

Report

Railway Market Analysis –
Germany

Short survey for the reporting
year 2023



Bundesnetzagentur

Railway Market Analysis – Germany

- Short survey for the reporting year

2023 –

May 2024

Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen

Section 702 – Technical Aspects of Rail Regulation, Rail Sector Digitalisation, Market Monitoring, Statistics

Tulpenfeld 4

53113 Bonn

Germany

Phone: +49 (0) 228 / 14-0

Fax: +49 (0) 228 / 14-8872

Email: info@bnetza.de

Table of contents

Introduction and summary	5
1 Development of the market and performance.....	9
Changes in the market environment	10
Operating performance	10
Transport performance	12
Excursus on the “Germany ticket”	14
Average train occupancy rate and freight volume	17
2 Development of competition.....	19
3 Costs for traction current.....	25
4 Delay data / incentive system	29
List of figures	32
List of abbreviations.....	33
Publisher’s details.....	34

Introduction and summary

Introduction

The Bundesnetzagentur has decided that the monthly survey of traffic data that was introduced during the coronavirus pandemic should be continued in the form of an annual short survey. As a result, in March and April 2024, nearly 100 railway undertakings and infrastructure managers were surveyed. These companies are responsible for around 99% of traffic in rail passenger services and around 90% of traffic in rail freight transport respectively. The survey included both federally owned railway undertakings and non-federally owned railway undertakings. The scope of the survey was focused on the monthly performance data (train-kilometres, passenger-kilometres, tonne-kilometres), as well as on a few additional questions concerning electricity costs and (for regional and local rail passenger transport companies) the Germany Ticket.

The Bundesnetzagentur would like to thank the companies surveyed for their very good cooperation and for their time.

The continuation of this survey was viewed as necessary due to a rise in the number of requests from government bodies in particular for more up-to-date analyses and trend forecasts. The figures not only facilitate the evaluation of measures that have already been introduced, but are also useful for the development of new approaches for steering and supporting the rail market in Germany.

This report shows 2023 in comparison with the previous four years (2019-2022) and includes developments during the course of the year. This report and all previous reports can be found at the following link:

<https://www.bundesnetzagentur.de/DE/Fachthemen/Eisenbahnen/Veroeffentlichungen/Marktuntersuchungen/start.html>

This survey was conducted using the same methodological framework as the prior surveys.

- The analysis concerns the German rail market. The key performance indicators that were surveyed refer to services performed on rail networks within Germany. International companies were asked to assess their business in Germany separately from their business outside the country.
- Service facility operators, industrial railway operators and regional transport authorities were not included.
- The figures shown in the report have been extrapolated to represent the entire market for railway undertakings and infrastructure managers in Germany.
- Both the mandate for the Bundesnetzagentur's market monitoring activities and the scope thereof are defined in section 17 of the Rail Regulation Act (ERegG).

Summary

In 2023, the German rail market was characterised by differing developments in rail passenger services and rail freight transport.

Following two years of growth featuring new records, the train-kilometres travelled registered a decline in 2023. This figure fell by just under 3%, or around 30mn train-kilometres travelled, to a little over 1,130mn train-kilometres travelled. The largest decline in operating performance was suffered by rail freight transport, with train-kilometres travelled in 2023 falling by nearly 10% compared to 2022. Regional and local rail passenger transport declined by around 1%. Long-distance rail passenger transport stagnated at -0.1%.

The differences in transport performance were even more pronounced. Whereas the tonne-kilometres for rail freight transport declined by roughly 10% compared with 2022, the passenger-kilometres increased by 10% to 12% in 2023.

Demand increased significantly in both regional and local rail passenger transport and long-distance rail passenger transport. The performance of regional and local rail passenger transport was influenced by the introduction of the Germany Ticket in May 2023. Demand increased by around 35% in the months following the ticket's introduction and remained at this level through the end of the year. Demand also rose significantly in long-distance rail passenger transport, both for DB Fernverkehr and for non-federally owned railway undertakings. Passenger transport achieved new records as a result, whereas freight transport experienced a decline on account of difficult economic conditions.

Competitors' share of transport performance increased in both passenger and freight transport. Based on the reported figures for 2023, non-federally owned freight railways achieved a market share of 61%.

The development of the cost of traction power continued to pose a challenge. In 2023, railway undertakings reported another significant increase in the average electricity price, to 16 cents per kilowatt hour (unweighted) / 19 cents per kilowatt hour (weighted by operating performance). The prices were cushioned by the electricity price brake, as a result of which it was possible to reduce the electricity price that was actually paid by the railway undertakings to a threshold of around 13 cents per kilowatt hour.

The delays that were assessed from the incentive system data show a slight decline in delay minutes in 2023 compared to the previous year. By far the largest share of delays were within either the direct or indirect area of influence of the infrastructure.

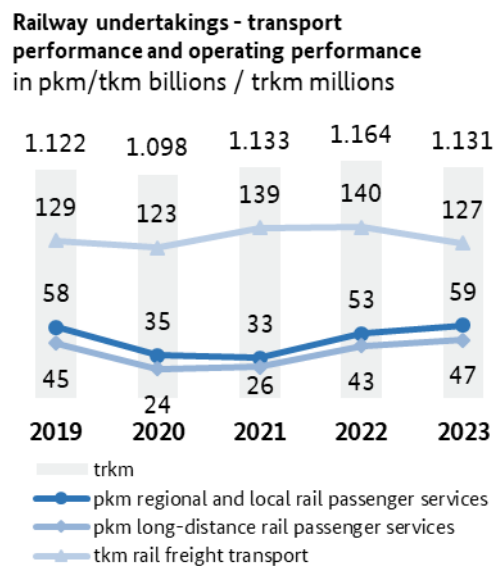


Figure 1: Development of transport performance and operating performance 2019 to 2023 (absolute, in billions of pkm/ millions of tkm; train-km)

1 Development of the market and performance

Changes in the market environment

The development of the rail market in 2023 was influenced by external factors. A general economic downturn triggered a reduction in production activity in many sectors. This meant that there was less freight to transport, and this had a negative impact on rail freight transport. An additional challenge was posed by high energy prices (due among other things to the ongoing war in Ukraine), although the electricity price brake made it possible to cushion the impact for most railway undertakings. The introduction of the Germany Ticket in May 2023 (see excursus) had a positive impact on rail passenger services.

Operating performance

Train-kilometres travelled set new records in both 2021 and 2022. In 2023, on the other hand, the operating performance experience a significant decline of 2.8%, to 1,131mn train-kilometres travelled. This marked a return to roughly the level of 2021. This marked a sharper decline than the one experienced in 2020 in comparison with the figures for 2019.

