



Department
for Transport

Rail passenger numbers and crowding on weekdays in major cities in England and Wales: 2021

Rail Statistics

Classified

connecting
people &
places

Rail passenger numbers and crowding on weekdays in major cities in England and Wales: 2021

- Annual publication on estimates of **rail passenger numbers** arriving and departing **14 cities in England and Wales** during Autumn 2021.
- Traditionally publication has focused on all day passenger numbers arriving, am peak arrivals, and pm peak departures, into/from selected London stations and major regional cities across England and Wales. There was also a focus on crowding on **peak time services**.
- Value of publication:
 - Granular geographic performance of rail industry - showing the impact and recovery from the coronavirus (COVID19) pandemic of rail demand at more **localised levels** across the UK;
 - Time of day analysis – by showing **changes in travel behaviour** (i.e. change in peak travel times).
 - Consistent time series of data presented in published data tables going back to 2010.
- Similar to the previous year's publication, this year's data is impacted by the **Coronavirus (COVID-19) pandemic** and impact on crowding. Hence no consideration of the **PiXC metric** in the publication.
- Improvement and development work: Published outputs include HTML report, data tables, infographic, and a power BI dashboard. A new RAP has been developed for all TOCs, with inbuilt QA process, which will significantly speed up publication process in future years.

Examples of passenger count uses

Passenger count data has been put to use across the DfT and for external government agencies for many projects:

- To support strategic and business cases for projects/schemes such as HS2, Integrated Rail Plan
- Post completion evaluation for projects such as the Great Western route modernisation
- To base/feed into passenger demand or transport models
- Use as a base in the development of alternative passenger counting equipment e.g. mobile data
- Feed into the planning for redevelopment of stations, for example at Euston
- Analysis of demand against capacity pre-COVID and post-COVID to inform decisions about rolling stock and service provision

2021 Publication Contents

- About the release
- Key background trends – expanded section on Coronavirus (COVID19) pandemic and associated effect of government responses – covering national wide impact on demand, government guidance and TOC responses regarding associated impact on capacity.
- Rail passenger demand in major cities
- Rail passenger demand in selected central London stations
- Rail trends and journey distributions by time
- Seating capacity
- Rail journey purposes, via National Transport Survey.
- Social research type data to contextualise the lasting effects of COVID19 on rail demand (perceptions of safety etc).
- International comparisons.
- Contextual information from the train operators
- Technical information.

TOC Engagement

- TOCs are engaged throughout the publication process by the DfT to:
 - Provide clarity on green book submissions and respond to queries regarding completeness of data submitted;
 - Provide contextual lines surrounding submitted green book data.
 - Quality assure final data to be published by the DfT.
 - TOCs are also contacted by the DfT to discuss data processing and data quality issues as they arise, as well as future TOC plans concerning coverage of Automatic Passenger Counting equipment and data extraction and processing of such data.

Data collection and validation

- Providing biannual passenger counts to the DfT is required of TOCs under the National Rail Contracts.
- Receive raw averaged counts and capacity data on a per service basis from 18 TOCs over count period – Sept 2021 – Dec 2021.
- This covers all services serving 14 cities of interest in the publication.
- Data covers all week days and weekends, although publication only reports data from a ‘typical midweek service’.
- Raw green book data can number up to 50 individual excel workbooks for one TOC.
- Data submitted is not standardised across all TOCs – they use different field names, different contextual information, different formats etc.
- Individual TOC mastersheets are produced from TOC raw green book data. The TOC mastersheets are submitted to an initial QA procedure.

Extensive QA Procedures

- The basic principles of the quality assurance process are:
- **Completeness:** Have all TOCs provided data for every city? Are all the required fields included? Have all services been included, in both directions?
- **Calculations:** Has the standing allowance been calculated correctly?
- **Sample sizes:** Are the sample sizes as we would expect? Has the TOC included infilled or estimated data? Have the number of APC changed since last year? Could this be as a result of new methodology or failing equipment?
- **Consistency:** Is the data internally consistent? Does the same rolling stock always have the same number of seats?
- **Historic comparison:** How does the data compare to previous years? How have overall trends changed? How has the distribution of passengers throughout the day changed (shape of the data)?
- **Context:** How does this compare to other data sources/trends (such as ORR usage data)? Any changes to infrastructure/timetable etc?
- Publication includes a summary of the strength and limitations of the data, in the technical information section.

