Rail infrastructure, assets and environment 2014-15 Annual Statistical Release

Publication date: 22 October 2015

Background

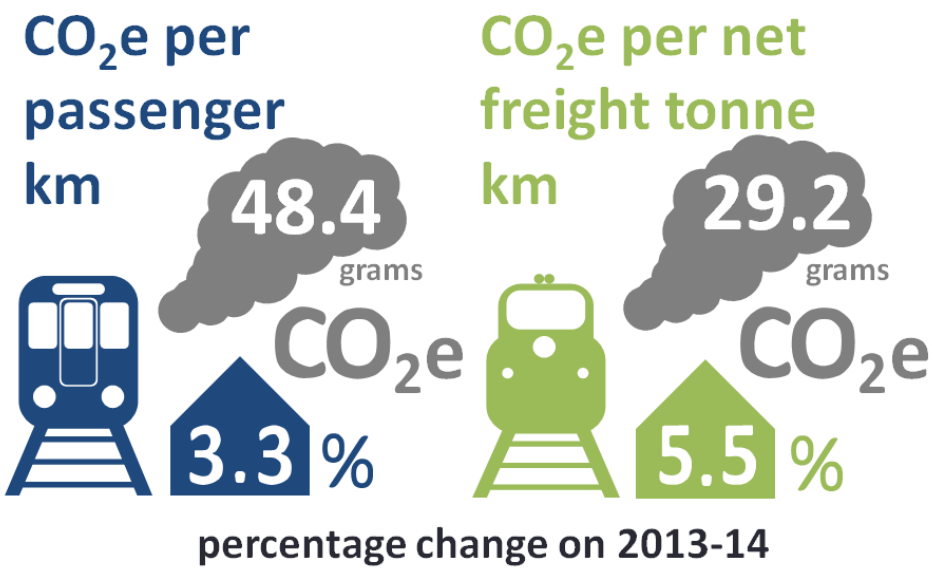
This release contains the following rail statistics for Great Britain in 2014-15:

Rail infrastructure statistics provide details on track length (including the volume of electrified track) and number of stations. The information is sourced from Network Rail and is available from 1985-86.

The **average age of rolling stock** is sourced from the Department for Transport and is published by sector from 2000-01 Q2, and by train operating company from 2007-08 Q4.

Sustainable development statistics are sourced from train and freight operators and provide an estimate of normalised CO_2e emissions from traction energy since 2005-06.

Contents



- **CO_2e emissions per passenger kilometre** have declined by 21.2% since 2005-06, but have increased by 3.3% compared to last year.
- **Freight CO_2e emissions per freight tonne kilometre** tend to fluctuate from year to year, and are up 4.4% since 2005-06 and 5.5% compared to last year.
- Total **route open for traffic** in 2014-15 was 15,760 kilometres, an increase of 7 kilometres since last year. Of which, 33.5% is **electrified**.
- In 2014-15 there were a total of 2,552 **stations**.
- Nationally the **average age of rolling stock** increased by 0.8 years between 2013-14 Q4 and 2014-15 Q4 to 20.2 years. This means newer rolling stock was introduced, or older rolling stock removed from service.

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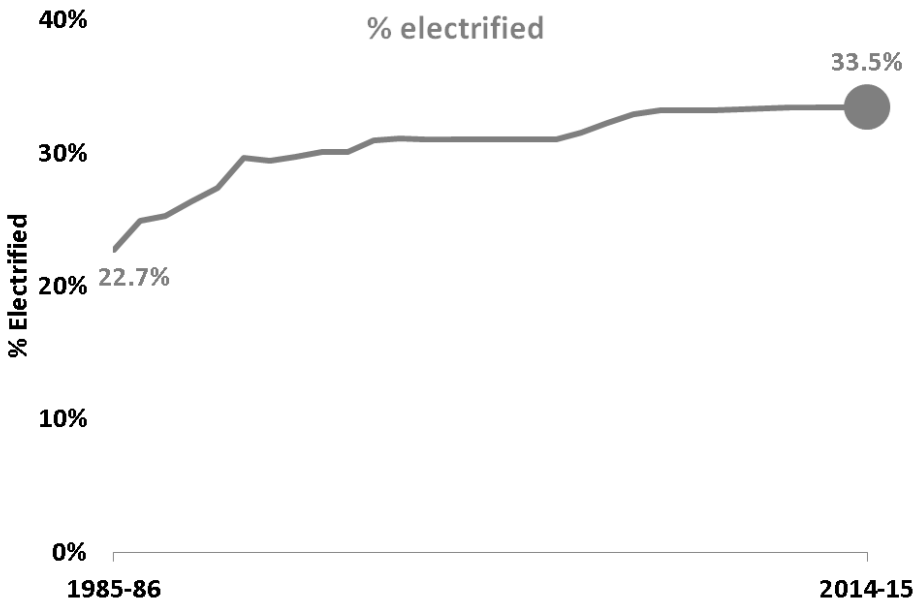
1. Infrastructure on the railways