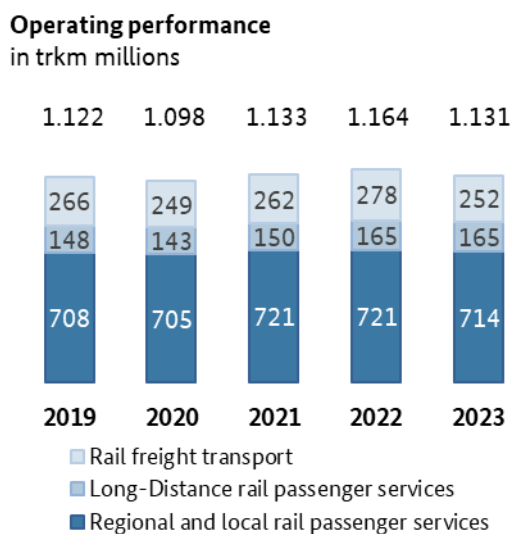


Figure 3: Development of the operating performance from 2019 to 2023 in trkm millions

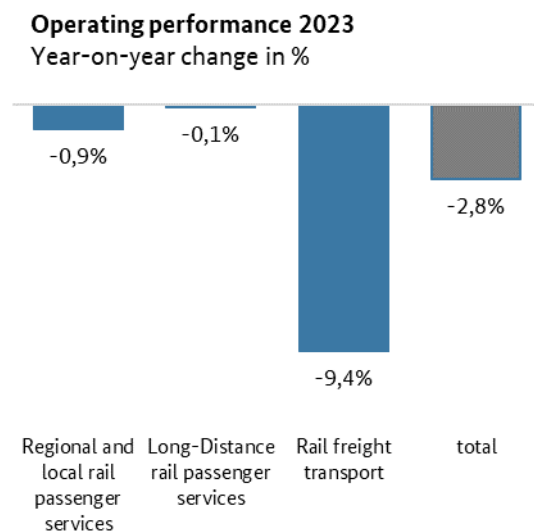


Figure 2: Rates of change in operating performance – 2023 compared to 2022 in %

Development within the transport services differed. (Figure 3).

- Following two years of growth, regional and local rail passenger transport declined by a little less than 1%. This was likely caused by increased construction activity, strikes and staff shortages. Whereas federally owned regional and local rail passenger transport fell by some 3%, competitors’ transport increased by around 2%.
- Overall, long-distance rail passenger transport stagnated at around 165mn train-kilometres travelled. Whereas DB Fernverkehr reported a slight decline, of 0.5mn trkm, competitors’ services increased by 6%.

- The largest decline was suffered by rail freight transport. Train-kilometres travelled fell by a little less than 10% compared to 2022, reaching a level lower than that of 2019. Non-federally owned railway undertakings declined by about 4%. Federally owned freight railway undertakings experienced a decline of 14%.

If all transport services are considered together, the non-federally owned railway undertakings were able to increase their operating performance (+1%). In contrast, federally owned railway undertakings declined by 4%.

As to the month-by-month performance for 2023, with the exception of seasonal developments (for example, the lower operating performance in the short month of February), there were no extraordinary changes discernible during the course of the year (Figure 4).

Operating performance 2023
in trkm millions

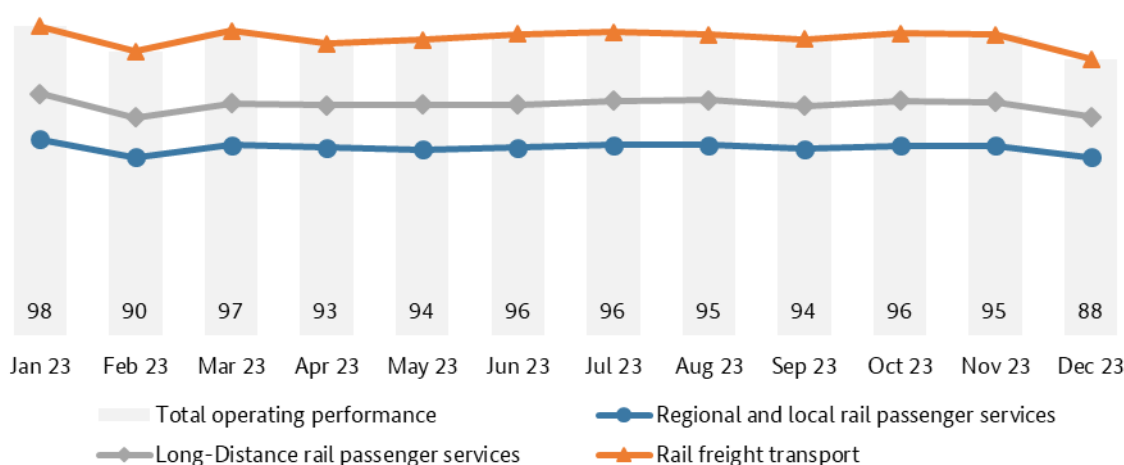


Figure 4: Month-by-month development of operating performance in 2023 in trkm millions

Transport performance

The changes in the market environment in 2023 had a direct impact on transport performance. Passenger and freight transport developed in opposite directions (Figures 5 and 6).

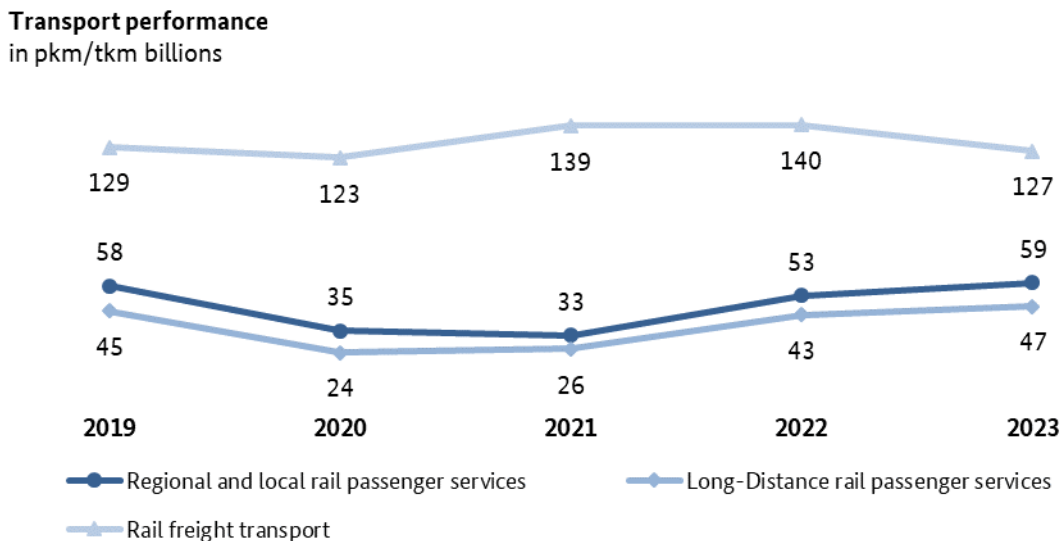


Figure 5: Development of transport performance from 2019 to 2023 in billions of pkm/tkm

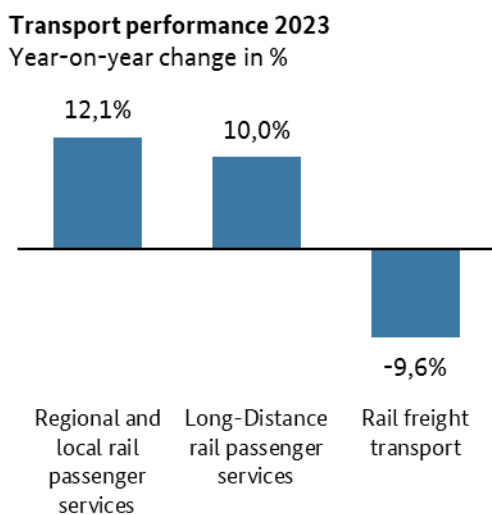


Figure 6: Rates of change in transport performance – 2023 compared to 2022 in %

Whereas both regional and local rail passenger transport and long-distance rail passenger transport each reached new record highs for their transport performance, rail freight transport experienced a sharp decline in its transport performance of nearly 10%. This was the largest drop since 2009 (when it fell by around 17%).

