Department for Transport

Rail passenger numbers and crowding on weekdays in major cities in England and Wales: 2018

About this release

This publication provides information on the number of passengers travelling by rail into and out of a number of selected major city centres in England and Wales. The statistics are based on a count of passengers carried out in autumn 2018. They represent passengers on National Rail services on a 'typical' weekday. More information is available in the accompanying notes and definitions document.

In this publication

Passenger numbers: These show the level of rail demand for each city centre.

Crowding measures: These show levels of crowding on routes into major cities. There are two key crowding measures: the percentage of 'passengers standing' and 'passengers in excess of capacity (PiXC)'.

Contextual information: Click on this symbol for a web-based interactive dashboard which provides a range of additional contextual information and allows you to explore the data further.

Bristol Temple Meads

Autumn 2018

Passenger arrivals have increased in most major cities in the last year. This is in line with the growth in rail journeys seen in recent years.

London remains the city with the highest rail passenger numbers with 8 times more passengers across the day than Birmingham, the city with the second highest.

54% **of daily arrivals were in the morning peak in London, reflecting that most rail journeys are for commuting**

During peak hours more than 230,000 passengers were standing on trains in London.

In other cities the number of standing passengers was much lower. After London, the next highest was Birmingham with 17,300 standing. However, the percentage of passengers standing has grown across seven major cities.

17% **of passengers were standing in the peaks across all selected major cities**

Morning peak crowding in London is at its lowest since 2014.

Nearly 50,000 passengers were in excess of capacity on trains across both peaks in London. Using the PiXC measure, Cambridge had the highest crowding level of 4.8% with 800 passengers over train capacity.

3.5% **of passengers were in excess of capacity overall during peak hours, the same as last year**

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FURTHER INFORMATION: Media: 020 7944 3021; Public: 020 7944 2419

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1. About this release

Scope

These statistics are based on counts of rail passengers and represent rail travel during a 'typical' weekday in the autumn.

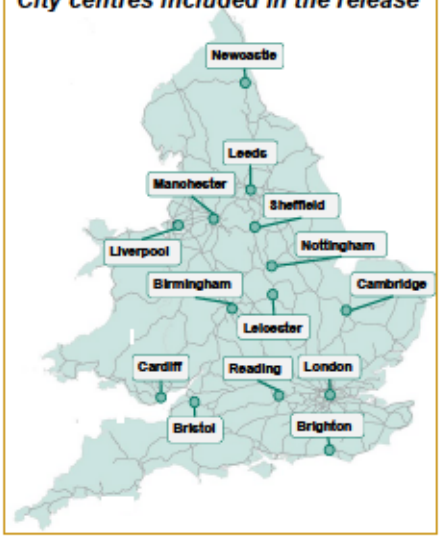
The count period in autumn covers services from the preceding May timetable and excludes days when there was disruption, where possible. Data is collected from franchised train operators at selected major cities across England and Wales, but does not include Open Access operators such as Heathrow Express and Grand Central.

Coverage

This publication focuses on crowding during the morning and evening peak hours, when rail travel tends to be busiest.

- The AM peak covers trains arriving into city centres between 07:00 and 09:59, whereas the PM peak reflects trains departing between 16:00 and 18:59.
- A city centre is defined using a cordon to include the major city centre stations. In some cases passengers will not alight at the cordon station but are counted there.
- For crowding statistics, passengers are counted at the busiest station on the route when entering or leaving the city centre.

City centres included in the release



Crowding in context

Crowding occurs when the train's capacity has not met the level of passenger demand, and varies by route and time of day. A feature on the pressures of variable demand throughout the day can be found on page 9 of this release.

Although variations in crowding levels can seem small across cities and over time, the actual numbers of passengers affected by crowding can be large. In London, where passenger numbers are in the hundreds of thousands over the peak periods, a small rise in crowding levels can translate to a large number of passengers experiencing crowded conditions overall.

Additional contextual information on how train design and capacity has changed over time is also available on the accompanying dashboard. This illustrates how some trains are specifically designed for commuter routes to enable more comfortable space for standing to help alleviate pressures during peak travel by increasing capacity on the network.

We welcome your feedback on any aspect of this publication and accompanying materials, please contact rail.stats@dft.gov.uk

2. Key rail trends

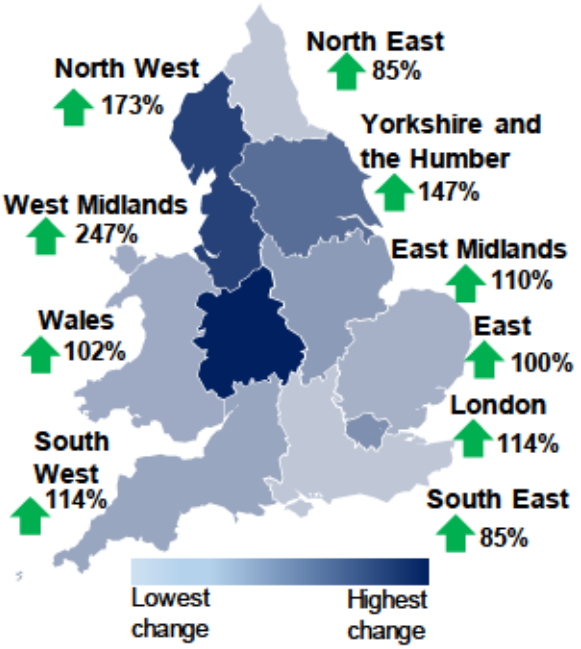
The following section presents previously published statistics about the rail system for context.

Rail passenger journeys in Great Britain reached a record high of 1.8 billion in 2018-19

- Over the last twenty years, passenger journeys have doubled; from 0.9 billion journeys in 1998-99 to almost 1.8 billion journeys in 2018-19.
- All regions in England and Wales have experienced growth in rail passenger numbers across the last two decades.
- London has the highest level of rail usage, with almost two-thirds of rail journeys in 2017-18 starting or ending in London. It also has the highest population density and the lowest level of car ownership per household.

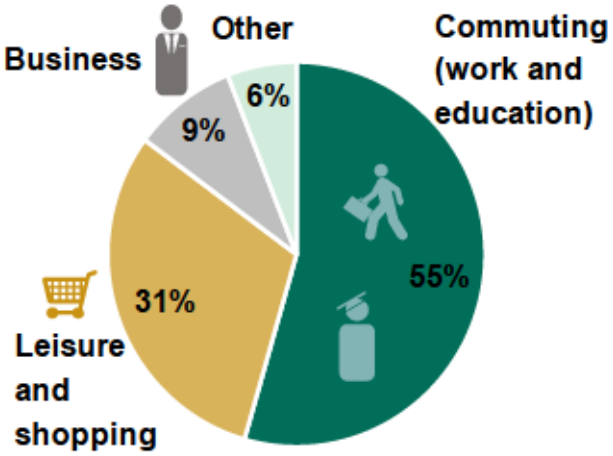
Source: Office of Rail and Road
Passenger Rail Usage 2018-19
Regional Rail Usage 2017-18

Figure 1: Change in rail usage 1997-98 to 2017-18



Over half of rail trips in England in 2017 were for work and education commuting

Figure 2: Rail journey purpose, England 2017



Source: Department for Transport
National Travel Survey 2017

- Nearly one third of rail trips were for leisure purposes and one in ten trips were for business purposes.
- Rail commuting trips per person have increased by over 50% between 2002 and 2017; during this period, there has been a decline in the number of commuting trips made by car per person.
- Rail travel is most common among:

-Males aged 21-49

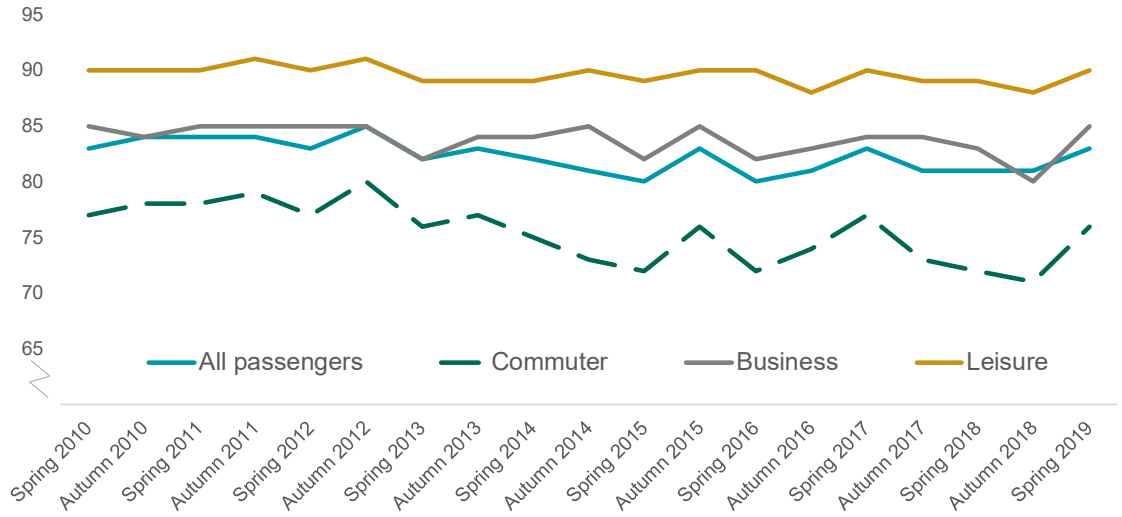
-Higher household income groups

-Those in professional or managerial occupations

Commuters are most likely to experience train crowding, and be less satisfied with levels of crowding

Transport Focus publishes the National Rail Passenger Survey (NRPS) bi-annually. This survey consistently shows that the proportion of commuter journeys rated as satisfactory overall is lower than for other rail journeys.