Proportion of the route open for traffic which is electrified – chart (Table 2.52), Great Britain, 1985-86 to 2014-15



Infrastructure on the railways: data on the number of kilometres of route open for passenger and freight traffic, the length of route which is electrified and the number of passenger stations on the Great Britain rail network.

Route kilometres are the total extent of routes available for trains to operate. This is different to track kilometres which takes into account multiple track routes (e.g. for each route kilometres where there is double track, there are two track kilometres).

For a detailed history on how route length has changed – including detail on the 'Beeching cuts' please view our quality report.

A third of the railway is electrified

- The route open for traffic in 2014-15 was 15,760 kilometres, an increase of 7 kilometres since last year. However, it was 54 kilometres lower than 2007-08 (since the last break in the time series).
- In 2014-15, 33.5% of route open for traffic is electrified. The percentage electrified has increased by 10.7 percentage points since 1985-86. However, it has remained relatively stable since 2007-08 with a 0.3 percentage point increase.
- Recent electrification work includes first phase of the North West electrification project between Newton-le-Willows and Castlefield junction in December 2013[1].
- Electrification work has also taken place for the Edinburgh-Glasgow Improvement Project with electrification of the Cumbernauld line and Whifflet line[2].

[1] http://www.networkrail.co.uk/news/2013/dec/The-first-phase-of-the-North-West-electrification-programme-is-commissioned/

Freight only route kilometres increased

- Route open for freight only has increased by 7 kilometres from the previous year. New freight routes include the 1.2 kilometres stretch of railway built in Ipswich for freight trains using the Port of Felixstowe[3]

Two new passenger stations

- There were a total of 2,552 passenger stations in Great Britain in 2014-15, two more than last year.
- Pye Corner and James Cook University Hospital opened in 2014-15.

Infrastructure on the railways data

Infrastructure on the railways data is available on the data portal in: Table 2.52

Network Rail also publish a range of infrastructure statistics available within the Network Rail Annual Return

[2] http://www.transportscotland.gov.uk/project/electrification-programme

[3] http://www.railexpress.co.uk/news/new-bacon-factory-curve-at-ipswich-completed

