



Safe systems approach for mining road safety

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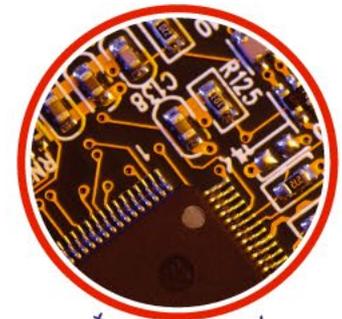
*Collaborating with the
road industry to turn
knowledge into practice*



research



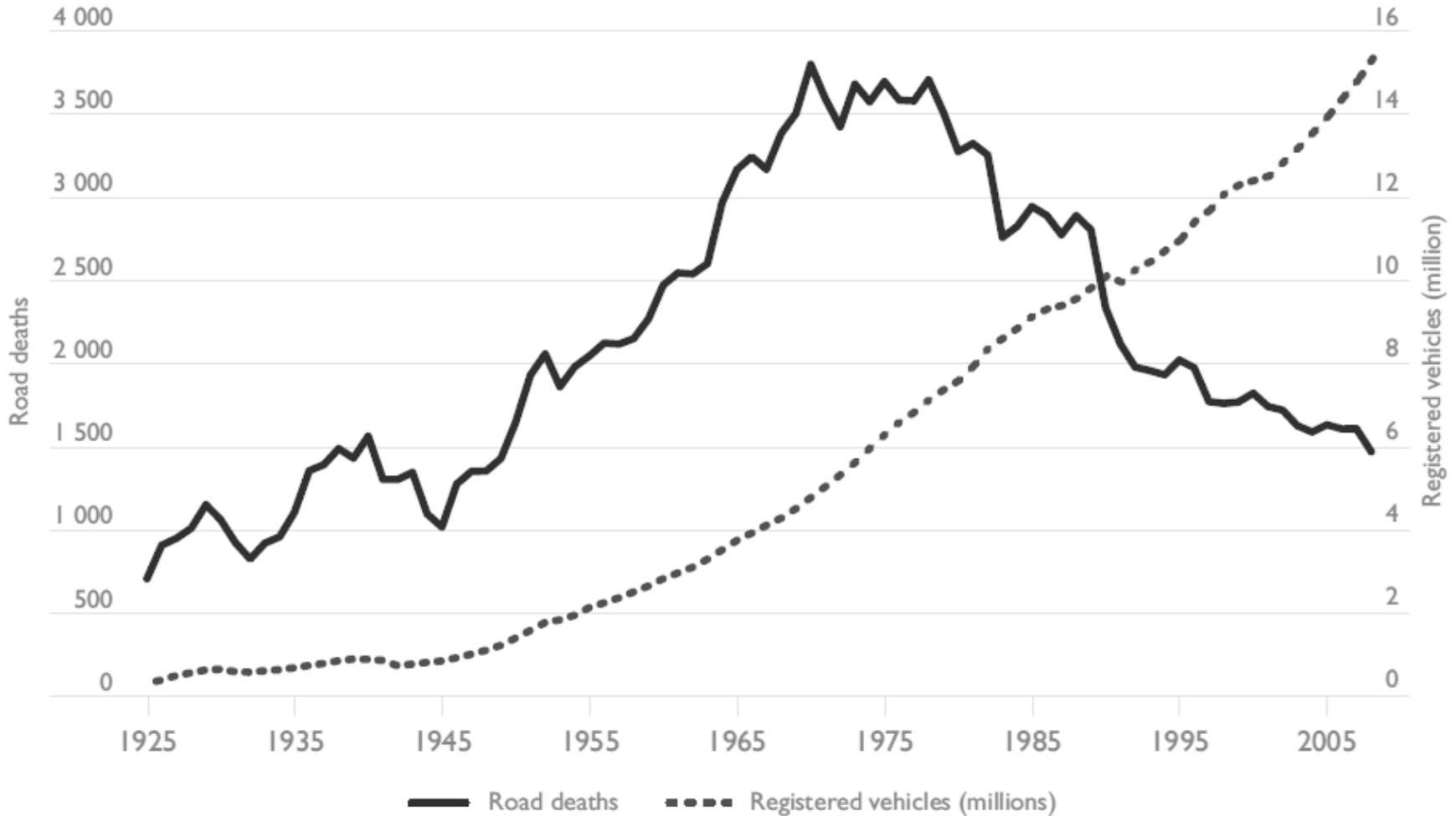
consulting



technology



Safe Systems



Source: *Road Deaths in Australia 1925-2008 – Information Sheet 38*, BITRE, 2010



Safe Systems