Transport performance in regional and local rail passenger transport

At 4.9 billion pkm per month, the average passenger-kilometres in regional and local rail passenger transport in 2023 were roughly 0.5 billion pkm higher than in 2022. This increase is associated with the introduction of the Germany Ticket in May 2023 (see following page).

Operating performance Regional and local rail passenger services 2023 in pkm billions

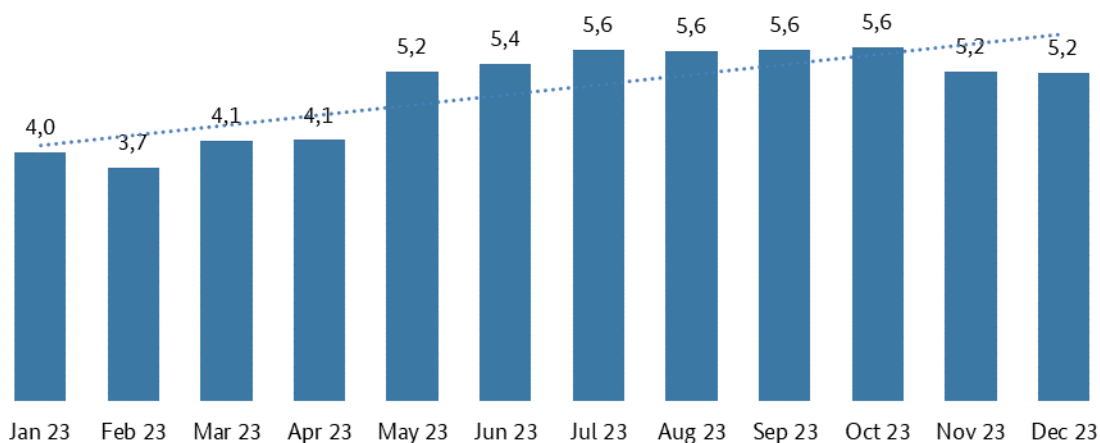


Figure 7: Month-by-month transport performance in regional and local rail passenger transport in 2023 in billions of pkm

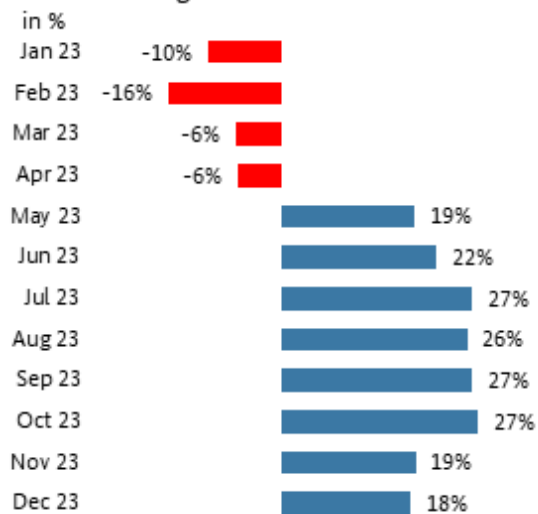
The transport performance in regional and local rail passenger transport of federally owned railway undertakings increased by 8% in 2023. Competitors were able to achieve a very significant increase of around 20%.

Analysis: Impact of the Germany Ticket



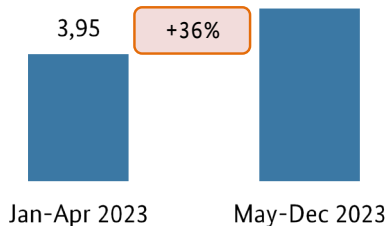
The introduction of the Germany Ticket (Deutschlandticket or D-Ticket) in May 2023 resulted in a noticeable increase in demand for regional and local rail passenger transport. A comparison of the monthly figures for 2023 with the average monthly passenger-kilometre figures for 2022 clearly illustrates the impact of this move. With the introduction of the Germany Ticket in May, transport performance increased by around 20% and then maintained this level through the end of the year.

Transport performance in regional and local rail passenger transport - monthly figures for 2023 compared with the average for 2022



Average monthly pkm before/after introduction of the Germany Ticket

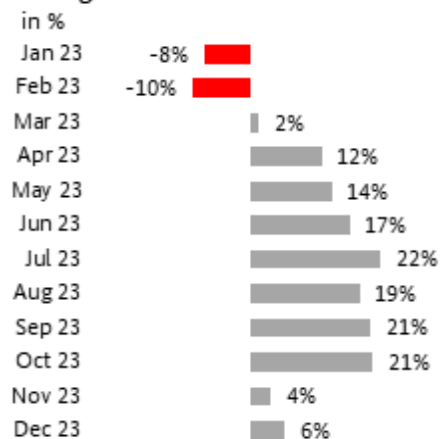
Regional and local rail passenger services, in pkm billions



Following the introduction of the Germany Ticket, monthly pkm figures were one-third higher than the average figure for the previous months. The increase for urban transport was only moderate, at around 10%, while the increase for routes in tourist destinations was in some cases very high at between 50% and 80%.

Demand in long-distance rail passenger transport also rose markedly. (see also the following page)

Transport performance in long-distance rail passenger transport - monthly figures for 2023 compared with the average for 2022



Transport performance in long-distance rail passenger transport

The increase in transport performance in long-distance rail passenger transport continued in 2023. Following an increase of around 65% in 2022, passenger-kilometres increased by a further 10% in 2023. This set a new record of 47.4bn pkm, topping the previous record from 2019 (around 45bn pkm).

In percentage terms, competitor railways enjoyed an increase (around 26%) that was nearly three times that achieved by DB Fernverkehr (around 9%). This resulted in an increase in the market share of non-federally owned competitors of an additional percentage point, from 4% up to 5%. The increase in demand was particularly strong for the competitors Westbahn, Flixtrain and SNCF, each of which enjoyed an increase of significantly more than 30%.

Developments over the course of the year reflect typical seasonal variations. It is worth noting that, despite the impetus given to regional and local rail passenger transport by the introduction of the Germany Ticket in May, the following months also saw continued growth in long-distance rail passenger transport. It is possible that additional journeys on regional and local rail passenger transport were combined with long-distance rail passenger journeys or that they were used as transfers. It should be noted that the introduction of the Germany Ticket did not result in falling demand for long-distance rail passenger transport.

