

Crowd Management at Stations

A good practice guide



The negative effects of crowds may be more than service delays and unhappy passengers. Crowding can also lead to injuries: anything from minor slips and trips to more serious incidents at pinchpoints and the platform edge.



Introduction

The popularity and inherent limitations of Britain's railway network almost inevitably lead to crowded conditions at stations. Whether caused by service congestion, local events or sheer weight of rush hour traffic, crowds can build quickly.

Purpose and scope

This good practice guide will introduce you to the key considerations when preparing to manage crowds at stations. These are divided under the following headings:

- Know your crowd
- Plan ahead
- Use your staff effectively
- The benefits of technology
- Directing the crowd flow
- Further Information

The information contained in this guide has been developed in consultation with rail stakeholders and through observation of station operation.

There are no rail-specific standards regarding crowd management. However, useful guidance has been produced for other applications. This is included in the *Further Information* section at the end.

Who is it for?

The guide has been written for anyone who may be directly involved with or indirectly influence the management of crowds at stations:

- Station managers and staff
- British Transport Police
- Architects
- Customer Information System designers
- Safety analysts

This guide has been prepared by Davis Associates for the Rail Safety and Standards Board (RSSB). Further assistance can be obtained from RSSB, contact: Michael Woods, Head of Operations Research on (0207) 904 7777.

Do you understand the crowd you are attempting to direct and control? Why do individuals and crowds behave the way they do? If you understand the reasons for a crowd's behaviour you will be better equipped to control it safely.



Know your crowd

There is a wide range of factors that will influence people's behaviour. Some factors are linked to fixed aspects of the station – signage, platforms and so on. However, there are factors that are flexible and can be influenced by the actions of station staff. Examples of both types are listed here.

When reading this list, ask yourself the following questions: which of these factors are present in my station? When planning to manage crowds, can you do anything to affect these factors in a way that will minimise congestion? Once you have identified any of these factors, this will help you predict how crowds will respond to events, information and control measures.

Physical layout:

- Are there obstructions, gates or barriers in the passengers' routes?
- Are there narrow passages or entrances to slow the passengers down?
- Are there awkward staircases or escalators to negotiate?
- Are the platform and concourse areas big enough to accommodate the expected crowds?

Operating environment:

- What effect can hot days, rain, snow and ice have on station operation?
- Are ticket sales, collection and checking facilities sufficient to cope with crowded conditions?
- Can you control station access safely? How do people arrive?
- Do timetable gaps create problems?

Crowd flow:

- Where are the pinch points in crowd flows?
- Where are the crowd flow conflict areas?

- What peaks are there in crowd flow and when?
- Where do your passengers gather in groups?
- What trespass opportunities are available?

People - individual factors:

- What are passengers' habitual actions at your station?
- What facilities does your station have to accommodate passengers with visual impairments or restricted mobility, for example elderly passengers, those with luggage or pushchairs, or wheelchair users?
- How do you manage passengers with health problems or those under the influence of drugs and alcohol?

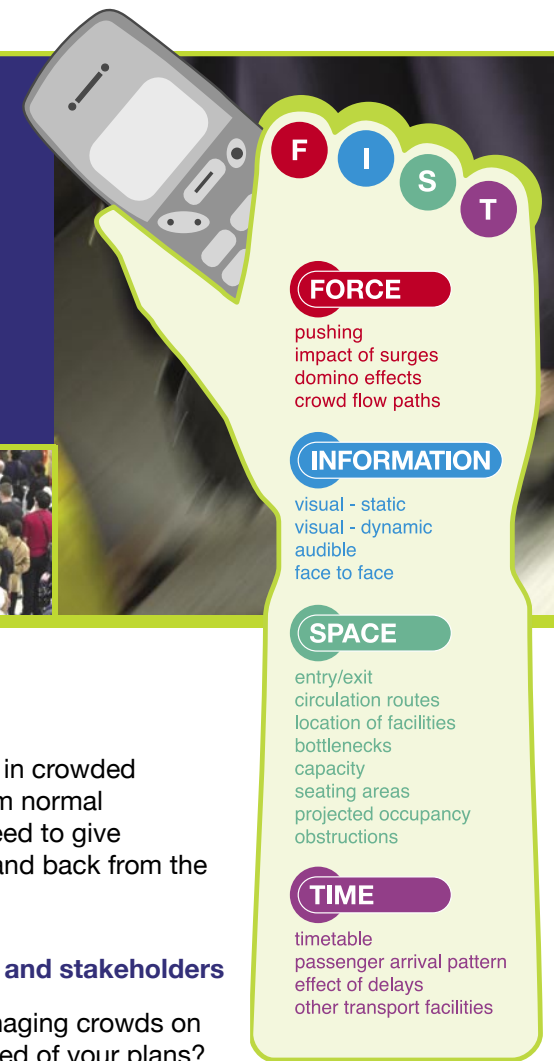
Information & communication:

- Do you provide information that is frequent, consistent, accurate, relevant and accessible?
- Do you make good use of temporary displays?
- Are your staff accessible to passengers when needed?
- Are the wayfinding signs effective?
- Is information available in different formats, for example audible and visual?

