of a countermeasure for intoxicated pedestrians**

Fatal Crashes in Victoria involving Alcohol:

Preliminary data on crash types and behavioural factors

Acknowledgements

- **Project Sponsors**
 - VicRoads, Transport Accident Commission, Victoria Police, and Department of Justice
- **Co-authors**
 - Michael Fitzharris & Nicola Fotheringham
- **MUARC colleagues**
- **Staff at NCIS**

Rationale (1)

- **AOD impair performance**
- **Associated with > risk**
- **Role is crashes being established**
- **RDT began in Victoria in late 2004**
- **Targeting of enforcement important**
 - Who are the targets?

Rationale (2)

This study DOES...

- Inform enforcement (crash types)
- Inform education (behav factors)
 - What drugs?
 - Who is involved?
 - Where?
 - What other factors?
 - Behavioural factors?

This study is NOT...

- Measuring risk or culpability

Methodology - Potential Data Sources

- **General surveys of drug use and self-reported crashes**
- **Targeted surveys/interviews**
- **Injured samples / hospitals**
- **Road crash data**
- **Coroners' data**
 - Contains rich narrative data re: behavioural factors

Coroners' Reports contain...

- **Police report**
- **Medical report**
- **Toxicology report**
- **Findings document**

- **Inquest report**

Methodology - Overview

- **Identify variables of interest**
- **Ethics approvals**
- **Extract NCIS data (2004) and code**
- **Match with RCIS data**
- **Descriptive analysis**
 - comparison with all 2001-2004 injury crashes

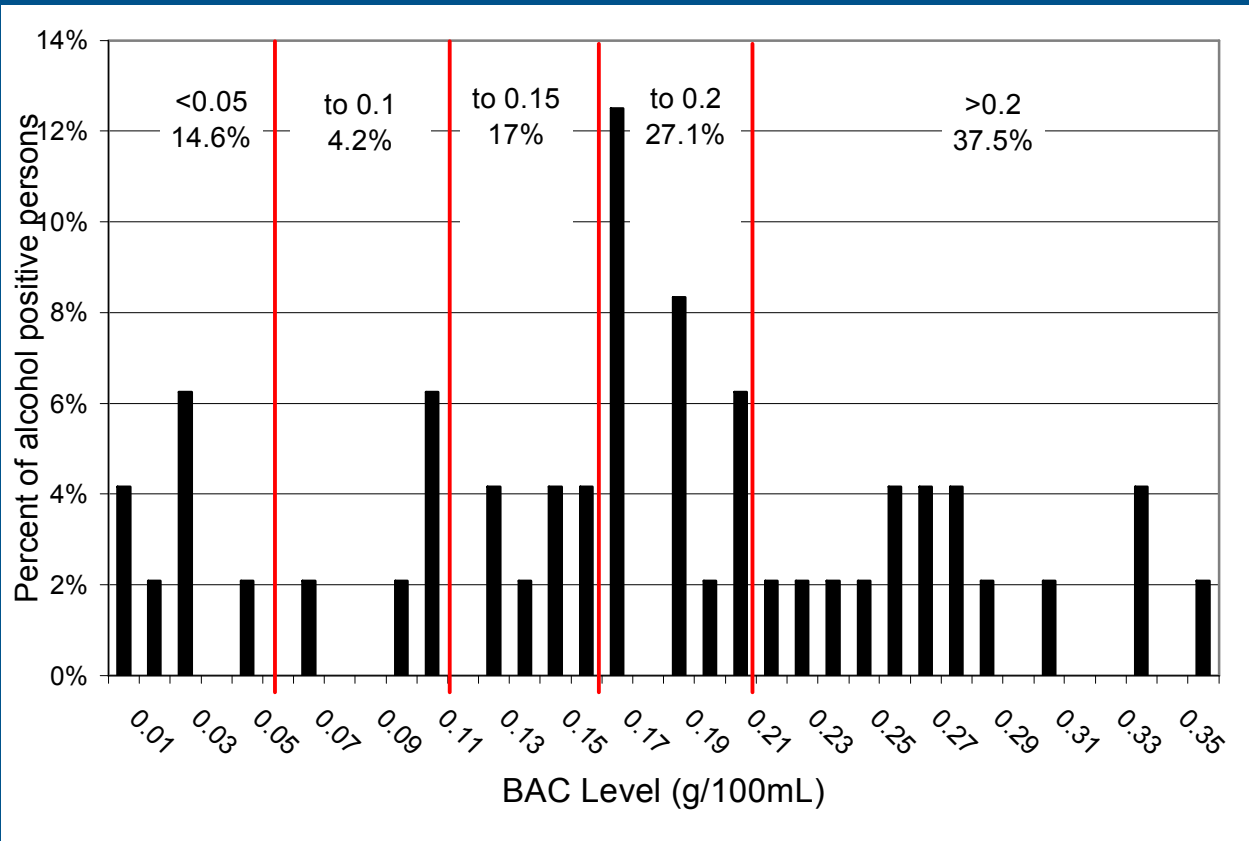
Alcohol and Drugs Detected (2004)