Transport performance in long-distance rail passenger services 2023 in pkm billions

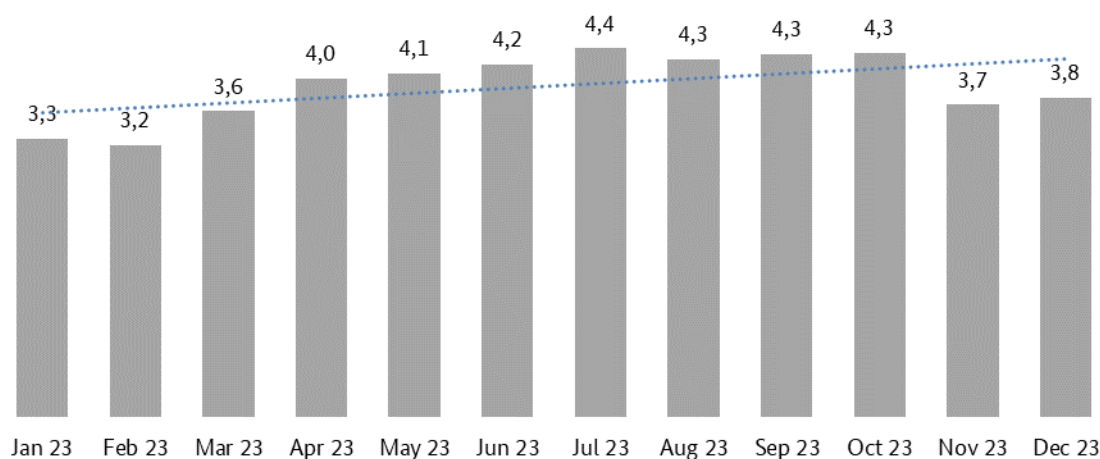


Figure 8: Month-by-month transport performance in long-distance rail passenger transport in 2023 in billions of pkm

It is notable that there were seven months in which monthly transport performance was higher than 4 billion pkm. Even in the previous record year of 2019, this was only the case for two months, according to estimates from the Bundesnetzagentur. In light of announcements by all market participants that they

intend to continue with the significant expansion of their long-distance rail passenger transport operations, continued market growth can be expected in coming years.

Transport performance in rail freight transport

Rail freight transport confronted major challenges in 2023. In addition to a general fall in demand on account of the overall economy, these challenges included an increase in construction measures in the rail networks, lengthy strikes in Germany and neighbouring countries, weather-related restrictions and the impact of accidents (eg closure of the Gotthard Base Tunnel). In combination with general cost increases and familiar problems with insufficient track capacities and high energy prices, this led to a significant decline in both operating performance and transport performance in 2023.

The decline in tonne-kilometres of around 10% entailed a fall of around 23bn tkm, resulting in a sharp fall that approached the level from 2020.

With a loss of around 13%, federally owned freight railway undertakings ¹performed markedly worse than competitors, who had a decline of 7%. In fact, some of the larger competitors managed to defy the trend and even achieved slight growth in 2023 compared to 2022. Even so, the trend line for the monthly development of tonne-kilometres remains negative at present. Months with over 13bn tkm – last achieved in March 2022 – did not occur at all in 2023.

Transport performance in rail freight transport 2023 in tkm billions

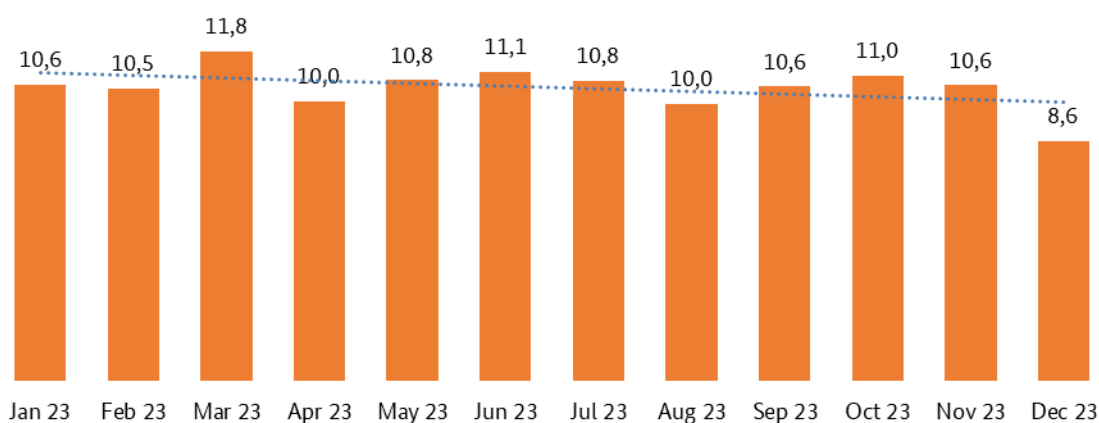


Figure 9: Month-by-month transport performance in rail freight transport in 2023 in billions of tkm

¹ DB Cargo AG announced a revision of the net tonne-km based on an improved analysis method. The data from this revised process had not been submitted to the Bundesnetzagentur by the copy date. The data reported by DB Cargo for this report correspond to the data included in the 2023 Annual Report from DB Cargo AG.

Average train occupancy rate and freight volume

The ratio of the transport performance to operating performance reflects the developments in the market in the form of average train occupancy rate or freight volume respectively.

In regional and local rail passenger transport, the combination of high customer demand and a slight fall in operating performance resulted in the average train occupancy rate reaching a new record high in 2023. The main reason for this, as has already been detailed, is the Germany Ticket. At 83 persons, the figure exceeded the number for 2019 for the first time.

Although the average train occupancy rate in long-distance rail passenger transport increased by roughly 10% over the previous year, this was still about 6% lower than the figure for 2019.

The average volume of freight in rail freight transport remained constant, as both the operating performance and the transport performance declined by around 10% compared to the previous year.

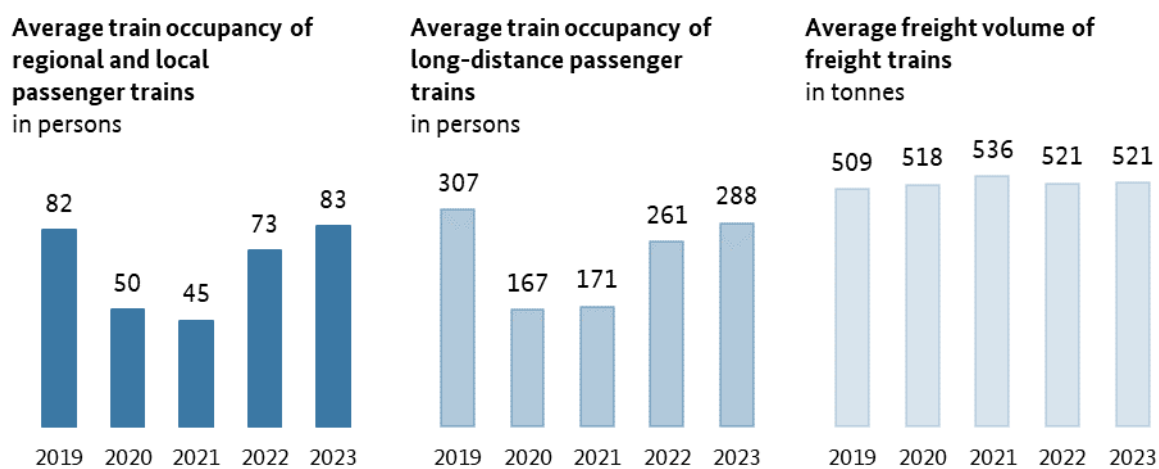


Figure 10: Development of the average train occupancy rate / freight volume from 2019 to 2023 in persons/tonnes

2 Development of competition

Development of competition

Non-federally owned railway undertakings were able to expand their market shares in all three segments of rail transport services.