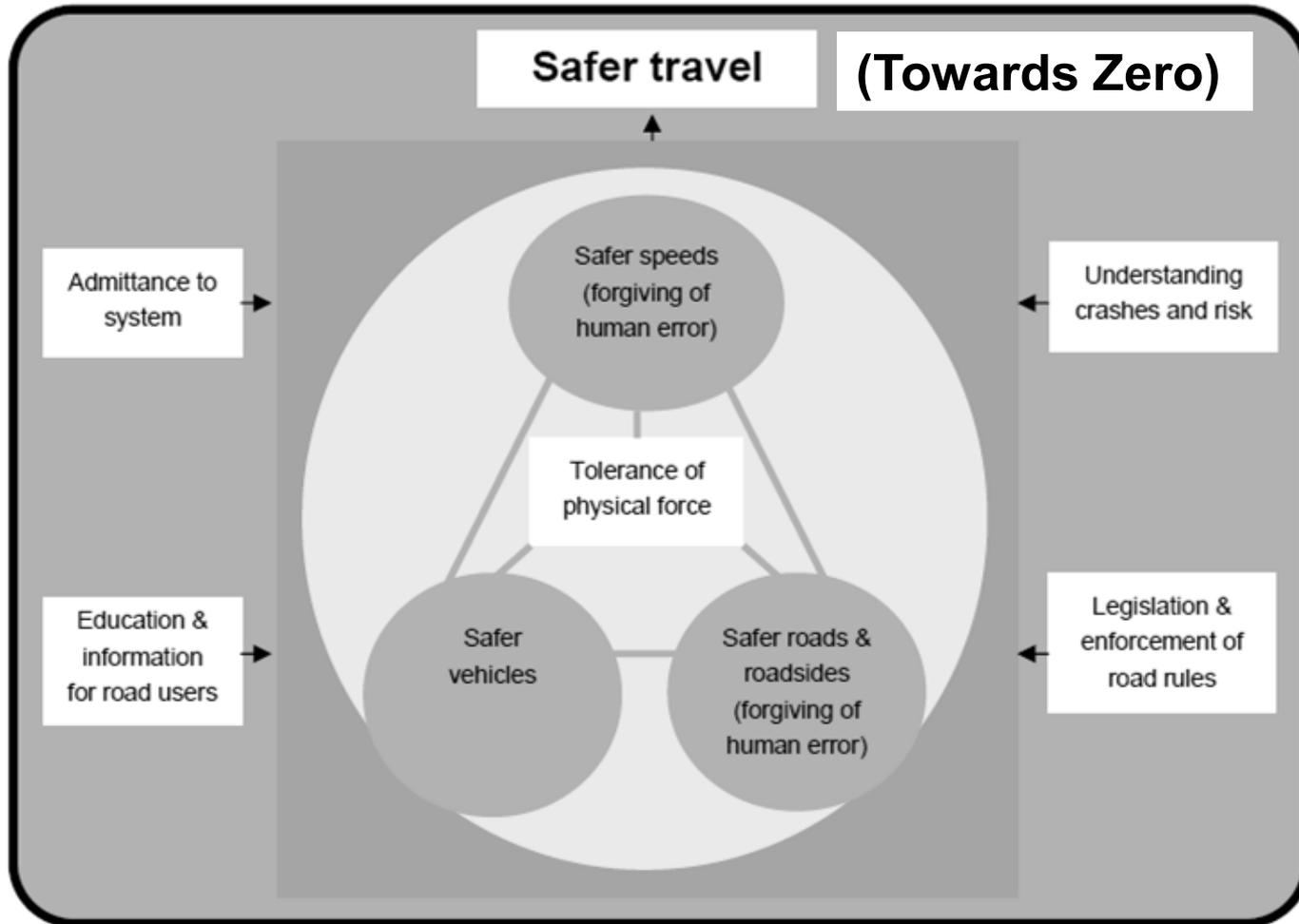
- multi-disciplinary, systematic approach to road safety based on a long term vision
- appreciation of the limitations of the human body to absorb physical forces
- road users make, and will continue to make, mistakes while driving and crashes will continue to occur despite prevention efforts
- society does not accept that innocent mistakes should result in death or serious trauma



