



Rail Executive

# Rail passenger numbers and crowding on weekdays in major cities in England and Wales: 2014

With rail passenger demand at its highest level since the 1920s, these latest statistics show the direct impact of the recent growth on train crowding in a number of major cities.

## About this release

This publication provides information on the numbers of passengers travelling on trains throughout the day in several major cities, and the levels of peak crowding in these cities.

The statistics are based on passenger counts carried out by franchised train operators in autumn 2014. They represent passenger numbers on national rail services on a 'typical' weekday.



The overall level of crowding across the 11 cities included in the statistics has increased, and it is clear that much of the growth has been on routes that are already very busy.

## Main results

On a typical autumn weekday in 2014:



**Overall peak crowding was higher in London than in other cities**, with 4.1% of passengers in excess of capacity (PiXC) in London compared to 1.4% PiXC across the other 10 cities. The city with the most crowding outside of London was Manchester with PiXC of 3.3%.



**139 thousand passengers were standing at trains' busiest points on arrival into London** in the morning peak, 22% of all passengers. 26% of morning peak trains were over capacity and in total 59% had passengers standing



**In the morning peak 563 thousand passengers arrived by rail into central London** (Zone 1 of the travelcard area), a 3% increase from the year before. Just over one million passengers arrived into central London by rail across the whole day.



**The city outside London with the highest number of passengers was Birmingham**, with 39 thousand passengers on board trains arriving into the city centre in the morning peak. Manchester had 31 thousand morning peak arrivals and Leeds 26 thousand.

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## What is 'PiXC'?

Passengers in excess of capacity (PiXC) is the main measure of crowding used in these statistics. It shows the proportion of standard class passengers that are above the capacity on their service at its busiest point.

The numbers of PiXC on each service are added together and shown as a percentage of the total number of passengers on all peak services.

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# Autumn 2014 overview

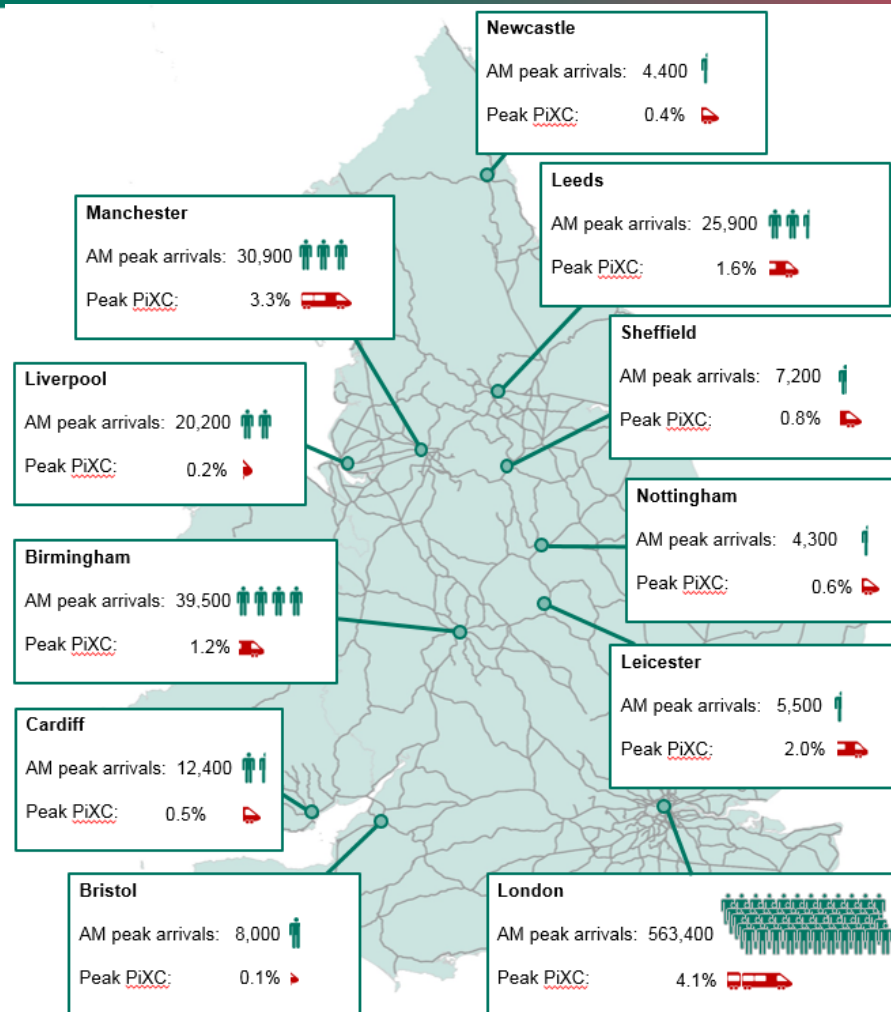
## Rail passenger numbers and crowding on weekdays in major cities in England and Wales

### Key

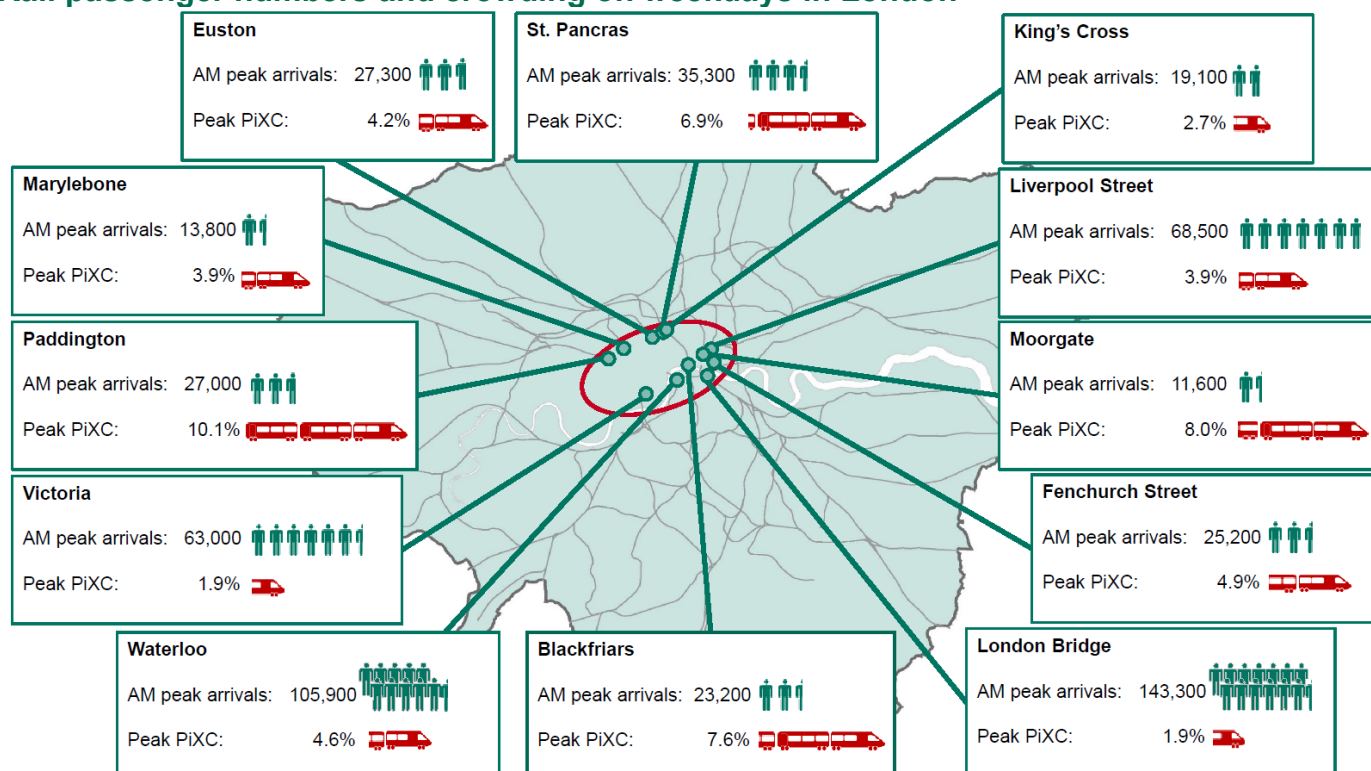
**AM peak arrivals** is the number of passengers arriving into the city centre by national rail on a typical autumn weekday during the three hour morning peak (7-10am).

**Peak PiXC** is the percentage of passengers in excess of capacity (PiXC) across the am and pm peaks on a typical autumn weekday. It is the main measure of crowding in these statistics. A higher PiXC percentage represents a worse crowding level.

 Approximate London zone 1 boundary



## Rail passenger numbers and crowding on weekdays in London



## Growth in rail usage

**Table 1: Passenger rail usage, franchised operators, financial year ending 2015**

	2014/15 total	Change from last year	Change from 10 years ago
<b>Passenger kilometres</b>	62.4 billion	↑ 4.5%	↑ 50%
<b>Passenger journeys</b>	1.7 billion	↑ 4.2%	↑ 59%

All train operators (TOCs) have experienced recent growth in demand.

**Table 2: Passenger journeys by TOC, financial year ending 2015**

Train operating company	Passenger Journeys (millions)	Growth since 2013/14 (%)
Arriva Trains Wales	30.8	+2.8
c2c	40.8	+5.0
Chiltern	23.6	+3.1
CrossCountry	35.4	+3.7
Virgin Trains East Coast	20.7	+3.9
East Midlands Trains	25.5	+5.8
Govia Thameslink Railways	123.8	+5.0
First Great Western	103.7	+4.0
First ScotRail	92.7	+7.3
Greater Anglia	143.4	+6.1
London Midland	65.3	+2.0
London Overground	140.1	+3.3
Merseyrail	44.3	+3.7
Northern	96.4	+2.6
South West Trains	229.9	+3.2
Southeastern	185.8	+4.0
Southern	188.6	+3.7
TransPennine Express	28.6	+9.5
Virgin Trains	34.5	+8.3

Source: ORR



The crowding and demand figures included in this release need to be considered in the context of substantial recent growth in rail usage

- Annual figures published by the Office of Rail and Road (ORR) show the number of passenger journeys in Great Britain having more than doubled since rail privatisation, from 735 million in 1994/95 to 1.7 billion in the latest financial year (2014/15).
- The 4.5% overall growth in passenger kilometres was the highest since 2011/12, and this growth was seen across all three rail sectors. Long distance operators had the highest growth at 5.5%, followed by regional operators at 5.4%. For London & South East operators the increase was 3.4%.
- Commuter travel into the major cities makes up a substantial component of the total. The National Travel Survey (NTS) suggests that on weekdays around half of rail trips in England are for commuting purposes, and a further 10% are for business travel. Because this release focuses on travel into cities on weekdays during school term time, commuter journeys are likely to account for a much higher percentage of trips.

## Crowding

The summary table below shows the latest PiXC crowding figures from 2014 for the routes into each city and London terminal, including the percentage point change from the year before. Note that because passenger numbers fluctuate from day to day and may vary across the autumn period this can have an impact on the statistics, depending on the sample of days on which particular services are counted. Therefore, small differences in the crowding figures between routes or between years should be treated with some caution.

