



Department for Transport

Rail passenger numbers and crowding on weekdays in major cities in England and Wales: 2020

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 between 21 September and 13 December. They represent passengers on National Rail services on a 'typical' weekday. For more information see the [notes and definitions](#).

⚠ These statistics refer to autumn 2020 and therefore have been significantly impacted by COVID-19.

In this publication



Passenger numbers:

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

Capacity:



*These indicative estimates show the amount of seating available and include some estimates based on 1-metre social distancing measures.

% Crowding measures:

This publication typically releases statistics on two key crowding measures: the percentage of 'passengers standing' and 'passengers in excess of capacity (PiXC)'. However, the impact of COVID-19 meant that demand fell well below capacity levels. As a result, there will be no reporting of overcrowding and passenger standing measures within this statistical release.

Autumn 2020



In autumn 2020 there were on average 453,603 daily passenger arrivals into major cities. This represents a decrease of 75% compared to the same period in the previous year (1.8 million in autumn 2019).

Across selected major cities 34% of these daily arrivals were in the morning peak (07:00 to 09:59).

London had the highest rail passenger numbers arriving into a city across the day (297,785); just over 10 times that of Birmingham (second highest at 29,539).

On average in selected major cities during autumn 2020, there was an 81% reduction of passenger arrivals during the AM peak (07:00 to 09:59). Passengers travelled at slightly different times of the day compared to years prior to COVID-19. In London, 39% of daily arrivals were in the morning peak (a reduction from 55% in the previous year) reflecting a flattening of peak-demand due to a decrease in commuting trips.

Indicative estimates* suggest non-social distancing capacity decreased by 8% compared to autumn 2019. For the same period with 1m social distancing, capacity fell 56% on autumn 2019.

Summary statistics across all major cities on a typical weekday in autumn 2020 (compared with autumn 2019):

All Cities All Day Arrivals 453,603 -75%	Regional Cities All Day Arrivals 155,817 -79%	London Stations All Day Arrivals 297,785 -73%
All Cities AM Peak Arrivals 155,892 -81%	Regional Cities AM Peak Arrivals 38,610 -83%	London Stations AM Peak Arrivals 117,282 -81%
All Cities PM Peak Departures 155,664 -79%	Regional Cities PM Peak Departures 42,551 -82%	London Stations PM Peak Departures 113,114 -78%

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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 of 2020.

The count period (21 September to 13 December) covers services from the preceding May timetable change. Owing to the impact of COVID-19 there were adjustments made to the timetable throughout the period to reflect the variable level of demand. Where possible, the count period excludes days when there was disruption. Data is collected from franchised train operators at selected major cities across England and Wales. It does not include Open Access operators such as Heathrow Express and Grand Central.

Coverage

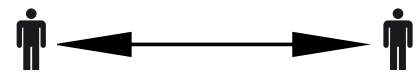
This publication focuses on passenger numbers during the morning and evening peak hours, when rail travel tends to be busiest.

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.

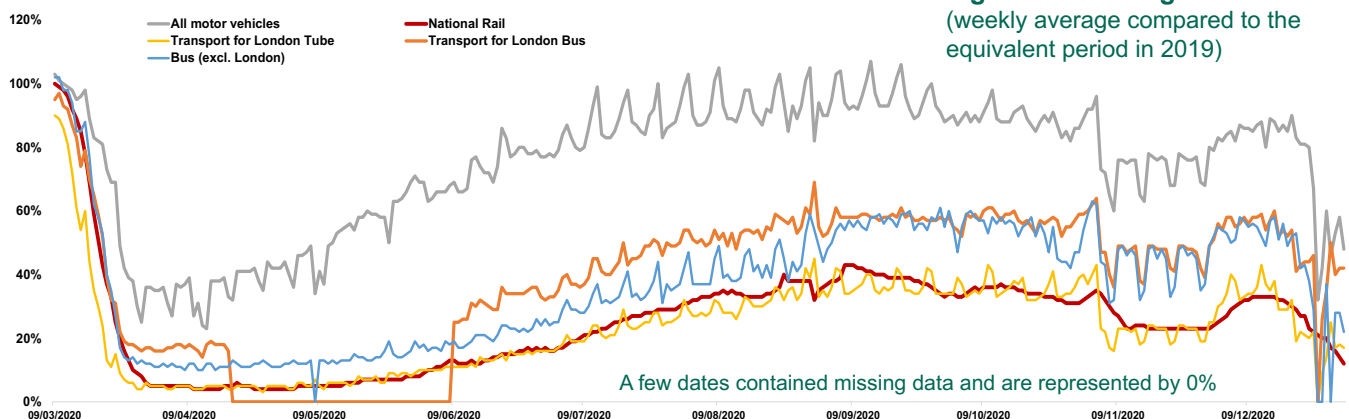
Impact of Coronavirus (COVID-19)



This publication covers data for the period autumn 2020 (21 September to 13 December), which coincides with the application of movement restrictions due to COVID-19 in Great Britain.

In 2020, transport was heavily impacted by the COVID-19 pandemic; in particular, public transport. At the lowest point in April and May 2020, the level of passenger rail journeys was 96% less than an equivalent day in the previous year. Further information on the time-series of transport: Source: DfT [transport use during the COVID-19 pandemic](#) statistics

Figure 1: Passenger Rail Journeys
(weekly average compared to the equivalent period in 2019)



Throughout the observed autumn 2020 period, various government measures were introduced to reduce the spread of the pandemic. These included lockdowns and social distancing policies. This led to reduced rail capacity as timetables were revised and less seating could be used.

Some of these measures were at the local level, so areas of the country were impacted differently. The chart below provides a breakdown of the measures in each of the 14 observed major cities in this publication and provides some context to impact on travel patterns during this period.