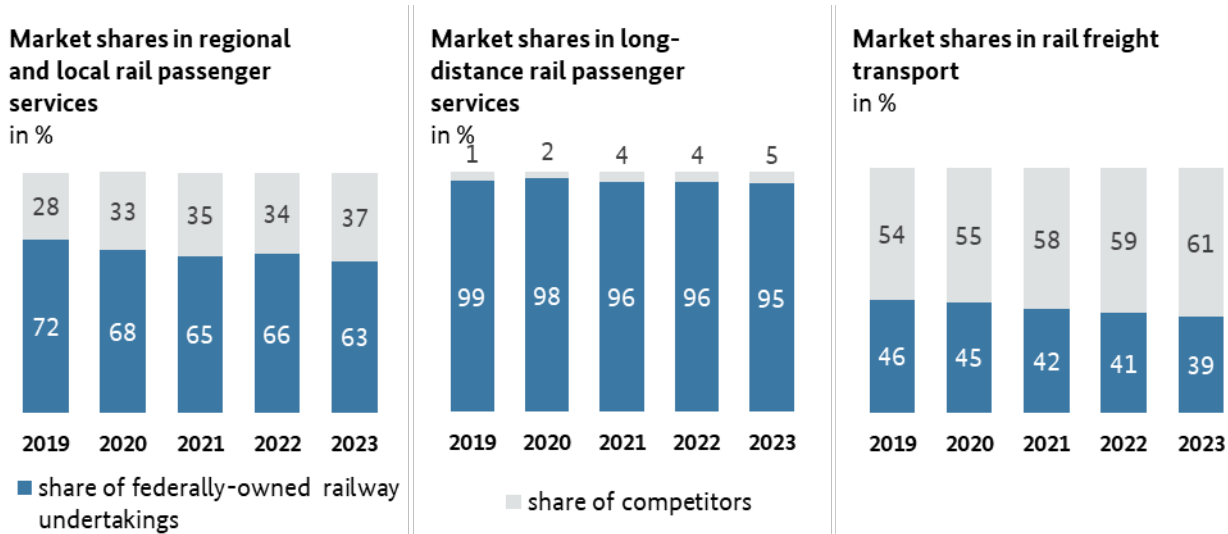


Figure 11: Development of competition in the segments of rail transport services 2019 to 2023 based on transport performance in billions of passenger-kilometres and tonne-kilometres with market shares in %

In regional and local rail passenger transport, the non-federally owned railway undertakings increased their market share by three percentage points in 2023, because their transport performance grew more strongly than did that of the federally-owned railway undertakings.

Regional and local rail passenger transport

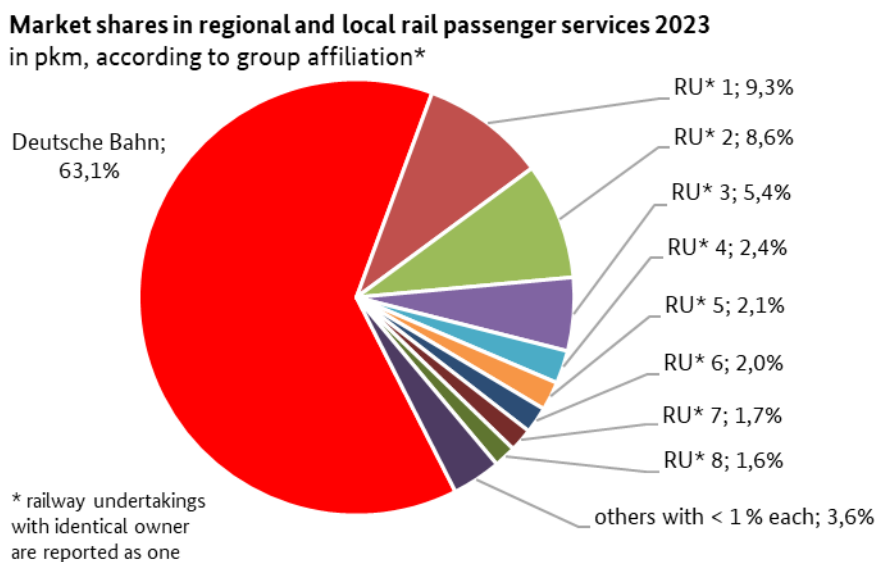


Figure 12: Market shares in regional and local rail passenger transport 2023 in %

Nearly one dozen companies achieved a market share of more than 1% in the market for regional and local rail passenger transport. Among others, this included the following companies (listed alphabetically): Benex, Go-Ahead/ÖBB, HLB, Mobico, Netinera, SWEG, Transdev. Here, the largest five competitors are under foreign ownership. These are also the market participants with the highest growth rates or which have been able to increase their market shares through acquisitions and mergers.

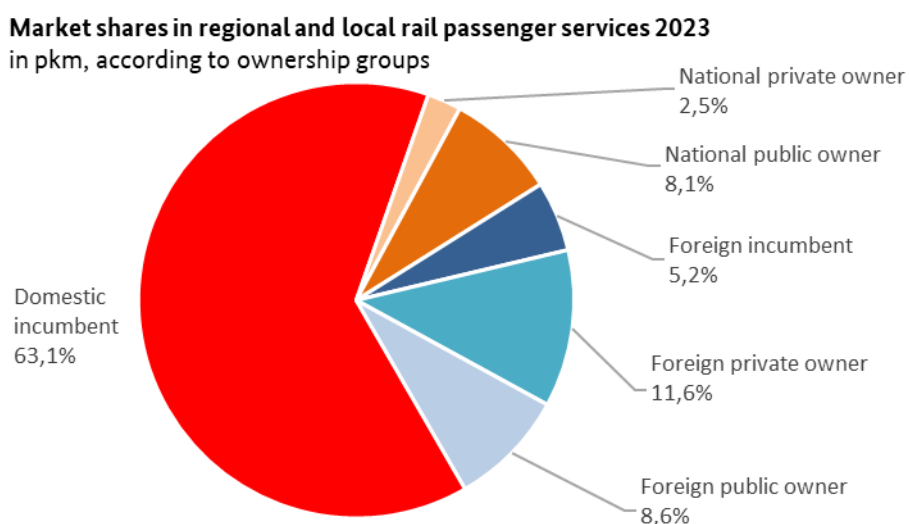


Figure 13: Market shares in regional and local rail passenger transport 2023 according to ownership in %

In total, the market share of railway undertakings under foreign ownership amounts to one-quarter of the market for regional and local rail passenger transport. However, foreign state-owned railways only play a subordinate role here. National competitors account for slightly more than 10% and are primarily under public (usually municipal) ownership.