What other factors could influence the management of crowds at stations:

- Is there good cooperation between agencies operating in and around the station?
- Do you have extra staff available at short notice?
- What is the capacity of adjacent transport modes?
- Do you have an effective crowd management plan?
- Do you have advance warning of big crowd events nearby?

Good planning will help you prevent many of the problems caused by station crowding. The FIST diagram highlights the main issues for consideration during the planning of a crowd management strategy.



Plan ahead

There are no rail industry-specific standards to guide station operators in the management of crowds. However, there have been guidelines published for sports and other venues that you can apply to crowd management at your station. These include guidance on carrying out an appropriate risk assessment. For more information on the FIST diagram and guidance from other applications see *Further Information* on page 13.

When preparing your crowd management plan you should consider:

The actual capacity of the station and the train service

Estimate the capacity of building spaces, corridors, escalators, lifts and trains. By combining this with the train timetable, you can measure the total passenger capacity of your station. (See *Further Information* for details.)

The passenger numbers expected through the station

How many passengers are you expecting? For example, this may be a proportion of attendees at a nearby sports or music event or evidence obtained from research of rush hour crowds.

Any extra space required over and above existing facilities

If you compare the capacity and the expected numbers, do you need to arrange for extra space? For example, temporary use of car parks or public spaces at the front of the station?

Staff deployment

How many staff do you need to manage the expected crowds? Where should you deploy them? What skills and competencies do they need? What training and preparation do they require?

Provision of information

What do you need to tell passengers in crowded conditions? How does this differ from normal operation? For example, you may need to give passengers frequent reminders to stand back from the platform edge.

The involvement of other agencies and stakeholders

Who else will be assisting you in managing crowds on your station? Have they been informed of your plans? What is their exact role and does this change in different situations? Who has authority in given situations?

Previous experience at this and similar stations

What can you learn from crowd management situations at other stations or previous incidents at your own station?

Emergency plans

If an emergency occurs, how are you going to deal with it in a crowded environment? How might this differ from established emergency procedures?

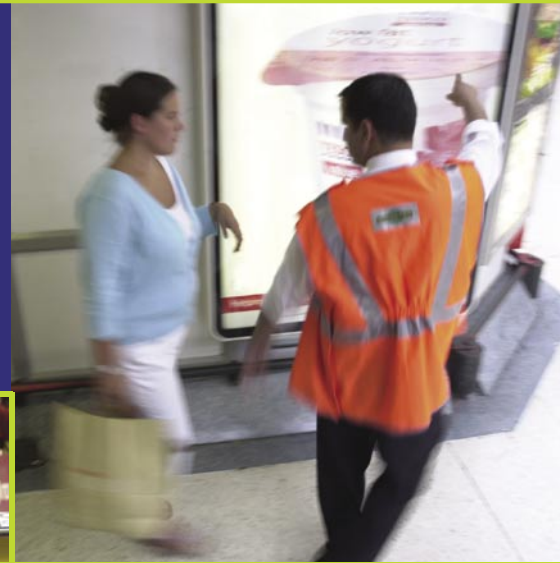
Check your plans

Before applying the plans in a real situation carry out a 'sense-check' of your plans with station staff and managers. You can do this by considering examples of situations that could occur and then applying your plans to see if those situations could be managed.

Debrief

After an incident or event carry out a debrief with your staff. Discuss how well the crowds were managed and document any lessons learned for the future.

Effective use of staff is very important in managing crowds. Station staff can be used to monitor, control and communicate with the crowd.



