

Crowd management on trains

a good practice guide



Rail Safety & Standards Board

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About this guide

This document is an operational- and design-based guide to support those involved in the management of on-train crowding.

This guide will introduce you to a range of 'how to' practices, under key topic areas. These potential tools have been applied with success in service and are generally recent and recommended ways to manage on-train crowding.

It is not the intention of this guide to suggest that 'one-size fits all'. The focus is to encourage users to develop new ideas that support your particular train services, staff and passengers.

The information within this guide has been developed following passenger behaviour studies and collaboration with Train Operating Companies (TOCs), Network Rail, passenger and accessibility representatives and the British Transport Police (BTP).

You may also find it helpful to refer to a related RSSB guide, 'Crowd management at stations'.

Who is this guide for?

This guide has been developed for anyone directly involved in, or who indirectly influences, the management of passengers on trains:

- Train and station front line staff, assisting passengers on a daily basis
- Station duty managers, directing staff and making tactical decisions
- Train and station operating company senior managers, defining crowd management procedures
- Rolling stock designers, influencing passenger distribution through coach or carriage layouts

This guide does not provide information relating to on-train crowding in emergency situations. Reference to additional guidance is provided in the 'Further information' section of this guide.

Summary of contents

This guide is divided into the following sections:

Introduction

Outlines the context of this operational- and design-based guide. It also identifies where this guide fits into the strategic work being undertaken by the Department for Transport and other industry bodies.

Passenger behaviour

Provides an overview of key passenger behaviours, identified from extensive passenger research, that are affected by or influence crowd-developing and crowded situations.

The 'introduction' and 'passenger behaviour' sections may be of interest to all readers.

Further information

Reference to other relevant documents.

'How to' practices

Five topics outlining measures for managing crowding on trains and platforms. All topics may be of interest, however we have highlighted particular groups after each heading in brackets.

- Company wide-practices (operating company senior managers)
- Passenger information (duty managers and front line staff)
- Crowd control (duty managers and operating company senior managers)
- Passengers' luggage (all staff)
- Rolling stock design (rolling stock designers)

This guide has been produced by Davis Associates Ltd for the Rail Safety and Standards Board (RSSB). Further assistance can be obtained from RSSB: contact Michael Woods, Head of Operations Research or email research@rssb.co.uk

Introduction

The providers of passenger services on the rail network in Great Britain have an important role in maintaining safety, operational performance and passenger satisfaction.

This 'how to' guide has brought together a range of practical suggestions to improve how you could manage passengers before and during busy on-board situations.

These suggested practical measures are presented within five topic areas, these being:

- Company-wide practices
- Passenger information
- Crowd control
- Passengers' luggage
- Rolling stock design

Whether crowding is caused by local events, peak passenger flows or service route problems, there are real benefits to be gained by implementing practical measures.

Certain measures may be particularly relevant during different contexts, such as:

- Rail service disruption
- Rail network planned event
- Planned external event
- Unplanned external event

However, the way in which measures have been presented within this guide will allow you to further develop and implement measures that are fit for your particular purpose.

Crowding definitions

One of the most important issues in managing crowding is to understand what this means to your passengers. There is a very distinct difference between density and crowding:

- **Density**

This is a quantitative measure of the number of passengers in a given space. This may be expressed per square metre of standing space, or as a percentage of carriage capacity.

- **Crowding**

This is a purely subjective term, not measured in numbers, but by the perception of your passengers, relating to peoples' perception of crowds. Research has shown that perceptions of crowding are influenced by a range of factors, including but not limited to:

- restricted movement
- standing space
- journey duration
- availability of handholds
- expectations

These crowding perceptions are important factors in how your passengers feel and behave when in crowd developing and crowded train situations. They should inform all the decisions you make when developing measures or implementing design changes for managing crowding.

Government strategies

This guide is a practical operational- and design-based document. It fits within a broader programme of activities to accommodate increases in passenger numbers on Britain's railway network.

This programme includes current and future planned government and TOC strategies, including but not limited to:

- Current and planned investments
- Purchasing of additional rolling stock capacity
- Increasing infrastructure capacity, for example platform lengthening

If you would like more information on this wider programme of works, please contact the Department for Transport.

Passenger behaviour

A passenger-centred approach is the key to successful management of on-train crowding. By understanding the needs, emotions and motivation of your passengers you can develop efficient and effective crowd control practices. This applies to both operational management and rolling stock design.

So why do your passengers behave the way they do in crowd-developing and crowded trains?

- **Why do seats remain empty when the vestibule is packed with standees?**

Passengers can feel uncomfortable asking others to move out of the way. They may also wish to minimise any contact with fellow travellers by not pushing through to available seats.

- **Why won't passengers move down inside the train?**

Other passengers' seat selection, such as sitting in the aisle seat, can discourage passengers from taking a seat. The available standing space may also be too close to a seated passenger's personal space.

The lack of easily reachable handholds may also discourage movement down inside the train.

Other passengers' behaviour, such as standing in the vestibule, may suggest that no seating is available within the train.

- **Why do passengers give up looking for a reserved seat?**

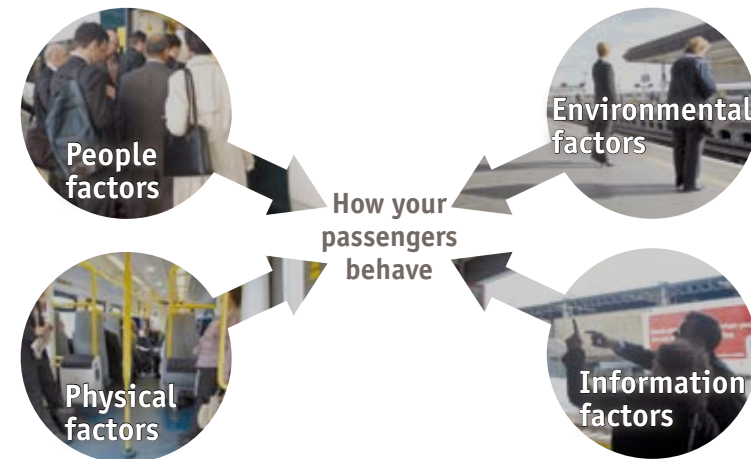
It may be easier to choose available seating close to where they boarded the train, rather than drag bags and suitcases or push past others to reach their reserved seat.

The answers to questions like this provide the foundations for the measures outlined in this Good Practice Guide.

In this section we will introduce you to passenger behaviours and how they result in crowding patterns on the train and platform.

Behaviour influencing factors

The latest research indicates that each passenger has a range of factors which will influence their behaviour and where they choose to position themselves on the platform and the train. Through journey experience trials and interviews we can now identify and categorise those factors under four broad headings.



- **People**

People factors affecting the individual, for example perception of personal space and the impact of behaviours affecting other passengers, such as the speed at which other passengers alight.

- **Physical**

Physical train and platform factors affecting passenger behaviours, such as the position of seats and grab rails, platform size and position of entrances and exits.