2. Average age of rolling stock

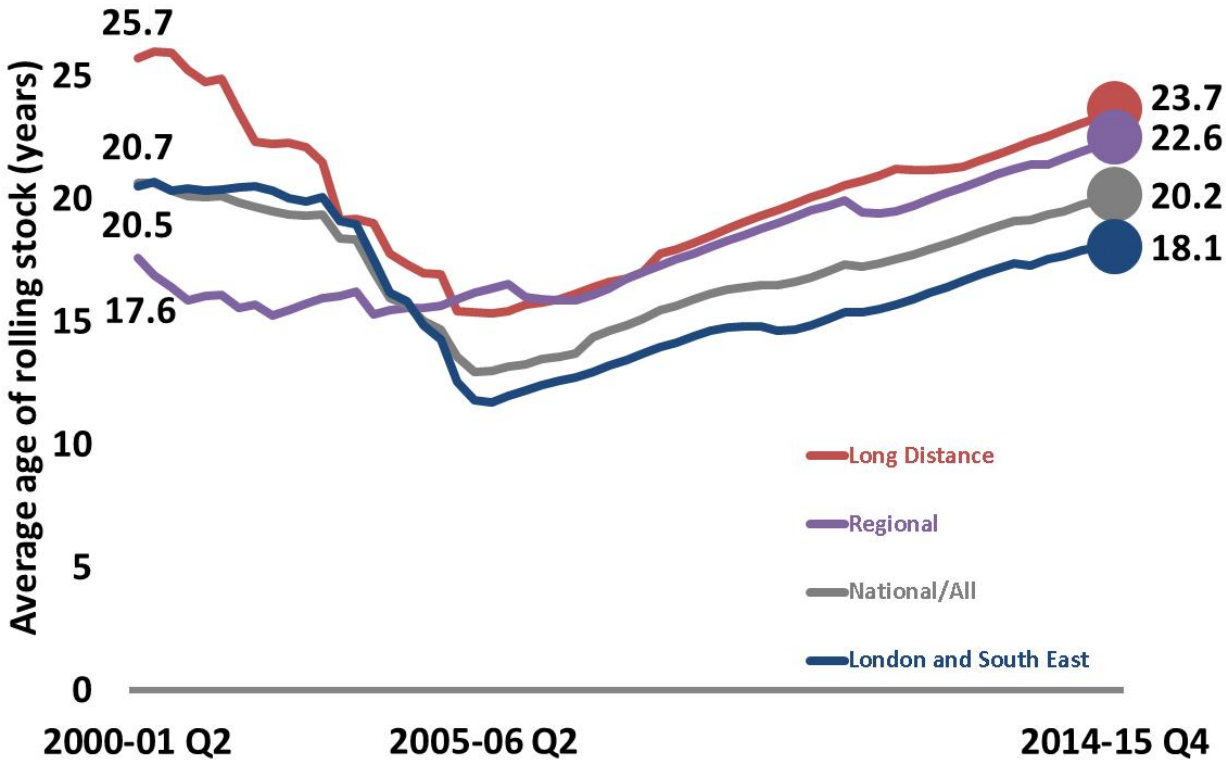
Modern rolling stock can offer a more comfortable service and higher standards of reliability and performance. However, older rolling stock can be refurbished and upgraded which can also increase comfort and reliability of the rolling stock, but this will not be reflected in these statistics.

If the fleet remains unchanged, we expect the average age to increase by one year each year. Should the increase for a train company be less than one year this would indicate that some new or younger rolling stock has been introduced or some older stock has been phased out. Any increase greater than one year would indicate that some older stock has been put into service or some younger stock has been removed. A vehicle drops out of the data when its lease either expires or is terminated.

Average age of rolling stock includes all rail vehicles leased to franchised train operating companies by rolling stock leasing companies (ROSCOs).

ROSCOs own most of the coaches, locomotives and freight wagons that run on the rails, which they lease to train operating and freight operating companies.

Average age of rolling stock by sector – chart (Table 2.30)
Great Britain, 2001-02 Q2 to 2014-15 Q4



Average age of rolling stock continues to rise

- The average age of rolling stock nationally at the end of 2014-15 was 20.2 years.
- The average age of rolling stock fell across all sectors following the start of the time series. Nationally the average age of rolling stock fell 7.7 years between 2001-02 Q2 and 2005-06 Q2. This was due to ROSCOs replacing many of the older trains which were being used at the time of privatisation with modern vehicles. After 2005-06 Q2 the average age of rolling stock grew for all sectors.
- Nationally rolling stock has increased by 0.8 years between 2013-14 Q4 and 2014-15 Q4. This means newer rolling stock was introduced, or older rolling stock removed from service during 2014-15. This was driven by newer rolling stock within the London and South East sector (see below).

Newer rolling stock in London and South East sector

- London and South East sector's rolling stock average age increased by 0.5 years to 18.1 years during 2014-15. This has been driven by a reduction in average age of rolling stock at Southern, London Overground and London Midland.
- Southern's average age of rolling stock decreased by 0.3 years over the past year, and has decreased by 1.41 years since 2013-14 Q2. This is due to the introduction of an additional 76 Class 387 vehicles and the introduction of a new fleet of Class 377 trains.
- London Overground increased by 0.9 years due to the introduction of 8 new vehicles during 2014-15 Q3. London Overground rolling stock is the lowest age of all operators with an average age of 4.7 years.
- London Midland's average age of rolling stock increased by 0.2 years due to the introduction of ten new class 350/3 Desiro units[4].

