

# A Systems Approach to Heavy Vehicle Safety

Dr Sharon Newnam



## Current approaches to HV safety

- Data collection
  - Crash investigations
  - Injury data
- Intervention
  - Speed
  - Fatigue
  - Drug use
- Chain of Responsibility (CoR) legislation
  - Defining roles and responsibilities of actors across the system

What do current safety approaches suggest?

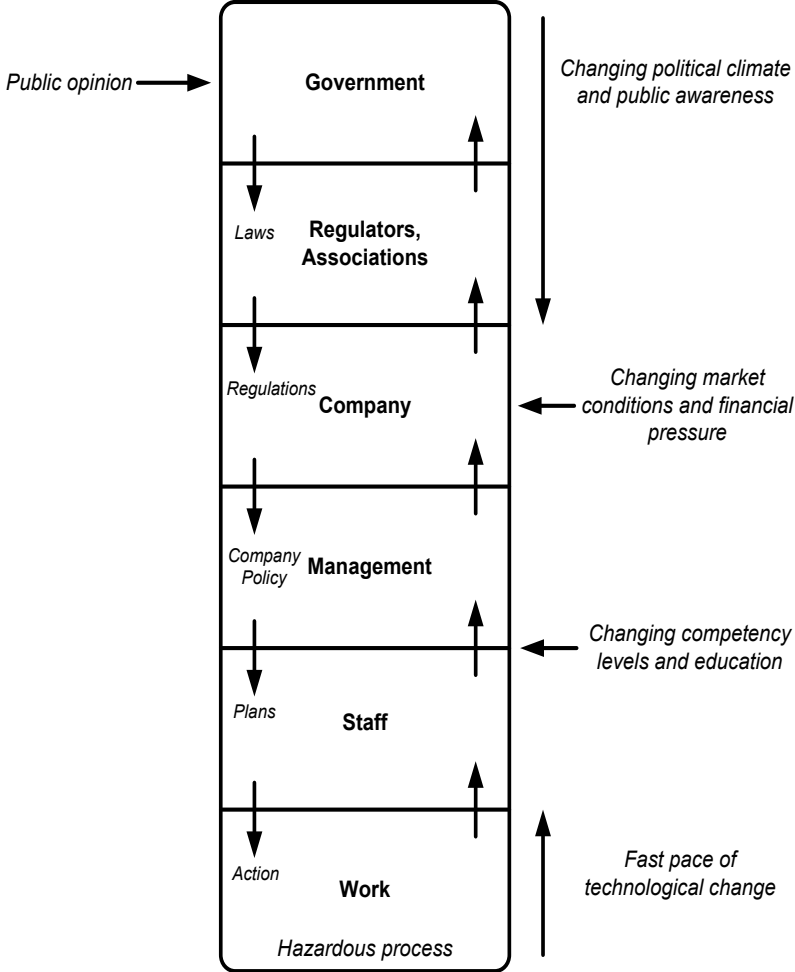
“The Driver is to Blame for Heavy Vehicle Crashes”

# A systems approach to understanding the Road Freight Transport System

- Complex system of factors that generate hazardous situations
- Capture the characteristics of a complex sociotechnical system
- Why do we need a systems-based understanding?