- **Environmental**

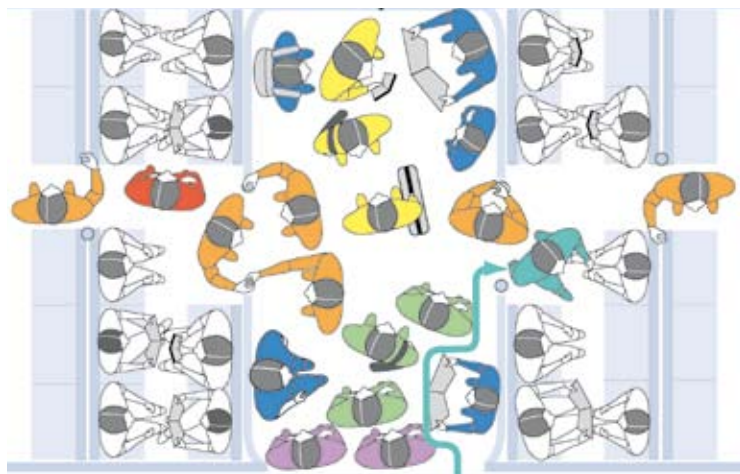
Environmental factors affecting passenger behaviours, such as weather conditions.

- **Information**

Information factors, such as visual cues via platform or on-board displays, or audible messages via platform and on-train announcements, affecting passenger behaviours.

Some of these influencing factors are beyond your control. Passengers' level of experience and personal confidence when travelling is something they bring with them.

Many of the factors together result in patterns of behaviour you can observe on the train. These patterns we have referred to as crowd 'characters'. The illustration below shows some typical standing positions as the carriage seats become occupied.



Each of these characters can be described in terms of their behaviour and the underlying reasons:

Sentinels

Standing passengers positioned in the corners of the vestibule, normally leaning against the draught screen. Influencing factors may include: need to be close to the door, a short journey duration, not wanting to stand amongst seated passengers.



Blockers

Standing passengers who hold on to or lean against the grab rails. These passengers can often block the access to the aisle for other passengers. Related influencing factors may include: a lack of suitable holding points further along the aisle or lack of confidence to stand amongst seated passengers.



Midfielders

Standing passengers that are not able to travel in either the Sentinel or Blocker positions but are reluctant to move down the aisle, so stand in the middle of the vestibule. Influencing factors may include: short journey duration or not wanting to ask others to move into available space.



Hostages

Standing passengers that board an already crowded vestibule and have no other option than positioning themselves where they can most comfortably fit. Their choices for moving are limited because of other passenger behaviours and positions within the train.



Seat snatchers

Passengers that stand in the best position to occupy a seat once someone else leaves. Related influencing factors may include: the importance of finding a seat for their journey, journey duration and not wanting to feel surrounded by other standing passengers.



Heroes

Passengers who fight their way through the crowded vestibule to the space available in the aisle or to an available seat. Related influencing factors may include: a long journey duration, wanting a seat or more space to stand.



Opportunists

Passengers boarding an already full vestibule area, typically squeezing on just before the doors close. Related influencing factors may include: time restriction or desire not to wait for the next train.



By understanding these characters and the many other factors which influence your passengers' behaviours, you can start to plan your operational- or design-based measures to support these. More information on influencing factors can be found in the following report on the RSSB website:

'Final Report, Management of on-train crowding'

Further information

Association of Train Operating Companies, 'Guidance note: The training of on train staff in on train emergency procedures', ATOC/GN003 Issue 4

Association of Train Operating Companies, 'Good practice guide: Responding to the failure or non-availability of on-train air-conditioning' ATOC/GPG004

Health and Safety Executive, 'Managing crowds safely: A guide for organisers at events and venues' HSG154

Health and Safety Executive, 'The event safety guide' HSG195

Rail Safety and Standards Board, 'T605: Final Report, Management of on-train crowding'

Rail Safety and Standards Board, 'Crowd Management for Stations: Good practice guide'

Rail Safety and Standards Board, 'T592: Management of football fans on the railway'

Training courses:

Emergency Planning College, York

- Introduction to crowd and public safety management
- Crowd dynamics

1 Company-wide practices

Train crowding
good practice
guide

Although front-line staff may bear the greatest workload when managing crowds, good practice starts at the very highest levels of your company. Research has shown that a passenger-focused company approach to the management of platform and on-train crowding delivers positive benefits. These include lessons learned from past problems, improved customer satisfaction and targeted training for staff.

- 1.1 Selecting staff
- 1.2 Hearing what your passengers and staff have to say
- 1.3 Teaching staff about crowding and passenger behaviours
- 1.4 Involving all staff
- 1.5 Establishing communication and planning relationships
- 1.6 Co-ordinating crowd management plans
- 1.7 Adopting a company-wide crowding strategy

1.1 Selecting staff

Why

Front-line staff will have to deal with an array of situations involving large numbers of passengers. Those that can interact and respond to your customers in a people-focused way will have a positive impact on crowding situations.

How

In addition to other fundamental selection criteria, do your recruitment procedures have measures in place for selecting staff based on a range of interpersonal skills?

Your passengers may not always understand why you need to implement particular practices. However, they are more likely to cooperate if instructions are perceived as appropriate. Do your selection criteria address methods of speaking with non-rail users, interpreting rail information and conveying this in a useful and direct way to your passengers?

Your selection criteria would also benefit from using replica real-life situations to assess how your staff would communicate with passengers and how well they would cope in choosing the correct methods for conveying information.

Consider with

- 1.4 Involving all staff
- 1.3 Teaching staff about crowding and passenger behaviours
- 2.1 Improving your written and audible information

1.2 Hearing what your passengers and staff have to say

Why

Your front-line staff are suitably positioned to provide feedback on issues relating to on-train crowding. Passengers can also provide suitable feedback, which could be used to target initiatives for improved management of crowding.

How

Do you have systems in place for capturing staff feedback? Have you considered providing some form of question and response sessions between staff and senior management?

There are various ways of doing this, such as written questions and responses or more direct sessions where staff are invited to put their questions and concerns forward.

Passenger feedback may be provided through direct sessions with managers, focus groups or through online or written responses. It may also take the form of consultation with individual passengers or representatives.

Specific sessions could be aimed at on-train crowding issues for both staff and passengers.

During any of these feedback sessions, whether spoken or written, clear guidelines should be provided to respondents on the appropriate use of words to ensure information received is relevant.

These feedback systems have an important role in creating and maintaining positive staff and passenger relationships. However, they also provide opportunities to target on-train crowding issues and help to influence appropriate changes.

Consider with

- 2.1 Improving your written and audible information

1.3 Teaching staff about crowding and passenger behaviours

Why

Staff will understand and respond appropriately to how passengers behave and how they are affected by crowd-developing and crowded situations.

How

Training should provide staff with an understanding of crowding issues and associated passenger behaviours. It should also enable them to recognise and take direct action on these issues.

Consider developing subjective guides to help your staff identify when and where they need to take action. Subjective guides may use a range of key passenger traits, such as age, mobility and their journey length to help define when measures should be implemented by staff.