Headline Findings

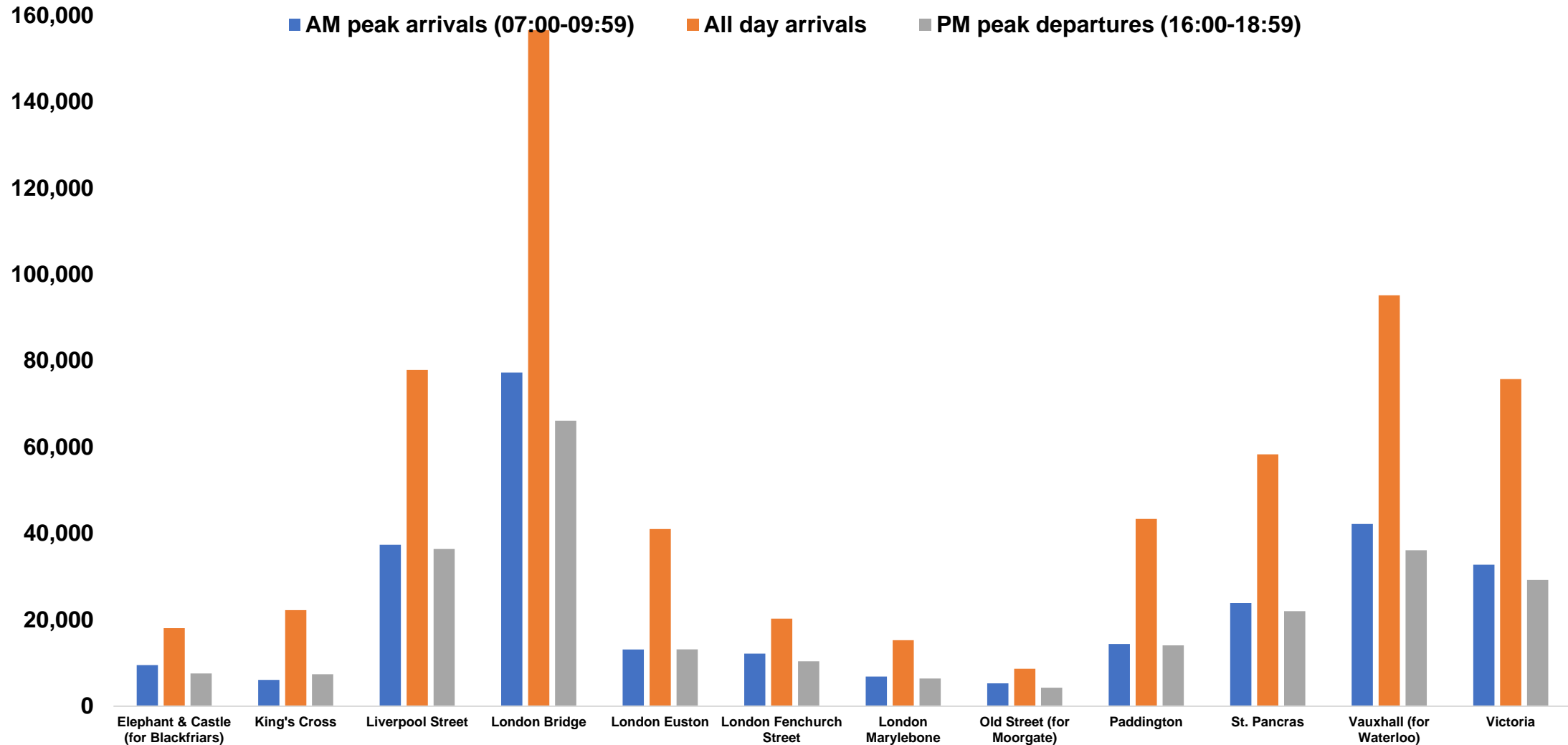
<p>All Cities All Day Arrivals 2021: 1,079,976 2020: 138% ↑ 2019: -41% ↓</p>	<p>Regional Cities All Day Arrivals 2021: 447,236 2020: 187% ↑ 2019: -39% ↓</p>	<p>London Stations All Day Arrivals 2021: 632,740 2020: 112% ↑ 2019: -43% ↓</p>
<p>All Cities AM Peak Arrivals 2021: 391,797 2020: 151% ↑ 2019: -53% ↓</p>	<p>Regional Cities AM Peak Arrivals 2021: 110,630 2020: 187% ↑ 2019: -52% ↓</p>	<p>London Stations AM Peak Arrivals 2021: 281,168 2020: 140% ↑ 2021: -54% ↓</p>
<p>All Cities PM Peak Departures 2021: 379,191 2020: 144% ↑ 2019: -50% ↓</p>	<p>Regional Cities PM Peak Departures 2021: 125,824 2020: 196% ↑ 2019: -48% ↓</p>	<p>London Stations PM Peak Departures 2021: 253,367 2020: 124% ↑ 2019: -51% ↓</p>