Figure 2: City centres included in the release and localised COVID-19 measures

Manchester

Local lockdown: 22 September - 14 October
 Tier 2: 14 October - 23 October
 Tier 3: 23 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 3: 2 December to end of period

Liverpool

Local lockdown: 22 September - 14 October
 Tier 3: 14 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 2: 2 December to end of period

Birmingham

Local lockdown: 21 September - 14 October
 Tier 2: 14 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 3: 2 December to end of period

Cardiff

Local lockdown: 22 September - 23 October
 Circuit-breaker lockdown: 23 October to 9 November
 Welsh national restrictions: 9 November to end of period

Bristol

Tier 1: 14 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 3: 2 December to end of period

Reading

Tier 1: 14 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 2: 2 December to end of period

Brighton

Tier 1: 14 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 2: 2 December to end of period

Newcastle

Local lockdown: 21 September - 14 October
 Tier 2: 14 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 3: 2 December to end of period

Leeds

Local lockdown: 21 September - 14 October
 Tier 2: 14 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 3: 2 December to end of period

Sheffield

Tier 2: 14 October - 24 October
 Tier 3: 24 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 3: 2 December to end of period

Nottingham

Tier 3: 14 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 3: 2 December to end of period

Leicester

Local lockdown: 21 September - 14 October
 Tier 2: 14 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 3: 2 December to end of period

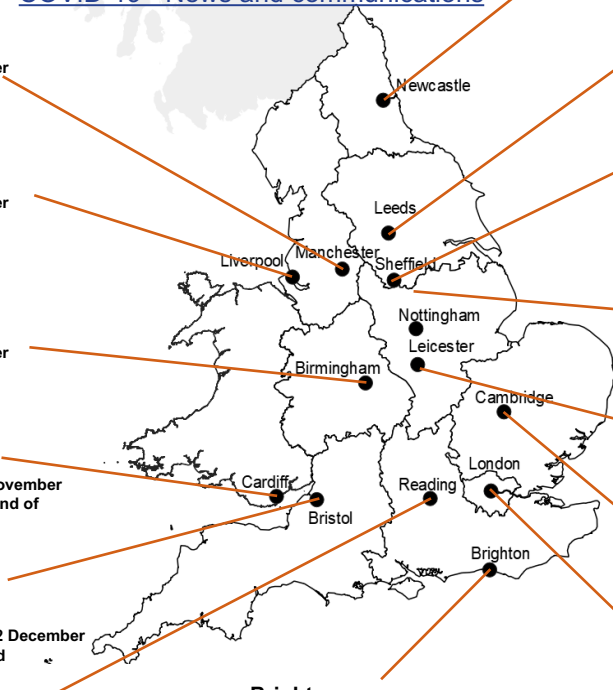
Cambridge

Tier 1: 14 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 2: 2 December to end of period

London

Tier 1: 14 October - 17 October
 Tier 2: 17 October - 5 November
 National lockdown: 5 November - 2 December
 Tier 2: 2 December to end of period

[COVID-19 - News and communications](#)



In previous years this publication has presented estimates of overcrowding on trains during peak times using the PiXC (Passengers in Excess of Capacity) metric. PiXC statistics show the overall percentage of passengers that exceed each train’s capacity and are derived from passenger counts at a train’s busiest point on route into (AM peak) or out of (PM peak) a city centre. However, owing to the fact that for nearly all journeys observed in autumn 2020 seating capacity exceeded passenger numbers, there will be no reporting of overcrowding and passenger standing measures within this statistical release. Our published tables will contain these metrics for the purpose of maintaining the long-term timeseries: [rail passenger numbers and crowding on 2020](#).

Chapter 6 provides estimates comparing the impact of 1-metre social distancing measures on total seating capacity based on information provided by train operators.



These statistics refer to autumn 2020 and have therefore been impacted by [COVID-19](#).

The coronavirus pandemic slightly reduced train operators’ ability to collect passenger numbers data. For instance, due to health and safety considerations, fewer manual counts were conducted. Whilst all train operators provided manual counts and automatic passenger counts that covered the period, there have been increased levels of imputation and estimation. See section on Strengths and Weaknesses of the data on page 15.

For more information on COVID-19 impacts:

- DfTs [transport use during the COVID-19 pandemic](#) statistics
- DfTs [All Change? Travel tracker](#)
- Office for National Statistics (ONS) [Coronavirus and the social impacts on Great Britain](#)
- Transport Focus weekly [Travel during COVID-19](#) survey

2. Rail Passenger Demand in Major Cities

Passenger demand fell in all major cities because of COVID-19

All day arrivals:

London



2019 = 1,112,241
2020 = 297,785

Birmingham



In 2019 = 135,834
In 2020 = 29,539

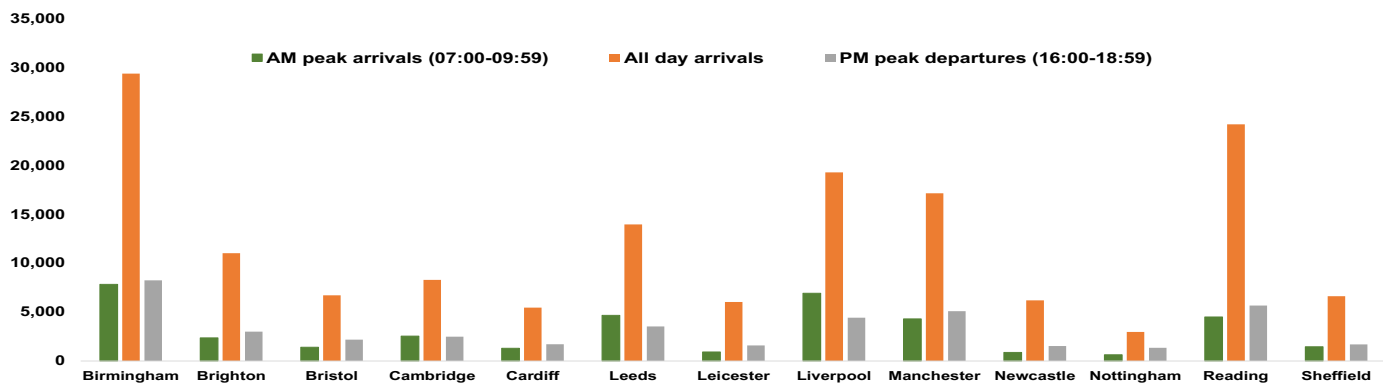
Manchester



In 2019 = 107,071
In 2020 = 17,136

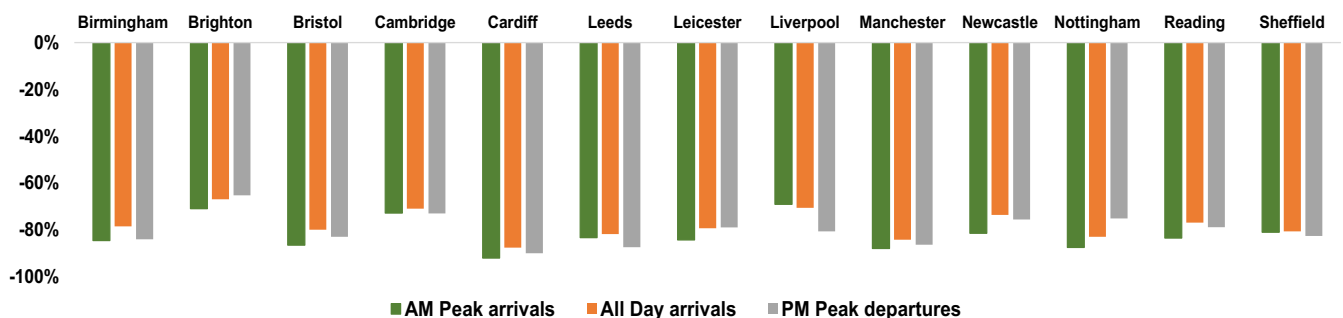
London remained the city with the highest rail passenger numbers. Passenger arrivals throughout the day were just over 10 times that of Birmingham (the city with the second highest).

Figure 3: Passenger Arrivals and Departures by City (outside London): Autumn 2020



The average number of rail journeys into major cities in England and Wales decreased by 75% (79% outside London) in autumn 2020 compared to the same period in the previous year. This fall was even greater during the AM peak, where the average number of rail journeys into major cities fell by 81%.

Figure 4: Comparison of Passenger Arrivals and Departures by City (outside London): Autumn 2019 to Autumn 2020



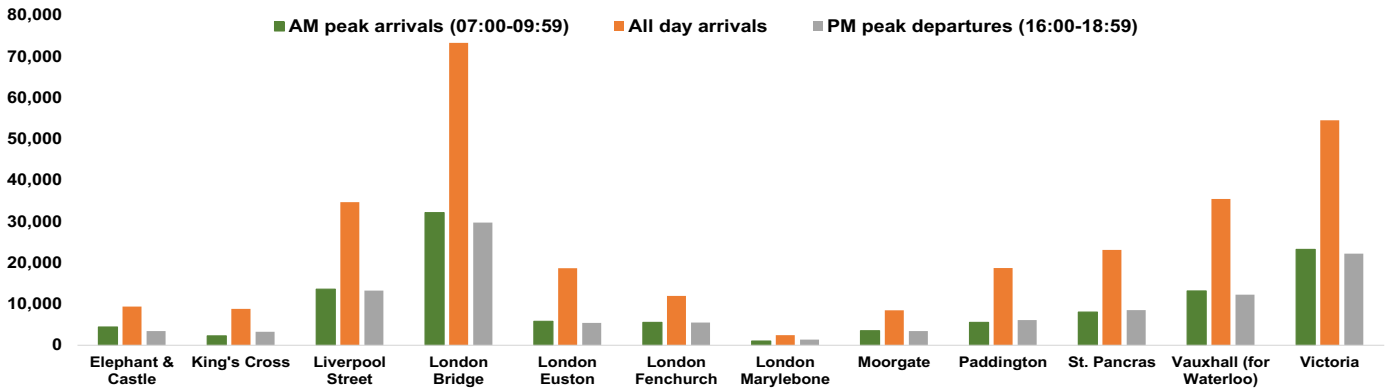
In autumn 2020, Cardiff saw the largest percentage decrease (87%) in all-day arrivals compared with the same period in 2019.

PM peak departures saw similar decreases; for major cities outside London (82%) and London (78%).

3. Rail Passenger Demand in Central London Stations

Passenger demand fell across all London stations because of COVID-19

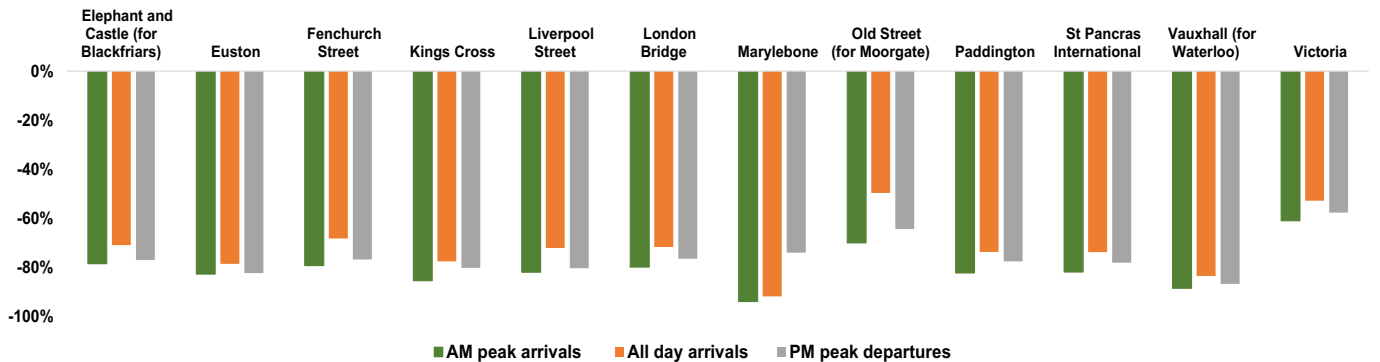
Figure 5: Passenger Arrivals and Departures by London Station: Autumn 2020



In 2020, London Bridge had both the most all-day arrivals, and arrivals during the AM peak of any London station, followed by Victoria station and Vauxhall (for Waterloo).