**Table 3: Passengers in excess of capacity (PiXC) by city: 2014, and percentage point change from 2013 (Rail web table [RAI0209](#))**

	AM peak		PM peak		Both peaks	
City	PiXC	Change from 2013	PiXC	Change from 2013	PiXC	Change from 2013
Birmingham	1.6%	↑0.8%	0.8%	↓0.1%	1.2%	↑0.4%
Bristol	0.0%	↓1.2%	0.2%	↓0.6%	0.1%	↓0.9%
Cardiff	0.5%	↓0.4%	0.5%	↑0.1%	0.5%	↓0.1%
Leeds	1.8%	↑0.2%	1.4%	↓0.1%	1.6%	↔0.0%
Leicester	1.0%	↓0.1%	2.9%	↑2.0%	2.0%	↑1.0%
Liverpool	0.0%	↓0.3%	0.4%	↑0.4%	0.2%	↑0.1%
Manchester	4.3%	↑1.8%	2.3%	↑1.6%	3.3%	↑1.7%
Newcastle	1.0%	↑1.0%	0.0%	↔0.0%	0.4%	↑0.4%
Nottingham	0.2%	↑0.2%	1.0%	↑1.0%	0.6%	↑0.6%
Sheffield	1.1%	↓2.9%	0.6%	↓0.9%	0.8%	↓1.8%
<b>All cities outside London</b>	<b>1.7%</b>	<b>↑0.4%</b>	<b>1.1%</b>	<b>↑0.4%</b>	<b>1.4%</b>	<b>↑0.4%</b>
<b>Routes into London terminals</b>						
Blackfriars (via Elephant and Castle)	10.6%	↑0.4%	3.2%	↑1.8%	7.6%	↑0.9%
Euston	3.6%	↓0.9%	4.7%	↓0.6%	4.2%	↓0.8%
Fenchurch Street	7.0%	↑1.0%	2.4%	↑0.8%	4.9%	↑0.9%
King's Cross	2.7%	↑1.3%	2.8%	↑0.8%	2.7%	↑1.0%
Liverpool Street	5.5%	↑2.0%	2.1%	↑0.6%	3.9%	↑1.3%
London Bridge	3.1%	↑1.0%	0.5%	↔0.0%	1.9%	↑0.5%
Marylebone	4.9%	↑1.3%	2.8%	↑1.7%	3.9%	↑1.5%
Moorgate	10.6%	↑8.6%	5.4%	↑5.2%	8.0%	↑6.8%
Paddington	13.5%	↑3.7%	6.0%	↓2.6%	10.1%	↑0.8%
St. Pancras	7.2%	↑4.0%	6.6%	↑4.9%	6.9%	↑4.4%
Victoria	3.3%	↓0.1%	0.3%	↓0.3%	1.9%	↓0.2%
Waterloo	5.5%	↑0.5%	3.6%	↑0.6%	4.6%	↑0.6%
<b>London total</b>	<b>5.4%</b>	<b>↑1.4%</b>	<b>2.5%</b>	<b>↑0.6%</b>	<b>4.1%</b>	<b>↑1.0%</b>
<b>All cities (including London)</b>	<b>4.6%</b>	<b>↑1.2%</b>	<b>2.2%</b>	<b>↑0.5%</b>	<b>3.5%</b>	<b>↑0.9%</b>

Note: All percentage point changes in this table are shown to one decimal place, with changes of less than 0.05 percentage points shown as unchanged.

- Overall crowding in 2014 has increased in line with growing passenger numbers in most cities. There has been a 1.0 percentage point increase in PiXC for routes into London terminals since 2013, and while the differences in PiXC have been more variable for cities outside London, these have also increased on average by 0.4 percentage points.

- Demand on several routes into London has increased as the economy has stabilised, returning to pre-recession levels and as employment in the Central London city areas has been growing. In London the standard class critical load increased by 4.0% in the morning peak between 2013 and 2014, when PiXC rose from 4.0% to 5.4%, and by 4.6% in the afternoon peak, when PiXC rose from 2.0% to 2.5%.

### Key Definitions

The **critical load point** is the location in a city where the passenger load on a service is highest. For example, for a service arriving into Manchester Victoria in the morning peak the critical load point might be on arrival at Salford Crescent or Salford Central rather than at Manchester Victoria.

The **standard class critical load** is the number of standard class passengers on the service at the critical load point, and this is the passenger load upon which the crowding statistics are based.

- PiXC has increased at most London terminals since 2013. In the morning peak, PiXC at Moorgate increased by 8.6 percentage points to reach 10.6%. Paddington saw an increase of 3.7 percentage points to reach the highest morning peak PiXC of all the London stations of 13.5%.
- Crowding has decreased for some cities outside London, in particular Sheffield where PiXC fell by 2.9 percentage points in the morning peak to reach 1.1% overall in autumn 2014.
- The city with the largest increase in crowding outside of London was Manchester with a 1.7 percentage points increase over both peaks, to give the largest PiXC of any city outside London of 3.3%.
- A total of 139 thousand passengers had to stand on trains arriving to London in the morning peak on a typical day, which is an increase on the 120 thousand passengers recorded in autumn 2013. Of these, 84 thousand passengers were standing on trains during the morning peak hour (08:00 to 08:59) at their busiest points.
- Between autumn 2013 and autumn 2014 the number of passengers standing on trains departing London during the afternoon peak rose from 66 thousand to 78 thousand.



## Passenger numbers

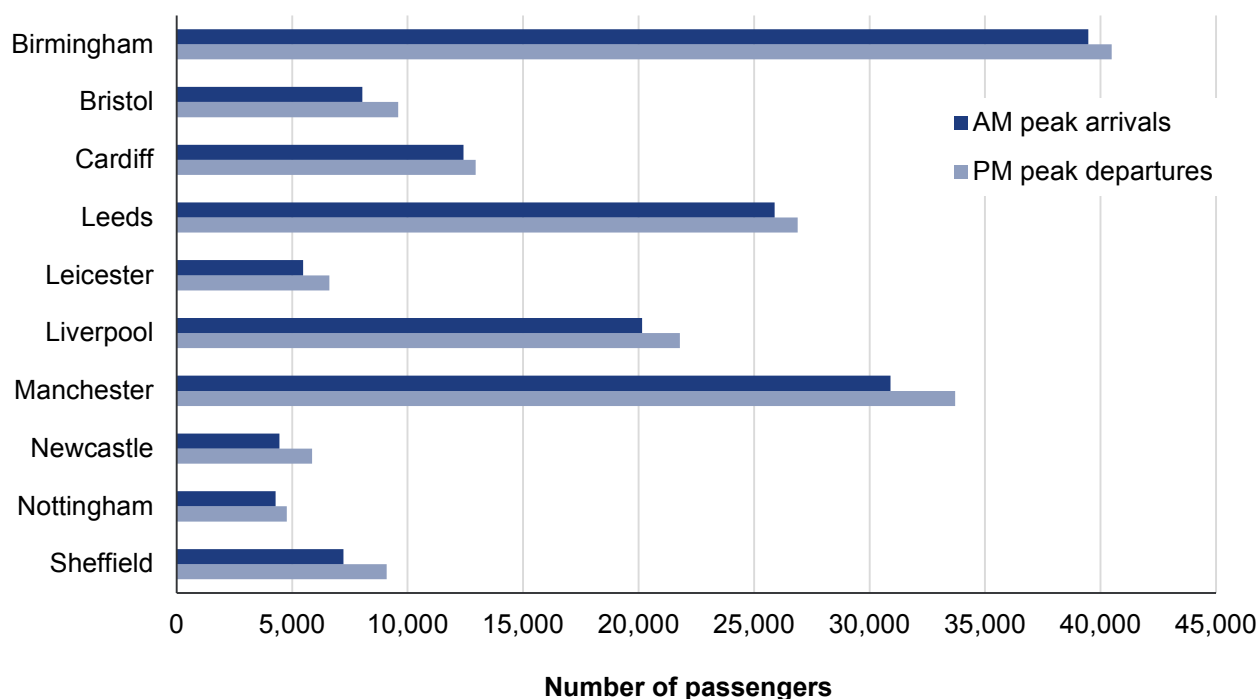


In addition to information about crowding, the statistics in this release also show the numbers of passengers travelling by rail in each city throughout the day. The passenger number statistics differ from the crowding statistics in that they include first class passengers as well as standard class passengers, and also because they show the numbers of passengers on board trains as they arrive at or depart from city centre stations, which are not always the critical load points.

- London had a much higher number of passengers travelling in and out of the city centre compared to any other city, with 563 thousand arrivals in the morning peak on a typical weekday in 2014 compared to 39 thousand in Birmingham, the second busiest city.
- As well as in Birmingham, there were also typically more than 20 thousand arrivals into the city centre during the morning peak in Manchester, Leeds and Liverpool.
- All cities outside London had a higher number of passengers departing during the 3 hours of the afternoon peak than arriving in the 3 hour morning peak. This is likely to be because there will have been more leisure travellers during the afternoon than in the morning, in addition to the large number of commuters.

The following chart shows the number of morning peak arrivals and afternoon peak departures in each city outside London on a typical autumn weekday in 2014.

**Chart 1: City centre peak arrivals and departures by rail excluding London, 2014**  
(Rail web table [RAI0201](#))

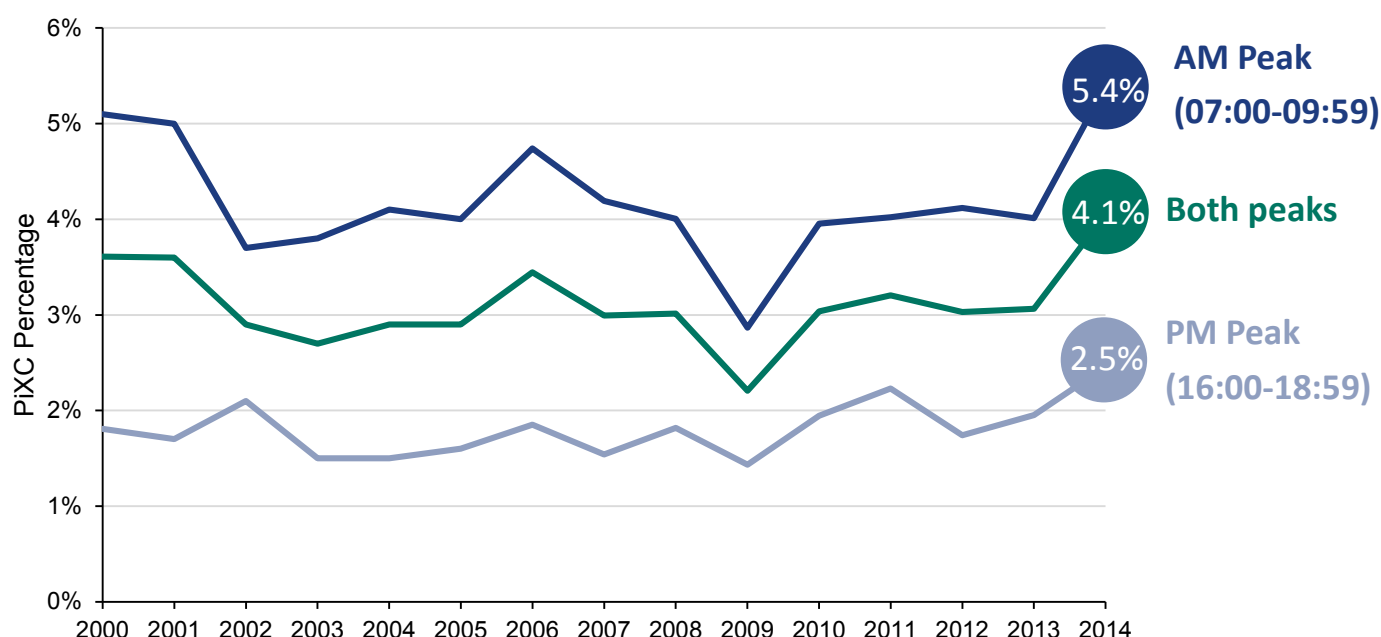


### London

On a typical weekday in autumn 2014, across both peaks, 4.1% of passengers were in excess of capacity (PiXC) on London & South East rail services, an increase from 3.1% in 2013. In the morning peak, crowding increased to 5.4% PiXC in 2014 from 4.0% in 2013, and in the afternoon peak it increased to 2.5% PiXC from 2.0% in 2013. The overall standard class critical loads in London rose compared to 2013, with an increase of 4.0% in the morning peak and an increase of 4.6% in the afternoon peak.

