Rail Infrastructure and Assets 2020-21

14 October 2021

Background:

This annual statistical release contains information on the infrastructure and assets of the mainline rail network in Great Britain.

It covers: **track and route length** (including **electrified length**); the number of **mainline stations**; and the **average age of rolling stock** by train operator.

Sources: Network Rail, Amey Keolis Infrastructure Ltd., and Rail Safety and Standards Board (RSSB)

Latest year: 2020-21 (April 2020 to March 2021)

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Next publication:

October 2022

Track length: 31,251 kilometres

Route length: 15,935 kilometres

In 2020-21, 6,045 kilometres (km) of the mainline railway route were electrified (37.9%).

Proportion of route length electrified, Great Britain, 2020-21

In 2020-21, 179 electrified track km were added to the network. This was due to upgrading the Midland Main Line between Bedford and Corby.

The **average age of rolling stock** for all passenger train operators in 2020-21 was 17.1 years, which decreased by 0.3 years since 2019-20. For franchised operators, the average age fell by 0.2 years and for non-franchised operators the average age fell by 8.5 years.

Heathrow Express had the largest annual decrease in average age due to replacing their fleet, falling by 17.1 years to 4.6 years.

Three new mainline stations opened in 2020-21: Bow Street, Horden and Kintore. This brings the total number of stations in Great Britain as at 31 March 2021 to 2,569.

All data tables and a quality and methodology report associated with this release are published on the Rail infrastructure and assets page of the data portal. Key definitions are in annex 1 of this release.

1. Infrastructure on the railway

Rail network length

Track length in Great Britain in 2020-21: 31,251 km

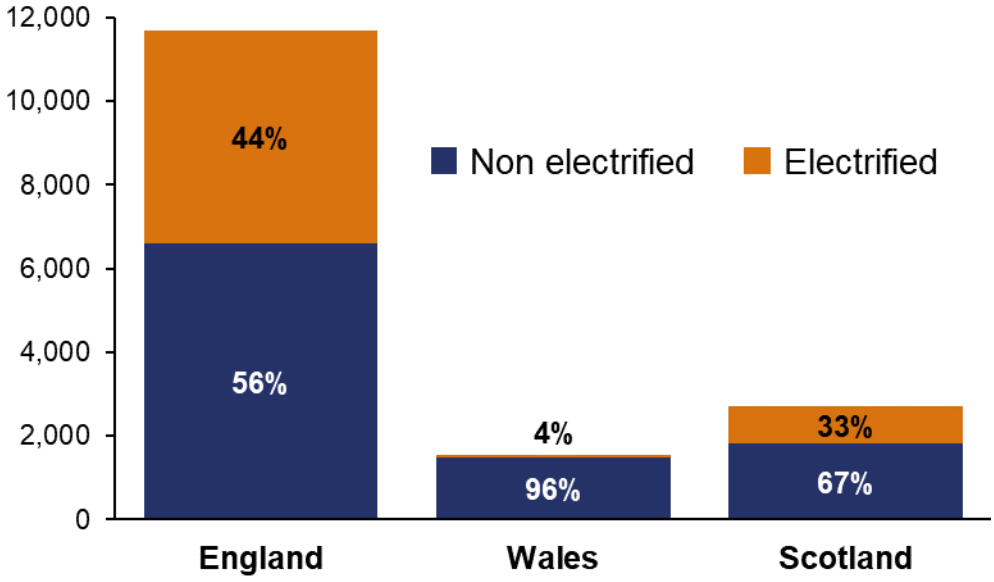
Route length open for traffic in Great Britain in 2020-21: 15,935 km

In England, the total route length increased by 30 km from 11,672 km in 2019-20 to 11,702 km in 2020-21. The total route lengths in Scotland and Wales were unchanged compared with 2019-20.

In Great Britain in 2020-21 6,045 km of route were electrified (37.9%). This is a similar proportion to previous years. The highest proportion of electrified route length in 2020-21 was in England with 43.6%. In Wales, 3.7% of the route length was electrified and in Scotland 32.8% was electrified.

Figure 1.1: The highest proportion of electrified route length in 2020-21 was in England

Total and electrified route length (kilometres) by country, Great Britain, 2020-21



Data on track length for each Network Rail region is available in Network Rail's Annual Return data tables. Please note Network Rail's data tables do not include Core Valley Lines (CVL) infrastructure, which transferred from Network Rail to Transport for Wales on 28 March 2020.

