Rail Infrastructure and Assets 2019-20

5 November 2020

Route length: 15,904 km

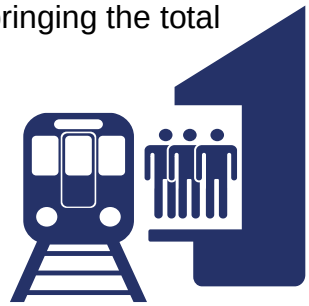
Track length: 31,218 km

As a result of various electrification schemes across Great Britain, **6,049 km** of the mainline railway route is now electrified. This is 38.0% of all route km.

In 2019-20, **251 new electrified track km** was added to the network**.** This was related to the Lee Valley Rail Programme, and Great Western Electrification plan.

Four new mainline stations opened in 2019-20, bringing the total number to **2,567 stations:**

- Meridian Water
- Robroyston
- Warrington West
- Worcestershire Parkway



The average age of rolling stock for all train operators is **17.3 years**, which has decreased 1.9 years since 2018-19. This is due to several operators introducing new rolling stock.

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

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

These statistics cover:

track and route length (including **electrified**), the number of **mainline stations**, and the **average age of rolling stock** for every train operator

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

Latest year: 2019-20 (April 2019 to March 2020)

Contents:

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1. Infrastructure on the railway

Rail network length:

Route km open for traffic in 2019-20: 15,904 km

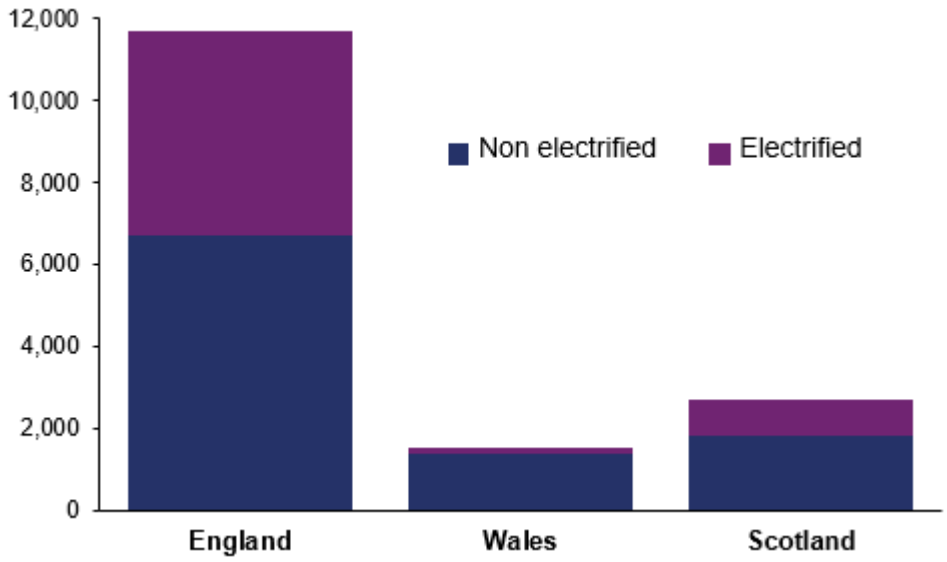
Track km in 2019-20: 31,218 km

The total network length is available for each country in Great Britain. In England, the total route length increased from 11,637 km to 11,672 km.

Wales now has electrified track for the first time in 2019-20. Work to electrify the line between London Paddington and Cardiff Central was completed in January 2020. This was part of the plan to electrify the Great Western Mainline.

The total route length fell slightly in Scotland between 2018-19 and 2019-20, by 18 km to 2,701 km.

Figure 1.1: Total route length km by country, Great Britain, 2019-20



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

For a detailed history on how route length has changed, including information on the 'Beeching cuts', please see the accompanying quality and methodology report.

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.

New electrification time series data

Network Rail have recently 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 shown by region in Network Rail Annual Return data tables (Table 66).