Use your staff effectively

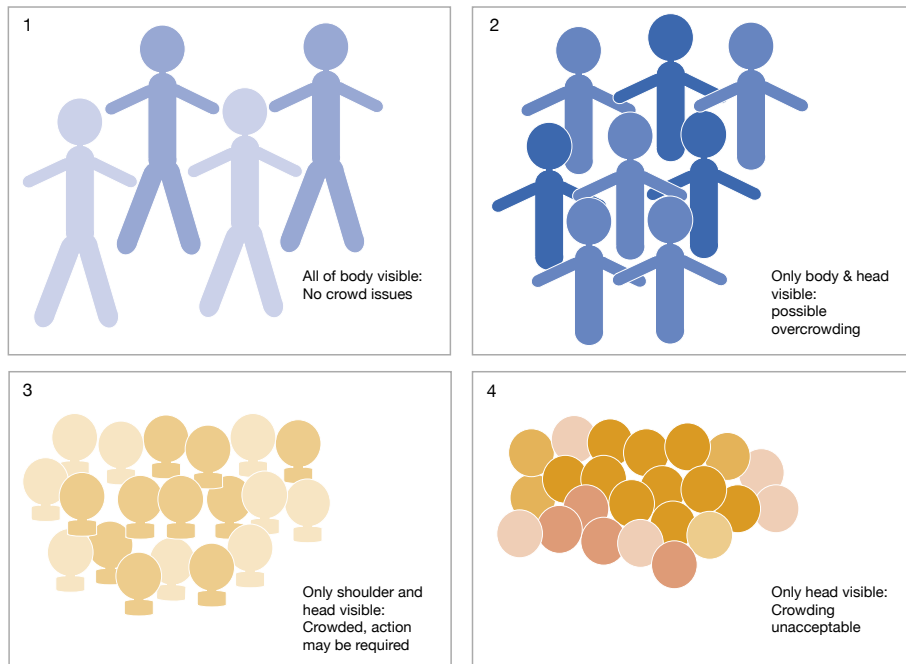


An effective training programme should include both initial and refresher training.

Your training programme should consider:

How to monitor crowd density

There are visual cues you can use to judge crowd density and therefore select appropriate actions. These are illustrated below:



Your staff can be trained to recognise these cues and react accordingly.

How to communicate effectively

Communication between your staff is one of the most important elements of a successfully managed crowd event. This is important before, during and after an event. Training should include communication skills, whether face-to-face or via radios and telephones.

Understanding the roles of others

An important part of preparing your staff is ensuring they understand the roles of others. Lack of understanding between staff from different stakeholders operating in a station can lead to delayed, inefficient or ineffective decisions. These stakeholders could include station staff, police, train drivers, franchise retailers and staff from other transport modes.

How to use the equipment

The technology systems in your station are only effective if your operators know how to use them. Such systems could include:

- CCTV
- Customer Information Systems such as Public Address (PA) and dynamic signage
- Radio and telephone communications
- Automatic gatelines

You should ensure that the staff selection, training, assessment and job design are appropriate for the systems in use.

Sources of recommendations for the content of crowd management training programmes are provided in *Further Information*.

The use of technology such as crowd flow computer modelling, CCTV and centralised station control systems can contribute to safe crowd management.



The benefits of technology



Before selecting and using new technology to help you manage crowds, you should carry out an operational review of the options. This should assess how the systems will work individually and together. Two examples discussed here are: the effective use of Closed Circuit Television (CCTV) and getting the best results from crowd flow modelling.

CCTV

To get the best from a CCTV system, you need to think about its application from two perspectives: the capabilities of the operator and the system design. The operator's ability to use CCTV effectively will be influenced by:

- The task design and operational demands
- Suitability of the operator to the task
- Training received
- Level of workload
- Length of viewing time

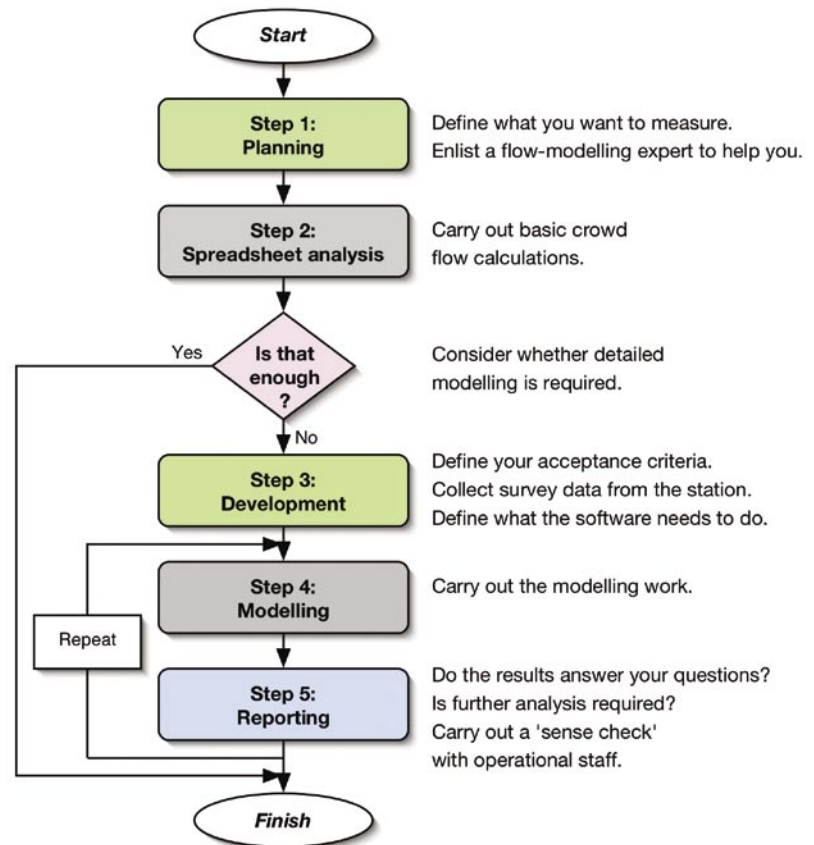
In the station control room, factors which will affect the CCTV system's ease of use include:

- Number of monitors per operator
- Size of monitors
- Viewing distances
- Camera and view control interface
- Control room environment (lighting, temperature and noise)

You should also consider the number of cameras you need, their coverage of the station and adjustment (pan, tilt and zoom). Sources of advice on design and operational requirements can be found in *Further Information*.