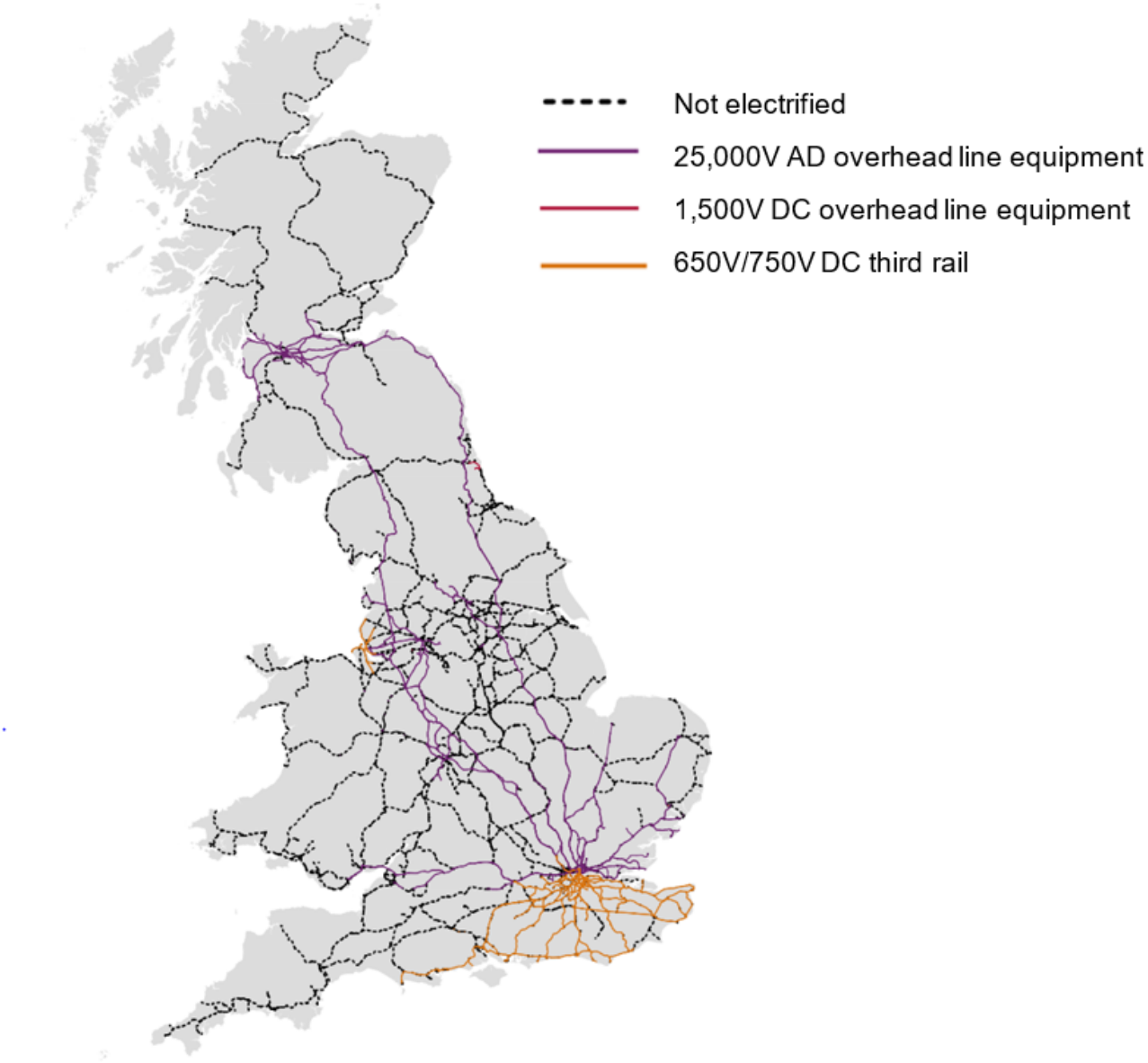
New electrification time series data

Network Rail carried out a historic review of the different electrification projects that have taken place on the network since 1995-96. This shows how much new electrified track was added to the network from each scheme, and where it took place.

The data is available for England, Wales and Scotland in Table 6320 – Infrastructure on the mainline. The data is shown by region in Network Rail's Annual Return data tables (Table 66: Electrification of the network).

In 2020-21, **179 track km** were added to the network due to upgrading the Midland Main Line between Bedford and Corby. New overhead line equipment was installed, as well as additional track between Kettering and Corby. East Midlands Railway launched a new all-electric service of Class 360 vehicles running between Corby and London St Pancras International. The first section of track was energised on 26 July 2020.

Figure 1.2: Rail network by electrification scheme, Great Britain, 2020-21



The map above shows the different track and electrification categories for the rail network in Great Britain.

The different track categories are:

- not electrified – trains run using diesel;
- electrified with 25,000V AC overhead line equipment;
- electrified with 1,500V DC overhead line equipment – used for Tyne and Wear metro;
- electrified with 650V/ 750V DC third rail – supplied from additional rails at track level which are in contact with electricity collection equipment on the train.

2. Number of mainline stations

As at 31 March 2021, there were 2,569 open mainline stations in Great Britain

New stations

Bow Street (Ceredigion, Wales) – opened 14 February 2021 and served by TfW Rail.

