



ACRI Rail Knowledge Bank update

Developed and maintained by the ARRB Group under the National Interest Services (NIS) program, the ACRI Rail Knowledge Bank is a managed online resource for the rail industry.

For more information, visit the ACRI website at www.acri.net.au, or you can [click here](#) to visit the Rail Knowledge Bank page directly.



New to the ACRI Rail Knowledge Bank

If you would like your name/organisation added to the ACRI Rail Knowledge Bank alert list, simply email rail@arrb.com.au with your request.

The primary, although not exclusive, focus is material relevant to an Australasian audience and is updated monthly. The Rail Knowledge Bank has grown in a range of subjects, including:

Light Rail

[Knowledge of the concept Light Rail Transit: exploring its relevance and identification of the determinants of various knowledge levels](#)

This paper explores the knowledge of the concept 'Light Rail Transit' (LRT) in the context of implementing a Light Rail system in a (sub)-urban region. To this end, three models are estimated: the first explores the role of knowledge on modal choice, second identifies the determinants of the level of knowledge and the third identifies the determinants of a cognitive mismatch between actual (real) knowledge and perceived knowledge.

[Performance of Australian light rail and comparison with U.S. trends](#)

Light rail transit (LRT) has re-emerged as an inner-city transit investment in Australia. U.S. service levels grew substantially more than service levels in Australia did during this same period. However, the outcome was that, although Australian service effectiveness grew by 20%, service effectiveness in the United States fell by 8%. Recently, Australian LRT planning has focused on the so-called streetcar struggle i.e. the action taken to reduce congestion effects of growing road traffic on LRT performance.

Park and Ride

[Strategic station access planning for commuter rail: balancing park-and-ride with other modes](#)

Park-and-ride is the dominant use and the preferred access mode for most riders. Many transit agencies are trying to reduce their reliance on park-and-ride facilities and encourage greater access by more sustainable modes. The TCRP Report 153: Guidelines for Providing Access to Public Transportation Stations outlines a process to identify multimodal access priorities at high-capacity transit stations, and to weigh the benefits and trade-offs. This paper presents a case study analysis of how this station access planning process could be adapted and applied to a commuter rail network.

[Are park-and-rides saving the environment or just saving parking costs? Case study of Denver, Colorado, light rail system](#)

Although park-and-rides are intended to increase transit ridership, such facilities may carry paradoxical environmental consequences. At issue is the degree to which such a multimodal car-to-transit trip actually offsets GHG emissions. The study reported in this paper examined single-occupancy vehicle (SOV) park-and-ride users in the Denver, Colorado, metropolitan area and evaluated the magnitude of GHG emissions saved from transit ridership.

High Speed Rail

[An optimization model of energy and transportation systems: assessing the high-speed rail impacts in the United States](#)

This paper presents a long-term investment planning model that co-optimizes infrastructure investments and operations across transportation and electric infrastructure systems for meeting the energy and transportation needs in the United States.

Human Factors

[Countermeasures for fatigue in transportation: a review of existing methods for drivers on road, rail, sea and in aviation](#)

The overall aim with this study was to gather knowledge about countermeasures for driver fatigue (including sleepiness) in road, rail, sea and air transportation. The knowledge has been used as an input for evaluating advantages and disadvantages with different countermeasures and to estimate their potential to be used regardless mode of transportation. The overall judgement was that a just culture, education, possibility to nap and schedules taking the humans limitations into consideration as the most effective countermeasures to fight fatigue, regardless mode of transportation.

Infrastructure / Research and Development

[Finite element modelling of modular precast composites for railway track support](#)

[structure: a battle to save Sydney Harbour Bridge](#)

Railway networks in Australia alone require replacing a large amount of aging timber components in excess of 280,000 m³/a. The replacement of timber track components is responsible for producing greenhouse gas emissions six times greater than equivalent reinforced concrete counterparts. Sydney Harbour Bridge presently experiences similar problem. A feasibility study to develop an innovative solution for the replacement of aging timber transoms installed on the Sydney Harbour Bridge was conducted to evaluate environmental, safety and financial benefits.

[Rail transport: communicating transport research and innovation](#)

This Thematic Research Summary (TRS) has been produced as a part of the activities of the Transport Research and Innovation Portal (TRIP). TRIP collects, structures, analyses and disseminates the results of EU-supported transport research and research financed nationally in the European Research Area (ERA), and selected global research programmes. The research projects are presented in three sub-themes: improving interoperability and safety of national networks; developing rail markets and improving rail management and developing innovative rail technologies.