Chart 2 shows how PiXC on London & South East rail services has changed over time. Overall PiXC has fluctuated around 3% for much of the last ten years, apart from in 2009 when it dropped to 2.2%. The recession that ended in late 2009 is likely to have caused that dip as London and South East operators' passenger numbers fell at that time (and therefore trains were a little less busy). Since then the trend in peak crowding has been fairly flat until this latest year when the impact of growing demand can be seen in increased levels of crowding.

**Chart 2: Passengers in excess of capacity (PiXC) for London & South East operators, 2000-2014 (Rail web table [RAI0210](#))**

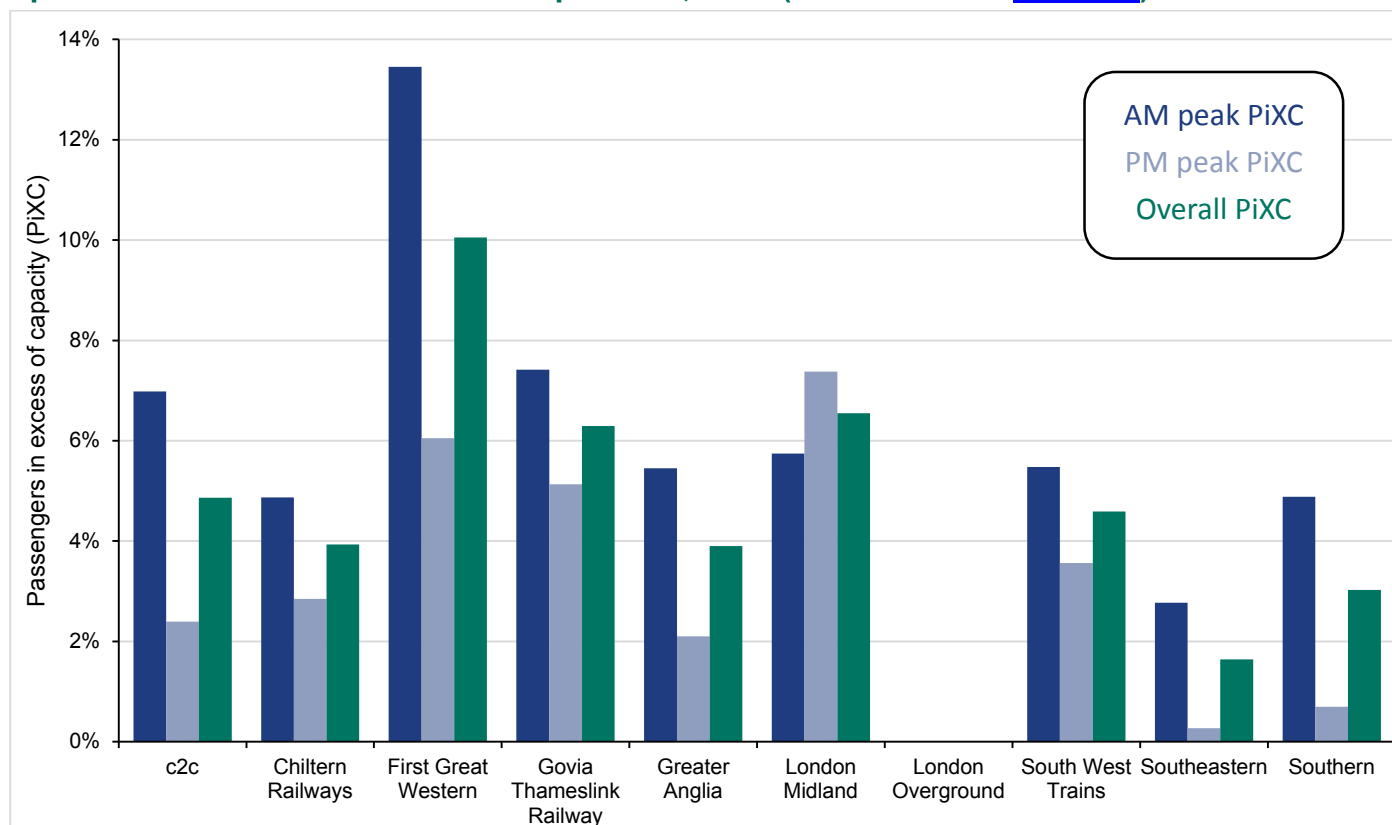


- In London, PiXC tends to be higher in the morning peak than the afternoon peak, reflecting the crowding caused by the more concentrated nature of commuter travel in the high peak hour in the morning (08:00 to 08:59) compared to the more evenly distributed nature of departures in the afternoon. In 2014, 7.2% of passengers were in excess of capacity in the morning high peak hour, and 2.9% of passengers were in excess of capacity in the afternoon high peak hour (17:00 to 17:59).

- In the morning peak, 26% of the 1,031 London services had passengers in excess of their capacity and 59% had passengers standing. In the afternoon peak, 14% of the 1,012 London services had passengers in excess of their capacity and 48% had passengers standing. These figures are greater for services arriving in the high morning peak hour of 08:00 – 08:59 when 40% of services had passengers in excess of their capacity and 76% of services had passengers standing.
- On an average weekday in autumn 2014, 139 thousand passengers were standing at the critical load point on arrival into London in the morning peak, equating to 22% of all passengers. There were 78 thousand passengers standing at critical load points during the afternoon peak, 15% of all passengers.

Chart 3 shows how PiXC compares between the London & South East operators during peak times in autumn 2014.

**Chart 3: Passengers in excess of capacity (PiXC) in the morning and afternoon peaks by operator for London & South East operators, 2014 (Rail web table [RAI0211](#))**



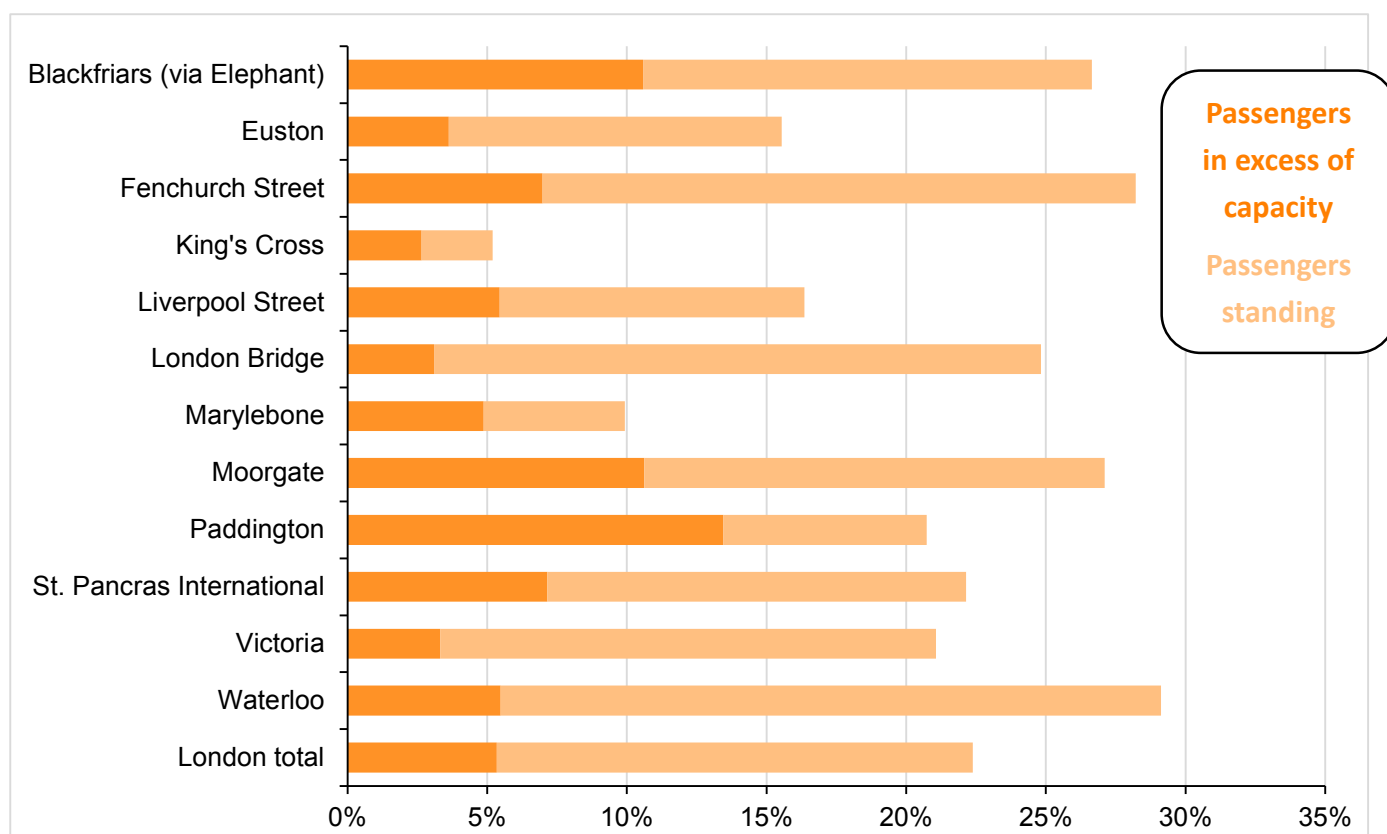
- First Great Western had the highest level of crowding of any London & South East operator in 2014 with 10.1% PiXC across both peaks, an increase from 9.2% in 2013. Morning peak PiXC has increased from 9.7% in 2013 to 13.5% in 2014. Despite the high PiXC figure, the proportion of passengers standing on First Great Western peak services is lower than for a number of other operators, partly because a large number of passengers commute between Reading and London using long-distance services on which standing is not included in the PiXC measure, so every passenger standing on these services is in excess of the capacity.



- London Midland had 6.5% PiXC in 2014 over both peaks, the second highest figure for any London & South East operator. The level of PiXC has fluctuated over the last few years for London Midland and unlike most operators, it had more PiXC in the afternoon than in the morning, with 7.4% PiXC in the afternoon peak in 2014 compared to 5.7% in the morning peak.
- London Overground had the lowest PiXC of any train operator in 2014, with no PiXC in either peak for the fifth year running. This follows the introduction of new high-capacity, metro-style rolling stock on the Watford DC line in 2010. These trains are designed to carry a high number of standing passengers but have limited numbers of seats compared to most other rolling stock, which results in London Overground having the highest proportion of passengers standing of any operator, with 51.4% standing in the morning peak and 42.7% in the afternoon peak.

Chart 4 compares the percentages of PiXC and passengers standing on the routes into each London terminal in the morning peak in 2014.

**Chart 4: Passengers in excess of capacity (PiXC) and passengers standing in the morning peak by London terminal, 2014 (Rail web table [RAI0213](#))**



- Paddington, had the highest crowding level of any terminal and saw an increase from 9.7% PiXC in 2013 to 13.5% in 2014 in the morning peak. Paddington also had the second largest PiXC value in the afternoon peak with 6.0%, where St. Pancras International had the highest afternoon peak PiXC at 6.6%. The largest increase in PiXC was at Moorgate, increasing from 2.0% in 2013 to 10.6% in the morning peak.

- Waterloo, Fenchurch Street and Moorgate had the greatest numbers of passengers standing on services arriving in the morning peak at 29.1%, 28.2% and 27.1% respectively. In the afternoon peak the largest proportion of standing passengers was at Waterloo at 22.2%.
- King's Cross had the lowest level of PiXC (2.7%) and passengers standing (5.2% of passengers) of all the London terminals, a pattern which has been seen in each of the five years for which these statistics have been published. Marylebone also had slightly lower levels of passengers standing with 9.9% in the morning peak and 6.3% in the afternoon peak.