	Death on roadside		Death in hospital		Total	
	Freq.	%	Freq	%	Freq.	% of 97
Ethanol	41	85	7	15	48	49.5
<i>Illicit drugs</i>						
THC	14	74	5	26	19	19.6
Amphet/Methamph	8	89	1	11	9	9.3
Heroin metabolites	7	100	0	0	7	7.2
Ecstasy	1	50	1	50	2	2.1
<i>Licit drugs</i>						
Narcotic analgesics*	10	45	12*	55	22	22.7
Anti-depressants	15	83	3	17	18	18.6
Anaesthetics*	1	7	14*	9	15	15.5
Benzodiazapines*	10	7	3*	23	13	13.4

Alcohol with licit/illicit Drugs

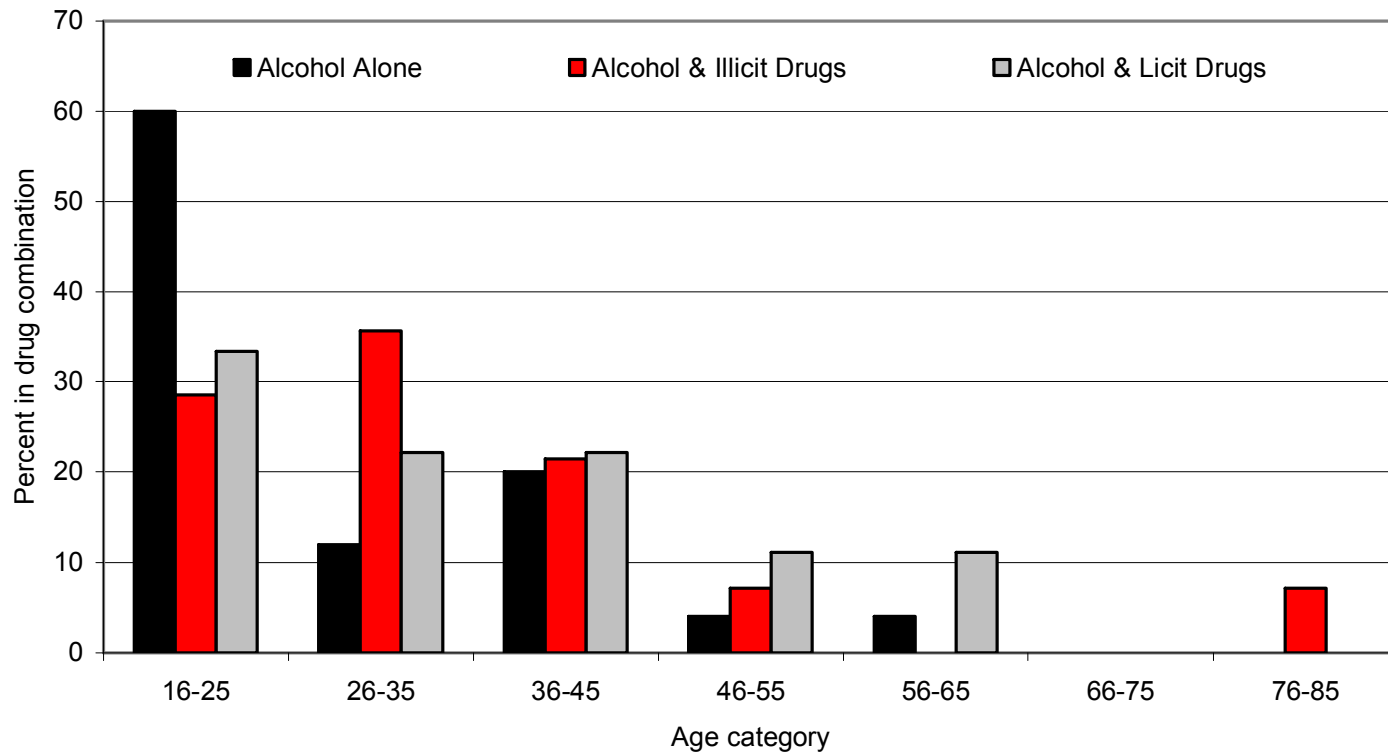
Category	Death at Roadside (n=68)		Death in hospital (n=29)		All (n = 97 [†])	
	Freq.	%	Freq.	%	Freq.	%
All alcohol cases	41	85	7	15	48	49.5
Alcohol Alone	22	88	3	12	25	25.8
Alcohol & Illicit Drugs	10	71	4	29	14	14.4
Alcohol & Licit Drugs	9	100	Nil	Nil	9	9.3
<i>Specific Drug Combinations</i>						
Alcohol & THC	7	88	1	13	8	8.2
Alcohol & Benzodiazepines	6	75	2	25	8	8.2
Alcohol & Antidepressants	6	86	1	14	7	7.2
Alcohol & Narcotic Analgesics	2	40	3	60	5	5.2
Alcohol & Amphetamines	4	100	Nil	Nil	4	4.1
Alcohol & Ecstasy	1	100	Nil	Nil	1	1.1