Crowd flow computer modelling

A crowd flow computer model can help you predict areas of likely congestion and analyse options for improvement. However, simply using the software does not guarantee you an accurate prediction. Like any tool, it has to be used in the right way and good preparation is important. Here is a recommended process:



See *Further Information* for more guidance on selecting and using pedestrian flow modelling.

Appropriate wayfinding can provide people with more confidence in their movements and encourage a crowd to move in a more positive manner.



Directing the crowd flow

In order to judge the likely success of your wayfinding information, consider the following basic questions: why, who, what, how, where and when.

Why are you giving wayfinding information?

Consider your motives for directing the crowd flow, for example:

- To get passengers on board trains
- To minimise the build-up of crowds
- To minimise safety risk at the platform edge or pinch points
- To accommodate operational changes

Your passengers have their own needs from wayfinding information:

- Orientation - 'Where am I?'
- Route decision - 'How do I get to where I want to be?'
- Route monitoring - 'Am I going the right way?'
- Destination recognition - 'Have I arrived in the right place?'

You should consider both sets of requirements when defining a wayfinding strategy.

Who uses that information?

Wayfinding information is not just useful for the passenger. Other users could include:

- Emergency services
- Friends and family meeting passengers
- Staff unfamiliar with the station layout
- Other stakeholders such as maintenance staff and retailers

Ensure that their needs are also considered in the wayfinding design.

What and how?

There are several ways in which you can give wayfinding information:

- Electronic displays
- Fixed signs, both permanent and temporary
- Spoken messages via PA or face-to-face with staff

Which methods you choose and what information you show is dependent on the situation and location. However, all wayfinding information should be clear, accurate and consistent.

Where?

There is a wide range of locations in which you can provide information to prepare and guide the passenger, both inside and outside the station. Inside the station, consider where your passengers need to make decisions on their route, for example:

- In concourse areas at information displays
- At corridor junctions
- At stairs, escalators and lifts
- At ticket windows and machines
- On platforms for alighting passengers

Guidelines are available on the design, positioning and content of signs. See *Further Information* for details.

When?

When you give wayfinding information to a crowd is important. Should you have to re-direct crowd flow, you should tell passengers as soon as possible. For example, last moment platform changes should be avoided wherever possible.



Further information

Guidance from other applications, including planning for crowds and training requirements:

Managing crowds safely - A guide for organisers at events and venues

Health and Safety Executive
HSE Books publication HSG154
ISBN 0-7176-1834-X

Guide to safety at sports grounds

Department for Culture, Media and Sport (DCMS)
ISBN 0-11-300095-2

The event safety guide

A guide to health, safety and welfare at music and similar events
Health and Safety Executive
HSE Books publication HSG195
ISBN 0-7176-2453-6

BS8406: 2003

Event Stewarding and Crowd Safety Services - Code of Practice

Railway Group Standards (issued by RSSB)

GO/RT3471 Incident response planning
GO/RT3472 Incident management and evidence gathering
(These can be obtained from RSSB's website www.rssb.co.uk)

Literature review

Davis Associates
RSSB reference 01-T161-report-04-June-03
(This can be obtained from RSSB's website www.rssb.co.uk)

Guidance on how to use pedestrian flow modelling:

Pedestrian flow modelling process definition

Davis Associates
RSSB reference 30-T161-report-27-May-04
(This can be obtained from RSSB's website www.rssb.co.uk)

Guidance on the use of CCTV:

CCTV: Making it work: CCTV Control Room Ergonomics

Police Scientific Development Branch (PSDB)
PSDB Publication no. 14/98
(available from:
www.homeoffice.gov.uk/crimpol/police/scidev/publications/index.html)

CCTV: Making it work: Training Practices for CCTV Operators

Police Scientific Development Branch (PSDB)
PSDB Publication no. 9/98
(available from:
www.homeoffice.gov.uk/crimpol/police/scidev/publications/index.html)

CCTV Operational Requirements Manual

Police Scientific Development Branch (PSDB)
PSDB Publication no. 17/94
(available from:
www.homeoffice.gov.uk/crimpol/police/scidev/publications/index.html)