

## Eleventh Annual Market Monitoring Report

April 2023



# 01

## Introduction



### Participating countries

- 
- AT - Austria
  - BE - Belgium
  - BG - Bulgaria
  - HR - Croatia
  - CZ - Czech Republic
  - DK - Denmark
  - EE - Estonia
  - FI - Finland
  - FR - France
  - DE - Germany
  - EL - Greece
  - HU - Hungary
  - IE - Ireland
  - IT - Italy
  - XK - Kosovo\*
  - LV - Latvia
  - LT - Lithuania
  - LU - Luxembourg
  - MK - North Macedonia
  - NL - Netherlands
  - NO - Norway
  - PL - Poland
  - PT - Portugal
  - RO - Romania
  - RS - Serbia
  - SK - Slovakia
  - SI - Slovenia
  - ES - Spain
  - SE - Sweden
  - CH - Switzerland
  - UK - United Kingdom

### SCOPE



**31**  
countries



**5 years**  
of data  
2017 - 2021

**Main focus this year**  
Impacts of the COVID-19 pandemic and market recovery in 2021



### CONTENT OF THE REPORT

- 01** Introduction
- 02** Characteristics of the railway network
- 03** Track access charges
- 04** Railway undertakings and European traffic
- 05** The rail freight market
- 06** The rail passenger market

### FOCUS TOPICS IN PREVIOUS REPORTS



\*Kosovo (XK): This designation is without prejudice to positions on status and in line with UNSCR 1244 (1999) and the ICJ opinion on the Kosovo declaration of independence.

# IRG-Rail – A network of cooperation

The Independent Regulators' Group-Rail (IRG-Rail) was established by 15 European rail regulatory bodies in June 2011. Since foundation, the objective of the group has been to establish a network of cooperation between member organisations in the railway sector. The group has expanded over the years and now includes members from 31 countries.

IRG-Rail members aim to consistently deal with regulatory challenges and rail developments across Europe. IRG-Rail acts as a platform for cooperation, sharing best practice and promoting a consistent application of the European regulatory framework. As put forward in the Group's statutory document<sup>1</sup>, 'the overall aim of IRG-Rail is to facilitate the creation of a single, competitive, efficient and sustainable railway market in Europe'.

## What we do

Article 56 (paragraph 2) of Directive 2012/34/EU states that regulatory bodies have a formal duty to monitor the situation in the railway market. Market monitoring is therefore an essential task for the national regulatory bodies. It is also a vital instrument for enhancing market transparency, setting direction for the activities of regulatory bodies and encouraging market participants to develop and improve their activities.

### General aim of the Market Monitoring Working Group



The IRG-Rail Market Monitoring Working Group was set up as a platform for cooperation and to exchange best practice in terms of data collection and analysis. The group has an agreed set of guidelines<sup>2</sup> for gathering railway data. Based on the results of a yearly collection, an annual Market Monitoring Report is produced by the Working Group.

This is the IRG-Rail's Eleventh Market Monitoring Report and covers calendar year 2021, unless otherwise stated.

### Content of the report



The Market Monitoring Report provides an overview of market developments and the economic conditions in the railway sector with respect to IRG-Rail member countries. The report also compares developments and the competitiveness of the railway market over time.

The report consists of two parts. The Main Report presents results at the overall European level. The Working Document<sup>3</sup> includes country specific data and more detailed observations. In addition, the underlying data is available on the IRG-Rail website<sup>4</sup>.

Each Market Monitoring Report focuses on one or several specific subject(s). This year, the report continues to monitor the impacts of the COVID-19 pandemic on the European rail market in 2021 by providing an overview of the situation. In addition, the post-pandemic market recovery is studied. This edition also includes some new indicators on infrastructure managers' expenditures and train punctuality.

### Methodology



It is the responsibility of each regulatory body to gather, quality-assure and submit data according to the guidelines agreed by the Working Group. The Working Group has developed a common template in order to ease the effort for the regulatory bodies and to ensure the comparability of the data. Data can originate from market surveys carried out by the regulatory bodies and/or national statistics as well as other trustworthy sources.

31 countries contributed to this Eleventh Market Monitoring Report. However, most countries were not able to provide data for all measures. In order to ensure reliable and consistent information, this report only presents indicators for which enough data was made available. Consequently, some analyses are performed using data from a subset of participating countries. Therefore, some sections may not cover all 31 countries. In each section of the report however, key figures and analyses presented use a consistent sample of countries<sup>5</sup>. Detailed information and specific data by country are also provided in the Working Document.

<sup>1</sup> <https://www.irg-rail.eu/irg/about-irg-rail/general-information/About-the-IRG-Rail.html>

<sup>2</sup> The guidelines can be found [here](#).

<sup>3</sup> The Working Document can be found [here](#).

<sup>4</sup> The data can be found [here](#).

<sup>5</sup> The data coverage for each figure is included in the footnotes. All countries are included, unless otherwise specified.



## Recent trends in European rail transport (2019-2021)



### Passenger services

Passenger train-km	Passenger-km	TAC* from passenger RU	Operator revenues
<b>-4%</b>	<b>-41%</b>	<b>-13%</b>	<b>-17%</b>
(31 countries) (2020-2021 : +7%)	(31 countries) (2020-2021 : +15%)	(24 countries) (2020-2021 : +5%)	(24 countries) (2020-2021 : +7%)

### Freight services

Freight train-km	Freight tonne-km	TAC* from freight RU	Operator revenues
<b>-0.2%</b>	<b>+1%</b>	<b>-37%</b>	<b>+0.3%</b>
(31 countries) (2020-2021 : +7%)	(31 countries) (2020-2021 : +8%)	(28 countries) (2020-2021 : -4%)	(24 countries) (2020-2021 : +18%)

Note: All comparisons are for 2021 compared with 2019, plus additional information in grey below each indicator of the comparison between 2020 and 2021. The number of countries included is provided under each metric. \* Track Access Charges

## OVERVIEW



In 2021, the European railway market continued to be impacted by the COVID-19 pandemic. The spread of the virus has resulted in the continuation of restrictions on international and domestic movement, especially during the first half of the year.

This has hindered the recovery of passenger demand for transport even though the supply of rail passenger transport – which was broadly maintained in 2020 – increased again in 2021. **Passenger-km fell by -41% compared to 2019, despite a comparably small decline in supply (-4% for train-km).**

There were differences in the market developments observed across different market segments. For example, although overall there was a relatively small decrease in the usage of the rail network (-5% for train-km), there were substantial differences in the stability of PSO (-3% less train-km) and non-PSO services (-15% less train-km). On the demand side however, the increase in the load factor led to growth of +1% for domestic tonne-km, whereas **domestic passenger-km fell by -40%**. While there were increases in the international freight market (+10% in train-km and +2% in tonne km), **international passenger services were severely affected with a persistent decline in 2021 for non PSO services (-30% in train-km and -59% in passenger km).**

The transportation of goods, however, was less impacted by the pandemic and its demand again outperformed the 2019 level. **For freight services, a small decline of train-km (-0.2%) was reported, while the volume of freight moved (tonne-km) increased by +1%.**

Despite the introduction of temporary or permanent measures to limit the impact of the pandemic on the railway sector (e.g. adjustments of track access charges or state aids), railway undertakings suffered direct economic consequences of this drop in rail activity. However, revenue from freight transport was stable between 2019 and 2021, whereas revenue from passenger services fell by -17%. This decrease is a consequence of a reduction in revenue from fares, in line with the drop of traffic demand, which was more than -40% for both PSO and non-PSO services. Meanwhile, European infrastructure managers recorded decreases of the track access charges from railway undertakings on the one hand, but higher public subsidies on the other hand, leading to a relative small decrease of their **total revenue from TAC (-5% from passenger services and -1% from freight services)**. It should be noted that the pandemic may not be the only contributing factor.