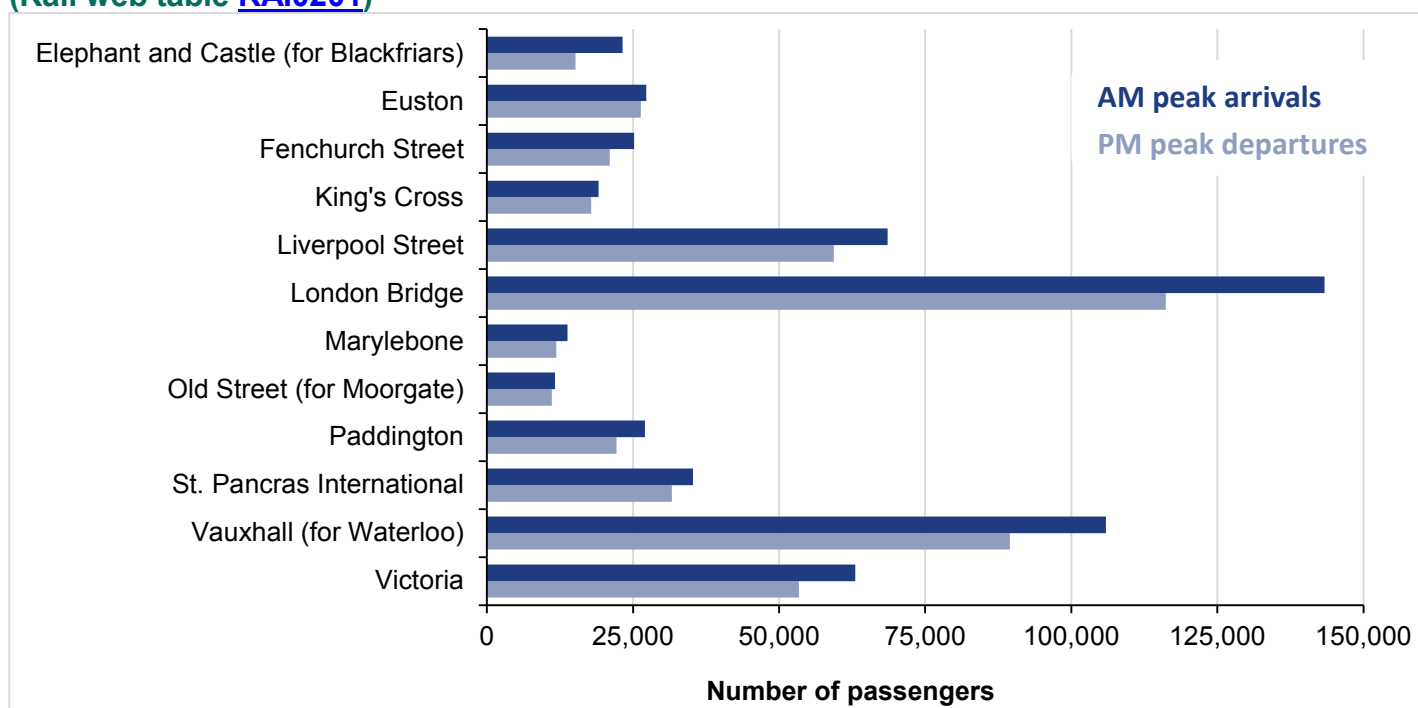


## Passenger numbers in London

Chart 5 shows how the number of passengers arriving and departing from Zone 1 in London in the peaks varied by route on a typical weekday in autumn 2014. The stations listed are the stations on or closest to the Zone 1 boundary on each route.

### Chart 5: Peak arrivals and departures by rail by station for London Zone 1, 2014

(Rail web table [RAI0201](#))

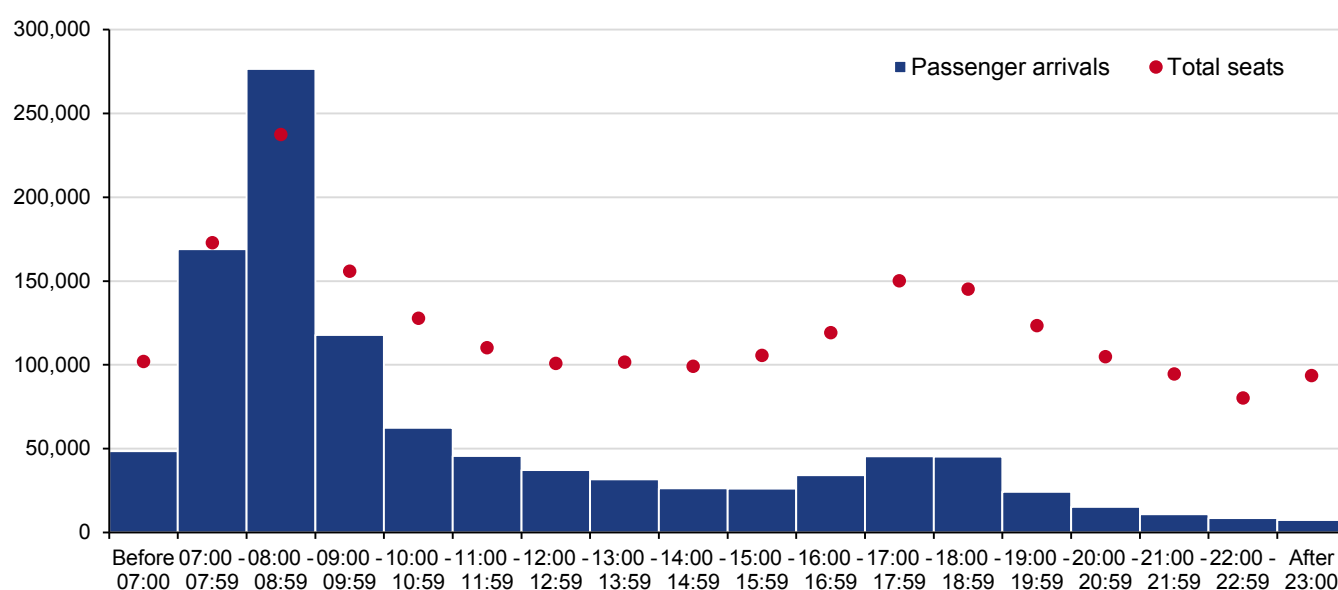


- In the morning peak, 143 thousand passengers were on trains entering Zone 1 at London Bridge, 25% of all peak arrivals into Zone 1. This total includes passengers who travelled through London Bridge to other stations, such as Charing Cross and Cannon Street. 24% of afternoon peak departures were also on this route.
- At Vauxhall, 106 thousand passengers were on trains entering Zone 1 in the morning peak, 19% of all peak arrivals in London. This includes passengers travelling to Waterloo, including those on trains that did not stop at Vauxhall. 19% of afternoon peak departures were on this route.

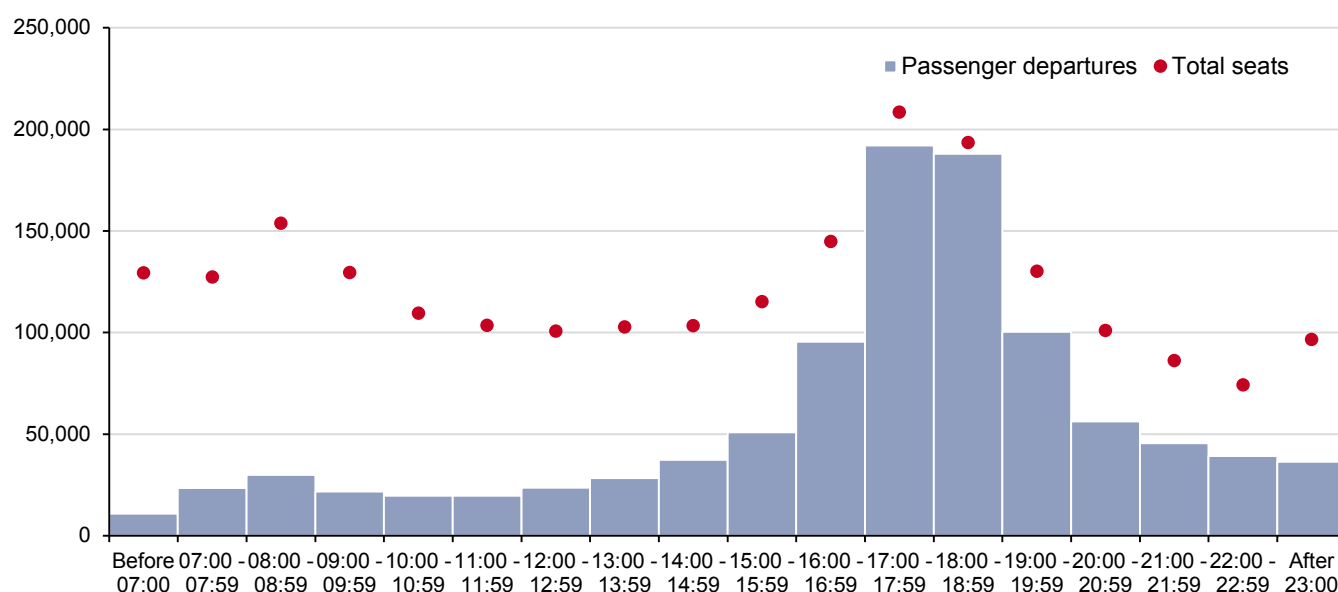
Passenger numbers in the morning peak were most concentrated in the hour from 08:00 to 08:59, with 277 thousand passengers arriving into central London in this time, half of the morning peak total and over a quarter of all arrivals across the day. The number of passengers departing London in the afternoon peak hour (17:00 to 17:59) was 192 thousand.

Charts 6 and 7 give an indication of how passenger numbers compared to the total seats provided throughout the day. As these are aggregate figures they hide a lot of detail, as there will be crowding on some routes and services while others have spare capacity. However, they do demonstrate how outside the peaks there is often a large amount of spare capacity, although this spare capacity will generally not be transferrable between routes or to other times of day.