In autumn 2020 there were large reductions in all-day arrivals into London stations, on average a fall of 73% compared to the same period in the previous year. The impact on AM peak arrivals was even greater, a fall of 81% compared to autumn 2019, owing to fewer commuting journeys taking place.

Figure 6: Comparison of Passenger Arrivals and Departures by London Station: Autumn 2019 to Autumn 2020



The station with the largest all-day arrivals fall in percentage terms was London Marylebone (92%), followed by Waterloo (83%) and King's Cross (77%).

London Marylebone, Waterloo, and King's Cross saw the largest (percentage) reductions in AM peak arrivals; 94%, 88% and 85% respectively. PM peak departures also fell sharply compared to autumn 2019 estimates.

Zone 1

Between 7am and 10am

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.

Zone 1

Between 4pm and 7pm

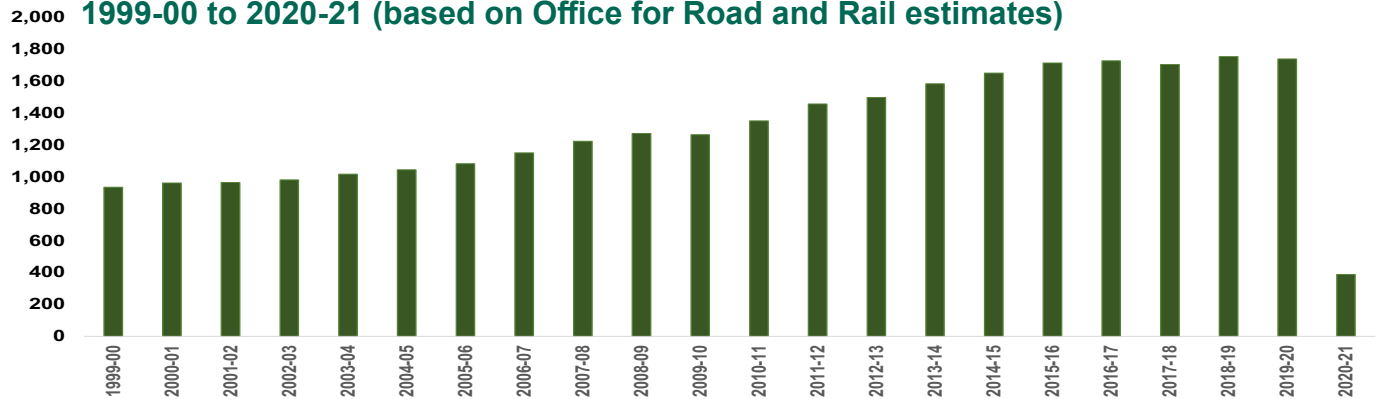
Passenger number methodology

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.

4. Rail Trends

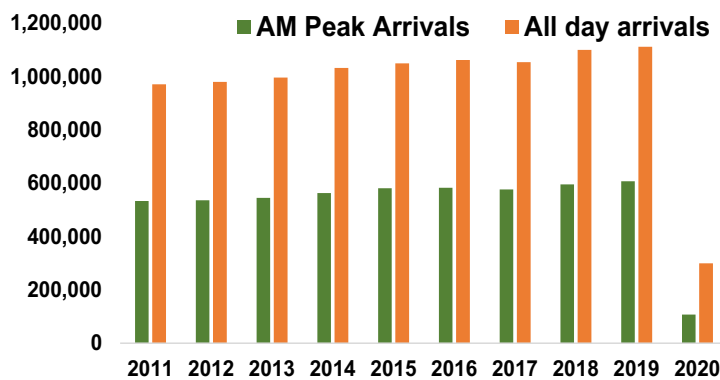
This section provides information on some longer-term trends of rail passenger numbers.

Figure 7: Annual (April to March) Passenger Rail Usage in Great Britain (millions) 1999-00 to 2020-21 (based on Office for Road and Rail estimates)



According to ORR estimates, between 1999-00 and 2019-20 annual passenger rail journeys almost doubled to 1.7 billion journeys, with an average annual increase of 3.5%. In 2020-21 with the impact of the pandemic, rail journeys fell 77% to 388 million compared to the previous year.

Figure 8: AM Peak and All-day Arrivals in London Autumn 2011 to Autumn 2020

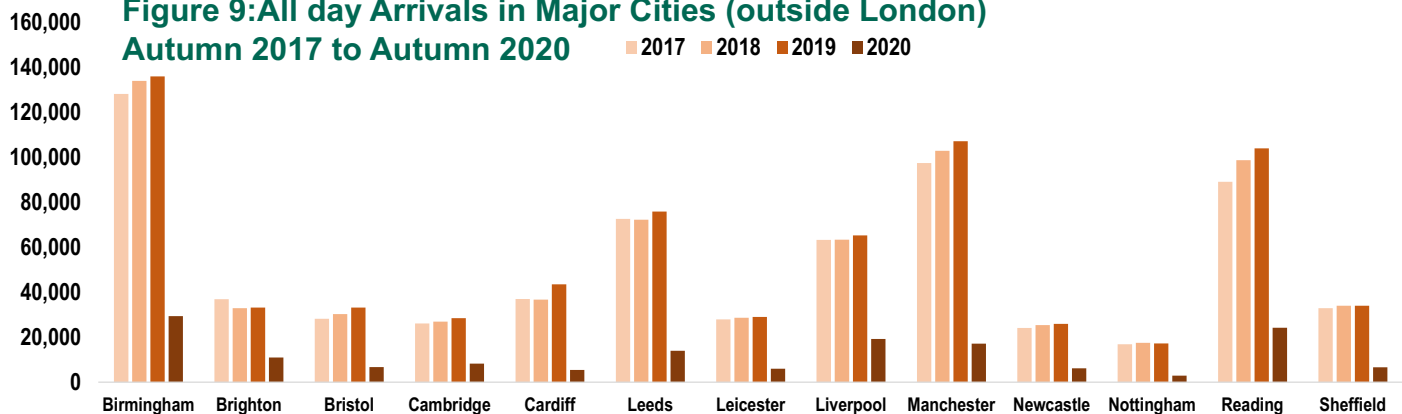


Between autumn 2011 and autumn 2019, the number of passengers arriving into London had been increasing steadily (orange bar in chart). However, in autumn 2020, the number of passengers arriving daily into London was 297,785 (a decrease of 73% on 2019 and 69% on 2011).