Level Crossings

[An exploratory comparison of compliant and non-compliant decision making at actively controlled rail level crossings using the decision ladder](#)

Collisions at rail level crossings (RLXs) present an ongoing major challenge for both road and rail safety organisations. Previous research has made little systematic attempt to understand road user decision making at RLXs, with most research relying on observational studies of single road user groups only. In this exploratory study, we applied Rasmussen's (1974) decision ladder (DL) for the first time in the RLX safety context to compare the decision making processes used during compliant and non-compliant encounters at RLXs.

[Assessing driver acceptance of Intelligent Transport Systems in the context of railway level crossings](#)

Intelligent Transport Systems (ITS) have the potential to substantially reduce the number of crashes caused by human errors at railway levels crossings. Such systems, however, will only exert an influence on driving behaviour if they are accepted by the driver. This study aimed at assessing driver acceptance of different ITS interventions designed to enhance driver behaviour at railway crossings.

[From the bush to the burbs: a comparison of driver situation awareness at rural and urban railway level crossings](#)

The problem of collisions between road users and trains at rail level crossings (RLXs) remains resistant to current countermeasures. One factor underpinning these collisions is poor Situation Awareness (SA) on behalf of the road user involved (i.e. not being aware of an approaching train). The aim of this paper is to investigate the differences in driver SA at rural versus urban RLXs. The implications for RLX design and safety are discussed.

[Where do novice and experienced drivers direct their attention on approach to urban rail level crossings?](#)

Crashes at rail level crossings (RLXs) remain a persistent but ill-defined safety issue. This study sought to examine where drivers direct their attention on approach to urban RLXs located in busy shopping strip areas, and whether this differs between novice and

experienced drivers. This study provides important insights into drivers' visual and cognitive behaviour on approach to urban RLXs located in areas of high visual demand.

ALCAM

[The Australian level crossing assessment model](#)

The Australian Level Crossing Assessment Model (ALCAM) has been developed as a direct impact of the need to ensure there is a rigorous defensible process in place to prioritise the treatment of disparate level crossings according to their comparative safety risk. ALCAM is an assessment tool designed to prioritise level crossing safety improvement works as well as assisting in the determination of the most effective treatments at these sites, in consideration of factors including cost.

[Implementing the Australian Level Crossing Assessment Model \(ALCAM\) in Victoria](#)

This paper has been prepared to demonstrate that the Australian Level Crossing Assessment Model (ALCAM) provides a safety assessment tool to be used to assist in the prioritisation of railway level crossings according to their comparative safety risk.

[Adoption of a risk methodology from another jurisdiction](#)

ALCAM was applied to a representative sample of level crossings in New Zealand and the information obtained used to identify issues and their possible resolution, assess likely costs and benefits of applying the model, consider funding options and assist in involving practitioners and decision makers in the process. The major strength of the model was identified as the necessary involvement of, and collaboration between, road and rail authorities in agreeing remedial treatments.

Social Media

[International study of current and potential social media applications in unplanned passenger rail disruptions](#)

This paper presents research on the role that social media play in the management of unplanned passenger rail disruptions. The study incorporated an international survey of 86 agencies on current practice and a case study on social media use in Melbourne, Victoria, Australia. The paper discusses future research and practice opportunities.

TIP

ACRI Rail Knowledge Bank users also have access to *ARRB Knowledge Base* resources via *Search* and *Browse*

The Knowledge Base also holds rail related resources.



The ACRI Rail Knowledge Bank is maintained by ARRB Group through the National Interest Services (NIS). It gratefully acknowledges the support of rail sector bodies including the RTSA and legacy founding body, the CRC for Rail Innovation.

[National Interest Services supporting an informed land transport community](#)

The Rail Knowledge Bank is supported by ACRI and ARRB Group.

ACRI and ARRB Group accept no responsibility for the content of any website link provided in this alert. Inclusion of a website link in this email does not imply any endorsement of website content by ARRB Group or ACRI, or a statement by ARRB Group Ltd or ACRI on the accuracy of any material a linked website may display.

See the [Rail Knowledge Bank Charter](#) for more information on its objectives and structure, and the [Rail Knowledge Bank Collection Development Parameters](#) for resource coverage.