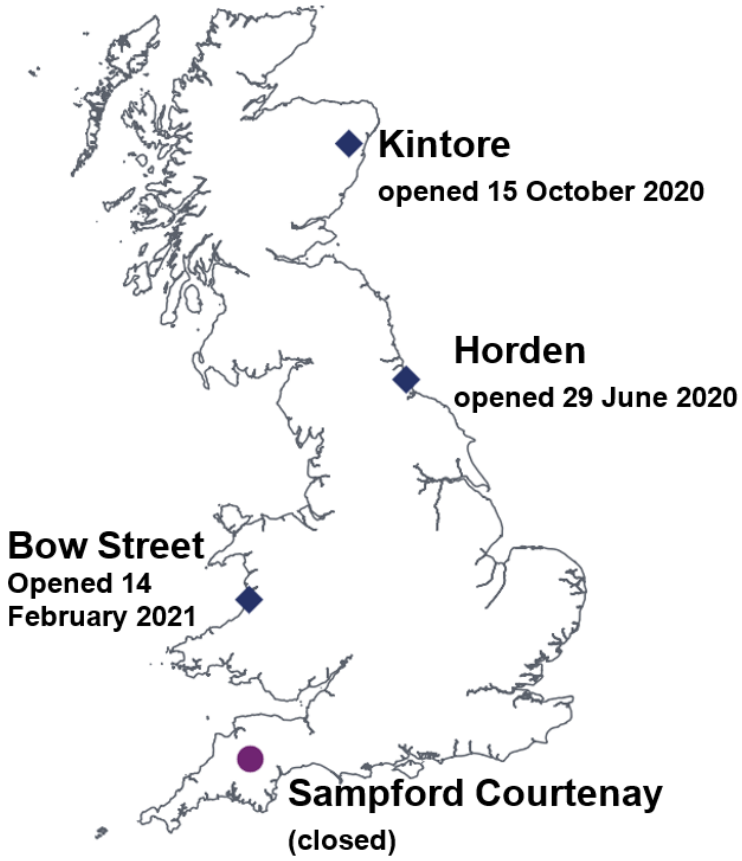
Horden (County Durham, England) – opened 29 June 2020 and served by Northern Trains.

Kintore (Aberdeenshire, Scotland) – opened 15 October 2020 and served by ScotRail.

Closed stations

Sampford Courtenay (Devon, England) – was previously served by Great Western Railway, and services were suspended in September 2019. It was announced Sampford Courtenay will not be reopening when services between Okehampton and Exeter are planned to resume.

Figure 1.3: Stations opened and closed in 2020-21, Great Britain



Temporary station and line closures

TfW Rail temporarily closed some stations from July 2021 due to issues around social distancing. To maintain distance between the conductor and passengers two train doors needed to be operated. This was not possible at some stations, due to their short platform length or platform curvature.

Heathrow Terminal 4 railway station closed on a temporary basis from 9 May 2020, due to the closure of the airport's Terminal 4 during the pandemic.

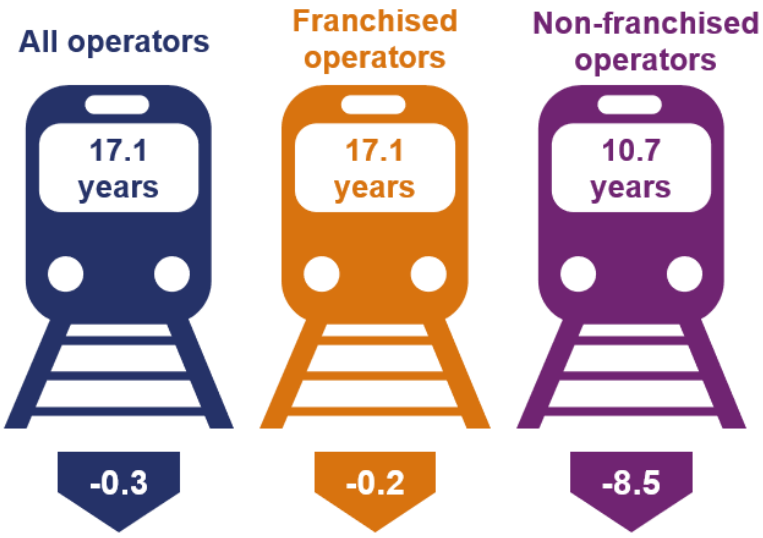
Part of the rail network was closed from August 2020 to March 2021, following a freight train fire at Llangennech. This led to a closure of the southern end of the Heart of Wales line which runs from Shrewsbury to Swansea via Llanelli.

The Conwy Valley Line was closed between February and September 2020, due to damage by Storm Ciara in February 2020. This runs from Llandudno to Blaenau Ffestiniog via Llandudno Junction.

For detailed information on all stations as at 31 March 2021 please see our new table on the data portal: Table 6329 Station attributes for all mainline stations in Great Britain. This covers geographical and other attribute information, such as county, local authority, Easting and Northing, and station facility owner.