Figure 3: Proportion of journeys rated satisfactory by journey purpose, NRPS spring 2019



Research shows that being able to get a seat on a train is a top priority for passengers; crowding was also the third most important factor driving dissatisfaction in spring 2019.

Table 1: Proportion of journeys rated satisfactory by journey purpose, NRPS spring 2019

	Commuters	Business	Leisure	All journeys
Aspect of journey				
Overall satisfaction	76%	85%	90%	83%
Satisfaction with crowding levels	61%	78%	82%	72%

The proportion of journeys rated satisfactory for the level of crowding by commuters is particularly low for Manchester city centre stations.

Table 2: Proportion of journeys rated satisfactory by commuters, NRPS spring 2019

	London terminals			Regional city stations				
	Victoria	**London Bridge**	**Liverpool Street**	**Birmingham New Street**	**Leeds**	**Nottingham**	**Cambridge**	**Manchester**
Overall satisfaction	71%	74%	83%	81%	65%	84%	76%	62%
Satisfaction with crowding	60%	64%	62%	56%	57%	59%	61%	50%

Source: Transport Focus
National Rail Passenger Survey

3. Passenger demand

Passenger demand has increased in eleven out of fourteen major cities

All day arrivals:

London

Birmingham

Reading

- London remains the city with the highest rail passenger numbers, where passenger arrivals are 8 times higher than Birmingham, the city with the second highest.
- An additional 46,000 passengers arrived into London compared to a year ago. This is more than the total daily passenger arrivals for eight of the fourteen major cities.
- Reading (10.7%) and Bristol (7.4%) saw the largest percentage increases in all day arrivals on last year.
- Across all cities, departures in the PM peak (+4.8%) have increased faster than arrivals in the AM peak (+3.8%).

Passenger numbers

Passenger numbers are taken from counts conducted on trains at the city centre stations themselves, including standard and first class rail passengers. All services on a 'typical' autumn day are counted.

Table 3: Passenger arrivals and departures by city: autumn 2018

	All day arrivals		AM peak arrivals		PM peak departures	
City	Total	Change from 2017 (%)	Total	Change from 2017 (%)	Total	Change from 2017 (%)
Birmingham	133,900	↑4.5	47,900	↑6.2	48,900	↑5.1
Brighton	33,000	↓-10.6	7,800	↓-2.6	8,700	↓-6.2
Bristol	30,300	↑7.4	9,500	↑2.9	10,400	↑1.3
Cambridge	27,000	↑3.2	8,600	↑11.7	9,000	↑2.0
Cardiff	36,700	↓-0.8	14,100	↑3.9	15,000	↑6.5
Leeds	72,200	↓-0.4	27,300	↑6.2	27,100	↑2.9
Leicester	28,600	↑2.4	6,000	↓-4.2	7,600	↑9.8
Liverpool	63,300	↑0.2	21,200	↑6.0	23,900	↑10.3
Manchester	102,900	↑5.6	35,100	↑4.6	36,300	↑7.7
Newcastle	25,400	↑5.5	4,700	↑7.0	6,600	↑9.0
Nottingham	17,600	↑4.2	5,000	↑2.7	5,400	↓-0.6
Reading	98,600	↑10.7	26,000	↑8.2	27,400	↑7.8
Sheffield	34,000	↑3.1	7,800	↓-0.4	9,600	↑2.4
All cities outside London	**703,400**	**↑3.4**	**221,100**	**↑5.1**	**236,000**	**↑5.4**
London total	**1,100,900**	**↑4.4**	**596,300**	**↑3.4**	**508,600**	**↑4.5**
All cities	**1,804,200**	**↑4.0**	**817,400**	**↑3.8**	**744,500**	**↑4.8**

All figures in this table are rounded to the nearest 100 passengers. Totals may not sum due to rounding.

4. Seating capacity and demand on trains

All cities have seen an increase in AM peak demand since 2010, and all but one had increases in AM peak seating capacity

- In 2018, all cities outside London had more seating capacity in the 3-hour morning peak than demand.
- As some routes are busier than others and some passengers choose to travel on particular services (i.e. fast services), these services suffer most from overcrowding.
- Since 2010, total passenger demand in the morning peak has grown faster than seats in every city except for Bristol and Newcastle.

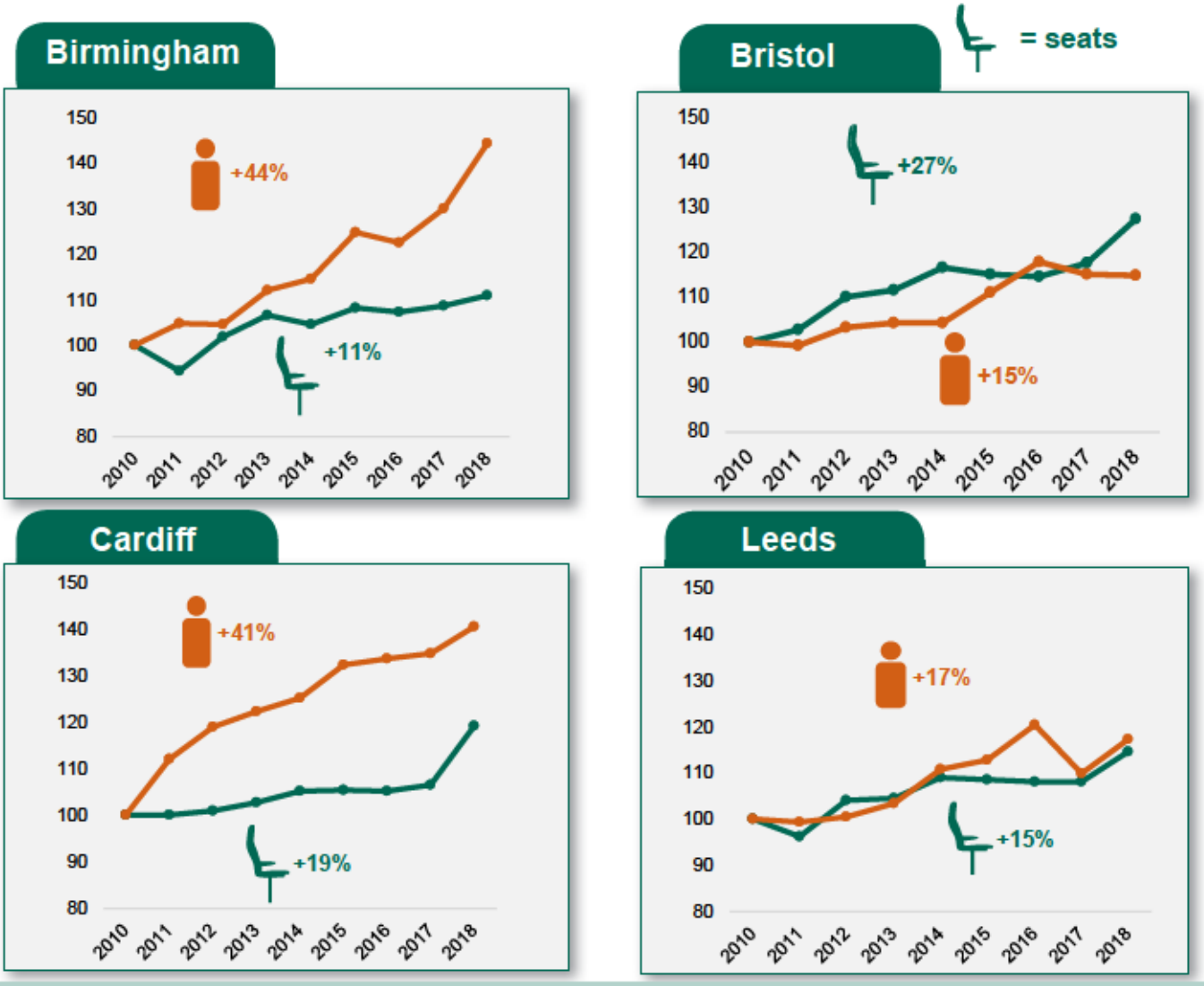
Major Infrastructure Projects HS2

The completion of the Thameslink project has given passengers new journey options into London and the Crossrail project will further increase this. Outside of London, extensive remodelling of city centre stations and upgrades help minimise crowding. In addition, HS2 could free up capacity on the existing network for additional services.