**Chart 6: Arrivals by rail, by time band for London Zone 1, 2014**  
(Rail web table [RAI0203](#))

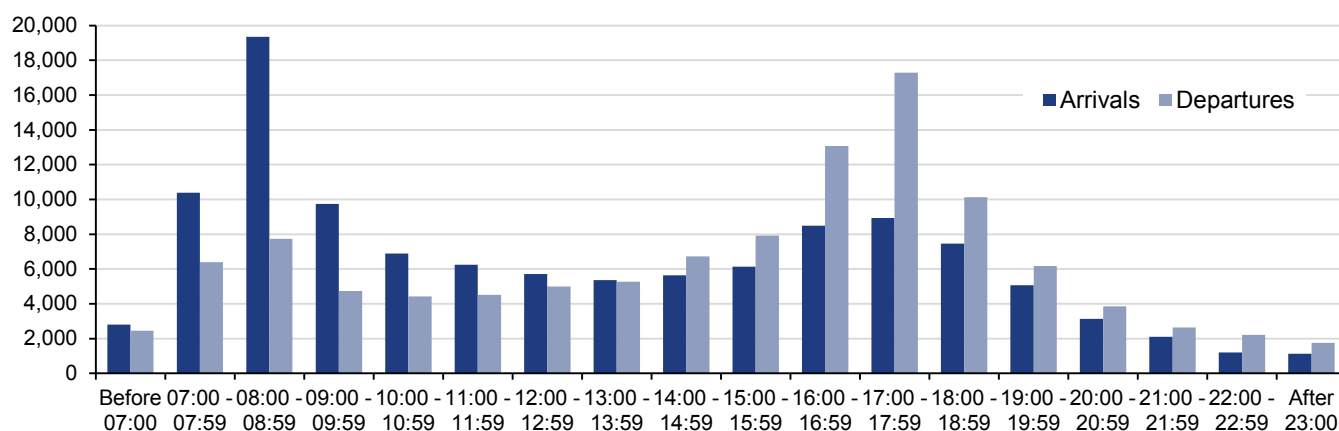


**Chart 7: Departures by rail, by time band for London Zone 1, 2014**  
(Rail web table [RAI0203](#))



# Birmingham

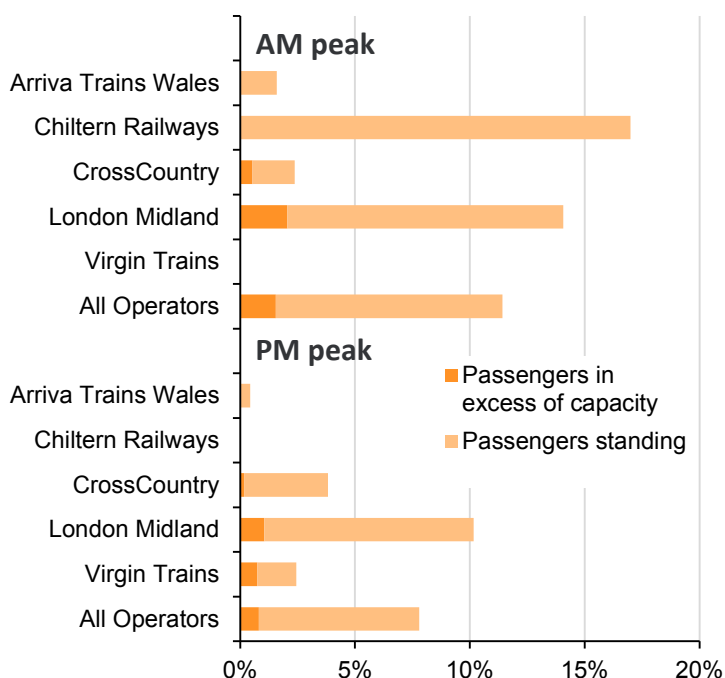
**Chart 8: Arrivals and departures by rail, by time band: Birmingham, 2014**  
(Rail web table [RAI0202](#))



Five train operators operate services in Birmingham, with London Midland providing a large number of local commuter routes.

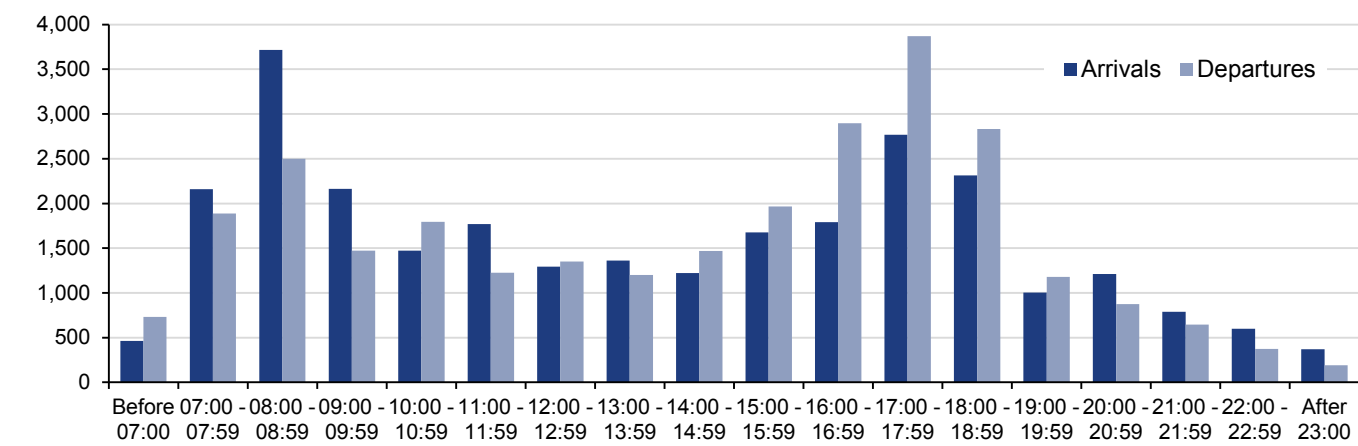
- On an average weekday 39 thousand passengers arrived into central Birmingham in the morning peak, an increase of approximately one thousand from 2013. This is the largest number of passengers arriving in the morning peak for any city outside London. Across the day in total, 116 thousand passengers were on services arriving into Birmingham.
- At trains' busiest points 1.6% of passengers were in excess of capacity in the morning peak and 11.4% were standing in total. In the afternoon peak these figures were 0.8% and 7.8% respectively.
- The highest levels of crowding in both peaks were on London Midland services with 2.1% PiXC in the morning peak and 1.0% in the afternoon peak.
- 17.0% of passengers were standing on Chiltern services arriving into Birmingham Moor St and Snow Hill in the morning peak, but none were standing in the afternoon peak.

**Chart 9: Passengers in excess of capacity by operator: Birmingham, 2014** (Rail web table [RAI0214](#))



# Bristol

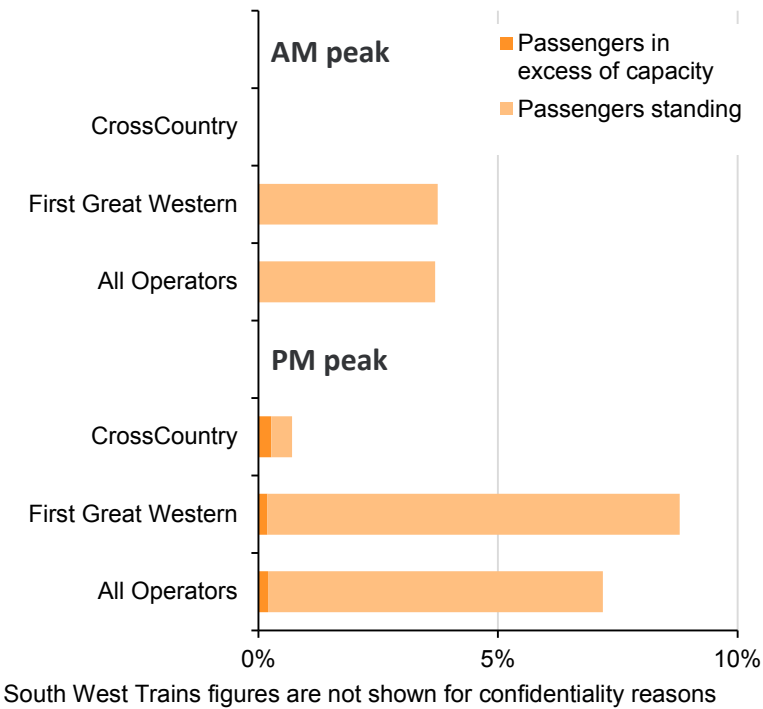
Chart 10: Arrivals and departures by rail, by time band: Bristol, 2014  
(Rail web table [RAI0202](#))



Three train operators operate services in Bristol, with First Great Western providing the majority of services, on both local and long distance routes.

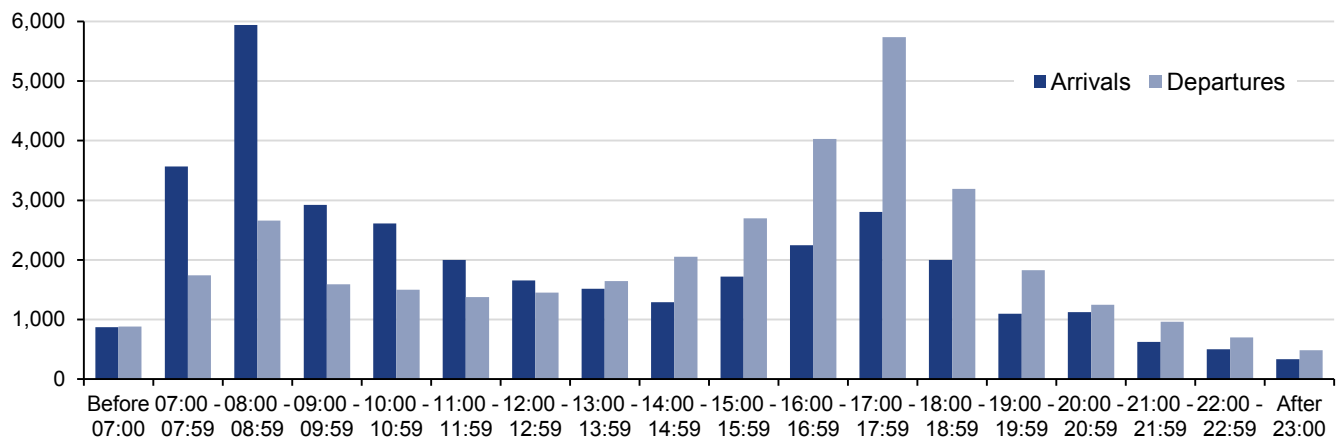
- On an average weekday 8 thousand passengers arrived into central Bristol in the morning peak. Across the day 28 thousand passengers were on services arriving into Bristol.
- At trains' busiest points 3.7% of passengers were standing but there were no passengers in excess of capacity in the morning peak. In the afternoon peak 7.2% of passengers were standing with 0.2% PiXC.
- 8.8% of passengers were standing on First Great Western services departing from Bristol Temple Meads in the afternoon peak, compared to 3.7% in the morning peak.

Chart 11: Passengers in excess of capacity by operator: Bristol, 2014 (Rail web table [RAI0214](#))



# Cardiff

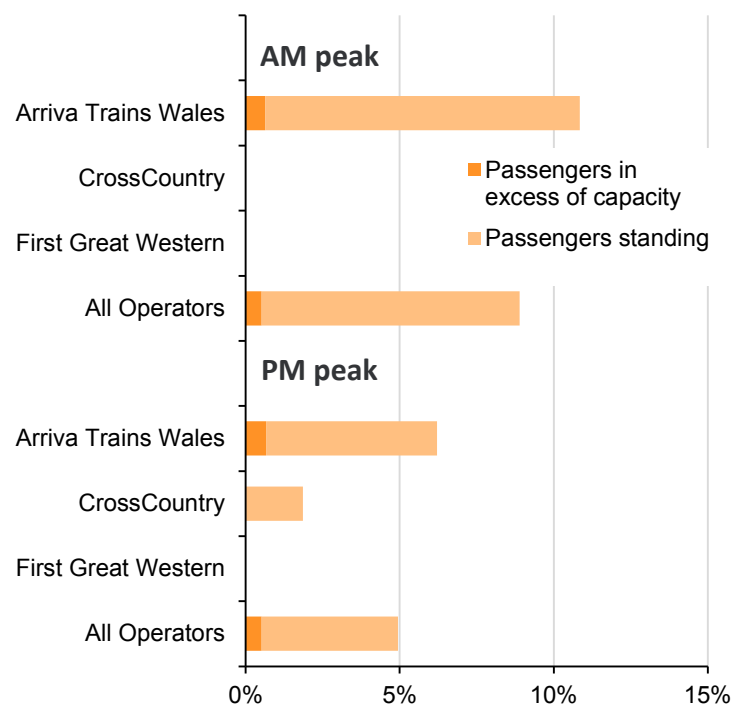
**Chart 12: Arrivals and departures by rail, by time band: Cardiff, 2014**  
(Rail web table [RAI0202](#))



Three train operators operate services in Cardiff, with Arriva Train Wales providing the majority of services on local commuter routes.

- On an average weekday 12 thousand passengers arrived into central Cardiff in the morning peak. Across the day 35 thousand passengers were on services arriving into the city.
- At trains' busiest points 0.5% of passengers were in excess of capacity in the morning peak and 8.9% were standing in total. In the afternoon peak these figures were 0.5% and 4.9% respectively.
- Arriva Trains Wales had 10.8% of passengers standing in the morning peak and 6.2% of passengers standing in the afternoon peak.
- The highest levels of crowding in both peaks were on Arriva Trains services with 0.6% PiXC in the morning peak and 0.7% PiXC in the afternoon peak.