Subjective guides may also use physical attributes, such as standing space occupied or available, to help define when a measure may need to be implemented.

It is considered good practice to work together with your staff when identifying these subjective guides. For example, if you plan to implement a safety measure when crowding levels reach a particular point, consult with your staff about the key visual cues that they can easily identify and use to implement the appropriate measures at the right time.



Your training could provide an understanding of the following:

- **Passenger behaviours**
The behaviours exhibited by passengers during crowd developing and crowded situations, such as the crowd characters. Specific Crowd Management training can highlight core practices and show the importance of implementing the right practices at the right time. Front-line managers and those managing crowding on a regular basis may benefit from this.
- **Passenger perception of crowding**
How passengers feel and why they respond in particular ways. Their perception of crowding is very different to methods for calculating passenger density.
- **Behaviours affecting operational issues**
Passenger behaviours that strongly affect operational issues. These will require your staff to apply the correct measures in an assertive manner, yet be understanding of passengers' needs.
- **Passenger information needs**
What support passengers need to make decisions and to respond appropriately to requests made by your staff. The role of appropriate and timely provision of information.
Have you considered using scripts, or defining key pieces of information for your staff to convey that will positively impact on passenger behaviours?

Explore the research section of this guide and the 'T605 Final Report'. This should help you to identify key passenger behaviours.

Consider with

- Passenger behaviour (page 8)
- 1.1 Selecting staff

1.4 Involving all staff

Why

Passenger-focused training and involvement is important for staff in both a customer-facing role as well as those in managerial positions.

How

Do all your relevant staff, including managers, have some form of training in understanding crowding issues and passenger behaviours?

Have you made sure that all staff, who will have some impact on crowding, are involved in information updates and changes to procedures?

Many station-based staff consider train drivers and guards an integral part of the on-train crowd management process. This is especially during crowd-developing situations, when they can positively affect the situation before arriving at a station.

Are your on-train staff given guidance on how and when to do this?

Consider giving guidance such as the use of targeted announcements during specific situations to prepare on-train passengers before arriving at a station. For example, telling passengers that the next station is busier than normal and to minimise delays, it would be helpful if they moved away from the doors and further down the aisles.

It is also important for staff to be presented with a clear understanding of the benefits, both passenger- and operational-based, for why they should implement practices. This is particularly important if staff are not aware of the positive benefits it can bring, especially if these affect the crowding situation at other locations.

Consider setting up methods, such as scenarios, where staff can observe passengers to see how the issues need to be dealt with and the resulting outcome.

Consider with

→ 1.1 Selecting staff

→ 1.3 Teaching staff about crowding and passenger behaviours

Case study

An approach that has been successfully tried is for on-train staff to be shown the benefits of initiating communication links with other staff.

In this case, staff were shown why they need to initiate communications links with service control to inform them when their trains are considered very crowded.

What may appear to on-train staff to be unhelpful information, this is actually being used to implement other practices at upcoming stations to improve crowding levels on trains. For example, giving passengers information as early as possible about alternative services they can take.



1.5 Establishing communication and planning relationships

Why

Some of your crowd control practices may require the support of other TOCs, transport providers, network infrastructure managers and external links, such as the BTP, the media and event organisers to ensure complete success.

Planned communication and procedure links between TOCs and other transport providers can reduce staff workload, ensure actions are initiated early and manage situations appropriately.

How

To improve the success of your planned communication links, consider the following questions: Why, Who, When, How and What.

- **Why** do you need these communication links? Make it clear to staff the benefits in doing so.
- **Who** needs to be involved and informed? Identify those that should provide and receive the relevant information.
- **When** do communication links need to be initiated? Identify situations when plans need to be put into place.
- **How** will your staff manage the situation? Identify what measures and communications they will initiate.
- **What** information will be transferred between the relevant parties? Identify what information needs to be provided to help manage the situation appropriately.

Co-location of services and communication points, or similar co-ordinated approaches at stations, may further improve how early crowding issues are identified and managed. For example, you could share workloads and provide additional support when required.

Consider with

- 1.4 Involving all staff
- 1.6 Co-ordinating crowd management plans

1.6 Co-ordinating crowd management plans

Why

Passenger boarding position and behaviour is influenced by many factors, such as the positioning of information and if carrying luggage. There is limited scope for your on-train staff to manage passengers once they are already on board. Platform and station-based staff play a critical role in crowd management.

How

On-train crowd control measures are most effective when assessed in line with practices being applied throughout the station. This can help identify conflicts of procedures that impact negatively on the management of crowds on trains or within the station.

Have you initiated a review of station, platform and on-train crowd management plans? These plans may require adjustments if there are conflicts in procedures.

Communications and practices should provide a co-ordinated approach to managing on-train crowding issues. Staff will be able to manage the situation throughout its lifecycle, if methods allow smooth links from station to station, to train and to service control.

Providing staff mobile communication devices to receive or provide information is just one way of achieving this. Staff training in the use of these devices is vital to ensure they are used correctly.

If you wish to allocate staff based on an evolving situation, how would this work at stations without the necessary staffing levels? Plans that consider the use of resources based on where service problems can occur help to target additional resources to where they may be required.

Consider with

- 1.4 Involving all staff
- 1.3 Teaching staff about crowding and passenger behaviours
- 2.5 Providing staff with updated service information

1.7 Adopting a company-wide crowding strategy

Why

You can identify new and successful opportunities to improve crowd management for trains and platforms.

How

Depending upon the service you operate, together with existing and predicted crowding issues, there are various ways of structuring a company-focused strategy.

This may involve setting-up a central team with representatives from relevant areas of the business, including but not limited to safety, operations and training. To ensure the effectiveness of such a team, there should be opportunities to identify and trial different crowding preventative initiatives.

Regional groups, focusing on identifying local issues within the TOC operating areas could add further value. For example, establishing links with event organisers to identify where considerable operational planning and resources will be required to support those attending the event.

Consider with

- 1.4 Involving all staff
- 1.3 Teaching staff about crowding and passenger behaviours

Case study

A crowding task force is one approach used to ensure all crowding related issues are captured and managed by the most appropriate area of the business.

The task force, meeting on a regular basis and represented at senior management meetings, will have representatives from key areas of the business, such as customer services and safety.

2 Passenger information

Research has shown that passengers can be managed more effectively if you communicate with them in an appropriate way. Helping your staff to provide useful and passenger-focused information will deliver positive benefits within crowd-developing and crowded situations.

- 2.1 Improving your written and audible information
- 2.2 Providing passenger etiquette information
- 2.3 Informing passengers of busy services and stations
- 2.4 Providing passengers with updated service information
- 2.5 Providing staff with updated service information

2.1

Improving your written and audible information

Why

Research has shown that passengers will understand and respond more effectively when you provide them with clear and reasonable information.

This provides passengers with confirmation, reassurance, preparation time and guidance on which to act upon.

How

A passenger's perception of crowding is influenced by factors such as the available standing space, restriction in movement and invasion of personal space. A lack of information in a situation that the passenger perceives as crowded, can increase their anxiety.