Figure 4: AM Peak Standard Class passengers and seats by city 2010-2018 (2010 = 100)

= passengers

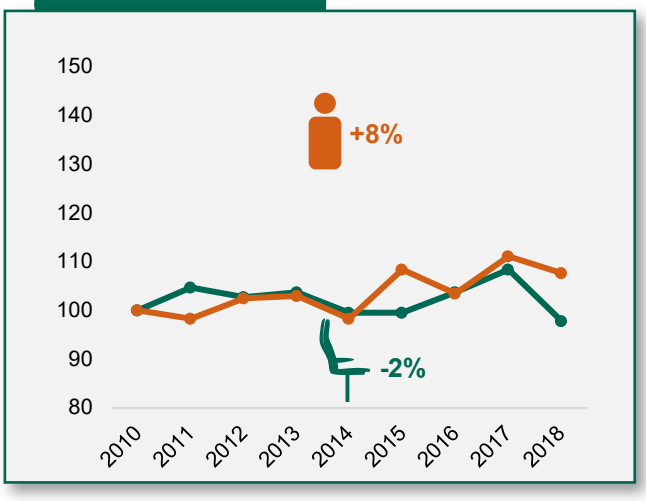
= seats



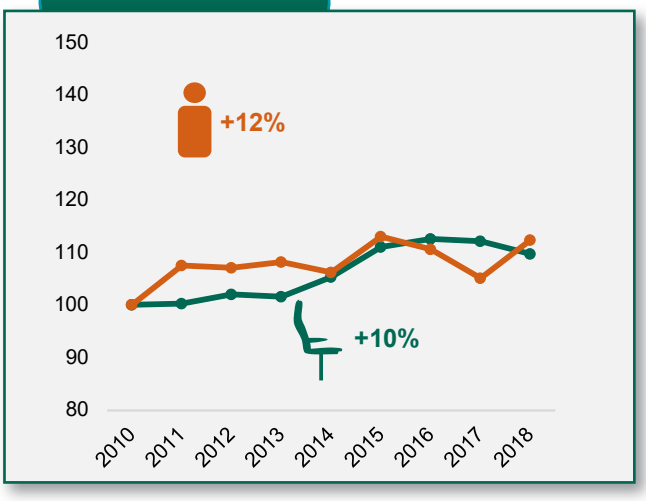
= passengers

= seats

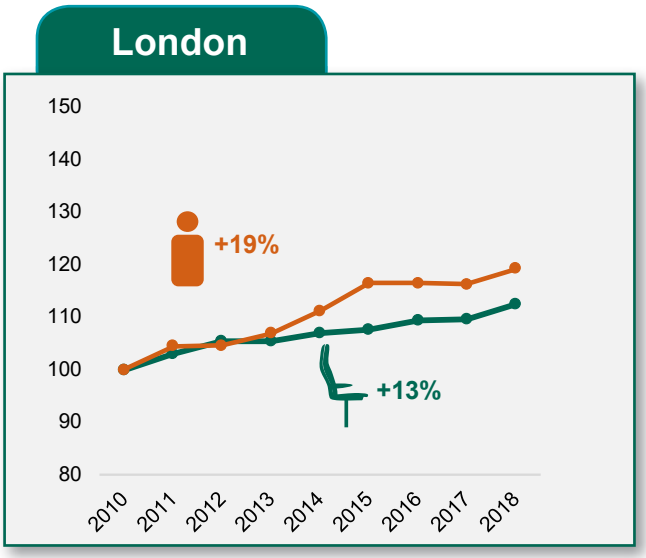
Leicester



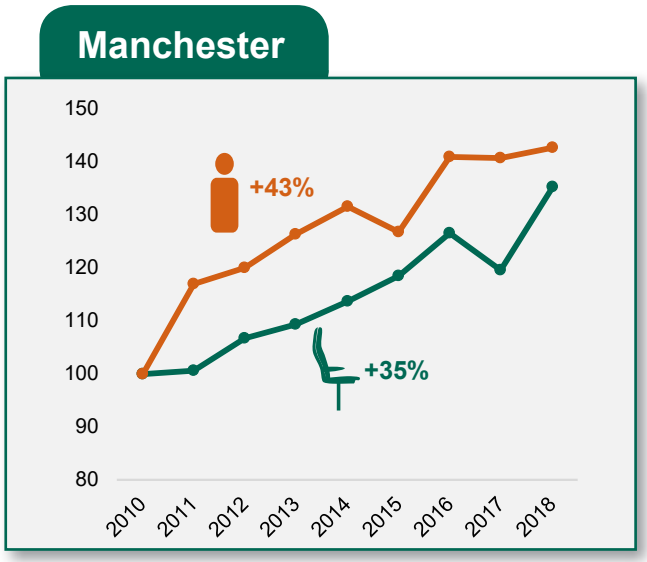
Liverpool



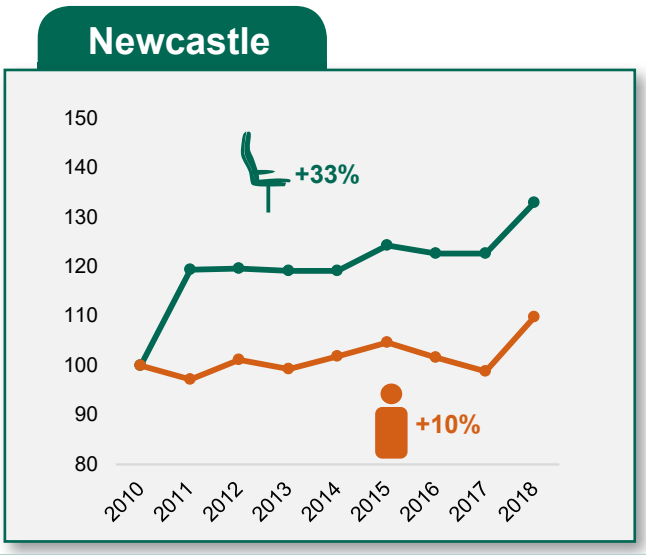
London



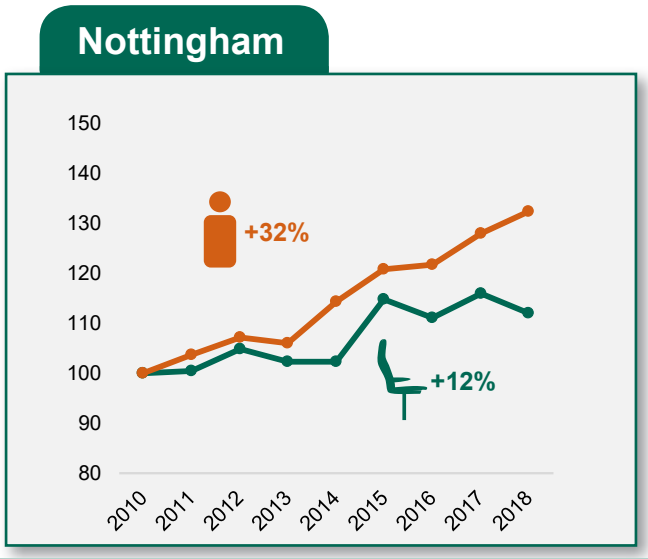
Manchester

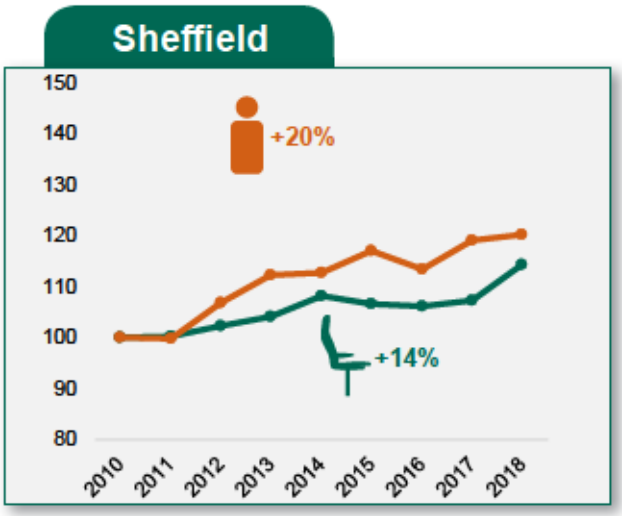


Newcastle



Nottingham





These indices present the changes in passengers and seats within the morning peak only, when rail demand is dominated by commuter flows into and out of the major city centres.

The profile of rail travel throughout the day varies by city due to the mix of journey purposes.

Rail travel into London is predominately in the AM peak, whereas demand is more evenly spread throughout the day in other cities

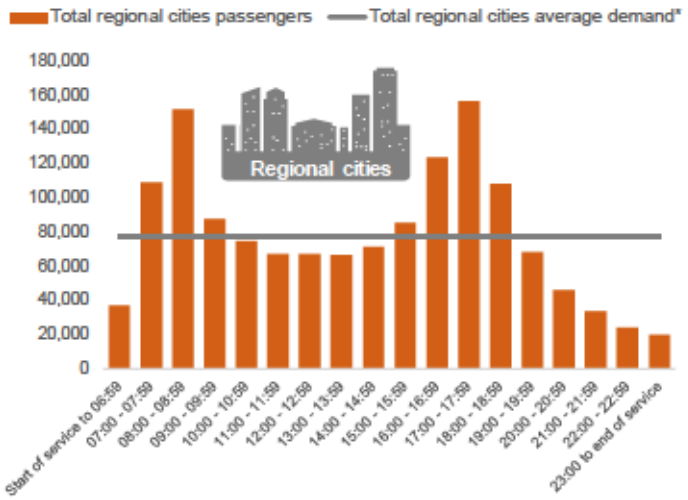
Figure 5: Passengers arriving and departing London, by hour

- Over 1.1 million journeys were made into central London on a typical day. Of these, 54% were made in the morning peak. This is equivalent to nearly 600,000 passengers, and an increase of 3.4% on last year.
- Off-peak arrivals (up 5.6%) increased faster than peak arrivals (up 3.4%) in London compared with a year ago.