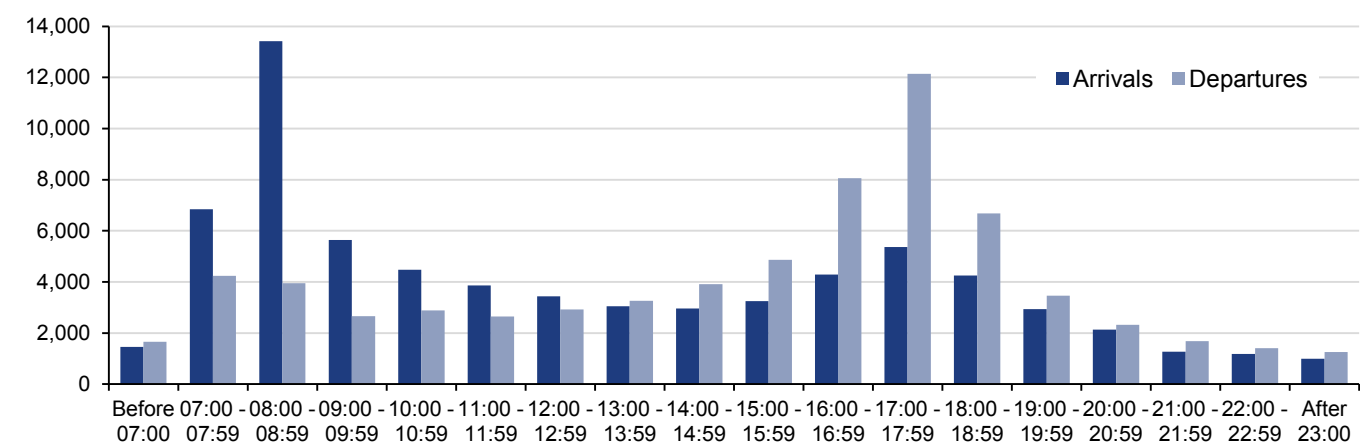
**Chart 13: Passengers in excess of capacity by operator: Cardiff, 2014** (Rail web table [RAI0214](#))





# Leeds

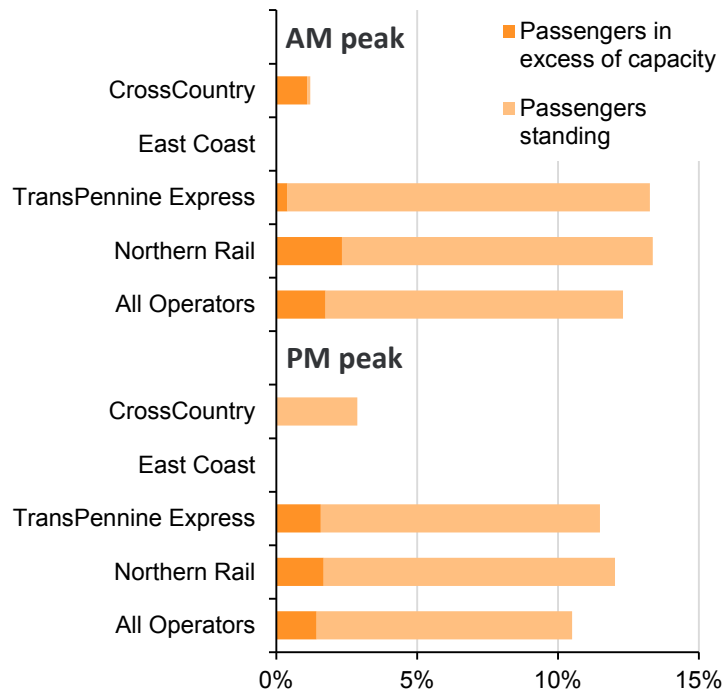
Chart 14: Arrivals and departures by rail, by time band: Leeds, 2014  
(Rail web table [RAI0202](#))



Four train operators operate services in Leeds, with Northern Rail providing the majority of services on local commuter routes.

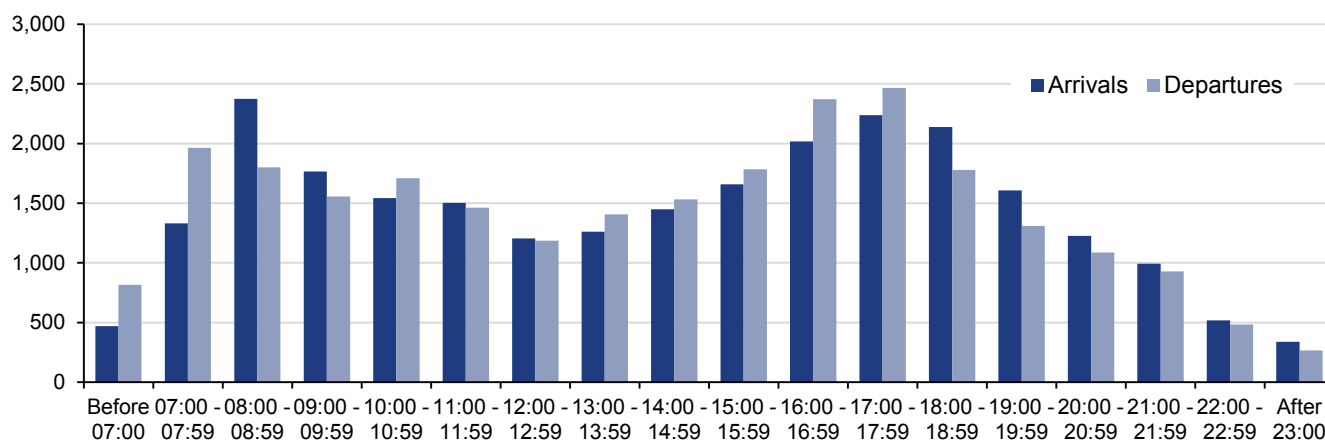
- On an average weekday 71 thousand passengers were on services arriving into Leeds, almost 4 thousand more than in 2013. 26 thousand passengers of these arrived in the morning peak.
- At trains' busiest points 1.8% of passengers were in excess of capacity in the morning peak with 12.3% standing in total. In the afternoon peak these figures were 1.4% and 10.5% respectively.
- The highest levels of crowding in both peaks were on Northern Rail services with 2.3% PiXC in the morning peak and 1.7% in the afternoon peak.
- Both TransPennine Express and Northern Rail had 13% of passengers standing on services arriving into Leeds in the morning peak. In the afternoon standing on TransPennine Express services was 11%, and on Northern, 12%.

Chart 15: Passengers in excess of capacity by operator: Leeds, 2014 (Rail web table [RAI0214](#))



# Leicester

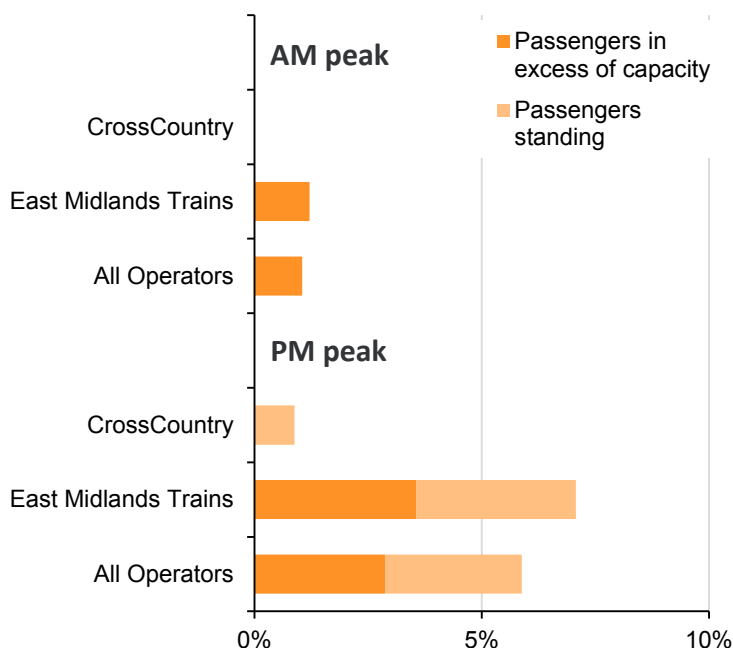
**Chart 16: Arrivals and departures by rail, by time band: Leicester, 2014**  
(Rail web table [RAI0202](#))



Two train operators operate services in Leicester, with East Midlands Trains providing the majority of services on long distance routes. Demand is generally more even across the day, with smaller increases in passenger numbers during peak times, than seen in other cities.

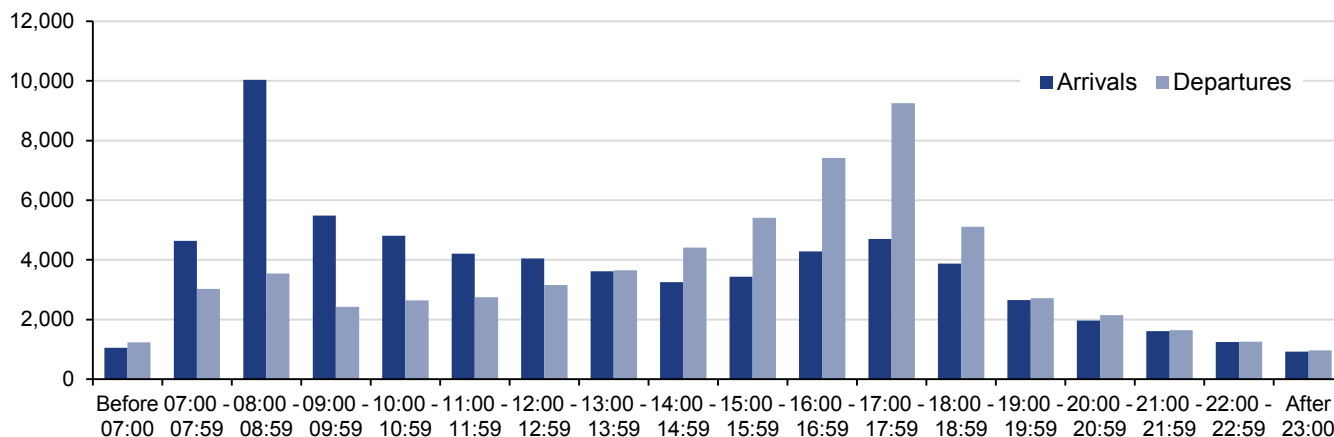
- On an average weekday 5 thousand passengers were on services arriving at Leicester in the morning peak. Across the day 26 thousand passengers were on services arriving into Leicester. These figures include passengers on trains passing through the city as well as those alighting there.
- At trains' busiest points 1.0% of passengers were in excess of capacity in the morning peak and 1.0% were standing in total. In the afternoon peak these figures were 2.9% and 5.9% respectively.
- The highest levels of crowding in both peaks were on East Midlands Trains services with 1.2% PiXC in the morning peak and 3.6% in the afternoon peak.
- East Midlands Trains services also had the highest percentage of passengers standing in both peaks with 1.2% and 7.1% respectively.