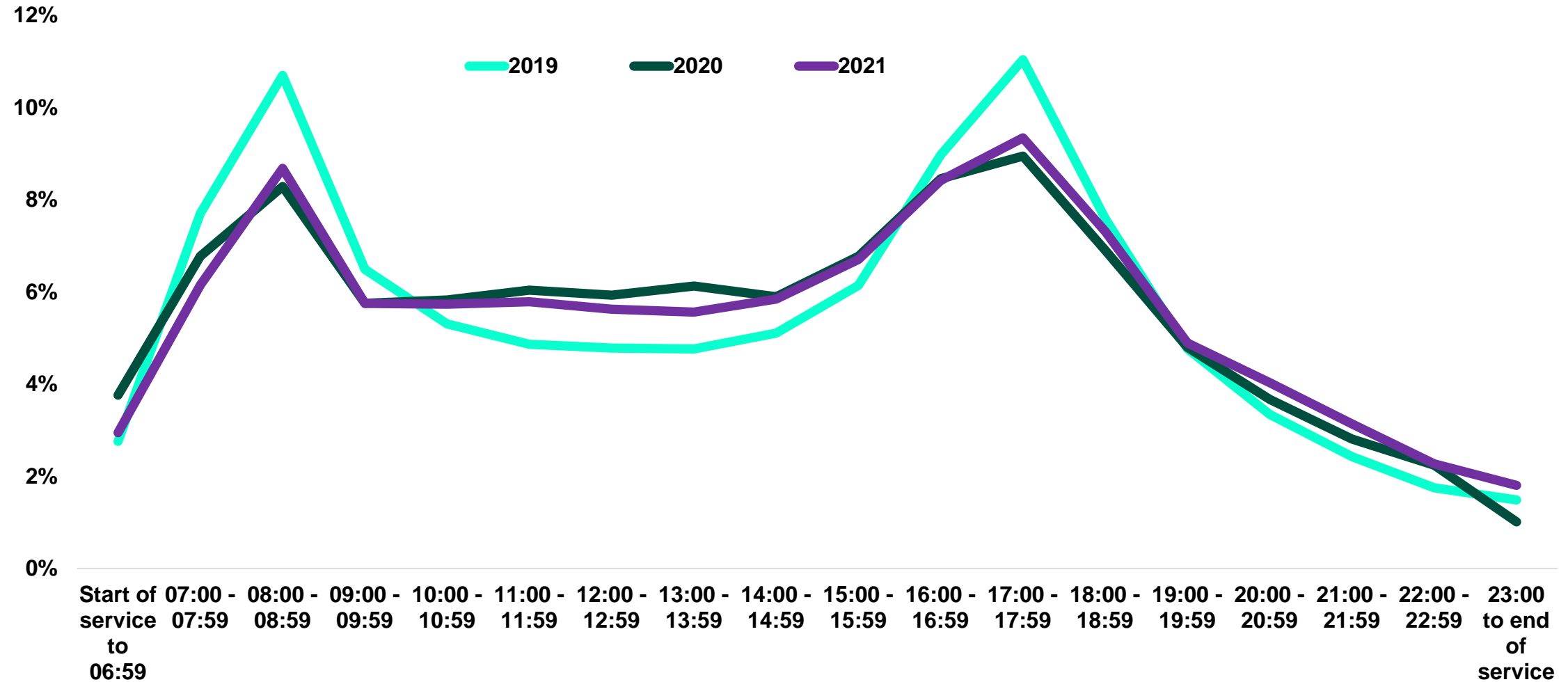
Major Cities – all day arrivals time series