Long-distance rail passenger transport

The strong increase in demand experienced by competitors in long-distance rail passenger transport allowed their market share of transport performance to increase by an additional percentage point compared to 2022, bringing it to around 5% currently. It is notable that the rates of increase for the largest competitors, at 30% to 50%, were yet again significantly higher than the already high figure for DB Fernverkehr AG of nearly 10%.

The largest market participants in the long-distance passenger transport segment are on a growth path: Flixtrain, ÖBB and Westbahn have already announced new connections and more frequent journeys for their trains. DB Fernverkehr is also expanding the size and density of its route network.

Market shares in long-distance rail passenger services 2023
in pkm, according to ownership groups

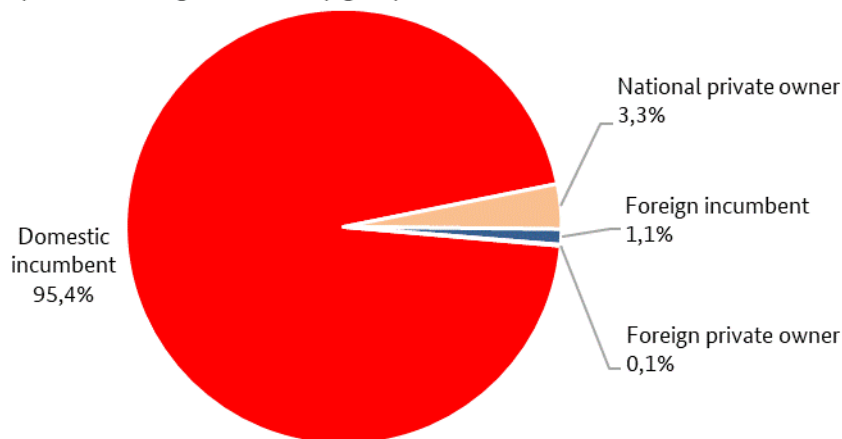


Figure 14: Market shares in long-distance rail passenger transport 2023 according to ownership in %

In contrast to the rail freight transport segment, foreign state-owned railways have refrained from competing against one another in long-distance rail passenger transport in Germany to date. This is not expected to change in the next few years.

Rail freight transport

The continuous increase in the market share of competitor freight railway undertakings in rail freight transport continued in 2023. As a result of the significantly larger decline in transport performance for DB freight railways, the market share of non-federally owned freight railways increased to 61%.

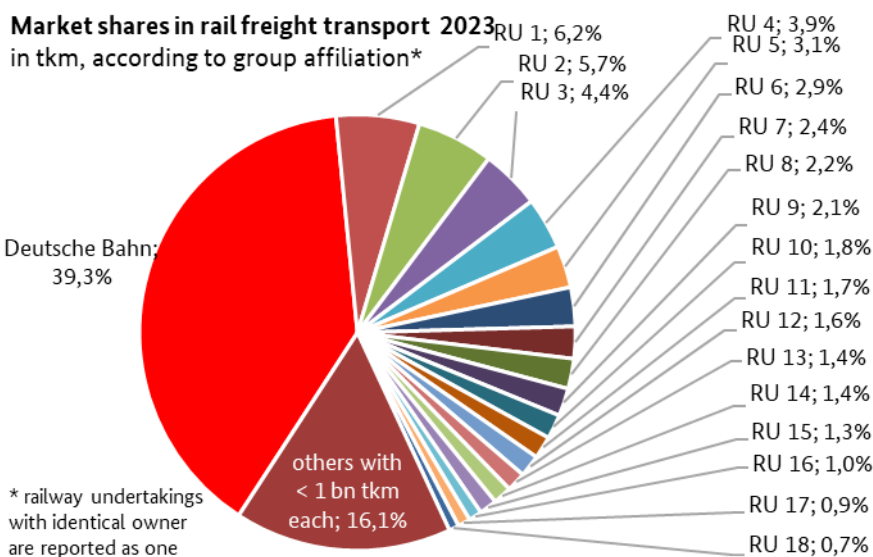


Figure 15: Market shares in rail freight transport 2023 in %

The rail freight transport market is the most heterogeneous of the three rail transport services. Only two competitors achieved a market share of more than 5%. More than one dozen other companies achieved a market share of 1% to 4%. Many other railway undertakings each transported less than 1bn tkm per year. Further consolidation in the sector can be expected.

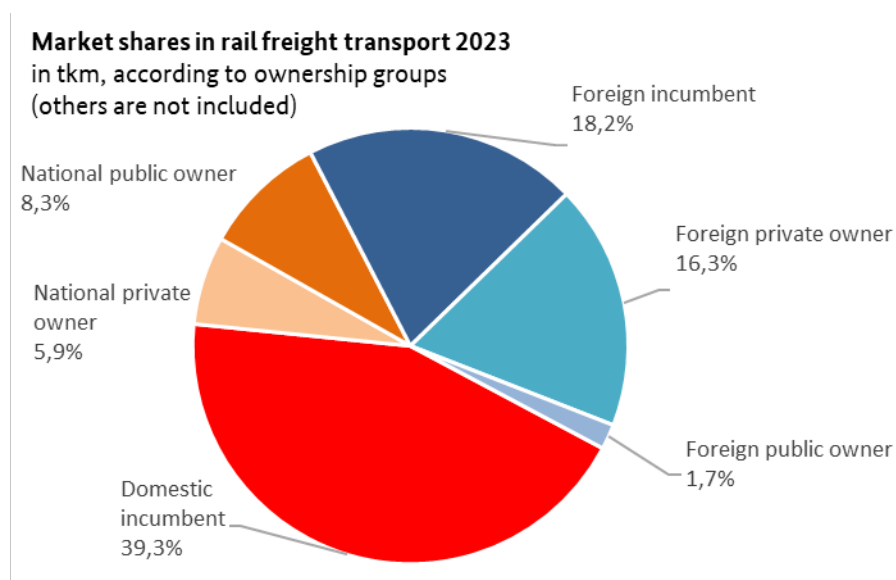


Figure 16: Market shares in rail freight transport 2023 according to ownership in %

The largest market shares were primarily achieved by the larger competitor railway undertakings under foreign management. This means that more than one third of the German rail freight transport market was accounted for by companies under foreign ownership. Of these, railway undertakings backed by foreign state-owned railways accounted for the largest share. Even so, these also suffered larger declines in transport performance, particularly in multimodal transport services.

3 Costs for traction current

Costs for traction current

For a number of years now, the Bundesnetzagentur has been requesting information on the prices that railway undertakings are paying for traction current. In the short survey, the railway undertakings were asked to submit the specific price points that were charged by electricity suppliers in 2023. They were not to include the electricity price brake.

