ACRS Policy Position Statement
Data and Information Needs

Summary

Good data (raw, unorganised facts) and information (contextualised, organised data; 1) are critical to understanding the causes of and developing solutions to existing and emerging road safety problems. They also support tracking progress towards road safety objectives. Currently there are significant inconsistencies and barriers making quality data and information difficult to obtain. Reporting systems and databases of fatal crashes and fatalities, and hospitalised serious injury cases are inconsistent between jurisdictions. Further, there is limited in-depth, systems thinking led analysis of the causes of fatal and serious injury crashes. Without these, research, monitoring, and evaluation are inadequate, leading to incomplete evidence-based policy and road safety countermeasures. Critical action must be taken to ensure that quality data and information, including intervention outputs and intermediate outcomes, are collected, analysed, and disseminated to enhance road safety.

Key policy positions

1. Develop consistent national collections of fatal crash and road fatality data.
2. Establish consistent national serious injury crash datasets.
3. Conduct in-depth, systems thinking led analysis of the circumstances of casualty crashes.
4. Ensure quality research, monitoring and evaluation are central to assessing the efficacy of road safety interventions.
5. Ensure emerging data and information needs are considered now to better support the future of road safety.
6. Ensure road safety data and information are equitably collected, analysed and shared to better support those disproportionately impacted by road trauma.

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Policy problem

For decades, there has been insufficient data and information collected on fatal and serious crashes. This has limited our understanding of the system of factors contributing to crashes and hindered the development of targeted strategies and countermeasures to improve road safety. We need to understand why serious injury crashes occur and what contributors to road crashes need to be addressed, to prevent and mitigate the consequences.

While good data on crashes is important, we also need performance indicators which measure changes in safety risk before crashes occur. This data will support proactive actions to help mitigate crashes and allow for effective monitoring and evaluation of the effects of road safety interventions. By accurately measuring and monitoring these indicators, we can ensure that interventions that lead to tangible, measurable road safety benefits are prioritised, and less effective interventions are removed.

Quality road safety data and information is crucial for adopting an evidence-based approach and developing outcome-oriented strategies and interventions. It helps to identify critical crash types and locations, diagnose underlying reasons for fatal and serious injuries, select appropriate interventions, and track and assess the effectiveness of initiatives.

Principles underpinning ACRS position

- We should prevent all fatal and serious injury crashes on our roads.
- We must understand the number and scope of fatal and serious injury crashes. Development and use of consistent data on fatal and serious road injury will better enable research and inform actions to prevent them.
- Good countermeasures to reduce road fatalities and serious injury require understanding of the system of factors contributing to crashes.
- We need to understand the causes underlying crashes, to build in measures that prevent human error and mitigate its consequences.
- Application of systems thinking approaches of casualty crashes will support a targeted and evidence-based approach to preventing crashes.
- Road systems must be made safe for all road users.
- We must understand how and when road injury risk varies with, e.g., characteristics of road users, geographic locations, and the broader road and transport system.
- Data and information need to be equitably collected, analysed, and shared to better support road user groups disproportionately impacted by road trauma.

Evidence base

Lack of consistency around the collection of fatal crash and road fatality data

Data on fatal crashes and road fatalities are often primarily collected by police and held in each jurisdiction, and nationally, such as in the Australian Road Deaths Database (ARDD; 2). In New Zealand the situation is similar. Both countries provide near real time information (i.e., within days) to count fatal crashes and fatalities and look at changes across time, but not much more. The ARDD, for example, includes general characteristics of the incident such as jurisdiction, date, time of day, crash type, type of road user involved, their age, gender and location of the crash, but no information about broader circumstances of fatal crashes

and fatalities. We need consistent national databases of information sufficient to understand the characteristics and circumstances of fatal crashes and road fatalities.

Inadequate collection of serious injury crash data

Obtaining consistent information on serious injury crashes has been a greater challenge than fatal crashes (3, 4). Information is available on the number of casualty crashes serious enough to require admission to hospital and the types of injuries sustained. However, this provides no other information about the circumstances. Police records contain information about casualty crashes and their circumstances, but a significant proportion are not reported to police and there are often other contributing factors not recorded.

Attempts to link hospital data and police records of casualty crashes in some jurisdictions and nationally in Australia (3), have had limited success due to under-reporting of crashes to police, especially those involving vulnerable road users (3). Inclusion of other data sources such as insurance data (5) has not overcome this problem.

We need to develop alternative approaches for identifying serious casualty crashes that include basic information about the circumstances of the crash including pre- and post-crash factors that may have contributed to events and outcomes.