We welcome feedback on the content and format of this new table, as well as suggestions for additional information. Please email us at rail.stats@orr.gov.uk

3. Average age of rolling stock

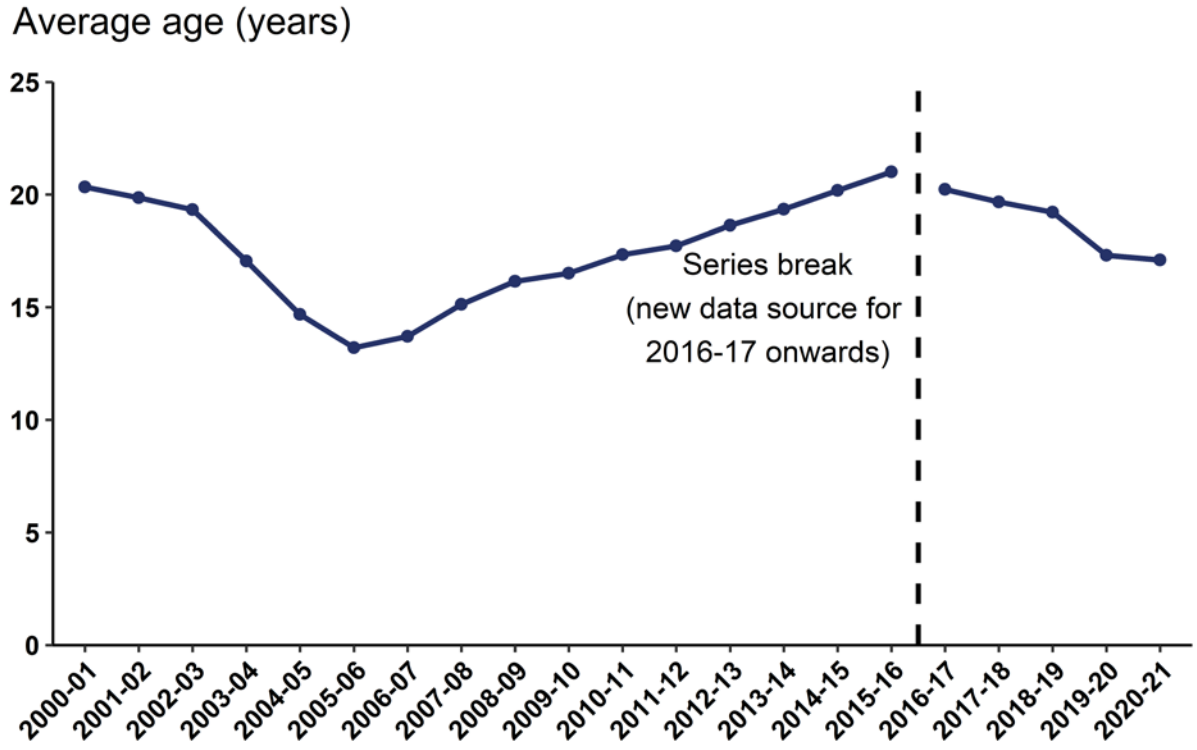


In 2020-21 the average age of passenger train operators rolling stock fleet (railway vehicles) in Great Britain decreased by **0.3 years** compared with 2019-20.

For franchised operators, the age decreased by **0.2 years** and for non-franchised operators the age decreased by **8.5 years**. This large decrease for non-franchised was due to reduction in age for Heathrow Express, who replaced their older vehicles.

Figure 3.1: Average age of rolling stock has decreased each year since 2016-17

Average age of rolling stock (franchised operators), Great Britain, 2000-01 to 2020-21 (Table 6313)