BAC Levels

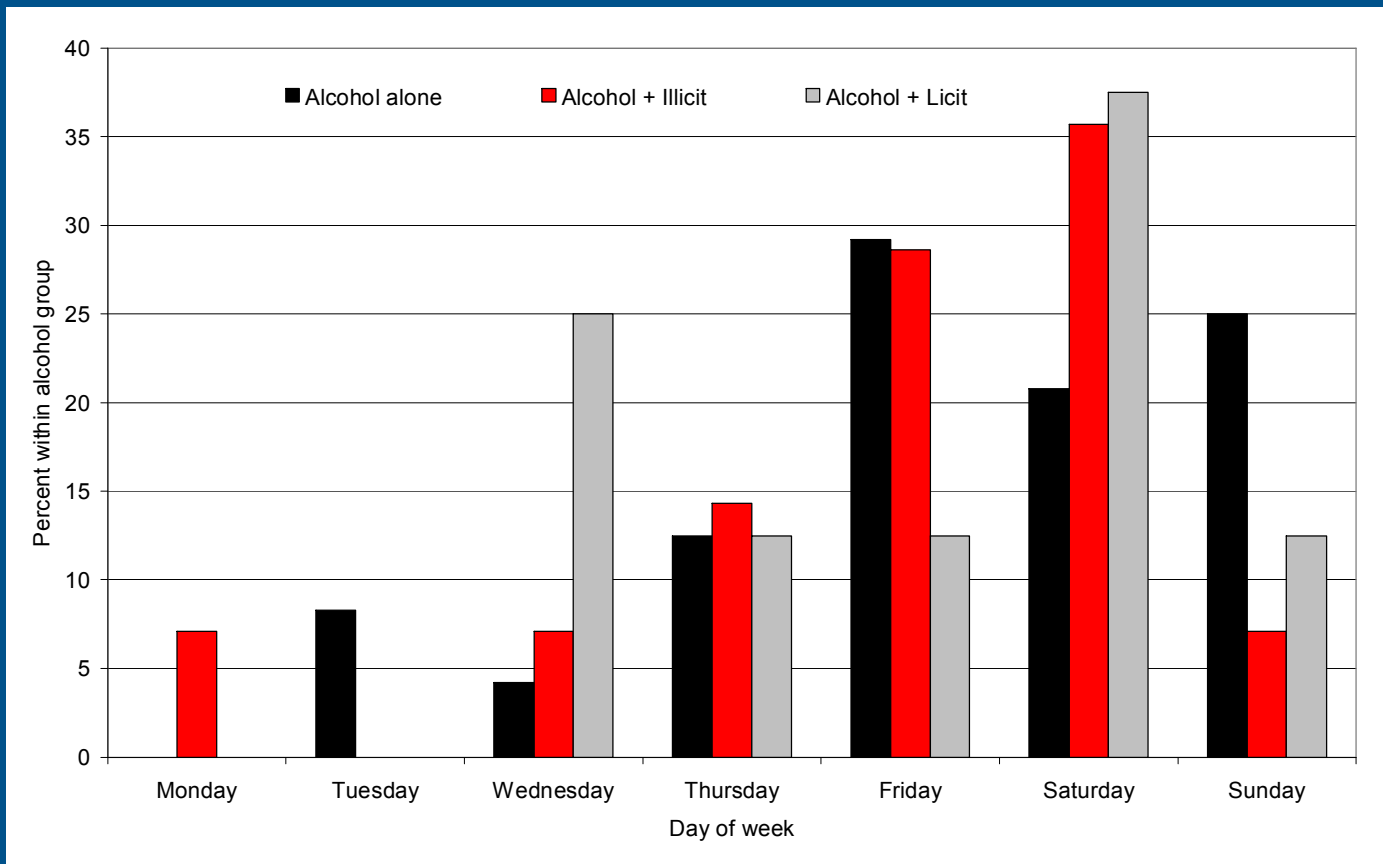


- 85% above legal limit (0.05%)
- About 2/3 over 0.15%

Proportion of Alcohol Crashes



Alcohol crashes by Day or Week



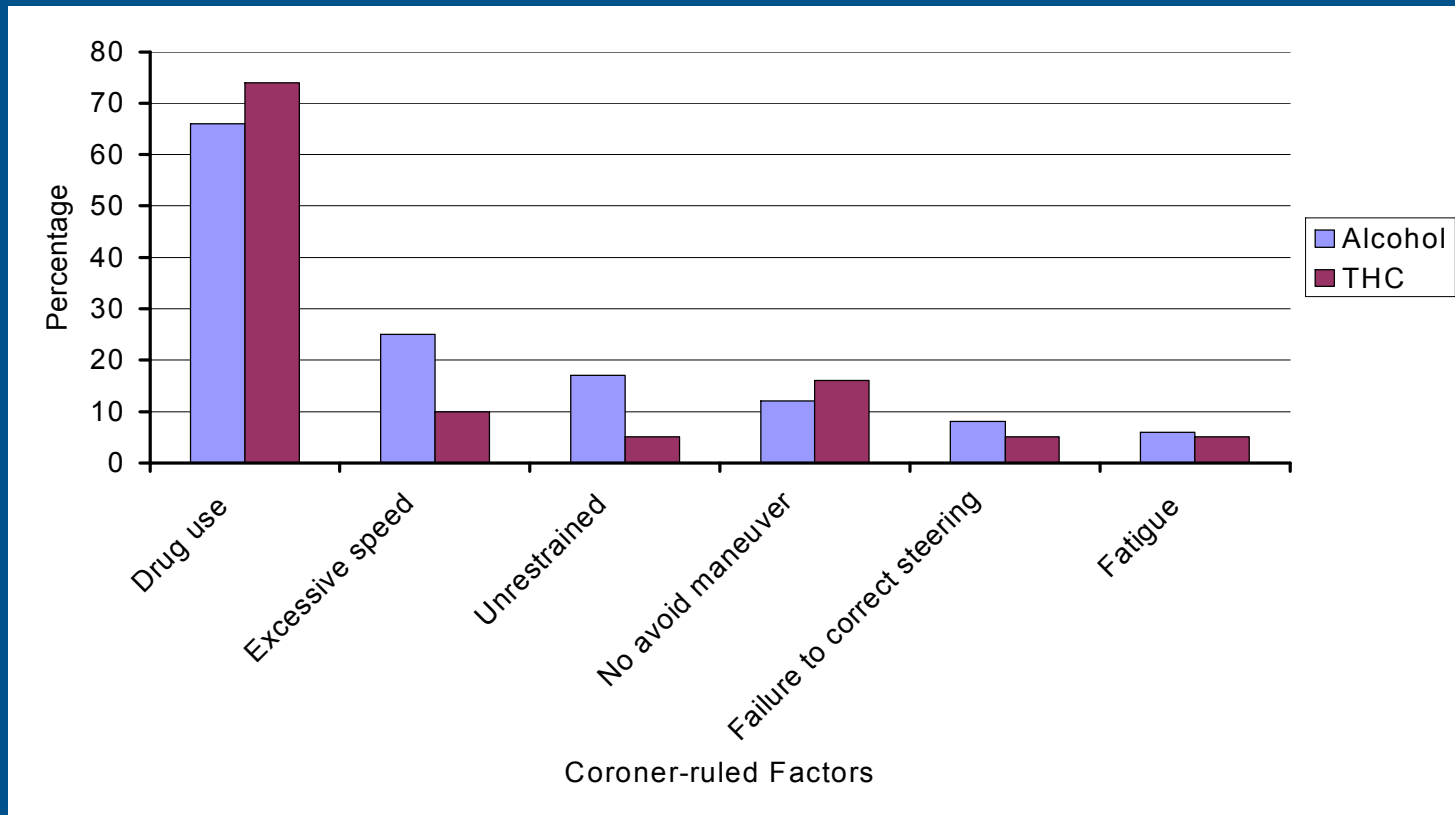
Prior Traffic Violations

- **Of the 14 individuals found to have alcohol and illicit drugs present, two had prior traffic convictions:**
 - Case vignette 1: One case with alcohol and illicit drugs present had been issued with a penalty notice earlier in the evening of the crash after being detected with a BAC > 0.05 and was to be disqualified for six months.
 - Case vignette 2: Another had a long history of driving at an excessive speed, had been fined for careless driving and driving under the influence, and had their license canceled 12 times between 1983 and 1998.