[4] http://www.londonmidland.com/about-us/latest-news/#/pressreleases/ps62-million-government-investment-in-new-trains-means-more-services-for-passengers-1063501

Long distance sector average age has increased slightly

- Long distance sector average age of rolling stock increased by 1.1 years to 23.7 years during 2014-15.
- Virgin Trains East Coast's rolling stock increased by 1.3 years over the past year. Rolling stock numbers were updated to reflect leases at the start of the new franchise.
- Virgin Trains West coast's rolling stock average age increased by 0.6 over the past year due to the removal of older pendolino carriages[5].

Regional sector average age has increased slightly

- Regional sector average age increased slightly by 1.1 years to 22.6 years. This is likely to be caused by 56 Class 319 vehicles which are now on lease with Northern.
- Merseyrail rolling stock is the oldest of all operators with an average age of 36.3 years.

Average age of rolling stock data

Average age of rolling stock by sector data by quarter is available on the data portal in: Table 2.30

Average age of rolling stock by train operating company data by quarter is available on the data portal in: Table 2.31

[5] http://www.railmagazine.com/news/fleet/pretendolino-moves-to-anglia

3. Sustainable development

How emissions are calculated:

CO_2e emissions are calculated from actual and estimated data for energy consumption. Train operators provide ORR with their total traction electricity (kWh) and diesel usage (litres) consumption. Estimates were calculated for the two train operating companies and five freight companies who did not supply data; see the quality report for more information.

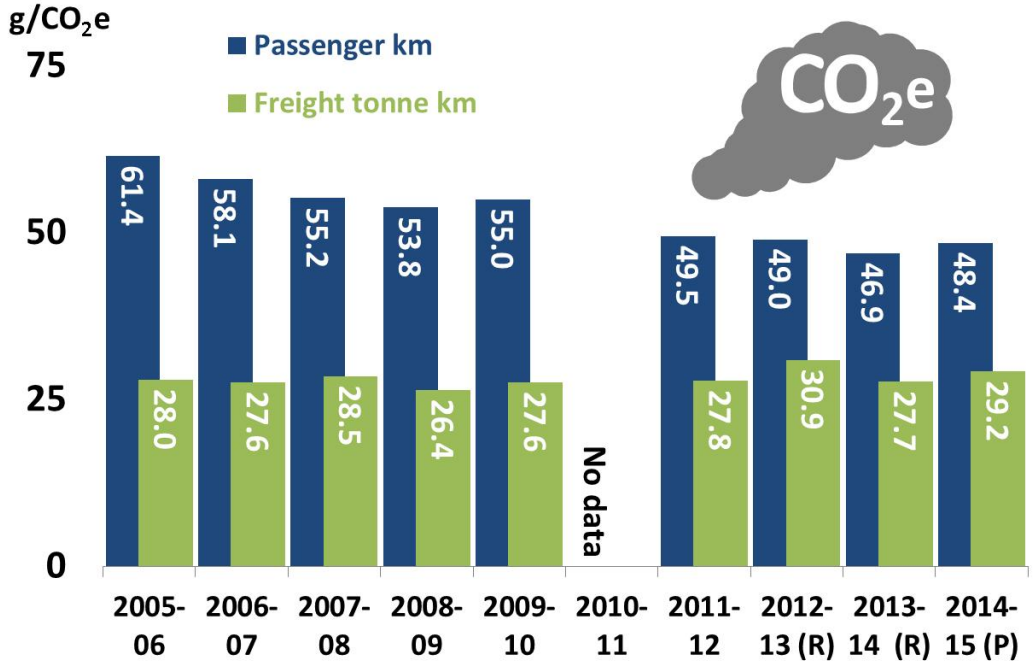
Actual energy consumption data is converted into CO_2e using standard conversion factors from the Department for Environment, Food and Rural Affairs (DEFRA). The conversion factors allow activity data (e.g. litres of fuel used, kWh consumed) to be converted into kilograms of carbon dioxide equivalent (CO_2e) which is a universal unit of measurement that allows the global warming potential of different greenhouse gases (GHGs) to be compared. For more technical information see the quality report.

Sustainable development statistics are an environmental indicator showing normalised CO_2e (carbon dioxide equivalent) emissions from traction energy for passenger and freight trains.

Passenger data has been normalised to show the average CO_2e emission per passenger kilometre. Freight data has been normalised to show the average CO_2e emission per net tonne kilometre of freight moved.

Traction energy refers to rolling stock on the Great Britain rail network and the energy used to power passenger and freight train movements.