- For cities outside of London, there is a more even spread of rail travel across the day, with 70% of arrivals made outside the 3-hour morning peak.
- A larger proportion of passengers travel in the evening peak (27.7%) than the morning peak (24.9%), due to a greater share of business and leisure journeys.

**The average demand represents the number of passengers if the demand was equally spread throughout the day.*

Figure 6: Passengers arriving and departing cities outside London, by hour



The following sections present the two key crowding measures, passengers standing and passengers in excess of capacity:

Measures

Passengers standing (%) – The number of passengers who are in excess of seats. It is represented by passengers standing as a percentage of the total number of passengers travelling.

%

Passengers in Excess of Capacity (PiXC) – PiXC is a metric that was used historically by the DfT to monitor crowding levels. It is defined as the number of standard class passengers who are in excess of total capacity (standard class seats plus a standing allowance), as a percentage of the total number of Standard Class passengers.

Key differences between measures

There are key differences between the passenger number and crowding measures, highlighted in the table below:

Table 4: Key differences between measures presented in this release

	Passenger Numbers	Passengers Standing	PiXC
Where are the data collected?	on trains at the city centres	at the busiest point into and out of the city centre	at the busiest point into and out of the city centre
When are the data collected?	throughout the day	during peak travel times	during peak travel times
Which passengers are counted?	Standard and First class passengers	Standard Class passengers only (as First Class passengers are typically guaranteed a seat)	seated Standard Class passengers and some standing passengers only (as First Class passengers are typically guaranteed a seat)
How are the data presented?	total number	percentage	percentage

PiXC takes into account demand and capacity, so a city with few passengers and train services could have a higher PiXC score than one with many more passengers and services.

For further details please view the accompanying notes and definitions.

5. Passengers standing

There has been a relatively high increase in passengers standing in Birmingham, Leeds and Liverpool

- For Birmingham and Liverpool, increases in the percentage of passengers standing during the morning peak drove the overall increases across the peaks, whereas for Leeds it was the evening peak.
- However, Manchester recorded the largest improvement, with a decrease of 2.8 percentage points (pp). Bristol and Newcastle recorded the second largest improvement (-1.3pp).
- Passengers standing in London improved by 0.3pp to 19.4% of passengers standing. This equates to 238,500 passengers standing across the peaks, more passengers than the total arriving into other major cities.
- All cities have been relatively stable, with a combined 16.8% of passengers standing during peak hours, the same as last year.

All cities, percentage of passengers standing, 2018:

AM peak 19.8%

PM peak 13.6%

Both peaks 16.8%

Train designs

On some routes, particularly those which serve commuters, train companies use rolling stock that are designed with a higher capacity of standing space.

Further information on train design and how this has evolved over time is available on the accompanying interactive dashboard, see: http://maps.dft.gov.uk/rail-passengers-and-crowding/interactive-dashboard/index.html

Table 5: Passengers standing across both peaks by city, autumn 2018

City	Passengers Standing	% standing	Change from 2017 (pp)
Birmingham	17,300	17.1%	↑3.9
Brighton	1,100	7.0%	↑0.8
Bristol	700	3.9%	↓-1.3
Cambridge	2,400	14.0%	↓-0.9
Cardiff	3,000	10.3%	↓-0.7
Leeds	7,900	14.7%	↑3.3
Leicester	500	4.0%	→0.0
Liverpool	2,200	5.0%	↑2.6
Manchester	7,200	9.8%	↓-2.8
Newcastle	300	2.6%	↓-1.3
Nottingham	700	6.4%	↑2.1
Reading	1,200	2.3%	↑0.4
Sheffield	1,000	5.8%	↑1.0
All cities outside London	**45,500**	**10.0%**	**↑1.1**
London total	**238,500**	**19.4%**	**↓-0.3**
All cities	**283,500**	**16.8%**	**0.0**

All figures in this table are rounded to the nearest 100 passengers. Totals may not sum due to rounding.

Cities

Outside London, passengers standing in the AM peak increased

- Most cities experienced an increase in standing passengers within the morning peak. Cardiff, Leicester and Newcastle all saw increases in the morning peak but the evening peak drove an overall decrease.
- Passengers standing within the 3-hour morning peak in London has remained around one quarter for each of the last 3 years.
- While London has the highest level of standing passengers, Birmingham and Cardiff have seen the largest increases since 2010, over 10pp. Whereas, Bristol experienced the largest decrease of 4.3pp.

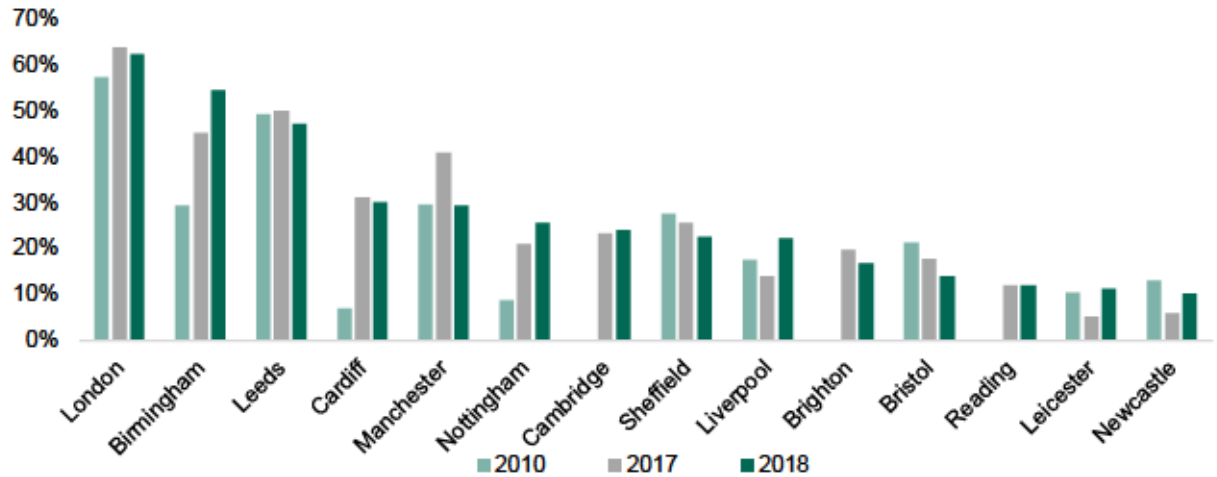
Table 6: Percentage of passengers standing in the AM peak by city: autumn 2018

City	% standing	Change from 2017 (pp)	Change from 2010 (pp)
Birmingham	19.2%	↑4.5	↑10.5
Brighton	6.5%	↓-0.4	-
Bristol	3.0%	↓-0.1	↓-4.3
Cambridge	16.0%	0.0	-
Cardiff	12.0%	↑0.3	↑10.4
Leeds	15.2%	↑2.9	↑2.4
Leicester	1.9%	↑0.7	↓-2.4
Liverpool	6.7%	↑4.0	↑3.9
Manchester	10.3%	↓-4.8	↓-0.7
Newcastle	5.0%	↑1.6	↑2.1
Nottingham	4.6%	↑1.9	↑2.4
Reading	3.2%	↑0.7	-
Sheffield	4.7%	↓-0.1	↓-2.4
All cities outside London	**11.0%**	**↑1.2**	**-**
London total	**22.7%**	**↓-0.2**	**↑3.4**
All cities	**19.8%**	**↑0.1**	**-**

% standing = Percentage of passengers in excess of standard class seats

% services = Percentage of train services with at least one passenger in excess of standard class seats

Figure 7: AM peak services with standing into major cities, compared with the previous year and 2010



Statistics for Brighton, Cambridge and Reading were first published in autumn 2017. Therefore, the figures for 2010 are unavailable for these cities.

London Stations

The percentage of passengers standing into London has decreased compared to last year

Re-routed services

Some London stations have experienced large fluctuations in passenger numbers in the last year, despite small changes in the London totals. This reflects re-routing of services as major projects such as Thameslink are underway. The completion of the Thameslink programme and redevelopment of London Bridge station in 2018 has given rail passengers more capacity and future journey options in London.

