



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:

Design

[A design study of metropolitan rail carriage interior configuration to improve boarding, alighting, passenger dispersal and dwell time stability](#)

This thesis describes a design study into the creation of an alternative train carriage design based on the physical parameters of Melbourne network infrastructure. Melbourne's network was chosen also for its particularly onerous problems of accommodating both a metro (short trip) system with a lengthy outer suburban service on tracks shared with regional and freight services. The study embraced drawing, computer aided design, physical models and computer simulations to determine the efficacy of suggested concepts.

Environment

[Greening demand chains in urban passenger transport: emissions saving from complex trip chains](#)

The impact of trip chaining (multiple modes, destinations and trip purposes) on greening the demand chain is not well understood. We are unaware of any studies that have investigated the greening of passenger demand chains associated with the complexity of trip chains. The Sydney Household Travel Survey and an econometric model is used to identify the impact that the changing nature of trip chains has on CO2 emission.

Infrastructure and Markets

[NSW rail freight transport and infrastructure](#)

This briefing paper summarises the 2015 NSW freight task, and the administrative, industrial and legal framework that underpins its operations. It outlines the State's freight network, including rail, and discusses the long term capacity issues faced by the rail freight network.

[State of Australian cities 2014-2015](#)

The State of Australian Cities 2014–2015 once again looks at the drivers behind some of the public policy issues facing the country today and into the future. This report examines population growth, economic growth and the increased traffic flows through our ports and airports and on our roads and rail lines.

[The industrial organization of transport markets: modeling pricing, investment and regulation in rail and road networks](#)

This thesis explores the industrial organization of transport markets; that is, the decisions made by non-price taking market participants, the outcomes of those decisions and the ways in which regulators can influence them. It develops methods to model these decisions and uses the resulting models to investigate pricing and scheduling behaviour, investment and optimal regulation under various competitive structures. Transport modes and links are not considered in isolation, but as part of larger networks in which complements and substitutes exist.

Innovation and Investment

[Estimating the wider economic benefits of transport investments: the case of the Sydney North West Rail Link project](#)

This paper develops a practical framework for estimating the wider economic benefits generated from transport investments, illustrated by a real project – the North West Rail Link, a 23 km rail link in north west Sydney, Australia, with an estimated investment of \$8.3 billion.

[Innovation strategy in new transportation systems: the case of Crossrail](#)

This article examines how innovation can be strategically incorporated into transportation systems. Large transportation systems generally have a poor record in systematically integrating innovation in their development, construction and operation. Our research setting is Crossrail, a major new railway traversing London, where the creation and implementation of an innovation strategy formalized and systemized its approach to innovation.

Level Crossing Safety

[Contributing factors of crash injury severity at public highway-railroad grade crossings in the US](#)

The Moving Ahead for Progress in the 21st Century (MAP-21) includes a separate program that supports safety improvements to reduce the number of fatalities and injuries at public highway-

railroad grade crossings (HRGCs). This study identifies the significant factors affecting crash injury severity at public HRGCs in the United States.

[Visibility; Work Zone Traffic Controls; Highway-Rail Grade Crossings 2014](#)

This open access issue of the *Transportation Research Record* contains 14 papers concerned with visibility, work zone traffic controls, and highway-rail grade crossings. Topics include, among others: human factors issues of accidents at passively controlled rural level crossings; train warning times and gate violations and a dual microwave radar vehicle detection system at a four-quadrant-gate railroad grade crossing.

Light Rail

[Light rail transit and residential density in mid-size cities](#)

This paper focuses on the factor of population density adjacent to the light rail corridor with an examination of the changes in density due to light rail in cities comparative to Canberra, Australia. This study establishes a walkable corridor of 1.5km either side of the light rail. Analysis has also been undertaken to compare this wide corridor with a smaller 400 metres either side of the light rail.

Multi-discipline

[Railroads 2014](#)

This open access issue of the *Transportation Research Record* contains 17 papers. Topics include: the influence of size and shape properties of railroad ballast on aggregate packing; railroad track transitions with multidepth deflectometers and strain gauges; slab upwarping of twin-block slab track on subgrade-bridge transition sections; detection of range-based rail gages and missing rail fasteners; track ballast fouling and permeability characterization by using resistivity; the characterization of ballast degradation; a three-dimensional train-track-soil model for high-speed rail; railway infrastructure pricing in Europe for high-speed and intercity services; high-speed rail and air transportation intermodal passenger network design; bicycle network connectivity for passenger rail stations; railway train wheel maintenance models; freight shipment demand in congested rail networks; deadlock avoidance and detection in railway simulation systems; capacity expansion strategies for single-track railway lines with sparse sidings; capacity charges for shared-use rail lines; siding location for single-track lines; load characterization techniques and an overview of the loading environment in North America.

Pedestrian

[Monitoring the performance of the pedestrian transfer function of train stations using automatic fare collection data](#)

Over the last years all train stations in The Netherlands have been equipped with automatic fare collection gates and/or validators. All public transport passengers use a smart card to pay their fare. In this paper we present a monitor for the performance of the pedestrian function of train stations which is based on data from the automatic fare collection system. To our knowledge this is the first study that uses smart card data

in the context of pedestrian behaviour at train stations. To illustrate the added value of the monitor, various applications for a number of train stations are presented.

TIP

"I was looking for but couldn't find" – your [email](#) for suggestions, feedback or help are important and welcome.



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.