How the average age of rolling stock is calculated

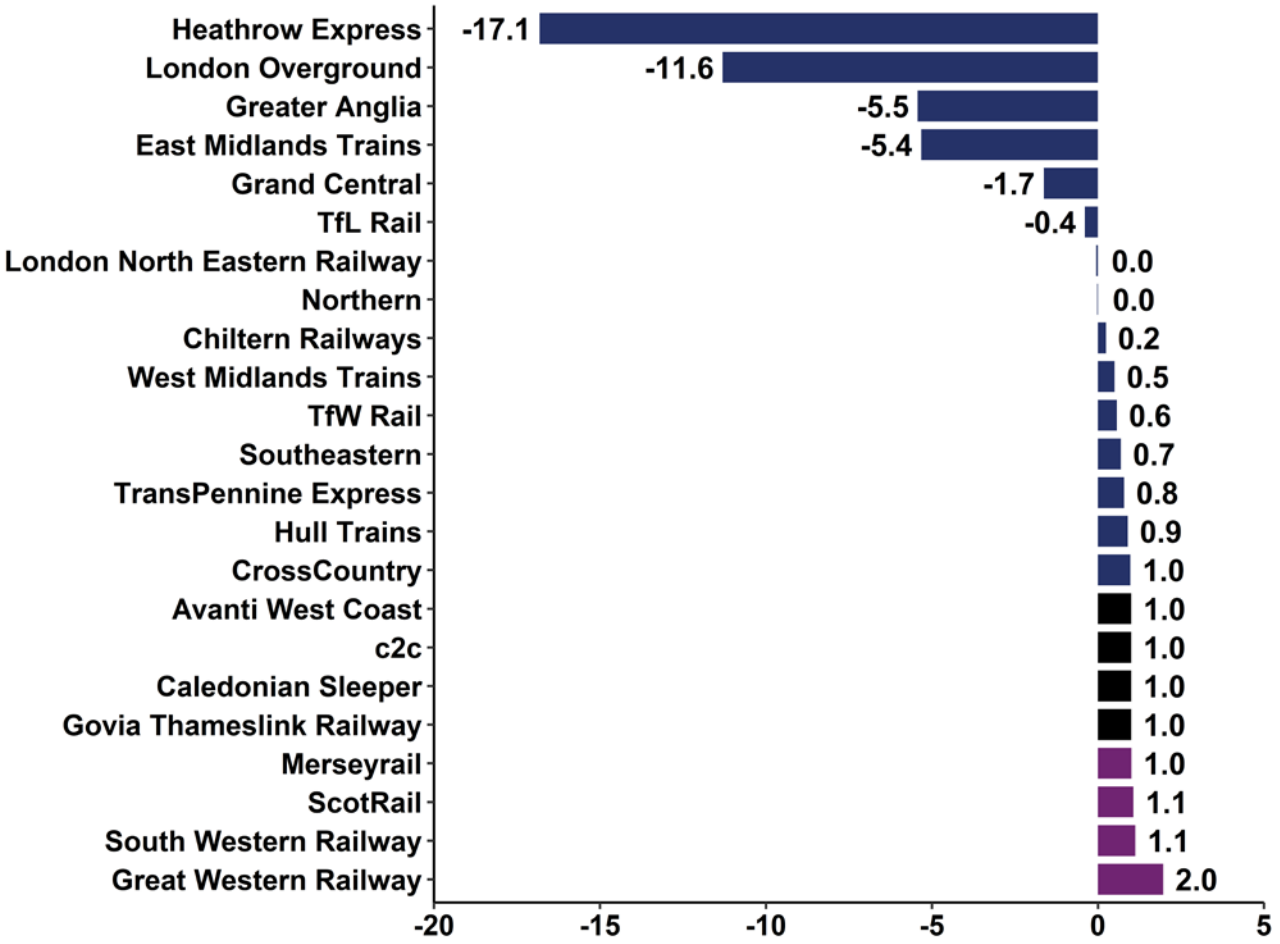
The average age of rolling stock shown is the age at the end of the financial year (31 March). A vehicle drops out of the dataset if it is no longer leased by a train operator. As all existing rolling stock will age by one year between one year and the next, any change in average age of less than 1.0 years is an indication of either the introduction of newer rolling stock or the removal of older stock from the fleet.

The data is supplied by RSSB from the R2 database. This is a central asset management system, which holds details of every vehicle registered to operate on Great Britain's railway. Further detail is available in the quality and methodology report on the Rail Infrastructure and Assets page.

Average age of rolling stock by train operator

Figure 3.2: Heathrow Express had the largest annual decrease in average age

Age change in years of rolling stock between 2019-20 and 2020-21 by train operator, Great Britain (Table 6313)



For four operators, the rolling stock fleet was unchanged (no additions or removals) between 2019-20 and 2020-21. Therefore their average age increased by one year.