**Chart 17: Passengers in excess of capacity by operator: Leicester, 2014** (Rail web table [RAI0214](#))



# Liverpool

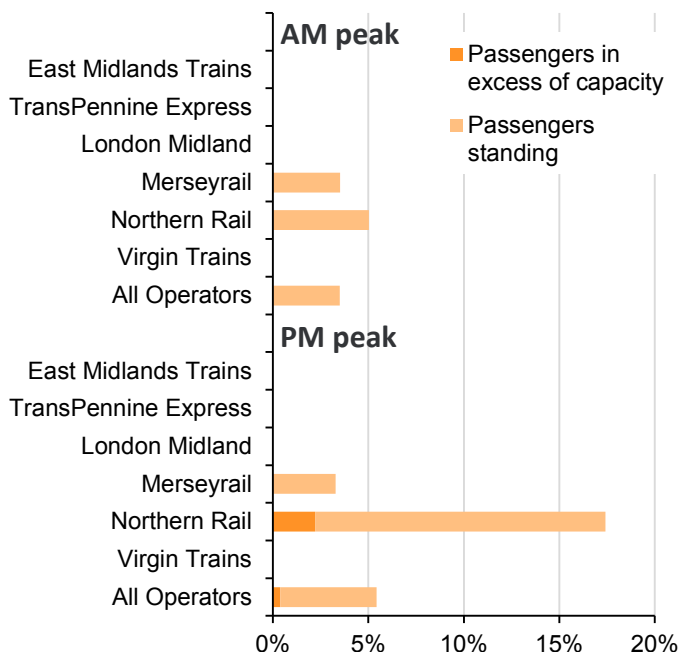
**Chart 18: Arrivals and departures by rail, by time band: Liverpool, 2014**  
(Rail web table [RAI0202](#))



Six train operators operate services in Liverpool, with Merseyrail providing the majority of services on local routes. All other operators run services on routes into Liverpool Lime Street.

- On an average weekday 20 thousand passengers arrived into central Liverpool in the morning peak. Across the day 66 thousand passengers were on services arriving into the city.
- At trains' busiest points in the morning peak 3.5% of passengers were standing but there was no PiXC. In the afternoon peak these figures were 5.4% and 0.4% respectively.
- No morning peak services had PiXC, and only Northern Rail services had PiXC of 2.2% in the afternoon peak.
- In the afternoon peak 17% of Northern passengers were standing on departure from Liverpool.

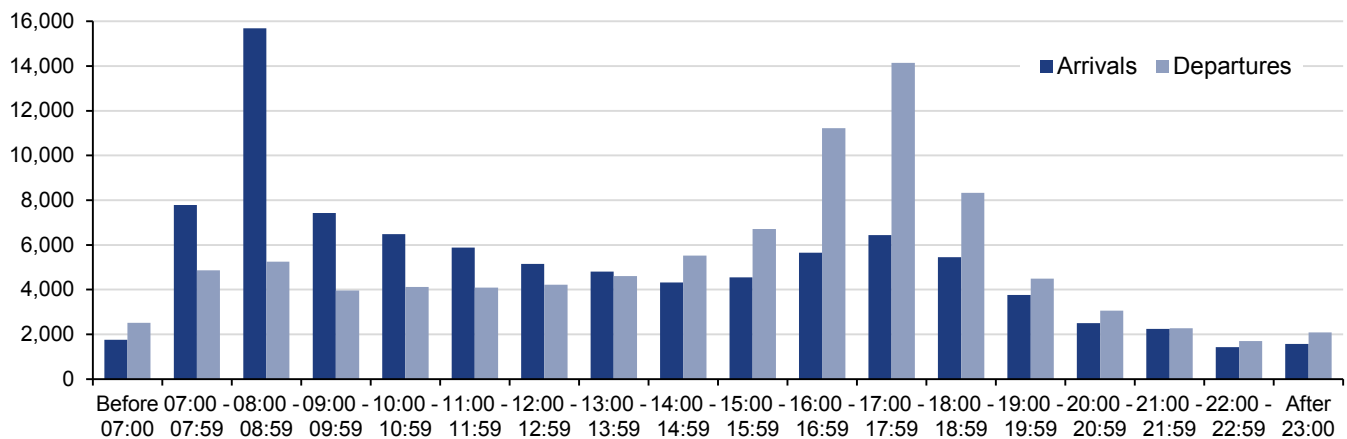
**Chart 19: Passengers in excess of capacity by operator: Liverpool, 2014** (Rail web table [RAI0214](#))



\* East Midlands Trains and Virgin Trains morning peak figures are not shown for confidentiality reasons.

# Manchester

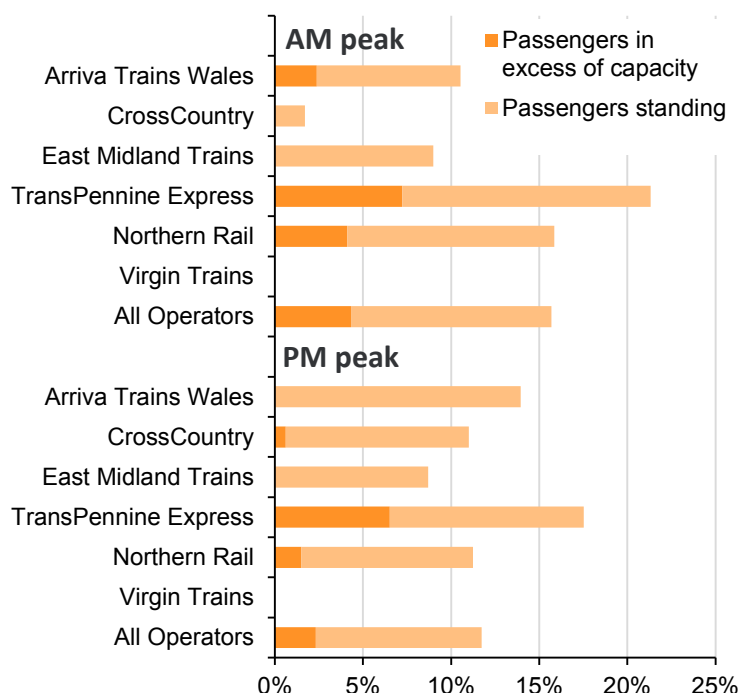
**Chart 20: Arrivals and departures by rail, by time band: Manchester, 2014**  
(Rail web table [RAI0202](#))



Six train operators operate services in Manchester, with Northern Rail providing the majority of the services.

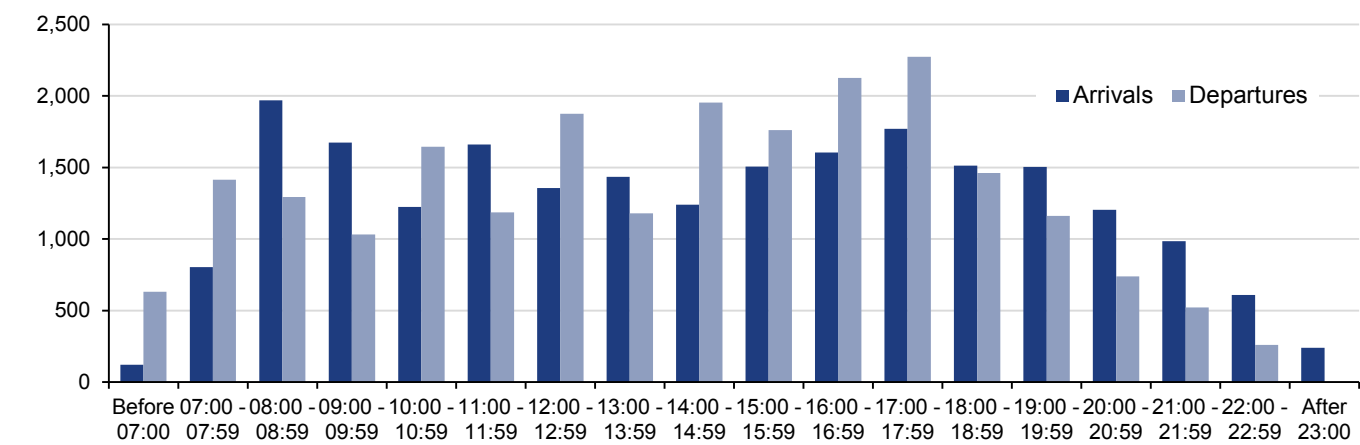
- On an average weekday 31 thousand passengers arrived into central Manchester in the morning peak, the second highest number for any city outside London. Across the day 93 thousand passengers were on services arriving into Manchester, an increase of 4 thousand from 2013.
- At trains' busiest points 4.3% of passengers were in excess of capacity in the morning peak and 15.7% were standing in total. In the afternoon peak these figures were 2.3% and 11.7% respectively.
- First TransPennine Express had the highest level of crowding in the morning peak with 7.2% PiXC and 21.3% of passengers standing. It had 6.5% PiXC and 17.5% of passengers standing in the afternoon peak.

**Chart 21: Passengers in excess of capacity by operator: Manchester, 2014** (Rail web table [RAI0214](#))



# Newcastle

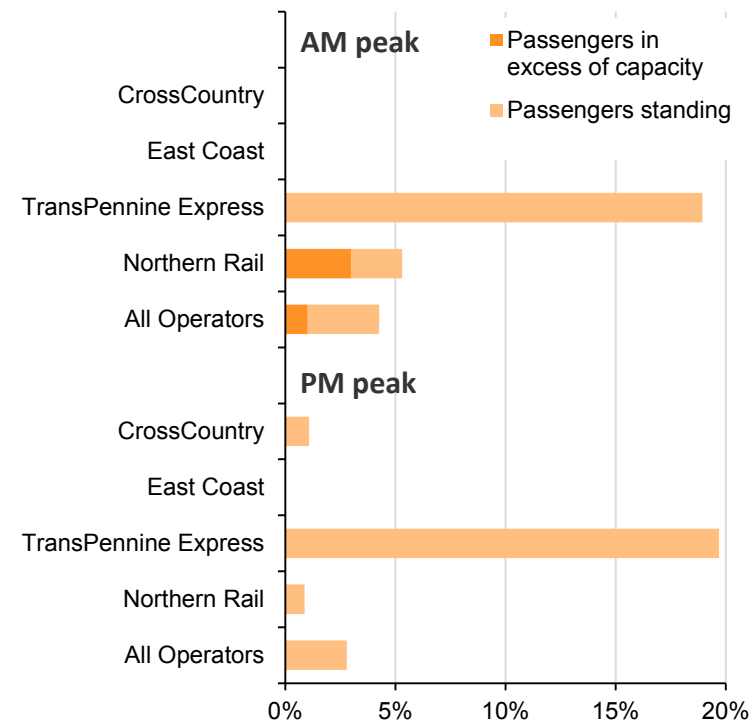
Chart 22: Arrivals and departures by rail, by time band: Newcastle, 2014  
(Rail web table [RAI0202](#))



Four train operators operate services in Newcastle, with Northern Rail providing the most services on local routes. East Coast and CrossCountry provide longer distance services into and out of the city.

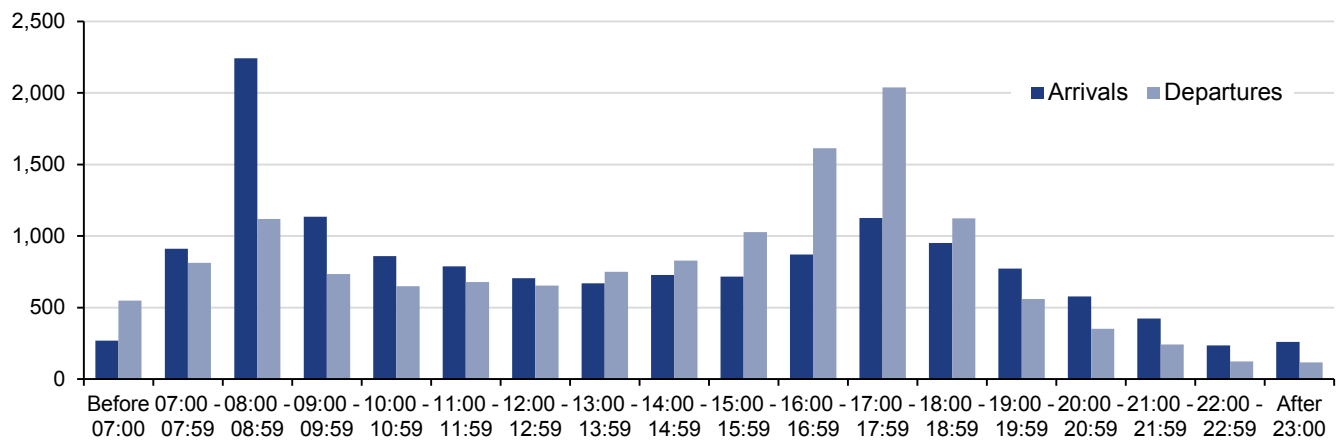
- On an average weekday 4 thousand passengers arrived into central Newcastle in the morning peak, the second lowest number for any of the cities in these statistics. Across the day 22 thousand passengers were on services arriving into Newcastle.
- There were no passengers in excess of capacity in the afternoon peak. PiXC for Northern Rail was 3.0% in the morning peak.
- First TransPennine Express had 18.9% of passengers standing during the morning peak, and 19.7% of passengers standing during the afternoon peak.

