



Freight rail usage and performance

Quality and methodology report

14 March 2024

Contact information Author: O. Lowe Responsible Statistician: P. Moran Public enquiries: <u>rail.stats@orr.gov.uk</u> Media Enquiries: 07856 279808



Contents

Introduction	3
Data sources, methodology and definitions	4
Historical background	12
Relevance to users	13
Accuracy and reliability	15
Timeliness and punctuality	18
Accessibility and clarity	19
Coherence and comparability	21

Introduction

This is a report on the quality of the quarterly freight rail usage and performance statistical release and associated data tables. It helps users to understand the quality of our statistics, and also ensures ORR is compliant with the three quality principles in <u>the Code</u> <u>of Practice for Official Statistics</u>; Q1: Suitable data sources, Q2: Sound methods, and Q3: Assured quality. This report also provides information on the methodology and data sources used to produce the statistics.

This report covers the following areas:

- Data sources, methodology and definitions: detail on the various data sources, methodology used to compile the statistics and key definitions;
- Historic background: background to these statistics and details of any changes throughout the time series;
- Relevance to users: the users of the statistics, and our engagement;
- Accuracy and reliability: the accuracy, data coverage and quality assurance of the statistics;
- Timeliness and punctuality: our timescales for the production and publication of the statistics;
- Accessibility and clarity: the format of our statistics and where they can be found;
- Coherence and comparability: similar statistics published elsewhere and the degree in which the statistics can be compared over time.

Data sources, methodology and definitions

Data sources

The data contained within the release and the data tables are sourced from Network Rail, freight operators and Department for Transport (DfT). Freight usage and performance is measured using a range of metrics, which are covered in detail in the methodology and definitions section below.

Methodology and definitions

Quarterly and periodic data

The rail industry reports data on a periodic basis rather than the more recognised reporting cycles such as monthly or quarterly. A period is normally a 28-day, or four weekly, period for business reporting purposes (Sunday to Saturday) and there are 13 periods in a financial year. The length of a period may differ at the end of the financial year, 31 March, and the beginning of the financial year, 1 April, to ensure a break is made at 31 March.

Some quarterly datasets, such as Freight Delivery Metric and Freight Moved, require apportionment of these data.

The standard method for apportionment is based on the number of days within the period that fall into the relevant quarter. For example, the dates in period 4 cover both the first quarter (April to June) and the second quarter (July to September). When the quarterly data are calculated for the year April 2023 to March 2024, 6/28 of the data are assigned to the first quarter (covering 25 June to 30 June) and 22/28 of the data are assigned to the second quarter (covering 1 July to 22 July).

The breakdown of the calculations used for 1 April 2023 to 31 March 2024 are as follows:

Quarter number	Quarter	Calculation
1	1 Apr to 30 Jun 2023	Period 1 + Period 2 + Period 3 + 6/28 of Period 4
2	1 Jul to 30 Sep 2023	22/28 of Period 4 + Period 5 + Period 6 + 14/28 of Period 7
3	1 Oct to 31 Dec 2023	14/28 of Period 7 + Period 8 + Period 9 + 22/28 of Period 10
4	1 Jan to 31 Mar 2024	6/28 of Period 10 + Period 11 + Period 12 + Period 13

Moving Annual Average

The moving annual average (MAA) is included within some freight performance metrics. This measures performance over the last 4 quarters or 13 periods. MAAs are used to account for seasonality of data and highlight longer term trends.

Governance

As part of our licence agreement with Network Rail they are required to provide the freight moved, freight delay minutes, train mileage and vehicle mileage data to us within 21 days of the period end. We have automated various processes involved in the production of these statistics, reducing the overall time and burden involved in publishing these statistics.

Furthermore, we have memorandums of understanding (MoUs) with Network Rail and DfT detailing the scope and timeliness of each dataset supplied. This ensures consistent and timely data are received each period. The MoUs are reviewed on an annual basis.

There are currently no MoUs with the freight operators but they typically provide the freight data around 5 weeks from the period ending.