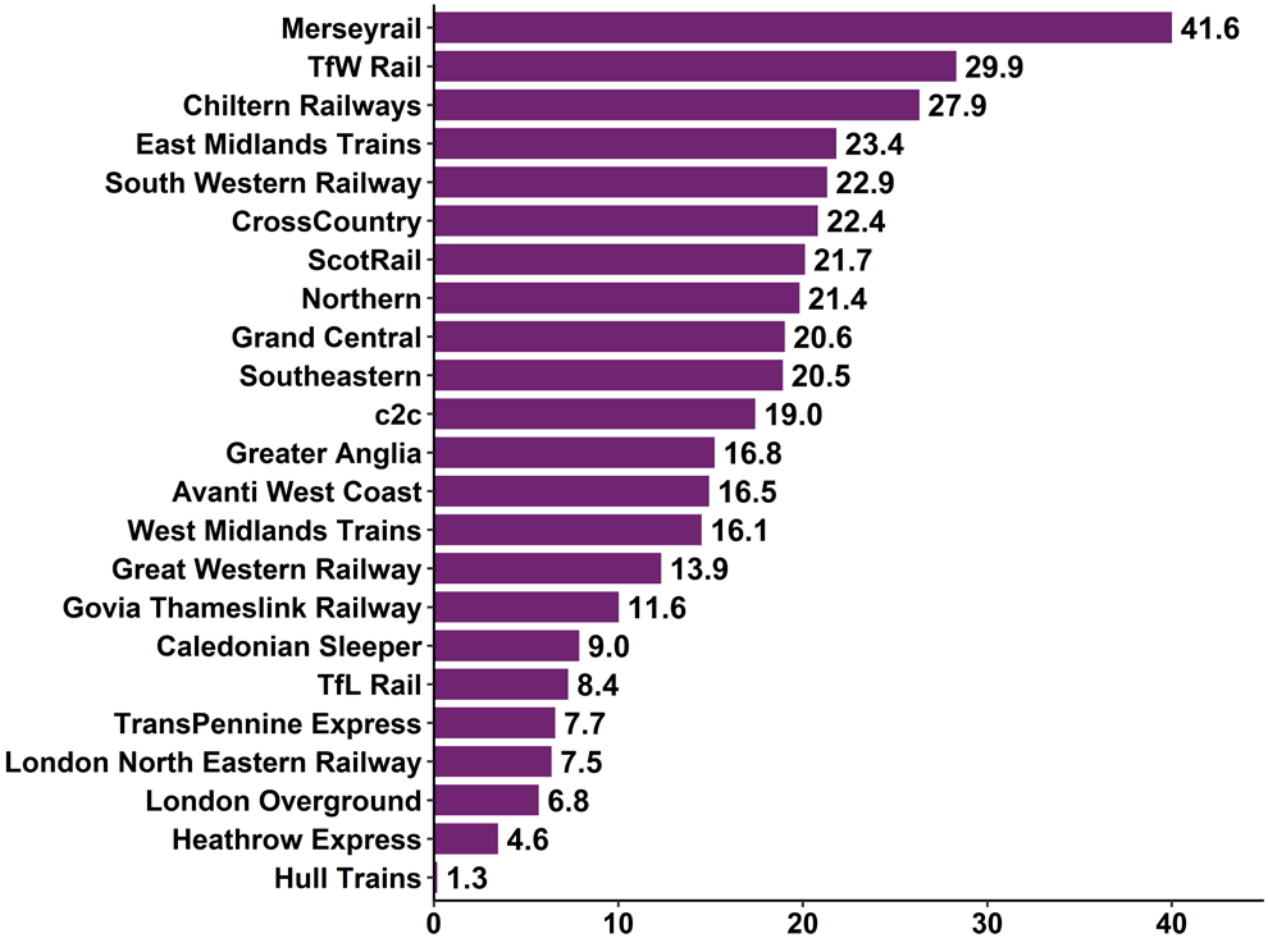
For four operators, the average age of rolling stock increased by more than one year. These increases are further explained in Table 3.1 for each operator.

For 15 operators, the average age of the rolling stock either decreased, or increased by less than a year. This was due to new rolling stock being introduced, older rolling stock being phased out, or a combination of both of these factors.

In 2020-21, Hull Trains had the lowest average age of 1.3 years, whilst Merseyrail had the oldest fleet with an average age of 41.6 years.

Figure 3.3: The average age of rolling stock varied by operator

Average age of rolling stock by train operator, Great Britain, 2020-21 (Table 6313)



Average age of rolling stock: further detail by train operator

The table below provides some further detail about key rolling stock changes and future rolling stock orders. Further information on rolling stock changes and future developments can be found in the Department for Transport's Rolling Stock Perspective and the Rail Delivery Group's Long Term Passenger Rolling Stock Strategy.

Table 3.1 Average age of rolling stock by passenger train operator in 2020-21, annual age change and reason (Table 6313)

Train Operator	*Average age of rolling stock*	*Age change compared with 2019-20 (years)*	*Reason for changes between 2019-20 and 2020-21*
Avanti West Coast	16.5 years	+1.0	No change
c2c	19.0 years	+1.0	No change
Caledonian Sleeper	9.0 years	+1.0	No change
Chiltern Railways	27.9 years	+0.2	Removal of older Mark 3 stock
CrossCountry	22.4 years	+1.0	Addition of Class 170 Turbostar
East Midlands Railway	23.4 years	-5.4	Addition of Class 170 Turbostar and first all-electric Class 360 trains running between Corby and London St Pancras
Govia Thameslink Railway	11.6 years	+1.0	No change
Grand Central	20.6 years	-1.7	Cancelled introduction of older rolling stock (Mark 4). The intention was to use these on a planned new service between London Euston and Blackpool North. This service was not launched due to coronavirus (COVID-19) pandemic
Great Western Railway	13.9 years	+2.0	Introduction of Class 769 Flex fleet for testing before operation. Class 143 vehicles removed from service
Greater Anglia	16.8 years	-5.5	New fleet was added, including Class 720
Heathrow Express	4.6 years	-17.1	Complete change of fleet between 2019-20 and 2020-21 from Class 332 to Class 387