This is the third IRG-Rail publication focusing on the impacts of the COVID-19 pandemic. IRG-Rail will continue to closely monitor these impacts and responses in 2021 and the coming years to assess how the European railway markets evolved after this pandemic.



# Global restrictions on rail transport demand

Two years after the start of the COVID-19 pandemic, most European countries have lifted measures of confinement and restrictions on internal movement implemented in March 2020.

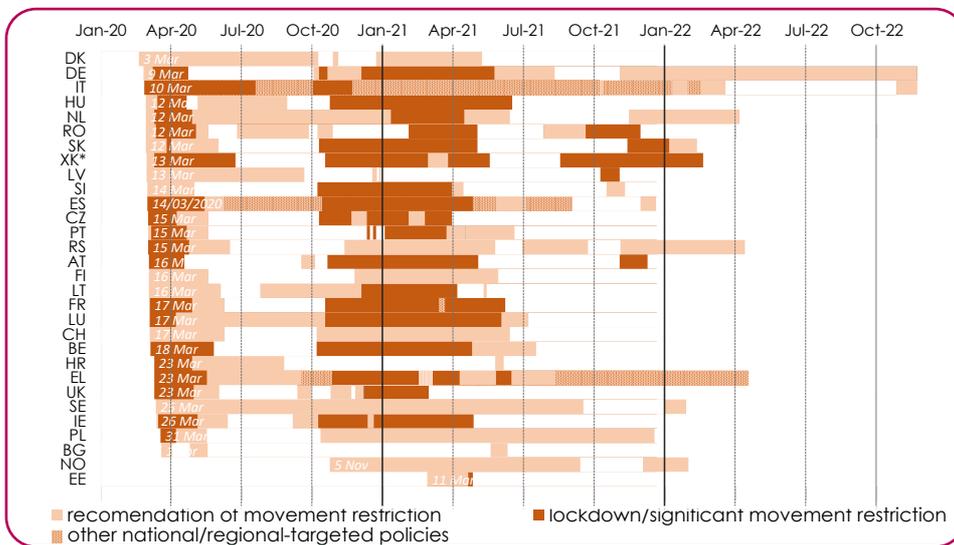
Looking back at 2021, strict measures were put in place at times to once again limit the impact of the pandemic. This was more apparent in the first half of 2021 and resulted in low global mobility, before a slow recovery in demand for rail transport and other transportation modes.

Figures 1 and 2 highlight the restrictions on movement at a national level. These restrictions were in some cases applied at a regional level, with targeted policies being applied in 2021 in several European countries (including Italy, Germany, Greece, Portugal, Spain, Romania, the UK and France).

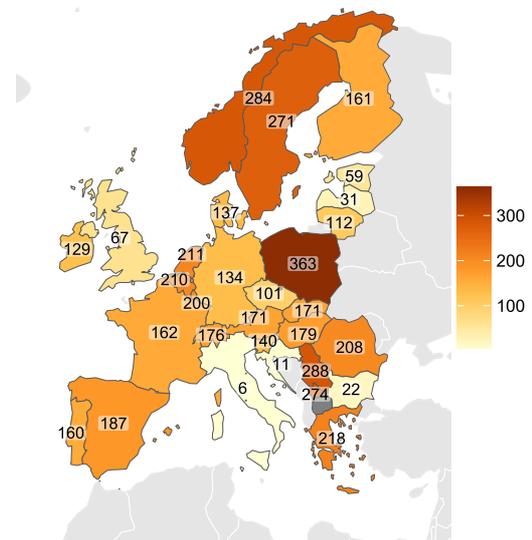
Different restrictive measures were implemented in 2020 and 2021 depending on the type of transport service and geographical horizons:

- While strict lockdown measures applied to people, there was no regulatory restriction on the transport of goods in many countries. Some freight services even saw an increase in the demand for domestic distribution.
- Furthermore, restrictions on movement varied by geographical region. In 2021, international movement of people was still curbed as 10 EU countries (16 in 2020) enforced land, sea and air border control due to the pandemic. Internal cross-regional movement was restricted as well in several countries.

**Figure 1** – Calendar 2020-2022 of “movement restrictions” requirements and recommendations per country<sup>7</sup>



**Figure 2** – Number of days in 2021 with “stay at home” requirements or recommendations (national policies only)<sup>7</sup>



## Response measures adopted

As presented in the 10th IRG-Rail Market Monitoring Report, temporary or permanent financial measures were adopted in 2021 and continued into 2022 to limit the impact of the pandemic on the railway sector by the states or infrastructure managers:

- **Adjustment of track access charges**, as raw discounts or reimbursement of charges, the waiver of mark-ups, a postponing of the invoicing or changes of the references for charges or a relaxation of cancellation charges or reservation penalties.
- **State aids to railway undertakings**, provided for most countries as compensation for the loss of revenue, an increase of public subsidies or temporary unemployment aid.
- **State aids to the infrastructure managers** or specific funding and incentives for infrastructure projects, granted in specific countries to compensate for the loss of revenue.

In 2021 very few regulatory bodies noted the implementation of additional new measures.

### Regulation (EU) 2020/1429 establishing measures for a sustainable rail market in view of the COVID-19 outbreak

On 7 October 2020, Regulation (EU) 2020/1429 establishing measures for a sustainable rail market in view of the COVID-19 outbreak was adopted. This regulation includes temporary measures to help the railway sector facing the impacts of the COVID-19 pandemic. It enables Member States to authorise infrastructure managers to remove, postpone or lower the charges for access in rail infrastructure during the pandemic, while ensuring state aids to the infrastructure managers for this loss of revenue. This temporary regulation was first applied retrospectively during a period of reference going from 1 March 2020 until 31 December 2020. It was extended three times<sup>8</sup> to end on 30 June 2022. In the last Delegated Regulation ((EU) 2022/312), the Commission is also empowered to adopt delegated acts to prolong the reference period until 31 December 2023.

At the time of the publication, five countries have applied this Regulation (Austria, Denmark, Germany, Italy, Portugal and Sweden) by means of different specific national complementary rules and/or administrative practices.

<sup>7</sup> Source: Oxford COVID-19 Government Response Tracker, indicator C6 “Stay at home requirements”. This includes either requirements or recommendations to “shelter-in-place” and otherwise confine to the home, applied across the whole country. The indicator may exclude specific policies applied at local or regional scales.