Regular information updates, even if there is nothing new to report, are very important for easing passenger concerns.

Provide passengers with reasons as to why a situation is occurring or why you are implementing particular crowd management measures. Try to explain it so they can see there is a genuine reason for the situation they are in. Passengers are more likely to cooperate and support the decisions being made if they are presented with information that is perceived clear and appropriate.

Have you considered whether you and your staff are using the right terminology to describe situations and to give instructions?

Try to find alternative words or phrases for terminology and practices that you regularly need to convey.

Current practice suggests that passengers respond more positively to certain crowding-related announcements and written information. For example, saying that trains are 'Full and standing' helps passengers decide exactly what situation they will be presented with, giving them choice to transfer to alternative services.

Passengers may also not be fully aware of why operational procedures are being carried out and may find them unnecessary. However they can respond appropriately if told why.

Enhancements to audible information that consider your passengers' needs and staff situations may include:

- Pre-defined emergency and general crowd-related announcements
You can save time and ensure information is conveyed correctly by using pre-defined announcements.

This may be helpful in event-related situations where repetitive, but safety critical information will be required quickly, in a clear and precise manner.

- Coding and grouping audible information
Announcers can use coding to quickly find the relevant statements.

You should also follow good design principles when producing written information. The order and structure in which you present information may mean it is misunderstood or not read by your passengers.

Test your written information with non-railway personnel to identify if they have problems understanding the information.

Consider with

→ [2.3](#) Informing passengers of busy services and stations

2.2 Providing passenger etiquette information

Why

Raising passengers' awareness of their behaviour and encouraging them to make adjustments can improve the effectiveness of your crowd control measures and improve operational performance.

The availability of etiquette information also gives staff and passengers the confidence to ask others to adjust their behaviour to improve crowding situations.

How

Review the 'Passenger behaviour' section of this guide. You could use the researched on-train characters and other influencing behaviours, to inform passengers about how their own behaviours can affect operational performance. For example, 'leaving bags on seats discourages other passengers from sitting, leading to congestion near the doors and delaying your train at stations'.

Information can be provided in various ways, to suit the situation and behaviours that you are targeting.

Provide this information as announcements, on trains and stations, to encourage passengers to adjust their behaviour accordingly.

Behaviour such as leaving bags on seats or sitting in aisle seats can influence other passengers from taking available seats and to remain in vestibule areas. On-board staff can monitor passenger behaviour and provide encouragement to move bags from seats, move towards window seats, allowing ease of access for others to sit in the aisle seats.

Printed information, such as leaflets or posters, can also be used to encourage passengers to avoid adopting particular behaviours.

Are you giving passengers this information early enough? Once a train arrives at a platform, there is often little time for on-train passengers to react. Could you improve the situation by informing them at the previous station?

Use this information to help staff understand how particular passenger behaviours can cause localised crowding on-trains, giving them opportunities to target these behaviours on the train.

Be careful to manage how much information you provide to passengers, to avoid overloading them. Think about targeting your information on routes or stations where adjusting certain passenger behaviours would really help ease crowding problems, improve operational performance and increase passenger satisfaction.

Consider with

→ Passenger behaviour (page 8)

→ 1.3 Teaching staff about crowding and passenger behaviours



2.3

Informing passengers of busy services and stations

Why

Busy service and station information can encourage passengers to transfer to alternative services, reserve seats, board the train at a more appropriate position and encourage them to avoid station and platform areas at specific times.

How

Information should be provided as far in advance as possible, to allow your passengers sufficient time to make alternative arrangements or distribute themselves more effectively throughout the train.

However, passengers' willingness to board a crowded train is also influenced by the immediate availability and awareness of suitable alternative train services.

Prepare passengers for the arrival of short formation trains. This can help to ease localised crowding by giving passengers clearly defined positioning information about where they should stand on the platform.

Target known busy services and implement procedures to distribute passengers more effectively. Consider giving staff guidance on alternative route options or train choices for these busier services, that they can pass on to passengers, particularly infrequent users.

In some exceptional crowding situations, opportunities may exist to suggest alternative services at the booking point when passengers purchase walk-on tickets. A communication link between service control and the booking offices would be required to support this kind of practice.

On a permanent basis, you could also consider encouraging passengers to reserve seats on services that are likely to be busy on a more regular basis. Information can be made available on company timetables, in printed and online formats.

Specific event-targeted information provides event-goers and other train users of days and times when services are likely to be busier than usual. Giving additional leaflet information on the last trains of the day, but not necessarily the very last train, can distribute event-goers more effectively across services.

Inform passengers of planned maintenance work or other restrictions where this impacts on passenger flow and crowding on trains. It may be beneficial to identify those stations or services that will be particularly busy so passengers have the choice to make alternative route decisions.

Use technology to convey necessary information, such as passenger information texts or website information.

Posters, leaflets and announcements giving advance information are all relevant and useful ways of affecting passenger distribution.

Consider with

→ 2.1 Improving your written and audible information

→ 3.1 Encouraging passengers to use other services



2.4 Providing passengers with updated service information

Why

Providing timely, appropriate and suitable locations for updated route information can empower passengers to take alternative routes, and minimise crowding.

How

Consider identifying locations where route disruptions, caused by your own and/or other connecting services, create localised crowding problems. Identify if there are opportunities to minimise crowding by understanding where passengers can make alternative route choices or travel decisions.

You should take into account:

- Where on your passengers' journeys do they start to think about alternative route choices or changes to their travel plans?
- What are the alternative routes they take to get to key destinations?

On particularly busy services, do your passengers have strong patterns of travel? If so, you can use this to plan ahead for alternative routes that they may take. Your plans could involve updating staff at other stations about the potential increase in passenger numbers.

- What factors cause localised crowding?
If a regular problem or situation occurs, think about how you can plan ahead for this, so that staff can initiate actions as soon as possible.

If you provide the necessary information at the right time, this could help maintain passenger confidence and satisfaction in your service.

Identify the locations where information is required at its earliest opportunity, to match passenger alternative route choices.

Use your front-line staff to identify where passengers make alternative route choices, depending on the type and location of route problems.

Do your communication links with other TOCs and transport operators provide opportunities to deliver information at a point where it is most effective?

Consider with

- 1.5 Establishing communication and planning relationships
- 1.7 Adopting a company-wide crowding strategy



2.5 Providing staff with updated service information

Why

Front-line staff play an important role by using route service and station information updates to manage crowd-developing and crowded situations.

Research has shown that face-to-face communication with passengers is very effective for improving their response to information.

How

Provide your staff with relevant and timely updated route service information.

Use technology, such as mobile communication devices, to deliver text-based information to staff, wherever they are located. Use this technology to provide updates in regularly changing situations.

The content of this information is also important. Does it convey the necessary information to support your staff to make appropriate announcements or take action to manage a potential crowding situation?

Does information to staff contain details about:

- Where the problem is occurring?
- What stations and routes are affected?
- Suggestions as to alternatives for passengers' ongoing journeys?