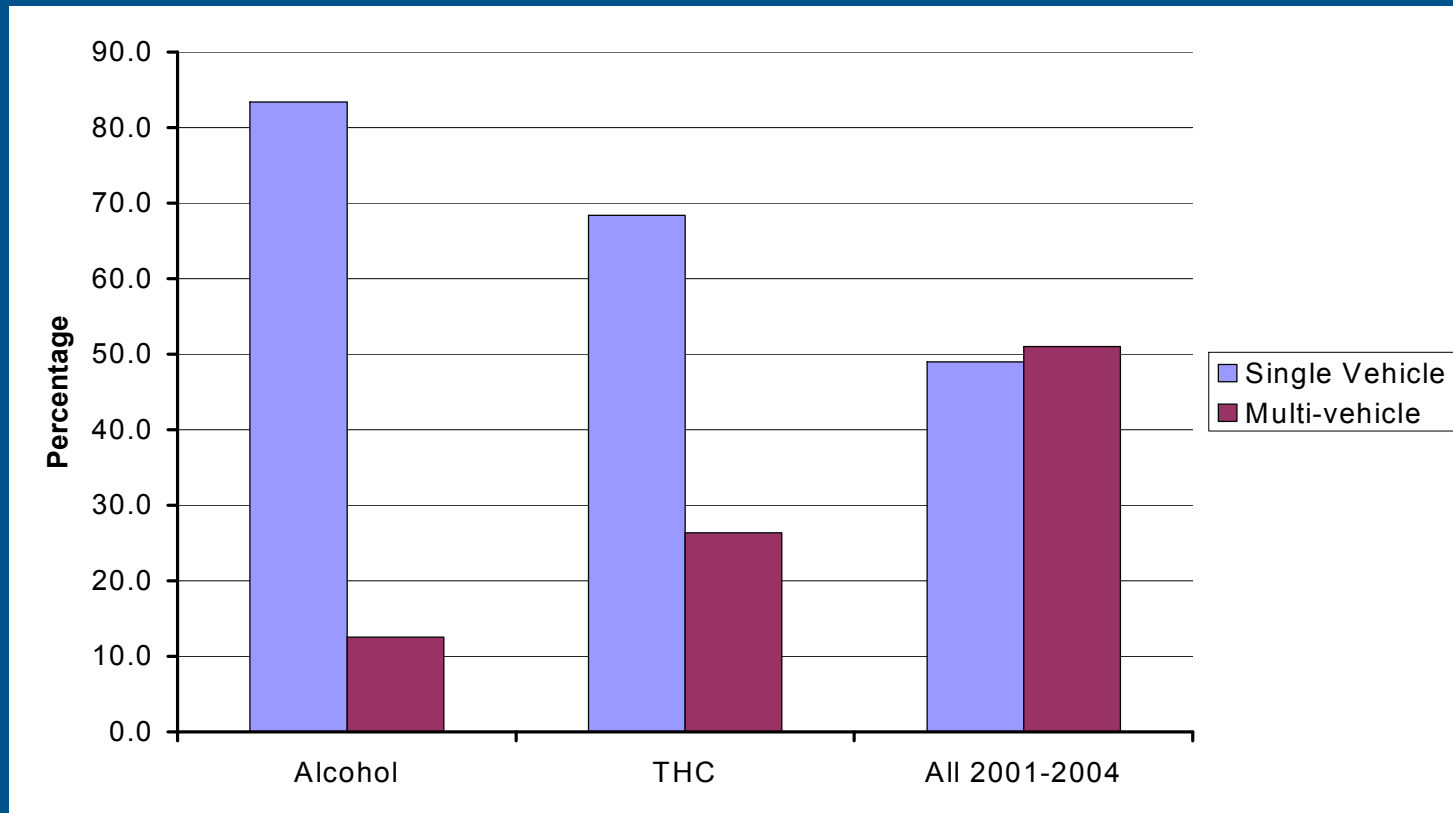
Mental States

- **One individual had been issued with a penalty notice and disqualified from driving earlier that evening after being detected for driving with a positive BAC.**
- **One individual was being treated for mild depression caused by an injury and was being prescribed [x] several months prior to the incident.**
- **One case had a long history of depression, anxiety, psychiatric treatment and also had a heroin dependency.**
- **One case was an elderly male with a psychiatric history and suicidal tendencies expressed in the past.**