The data is shown separately for England, Wales and Scotland in Table 6320 – Infrastructure on the mainline.

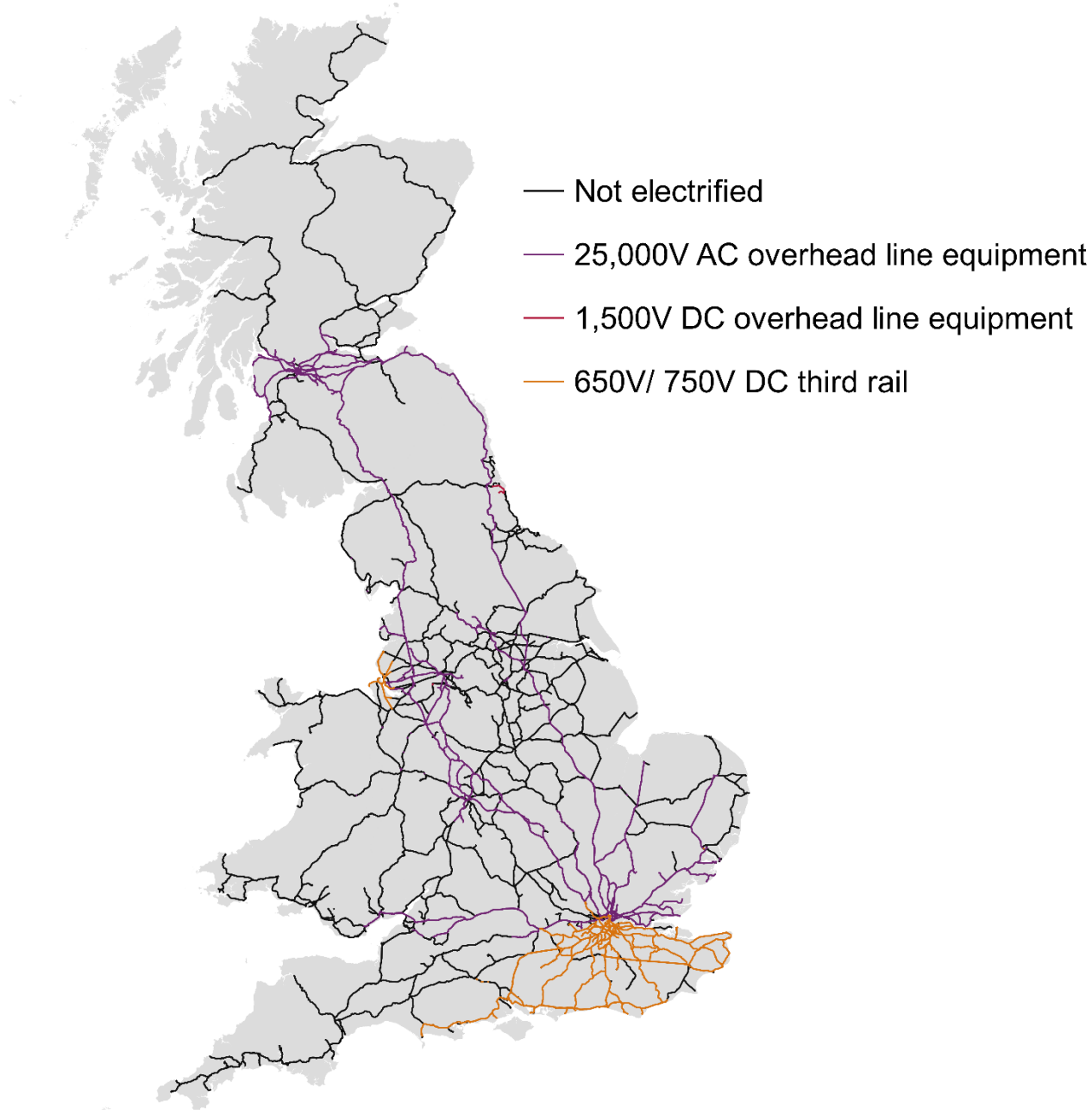
In 2019-20, **251 track km** were added to the network due to electrification projects:

- **6 track km** for West Anglia Main Line between Lea Bridge and Meridian Water stations. This was part of the Lee Valley Rail Programme, which started in 2017.
- As part of the Great Western Electrification plan, lines between St Brides, Newport and west of Cardiff Central station were electrified. **212 track km** was added between Bristol Parkway and Cardiff, and **34 track km** between Wootton Bassett and Chippenham. The work was completed in January 2020, and passengers can now benefit from saving an average journey time of 14 minutes. This has also resulted in 15,000 additional weekday seats between South Wales and London.
- Electrification between Stalybridge and Manchester Victoria was completed in July 2019 and a new power supply was installed. This work supports ongoing introduction of electric trains across the North West as part of the Great North Rail Project.

Electrified route length

At the end of 2019-20 there was a total of 6,049 km of electrified route, which is 38.0% of the total. This has increased from 6,010 km in the previous year, which was 37.9% of the total route length.

Figure 1.2: Rail network by electrification scheme, Great Britain, 2019-20



The map above shows the different track and electrification categories for the rail network in Great Britain. Data was extracted by Network Rail in May 2020, as it was not possible to extract data to show the network as of March 2020. However, the changes to track between these months are likely to be minimal.

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, not its wheels.

2. Number of mainline stations

As at 31 March 2020, there were 2,567 open mainline stations in Great Britain

Closures

Angel Road – permanently closed on 31 May 2019. This closure was due to a new station (Meridian Water) opening approximately 580 metres to the south of Angel Road.

IBM – all services were suspended from 9 December 2018 by ScotRail. It served the IBM factory which closed in 2016.

Redcar British Steel – all services ceased on 14 December 2019. The station is located within the private property of the steel works. As the British Steel site was closed and the area sealed, Northern stopped all services to and from this station.

New stations

Meridian Water – opened 3 June 2019 to better serve local passenger demand (as mentioned above the new station is near to closed Angel Road station). It is served by Greater Anglia.

Robroyston – opened 15 December 2019. It is served by ScotRail. The new station has been built upon land that was previously home to a Robroyston station and a marshalling yard, which closed over 50 years ago.

Warrington West – opened 16 December 2019 and is served by Northern Trains.

Worcestershire Parkway – opened 23 February 2020. It is served by CrossCountry and Great Western Railway.

3. Average age of rolling stock

The average age of the rolling stock fleet (railway vehicles) in Great Britain decreased by **1.9 years** since 2018-19.

For franchised operators, the age decreased by **1.9 years** and for non-franchised operators the age decreased by **0.1 years**.