Involve your front-line staff when defining new ways of delivering this type of information. They may provide recommendations for suitable ways for achieving these information updates.

Consider with

- 1.3 Teaching staff about crowding and passenger behaviours
- 1.6 Co-ordinating crowd management plans
- 2.4 Providing passengers with updated service information

3 Crowd control

There are a range of practical crowd measures you can use to manage your passengers effectively and deliver real benefits for on-train situations. These include better use of your available capacity, encouraging passengers to distribute to other services and helping them locate a suitable position on the platform.

3.1 Encouraging passengers to use other services

3.2 Using passenger numbers and distributions

3.3 Passenger positioning on platforms

3.4 Declassifying first class

3.5 Adjusting train stopping patterns and timings

3.6 Implementing changes to stations and platforms

3.7 Maintaining and increasing capacity

3.1 Encouraging passengers to use other services

Why

You can help maintain operational performance as well as passenger satisfaction by using a range of methods or incentives to distribute passengers across services.

How

You can implement measures to distribute passengers on a day-to-day basis or during particular service disruptions.

Identify the locations and situations in which you could provide incentives to passengers. The incentives may consist of refreshments, money-off vouchers or similar to encourage passengers to board a later train.

For example, if core service routes were affected at peak hours, you may be able to encourage passengers, by using vouchers, to wait 30 minutes.

Could passengers arrive only 5 or 10 minutes later at their required station, by taking a less busy service? Make passengers aware of these alternative services, using leaflets or posters to advertise.

Try alternative words or practices that convey a clear picture to passengers of how busy the train is. Announcements such as 'full and standing' are just one way. Practices may involve reducing the seat reservation limit on a particular train, suggesting to regular passengers that it is much busier than usual when they book.

Provide audible and visual information to passengers of later trains going to the same destinations. Passengers' willingness to board a crowded train is also influenced greatly by the immediate availability of next train information.

Consider with

- 2.1 Improving your written and audible information
- 2.4 Providing passengers with updated service information

3.2 Using passenger numbers and distributions

Why

You can support capacity planning and improve daily crowd control by using on-train passenger numbers and distributions.

How

Consider involving key front-line staff in the planning of service timetables when using passenger counts. They can identify other crowding issues that inform how you can plan your future services.

You can also use real-time passenger number and distribution information to inform train and station staff. Using appropriate communication links, such as station-to-station, you can help staff to:

- Filter passengers onto the platform during controlled situations, to match the available train capacity.
- Prepare for a specific number of passengers when it is necessary to get them off the train and prepare for sufficient contingency services if a train breaks down. This may be another train or road transport.
- Guide passengers to platform positions based on distribution information within the train.

Consultation with staff that will use such information will help to identify how these procedures and communication links will work best.

Other opportunities exist for improving the use of the booking systems, to inform platform staff of the location of on-board passengers who may require assistance on alighting.

Consider with

- 1.6 Co-ordinating crowd management plans

3.3 Passenger positioning on platforms

Why

If you provide passengers with clear and relevant guidance on where to wait, this will ease boarding and alighting and make full use of the train's capacity.

How

Passenger positioning on platforms is influenced by many factors:

- Passengers may stand near the train arrival displays, giving continued confidence that they know when their train is arriving.
- They may position themselves in the middle of the platform because there is no appropriate indicator to direct them to where their required carriage will stop.
- If they are carrying luggage and are unsure where to stand they may just stop at the point they entered the platform.

There are many other passenger and platform design factors that affect where your passengers board.

You should identify what these factors are, and the situations where passenger positioning causes or influences on-train crowding issues. Observations at stations are just one way to help you to identify and prioritise these issues. For example, entry and exit positions may be contributing to poor use of the train's capacity and causing localised on-train crowding issues later in the route.

The measures you use will be dependent on the situation and services provided. A generic approach of applying measures may not be best in all situations and you should target where they are most appropriate and have the greatest effect.

Painted lines on the floor are an example of discouraging passengers from standing in areas that restrict boarding and alighting flows.

Distinctive platform markings can also help passengers identify carriage-stopping points. You may have different rolling stock, but can you consider options of using a basic set of markings that would help the majority of passengers?

During controlled boarding situations, you may want to consider using large temporary floor markings to indicate where passengers should stand. Passengers are less likely to be aware of and fully understand operational-based markings, such as carriage stop signs.

Consider using points of reference when asking passengers to move along the platform. Use platform facilities such as toilets and other strong visual cues when making announcements. This is especially helpful if this relates to where specific carriages will stop at the platform. Passengers will be reluctant to move if they are only told to move along the platform and not provided with a specific reference point.

Give sufficient information about the order of train carriages. Passengers will also need to know the first carriage into the platform and the direction of travel to help them locate their required carriage.

Passengers such as cyclists or wheelchair users may find it helpful to have marked areas specific to where they need to wait.

Consider with

→ 1.3 Teaching staff about crowding and passenger behaviours

→ 3.6 Implementing changes to stations and platforms



3.4 Declassifying First Class

Why

First Class carriages can provide a useful capacity buffer. However this is considered a last resort method and how it is used differs greatly between service providers.

How

Adopt well-established procedures to allow staff to declassify First Class carriages for a temporary period. You will need to manage paying First Class customers and revenue control appropriately in these circumstances.

Permanent First Class declassification can provide use of all carriages to standard passengers. However the acceptability of this solution could be affected by:

- Passenger expectations
- Journey length
- Train service type
- Rolling stock configuration
- Revenue implications

Consider with

- 1.7 Adopting a company-wide crowding strategy
- 3.3 Passenger positioning on platforms



3.5 Adjusting train stopping patterns and timings

Why

Changes to train stopping patterns and timings can deliver improvements for distributing passengers across services and for meeting capacity requirements.

How

If event-goers use your services, consider adjusting stopping patterns and arrival times to meet crowding requirements.

- Do all event-goers arrive at the station at the same time, or are they staggered?
- Is more than one station being used? If so, stopping the same train at both stations may not be viable.
- In some circumstances, trains could be terminated and passengers moved to another service so that the train is available for a specific group of passengers.

During day-to-day operations, if crowding is problematic, trains could stop before or continue past the next scheduled station. There are consequences associated with this measure and it is limited to severe crowding conditions when other practices do not mitigate the problem.

Pre-planned adjustments to stopping patterns could be undertaken to distribute passengers more effectively between a TOC's own services. Opportunities may exist for co-operating with other TOCs to alter stopping patterns and provide an improved service to all passengers.

Consider with

- 3.2 Using passenger numbers and distributions

3.6 Implementing changes to stations and platforms

Why

The best opportunities to influence on-train crowding are at the station and platforms.

Appropriate changes to the design of these areas and their facilities can positively affect the on-train situation.

How

You can use passenger observations, staff and passenger feedback and knowledge from other stations when identifying design features that lead to localised and general on-train crowding.

During major refurbishment work, opportunities may arise to make large changes in the design and of station and platform facilities. This may include changes to entry and exit points at the platform, which can influence where passengers stand, affecting the use of the train's full capacity.