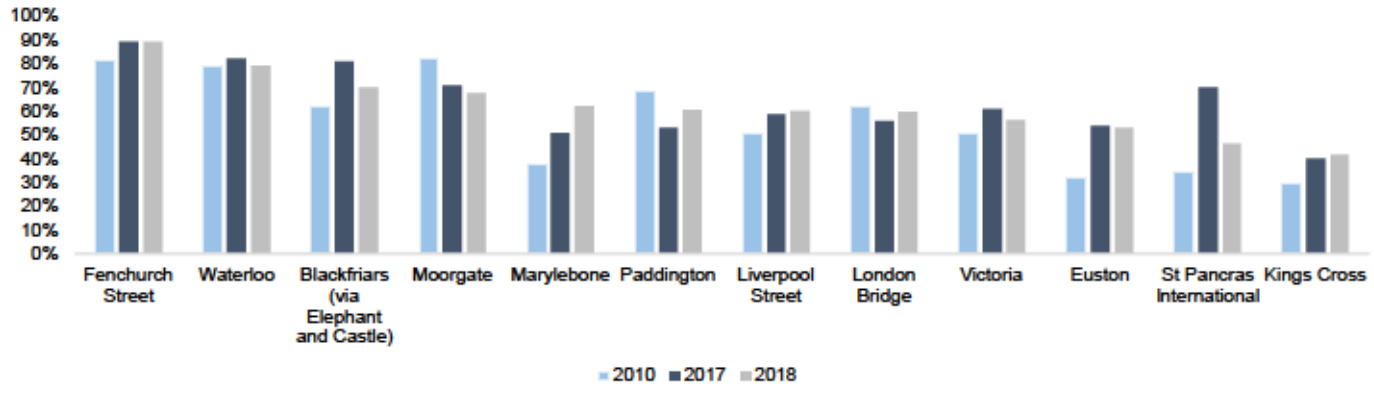
THAMESLINK PROGRAMME

- In autumn 2018, nearly 1 in 4 passengers (22.7%) were standing on a service arriving into London within the AM peak (07:00 -09:59). This is a decrease from a year ago, but an increase from the 19.3% of passengers standing in 2010.
- Paddington has seen the largest increase in passengers standing during the morning peak in comparison to autumn 2017. Whereas Marylebone saw the largest increase in the number of services which recorded passengers standing across the same period.

Table 7: Percentage of passengers standing in the AM peak by London station: autumn 2018

London Station	% standing	Change from 2017 (pp)	Change from 2010 (pp)
Blackfriars	32.7%	↓-2.9	↑15.2
Euston	19.8%	↑0.5	↑9.8
Fenchurch Street	31.7%	↑1.0	↑13.7
Kings Cross	13.0%	↓-3.9	↑8.7
Liverpool Street	24.4%	↑2.8	↑8.6
London Bridge	22.5%	↑1.1	↑0.5
Marylebone	12.6%	↑1.5	↑3.6
Moorgate	23.4%	↓-1.8	↓-0.2
Paddington	20.3%	↑9.8	↓-5.0
St Pancras	17.1%	↓-7.3	↑7.6
Victoria	14.8%	↓-4.5	↓-2.9
Waterloo	27.9%	↓-1.0	↑0.7
London total	**22.7%**	**↓-0.2**	**↑3.4**

Figure 8: AM peak services with standing into London stations, compared with the previous year and 2010



6. Passengers in excess of capacity (PiXC)

Cambridge had the highest level of peak crowding (4.8%), whereas London has the highest number of crowded passengers

- Nearly 50,000 passengers were in excess of capacity across both peaks in London (4.0%), a decrease of 0.1pp on the previous year.
- Half of the major cities have seen an improvement or no change in PiXC in the last year. Newcastle saw a decrease of 2.0pp PiXC, whereas Brighton saw the largest increase of 2.0pp in PiXC from last year.

Passengers in excess of capacity
(change from autumn 2017):

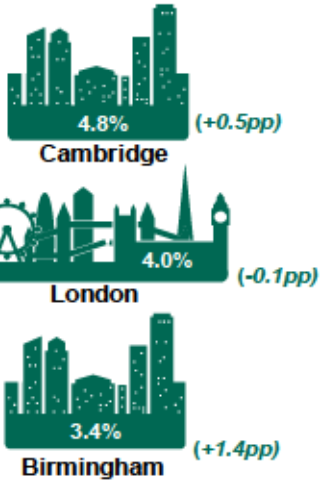


Table 8: PiXC by city and London station: autumn 2018

City	Both peaks PiXC	PiXC (%)	Change from 2017 (pp)	Change from 2011 (pp)
Birmingham	3,500	3.4%	↑1.4	↑1.4
Brighton	400	2.2%	↑2.0	-
Bristol	300	1.8%	↑0.3	↑0.9
Cambridge	800	4.8%	↑0.5	-
Cardiff	800	2.7%	↑0.1	↑2.1
Leeds	1,000	1.9%	↓-0.5	↑0.1
Leicester	200	1.5%	↓-1.1	↑0.9
Liverpool	0	0.0%	0.0	↓-0.2
Manchester	1,600	2.1%	↓-1.1	0.0
Newcastle	0	0.3%	↓-2.0	↑0.0
Nottingham	300	2.5%	↑1.7	↑2.3
Reading	200	0.5%	0.0	-
Sheffield	200	1.0%	↑0.1	↓0.5
All cities outside London	9,300	2.0%	↑0.2	↑0.6
Routes into major London stations				
Blackfriars	100	0.2%	↓-3.6	↓-3.1
Euston	2,700	4.7%	↑0.4	↓-0.3
Fenchurch Street	3,700	4.9%	↑0.7	↑2.3
Kings Cross	2,200	5.9%	↓-1.4	↑4.7
Liverpool Street	14,500	7.0%	↑1.5	↑2.9
London Bridge	4,000	1.4%	↓-1.0	↓-0.8
Marylebone	2,000	6.5%	↑0.6	↑3.2
Moorgate	1,900	5.7%	↑1.3	↑2.8
Paddington	3,700	6.1%	↑2.3	↓-3.8
St Pancras	3,900	5.1%	↑2.5	↑2.3
Victoria	1,200	0.9%	↓-1.0	↓-1.2
Waterloo	9,900	4.8%	↓-1.2	↑1.4
London total	49,600	4.0%	↓-0.1	↑0.8
All cities	58,900	3.5%	0.0	↑0.6

All figures in this table are rounded to the nearest 100 passengers. Totals may not sum due to rounding.

Passenger crowding

Crowding levels, measured using PiXC, are derived from passenger counts at a train's busiest point on route into (AM peak) or out of (PM peak) a city centre.

PiXC statistics show the overall percentage of passengers that exceed each train's capacity. For example, a train with a capacity of 90 carrying 100 standard class passengers has a PiXC of 10. This is divided by the total number of standard class passengers to give a percentage (10/100 = 10%). While PiXC is shown as a percentage, there will be large differences in the absolute number of crowded passengers at each city.

Most overcrowded trains

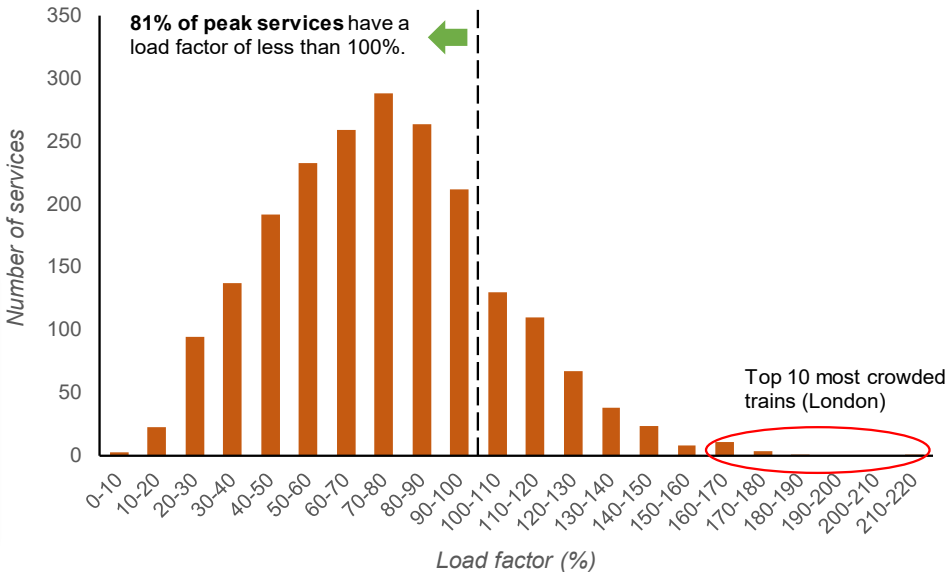
⚠ This page looks at the loading at the busiest point for the 10 busiest peak trains during the autumn period when passenger numbers tend to be highest. These trains make up a small fraction of all services and do not represent general conditions on the railway. As per the rest of this publication, this list looks at train services over the autumn period only.

This list represents less than 0.05% of daily train services

In 2018-19, almost 1.8 billion passenger journeys were made to over 2,500 stations in Great Britain. The ten listed services represent 0.05% of the average 20,000 train services running on the network each day.

The **load factor** shows the number of standard class passengers as a percentage of the maximum allowable standard class passenger capacity at the busiest calling point on route to or from the city centre.

Figure 9: London services across both peaks, autumn 2018



1.	*17:46 London Euston to Crewe (West Midland Trains- WMT)*
Service information	During autumn 2018, twelve WMT services departed London Euston within an hour of this service with an average load factor of 96%. This service recorded a load factor of 214% on departure from London Euston.
Reducing crowding	From May 2019 WMT introduced timetable changes to increase the available capacity on a number of alternative services. Further capacity enhancements planned include service initiatives, introduction of new trains and facilitation for HS2 on this route.