Freight usage

Freight moved

• The amount of freight which is moved on the railway. Freight moved is measured in net tonne kilometres and covers the net weight of the goods carried and the distance carried.

Freight moved data are supplied by Network Rail at the end of each railway period. The data covers Network Rail infrastructure, HS1 and Core Valley Lines. The data includes a breakdown of total freight moved by commodity and operator. ORR publishes the following

commodity groups within our quarterly release: Biomass, Coal, Construction, Domestic waste, Industrial minerals, Infrastructure, Intermodal maritime, Intermodal non-maritime, International, Metals, Oil and petroleum, and Other (which includes chemicals, domestic automotive, general merchandise, mail and premium logistics, and Royal Mail). Infrastructure is <u>not</u> included in the freight moved totals.

Below is the grouping of freight commodities used in the statistical release, together with a brief description of each freight commodity:

Commodity	Includes	Description
Biomass	Biomass	Product to be used in bio-fuel production
Coal	Coal ESI (Energy Supply Industry)	Power station coal
Coal	Coal other	Non power station coal
Construction	Construction materials	Aggregates for road construction or general building works, as well as concrete and cement products. It includes timber traffic and High Speed 2 (HS2) construction traffic.
Domestic waste	Domestic waste	Domestic waste for landfill or incineration
Industrial minerals	Industrial minerals	Limestone for FGD (flue-gas desulfurization), gypsum, china clay, sand for glass making, calcium carbonate, potash, and alumina.
Infrastructure (not included in freight moved totals)	Engineering haulage	Non-chargeable traffic moved for Network Rail
Intermodal maritime	Maritime intermodal	Maritime intermodal traffic to/from ports.
Intermodal non-maritime	Domestic intermodal	Intermodal traffic not destined to go through (or to) the Channel Tunnel (Goods transported by two or more modes of transport e.g. Freight train and HGV within

		the UK). Domestic intermodal includes
		supermarket traffic.
International	European automotive	Automotive traffic destined to go through (or to) the Channel Tunnel. HGV traffic using Le Shuttle is not included.
International	European conventional	General traffic destined to go through (or to) the Channel Tunnel. Examples include aluminium and bottled water. HGV traffic using Le Shuttle is not included.
International	European intermodal	Intermodal traffic destined to go through (or to) the Channel Tunnel. It includes some non- intermodal traffic such as export steel. HGV traffic using Le Shuttle is not included.
Metals	Iron ore	Raw material not finished product
Metals	Steel	All finished steel products, and scrap metal
Oil and petroleum	Petroleum	All petroleum products including bitumen etc.
Other	Chemicals	All chemical products
Other	Domestic automotive	Automotive traffic not destined to go through (or to) the Channel Tunnel
Other	General merchandise	General goods moved in variety of wagons, white goods etc. It includes the movement of light engines and passenger stock.
Other	Mail and premium logistics	Parcels and mail (Not Royal Mail)
Other	Other	Nuclear flasks, MOD (Ministry of Defence), wagon maintenance moves, and delivery or test trains of passenger stock.
Other	Royal Mail	Post on Royal Mail contract

This data is updated on the data portal every period (4-weekly) and included in the quarterly statistical release and associated data table.

Freight lifted

• The mass of goods (tonnes) carried on the rail network, excluding the weight of the locomotives and wagons. Unlike the freight moved measure it takes no account of the distance travelled.

Actual freight lifted data covers all mainline infrastructure. The data are provided by the following freight operators: DB Cargo UK, Freightliner Intermodal, Freightliner Heavy Haul, Direct Rail Services (DRS), GB Railfreight and Colas Freight (from April to June 2020 quarter onwards). In July to September 2020, estimates for Devon & Cornwall Railways (from the financial year ending 2012 onwards) and Colas Freight (financial years ending 2011 to 2020) have been added to the dataset to improve coverage of the dataset. More details on the methodology used to estimate these can be found in the **Accuracy and reliability** section of this report. As the data comes from seven different operators, there is little consistency between the commodity groupings that are supplied. Therefore, freight lifted data cannot be published at the same level of disaggregation as freight moved. The published commodities for freight lifted are Coal and Other (which include metals, construction, oil & petroleum, infrastructure, domestic intermodal and international).