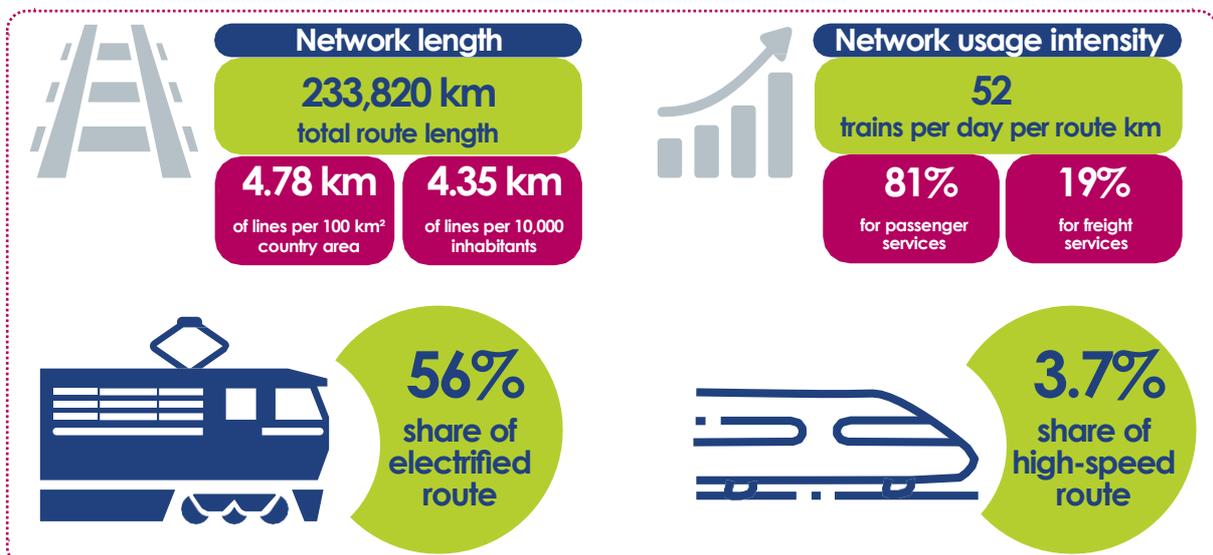
<sup>8</sup> Commission delegated regulations (EU) 2020/2180 on 18 December 2020, (EU) 2021/1061 on 28 June 2021 and (EU) 2022/312 on 24 February 2022.

# 02

## Characteristics of the railway network



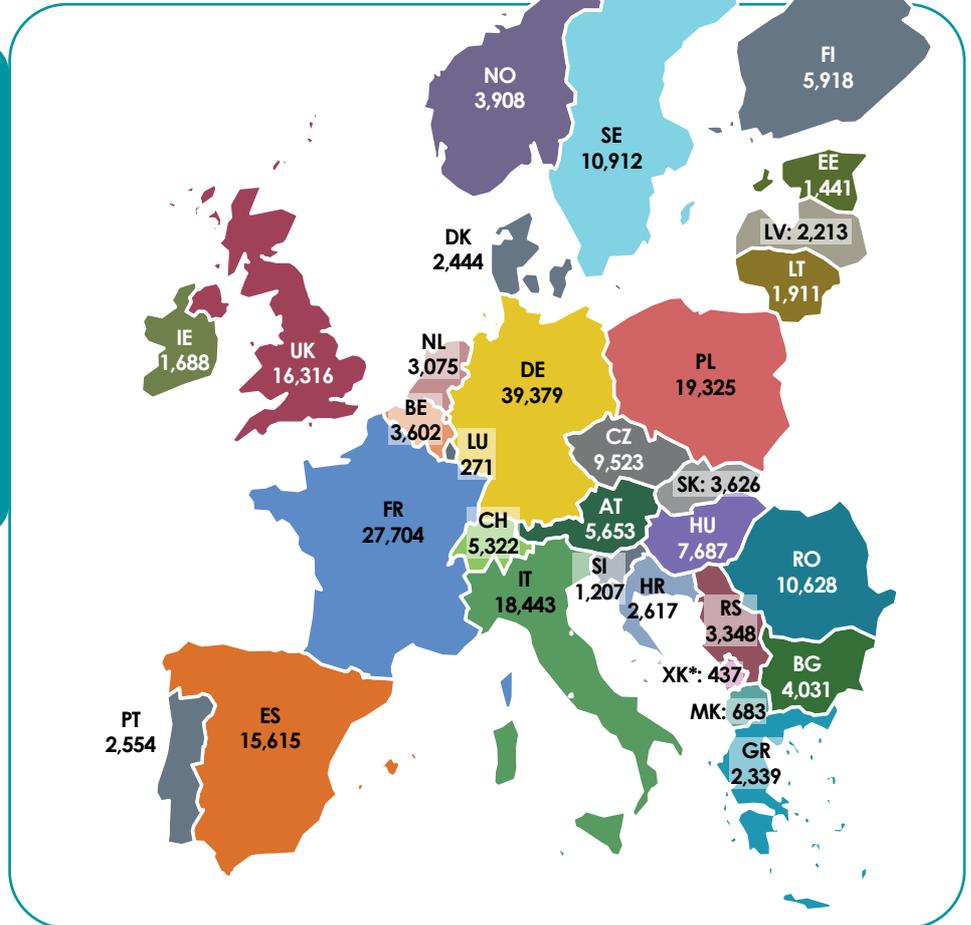
### IN 2021



The sample used to calculate these figures is specified in the following pages.

## European rail market

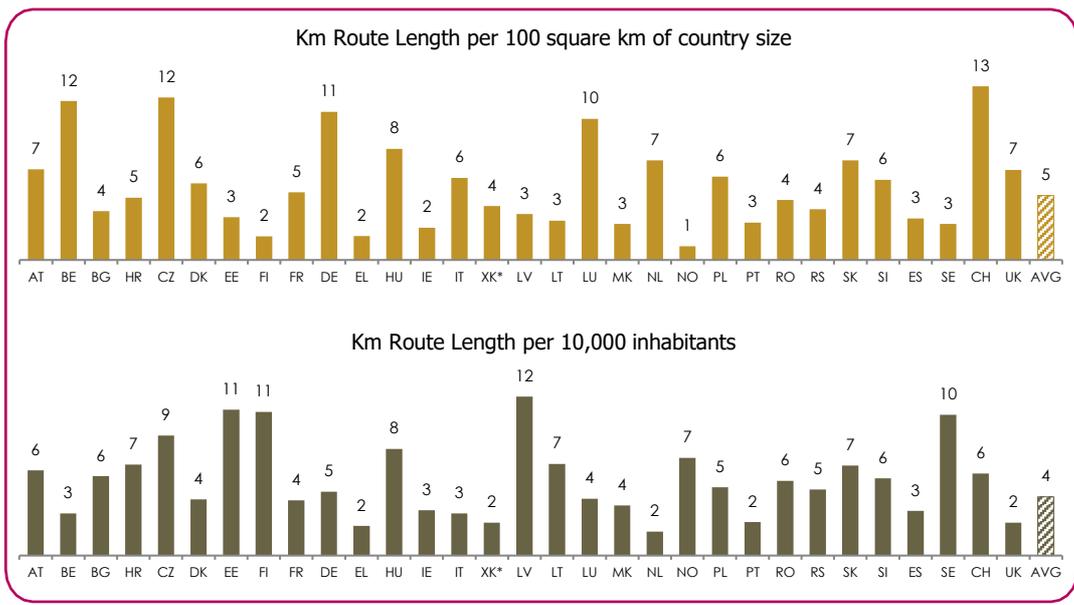
**Figure 3** – Route length (in km) of the participating countries in 2021



In 2021, the overall route length for IRG-Rail monitored countries was approximately 234,000 km. The total route length has remained stable over recent years. However, there have been some changes within specific countries (see Working Document for more details).

Over 50% of the total route length comes from the five countries with the largest networks: Germany, France, Italy, Poland and the UK. Luxembourg has the shortest network of all participating countries (271 km).

**Figure 4** – Network density with respect to country area and population in 2021



Network density is an indicator for the development and coverage of the rail network in each country. The average network density in the monitored countries was about the same in 2021 as it was in 2020.

Relative to country size, Switzerland reported the highest network density (13 route-km per 100 km<sup>2</sup>), followed by Czech Republic and Belgium (12). Each of these countries have rail networks with a high level of coverage across the countries' land area. Norway has the lowest network density relative to country size of all participating countries.