Train Operator	*Average age of rolling stock*	*Age change compared with 2019-20 (years)*	*Reason for changes between 2019-20 and 2020-21*
Hull Trains	1.3 years	+0.9	Introduction of newer Class 802 Paragon
London North Eastern Railway	7.5 years	0.0	Removal of some older fleet
London Overground	6.8 years	-11.6	Removal of older Class 315, and addition of Class 710
Merseyrail	41.6 years	+1.0	Removal of some Class 508
Northern Trains	21.4 years	0.0	Removal of older Pacers and addition of Class 195 and Class 331
ScotRail	21.7 years	+1.1	Removal of Class 170 and addition of Class 153 on West Highland Line
South Western Railway	22.9 years	+1.1	Removal of Class 707 Desiro City (moving to Southeastern) and Class 442 vehicles
Southeastern	20.5 years	+0.7	Addition of Class 707 City Beam, first entered service September 2021
TfL Rail	8.4 years	-0.4	Addition of Class 345 from July 2020 and removal of Class 315 and Class 360
TfW Rail	29.9 years	+0.6	Removal of Mark 3 vehicles and addition of Class 769 from November 2020
TransPennine Express	7.7 years	+0.8	Introduction of Mark 5 vehicles
West Midlands Trains	16.1 years	+0.5	Removal of older vehicles including Class 153 and 170 into long-term storage

Authorisations

New, major, upgraded or renewed infrastructure and rolling stock applicants must seek authorisation from ORR to place their subsystems into service. The UK Register of Authorised Types of Railway Vehicles aims to streamline the authorisation process and encourage standardisation on the railway network. There is a requirement for ORR to keep this register since the United Kingdom left the EU.

The following railway vehicles were authorised in 2020-21:

- Class 88 authorised 2 June 2020
- Class 68 authorised 3 June 2020
- Class 230 authorised 23 June 2020
- Ecofret2 (freight wagons) authorised 30 March 2021

For details of authorisations granted by ORR under the Railways (Interoperability) Regulations 2011 in 2020-21, see the Interoperability authorisations page on ORR's website.

Rolling stock additional information

While new rolling stock may be more efficient and technologically advanced, existing trains can be refurbished during their lifetime to add better facilities (e.g. WiFi capability or increased seating capacity). Both newly-built and refurbished rolling stock can offer a more comfortable service for passengers. Therefore, the age of rolling stock does not necessarily affect passenger satisfaction. The introduction of refurbished rolling stock is not reflected in these statistics.

Accessibility

The Railways (Interoperability) Regulations 2011 and the Rail Vehicle Accessibility (Non-Interoperable Rail Systems) Regulations 2010 required that all passenger rail vehicles meet accessibility standards by 1st January 2020.

These requirements included, for example:

- providing access for wheelchair users
- the size and location of handrails, handholds and control devices
- providing passenger information systems and other equipment

DfT reported that around 1,200 vehicles failed to meet this deadline, and were granted an exemption to 31 January 2020. This was later extended to 30 April 2020, and further extended until 31 December 2020.

It was extended further until 30 September 2021, to allow government and industry to create a long-term solution for providing rail replacement services which is fully compliant with current public service vehicles accessibility regulations.

This exemption is subject to the conditions that:

- train operating companies must source and use compliant vehicles wherever possible in the first instance, only using non-complaint vehicles that have been granted a special authorisation when other options have been exhausted
- train operating companies must provide alternative accessible transport for disabled passengers which offers the same levels of service as those for non-disabled passengers with no detriment to those passengers when no compliant vehicle is available
- arrangements must be made in advance during planned engineering works to ensure alternative accessible transport is readily available

As of July 2020, DfT estimates that around 94% of heavy rail rolling stock was built or refurbished to be accessible to disabled passengers. The latest fleets of trains are fully compliant with accessibility standards.

4. Annexes

Annex 1 – Definitions

- **Rolling stock** are railway vehicles, including both powered and unpowered vehicles, such as locomotives, carriages, and freight wagons.
- **Route kilometres** are the total extent of routes available for trains to operate. Sidings and depots are excluded.
- **Track kilometres** takes into account multiple track routes (e.g. for each route kilometre where there is double track, there are two track kilometres). Sidings and depots are excluded.
- **Franchised operators** run services as part of contracts awarded by government.
- **Non-franchised (open access) operators** are licenced by ORR to run services on specific routes. The datasets that accompany this publication contain data for such operators: Grand Central, Heathrow Express, and Hull Trains.
- **Authorisations** are needed by law as no structural or vehicle subsystem can be put into use on or as part of the rail system in Great Britain unless the ORR has provided an interoperability authorisation the placing in service of the subsystem.

Further information on these definitions can be found in the quality and methodology report on the Rail Infrastructure and Assets page.

Annex 2 – Quality and methodology

Data sources

The number of mainline stations is sourced from ORR's Estimates of Station Usage. This covers all stations on the rail network that are served by mainline services as at 31 March 2021. Any stations where all services have been suspended temporarily are included, whereas stations closed permanently or where all services have been suspended permanently are not.

Data for the track and route length is provided by Network Rail, and Amey Keolis Infrastructure Ltd (AKIL). The Island Line network on Isle of Wight is not included in these figures. This is leased from Network Rail to First MTR South Western Trains Limited (operating as South Western Railway).