Both freight moved and lifted data are subject to changes with regards to freight operators entering/leaving the freight market. They cannot be published at operator level because the data are commercially sensitive.

This data is updated on the data portal every quarter and included in the quarterly statistical release and associated data table.

Freight performance

Freight Delivery Metric (FDM)

• The percentage of commercial freight services that arrive at their planned destination within 15 minutes of their booked arrival time, or with less than 15 minutes of delay caused by Network Rail or another operator that is not a commercial freight operator.

The data covers mainline infrastructure including Network Rail, Core Valley Lines and HS1. These measures include all freight trains (loaded or empty) operated by freight operators, excluding services operated on behalf of Network Rail (e.g. sandite, ballast and engineering trains) and any passenger charter services. A higher score indicates better performance.

Circumstances where trains are not included within FDM are:

- any train cancelled for commercial reasons;
- light engine trains (Class 0 trains);
- any planned or scheduled cancellation;
- very short term planning (VSTP) schedules, where train moves are arranged through the Control Office, rather than timetable planners.

This data is updated on the data portal every quarter and included in the quarterly statistical release and associated data table.

Freight Delivery Metric by Region (FDM-R)

 This measure is derived from FDM for each Network Rail Region. As with FDM, it reflects the percentage of commercial freight services that arrive at their planned destination within 15 minutes of their booked arrival time, or with less than 15 minutes of delay caused by Network Rail or another operator that is not a commercial freight operator.

The data covers Network Rail infrastructure, but unlike FDM, other networks' infrastructure are not included. All other aspects of FDM-R are the same as FDM (see above).

This data is updated on the data portal every quarter and included in the quarterly statistical release and associated data table.

Freight delay per 100 train kilometres

• Freight delay per 100 train kilometres is a normalised measure of delay experienced by freight operators. It is calculated from the total delay experienced by all GB freight operators divided by their train mileage.

The data covers Network Rail infrastructure, but (from the financial year ending 2021) does not contain Core Valley Lines infrastructure. Freight train mileage can fluctuate depending on demand so a normalised measure allows for comparison over time regardless of changing levels of freight traffic on the network. A lower score indicates better performance. The dataset is provisional as delay data can be revised as part of the delay attribution process.

Delays to train journeys experienced by freight companies are broken down into Network Rail attributed delays (Network Rail-on-FOC) and those attributed to passenger and freight operators (TOC-on-FOC, FOC-on-FOC or FOC-on-self). Those attributable to Network Rail typically relate to infrastructure, timetabling and operation of the network, and also include external events impacting the network where Network Rail's role is to control or mitigate impacts. Those attributable to passenger or freight operators typically relate to train operations, station operations, fleet reliability, problems with train crew resources or external causes affecting trains.

For further information on delay minutes please refer to the <u>Delay Attribution Principles</u> and <u>Rules</u>.

This data is updated on the data portal every quarter and included in the quarterly statistical release and associated data table.

Freight traffic

Freight train kilometres by operator

• The actual mileage in kilometres operated by freight operators on all mainline infrastructure, terminals and yards.

The data is sourced from Network Rail's Track Access Billing System (TABS). Not all freight operators have been in operation throughout the time-series, therefore total year on year comparison should be treated with caution.

It captures all freight train kilometres including commercial freight traffic and the infrastructure column includes freight train movements operated for the purpose of infrastructure maintenance and rail-related activities (e.g. transport of rolling stock). The data in the table covers electric, diesel and all traction.

It is also worth noting that competition between freight operators means we could potentially see a greater level of variation in mileage from year to year than in the passenger market.

This data is updated on the data portal every quarter and included in the quarterly statistical release and associated data table.

Freight vehicle kilometres by operator

 The actual mileage in vehicle kilometres operated by freight operators on all mainline infrastructure, terminals and yards. A train with a locomotive and four carriages travelling one kilometre will generate one train kilometre and five vehicle kilometres.