Normalised CO_2e emissions for passenger and freight - chart (Table 2.100)
Great Britain, 2005-06 to 2014-15



Note: There was no data for 2010-11 due to a change in the data collection process, consequently comparisons to emissions in earlier years should be made with caution.

Long term decrease in carbon dioxide emissions per passenger kilometre

- There has been a long term decrease in CO_2e emissions per passenger kilometre since the time series began in 2005-06; emissions have fallen by 21.2%.
- However, CO_2e emissions per passenger kilometre increased by 3.3% compared to last year to 48.4g. The increase may be due to Defra's 2014 electricity factors, which convert electricity usage into carbon dioxide, increasing by 11% compared to the 2013 factors. This was as a result of a significant increase in coal powered electricity in 2014. Defra factors can vary from year to year due to the reliance on the relative prices of coal and natural gas as well as fluctuations in peak demand and renewables.

Freight carbon emissions per freight tonne kilometre are up on 2005-06

- Freight CO_2e emissions per freight tonne kilometre have not seen a decline like passenger CO_2e emissions have. Freight emissions tend to fluctuate from year to year, and are up 4.4% since 2005-06.
- Freight CO_2e emissions per freight tonne kilometre have increased by 5.5% compared to last year to 29.2g. Despite this the amount of diesel usage by freight companies has decreased by 0.9% compared to last year and electricity usage has declined by 4.6% (see Table 2.101). A reason for the increase in CO_2e emissions could be caused by a 2.2% decrease in freight kilometres during 2014-15.

Revisions:

In 2013 Defra removed the five year rolling average factors for electricity. These were replaced with single year average factors for each year. The advantage of this is that it allows organisations to report efficiencies achieved in national infrastructure, rather than being dampened within a 5 year average. However, the reported figures will be more sensitive to energy mix changes on a year on year basis.

ORR have therefore re-baselined data between 2012/13 to 2013/14 in order to allow consistent reporting. Not rebasing would have resulted in a large drop in emissions for the new reporting year compared to previous reporting years and could therefore

have resulted in false interpretation of an emissions reduction and inconsistent reporting. Please see Defra guidance and the quality report for more information.

ORR also received updated data from one train operating company for 2013-14.

Sustainable development data

Estimates of normalised passenger and freight CO_2e emissions data are available on the data portal in: Table 2.100.

Estimates of passenger and freight energy consumption and CO_2e emissions data are available on the data portal in: Table 2.101.

The Department for Transport publishes energy and environment data

Annex 1 – List of pre-created reports available on the ORR Data Portal

All data tables can be accessed on the data portal free of charge. The ORR data portal provides on screen data reports, as well as the facility to download data in Excel format and print the report. We can provide data in csv format on request.

Infrastructure on the railways

- Infrastructure on the railways – Table 2.52

Average age of rolling stock data

- Average age of rolling stock by sector – Table 2.30
- Average age of rolling stock by train operating company – Table 2.31

Sustainable development data

- Sustainable development: Estimates of normalised passenger and freight CO_2 emissions – Table 2.100.
- Sustainable development: Estimates of passenger and freight energy consumption and CO_2 emissions – Table 2.101.
- The Department for Transport publish energy and environment data within energy and environment data

Revisions: There have been revisions to the previously published tables associated with this statistical release. Further details can be found at: Revisions Log

Annex 2

Statistical Releases

This publication is part of the statistical releases which cover the majority of reports that were previously released through the Data Portal. The statistical releases consist of four annual and four quarterly themed releases:

Annual:

- Rail Finance;
- Key Safety Statistics;
- Rail Infrastructure, Assets and Environmental;
- Regional Rail Usage.

Quarterly:

- Passenger and Freight Rail Performance;
- Freight Rail Usage;
- Passenger Rail Usage;
- Passenger Rail Service Satisfaction.

A full list of publication dates for the next twelve months can be found in the release schedule on the ORR website.

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.

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.

For more details please contact the Statistics Head of Profession Lyndsey Melbourne on 020 7282 3978 or contact rail.stats@orr.gsi.gov.uk.

The Department for Transport (DfT) also publish a range of rail statistics which can be found at DfT Rail Statistics

Network Rail also publish a range of infrastructure statistics available within the Network Rail Annual Return

This publication is available at orr.gov.uk

Any enquiries regarding this publication should be sent to us at orr.gov.uk