However, minor adjustments to platform facilities, such as the location of platform seating and dynamic information screens, can all have an effect on passenger positioning.

Think about:

- Where do passengers currently position themselves on the platform and how does this impact on train crowding?
- What features of the platform or station influence their decision?
- The use of platform structures, such as shelters and waiting rooms can affect passengers' willingness to move along the platform. Where available, upgrades and extensions to these structures along the platform can greatly encourage passengers to utilise all of the platform.
- What are the different passenger behaviour issues when the platform or station is being used at different times of the day?

You could encourage cyclists to leave their bikes at the station by providing facilities such as lockers and showers. This may reduce cycle carriage on trains.

Consider with

→ 1.2 Hearing what your passengers and staff have to say

→ 3.3 Passenger positioning on platforms

Case study

One approach used to encourage passengers to utilise all of the platform is the installation of covered areas along the platform length.



3.7 Maintaining and increasing capacity

Why

Events, service disruptions and seasonal peaks place extra strain on your train service. A robust maintenance programme and access to short term increases in capacity can help you deal with these conditions.

How

Appropriate maintenance programmes are critical for ensuring your rolling stock is available and retained for the level of service you provide.

Where extra capacity is not available from your own stock, in particular during special events that place increased capacity requirements on your services, hiring additional capacity may be required.

The use of stand-by trains, if available, is also a way for managing problematic and unexpected capacity requirements, in particular during event-based situations.

Consider with

→ 1.7 Adopting a company-wide crowding strategy

4 Passengers' luggage

In comparison with air travel, rail passengers enjoy a generous luggage allowance on trains. Although restricted by the National Conditions of Carriage, passengers are usually unaware of this. They often take on board more than they can actually carry.

TOCs agree that managing luggage is an essential role within day-to-day operations. Appropriate practices can encourage passengers to bring only suitable sizes and quantities of luggage, helping to minimise the effect on existing busy passenger situations.

4.1 Using station and platform staff

4.2 Using train staff

4.3 Preparing passengers

4.4 Planning for luggage

4.5 Providing on-board information and support

4.6 Flexible or alternative luggage configurations

4.1 Using station and platform staff

Why

Once passengers have boarded a train, there are limited opportunities to influence where they position themselves and their luggage. Staff can influence passenger positioning to alleviate issues at the station, as well as further along the train route.

How

Help your staff to identify luggage associated behaviours and the effects on safety and operational performance. This guidance helps staff to manage the situation appropriately, for example by making announcements to position passengers on platforms at the earliest opportunity.

The timing and type of guidance given to passengers should consider factors that influence passenger behaviours:

- **The station and platform layout**
Do platform entrances and stairs lead to congestion points on the platform? Identify where these congestion points are and use face-to-face instructions to encourage passengers to move away from these areas.
- **Passenger and luggage types**
Who are your passengers and what sizes and shapes of luggage do they have? Give advice on where passengers should locate their luggage on the train, prior to boarding. Groups often travel together. However, this may cause boarding and alighting problems. If willing, they may be encouraged to travel in smaller groups, to help distribute luggage throughout the train.
- **Seasonal issues**
Do luggage related crowding problems occur at particular times of the year? If there are fluctuations in luggage levels, consider allocating staff to areas where luggage has the greatest impact on train crowding.

Established communication links between stations, trains and service control can be used to warn of potential luggage issues. For example, passengers with luggage requiring exceptional support at a station later on, or to inform staff at upcoming stations of available capacity areas on board the incoming train.

Consider with

- Passenger behaviour (page 8)
- 1.3 Teaching staff about crowding and passenger behaviours
- 2.1 Improving your written and audible information

Case study

During a perturbed situation, when trains were held at a station for a period of time, platform staff made efforts to walk along the train length, board the train and make announcements to directly influence passenger luggage positioning. The presence of staff making direct announcements to passengers, strengthened its approach over and above using the on-board PA system.



4.2 Using train staff

Why

The most effective way of influencing the distribution of passengers inside a train is actually on the platform. However, train staff can continue to positively affect the luggage issues once passengers are on the train.

How

Use staff feedback to identify stations which present particular luggage boarding and alighting issues. This can then be highlighted to all staff who can use this knowledge to prepare the on-board situation appropriately.

Provide suitable communication links for staff, warning of passenger loading at stations ahead. Using this information, train staff can prepare in advance for boarding passengers by encouraging the correct use of luggage stowage on board and moving standees away from doors.

On-train passengers can be reluctant to move from a preferred standing or seated position, making it more difficult for those boarding and also limit the use of usable standing or seated space. Explain to passengers already on the train the consequences of not allowing space for boarding passengers.

Train staff can also prepare alighting passengers, using PA announcements or face-to-face when walking through the train. This can help platform flows and station crowd management.

Consider with

- 1.3 Teaching staff about crowding and passenger behaviours
- 2.1 Improving your written and audible information
- 2.2 Providing passenger etiquette information

4.3 Preparing passengers

Why

You have a greater opportunity to manage luggage, cycles and pushchairs if you prepare passengers before they make their journey.

How

Try different practices to influence passengers to take fewer and less awkward sized items of luggage. Consider providing this information at the earliest opportunity, prior to a passenger making their journey.

Give advice at the point of ticket booking. Depending on the booking location, you could choose information appropriate to these places.

For telephone services or agents, provide them with leaflets and luggage labels to send to passengers once a booking is complete. This could guide passengers to limit how much they bring based on what they can comfortably carry.

You could also use this type of information format to prepare passengers on arrival at the station. For example, encouraging them to stand in the correct area of the platform and use appropriate stowage areas once on board. Giving passengers reasons why they should do this plays an important part in changing passenger behaviour.

Consider using your online sources to advertise luggage guidance.

During engineering or other planned works, passengers need to be made aware of luggage limitations.

Consider with

- 2.1 Improving your written and audible information
- 2.2 Providing passenger etiquette information

4.4 Planning for luggage

Why

Luggage is one of the greatest challenges for managing on-train crowding. This issue can be alleviated by well-planned guidance and appropriate luggage services.

How

You can shape the guidance and luggage services according to:

- The type of passengers on a particular service
- The type of luggage they travel with
- The time and duration of their journey

One source of information is staff feedback. This can be used to gather information about passenger behaviour and identify when and how luggage presents a particular challenge.

Consider targeting particular passenger types prior to their journey, such as people travelling in large groups. Information gathered about your passengers should help you to focus how you deliver guidance or luggage services.

More developed luggage services may include facilities to reduce the quantity of luggage within the passenger areas. Such services may be well suited to passengers travelling from terminus to terminus.

Tactically positioning passengers with luggage by seat reservation can also help manage the on-train and platform situations. Speak with station staff about problematic boarding stations and platforms. Use this knowledge to help plan seat reservation tactics.

Rail services linking with other transport modes, such as ferry terminals and airports, may also benefit from adjustments to service timetables. This can accommodate for extreme luggage requirements at key times of the day.

Consider with

→ 1.2 Hearing what your passengers and staff have to say

4.5 Providing on-board information and support

Why

On-board information can encourage passengers to stow luggage correctly, reducing the use of seats and other inappropriate areas.