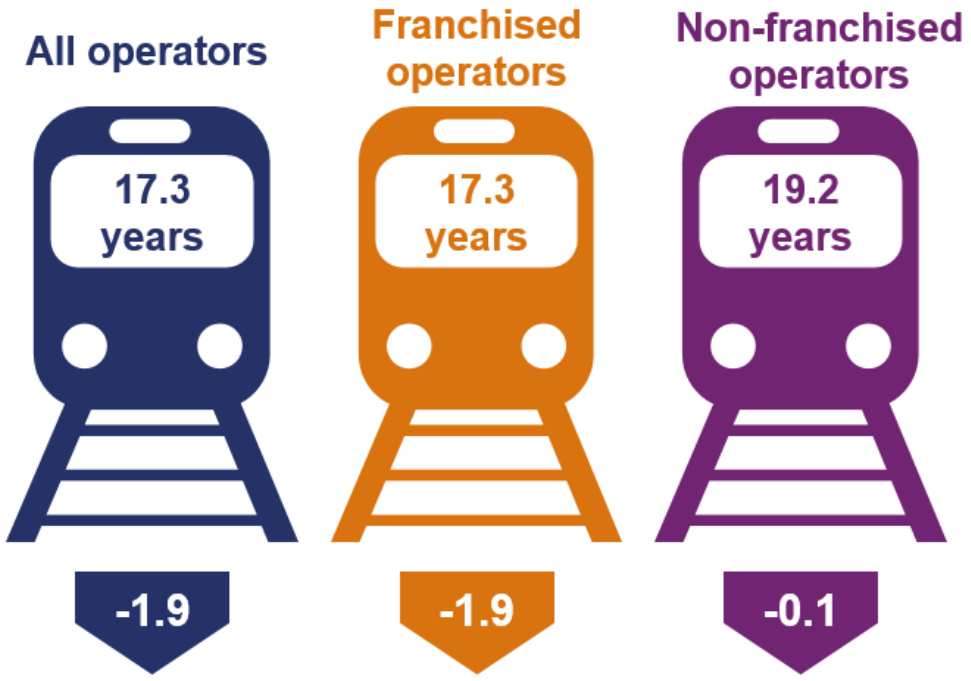
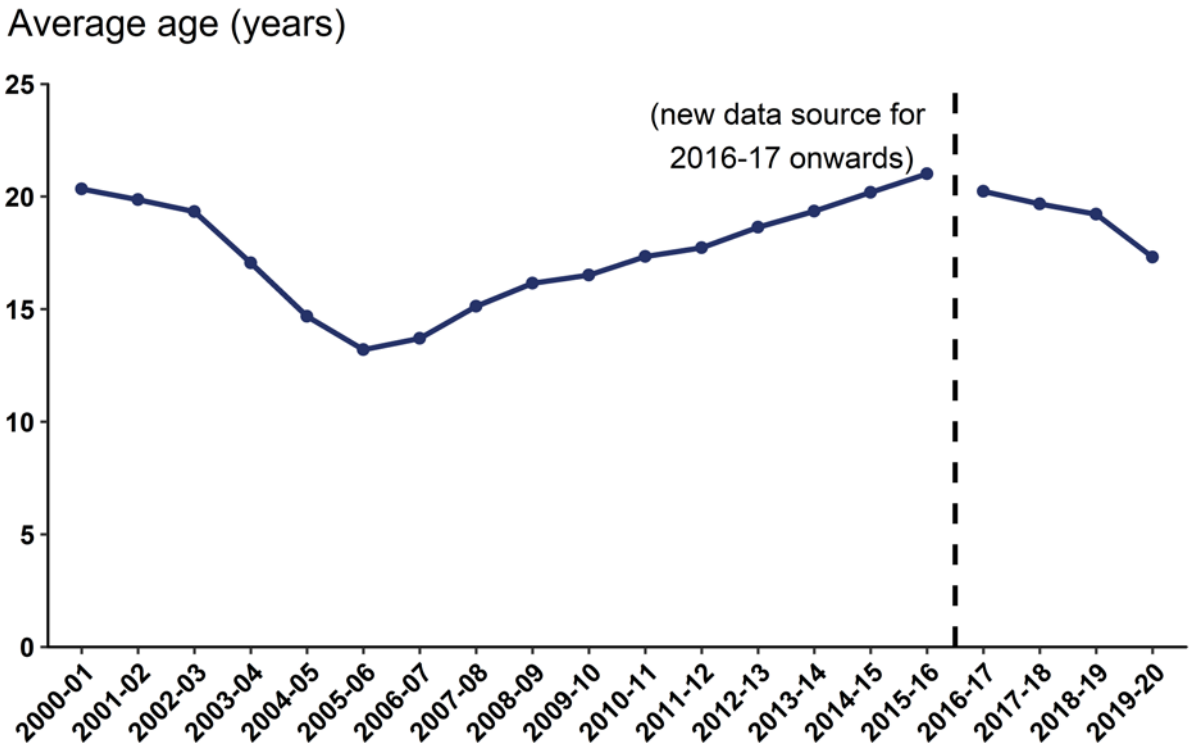


Figure 3.1: Average age of rolling stock (franchised operators), Great Britain, 2000-01 to 2018-19 (Table 6313)