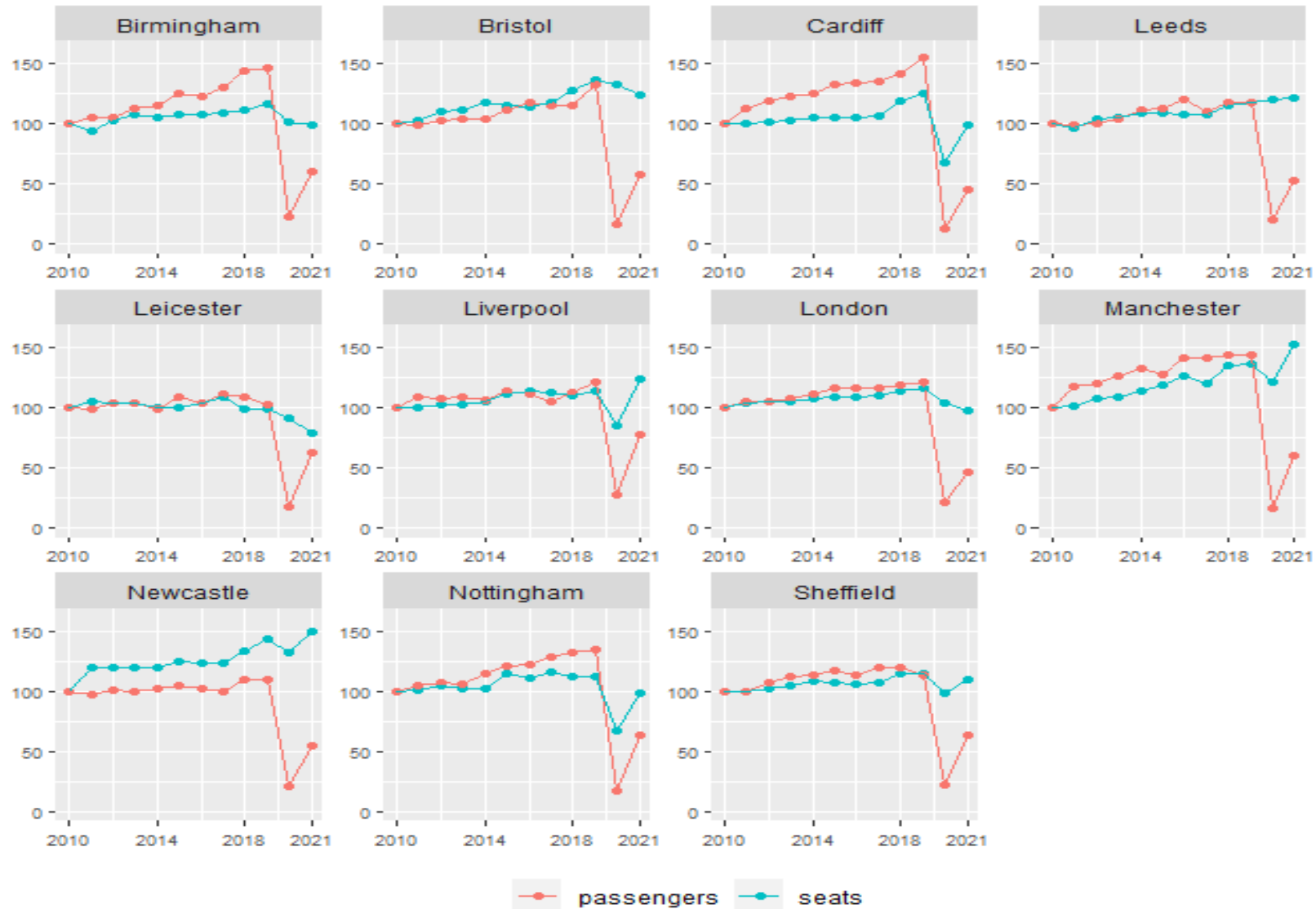
London Stations – am and pm peak arrivals and departures