2.	*18:07 London Liverpool Street to King's Lynn (Greater Anglia- GA)*
Service information	The load factor was 183% at Tottenham Hale. Within an hour of this service, 32 GA services departed Liverpool Street in autumn 2018 with an average load factor of 76%.
Reducing crowding	New Bombardier rolling stock are due to be introduced. This will increase available capacity on this route, with 64% more seats.

3.	*08:22 Shenfield to London Liverpool Street (TfL Rail)*
Service information	The heaviest loading on this service is 180% at Stratford at 09:05, based on a single manual count of passengers. There were typically 14 additional TfL services arriving at Liverpool Street in autumn 2018 with an average load factor of 112% within this hour.
Reducing crowding	This service will be switched to a new Class 345 train. This is a new, higher capacity rolling stock which is expected to be introduced in autumn 2019.

4.	*07:38 Enfield Town to London Liverpool Street (London Overground- LO)*
Service information	The load factor was 177% at Seven Sisters (08:16), taken from a single daily count. In autumn 2018, 11 LO services arrived within the hour, with an average load factor of 98%.
Reducing crowding	This usually operates as an 8 car-service, but was short-formed during the count period due to a lack of available units. Higher capacity trains are planned for the future.

5.	*08:05 Gidea Park to London Liverpool Street (TfL Rail)*
Service information	Arriving at Liverpool Street within this hour there are usually an additional 14 TfL services with an average load of 131%. The heaviest load for this service was 177% at Stratford at 08:37. This information was based on an atypical single daily count.
Reducing crowding	This service will be switched to the new, higher capacity, rolling stock in the future.

6.	*07:02 Woking to London Waterloo (South Western Railway- SWR)*
Service information	A load of 175% was recorded at Waterloo at 07:49. Within this hour, 55 additional SWR services arrived at Waterloo with an average load factor of 85% in autumn 2018.
Reducing crowding	From May 2019 an Esher to Waterloo service calls additionally at Surbiton approximately 10 minutes ahead of this service to alleviate the high Surbiton to Waterloo flow. Additionally, the current fleet is being refurbished to provide additonal capacity.

7.	*07:34 Norwich to Cambridge (Greater Anglia- GA)*
Service information	This was a 3-car service with no standing allowance. At Cambridge the heaviest load of 173% was recorded at 08:52. This information was based on a single daily count.
Reducing crowding	New Stadler bi-modes are planned to operate on this route which will increase seats by 27%.

8.	*06:54 Ipswich to Cambridge (Greater Anglia - GA)*
Service information	This was a 3-car service with no standing allowance. At Cambridge the heaviest load of 171% was recorded at 08:19. This information was based on a single daily count.
Reducing crowding	New Stadler bi-modes are planned to operate on this route which will increase seats by 27%.

9.	*07:18 King's Lynn to London Kings Cross (Govia Thameslink Railway- GTR)*
Service information	This service had a load factor of 170%, with the heaviest loading between Letchworth and London Kings Cross at 09:04. It currently operates with the maximum of 8 cars.
Reducing crowding	The current 8 cars are intended to be increased to 12 cars from May 2020, subject to platform reallocations to allow a longer train formation at London Kings Cross.

10.	*07:18 Bedford to Brighton (Govia Thameslink Railway- GTR)*
Service information	This records a 168% load factor at St Pancras, with the heaviest loading between St Albans and St Pancras at 08:20. This train is designed to maximise comfortable standing.
Reducing crowding	As further trains are introduced in subsequent phases of the Thameslink programme crowding levels should reduce further.

Passenger numbers on individual train services

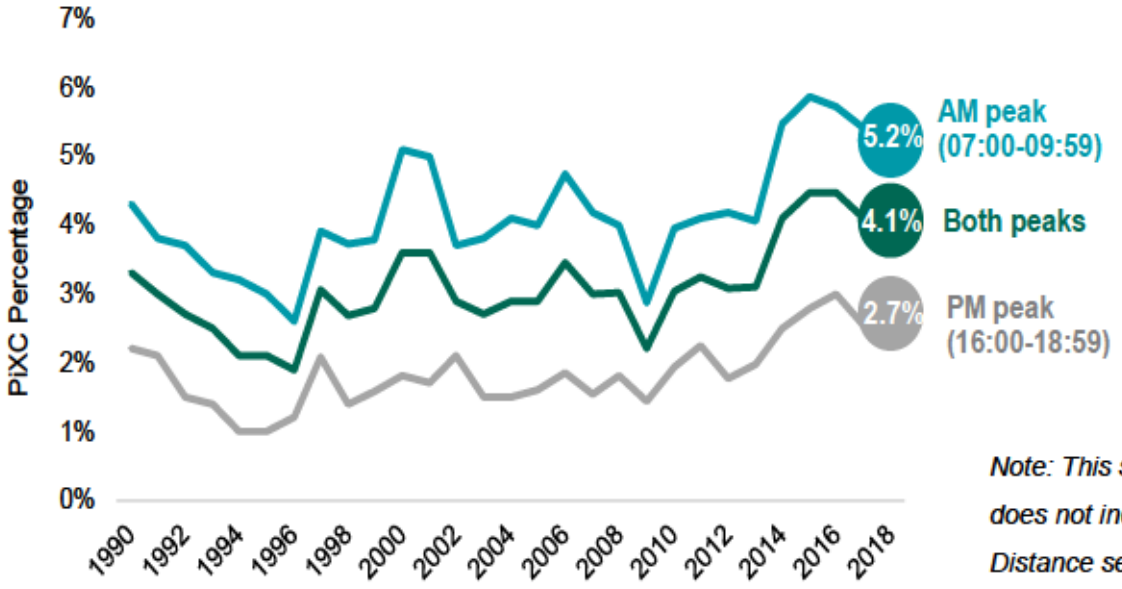
Statistics on individual services are not always robust due to fluctations in passenger numbers from day to day. These are also more susceptible to measurement errors, particularly as some of these are based on a single daily count. This list should be treated with caution and referenced alongside the aggregate statistics for trends in crowding.

7. Passenger numbers and crowding in London

Morning peak crowding in London is at its lowest since 2014

- Since 2010, passengers arriving into London during the morning peak has increased 14%.
- Over the same time period, peak crowding levels to and from London have increased, but over the last two years these have slightly declined. Morning peak PiXC for London and South East operators is at its lowest level since 2014, and PiXC across both peaks is at its lowest level since 2013.

Figure 10: PiXC for London & South East operators, 1990 to 2018



Note: This series does not include Long Distance services.

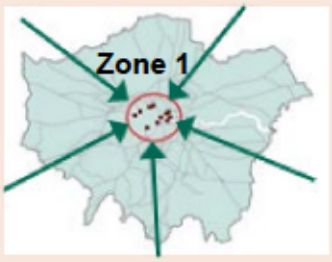
Table 9: Passenger numbers and PiXC at major London stations during the AM peak

AM peak	2010	2011	2012	2013	2014	2015	2016	2017	2018
Passengers	521,200	533,200	536,200	545,300	563,400	581,400	583,400	577,000	596,300
PiXC	3.9%	4.1%	4.1%	4.1%	5.4%	5.8%	5.7%	5.4%	5.2%

Passenger counts in London

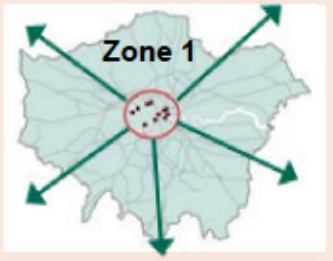
Passenger numbers arriving into London are counted on arrival at the first station stop in Zone 1 of the TfL Travelcard area on route to London. For example, services terminating at Charing Cross or Cannon Street will be counted at London Bridge. Conversely, passengers departing London are counted at the final station from which a train departs before leaving Zone 1.

AM peak arrivals



Between 7am and 10am

PM peak departures



Between 4pm and 7pm

Several central London stations have experienced large fluctuations in passenger numbers since last year

Re-routing of services on completion of major projects such as Thameslink and the re-development of London Bridge has resulted in large fluctuations in the passenger numbers at London stations.

Table 10: Passenger numbers and seats during the AM peak by central London station, 2010-2018

	Passenger numbers			Passenger seats		
Central London Station	Total	Change from 2017 (%)	Change from 2010 (%)	Total	Change from 2017 (%)	Change from 2010 (%)
Blackfriars	18,800	↓-25.6	↓-4.5	14,300	↓-28.2	↓-22.9
Euston	30,700	↓-0.6	↑34.1	33,000	↑2.0	↑17.6
Fenchurch Street	26,600	↑1.8	↑12.1	28,100	0.0	↑11.3
Kings Cross	18,400	↓-16.9	↑6.0	22,800	↓-15.8	↓-8.7
Liverpool Street	74,700	↑4.5	↑16.4	95,600	↓-1.0	↑11.9
London Bridge	155,800	↑14.5	↑16.6	135,400	↑7.2	↑13.7
Marylebone	15,800	↑4.5	↑37.4	15,100	↓-2.5	↑27.2
Moorgate	12,700	↓-1.4	↓-1.9	15,300	↑10.0	↑24.5
Paddington	31,500	↑12.5	↑20.7	31,400	↓-0.5	↑21.4
St Pancras International	38,400	↑7.7	↑34.4	40,100	↑24.5	↑20.0
Victoria	58,600	↓-6.7	↓-9.7	72,500	↑2.8	↑9.7
Waterloo	114,400	↑3.4	↑19.4	90,000	↑5.3	↑13.1
London total	**596,300**	**↑3.4**	**↑14.4**	**593,437**	**↑2.4**	**↑11.9**

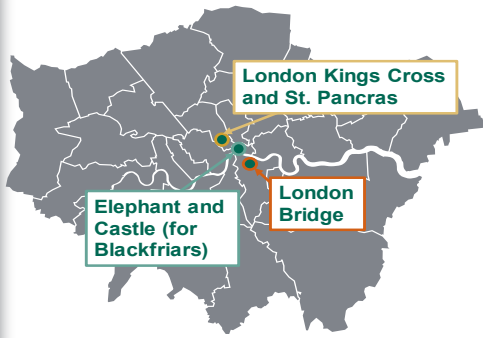
London Bridge and Blackfriars

Since 2009, the Thameslink Programme rebuilt Blackfriars and London Bridge. Whilst work was underway some services were re-routed from London Bridge to Blackfriars, which is evident in changes to crowding levels seen in previous publications. These services have now returned to London Bridge and the new Thameslink trains with increased capacities are in operation.