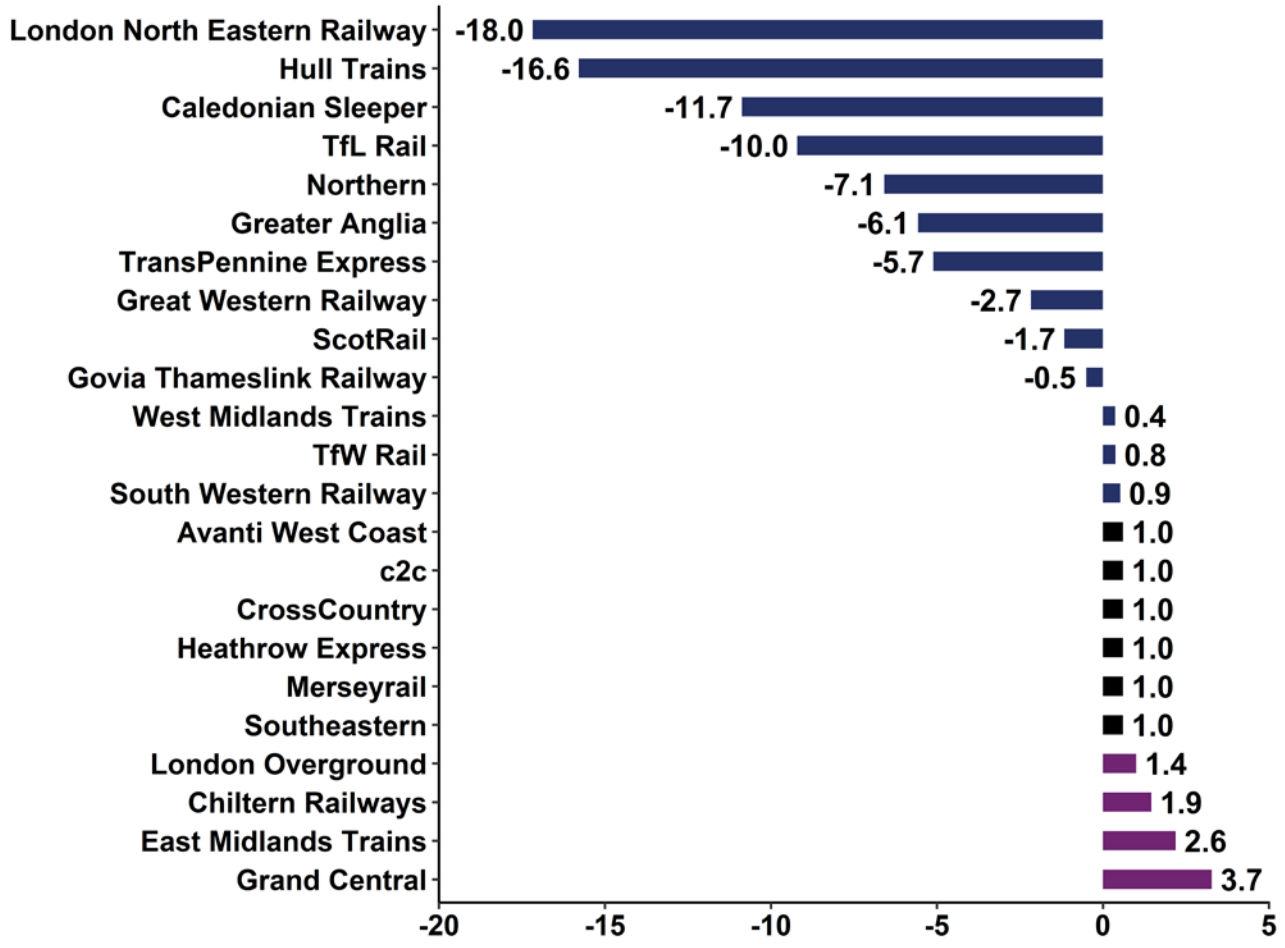
How the average age of rolling stock is calculated

The average age of rolling stock shown is the age as at March 2020. Changes in rolling stock average age are recorded against the same time period the year before. 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 the UK railway. For further detail, please see the quality and methodology report.