Procurement prices increased yet again from 2022 to 2023. In terms of the unweighted mean price (ie all of the average prices submitted by the railway undertakings were weighted equally to determine the average price), prices were more 20 % higher in 2023 than in 2022. The procurement price was nearly 20 cents per kWh.

Average procurement price for traction current for railway undertakings unweighted, in cents per kWh

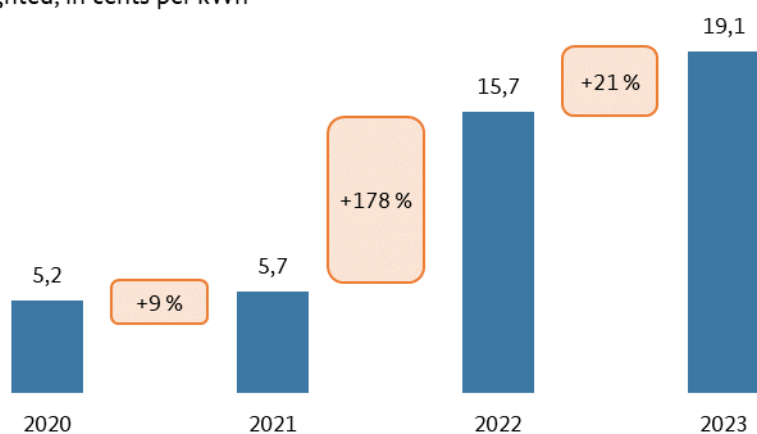


Figure 17: Average unweighted traction current prices for railway undertakings in cents per kWh

The electricity price brake helped to cushion the negative economic impact of the expected price increase on companies in the rail market. Railway undertakings were able to obtain reimbursement for sums in excess of the fixed value of 13 cents per kWh upon request². As a result, when the electricity price brake is included, hardly any railway undertakings reported having to actually pay (after accounting for reimbursements) a procurement price significantly higher than 13 cents per kWh.

The range of price points reported in 2023 was somewhat narrower than in the previous year, but it remained very large. At the lower end of this range can be found the railway undertakings that had secured lower prices on a longer-term basis. The upper end of the range was accounted for by prices obtained on the spot market. Interestingly, one-quarter of the railway undertakings reported procurement prices that were significantly lower than the electricity price brake threshold of 13 cents per kWh – in multiple cases even lower than 10 cents – and therefore did not need to make use of the electricity price brake. On the other hand, 35% of the railway undertakings reported a procurement price

² for 90% the reference volume in the baseline year 2021

higher than 20 cents per kWh; in fact, in multiple cases prices in excess of 30 or even 40 cents per kWh were reported.

Range of procurement prices for traction current
in cent per kWh

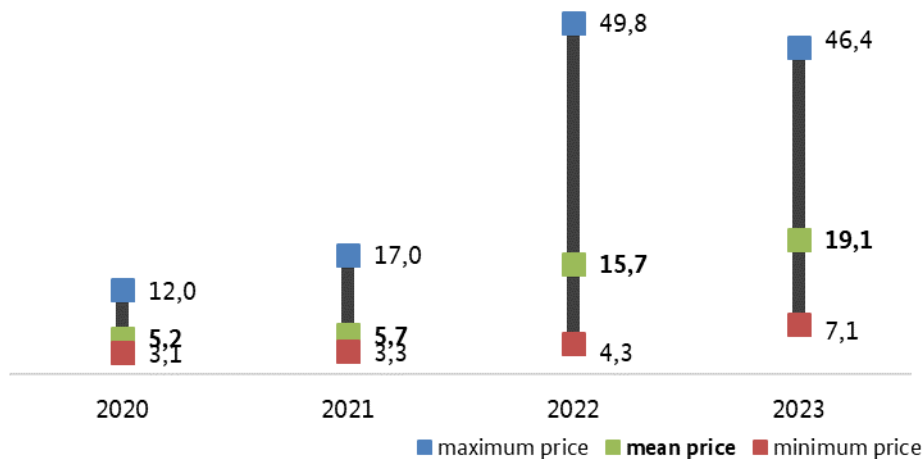


Figure 18: Range of average procurement prices reported for traction current in cents per kWh

If the prices reported by the railway undertakings are weighted by the operating performance under electric traction, the increase amounts to more than 60%, although this increase is from a smaller base than is the unweighted mean price. If the analysis is restricted to non-foreign owned railway undertakings, the weighted price in 2023 would be around 17.3 cents per kWh, rather than 16.1 cents per kWh.

Average procurement price for traction current for railway undertakings
weighted by operating performance, in cents per kWh

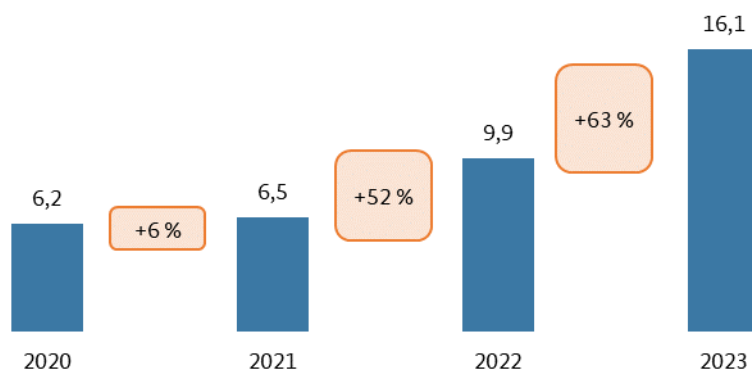


Figure 19: Average traction current prices for railway undertakings, weighted by operating performance in cents per kWh

4 Delay data / incentive system

Analysis of delay data from the incentive system

Within the framework of data collection for the incentive system for 2023, some 18mn delays were registered in the Deutsche Bahn railway network. Under this system, a delay is considered to be an incident if the continuation of a train’s journey is delayed by more than 90 seconds. These delays include not only the initial occurrence of a delay, but also any additional delay minutes arising thereafter. The total duration of these delays amounted to around 202mn minutes, a figure that is slightly less than the figure for the previous year (208mn minutes). This decline of a little less than 3% is almost identical to the fall in operating performance. This means that the additional delays per train-km remained the same (around 0.18 minutes per train-km).

Methodology: The responsible traffic controller assigns a cause to every delay in railway operation by means of a code in accordance with Guideline 420.9001 (Coding the Additional Delay Minutes). These are validated by operations control centre staff in collaboration with the affected railway undertaking.

These delay codes make it possible to systematically assign the causes to the responsible factors. The code "headway" is of special significance here. "Headway" is assigned as the cause of a delay whenever additional delay minutes cannot be assigned to a specific disruption (or the location thereof).

Using the incentive system, the recorded delays can be aggregated for the individual factors responsible. The following graphic illustrates the delays over the course of the year for the infrastructure managers and railway undertakings in 2023. In addition, the delays are categorised according to whether they were caused by external influences and other factors, as well as the cumulative headway delays.