London Bridge and Blackfriars (combined totals in the AM peak):

174,600 passengers
8.2% increase since 2017

149,600 seats
2.4% increase since 2017



Kings Cross and St Pancras International

These stations are connected and share an underground station. In autumn 2018, a large decrease in passengers travelling into Kings Cross (16.9%) corresponded with an increase in passengers at St Pancras International (7.7%), largely as a result of additional route options from the Thameslink Programme.

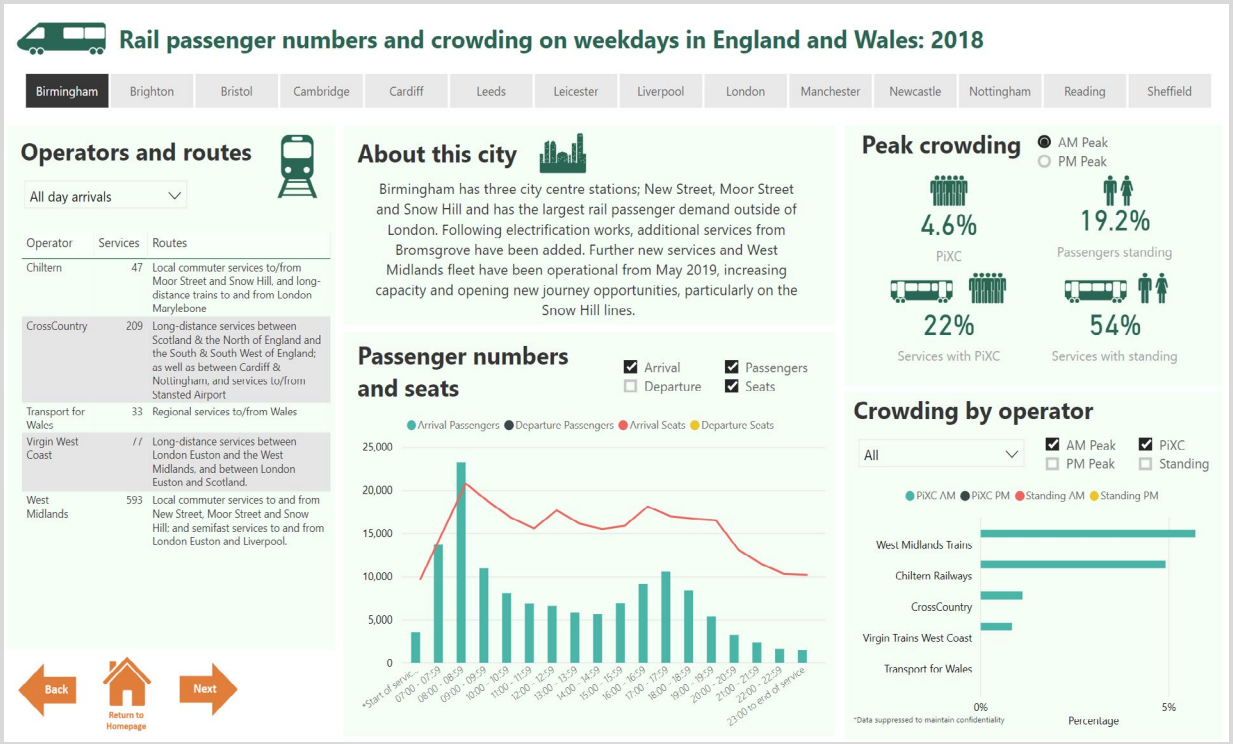
Kings Cross and St Pancras (combined totals in the AM peak):

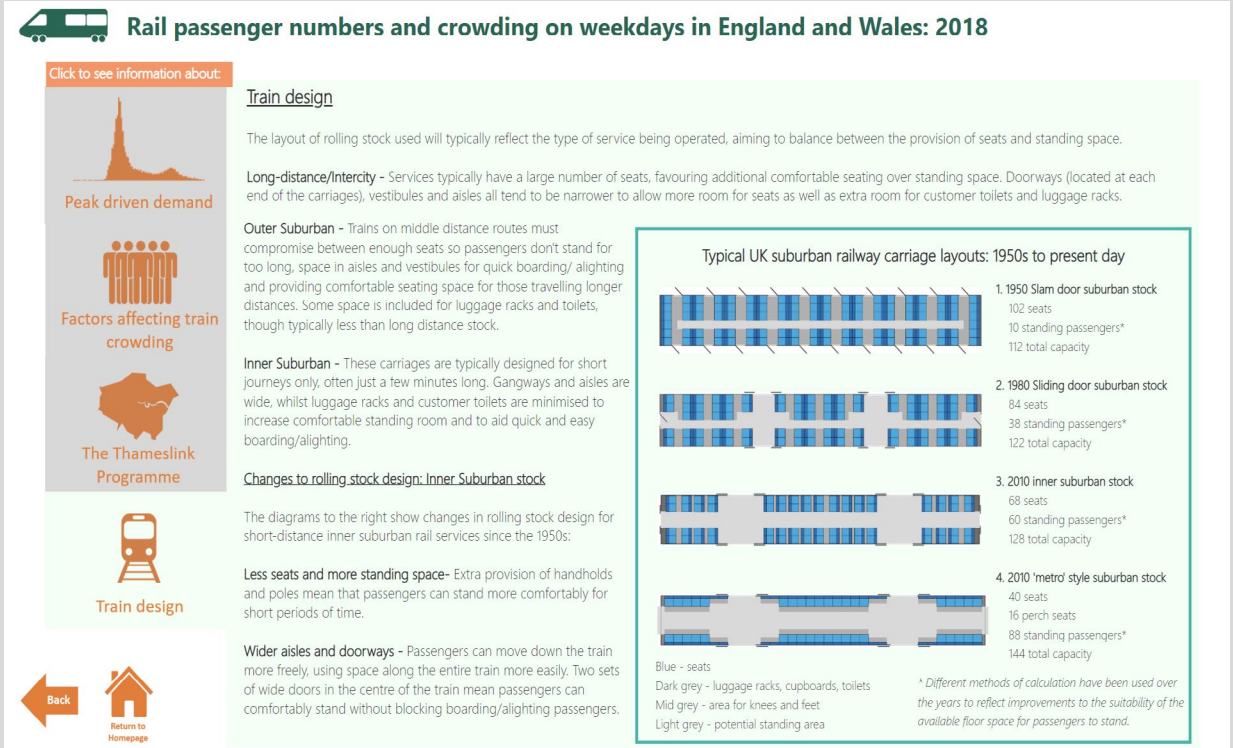
56,800 passengers
1.7% decrease since 2017

63,000 seats
6.1% increase since 2017

If you are viewing this digitally, you can view the statistics summaries for each city and cental London using our interactive dashboard at the following link:

http://maps.dft.gov.uk/rail-passengers-and-crowding/interactive-dashboard/index.html