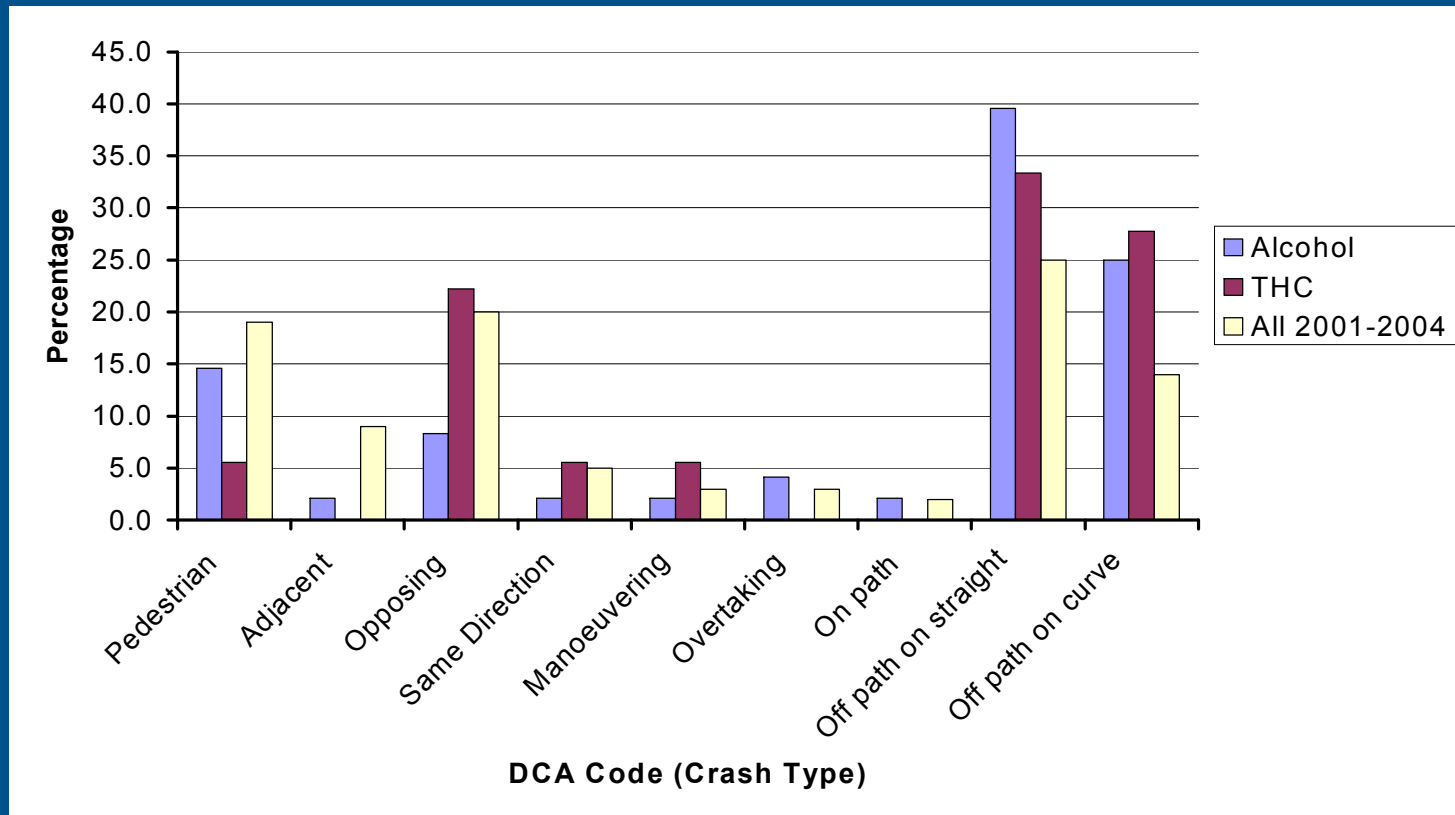
BEHAVIOURAL DATA: Coroner factors



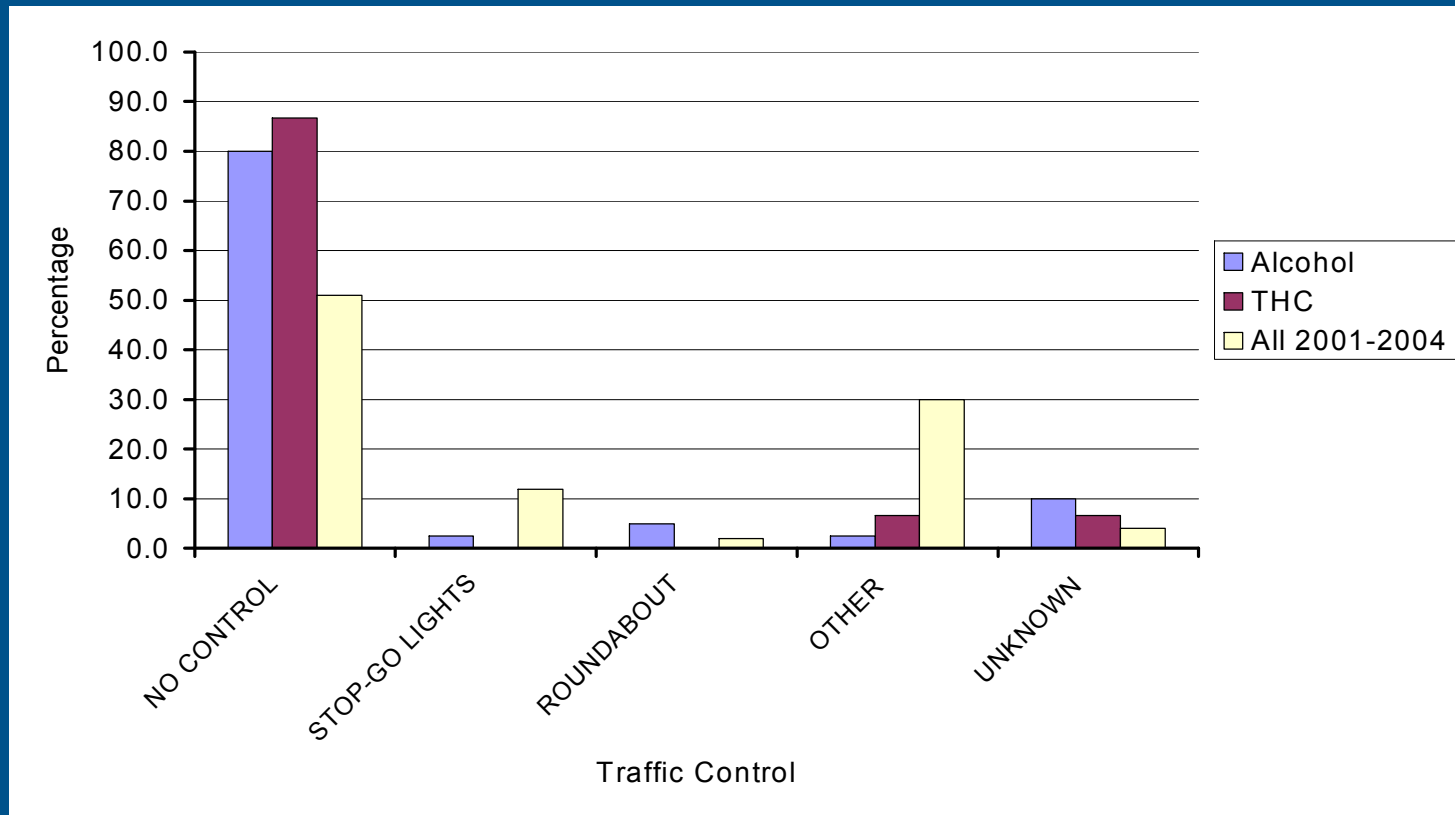
CRASH DATA: Number of Vehicles



CRASH DATA: Crash Types



CRASH DATA: Level of Traffic Control



Conclusion (1)

- **Methodology worked well**
- **Alcohol Crash Types**
 - High proportion single vehicle
 - High proportion run-off-road
 - High proportion involve no traffic control

Conclusion (2)

Application of results:

- Crash characteristics informs enforcement
- Person-based informs education/prevention

➤ **Further examination of these demographic and crash factors is needed**

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Modifications to Traffic Signal Operation to Improve Safety for Intoxicated Pedestrians

Lenne, Stephan & Corben (2007). Accident Analysis & Prevention.