Develop Evidence-Based Approaches to Prevention Efforts

# Risk Management Framework



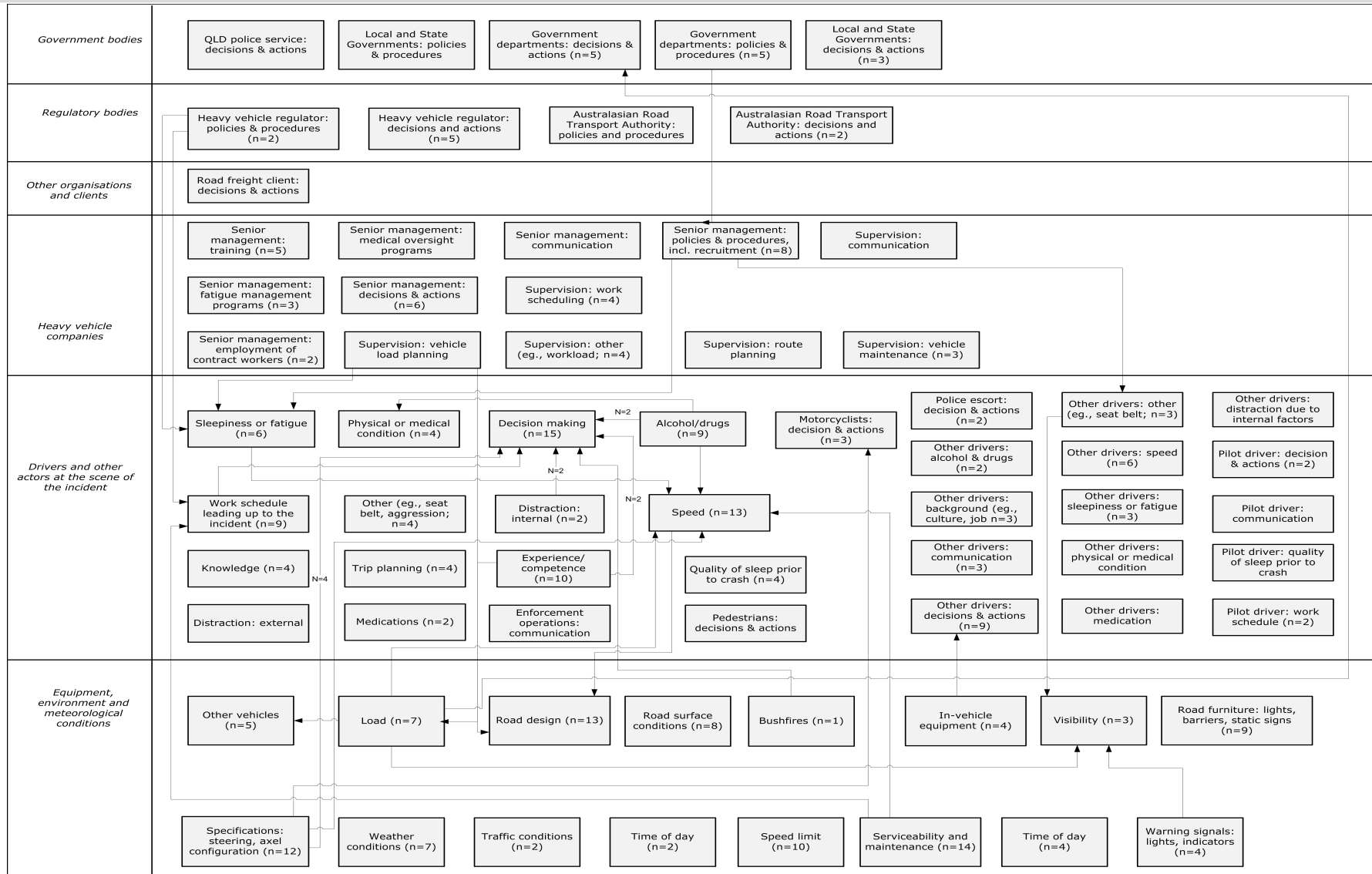
# The Road Freight Transportation System

<i>Government bodies</i>	<b>Decisions, actions and legislation relating to road transportation</b>
<i>Regulatory bodies</i>	<b>Activities, decisions, actions etc made by personnel working for road transportation regulatory bodies, as well as policies and guidelines</b>
<i>Other organisations &amp; clients</i>	<b>Activities, decisions, actions etc made by commercial organisations that impact on road freight transportation activities, such as clients and other organisations that operate within the road environment</b>
<i>Heavy vehicle companies</i>	<b>Activities, decisions, actions, etc made by supervisory and management personnel at the road freight transportation company, as well as company policies, planning and budgeting</b>
<i>Road Users</i>	<b>Actions and decisions undertaken 'at the sharp end' prior to, and during, the crash</b>
<i>Equipment, environment &amp; meteorological conditions</i>	<b>The vehicle and equipment (eg., in-vehicle telemetry), the physical road environment (eg., road surface conditions), and the ambient and meteorological conditions prior to or during the crash</b>

## How do we learn from heavy vehicle crashes?

- Analysed Australian Coroner's inquest reports on road freight transport crashes from 2004 – 2014 (n = 21)
- All reports involved a heavy vehicle (non-passenger, e.g. a semi-trailer, truck)
- Two staged analysis:
  1. Contributing factors/relationships
  2. Recommendations

# Crickey it's a complex system!





# How has this information informed prevention efforts?

<i>Government bodies</i>	Government departments: decisions & actions (n=4)	Government departments: policies & procedures (n=2)	Local and State Governments: policies & procedures	Local and State Governments: decisions & actions	QLD police service: decisions & actions
<i>Regulatory bodies</i>	Heavy vehicle regulator: policies and procedures	Australasian Road Transport Authority: decision & actions (n=2)			
<i>Other organisations and clients</i>					
<i>Heavy vehicle companies</i>	Senior management: fatigue management programs (n=3)	Senior management: policies & procedures, incl. recruitment (n=5)			
<i>Drivers and other actors at the scene of the incident</i>	Decision making	Experience/competence			
<i>Equipment, environment and meteorological conditions</i>	Weather conditions (n=8)	Road design (n=6)	Road furniture: lights, barriers, static signs (n=5)	Speed limit (n=4)	Serviceability and maintenance (n=2)
	Visibility	Load (n=2)	Warning signals: lights, indicators	Specifications: steering, axel configuration (n=5)	Other vehicles (n=5)

## What are the facts?

### Fact 1: Factors contributing to safety across the system

- A reductionist view to HV safety is unlikely to inform effective intervention or policy development

### Fact 2: Recommendations limited to lower levels of the system

- Coronial data is unlikely to effectively guide the decisions & actions of regulators and government

### Fact 3: Limited feedback loops from lower to higher levels

- Lack of learning from HV crashes

## Where to from here....

- Systems-based methods are required to learn from HV crashes
  - System-based crash investigation method
- Evidence-base knowledge will inform review and revision of:
  - Data collection
  - Intervention
  - CoR



ACCIDENT  
RESEARCH  
CENTRE

Dr Sharon Newnam

+61 3 9905 4370

[sharon.newnam@monash.edu](mailto:sharon.newnam@monash.edu)