8. Autumn 2018 statistics summary

Table 11: Summary statistics across the peaks, with the change since autumn 2017

City/Station	Total peak passenger numbers		Total peak seats		Passengers standing		PiXC	
Birmingham	96,874	6%	107,122	2%	17%	4%	3.4%	1%
Brighton	16,503	-5%	38,083	3%	7%	1%	2.2%	2%
Bristol	19,874	2%	31,480	10%	4%	-1%	1.8%	0%
Cambridge	17,624	7%	35,452	18%	14%	-1%	4.8%	1%
Cardiff	29,087	5%	46,461	11%	10%	-1%	2.7%	0%
Leeds	54,424	5%	61,870	3%	15%	3%	1.9%	-1%
Leicester	13,613	3%	22,050	-2%	4%	0%	1.5%	-1%
Liverpool	45,157	8%	66,020	-1%	5%	3%	0.0%	0%
London	1,104,909	4%	1,177,249	4%	19%	0%	4.0%	0%
Manchester	71,397	6%	97,597	13%	10%	-3%	2.1%	-1%
Newcastle	11,378	8%	22,229	9%	3%	-1%	0.3%	-2%
Nottingham	10,365	1%	15,675	-1%	6%	2%	2.5%	2%
Reading	53,372	8%	103,543	12%	2%	0%	0.5%	0%
Sheffield	17,383	1%	25,737	5%	6%	1%	1.0%	0%
Central London Stations								
Elephant and Castle	33,095	-24%	28,670	-21%	26%	-7%	0.2%	-4%
Euston	59,821	-2%	66,952	1%	18%	0%	4.7%	0%
Fenchurch Street	50,229	2%	54,024	0%	30%	1%	4.9%	1%
Kings Cross	36,780	-21%	45,525	-16%	10%	-5%	5.9%	-1%
Liverpool Street	144,424	6%	188,370	-1%	22%	4%	7.0%	1%
London Bridge	280,297	15%	266,784	10%	18%	1%	1.4%	-1%
Marylebone	29,638	5%	29,576	-2%	11%	3%	6.5%	1%
Moorgate	22,631	3%	30,160	7%	20%	1%	5.7%	1%
Paddington	57,923	12%	63,683	4%	15%	7%	6.1%	2%
St Pancras International	74,159	12%	81,206	26%	14%	-6%	5.1%	3%
Victoria	110,058	-6%	144,858	2%	11%	-5%	0.9%	-1%
Waterloo	205,854	4%	177,441	6%	25%	-1%	4.8%	-1%

**percentage points- the change in percentage points since autumn 2017*

An infographic showing theses statistics by city and London station is available below:

https://www.gov.uk/government/statistics/rail-passenger-numbers-and-crowding-on-weekdays-in-major-cities-in-england-and-wales-2018

9. Technical information

Strengths and weaknesses of the data

The statistics on rail passenger demand and crowding are based on counts carried out by train operators of the numbers of passengers using their services, either using automatic counting equipment fitted to trains or manual counts carried out on board trains or at stations. While the statistics should be a reliable guide to the magnitude of passenger numbers at particular locations and at different times of day, there are a number of factors which can affect these statistics.

- Passenger numbers on individual train services fluctuate from day to day and may vary across the autumn period. This can have an impact on the aggregate statistics, depending on the sample of days each year on which passengers on particular services are counted. This particularly affects cases when counts are based on a small number of services or where services have only been counted a small number of times, as changes from year to year may reflect these fluctuations rather than a genuine trend. For the same reason, small differences in the crowding figures between routes or when comparing different years should be treated with caution.

- Passenger counts can be subject to measurement errors. For example with manual counts there is a risk of human error leading to incorrect counts, particularly on busy trains. Load-weighing equipment calculates the passenger load by assuming an average weight per passenger, which may not always be representative of the passengers on every train, and all automatic counting equipment can sometimes develop faults.

- The statistics are designed to represent a typical weekday during school term time in the autumn and may not be representative of other times of year, or on particular days of the week. They will also not reflect crowding seen on days when there was disruption. The autumn period is used because it is the time of year when commuter demand is generally at its greatest, but this will not necessarily be the case for all operators and on all routes, and crowding may be higher at other times of year or on particular days of the week in some cases.

- The basis on which standing allowances for different types of rolling stock are calculated can vary between train operators, usually because of the types of rolling stock in their fleets and the types of passenger services they provide. The method for calculating them has also varied over time. This will have an impact on the PiXC figures for each operator.

- Because some services include a standing allowance in their standard class capacity while longer distance services only include the number of standard class seats, the nature of PiXC is different in these cases. On services with no standing allowance it represents passengers having to stand for more than 20 minutes, whereas on services with a standing allowance, it represents passengers standing in cramped conditions.

More information about the methodology behind these statistics and factors that affect them can be found in the notes and definitions document that accompanies this statistical series: https://www.gov.uk/government/publications/rail-statistics-guidance.

Tables accompanying this release

Ten tables have been published alongside this release, three showing passenger number statistics and seven showing crowding statistics. The tables are listed below and can be found at the following link: https://www.gov.uk/government/statistical-data-sets/rai02-capacity-and-overcrowding.

Passenger number statistics tables

Table no.	Table title
RAI0201	City centre peak and all day arrivals by rail on a typical autumn weekday, by city: annual from 2010
RAI0202	City centre arrivals and departures by rail on a typical autumn weekday, by city and time band: annual from 2011
RAI0203	Central London arrivals and departures by rail on a typical autumn weekday, by station and time band: annual from 2011

Crowding statistics tables

Table no.	Table title
RAI0209	Passengers in excess of capacity (PiXC) on a typical autumn weekday by city: annual from 2011
RAI0210	Passengers in excess of capacity (PiXC) on a typical autumn weekday on London and South East train operators' services: annual from 1990
RAI0211	Passengers in excess of capacity (PiXC) on a typical autumn weekday by operator: London and South East train operators: annual from 2000
RAI0212	Peak rail capacity, standard class critical loads and crowding on a typical autumn weekday by city: annual from 2010
RAI0213	Peak rail capacity, standard class critical loads and crowding on a typical autumn weekday in London by terminal: annual from 2010
RAI0214	Peak crowding on a typical autumn weekday by city and train operator: annual from 2011
RAI0215	Peak crowding on a typical autumn weekday in London by terminal and train operator: annual from 2011

Revisions

Following a change of methodology used for calculating PiXC where estimations of first class passengers were applied, revisions have been made to the back-series of PiXC statistics from 2011 to 2014. More information on these revisions can be found here: https://www.gov.uk/government/publications/rail-statistics-guidance.

Definitions

The following definitions are used in this publication and accompanying tables.

Afternoon (PM) peak	All services that depart from a city centre in the 3-hour period from 16:00 to 18:59. The 1-hour PM peak includes all departures between 17:00 and 17:59.
Automatic passenger count (APC)	A passenger count collected by electronic equipment fitted to a train, for example 'infra-red' or 'load weighing' systems.
Autumn period	The period from mid-September to mid-December, excluding school holidays and bank holidays.
City centre	One or more selected railway stations in the centre of the city. In London this includes all stations within Zone 1 of the Transport for London (TfL) Travelcard area.
Cordon point	For 'arrivals' this is the first station that a service calls at or passes on route into city centre terminals. For 'departures' it is the last station that a service calls at or passes on its way out of a city centre.
Critical load point	The station where the standard class passenger load on a service is highest on arrival at (AM peak) or on departure from (PM peak) a city centre. Critical load points can vary each time a service runs but will usually be at the same location for services on the same route.
Franchised train operator	A train operator that is franchised by DfT or another government body. Non-franchised train operators' services are not included in these statistics.
Manual passenger count	A passenger count carried out without the use of electronic counting equipment, either on board a train (often by the train guard) or on a platform.
Morning (AM) peak	All services arriving at a city centre in the 3-hour period from 07:00 to 09:59. The 1-hour AM peak includes all arrivals between 08:00 and 08:59.
Number of passengers	Includes all standard and first class passengers on services when they arrive at or depart from the city centre .
Number of services	The number of services that the statistics are based on. This includes all train operators' services timetabled to run during the autumn period.
Passenger count	A count carried out by a train operator of the number of passengers on board a train at a particular point along its route.
Passengers in excess of capacity (PiXC)	The number of standard class passengers on a service that are in excess of the standard class capacity at the critical load point.
Passengers standing	The number of standard class passengers on a service that are in excess of the number of standard class seats at the critical load point.
Total seats	Includes all standard and first class seats on services when they arrive at or depart from the city centre.
Service	A train service refers to a specific train that operates routinely during the autumn timetable period, for example, the 10:00 Kings Cross to Aberdeen 17:06 service.
Standard class capacity	Includes the number of standard class seats on the service and may include a standing allowance.

Background notes

- Further information about the statistics in this report can be found in the notes and definitions.
- To retain data confidentiality, some services have been suppressed. See the notes and definitions for details of the confidentiality of passenger count data.

- The United Kingdom Statistics Authority designated these statistics as National Statistics in 2013, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics. The continued designation was confirmed in October 2017: https://www.gov.uk/government/publications/national-statistics-status-of-rail-passenger-numbers-and-crowding-statistics/national-statistics-status-of-rail-passenger-numbers-and-crowding-statistics
- Designation can be broadly interpreted to mean that the statistics:
  - meet identified user needs;
  - are well explained and readily accessible;
  - are produced according to sound methods, and
  - are managed impartially and objectively in the public interest.
  - Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.
- Details of Ministers and officials who receive pre-release access to these statistics up to 24 hours before release can be found in the pre-release access list.

Users and uses of these statistics

These statistics and the underlying passenger counts are used within Government and across the rail industry for a wide variety of purposes. Some of the main uses include:

- Informing Government policy on rail, including decisions on infrastructure, station and rolling stock investment.
- As part of the rail franchising process, informing the specification of new franchises and the models used in the assessment of franchise bids.
- In the day to day running of train operating companies, including planning timetables and rolling stock deployment.
- Understanding and monitoring passenger demand and crowding.
- Validating models of passenger demand.

A summary of feedback received from users in a 2013 is published on the DfT rail statistics notes and guidance webpage: https://www.gov.uk/transport-statistics-notes-and-guidance-rail-statistics.

10. Get in touch

We are always keen to hear how these statistics are used and would welcome your views on this publication. Comments and queries can be addressed to rail.stats@dft.gov.uk

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