The Core Valley Lines (CVL) network was transferred from Network Rail to Transport for Wales on 28 March 2020. Transport for Wales leases its assets to AKIL who are the

Infrastructure Manager for the Core Valley Lines network. There are 55 stations served by the CVL Network, and a map is available in the 2022 CVL Network Statement.

Data for the average age of rolling stock is provided by RSSB (Rail Safety and Standards Board. This is from the R2 central asset management system. R2 holds details of every vehicle registered to operate on the railway in Great Britain, and is the single repository for all vehicles and major components with full maintenance history. The data presented in this release are for mainline operators in Great Britain. The data does not include Eurostar, London Underground, light rail, heritage and charter services.

Data Quality

Between 2016-17 and 2017-18 Network Rail replaced GEOGIS, its master database for track assets, with a new system called INM (Integrated Network Model). As part of this process a number of data improvement and cleansing actions were undertaken.

Therefore, some of the changes in track and route kilometres between 2016-17 and future years may be due to this system change rather than an actual physical change on the ground.

Revisions

There have been revisions to route and track length for 2019-20. This was due to revisions and data quality improvements made by Network Rail in classifying the data.

Further details on the revisions can be found in the Revisions log

Further information on data quality issues, revisions, data collection, and the historic background, can be found in the quality and methodology report on the Rail Infrastructure and Assets page.

Annex 3 – List of data tables associated with this release and other related statistics

Data tables

All data tables can be accessed on the data portal free of charge in OpenDocument Spreadsheet (.ods) format. We can also provide data in csv format on request.

All tables associated with this release can be found under the Data tables heading at the bottom of the Rail infrastructure and assets page.

Infrastructure on the railways

- Infrastructure on the mainline – Table 6320
- Mainline stations in Great Britain – Table 6325
- Station attributes for all mainline stations in Great Britain – Table 6329 **(New table)**

Average age of rolling stock

- Average age of rolling stock by train operator– Table 6313

Other related data

Fuel consumption and estimates of associated emissions of passenger and freight operators are published on the Rail emissions page on the data portal.

Estimates of entries/exits and interchanges at each mainline station in Great Britain is published annually in Estimates of Station Usage.

Annual statistics covering Station Stewardship Measure (SSM) and Light Maintenance Depot Stewardship Measure (LMDSM) are published on the Asset condition page of the data portal.

Network Rail publish data on network length in their Annual Return data tables.

European Comparisons

Data on the total length of railway lines in European countries is available for calendar years 2008 to 2019. This is measured in route km. The UK last provided data in 2018 and had the fifth longest railway (16,289 route km). Of the countries that provided data in 2018, over 50% of the total is from the countries with the five longest rail networks: Germany, France, Italy, Poland and the UK. Luxembourg has the shortest network of all participating countries (271 km).

The Independent Regulator's Group-Rail (IRG-Rail) publish data on network length, electrified route length and high speed route length. In 2019, the average proportion of electrified route length was 55% for member countries. The UK was 21st out of 30 countries, with a proportion of 38%.

Annex 4 – ORR's statistical publications

Statistical Releases

This publication is part of ORR's National Statistics accredited releases, which consist of seven annual publications: **Estimates of Station Usage; Rail Industry Finance (UK); Rail Fares Index; Rail Safety Statistics; Rail Infrastructure and Assets; Rail Emissions; Regional Rail Usage**; and four quarterly publications: **Passenger Rail Performance; Freight Rail Usage and Performance; Passenger Rail Usage; Passenger Rail Service Complaints.**

In addition, ORR also publishes a number of Official Statistics, which consist of three annual publications: **Train Operating Company Key Statistics; Rail Statistics Compendium; Occupational Health**; and four quarterly publications: **Signals passed at danger (SPADS); Delay Compensation Claims; Disabled Person's Railcard (DPRC); Passenger assistance.**

All the above publications are available on the data portal along with a list of publication dates for the next 12 months.

National Statistics

The United Kingdom Statistics Authority 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. National Statistics status means that official statistics meet the highest standards of **trustworthiness**, **quality** and public **value**.

The majority of these statistical releases were assessed in 2012 and hold National Statistics status. Since our assessment we have improved the content, presentation and quality of our statistical releases. In addition, in July 2019 we launched our new data portal. Therefore, in late 2019 we worked with the Office for Statistics Regulation (OSR) to conduct a compliance check to ensure we are still meeting the standards of the Code. On 4 November 2019, OSR published a letter confirming that ORR's statistics should continue to be designated as National Statistics. OSR found many positive aspects in the way that we produce and present our statistics and welcomed the range of improvements made since the statistics were last assessed. Estimates of Station Usage statistics were assessed in 2020.

For more information on how we adhere to the Code please see our compliance statements. For more details or to provide feedback, please contact the Statistics Head of Profession (Lyndsey Melbourne) at rail.stats@orr.gov.uk.

This publication is available on the data portal

Any media enquiries regarding this publication should be sent to us at orr.gov.uk/contact-us.