Similarly, arrivals into London during the AM peak (green bar) had been increasing over the long term. In autumn 2020, the number of passengers arriving into London during the AM peak was 117,282 (a decrease of 81% on 2019 and 78% on 2011).

Before the pandemic, the cities (outside London) with the most all-day arrivals were Birmingham followed by Manchester and Reading. All Regional cities (except Brighton) had seen a steady upward trend in all-day arrivals before the pandemic.

Figure 9: All day Arrivals in Major Cities (outside London) Autumn 2017 to Autumn 2020



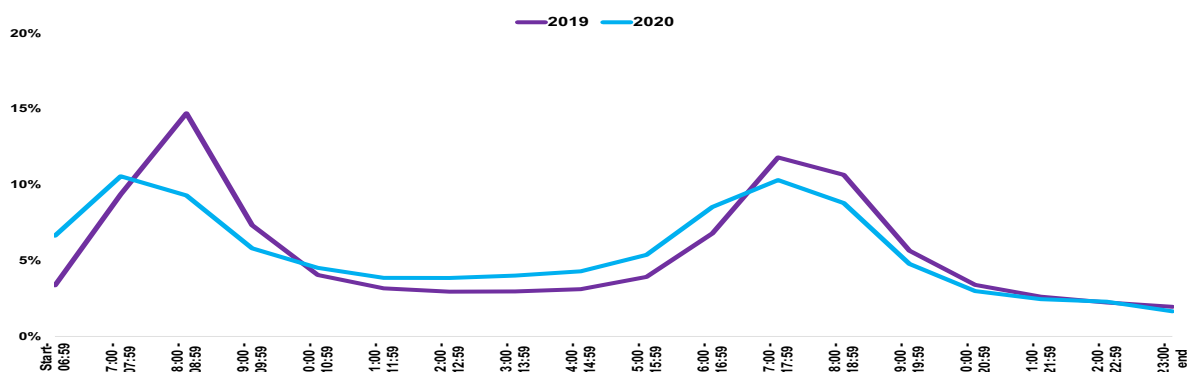
In autumn 2020, all-day arrivals declined on average by 79% in major cities (outside London). The largest percentage fall in all-day arrivals was Cardiff (87%) followed by Manchester (84%) and Nottingham (83%).

International Comparisons - Estimates collated by Eurostat illustrate the impact of COVID-19 on rail passenger numbers throughout Europe. During Quarter 3 (October to end December 2020) Ireland and the UK saw the largest falls in rail passenger numbers same period last year, although other countries had seen large drops in Quarter 2 2020-21. Further information on international comparisons of rail travel are available: [Eurostat - Passengers transported](#).

5. Rail Journey Distributions

In 2020 rail journeys were more evenly spread throughout the day. The typical peaks (seen before COVID-19) ‘flattened’ in both London and Regional cities.

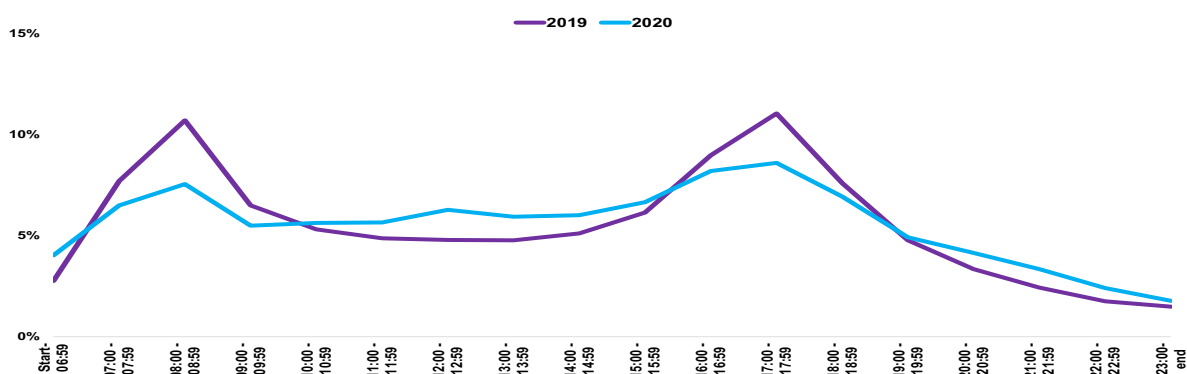
Figure 10: Proportion of Passenger Arrivals and Departures by Hour, London stations: Autumn 2019 and 2020



In 2019 (and other years prior to the pandemic) the distribution of journeys into and out of London was defined by two peaks; a larger more pronounced one during AM peak hours and a slightly shorter and wider one in the evening. This pattern has been affected during 2020 as fewer commuters travel into and out of London.

On a typical autumn day in 2020, 297,785 rail journeys were made into central London. Of these, 39% were made in the morning peak. On an average autumn day in 2019 there were 1.1 million arrivals, of which, 55% were during the 3-hour morning peak.

Figure 11: Proportion of Passenger Arrivals and Departures by Hour, Regional Major Cities: Autumn 2019 and 2020



For regional major cities, the pre-COVID-19 two-peak distribution was replaced by a more even spread of rail travel across the day. In 2020, 25% of arrivals occurred in the 3-hour morning peak, compared to 31% in the same period the previous year.

A larger proportion of passengers travelled in the evening peak (28%) in cities outside London than the morning peak (25%), possibly due to a greater proportion of leisure journeys.