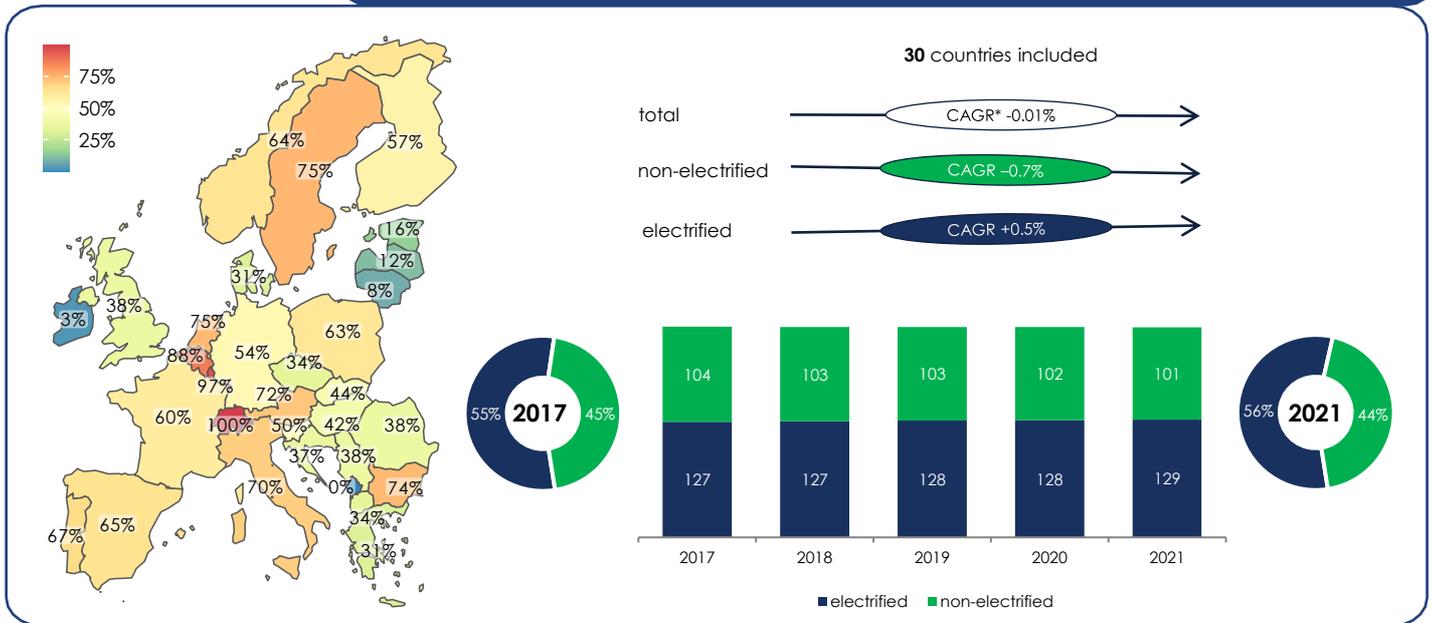
Network density can also be presented in terms of route length per 10,000 inhabitants. This indicator remained stable between 2020 and 2021 as well. Latvia, Estonia, Finland and Sweden have the densest networks in terms of route length per capita. These countries have more than 10 km of route per 10,000 inhabitants. Latvia reported the highest figure with 12 km of route per 10,000 inhabitants. Countries with a higher network density relative to population size typically show a lower density in terms of country size. This is usually indicative of a relatively low population density or the fact that there are large areas of the country which are not served by the rail network.

## Electrification of the railway network

**Figure 5** – Total route length (km) and electrified share of participating countries from 2017 to 2021<sup>8,9</sup> (right) and electrified share per country in 2021 (left)

Of the 30 countries that reported data, 56% of the total route length was electrified in 2021. This represents a small increase compared with 2020 and a one percentage point higher share of electrified route length than in 2017.

The share of electrified network varies substantially across Europe, ranging from 0% (Kosovo) to 100% (Switzerland). Among the monitored countries, eight have a share of electrified network higher than 70% and five have a share of electrified network below 20%.



\*CAGR: compound annual growth rate

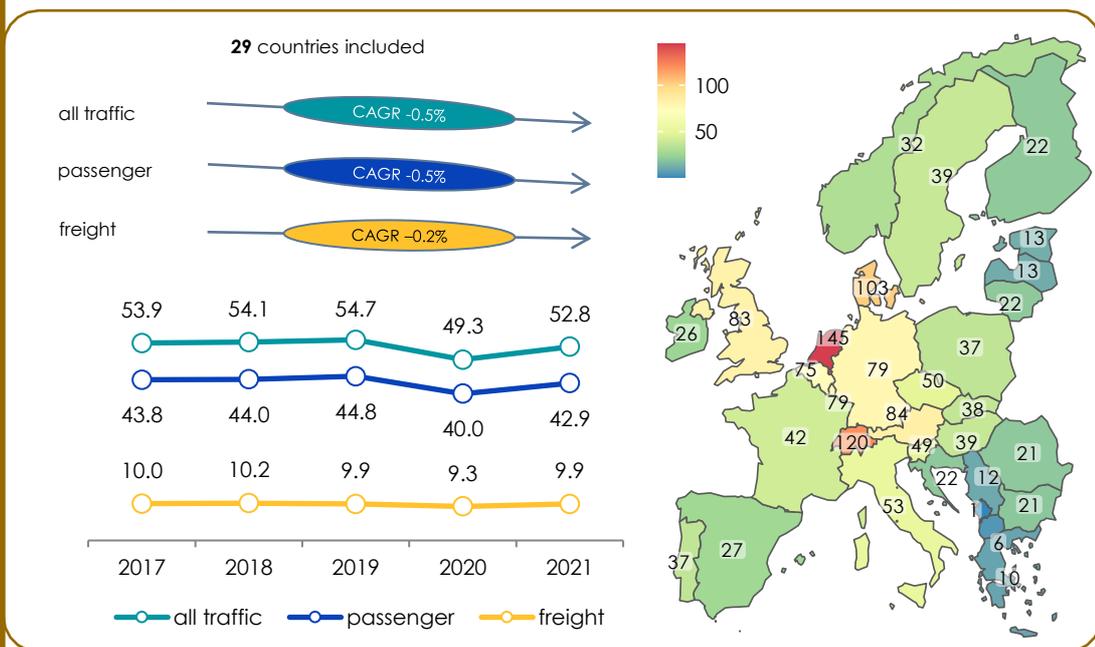
## Network usage

Network usage among participating countries showed a recovery during 2021, following the significant drop in 2020. Increased traffic during the year led to an average network usage of 53 train-km per route km per day, which corresponds to an increase of +7%. Nevertheless, network usage did not fully recover to the same levels as before the pandemic.

For passenger services, the recovery of traffic led to an increase in network usage of +7%. This was a significant increase, but not enough to fully compensate for the fall in 2020.

Freight traffic recovered to the same level as before the pandemic. The fall in 2020 was not as significant as for passenger traffic, as freight traffic was not affected by similar restrictions impacting passenger traffic. In 2021, the network usage for rail freight increased by +6%.

**Figure 6** – Overall network usage intensity (train-km per route km per day) for participating countries from 2017 to 2021<sup>10</sup> (left) and its 2021 level per country (right)



<sup>8</sup> In this graph and the following, CAGR stands for the compound annual growth rate.

<sup>9</sup> 30 countries are included in this figure (Serbia is missing).

<sup>10</sup> 29 countries are included in this figure (Ireland and Serbia are missing).



