



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.

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GROUP

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 World Congress in Railway Research (WCRR) is a biennial international conference which focusses on railway research, development and innovation. The most recent event took place on 29 May 2016 in Milan, Italy.

SPARK hosts the [research papers](#) from 2016. These join all papers from [past congresses](#) already held on SPARK.

Bus Bridging

[Economic viability of bus bridging reserves for fast response to unplanned passenger rail disruption](#)

A new approach explores the economic viability of dedicated bus reserves purely for bus bridging purposes. It estimates fleet costs and user benefits of reduced delay by improving the response to unplanned rail disruption. The feasibility of dedicated bus reserves has not been considered in previous research.

Connectivity

[Quantifying the value of internet access: mobile connectivity](#)

Detailed UK research to understand how rail users use and value on-train mobile connectivity (voice and internet), to provide more detailed valuations of the benefits of on train mobile connectivity disaggregated by level of provision and journey type.

Environment

[Time-based life-cycle assessment for environmental policymaking: greenhouse gas reduction goals and public transit](#)

As decision-makers increasingly embrace life-cycle assessment (LCA) and target transportation services for regional environmental goals, it becomes imperative that outcomes from changes to transportation infrastructure systems are accurately estimated. Greenhouse gas (GHG) reduction policies have created interest in better understanding how public transit systems reduce emissions.

[Tomorrow's railway and climate change adaptation: final report](#)

The overall objectives of this project are to enhance and disseminate knowledge within the British railway industry about: How the UK climate and weather is projected to change in the future; The current impacts of climate change and extreme weather on the GB railway, and the projected future impacts; What the GB railway industry is already doing to respond and adapt to the potential impacts of projected climate change and extreme weather; What else the GB rail industry can do to respond and adapt to the potential impacts of projected climate change and extreme weather over the short, medium, and long term, and What additional decision support frameworks, approaches and tools the GB rail industry requires in order to take cost-effective action to respond and adapt to the potential impacts of projected climate change and extreme weather.

High Speed Rail

[High-speed rail transport and its implications for different types of cities and territories](#)

This journal issue contains eleven open access papers concerned with high speed rail.

[The impact of personality on driving safety among Chinese high-speed railway drivers](#)

This study explored the impact of personality traits on driving safety in high-speed railway drivers.

Human Factors

[Remedial actions to prevent suicides on commuter and metro rail systems](#)

The present study reviewed current efforts of commuter railroads to reduce or prevent suicide on railways and discussed preventative activities affecting rail related suicides.

Maintenance

[Assessing the cost impact of competitive tendering in rail infrastructure maintenance services: evidence from the Swedish reforms \(1999 to 2011\)](#)

Sweden progressively opened up the market for rail maintenance services, starting in 2002. The cost impacts based on an unbalanced panel of contract areas between 1999 and 2011, using econometric techniques are studied. Competitive tendering costs were reduced by around 12%. This cost reduction was not associated with falling quality as measured by track quality class, track geometry or train derailments.

Policy

[The fourth railway package: another step towards a single European railway area: in-depth analysis](#)

The aim of this publication is to present the content of the fourth railway package and its objectives, against the backdrop of existing EU rail policy framework. The publication presents the positions of the co-legislators during the ongoing legislative process as well as different stakeholder viewpoints and reactions.

[Guidance for new policy developments on railway noise and vibration](#)

Noise and vibration are two of the main problems associated with railways in residential areas. To ensure quality of life and well-being of inhabitants living in the vicinity of railway paths, it is important to evaluate, understand, control and regulate railway noise and vibration. Much attention has been focused on the impact of noise from railway traffic but the consideration of railway-induced vibration has often been neglected. This paper aims to provide policy guidance based on results obtained from the analyses of relationships estimated from ordinal logit models between human response, railway noise exposure and railway vibration exposure.

Rail Track

[Experimental and discrete element modeling of geocell-stabilized subballast subjected to cyclic loading](#)

This paper presents a study of the load-deformation behavior of geocell-stabilized subballast subjected to cyclic loading using a novel track process simulation apparatus. The tests were conducted at frequencies varying from 10 to 30 Hzs. This frequency range is generally representative of Australian standard gauge trains operating up to 160 km/h.

[Influence of rail track properties on vehicle-track responses](#)

This paper presents an investigation, using a numerical approach, of the dynamic response of the vehicle-track system as a function of the mechanical properties of high-speed rail track components. In particular, in this study the stiffness of the rail pad, ballast and sub-grade layer were considered as variable parameters.

Marginal railway track renewal costs: a survival data approach

1 In this Swedish paper, renewal costs for railway tracks are investigated using survival analysis. The purpose is to derive the effect from increased traffic volumes on rail renewal cycle lengths and to calculate associated marginal costs.

Safety

Degradation of fluorescent high-visibility colors used in safety garments for the Australian railway industry

This study investigated the compliance of four fluorescent orange high-visibility garment substrates that are predominantly used in the Australian railway industry. While Special Purpose Orange (SPO), a shade of the Fluorescent orange (FI-orange) is recommended by most Australian states as the high-visibility background color of a safety garment, there appear to be variations in the background color of clothing used by line-workers and rail contractors. The color of the garment was assessed for compliance with the Australian Standard AS/NZS 1906.2.2010 for high-visibility materials for safety garments. The results were also compared with ANSI Z535.2011 and BS EN ISO 20471.2013 Standards.

Exploring causes of tram-involved crashes using a random effects negative binomial model

Safety is an overriding concern in design, operation and development of light rail systems including trams or streetcars. The aim of this study is to identify key traffic, transit and route factors that influence tram-involved crash frequencies along tram route sections in Melbourne, Australia.

Non-crossing rail-trespassing crashes in the past decade: a spatial approach to analyzing injury severity

Transportation professionals have long recognized the harm of trespassing along railway rights-of-way. However, the non-crossing rail trespassing issue has received less attention compared with highway–rail grade crossing crashes, despite the fact that nearly 8800 rail-trespassing crashes occurred on non-crossing rail tracks during the past decade with a large number of them resulting in fatality. Also, geographic and socio-demographic diversity within the US implies that trespassing crash severity and its correlates may vary across geographic entities or regions. The purpose of this paper is to investigate these issues using rail-trespasser crash data maintained by Federal Railroad Administration (N = 8794 over 2004–2013).

Perceptions of crime prevention through environmental design (CPTED) at Australian railway stations

Personal safety and security are essential criteria for measuring the quality of public transport, and research has consistently demonstrated that crime and fear of crime affect levels of patronage. Although authorities throughout the world are implementing Crime Prevention Through Environmental Design (CPTED), research and practice commonly focus on the elements of surveillance, territoriality, and controlling access. Few studies have investigated the CPTED concepts of “image management” or “geographical juxtaposition” (the surrounding environment). This research compares and contrasts the perceptions of rail users and security experts in relation to two railway stations in Perth, Western Australia.

Scheduling

[A new multi-objective model to optimise rail transport scheduler](#)

The sugarcane transport system plays a critical role in the overall performance of Australia's sugarcane industry. An inefficient sugarcane transport system interrupts the raw sugarcane harvesting process, delays the delivery of sugarcane to the mill, deteriorates the sugar quality, increases the usage of empty bins, and leads to the additional sugarcane production costs. Due to these negative effects, there is an urgent need for an efficient sugarcane transport schedule that should be developed by the rail schedulers. In this study, a multi-objective model using mixed integer programming (MIP) is developed to produce an industry-oriented scheduling optimiser for sugarcane rail transport system.



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

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



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