Limited in-depth analysis of the circumstances of casualty crashes

Enhancing databases on fatal and casualty crashes is necessary but will not be sufficient to achieve Vision Zero. System thinking models and methods are required to understand the causes of crashes and how to prevent them. While some in-depth studies of the causes of road crashes have been conducted (6, 7, 8, 9), most focus predominately on a single causal characteristic for each crash, attributed largely to failures by the driver. This is despite other factors (and interactions between factors) like the environment, road, and vehicle also contributing to crashes (9, 10). Unfortunately, most studies did not investigate the circumstances leading up to the crash, nor looked at the interaction between risk factors across levels of the road transport system. In-depth studies contain information of significant value for identifying crash prevention strategies including the opportunity to look at the multivariate relationships between the factors that contribute to crashes.

The systems thinking approach to crash analysis and road safety acknowledges the need to consider the wider circumstances of road crashes and interactions between system components to understand how to prevent them and to avoid the trap of automatically blaming the driver (see ACRS Policy Position: A New Systems Thinking Approach to Road Safety).

Current emphasis on outcome indicators

The focus of data-use for road safety is often largely on retrospective crash data where problems are only identified after a crash has occurred – referred to as final outcomes (or outcome indicators; 11). However, additional quality data and information is needed to complement outcome indicators, including intermediate outcomes (or safety performance indicators, e.g., measures of key safety behaviours, safety star ratings of roads, vehicle safety ratings) as well as outputs (or process/implementation indicators; e.g. road safety campaigns, enforcement data, emergency and medical system quality (11, 12). By accurately measuring and monitoring these outputs and outcomes, we can verify their link to road safety performance. This ultimately ensures that less effective outputs are removed, and greater emphasis is placed on outputs with tangible, measurable road safety benefits.

We must also be proactive in capturing data about the changing future transport environment. Transport system changes such as the effects of the gig economy, new technologies (e.g., Connected and Automated Vehicles, Electric Vehicles and e-micro mobility), and new business models and practices (e.g., Mobility as a Service, blockchain authentication) will likely impact road safety. We need to use data and information to manage this impact through better transport planning and policies.

Inadequate road safety data and information can disproportionately impact certain road user groups

The UN Sustainable Development Goal 10 states that we should aim to reduce inequalities within and among countries (13); road safety data and information should be no exception. It is well established that road trauma disproportionately impacts certain road user groups, including but not limited to, First Nations people (14, 15), people of lower socioeconomic background (16), and people living in regional and remote communities (14, 17, 18, 19).

We must ensure that enhancements are made to actively collect, appropriately analyse, and widely share data and information that shows how and why any groups are disproportionately affected. This will enable the development of solutions and countermeasures that equitably support all road user groups.

Recommended policy actions

1. Develop consistent national collections of fatal crash and road fatality data.
    a. Develop a straightforward electronic data collection system, consistent across all jurisdictions, to collect a clearly defined minimum dataset used by enforcement agencies and crash investigators.
2. Establish consistent national serious injury crash datasets.
    a. Road and health agencies should require all cases of road transport injury within the admitted patient database should be flagged, with patients completing a simple online form containing critical information about the basic circumstances of the casualty crash.
3. Conduct system thinking analysis of the circumstances of casualty crashes.
    a. Governments should fund large studies of the wider circumstances of casualty crashes, coordinated and managed by a national body, repeated periodically and conducted through a ‘no-blame’ approach.
4. Enhance the use of data to improve road safety for the future.
    a. Governments should commit to ensuring that research, monitoring and evaluation of road safety outputs are embedded in all stages of delivery, including data about all aspects of the road system such as crash data, road infrastructure and assets (including speed limits), population, demographics, socio-economic factors of road users, licensing and registration data as well as qualitative data about participants in the road system.
    b. Broader emphasis on safety performance indicators and measures of outputs to proactively identify risks before a serious crash occurs (e.g., measure of safety star ratings of roads and key safety behaviours of road users).
    c. Road safety professionals and agencies should improve the collection, analysis and sharing of road safety data to address current inequalities in road trauma amongst various road user groups.

ACRS actions

1. Raise awareness of the critical role that data and information plays in road safety.
2. Support key participants in the road system and facilitate the development and wider dissemination of a consistent 'minimum fatal crash data', as well as 'serious injury crash data' collection systems.
3. Advocate for large scale in-depth crash analyses to be conducted regularly.
4. Encourage governments to prioritise quality research, monitoring and evaluation of road safety outputs.
5. Advocate for data and information to be equitably collected, analysed, and shared to better support road user groups disproportionately impacted by road trauma.

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