**Additional indicators included in the Working Document:**

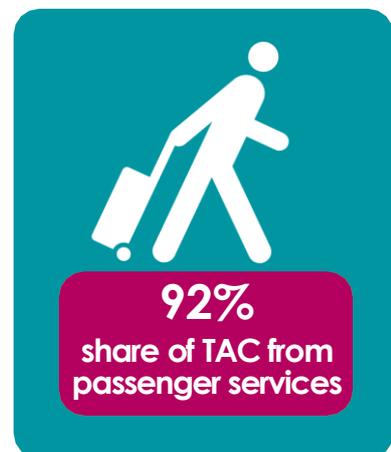
- High-speed and ETCS-enabled route length
- Infrastructure managers' expenditures

# 03

## Track access charges (TAC) for the minimum access package

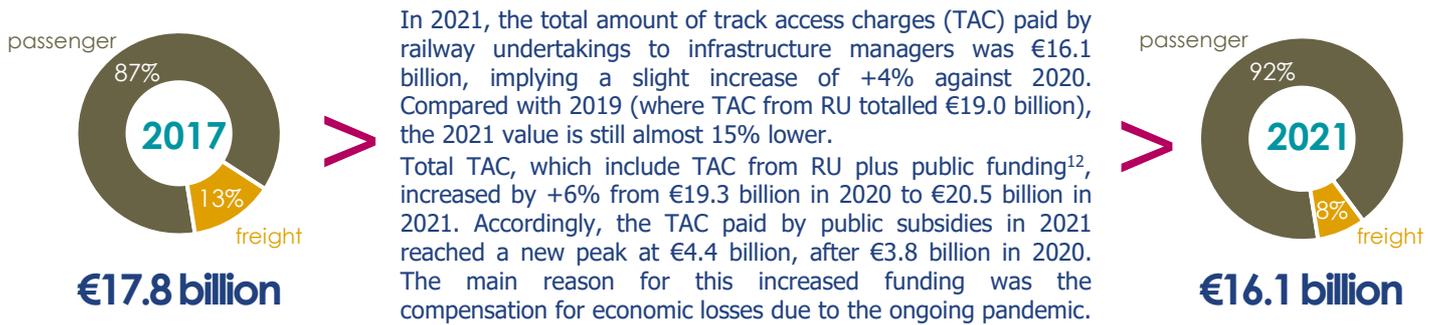


IN 2021



The sample used to calculate these figures is specified in the following pages.

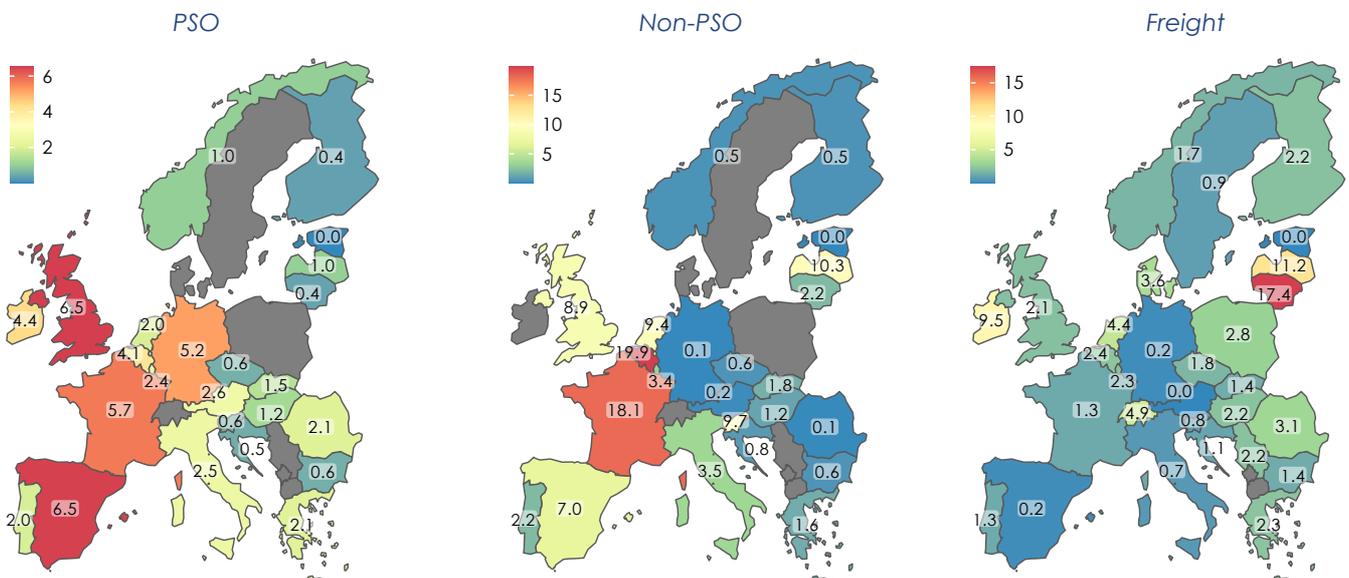
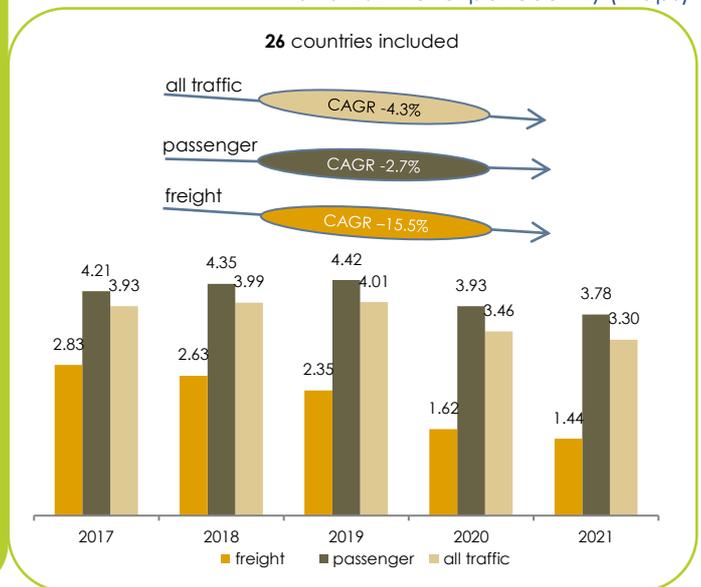
## Evolution of TAC<sup>11</sup>



## TAC from railway undertakings per train-km

More than 90% of all European track access charges (TAC) are paid by passenger services. The average TAC per train-km varies substantially among European countries, ranging from virtually zero to almost €11 in 2021. After a substantial decline of TAC from RUs in 2020 due to the impacts of the pandemic, TAC for both passenger and freight fell even further in 2021. While freight TAC per train-km were -11% lower than in the previous year, passenger TAC per train-km went down by -4% compared with 2020. As a result, the gap between freight and passenger TAC remained unchanged. Freight TAC in 2021 were less than half of passenger TAC. The continued decline is caused by a growing share of publicly subsidized TAC in several countries like Austria, Denmark, Estonia, France, Germany, Italy and Sweden. In these countries, the state assumed ownership of part of the RUs' economic burden that arose from the pandemic in 2021. In Estonia, nearly all TAC were paid by public subsidies. There were also high subsidized shares in France (around 40%), Austria (30%) and Germany (33%). Although freight TAC on average showed the lowest level, in the passenger sector non-PSO TAC were 45% higher than TAC for PSO services.