Average age of rolling stock by train operator

Figure 3.2: Age change in years of rolling stock between 2018-19 and 2019-20 by train operator, Great Britain (Table 6313)



For six operators, their rolling stock fleet was unchanged between 2018-19 and 2019-20. There were no additions or removals, so their average age increased by one year.

For four operators, the average age of their rolling stock increased by more than one year. These increases were due to the addition of older stock.

For 13 operators, the average age of their rolling stock either decreased, or increased by less than a year. This was due to either new rolling stock being introduced, older rolling stock being phased out, or a combination of both of these.

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.

Train Operating Company	***Average age of rolling stock***	***Age change compared to 2018-19 (years)***	***Reason for changes between 2018-19 and 2019-20***
Avanti West Coast	15.5 years	+1.0	No change
c2c	18.1 years	+1.0	No change
Caledonian Sleeper	8.0 years	-11.7	Older Mark 2 & Mark 3 vehicles were replaced by newer Mark 5 carriages, and were introduced in April 2019.
Chiltern Railways	27.7 years	+1.9	Addition of older Mark 3 vehicles.
CrossCountry	21.4 years	+1.0	
East Midlands Railway	28.8 years	+2.6	Addition of older stock including Class 156 units.
Govia Thameslink Railway	10.6 years	-0.5	Some Class 313 vehicles were removed.
Grand Central	22.3 years	+3.7	Introduced older rolling stock (Mark 4) with the intention to use these on a planned new service between London Euston and Blackpool North. This service will now not be launched due to coronavirus (COVID-19) pandemic.
Great Western Railway	11.9 years	-2.7	Removed some older fleet including Class 153. Class 802 vehicles starting running from September 2019.
Greater Anglia	22.2 years	-6.1	Some older fleet was removed. New fleet was added, including Class 745 and 755 from July 2019.
Heathrow Express	21.7 years	+1.0	No change

Hull Trains	0.3 years	-16.6	Completely changed their fleet between 2018-19 and 2019-20. Class 180 vehicles were replaced by with a newer Class 802 Paragon fleet.
London North Eastern Railway	7.5 years	-18.0	Some Mark 3 & 4 vehicles were removed. There were new additions to the fleet of Class 800/2, 801/1 and 801/2, known as Azuma. These entered service from May 2019.
London Overground	18.4 years	+1.4	Addition of older vehicles.
Merseyrail	40.6 years	+1.0	No change
Northern Trains	21.4 years	-7.1	Some older fleet was removed. New vehicles were added to the fleet, including Class 331.
ScotRail	20.6 years	-1.7	Some older fleet were removed, including Mark 2. Newer fleet was added, such as Class 385.
South Western Railway	21.8 years	+0.9	Some older fleet were removed.
Southeastern	19.8 years	+1.0	No change
TfL Rail	8.9 years	-10.0	Adding new Class 345 fleet throughout 2019-20.
TfW Rail	29.3 years	+0.8	New fleet was added including Class 170 vehicles
TransPennine Express	7.0 years	-5.7	Class 354 were removed. New vehicles were added, included Class 397 Nova from November 2019, and Class 802 from September 2019.
West Midlands Trains	15.6 years	+0.4	Older Class 150 were removed. Class 230 and Class 350 starting running throughout 2019-20.

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.

According to the Rolling Stock Strategy Steering Group, an additional 1,565 vehicles were ordered by the industry during 2017-18, meaning the total number of new vehicles expected to be delivered between 2014 and 2021 has reached almost 7,200 (over 50% of the current fleet). Consequently, the average age of rolling stock was forecast to fall to 15 years by March 2021. In 2019 calendar year, RDG (Rail Delivery Group) advised 833 new rail vehicles were ordered for the mainline.