Chart 23: Passengers in excess of capacity by operator: Newcastle, 2014 (Rail web table [RAI0214](#))



# Nottingham

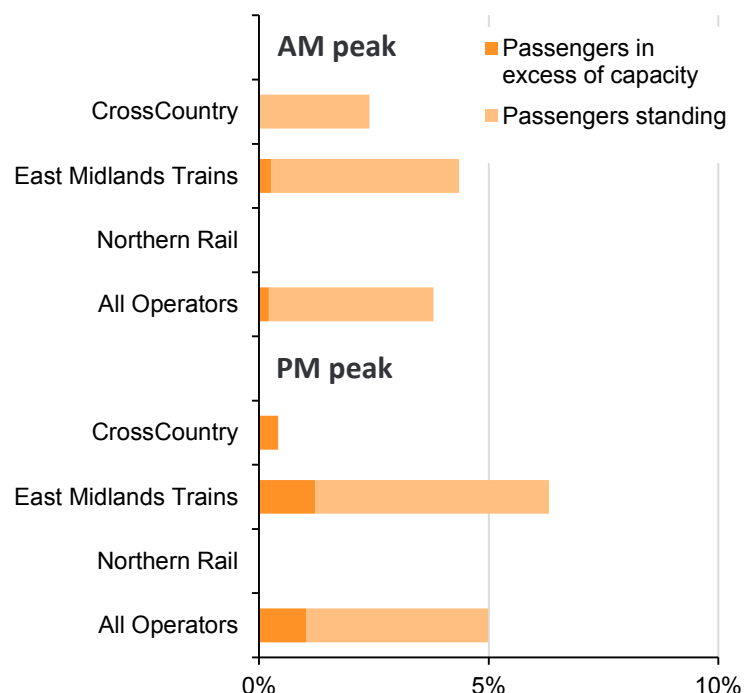
**Chart 24: Arrivals and departures by rail, by time band: Nottingham, 2014**  
(Rail web table [RAI0202](#))



Three train operators operate services in Nottingham, with East Midlands Trains providing the majority of services.

- On an average weekday 4 thousand passengers arrived into central Nottingham in the morning peak, the lowest number for any city counts were taken at. Across the day 14 thousand passengers were on services arriving into Nottingham.
- There are two clear peaks in passenger numbers through the day. The morning peak is shorter and more pronounced than the afternoon.
- East Midland Trains had 0.3% PiXC in the morning peak and 1.2% PiXC in the afternoon peak.
- Overall 3.8% of passengers were standing in the morning peak and 5.0% in the afternoon.

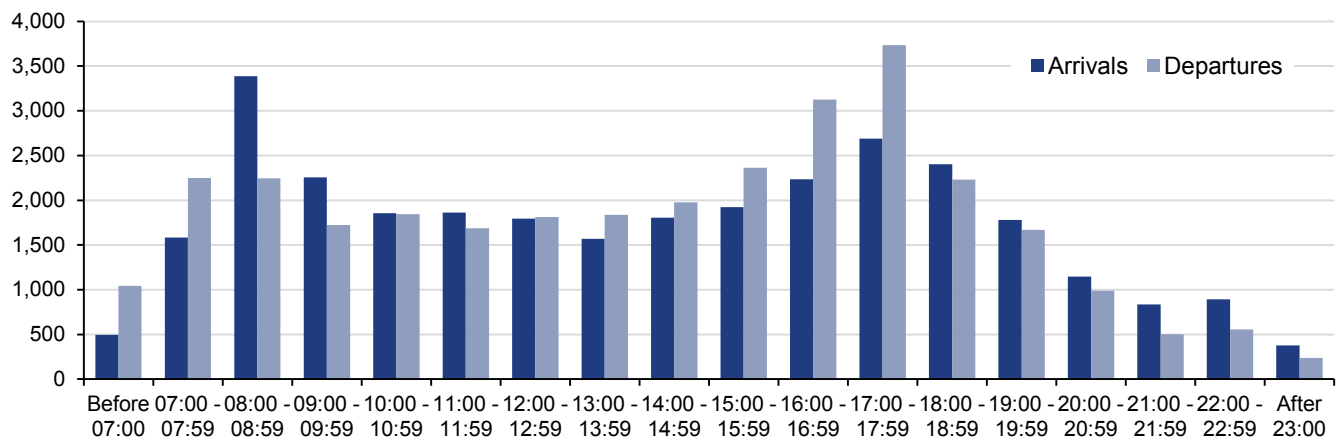
**Chart 25: Passengers in excess of capacity by operator: Nottingham, 2014** (Rail web table [RAI0214](#))





# Sheffield

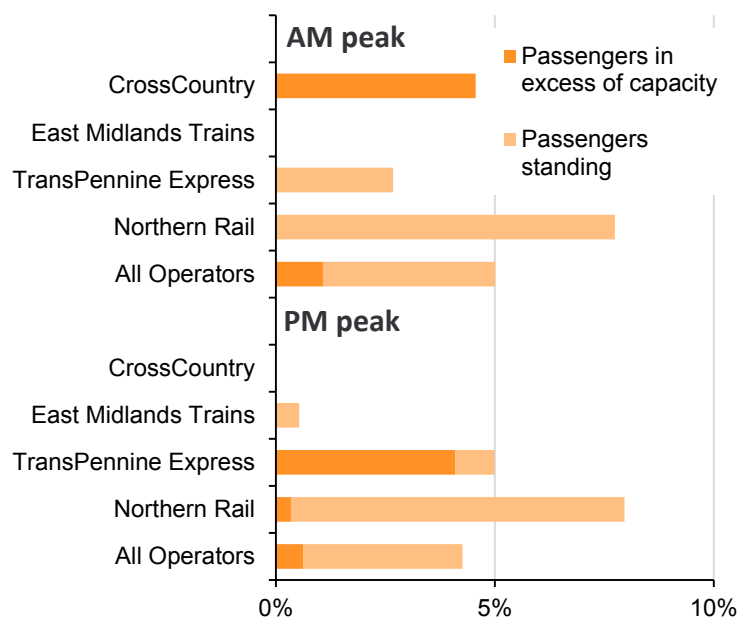
**Chart 26: Arrivals and departures by rail, by time band: Sheffield, 2014**  
(Rail web table [RAI0202](#))



Four train operators provide services in Sheffield, with Northern Rail operating the majority of services.

- On an average weekday 7 thousand passengers arrived into central Sheffield in the morning peak. Across the day 31 thousand passengers were on services arriving into Sheffield.
- The only service with excess capacity in the morning peak was CrossCountry with 4.6% PiXC. First TransPennine Express had 4.1% PiXC in the afternoon peak.
- Northern Rail had the most passengers standing on their services with 7.7% in the morning peak and 8.0% in the afternoon peak.

**Chart 27: Passengers in excess of capacity by operator: Sheffield, 2014** (Rail web table [RAI0214](#))



### Strengths and weaknesses of the data

These statistics 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 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-weighting 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 other services 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/uploads/system/uploads/attachment\\_data/file/352512/rail-notes-definitions.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/352512/rail-notes-definitions.pdf)

## 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
<a href="#">RAI0201</a>	City centre peak and all day arrivals and departures by rail on a typical autumn weekday, by city: annual from 2010
<a href="#">RAI0202</a>	City centre arrivals and departures by rail on a typical autumn weekday, by city and time band: annual from 2010
<a href="#">RAI0203</a>	Central London arrivals and departures by rail in on a typical autumn weekday, by station and time band: annual from 2010

### Crowding statistics tables

Table no.	Table title
<a href="#">RAI0209</a>	Passengers in excess of capacity (PiXC) on a typical autumn weekday by city: annual from 2011
<a href="#">RAI0210</a>	Passengers in excess of capacity (PiXC) on a typical autumn weekday on London & South East train operators' services: annual from 1990
<a href="#">RAI0211</a>	Passengers in excess of capacity (PiXC) on a typical autumn weekday by operator: London & South East train operators: annual from 2008
<a href="#">RAI0212</a>	Peak rail capacity, standard class critical loads and crowding on a typical autumn weekday by city: annual from 2010
<a href="#">RAI0213</a>	Peak rail capacity, standard class critical loads and crowding on a typical autumn weekday in London by terminal: annual from 2010
<a href="#">RAI0214</a>	Peak crowding on a typical autumn weekday by city and train operator: annual from 2010
<a href="#">RAI0215</a>	Peak crowding on a typical autumn weekday in London by terminal and train operator: annual from 2010

## Revisions

There have been no revisions from previous publications.

## Definitions

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

Afternoon (PM) peak	All services that depart from a city centre terminal in the three 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, either by 'infra-red' or 'load weighing' equipment.
Autumn period	The period from mid-September to mid-December, excluding school half term.
City centre	One or more selected stations in the centre of the city. In London this includes all stations within Zone 1 of the Transport for London (TfL) travelcard area on routes into major terminals.
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. Critical load points can vary from service to service, 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 terminal in the three 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 (unless otherwise stated).
Number of services	The number of services that the statistics are based on. This includes all franchised 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. These counts are either collected manually or by automatic counting equipment fitted to the train.
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. It is the difference between the standard class critical load and the standard class capacity, or zero if the critical load is within the capacity.
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. It is the difference between the standard class critical load and the number of standard class seats, or zero if the number of seats is greater than the passenger load.
Total seats	Includes all standard and first class seats on services when they arrive at or depart from the city centre.
Standard class capacity	Includes the number of standard class seats on the service and may include a standing allowance. No allowance for standing is made on a service when the time between stations before (AM) or after (PM) the critical load point is more than 20 minutes, but it is allowed when it is 20 minutes or less.
Standard class critical load	The number of standard class passengers on a service at the critical load point. It is the highest number of standard class passengers on a service on arrival at (AM peak) or on departure from (PM peak) a city.
'Typical' weekday	A midweek weekday during school term-time on which services are not disrupted and passenger numbers are not affected by any unusual events.

## 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 the feedback we have received from users in a recent consultation is published on the DfT rail statistics notes and guidance webpage: <https://www.gov.uk/transport-statistics-notes-and-guidance-rail-statistics>.

We are always keen to hear how these statistics are used and would welcome your views on this release. Comments and queries can be addressed to [rail.stats@dft.gsi.gov.uk](mailto:rail.stats@dft.gsi.gov.uk).

## Background notes

1. Further information about the statistics in this report can be found in the [notes and definitions](#).
2. To retain data confidentiality, two c2c services at London Liverpool Street and two Chiltern Railways services at London Paddington were excluded from the 2014 passenger number statistics. See the [notes and definitions](#) for details of the confidentiality of passenger count data.
3. The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the [Code of Practice for Official 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.

4. 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](#).
5. This is an annual publication. The next annual release of rail passenger numbers and crowding statistics will be the 2015 statistics published in autumn 2016.