6. Seat Capacity and Social Distancing

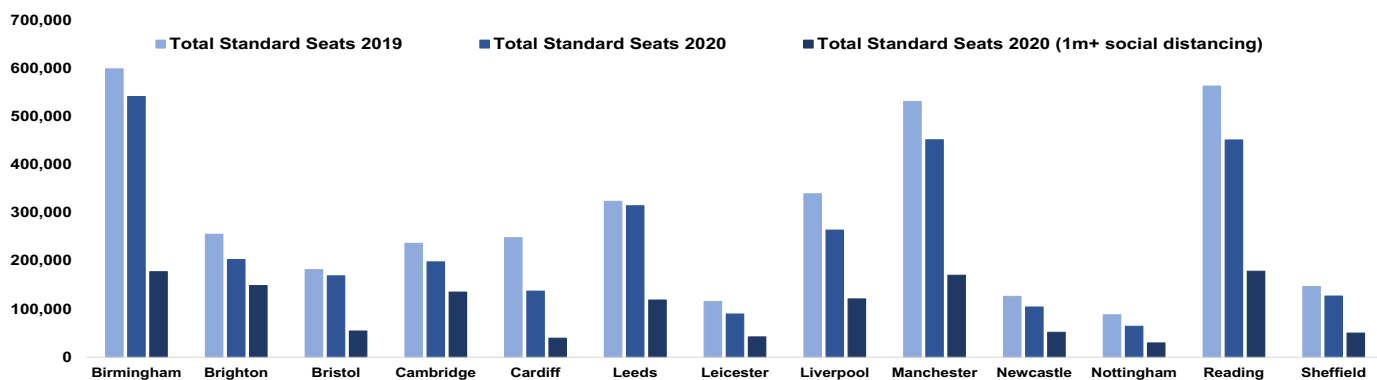
Seating capacity was affected by a reduction in the number of services and social distancing in carriages.

For 10 years prior to the pandemic, all major cities experienced increasing morning-peak demand, and all but one had increasing morning-peak seating capacity.

In 2020, the advent of the pandemic had a significant impact on capacity as train operators reduced the number of services and social distancing measures came into effect.

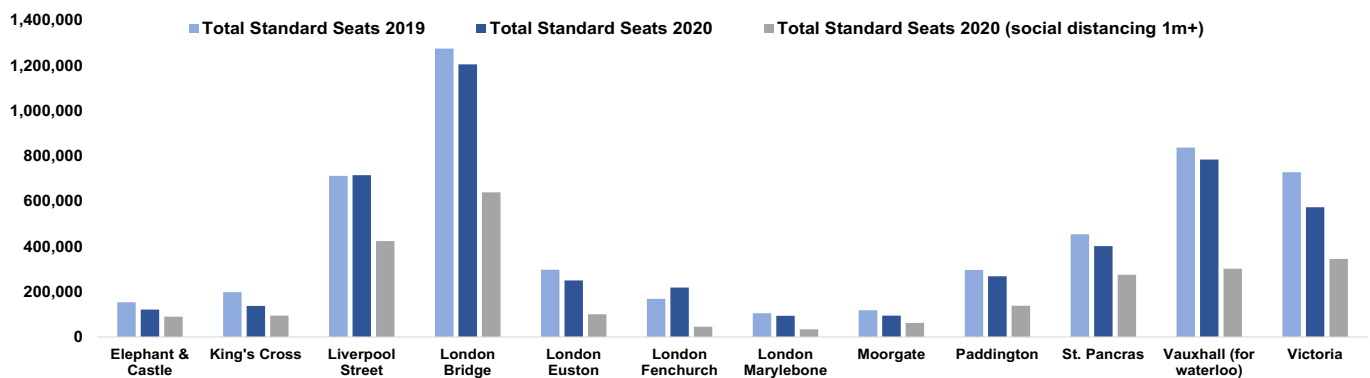
Based on traditional (non-social distancing) measures, capacity decreased by 8%. Taking into consideration 1m social distancing, capacity fell further (a decrease of 56% compared to 2019).

Figure 11: Average Daily Total Seating Capacity in Regional Major Cities: Autumn 2019 and Autumn 2020



In major cities outside London, the revised timetable owing to coronavirus measures reduced total seating capacity by 13%. In addition, with a social distancing policy of 1m+, total standard seating capacity was reduced to 1,315,703 (a decrease of 63% on 2019). The regional cities with the largest percentage decrease in social distancing 1m+ capacity was Cardiff and Birmingham.

Figure 12: Average Daily Total Seating Capacity at London Stations: Autumn 2019 and Autumn 2020



Similarly, in London, the revised timetable owing to coronavirus measures reduced total seating capacity by 4%. In addition, with a social distancing policy of 1m+, total standard seating capacity was reduced to 2,552,220 (a decrease of 52% on 2019). The London stations with the largest percentage decrease in social distancing 1m+ capacity were Fenchurch Street and London Marylebone.

Figure 13: Time-series of AM Peak standard class passengers and seats by city, 2010-2020.
Index 2010=100 These indices show change over 10 years rather than actual numbers of passengers and seats.



Standard class passengers and seats indices (10-year change)

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

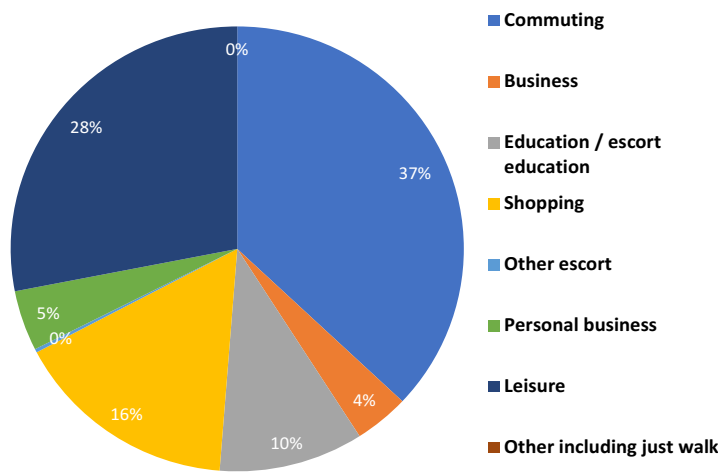
7. Rail Journey Purposes

There has been a large fall in rail commuting trips in England.

