



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

[Attitudes of metro drivers towards design of immediate physical environment and system layout](#)

In this study, the authors examined attitudes of the Tyne & Wear (T&W) Metro drivers towards system design-related factors and their influence on the propagation of driver-related incidents. The system design features assessed include the position of running signals, visibility of different signal types, and platform location in relation to the travelling direction.

[Testing the efficacy of platform and train passenger boarding, alighting and dispersal through innovative 3D agent-based modelling techniques](#)

This paper discusses a body of work concerning the building of a boarding and alighting

simulator at a more detailed scale where a deeper and richer experience of crowd behaviour has been modelled using 3D animated figures. The outcomes of this work have resulted in sophisticated imagery, underpinned by technical accuracy that provides a tool for the development of station infrastructure, train carriage design with implications on timetabling and network planning.

Driverless Trains

[Public perception of driverless trains](#)

The global trend for rail automation is increasing but there are very few publications on public perception of the ongoing changes in the railways. In order to fill this gap and to better understand people's perception of driverless trains, the paper focuses on automation of metro systems with a particular interest in unattended train operation (UTO).

Efficiency

[The circumvention of barriers to urban rail energy efficiency](#)

As energy prices rise, urban rail energy efficiency becomes even more important. Many technological, operational and policy-based energy efficiency measures are well known and can have a notable positive effect on the urban rail systems. However, these measures can remain unimplemented. This lack of action can often be attributed to a variety of conflicting stakeholder opinions and a lack of knowledge transfer. This paper firstly focusses on the energy efficiency requirements of various stakeholders, before discussing about how such conflicts can be circumvented to ensure the success of future energy efficiency projects.

[Evaluation of railway traffic control efficiency and its determinants](#)

The paper examines the efficiency of railway traffic control. In spite of large-scale migration strategies towards centralised signal boxes (traffic control centres), railway traffic control still remains a labour-intensive process in many European countries. In close collaboration with experts from Infrabel, the Belgian railway infrastructure manager, we develop a two-stage benchmarking framework which assesses and explains railway traffic control efficiency.

Network

[A dynamic network analysis of the information flows during the management of a railway disruption](#)

Railway systems experience disruptions on a daily basis. We test the use of Dynamic Network Analysis as a methodological tool in order to investigate the communication patterns during the dynamic process of disruption management. The tool was applied to a simulated case of a catenary failure in the Dutch railway system.

[Passenger stability within moving railway vehicles: limits on maximum longitudinal acceleration](#)

Increasing the acceleration and deceleration of trains within a railway network can improve the performance of the system. However, the risk of passengers losing their balance and falling is also increased. The purpose of this paper is therefore to examine the effect of longitudinal vehicle accelerations on passenger safety and comfort.

Public Transport

[2015 fare benchmarking report](#)

The benchmarking survey is intended to contribute to the public debate about fares and fare levels. It uses publicly available data about public transport fares across 24 cities in Australia, North America, Asia and Europe to provide cities with information about where they sit relative to their peers.

[Differentiating metropolitan transport disadvantage by mode: household expenditure on private vehicle fuel and public transport fares in Brisbane, Australia](#)

Public transport (PT) has become important in everyday travels in Australian cities. Rising PT

fares create a competitive disadvantage against private motor vehicles which is threatening PT ridership. This paper seeks to gain further insights into transport disadvantage by exploring spatial patterns of household transport expenditure on PT fares and private vehicle fuel use for the Brisbane metropolitan area.

[Empowering people with disabilities using urban public transport](#)

Today's public transport is not easy to use by people that are physically impaired or suffering from mental problems. Traffic planning today is driven by online time tables calculating the optimal way to use public transport in terms of time and costs. Unfortunately, this is not suitable for a group of travellers having constraints in using vehicles, vehicle types or particular stations for health reasons. This paper shows an approach developed within the project "mobile" funded by The German Federal Ministry of economy and energy (BMWi) that supports this kind of users while traveling by public transport.

Railway Track

[Comparative assessment of virtual track circuit based on image processing](#)

For urban rail track, it is important to detect the presence of the tram or light train in black spots (like urban tunnels, bridges and low visual contact). The classical solution is to use track circuit which is safety oriented designed. The paper proposes a virtual track circuit as an alternative solution.

[Investigation of geogrid-reinforced railroad ballast behaviour using large-scale triaxial testing and discrete element modelling](#)

This paper presents findings from an ongoing research study at the University of Illinois aimed at quantifying the effects of geogrid reinforcement on the shear strength behaviour of railroad ballast. The effects of two geogrid types on ballast shear strength were evaluated through laboratory testing and numerical modelling.

[The effect of railway local irregularities on ground vibration](#)

The environmental effects of ground-borne vibrations generated due to localised railway defects is a growing concern in urban areas. Frequency domain modelling approaches are well suited for predicting vibration levels on standard railway lines due to track periodicity. However, when considering individual, non-periodic, localised defects (e.g. a rail joint), frequency domain modelling becomes challenging. Therefore in this study, a previously validated, time domain, three-dimensional ground vibration prediction model is modified to analyse such defects.

Transport management

[Activity centres: making land use and transport work: phase 1: stations in or near freeway medians: reconciling node/place conflicts](#)

This report presents the findings of an analysis of 13 stations with associated activity centres in order to understand their performance as transport nodes, providing access to places and activities, and places for living, working and recreating.

[Study on the cost and contribution of the rail sector: final report](#)

The primary objectives of this study are to provide a 'broad brush' analysis of the trends in overall performance of different national rail systems; and conduct a scenario analysis assessing the potential societal benefits of a better performing rail sector.

[The big three: Facebook, Twitter and Video are DOTs preferred social places \(Talking Transportation, United States\)](#)

A short analysis of trends identified in AASHTO's 2015 survey of social media usage by US state departments of transportation. [Click here to view recent webinar on social media usage by US state departments of transportation](#)



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. The Rail Knowledge Bank was originally funded by 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.