Cases of delays per month by responsibility
number in millions

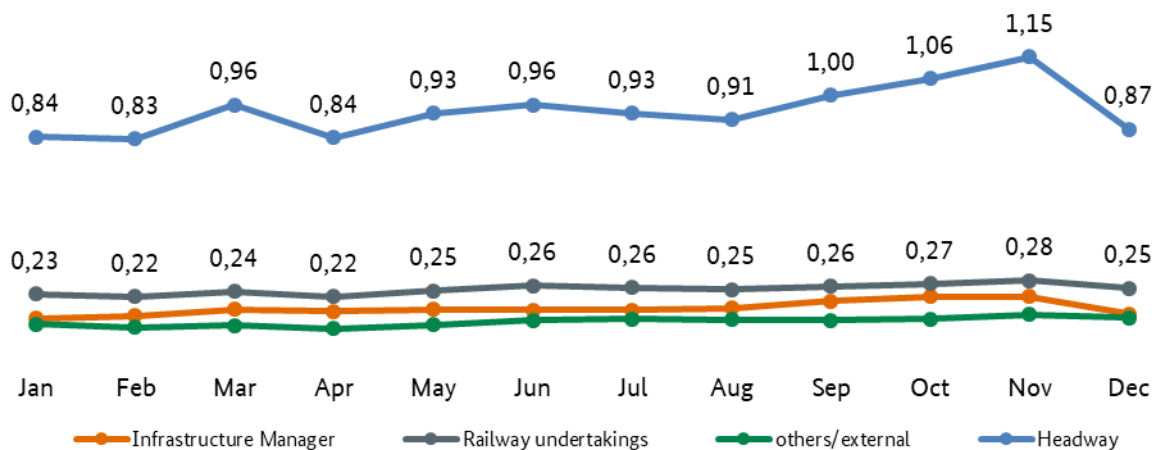


Figure 20: Delays by factor responsible in 2023 in millions

Delays caused by infrastructure managers and railway undertakings show relatively little variation over time. These lie between 140,000 and 220,000 incidents for the infrastructure managers and between

220,000 and 280,000 incidents for railway undertakings. The number of delays resulting from external factors (over which they have no influence) is even lower.

Delays for which headway is given as the cause are significantly more frequent, with around 830,000 to 1,150,000 incidents. These also includes delays that cannot (can no longer) be directly assigned to a specific delay event. However, the volume of these delays clearly demonstrates that the network is not resilient enough for the operating programme that is demanded by the market, such that it could eliminate the delays that arise through operational disruptions. In light of this, these delays can only be reduced by improving the infrastructure.

The categorisation of the measured delays in the coding process not only provides data for the incentive system processes, but also supplies valuable information on the causes of the delays.

Cases of delays per month by responsibility, condensed
number in millions

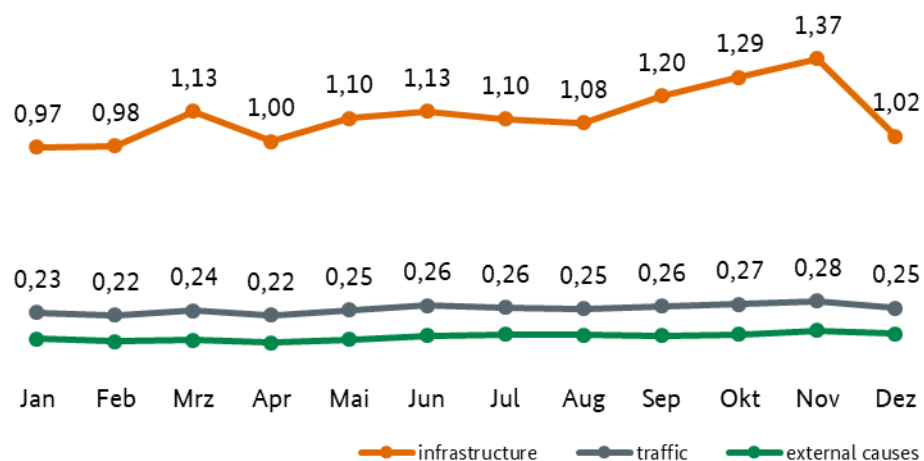


Figure 21: Delays by cause in 2023 in millions

According to these figures, by far the largest share of the delays were within either the direct or indirect area of influence of the infrastructure.

At the same time, everyone involved in the rail market could contribute to improved punctuality by reducing disruptions and making available sufficient resources for operations.

List of figures

Figure 1: Development of transport performance and operating performance 2019 to 2023	7
Figure 2: Rates of change in operating performance – 2023 compared to 2022	10
Figure 3: Development of the operating performance from 2019 to 2023.....	10
Figure 4: Month-by-month development of operating performance in 2023.....	11
Figure 5: Development of transport performance from 2019 to 2023	12
Figure 6: Rates of change in transport performance – 2023 compared to 2022.....	12
Figure 7: Month-by-month transport performance in regional and local rail passenger transport in 2023 13	
Figure 8: Month-by-month transport performance in long-distance rail passenger transport in 2023.....	15
Figure 9: Month-by-month transport performance in rail freight transport in 2023.....	16
Figure 10: Development of the average train occupancy rate / freight volume from 2019 to 2023	17
Figure 11: Development of competition in the segments of rail transport services 2019 to 2023.....	20
Figure 12: Market shares in regional and local rail passenger transport 2023	20
Figure 13: Market shares in regional and local rail passenger transport 2023 according to ownership.....	21
Figure 14: Market shares in long-distance rail passenger transport 2023 according to ownership	22
Figure 15: Market shares in rail freight transport 2023.....	22
Figure 16: Market shares in rail freight transport 2023 according to ownership	23
Figure 17: Average unweighted traction current prices for railway undertakings.....	26
Figure 18: Range of average procurement prices reported for traction current.....	27
Figure 19: Average traction current prices for railway undertakings, weighted by operating performance	27
Figure 20: Delays by factor responsible in 2023	30
Figure 21: Delays by cause in 2023	31

List of abbreviations

IM	Infrastructure managers
ERegG	Rail Regulation Act (ERegG)
RU	Railway undertakings
NE	Non-federally owned
ÖPNV	Local public transport
pkm	Passenger-kilometre
SGV	Rail freight transport
SPFV	Long-distance rail passenger transport
SPNV	Regional and local rail passenger transport
tkm	Tonne-kilometre
trkm	Train-kilometre

Publisher's details

Publisher

Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen

Tulpenfeld 4

53113 Bonn

Germany

www.bundesnetzagentur.de

Ordering address | Contact

Dr.-Ing. Axel Müller

axel.mueller@bnetza.de

Phone +49 (0) 228 / 14-7020

Frank Böttcher

frank.boettcher@bnetza.de

Phone +49 (0) 228 / 14-7073

Last revised

May 2024


Text

Section 702 – Technical Aspects of Rail Regulation, Rail Sector Digitalisation, Market Monitoring, Statistics



bundesnetzagentur.de

 x.com/BNetzA

 social.bund.de/@bnetza

 youtube.com/BNetzA