Use of Passenger Loading Data to Influence Behaviour, and Provide an Improved Experience for Passengers and Operators Alike

Investigating passengers’ potential response to information about crowding and seating availability
Does information about crowding levels or seating availability encourage passengers to change their behaviour, and could this reduce crowding?

Background

The rail industry collects a significant amount of data about the performance of train services, facilities at stations and on-board trains, data about rail assets and for other planning, operations and management purposes. Train companies also create various types of data associated with the provision of their rail services, including fares, timetable and routes. They use this data to provide rail travel information to their customers in a variety of ways, including through approved websites, via mobile phone apps and at stations.

To date, much of this data has been kept locked in its originating systems, however more of it is now being turned into information for staff and customers and this trend will continue as will the willingness of the industry to share this information with third parties. This has the potential to transform the way the rail industry plans, operates and manages the network and at the same time it will provide a greater understanding about the movement of people and freight.

In the past, much of the rail data has been dealt with in silos or available only in systems with restricted access. With a programme of system renewals and replacements, more data is potentially becoming available but major issues exist around matching and joining data and, in certain cases, preserving confidentiality and security. A key challenge is bringing data together from different sources to allow travellers to make better travel decisions.

Aims

The aim of the research was to determine whether providing information about crowding levels or seating availability would encourage behavioural change amongst passengers. It studied the potential reactions of different groups of passengers to crowding information, and the impact of the way in which the information was presented.

Findings

Passengers travelling on Gatwick Express services between London, Gatwick Airport and Brighton were shown sample information about crowding levels, in order to investigate whether it would encourage them to change their behaviour. A key measure was their willingness to wait at the station for a later (less crowded) train, estimated in terms of potential waiting time. Passengers catching a flight from Gatwick Airport were least willing to wait for a later train (11 minutes). Leisure passengers without a flight to catch and commuters were reasonably willing to wait. Non-commuting business passengers were the most willing to wait (25 minutes).

The research also found:

- Text-based information about the number of seats available was more influential than colour-coded graphics showing crowding levels;
- Information about crowding in carriages would encourage passengers, particularly non-commuting business passengers, to spread out along platforms and board where the train was less crowded, although commuters also valued proximity to ticket barriers at their destination station highly;
- Passengers planning journeys in advance typically preferred earlier trains, even when all trains were crowded, and the suggestion was that this was partly due to a lack of confidence in the reliability of the service.
Impact and benefits

The results suggest that information alone is not enough to influence the behaviour of commuters sufficiently to significantly reduce peak time crowding problems. However, information can be influential and beneficial, particularly for passengers who wish to use travel time productively, such as non-commuting business travellers. Operators should also consider the perceived reliability of the service as a significant factor in passengers’ responses to crowding information. Ultimately, helping passengers to understand when trains might be crowded can empower them to feel more in control and improve overall customer experience.

Method

Surveys were conducted on the Gatwick Express between London and Brighton, and comprised five sections:

- Participant consent and basic demographics.
- Participant journey details and perceptions of comfort, crowding and reliability.
- Stated preferences concerning information about train crowding levels provided before the journey commences e.g. via a smartphone app or ticket booking website.
- Stated preferences concerning information about train crowding levels provided at the station before boarding.
- Stated preferences concerning information carriage crowding levels provided at the station before boarding.

"The work undertaken by Dr Pritchard and his team is influential in terms of how we improve passenger loading and maximise train capacity at GTR and also across the industry. The findings inform future rail projects, especially the new Gatwick Station Redevelopment, where maximising rolling stock and platform capacity and how we display this information will be of the utmost importance."

Stephen MacCallaugh of Govia Thameslink Railway

Next steps

As part of the wider TOC ’15 initiative the project team is working with Govia Thameslink Railway to investigate methods of monitoring and reporting passenger loading to improve the accuracy of crowding information. This work will involve system trials on selected routes and an analysis of actual passenger responses. A better understanding of how passengers react to information will allow train operators to better manage crowding and capacity issues and improve the overall customer experience.

Where to find out more

This project was led by the University of Southampton as part of an RSSB/ATOC funded programme of work on “Data to Improve the Customer Experience”.

The technical report and this Research in Brief are available at www.sparkrail.org

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Figure 1 - An example set of text-based stated preference choices

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Figure 2 - An example of graphical stated preference choices

A pilot study in February 2016 yielded 90 responses. The full study in April 2016 yielded a further 400 responses.