How

Enhanced signage and passenger information to indicate on train stowage areas can improve passenger compliance for stowage.

Passengers with luggage are less likely to search for an available seat. Helping them to stow different sizes of luggage into the most appropriate areas can improve seat utilisation.

Symbols with basic text, indicating the type of luggage and where it should be stowed, can help to convey this information.

You may also need to indicate where luggage may not be located, where this causes a problem in restricting passenger movement and blocking wheelchair spaces. A review of these areas can help target where you need to provide information and guidance, whether through visual or audible information.

Is the design of the luggage areas likely to encourage passengers to leave their luggage behind? Poor visibility of these areas from seated and standing positions can increase passenger use of floors and seats to stow luggage.

Check whether your passengers can clearly see along luggage racks. If not, consider using mirrors behind stowage areas and upgrading to transparent materials in luggage racks to increase visibility.

Staff can also play an important role in encouraging passengers to use luggage facilities. Passengers' behaviour is greatly improved if spoken to directly by staff.

Consider with

→ 2.1 Improving your written and audible information

→ 4.2 Using train staff

4.6 Flexible or alternative luggage configurations

Why

Services often have to provide for many different passenger types and travel patterns. Once in operation, adjustments to train layouts to accommodate for different passenger behaviours may further improve luggage stowage.

How

An assessment of how passengers behave can highlight design opportunities to improve luggage stowage, without negatively affecting passenger satisfaction.

You can use a range of information gathering tools, such as passenger observations, staff feedback and discussions with local passenger representatives.

Feedback, combined with a cost-benefit analysis, may identify opportunities for implementing minor adjustments to seat configurations.

Flexible seating arrangements may also be useful by creating increased space to allow for more luggage when required. Information to guide passengers to these on-board areas may help increase their use. Platform staff can give guidance to passengers as to where they should position themselves to find these areas.

Consider with

→ 4.5 Providing on-board information and support

→ 5.2 Designing rolling stock to fit the purpose

Case study

One approach which has been tried is to re-evaluate the use of carriages in relation to passenger requirements for luggage. This identified that changes in seat configuration for a small area on a few train carriages eased luggage related problems, without negatively affecting passenger satisfaction.

5 Rolling stock design

Opportunities exist to improve passengers' journey experience and utilise current capacity more effectively through enhancing rolling stock design.

Recent examples of new and refurbished stock reflect industry-driven improvements in safety and RVAR regulations. Many of these changes have also responded to passenger needs, such as additional holding-on points. These reflect the value gained from considering passenger behaviour.

The following practices provide ideas for consideration during the design and development of rolling stock. The detail in how these are delivered is dependent upon the train service you are providing and the passenger types using your services.

5.1 Understanding crowding issues and passenger behaviour

5.2 Design rolling stock to fit the purpose

5.3 Standing passenger support structures

5.4 Vestibule and aisle areas

5.5 Seating options

5.6 On-board passenger guidance

5.7 Rolling stock mock-ups

5.1 Understanding crowding issues and passenger behaviour

Why

Passengers behave and position themselves according to different train design features. These affect their use of space within trains as well as their journey experiences.

By considering how passengers respond to different features, you can design appropriate seated areas and standing spaces.

Inclusion of these passenger requirements within rolling stock specifications identifies the importance of crowd behaviour in design decisions.

How

Review the 'Passenger behaviour' section of this guide for further information about on-train crowd characters. These characters consider some of the key passenger behaviours as a result of train design features.

For example, Blockers – standing passengers who hold on to or lean against grab rails, often blocking access to the aisles for other passengers.

Standing passengers are very reluctant to move down inside the train without clear and easy access to handholds. Standees do not like using small handholds on seatbacks, especially when they are located close to the seated passenger's head and thus risk physical contact. This can encourage passengers to remain standing in vestibule areas where they are confident of a secure handhold, but blocking movement through the train.

Even if seats are available, parameters such as seat width and row spacing will influence passengers' willingness to occupy them. Passengers may prefer to stand when faced with awkward access to seats and a high likelihood of enforced contact with passengers on either side.

Aspects of seat design, such as width and seat row spacing also affect passengers' willingness to occupy them. They can impact on passenger comfort, restricting movement to reach them and causing considerable contact with fellow passengers.

Learn from current practice. Well-planned observations and feedback from passengers and staff about their day-to-day experiences can help focus the development of specifications and designs during rolling stock development.

- What practices do platform and on-train staff undertake to positively affect how they manage passengers? For example, asking passengers to move away from the doors and further inside the train.
- How could these practices be further supported by enhancements to rolling stock design? For example, encourage movement away from the vestibules by providing plenty of accessible and secure handholds in the aisles.

Learn from other rolling stock designs. What are the alternatives and how have these been informed by knowledge of passenger behaviour and movement? Are there opportunities to explore these as part of your design stages? If available, use data from other passenger-focused rolling stock designs to inform your own specification.

Your rolling stock specification can then link design solutions to the passenger behaviours they address. Provide scope within the specification for assessing the practicality and effectiveness of different solutions to resolve your crowd management issues.

You can use discussion groups to coordinate the involvement of front-line staff and subject matter experts with those writing the specification. This can identify and prioritise passenger behaviours and staff practices, informing an enhanced rolling stock design.

Consider with

→ Passenger behaviour (page 8)

5.2 Design rolling stock to fit the purpose

Why

Where benefits can be gained from improved passenger behaviours, such as increased ease and speed of boarding and alighting, leading to reduced dwell times, custom rolling stock components can be considered viable investments.

(Custom components refer to rolling stock elements that are not normally offered as part of a traditional/standard scope of new or refurbished rolling stock work.)

How

Consider which rolling stock features may offer opportunities to further ease crowding related issues, improve the passengers' journey experience and gain other operational benefits, through using customised versions. These may include:

- Larger door widths
- Increased numbers or alternatively positioned doors
- Grab pole positions and shapes
- Alternative seat configurations

There may be particular crowding related issues on your platforms and trains, owing to the service type, location and passengers using your trains. The viability of using customised components will require a detailed analysis of passenger behaviour, using:

- Passenger counts and timings
- Passenger information surveys or knowledge from station staff

Consider with

→ 5.1 Understanding crowding issues and passenger behaviour

Case study

It is worth considering the benefits from using custom components.

One approach looked at what train features affected passenger behaviour during busy situations and the possible design solutions.

In this case, the analysis identified that wider door widths provided significant gains for the ease and speed of passenger boarding and alighting, with associated operational improvements.



5.3 Standing passenger support structures

Why

Passengers are more confident and willing to occupy standing space away from the doors if there are appropriate holding and leaning structures in these areas.

Even before a train becomes busy, passengers make decisions to stand rather than take an available seat. This can be for a variety of reasons, including the length of their journey and wanting to position themselves away from other passengers. Standing is also a reality for more busy services, where passengers need to seek out appropriate standing support structures. Without these, a passenger's perception of crowding is more negatively affected.