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

The 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. 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 has been granted a special authorisation when other options have been exhausted
- when no compliant vehicle is available 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
- arrangements must be made in advance during planned engineering works to ensure alternative accessible transport is readily available

As of December 2019, the Department for Transport estimates that around 92% of heavy rail rolling stock had been built or refurbished to be accessible to disabled passengers. The latest fleets of trains are fully compliant with accessibility standards.

National Rail Passenger Survey

The National Rail Passenger Survey (NRPS) provides a network-wide picture of customers' satisfaction with rail travel. Transport Focus collect opinions of train services twice a year from a representative sample of passenger journeys.

The latest NRPS was conducted in Spring 2020 by Transport Focus, with fieldwork taking place between 27 January and 16 March 2020 (fieldwork stopped following Government advice regarding coronavirus (COVID-19) pandemic). Passengers were asked about their last rail journey, and questions concerned their opinion of the overall journey, station facilities, and train facilities.

The results for questions relating to rolling stock and train facilities are shown in the below table. Data is also available for each train operating company, on the Transport Focus Data Hub.

Figure 3.3: National Rail Passenger Survey results, Great Britain, Spring 2020

Question	Very good/ fairly good (%)	Neither good nor poor (%)	Fairly poor/ very poor (%)	Change from Spring 2019 for very good/ fairly good (pp)
Upkeep and repair (condition of seats, walls, tables, etc.)	75	15	10	+2
Space for luggage	60	20	20	+1
Comfort of the seats	66	20	14	+1
Toilet facilities on the train	47	19	35	+1
Space for bicycles	44	23	33	+1
Availability of power sockets	42	10	42	+7
	Very/ fairly satisfied (%)	**Neither satisfied nor dissatisfied (%)**	**Fairly/ very dissatisfied (%)**	**Change from Spring 2019 for very/ fairly satisfied (pp)**
Overall, how satisfied were you with the train you boarded for your journey?	78	13	8	+1

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 operators** (open access) licenced by the ORR to run services on specific routes. The tables that accompany this publication contain data for such operators: Grand Central, Heathrow Express and Hull Trains.

Further information on these definitions can be found in the Rail infrastructure and assets quality and methodology report.

Annex 2 – Quality and methodology

Data sources

Data for the track and route length is provided by Network Rail, and Amey Keolis Infrastructure Ltd (AKIL).

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. A map of the CVL network can be seen on page 44 of the 2020 CVL Network Statement. There are 55 stations served by the CVL Network.

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 UK railway, and is the Single repository for all vehicles and major components with full maintenance history.

The number of mainline stations is sourced from ORR's Estimates of Station Usage.

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.

Revisions

There have been revisions to average age of rolling stock data previously published within this release from 2017-18 onwards. This is due to data quality issues and errors detected within RSSB's R2 database. One error was that for some vehicles the date they were built was incorrect, as the date of refurbishment was being used instead. After being informed of the issue, RSSB corrected the dates in the database.

The data for electrified route length in 2018-19 was revised. This was due to a revision made by Network Rail in classifying the data.

Further details on data quality issues, revisions, data collection, and the historic background, can be found in the Rail infrastructure and assets quality and methodology report.

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

Data tables

All data tables can be accessed on the ORR 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

Average age of rolling stock

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

Other related data

Rail emissions data tables are published on the Rail emissions page on the data portal.

Network Rail publish data on network length in Annual Return data tables (Table 52 and Table 66)

Transport Focus publish the National Rail Passenger Survey (NRPS).

European Comparisons

Comparisons with railway length in the rest of Europe are available for the calendar years 2007 to 2018. This is measured in route km. The UK had the fifth longest railway (16,289 route km). Of the countries that provided data, 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 2018, the average proportion of electrified route length was 55% for member countries. The UK was 22 out of 31 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 six annual publications: **Rail Finance; 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 four annual publications: **Estimates of Station Usage; 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 ORR 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**.

Our 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 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.

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 ORR data portal

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