Acknowledgements

- **Funding provided under contract by VicRoads**
- **Liz Knight & Linda Ivett (VicRoads)**
- **Stuart Newstead (MUARC)**

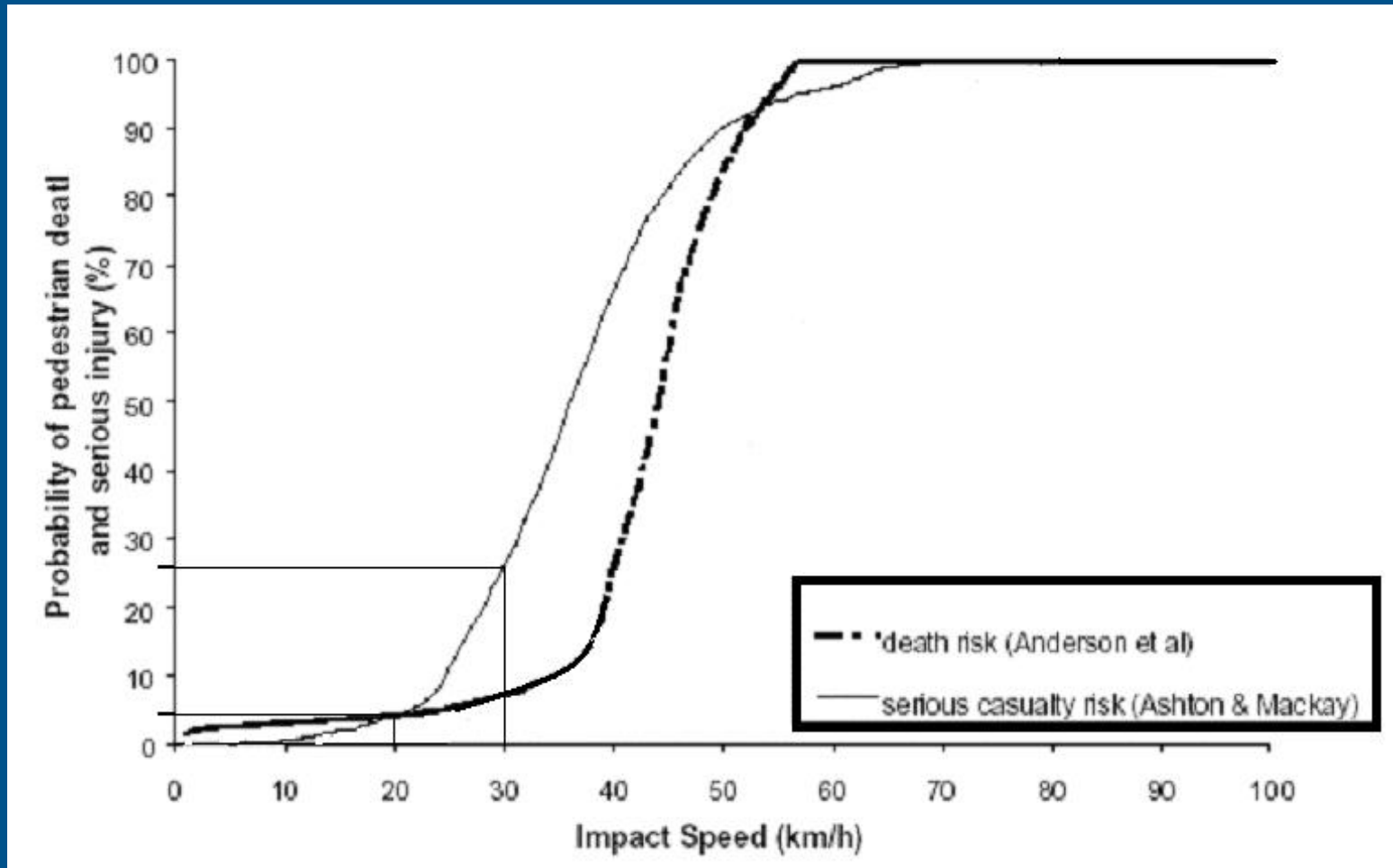
Background

- ~30% of peds killed have BAC > 0.05%
- Various programs in place
- Potential Treatments
 - Lower speed limits
 - Pedestrian fencing
 - Medians
 - Behavioural programs
 - Traffic signal modification

Evaluation Study

- Ballarat (March – August 2005)
- Dwell-on-Red treatment
 - activation between 22:00 and 05:00
- Speed data collection:
 - Before and after treatment installation
 - Control and treatment site
 - Two points (30 metres & intersection stop line)