**Figure 7** – Track access charges paid by railway undertakings<sup>13</sup> (in Euro per train-km) for the Minimum Access Package<sup>14</sup> from 2017 to 2021 (chart) and 2021 level per country (maps)



<sup>11</sup> 27 countries are included in this paragraph and its associated figures (Ireland, Kosovo, North Macedonia and Serbia are missing).

<sup>12</sup> Total TAC is a proxy of the sum of TAC from railway undertakings and TAC from public subsidies. Please note that the data of TAC from public subsidies might not be exhaustive since the scope of public funding for TAC varies substantially across countries so that several RB could not specify the exact amount.

<sup>13</sup> 26 countries are included in this figure (Ireland, Kosovo, North Macedonia, Serbia and UK are missing).

<sup>14</sup> Directive 2012/34/EU of the European Parliament and of the Council.

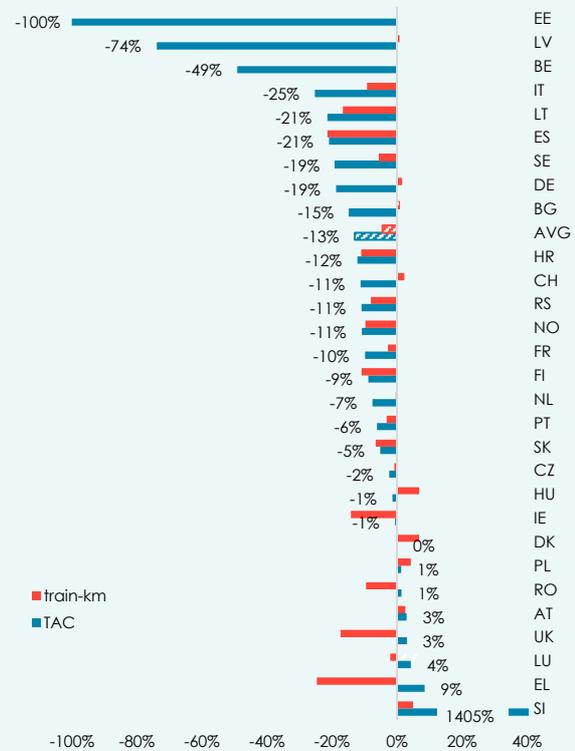
## Additional analyses: Impacts of the Covid-19 pandemic

Track access charges paid by railway undertakings for passenger services went up again in 2021 after decreasing in 2020 by around 17% on average. This was a total growth of €1.1 billion. However, compared with 2019 the volume of passenger track access charges were on average still 13% lower than in 2021. While in eight countries the level of 2019 was reached again, in the majority of countries passenger TAC stayed below the values of 2019.

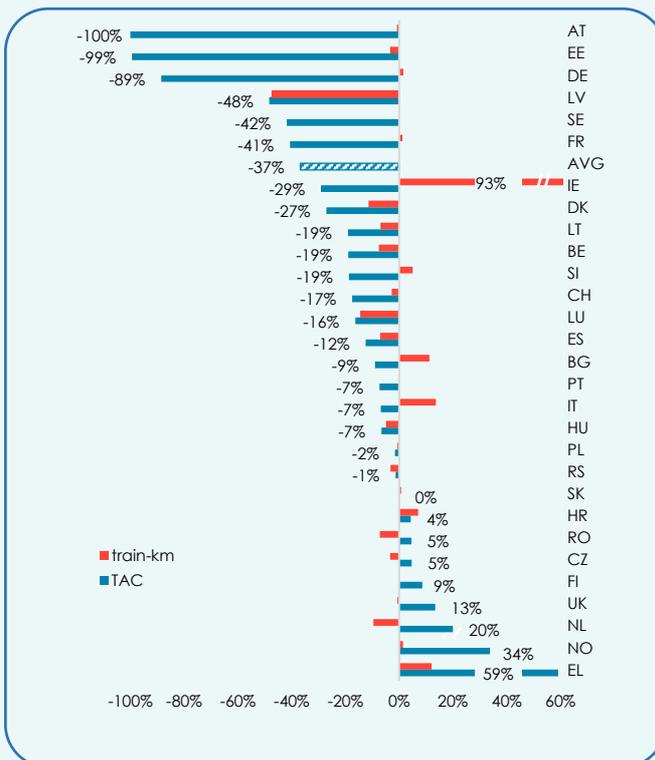
In general, the development of TAC correlates with the numbers of train-km. After the severe decline in 2020 a recovery started in 2021. However, train-km in 2021 were still lower than in 2019 (before the pandemic). Moreover, the share of TAC paid by public subsidies (rather than by RU) increased. With such measures, governments funded at least a part of the economic losses caused by the pandemic.

The charges in Estonia were fully funded by the state. In Belgium, the state also increased its subsidies to lower the TAC in support of the sector. A significant decrease in passenger-TAC was also reported in Latvia, due to structural changes of the charging methodology in 2019.

**Figure 8** – Trends of TAC from passenger RU and passenger train-km in 2021 compared with 2019



**Figure 9** – Trends of TAC from freight RU and freight train-km in 2021 compared with 2019



Freight TAC paid by RU went up by €0.2 billion from 2020 to 2021, which was an increase of +8%. While 20 countries showed an annual increase of their freight TAC, nine countries experienced a decline. However as shown in Figure 9 compared with 2019, charges in 2021 were more than 30% lower. The reason for this is that freight-TAC were compensated partly or fully (in the case of Austria) by the governments in seven countries, which reduced the amount of charges paid in 2021 significantly. Some countries without subsidies (like Greece or Norway) showed a strong increase in the amount of TAC.

In most countries, the change in freight TAC was comparable with the change in freight train-km. Ireland was an exception to this. This was due to industrial works taking place at Dublin port, which had subsequent impacts on rail activity.

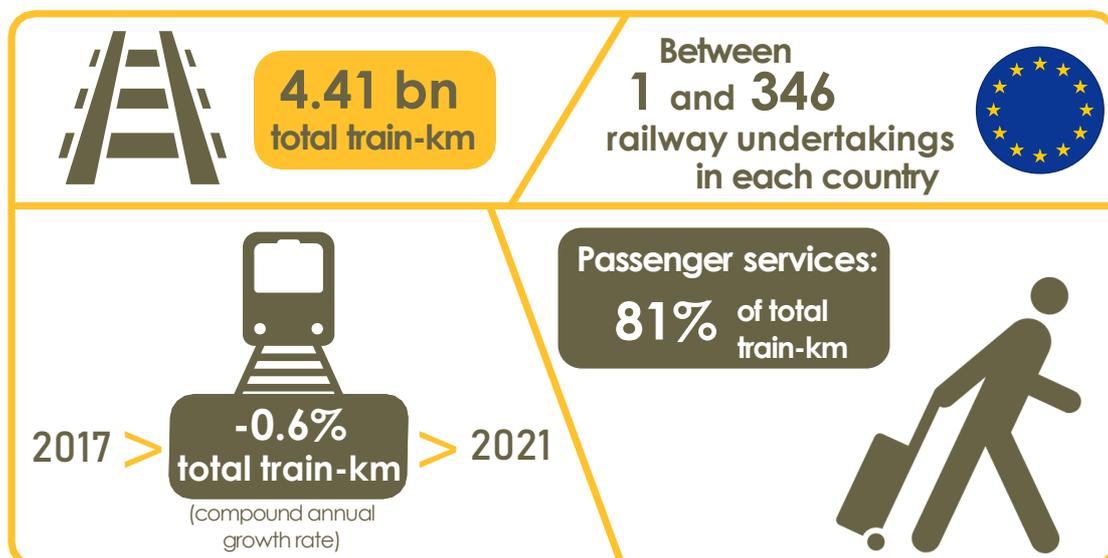
In few countries a decrease of freight-train-km was observed. For example, this was the case in Latvia and Lithuania, due to regressing traffic towards/from Russia.