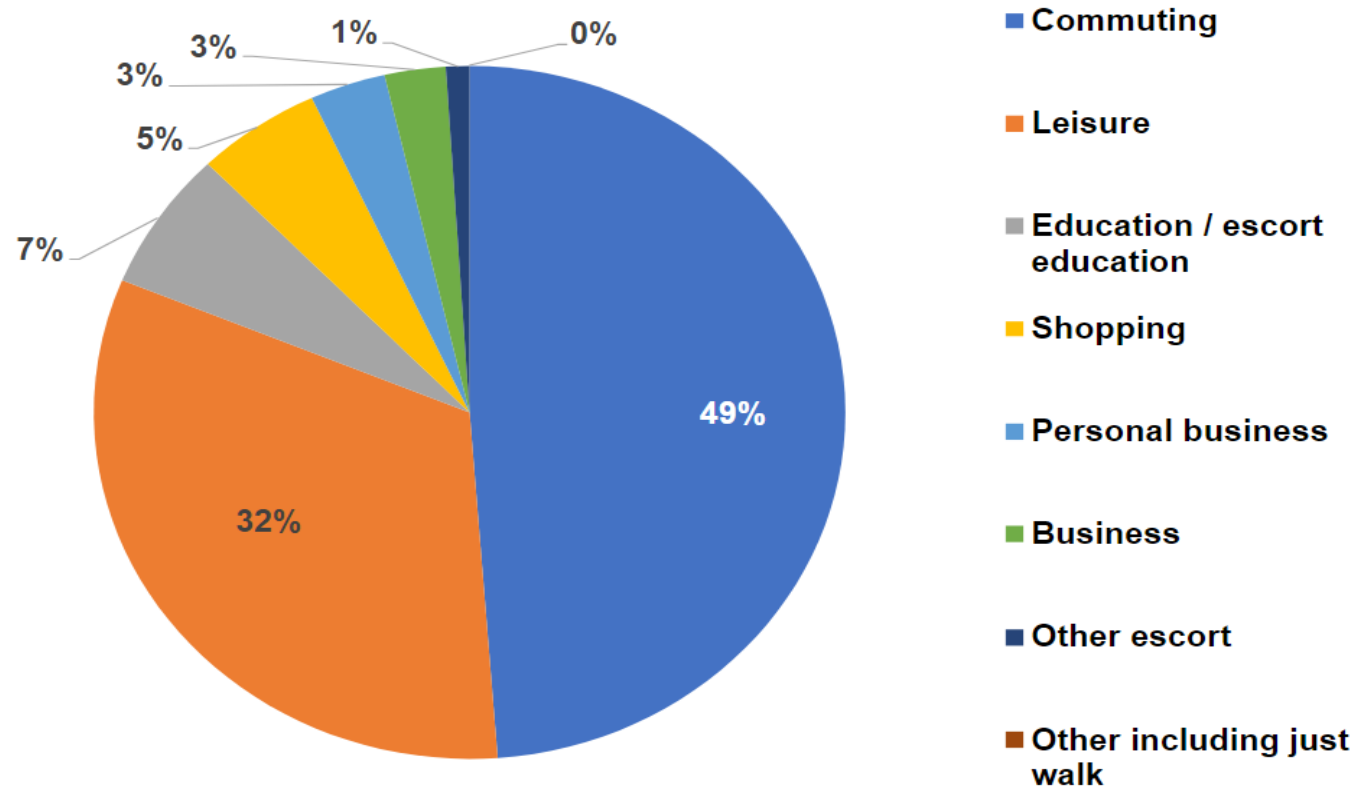
Proportion of Passenger Arrivals and Departures by Hour, Regional Major Cities: Autumn 2019, 2020 and 2021



Passenger demand and seating capacity - major cities



Rail Journey Purpose: England only, 2021 (NTS)



- The average number of rail commuting trips made per person per year in England increased from 4 to 5, between 2020 and 2021. From 2002 to 2019 this number increased by nearly two-thirds (from 6 trips per person per year to 10) before falling to 4 in 2020 as a result of the pandemic.

Perceptions of Rail (Travel Tracker)

- In 2021, a majority of passengers rated their ability to keep safe while travelling by rail as ‘Good’, although as rail demand recovered throughout 2021, there was a decrease of passengers with this view. In February to March 2021, when social distancing measures were in place, 81% of respondents felt they were able to keep safe. In November 2021 this had decreased to 54%.
- The pattern was similarly observed with passengers rating their ability to keep safe at railway, with 66% reporting as ‘Good’ in February to March 2021, increasing to 81% in May to June 2021. This fell back in November 2021 to 61%.
- Despite the majority of passengers rating their ability to keep safe while travelling by rail as “Good”, overcrowding on services remained a potential barrier to returning to rail for some passengers. In September 2021, 33% of pre-pandemic rail users said there would need to be an increase in the number of services to avoid crowding before they would feel comfortable travelling by train. This had fallen slightly to 30% by November 2021.

Improvements and Developments

- **2021 publication saw first HTML publication.**
- **An associated Power BI interactive dashboard will be published shortly.**
- **Mastersheet preparation significantly improved with the development of 17 TOC specific Reproducible Analytical Pipelines (RAPs).**
- **This process automates the production of two final outputs – a regional and London mastersheet – two sources used to derive all Data Tables and statistics included in publication.**
- **RAPs have inbuilt automated QA process.**
- **Future plan is to automate entire publication process bar report drafting, from data preparation, QA at all stages, graphics, and Data Table preparation, significantly reducing timescale to produce publication.**

Any questions?