In this section estimates have been sourced from the NTS (National Travel Survey) and represent the full calendar year.

The average number of rail commuting trips made per person in England increased by around two-thirds between 2002 and 2019 (from 6 trips per person per year to 10) before falling to 4 in 2020. During this period, the number of commuting trips made by car per person had declined from 96 in 2002 to 57 in 2020.

Figure 14: Rail journey purpose: England only, 2020




In 2020, because of the pandemic and home-working the number of leisure and shopping trips was greater than commuting/business trips. 41% of rail trips were for either commuting or business purposes whereas 44% trips were for leisure or shopping.

In 2020, on average males between 17-49 made more rail trips (17 trips per person per year) than females (13 trips).

Higher earning households made more rail trips on average. In 2020, the highest earning quintile made 14 trips per person per year compared to 11 in the lowest.

People professional or managerial jobs made the most trips of any occupational sector with 14 trips per person per year.

 Males aged 17-49 (average 17 trips per person per year)

 Higher household income groups (14 trips per person per year)


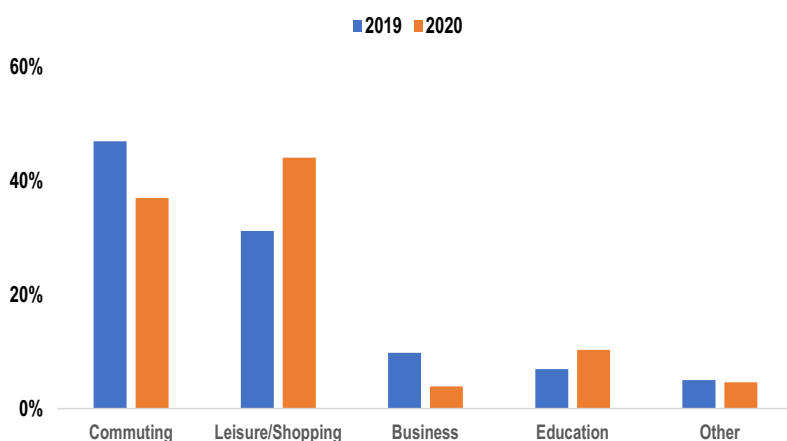
 Professional or managerial occupations (14 trips per person per year)

Figure 15: Rail Journey Purpose 2019 vs 2020



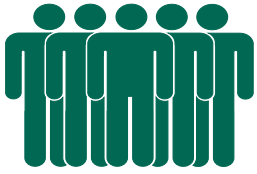
The impact of measures to control the spread of COVID-19 affected some journey types more than others. This led to a shift in journey purpose estimates between 2019 and 2020.

Of all rail journeys in 2020, the proportion that were commuting trips fell from 47% to 37% compared to the previous year.

Source: Department for Transport [National Travel Survey 2020](#)

8. Perceptions of Rail

Most passengers were satisfied with their rail journey and feel safe.



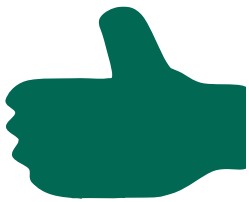
This section provides findings from research conducted by DfT and Transport Focus. They are not National Statistics. Range-estimates presented reflect repeated survey-waves during the period. The ranges presented for the Transport Focus research show the lowest and highest figures for repeated discrete weekly survey waves between the 2nd October and 13th December 2020.

Survey findings provide important context on passengers' perceptions of rail in terms of satisfaction with services, priorities, and safety during the pandemic.

Prior to the COVID-19 pandemic, rail passengers consistently identified being able to get a seat on the train as a top priority for improvement¹.

Research undertaken by Transport Focus² during the pandemic found that having enough space to sit or stand remained the top priority for rail users and non-rail users.

Other priorities for both users and non-users of rail were steps being taken to manage social distancing, trains being punctual and reliable, the inside of trains being well maintained and clean, and good ventilation on board.



Satisfaction amongst those who had made a rail journey in the past 7 days between October and December 2020 was high, with between 69% and 80% rating their journey as satisfactory overall².

Of those who had made a journey by rail in the last seven days between October and December 2020, between 69% and 79% were satisfied with the ability to keep a safe distance from other passengers².

Of those who had made a rail journey in the last seven days between October and December 2020: between 79% and 93% said they felt safe and between 7% and 21% said they felt unsafe³.



For the general public (including non-rail users) other research, including DfT's "All Change" survey⁴, indicated that confidence in travel by train, including perceptions of safety had improved. In November and December 2020, 32% of the general public said they felt comfortable with the idea of travelling by train in the next four weeks, 55% said that they felt uncomfortable.

9. Contextual Information

Contextual information of Train Operators during the pandemic:

Autumn 2020 provided a range of challenges for train operators. Each had to balance priorities; including policies that protected passengers and staff, providing a good service to passengers, ensuring sufficient capacity in a socially-distanced environment, and flexibility as government measures changed.

London Overground operated normal scheduled train formations and a full normal service on all routes. Passengers were encouraged to observe social distancing and change their journey times to facilitate this.

Northern Rail introduced new timetables in September 2020 which increased the number of services and operating hours compared to earlier in the year. The timetable reflected the provision of a service with reduced staff levels and protecting reliability and punctuality. Additional services were brought in and routes were prioritised.

Transport for Wales experienced a reduction of services owing to legal requirements of social distancing on public transport and other measures. Welsh Government guidance to work from home wherever possible was in place throughout the autumn period, leading to reduced demand for traditionally busy commuter services in Wales. The Cardiff Queen Street and Cardiff Bay shuttle service accounted for a large proportion of the reduction. Removing these, service provision was approximately 85% of pre-COVID levels by December 2020.