Safe Systems

- suggests implementing some new actions and using a lot of existing countermeasures in a different way
- a systematic approach that requires a thorough understanding of the four key components of road safety
 - users
 - vehicles
 - speeds
 - road environments

Safe Systems



Source: *Guide to Road Safety Part 2: Road Safety Strategy and Evaluation*, Austroads, 2006



Safe Systems on mines

- mining organisations:
 - are road owners and managers
 - can establish and enforce driving rules
 - control drivers' admittance, education and licensing
 - define vehicle standards
- they have a complete control over the four elements of Safe Systems
- potential for achieving 'Zero Harm' in area of road risk management



Safe Systems on mines

- road safety is still one of the major risk areas on Australian mining operations
- trends are encouraging, but do not suggest that Zero Harm will be achieved anytime soon

Over the last 10 years in Australia's mining, exploration and extractive industries, vehicle collision incidents and accidents caused 31 deaths or 28 per cent of all fatalities, and the whole industry wants to reduce that figure.

In Queensland's mining, exploration and extractive industries, six of the 17 fatalities in the past six years involved incidents related to interactions with vehicles.

Mr Stewart Bell, Qld Commissioner for Mine Safety and Health



Safe Systems on mines

- elements of the traffic system on most mines are dealt with by various departments on either operational or corporate levels
 - traffic risk management frameworks that are disjointed, not complementary, incomplete, irrelevant, outdated, etc.
- lack of skills and expertise in traffic safety and management



Road users (challenges)

- lack of experienced personnel
 - attraction of inexperienced operators
 - personnel with risk-taking behaviour
 - site specific road rules, regulations and information are not always available and understood by workforce
- driving rules and regulations are not always implemented or followed consistently
- fatigue is an ongoing issue



Road users (opportunities)

- allocation of personnel with risk-taking behaviour to less hazardous roles
- implementation of a robust driving permit allocation system
- provide appropriate training (e.g. defensive driving, 4WD driving, gravel driving, etc.)
- continue implementing comprehensive fatigue management programs
- consider risks associated with commute driving
- implementation of in vehicle monitoring system (IVMS) technologies for influencing behaviour



Vehicles (challenges)

- mining vehicle fleet is not always fit for purpose
- excessive numbers of vehicles used on mining operations
- poor vehicle maintenance and inspection practices
- best industry standards in vehicle safety are still not widely used



Vehicles (opportunities)

- continue with the development and propagation of advanced safety technologies
- ensure that mine vehicles are fit for purpose
- implement EOM requirements for safe operating conditions and servicing (as well as pre-start inspections)



Roads (challenges)

- mining roads do not get a full appreciation of their importance for safety and efficiency
- lack of design standards for different categories of mining roads
- design/construction/maintenance standards mainly consider immediate needs (i.e. not life-of-mine costs)



Roads (opportunities)

- develop road management manuals or guidelines that cover design, construction and maintenance of mining roads
- identify and collaborate in opportunities for relevant research to improve road safety
- conduct road safety audits at various stages of road projects
- provide training opportunities in areas of traffic safety and management for relevant staff
- establish 'road crews' on mines



Speed (challenges)

- speed is the most critical factors defining the outcomes in crashes between compatible vehicles
- inappropriate speed management on mining operations
 - speed limits that are too low
 - excessive number of speed limits
 - speed zones that are too short
 - inconsistency
- improvement is required in monitoring compliance with speed limits (and implementing appropriate disciplinary actions)



Speed (opportunities)

- review existing speed regimes for their appropriateness
- establish comprehensive and appropriate speed management for mines
- continue with speed monitoring and enforcing activities

Example of Safe Systems



Source: *Safety alert 194*, Queensland Department of Mines and Energy, 2008



Questions ?

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