# 04

## Railway undertakings and European rail traffic



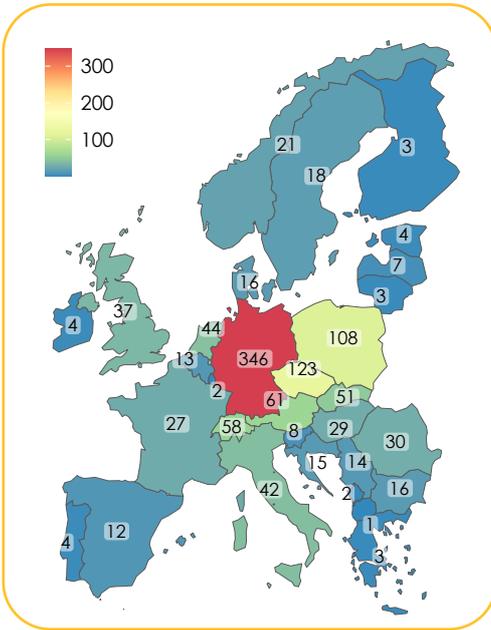
IN 2021



The sample used to calculate these figures is specified in the following pages.

# Railway undertakings (passenger and freight)

**Figure 10** – Total number of railway undertakings by country in 2021



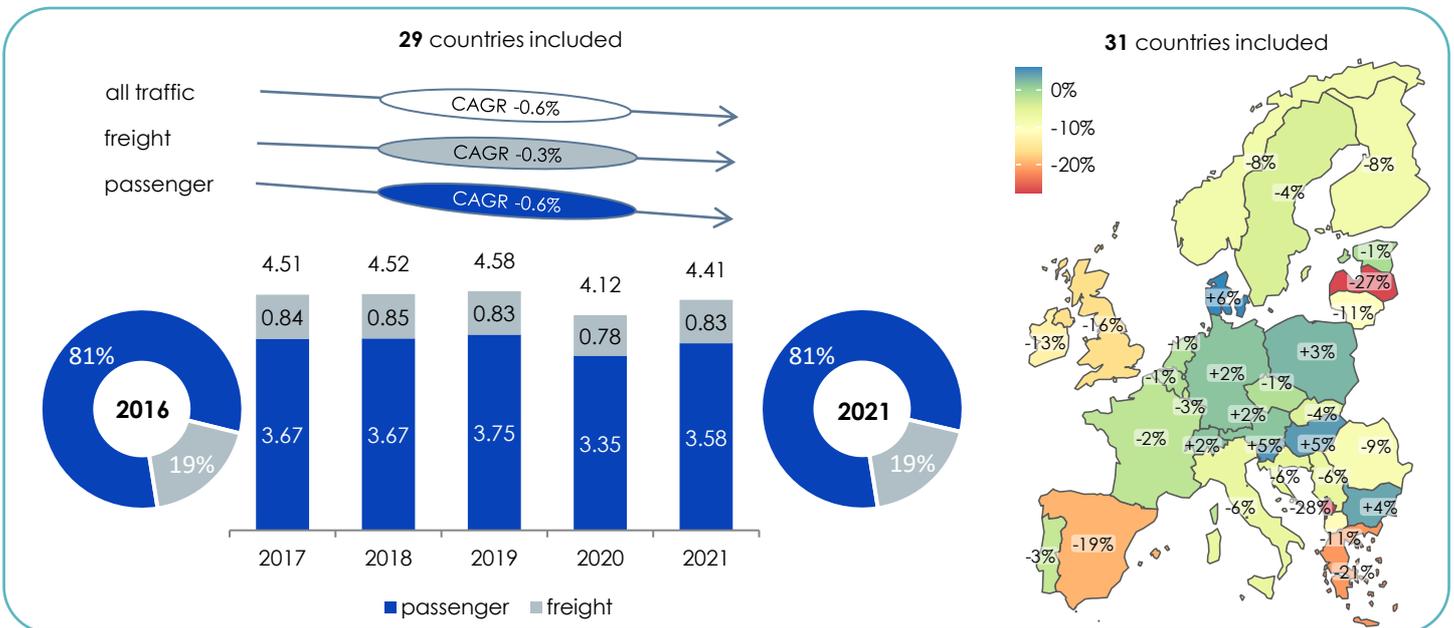
In 2021, there was a total of 1,122 active railway undertakings across all member countries.<sup>15</sup> This includes railway undertakings that operated passenger services, freight services and both (passenger and freight services). The number of active railway undertakings varies substantially across members. North Macedonia, for example, has only one active railway undertaking that offers both passenger and freight services, indicating a highly concentrated market. In contrast, Germany has 346 active railway companies that offer passenger and/or freight services, indicating a highly competitive market.

For most members (21), the number of active railway undertakings operating freight services exceeded the number operating passenger services. Freight services were offered by 73% of all railway undertakings, while passenger services were only offered by a third of operators.

Railway undertakings in the passenger sector can be categorized as operating PSO and non-PSO services. All member countries reported having at least one active railway undertaking operating under a public service contract (PSO), with some members reporting that all passenger traffic was operated by PSO operators.

# Total rail traffic

**Figure 11** – Rail traffic in billion train-km from 2017 to 2021<sup>16</sup> (left) and 2021/2019 change (right)



In 2021, a total of 4.41 billion train-km was reported by member countries. This was an increase of +7% on the 4.12 billion train-km reported in 2020. However, this remains 4% lower than the 4.58 billion train-km reported in 2019. The scale of recovery in terms of rail traffic varies substantially between countries. While for example Denmark (+6%), Hungary (+5%) and Slovenia (+5%) reported notable increases in 2021 traffic relative to 2019, Kosovo (-28%), Latvia (-27%) and Greece (-21%) all reported significantly less traffic than prior to the pandemic. Passenger traffic accounted for 81% of total traffic in 2021, while freight traffic represented just 19%. Prior to the pandemic, rail traffic was increasing steadily, and dropped substantially in 2020. The impact of the pandemic was more apparent for passenger traffic than for the less affected freight services. Restrictions placed on passenger services were much stricter than those on the movement of goods.

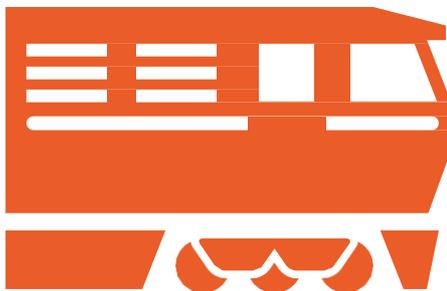
<sup>15</sup> It should be noted that some RUs may operate in multiple countries, therefore the total number of RUs may be inflated.  
<sup>16</sup> 29 countries are included in this figure (Ireland and Serbia are missing).

# 05

## The rail freight market



### IN 2021



**830 m**  
freight train-km

**466 bn**  
freight net tonne-km

Freight load factor:  
**561** net tonne-km per freight train-km

**51%**  
total market  
share of new  
entrants in the  
freight market  
(net tonne-km)



**€21.14**  
RU's revenue  
per freight train-km



**€cent 3.7**  
RU's revenue  
per net tonne-km

The sample used to calculate these figures is specified in the following pages.