The data is sourced from Network Rail's Track Access Billing System (TABS). Not all freight operators have been in operation throughout the time series, therefore total year on year comparison should be treated with caution.

It captures all freight vehicle kilometres including commercial freight traffic and the infrastructure column includes <u>all</u> operators conducting freight train movements for the purpose of infrastructure maintenance and rail-related activities (e.g. transport of rolling stock). The data in the table covers electric, diesel and all traction.

It is also worth noting that competition between freight operators means we would expect a greater level of variation in mileage from year to year than in the passenger market.

This data is updated on the data portal every quarter and included in the quarterly statistical release and associated data table.

Freight trains run (annual data)

• The number of chargeable freight train movements on Network Rail and Core Valley Lines infrastructure

Each freight train movement is designated into a chargeable or non-chargeable category. Non-chargeable can include empty trains to/from a depot, operators moving equipment to and from site for engineering work and train schedules not planned (i.e. last minute). The data published on the data portal only includes chargeable freight train movements.

The number of freight train movements are provided annually by Network Rail.

This data is updated on the data portal annually and included in the January to March quarter statistical release and associated data table.

Historical background

Freight rail performance measures for Control Period 6

Through consultation with Network Rail and the rail industry, ORR conducts periodic reviews of Network Rail to determine the outputs they must deliver, and the levels of access charge paid by train operators for use of its infrastructure. Subsequently ORR produced a <u>determination document</u> for the next five year period, Control Period 6 (CP6) which covers 1 April 2019 to 31 March 2024.

National FDM continued to be a core measure and FDM-R (a regional version of FDM) was introduced.

Relevance to users

The degree to which the statistical product meets the user needs in both coverage and content.

Freight Delivery Metric, the regional equivalent (FDM-R) and freight delay minutes are key performance measures, which ORR take into account regulating Network Rail over CP6.

Freight usage data provides a useful barometer of economic activity and is closely linked to other industries such as manufacturing and imports/exports.

This statistical release and the accompanying data published on our data portal are used by a range of individuals for planning, analysis, decision making and data validation.

ORR's last <u>user survey</u> took place from mid-January to mid-April 2020. The aim of the survey was to gather feedback on ORR's new data portal; this includes statistical releases, data tables and other supplementary material. There were 42 responses to the survey. ORR created an <u>implementation plan</u> following the 2020 user survey.

More detailed information on users of ORR statistics and meeting the needs of users is available on our <u>user engagement webpage</u>.

How these statistics can be used



- Measuring rail freight volumes and market share by commodity over time
- Comparing distances run by freight operators and over time
- Monitoring the impact of Network Rail and passenger operator caused delay on freight punctuality
- Comparing the size of the rail freight market relative to other modes

How these statistics cannot be used



- Using freight trains ran as an indication of freight volumes due to <u>train lengthening schemes</u> and more efficient use of the network
- Using freight train kilometres by operator as a proxy for market share of volumes due to the variation in freight train distances
- Identifying origin and destination of freight flows
- Estimating freight revenues (refer to rail industry finance)
- Estimating freight emissions (refer to rail emissions)

Accuracy and reliability

The proximity between an estimate and the unknown true value.

Estimates

Freight performance

Freight performance data are provided by Network Rail 13 times a year (each period) and the only estimates made are those ORR do to convert this periodic data into quarterly data (as explained above in the methodology section). No imputed or manually edited data are required in the production of the performance statistics. The latest periodic data from Network Rail should always be treated as provisional.

Freight moved and freight lifted

Freight moved data excludes some possession trains used during engineering works and the weight of locomotives and wagons. The freight moved data are accurate to the nearest tonne kilometre and include all freight operators.

Freight lifted data excludes the weight of locomotives and wagons.

The freight lifted data now covers the seven largest freight operators following the addition of Colas Freight and Devon and Cornwall Railways data. Based on Network Rail freight moved statistics for the financial year ending 2020, which covers all operators, these seven companies account for over 99.9% of the freight moved market so the value for freight lifted may be underestimated by a very small amount.