[Rail passenger numbers and crowding on weekdays in major cities in England and Wales: 2021 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/rail-passenger-numbers-and-crowding-on-weekdays-in-major-cities-in-england-and-wales-2021)

Estimates of station usage

Presented by David Leese (david.leese@orr.gov.uk)

What are Estimates of station usage

The **Estimates of station usage** statistics consist of estimates of the total numbers of people:

- Travelling from or to the station (**entries and exits**); and
- Changing trains at the station (**interchanges**)

The data covers all mainline stations in Great Britain (2,570 during April 2021 to March 2022)


The estimates of entries and exits are further split by ticket type (full price, reduced price and season tickets)

All associated materials are available from the release page on the ORR [data portal](#)

April 2021 to March 2022 data – released today!

Top 10 stations in Great Britain	Total entries and exits April 2021 to March 2022
London Waterloo	41,426,042
London Victoria	36,776,338
London Bridge	33,309,348
London Liverpool Street	32,165,310
Stratford (London)	28,182,238
London Paddington	23,870,510
London Euston	23,097,606
Birmingham New Street	22,682,526
London Kings Cross	20,476,492
Manchester Piccadilly	19,581,442


dataportal.orr.gov.uk/station-usage



April 2021 to March 2022 data – released today!

Top 10 stations in Great Britain	Total entries and exits April 2021 to March 2022
London Waterloo	41,426,042
London Victoria	36,776,338
London Bridge	33,309,348
London Liverpool Street	32,165,310
Stratford (London)	28,182,238
London Paddington	23,870,510
London Euston	23,097,606
Birmingham New Street	22,682,526
London Kings Cross	20,476,492
Manchester Piccadilly	19,581,442

dataportal.orr.gov.uk/station-usage



Usage at very nearly every station has increased following the pandemic, but still remains lower than before the pandemic.

London Waterloo regained its status as the most used railway station in Great Britain.


There are eight stations that serve the capital in the top 10. They are joined by Birmingham New Street which remained in eighth place (22.7 million) and Manchester Piccadilly, which moved up from last year's 18th to this year's 10th (19.6 million).

The least used station that was open in the latest year was **Elton and Orston** with 40 recorded entries and exits.

Most used stations in Scotland and Wales

Top 5 stations in Scotland	Total entries and exits April 2021 to March 2022
Glasgow Central	15,322,350
Edinburgh	13,617,536
Glasgow Queen Street	8,467,718
Paisley Gilmour Street	2,124,248
Partick	1,664,560

dataportal.orr.gov.uk/station-usage




In Scotland, Glasgow Central remained the most used station with 15.3 million entries and exits, up from 5.3 million last year, but down from 32.5 million two years ago.

Across Wales, Cardiff Central remained the busiest station during with 7.5 million entries and exits, up from 2 million last year, but down from 12.7 million during the previous year.

Top 5 stations in Wales	Total entries and exits April 2021 to March 2022
Cardiff Central	7,463,378
Newport (South Wales)	1,753,550
Swansea	1,478,016
Cardiff Queen Street	1,366,108
Bridgend	937,180

dataportal.orr.gov.uk/station-usage



How is Estimates of station used?

These are ORR's most popular statistics

As far as we are aware there isn't any comparable data like this publicly available

We get queries from quite a range of industry stakeholders, and examples include –

- Transport consultancies
- Local authorities
- Train operating companies
- Department for Transport

How do we calculate entries and exits

Entries and exits are primarily based on sales data from LENNON, the rail industry's ticketing and revenue system. This is supplemented with local ticketing data, a list of all the data sources used to create the entries and exits:

- LENNON, Transport for London (TfL) data and train operator data (Gatwick Express and Stansted Express) as an input to the MOIRA2.2 base matrix
- Local ticketing data from Passenger Transport Executives (PTEs)
- Manual station counts
- Heathrow Express ticketing data

Why “Estimates”?

Several factors create uncertainty around our estimates, some of the main ones are:

- Ticketless travel
- Split ticketing
- Group stations
- Allocation of season ticket journeys
- Eurostar journeys not included

Future developments

We are always striving to improve the accuracy of our estimates (and overcome the limitations on the previous slide) and will prioritise accuracy over consistency with the back series.

- Changes in methodology to account for split ticketing
- Explore new datasets to allocate between group stations

Any ideas or feedback on future developments would be very welcome.