Impact Speed and Pedestrian Injury

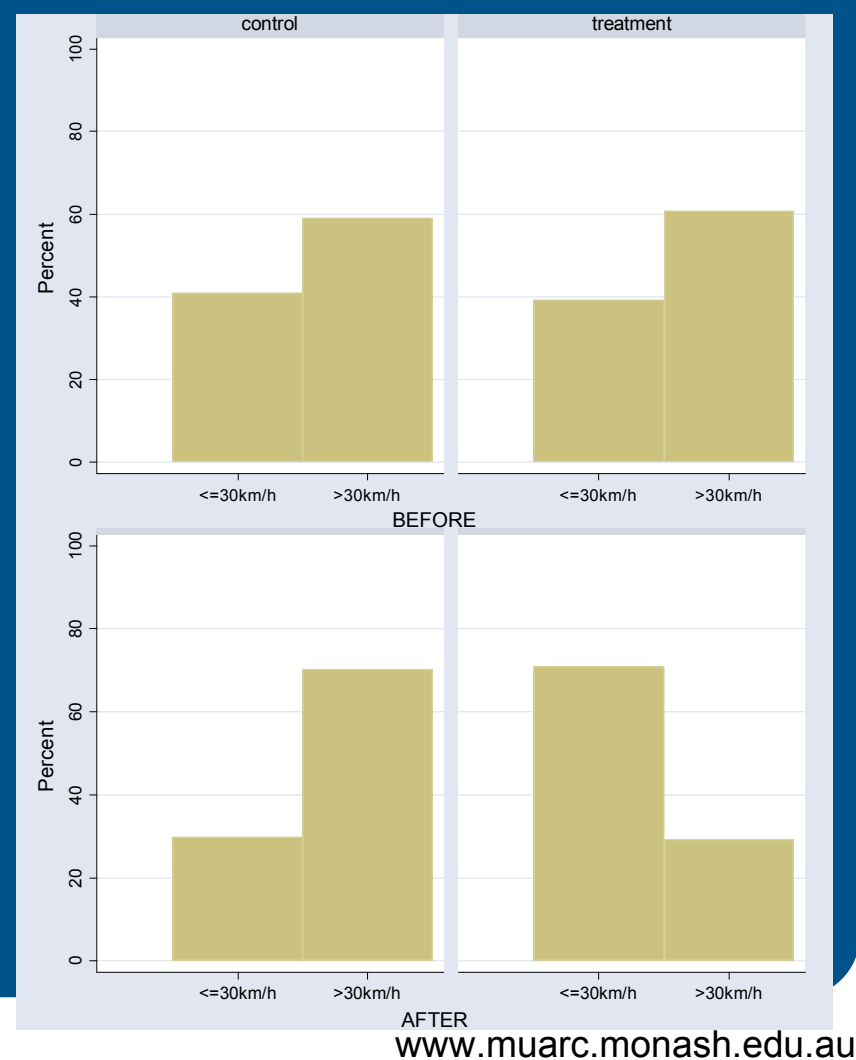


Proportion of vehicle speeds at stop line

Impact speed of 30 km/h associated with $\approx 25\%$ risk of serious pedestrian injury

Treatment site:

Increase from 39% to 71% of vehicles at speeds less likely to cause serious pedestrian injury

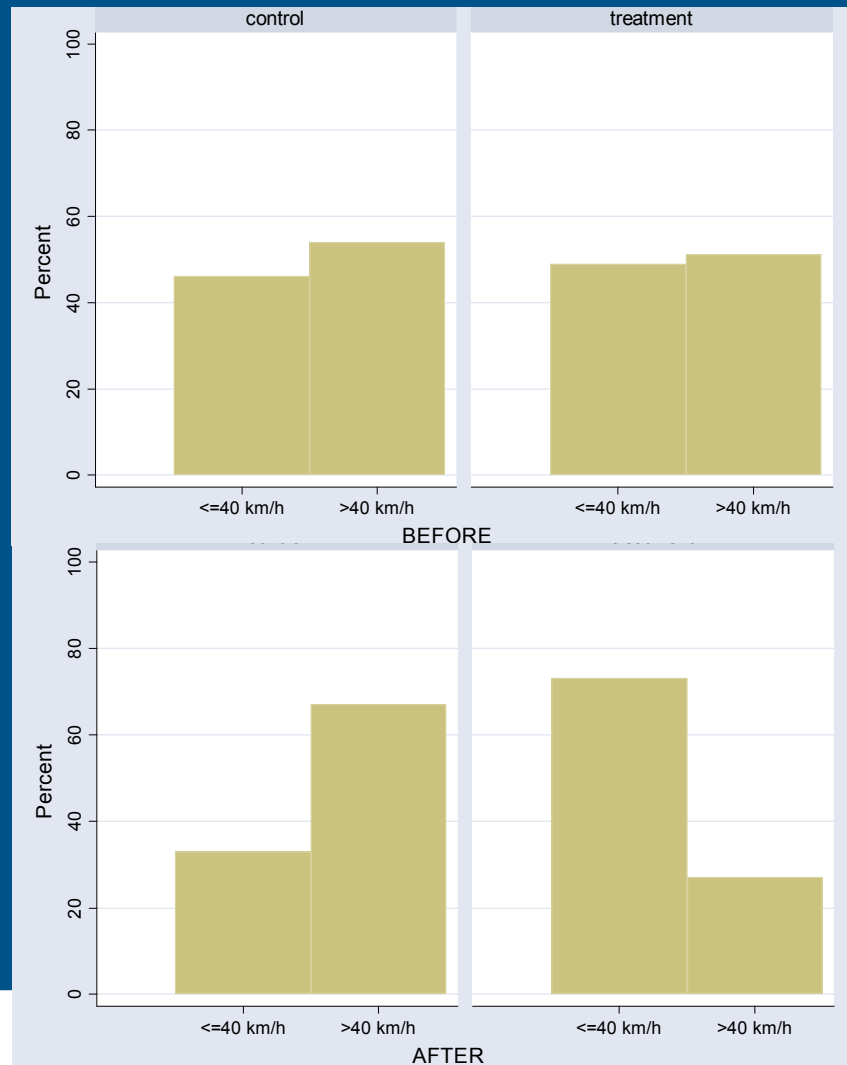


Proportion of vehicle speeds at 30 metres

Impact speed of 40 km/h associated with $\approx 20\%$ risk of fatal pedestrian injury

Treatment site:

Increase from 49% to 73% of vehicles at speeds less likely to cause fatal pedestrian injury



Conclusions

- Alcohol-affected pedestrians among the highest-risk groups involved in pedestrian casualty crashes
- Treatments and programs implemented with limited success
- Results here show significantly reduced vehicle speeds
- Recommend further evaluation
- Potential for other road safety applications

Questions?

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