During Autumn 2020, **CrossCountry** operated a reduced timetable to provide the necessary capacity for social distancing to be effectively observed on board our services. The social distancing policy was to reserve customers into window seats with only one person seated per table. All customers were asked to make a reservation before travel, encouraged through customer communications and announcements on board.

A step-up in timetabled service provision from **Avanti** from 7th September 2020 saw the reintroduction of; London-Edinburgh services via Birmingham, limited services between London–Chester/North Wales, and also Blackpool, Shrewsbury and Wrexham, providing increased connectivity across the regions served by Avanti West Coast whilst maintaining frequency on the core routes. This level of service remained in place until mid-November when a step down was implemented alongside the next national lockdown phase to reflect the increase in restrictions on travel within the country. During Autumn 2020 Avanti continued to utilise their fleet of 11 and 9 car Pendolinos alongside 5 and 10 car Voyager sets. Practices of prioritising delivery of 11 and 10 car sets on services with anticipated high demand due to regular passenger travel patterns and any special events remained in place. Reservable capacity levels on each service remained limited to just below 50% of our normal levels in order to ensure there would be sufficient space onboard for customers to effectively maintain social distancing in accordance with government guidelines, with mandatory reservations required for all journeys to further mitigate the risk of overcrowding.

C2C measures included (i) removal of 4-car peak trains on the network to allow all other trains to operate in either 8 or 12-car formations (ii) daily passenger loadings reviews to inform when trains were likely to breach social distancing capacity to allow quick response times regarding the provision of additional capacity, and (iii) proactive reinstatement of services to take account of schools / non-essential retail re-opening.

Ahead of the Autumn 2020 period **East Midlands Rail** increased services so that they were then at 97% of the pre-COVID timetable. Capacities of many services were set at 50% in order to maintain social distancing. Many areas on the EMR network including Nottinghamshire, South Yorkshire, Merseyside and Greater Manchester moved to Tier 3 COVID-19 restrictions during October.

New **Trans-Pennine Express** “Nova” trains began service on trains in late 2019 and continue to be introduced, bringing increased capacity on many Manchester routes.

Throughout the Covid pandemic, **Southeastern** made regular adjustments to its timetables in order to match demand and allow for social distancing.

Some measurement of our trains' internal layout took place and, while there are some variations where 3+2 seating is provided, for 2m social distancing, it was assumed that no more than approximately 25% of the seats should be in use, rising to approximately 50% for 1m+ social distancing. Southeastern did not take seats on trains out of use, however and this was self – regulated, but train lengths were planned to allow for 1m+ distancing.

The timetable introduced on 7th September 2020 delivered approximately 98% of the pre Covid levels and was intended to be the Franchise's base timetable going forward. However, following further tiered lockdown measures after the October half term, a reduced timetable was introduced on 16th November, which was then increased slightly from 7th December.

Train loadings using Load Weigh equipment were fitted and analysed on a weekly basis to assess demand and as a result, at other times during this period, some train lengths were also amended.

South Western Railway implemented a revised timetable from late March 2020 in response to the pandemic and aimed to operate maximum formations on all routes where possible to facilitate social distancing. As measures were eased they enhanced their timetable in June and July 2020. Further enhancements were made in September to ensure our timetable provided sufficient services for school flows. Throughout the period in 2020 we monitored passenger numbers and responded where necessary.

West Midlands Trains' passenger count data for autumn 2020 was collated from a mix of scheduled manual surveys and loadings derived from automatic passenger counting (APC) equipment, fitted to selected units within the class 350 Desiro fleet.

For trains where APC loading information had been provided the largest available representative data sample has been used, excluding known holiday periods, to ensure that the counts supplied, as far as possible, reflect typical weekday service demand during the survey window.

Where manual surveys have been used, primarily for regional trains serving Birmingham stations, these have been carried out on dates which, as far as possible, reflected the typical level of passenger demand for autumn 2020. No known service anomalies were present on the dates used.

The timetable in place during the autumn 2020 delivered its capacity in a significantly different way to the service in operation during autumn 2019 and the early part of 2020. It maintained the modular approach of the early Covid contingency timetables and on several routes made use of longer, less frequent services than had previously been the case. Notable examples of this included the Liverpool to Birmingham route, with services remaining self - contained and operating as hourly 8 – car trains in place of the previous half – hourly 4 – car service, on the West Coast Main Line, where only one direct West Midlands Trains through service per hour operated between Birmingham and London (in place of the previous three), and the Cross City route in Birmingham where four trains per hour operated in place of the previous six, but with all services being formed of 6 – car formations. Similar changes to service frequency and train length were also made on the Snow Hill lines in Birmingham and tweaks were also made to the regional routes operating to Shrewsbury and Hereford.

Social distancing restrictions were in place on all West Midlands Trains services and stations throughout the autumn 2020 census survey window.

10. 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, a number of factors 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 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 services with a standing allowance, it represents passengers standing in cramped conditions.



The pandemic provided some additional challenges in producing these statistics:

This year there was a slightly different composition of manual to automatic passenger counts (APCs). Health and safety concerns meant that train operators were unable to collect the usual levels of manual count data (around two-thirds of 2019) although more APC counts were received meaning that greater imputation and estimates were required than in previous years.

Whilst passenger estimates are robust, capacity estimates are indicative as data-quality was mixed and train operators had separate policies on socially-distanced capacity.

Timetables changed with short notice which caused arrival time processing issues for a few train operators, however these were later processed manually.

Information on the time-series of transport during the pandemic can be found here:

Source: DfT [transport use during the COVID-19 pandemic](#) statistics

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: [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: [statistical data sets - 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 afternoon, by city and time band: annual from 2011
RAI0203	Central London arrivals and departures by rail on a typical autumn weekday afternoon, by city 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

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- Sam Lennon for his conscientious work over the summer

Background notes

Further details about all the statistics in this report can be found in the [notes and definitions](#).

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. 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. The continued designation was confirmed in October 2017: [national statistics status of rail passenger numbers and crowding-statistics](#)

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 2013 is published on the DfT rail statistics notes and guidance webpage: <https://www.gov.uk/guidance/rail-statistics-information>

11. 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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