How

Have you provided sufficient numbers of, and appropriate positions for, holding points?

Consider positioning and designing holding and leaning structures to encourage passengers to use all available standing space. This is in addition to safety and RVAR legislation requirements.

However, how people feel and behave in busy situations also influences the location of holding points:

- **Passenger comfort**

Is the grab pole or handle accessible from a standing position? What is the impact for mobility impaired passengers, including those having to hold children and luggage. How long could standees be obliged to adopt this posture?

The lack of holding structures can result in standing space not being occupied, often due to fear of not being able to support oneself and the risk of falling over or into another passenger.

The use of anthropometric modelling can highlight where standing passengers are able to reach and therefore inform the location of holding-on structures.

- **Context of standing**

Do your design decisions to locate support structures truly reflect the issue of busy trains?

Are your passengers actually able to reach a holding point while others are standing around them? There may be insufficient space to reach a handhold if the passenger is surrounded by others. Consider the standing locations that offer the least opportunity to reach for a handhold. What design features could be installed to support those passengers?

Passengers may feel embarrassed to stand amongst seated passengers, especially where there are limited or inaccessible handholds to prevent them falling over. Accommodating for these personal factors, such as in the design and location of handholds, can greatly benefit the use of standing areas.

- **Personal space**

Can your passengers reach a holding point without overtly intruding into other passengers' comfortable space envelopes? Have you considered that people do adjust their behaviour and positioning to avoid contact and intrusion into others' personal space? Not all passengers are willing or confident to lean across other people to reach a handhold.

The shape of holding points can also affect passenger comfort and therefore ease and willingness to use them. For example, the shape and size of the seat back handle is an important consideration for minimising contact between the standing passenger's hand and the head of the seated passenger. If contact is difficult to avoid, especially while the train is moving, passengers are unlikely to use that handhold and will choose to remain in the vestibule.

Consider with

→ 5.1 Understanding crowding issues and passenger behaviour

→ 5.7 Rolling stock mock-ups

5.4 Vestibule and aisle areas

Why

The layout and overall design of vestibules and aisles can contribute towards improving passenger flow on, off and through the train.

Consideration of passenger behaviour and crowding issues can identify opportunities for improving the design of vestibule and aisle areas. You can minimise the effects of passengers blocking others in and encourage movement to seats and standing space.

How

Attributes such as increased stand-back areas, accommodating for the preferred 'Sentinel' standing position, may positively impact on crowd related issues. Wider gangways at the entrance to seating can also encourage movement away from doors.

Improve the ease of operating, and the visibility through, internal doors leading from vestibule areas. Mainly associated with intercity style trains, this can impact on passengers' willingness to move to seated areas. Those not confident in how to open the door or cannot see available seats are unlikely to go and search for seats, preferring to stand in vestibule areas. An on-going effect from this is that boarding passengers can assume seats are full and also stand in the vestibule, adding to congestion.

You can also encourage movement away from vestibule areas by using design measures that affect passenger positioning. The use of certain materials and lighting can help to encourage passengers to move from the doorways to available seating.

The relocation of luggage areas may better support passenger movement through the train and encourage passengers to move away from the vestibule area when boarding.

Consider with

- 4.6 Flexible or alternative luggage configurations
- 5.1 Understanding crowding issues and passenger behaviour

5.5 Seating options

Why

Seating configurations strongly reflect the train service being provided. However, adjustments to seat configurations can offer benefits for improved passenger movement through the train and encourage passengers to use all available seating.

How

Different services and situations will affect how seating configurations are delivered. However you could explore alternative seating options to better meet demands for your on- and off-peak services and a wide range of passenger travelling requirements.

Seating options could be delivered differently throughout carriages, if this better accommodates for on- and off-peak services, as well as those that are used as a suburban and intercity based service.

Passengers' willingness to occupy seats is related to their perception of how easy it is to sit in and leave the seat, while minimising contact with fellow passengers. Adjustments could include using 2+2 seat configurations in suburban and metro style trains, to offer improved ease of access to and encourage utilisation of all seats. This may also provide better use of space leading up to the seated areas to accommodate improved flow onto and off the train.

Flexible arrangements, such as fold-away seats, offer opportunities for passengers to sit or stand as required, and accommodate for fluctuations in demand.

Consider with

- 4.6 Flexible or alternative luggage configurations
- 5.1 Understanding crowding issues and passenger behaviour

5.6 On-board passenger guidance

Why

You can influence passengers' positioning on board the train with well-designed and positioned information points within the carriage.

Passengers use visual information to help identify where they are and where they should move to. Insufficient, poorly designed or poorly positioned information can impact on where passengers board and how they move through the train. This can lead to localised train congestion.

How

When providing visual information, you should consider:

- Your passengers' expectations and resulting behaviour from the way in which information is provided.
- Where passengers make action decisions and whether the information you provide allows quick and easy interpretation under time pressure. For example, finding a reserved seat in front of a queue of passengers who are eager to find their seats.
- Passengers, in particular those with less rail experience, will confirm at each decision point whether they are in the correct place. The positioning of information, such as carriage letters should consider where the passengers make that decision, allowing them to find it easily and maintain movement.
- Their response to different types of information, such as the choice of words used.

Are you applying best practice in information design and considering the context in which it will be used? This could apply to the location, size and design of seat numbers, seat reservation indicators and train carriage identifiers. Does information allow quick and easy interpretation when under pressure by other passengers to make a decision, such as finding the right seat?

Using dynamic information can have significant benefits, such as speed and quality, in comparison to static information. However, does it negatively affect passenger behaviour and movement?

- Have you considered what effects different types of technology will have on how passengers read and interpret the information, when compared to current practice? This could have a significant effect on localised on-train crowding.
- Does it replace or assist a staff practice? If so, does the technology really improve how passengers will behave and respond?

The use of human factors specialists as part of your design and development process can identify how people will respond to specific visual and tactile information.

Consider with

→ [2.1](#) Improving your written and audible information



5.7 Rolling stock mock-ups

Why

Mock-ups are effective for conveying design ideas, identifying and testing passenger and staff requirements and for informing rolling stock design development.

How

Mock-ups provide opportunities to involve end-users, such as passengers, train and station staff, and passenger representatives.

Their involvement, if carefully planned and undertaken when the design can still be influenced, can help to identify passenger flow problems and other crowding-related issues.

Functional mock-ups inform the design team about issues affecting different passenger types, accessibility and safety as well as the impact on crowding situations. They allow issues to be tested thoroughly, such as accessible luggage racks and seat configurations that maximise occupancy.

Appearance mock-ups in contrast to the above have fewer opportunities for assessing these particular issues. They are more ideally suited to later design stages or for defining the look and feel of a train carriage.

It is recognised that during refurbishment projects, cost constraints may not allow extensive functional mock-ups to be produced. However, an analysis of key design elements that may impact on a wide range of crowding issues, can offer guidance for testing specific elements of a carriage. For example, seating configurations and grab rail design and positioning.

Consider with

→ 5.1 Understanding crowding issues and passenger behaviour





Rail Safety & Standards Board