To provide more comprehensive coverage of the freight market, estimates of freight lifted have been calculated for Devon and Cornwall Railways (from the financial year ending 2012 onwards) and Colas Freight (financial years ending 2011 to 2020). From the financial year ending 2021, Colas Freight are providing actual freight lifted data but Devon and Cornwall Railways will continue to be estimated in future releases.

These estimates are based on calculating the number of freight train movements in a quarter for each operator (estimated from their actual train mileage data) and multiplying that by the average tonnes lifted per train for the latest full year, at a national level.

Freight lifted and freight moved data cannot be provided by a single source due to concerns over the quality and accuracy of the data.

Delay minutes

Delay minutes data are subject to change after the resolution of incident disputes between passenger or freight operators and Network Rail over who is responsible for the delay and the affected operators. Based on this, delay minutes can be re-attributed between Network Rail and passenger or freight operating companies.

Coverage

These statistics cover all freight operators in Great Britain, with the exception of freight lifted which includes data from the seven largest operators (>99% of the freight market). The coverage can vary over time based on the operators operational at the time.

Quality assurance

ORR receives freight usage and performance data from Network Rail, the freight operators and DfT. The data are supplied electronically and stored in a secure data warehouse maintained by ORR. The data is subject to an extensive quality assurance process, including a suite of validation checks to ensure the data meets the required specification and is in line with previous trends. Any arising issues are flagged up with the data suppliers who must confirm the anomalies or correct the data and re-submit.

Explanations from the data providers regarding data anomalies are included within our commentary to clarify the data and trends.

These data are then prepared for publication. The process includes quality assuring the tables and charts produced and providing supporting commentary regarding the key trends, methodology and quality measures. These reports are subject to peer review.

The final stage of the quality assurance process is a sign off by the statistics Head of Profession confirming the data and outputs meet the quality standards and are fit for publication.

Independent reporter's assessment of accuracy and reliability of data

Arup (in partnership with Winder Phillips Associates) was appointed as independent reporter by ORR and Network Rail in 2009 to review Network Rail's data and provide us with assurance of the accuracy and reliability of their information.

The delay minute data received a high confidence grade of A3 for freight delay minutes in the financial year ending 2012.

The <u>Freight Delivery Metric was assessed in the financial year ending 2017</u> and received a confidence grade of B1.

For further details about the reliability and accuracy of confidence grades or assessment please see the <u>independent reporters page</u> on our website.

Revisions policy

ORR's statement on <u>orderly release and revisions policy</u> outlines ORR's revision policy. Details of any revisions are available in the <u>revisions log</u>. Further information on revisions and data series breaks can also be found in the data tables.

Timeliness and punctuality

Timeliness refers to the time gap between publication and the reference period. Punctuality refers to the gap between planned and actual publication dates.

ORR aims to publish these statistics as soon as possible after the end of the reference period.

Periodic (4-weekly) freight moved by commodity type (Table 1314) is typically available on the ORR data portal within 20 days of the period ending. Quarterly freight moved and freight lifted data, freight performance data, freight train kilometres and freight vehicle kilometres are typically available approximately two months after the end of the quarter. Annual freight trains run data are typically published by the end of May, around two months after the year ends.

The <u>publication schedule</u> available on the data portal outlines the publication dates for National Statistics quarterly and annual statistical releases and other official statistics up to 12 months in advance.

Accessibility and clarity

Accessibility is the ease with which users are able to access data, also reflecting the format in which data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of metadata, illustrations and accompanying advice.

Statistics need to be presented in a clear and understandable form. All our rail statistics data tables can be accessed free of charge on our <u>data portal</u>. Commentary about the statistics and trends are provided in the statistical releases. Interactive dashboards (PowerBI) are also available.

Our data portal and its content meet the accessibility standards of the <u>Public Sector</u> <u>Bodies Website Accessibility Regulations</u>. We support our users by providing the information they need in a way that is clear and accessible. Our statistical releases use plain language, and any technical terms, acronyms and definitions are clearly defined and explained when this is appropriate, to ensure that the statistics can be used effectively. Our data tables are available at the highest level of detail that is practical and in accessible formats. All data tables are available in OpenDocument Spreadsheet (.ods) format. We can also provide data in csv format on request.

Please see our <u>accessibility statement</u> for further details, including any non-accessible content.

Data tables

All tables associated with this release can be found under the Data tables heading at the bottom of the <u>Freight rail usage and performance theme page</u>.

Freight usage

- Freight moved by commodity (quarterly) Table 1310
- Freight moved by commodity (periodic) Table 1314
- Freight lifted (quarterly) Table 1315

Freight performance

- Freight Delivery Metric (FDM) (quarterly) Table 1320
- Freight Delivery Metric by Network Rail Region (FDM-R) (quarterly) Table 1324
- Freight delay per 100 train kilometres (quarterly) Table 1325

Freight traffic

• Freight trains run (annual) – Table 1330

- Freight train kilometres by operator (quarterly) Table 1333
- Freight vehicle kilometres by operator (quarterly) Table 1343

Coherence and comparability

Coherence is the degree to which data that are derived from different sources or methods, but refer to the same topic, are similar. Comparability is the degree to which data can be compared over time and domain.

Other related data

Passenger rail usage statistics are published on the <u>Passenger rail usage page</u> on the data portal.

Passenger rail performance statistics are published on the <u>Passenger rail performance</u> page on the data portal.

Estimates of passenger and freight energy consumption and carbon dioxide equivalent (CO2e) emissions are published on the <u>Rail emissions page</u> on the data portal.

The Department for Transport (DfT) also publishes some <u>multimodal freight statistics</u> as part of the <u>Transport Statistics Great Britain publication</u>.

The Department for Transport (DfT) also publishes <u>rail statistics</u>. For example, Rail passenger numbers and overcrowding on weekdays in major cities.

European comparisons

Comparisons with railways in the rest of Europe are available up until December 2020 for freight moved and freight lifted, for both quarterly and annual data. These statistics can be accessed via the <u>Eurostat Statistical Database</u>.

Due to differences in how freight punctuality is measured in other countries, opportunities to make direct comparisons with statistics in this release are limited.

Data from other European countries is published in the <u>IRG-Rail Tenth Annual Market</u> <u>Monitoring Report</u>, including comparable traffic volume data based on freight train kilometres.

Length of comparable time series

Measure	Start of time series	Any break in	Data portal
		time series	table
Freight moved by commodity		From 1 Apr 1998	Table 1310
		and from 1 Apr	
Quarterly	1 Apr to 30 Jun 1998	2010 greater	
Annual	1 Apr 1982 to 31 Mar 1983	disaggregation by commodity, including the 'Other' category being broken down into more categories.	
Freight moved by commodity		-	Table 1314
Periodic	1 Apr 2010 to 31 March 2011 Period 1		
Freight lifted		-	Table 1315
Quarterly	1 Apr to 30 Jun 1996		
Annual	1 Apr 1982 to 31 Mar 1983		
Freight Delivery Metric	1 Apr to 30 Jun 2013	-	Table 1320
Freight Delivery Metric by Region (FDM-R)	1 Apr 2014 to 31 Mar 2015 Period 1	-	Table 1324
Freight delay per 100 train		-	Table 1325
kilometres	1 Apr to 20 Jun 2010		
Quarterly			
Annual	1 Apr 2010 to 31 Mar 2011		
Freight train kilometres by		-	Table 1333
operator	1 Apr to 30 Jun 2010		

Quarterly	1 Apr 2010 to 31 Mar 2011		
Annual			
Freight vehicle kilometres by		-	Table 1343
operator	1 Apr to 30 Jun 2010		
Quarterly	1 Apr 2010 to 31 Mar		
Annual	2011		
Freight trains run	1 Apr 2003 to 31 Mar 2004	-	Table 1330



© Crown copyright 2024

This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit <u>nationalarchives.gov.uk/doc/open-government-licence/version/3</u>

Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

This publication is available at <u>dataportal.orr.gov.uk</u>

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