# The rail freight market size

For reference, the modal split of rail freight transport in the EU countries (measured in tonne-km) was 16.8% of total inland freight transport in 2020, down 0.9pp (source: Eurostat).<sup>18</sup>

In 2021, freight traffic (in terms of train-km) returned to 2019 levels. There has been a slight decreasing trend since 2017, which suggests the recent decline cannot be attributed solely to the impact of the pandemic. On the demand side, freight traffic in terms of net tonne-km has increased by +1.3% since 2019. This can be partly explained by a substantial increase (of more than +5%) in several countries.

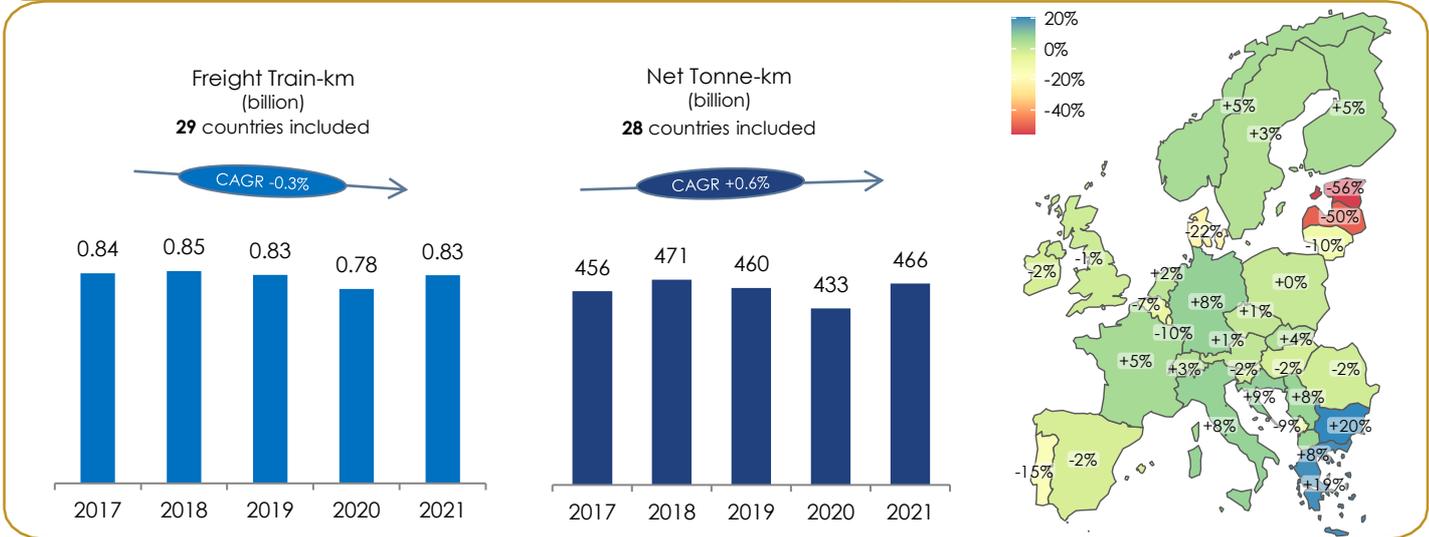
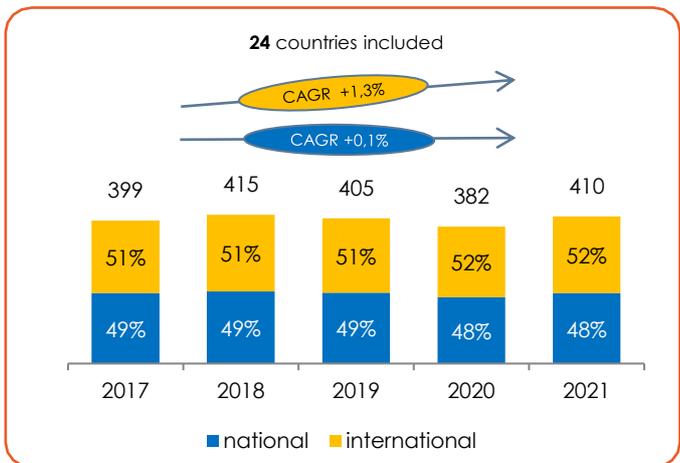


Figure 13 - National and international freight traffic (in billion net tonne-km) from 2017 to 2021<sup>20</sup>

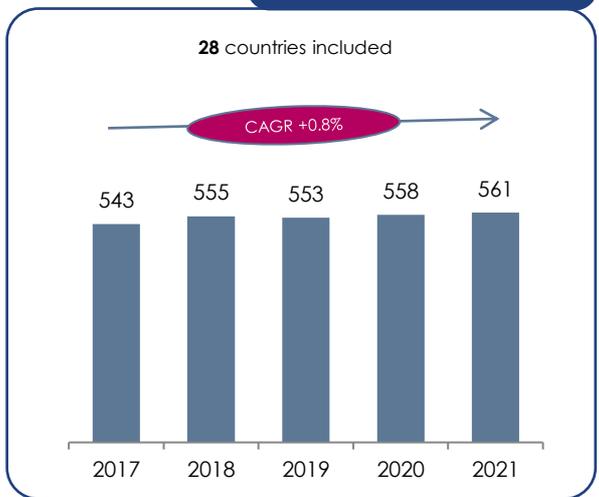


In 2021, 52% of total freight traffic (in tonne-km) came from international transport. This proportion has increased by one percentage point since 2017. On the other hand, 48% of freight traffic (in tonne-km) came from domestic transport. This is down one percentage point since 2017. Looking at the long-term growth patterns, we observe that the growth in international traffic has exceeded that of domestic traffic.

\*The difference with the total volume reported in Figure 12 is notably explained by the absence of decomposition of national and international traffic for Switzerland, accounting for a total of 12 billion net tonne-km

In 2021, the freight load factor (net tonne-km per freight train-km) increased by +1.4% from 2019. This has resulted in an average annual growth rate of +0.8% over the last five years. The increasing trend has been observed in a substantial majority of European countries over recent years.

Figure 14 – Freight load factor (net tonne-km per freight train-km)<sup>21</sup>



<sup>18</sup> Data on the modal split of freight transport in the European Union can be found on [Eurostat website](#).  
<sup>19</sup> 29 countries are included in the figure for freight train-km (Ireland and Serbia are missing), 28 countries are included in the figure for net tonne-km (Republic of North Macedonia, Ireland and Serbia are missing).  
<sup>20</sup> 24 countries are included in this figure (Republic of North Macedonia, Belgium, Estonia, Ireland, France, Serbia and Switzerland are missing).  
<sup>21</sup> 28 countries are included in this figure (Republic of North Macedonia, Ireland and Serbia are missing).

## Additional analyses: Impacts of the COVID-19 pandemic

Figures 15 and 16 show the pandemic recovery for national and international freight traffic. It shows clear differences in the trends observed across countries. For example, in the case of Latvia and Estonia, there was a significant fall in international cargo transport in 2021. While, domestic shippers on the contrary became more active, leading to an increase in national train-km in these countries.

Bulgaria, Greece, Croatia and Slovenia also saw a strong recovery of both the national and international train-km. In Bulgaria, this can partly be explained by a significant modal switch of international haulages from road to rail since 2020.

We see that few countries reported growth of freight train-km domestically. While 10 of the 21 countries that supplied data reported an increase in international freight train-km. In terms of freight moved, 14 countries reported an increase in international tonne-km, with eight countries reporting an increase in domestic tonne-km. This resulted in an overall increase in the share of international traffic for ten European countries relative to the pre-pandemic year.

Given not all restrictions were applied to the transport of goods, international freight services were not impacted to the same extent as other services.

Figure 15 – Trends for national freight traffic in 2021 compared with 2019<sup>22</sup>

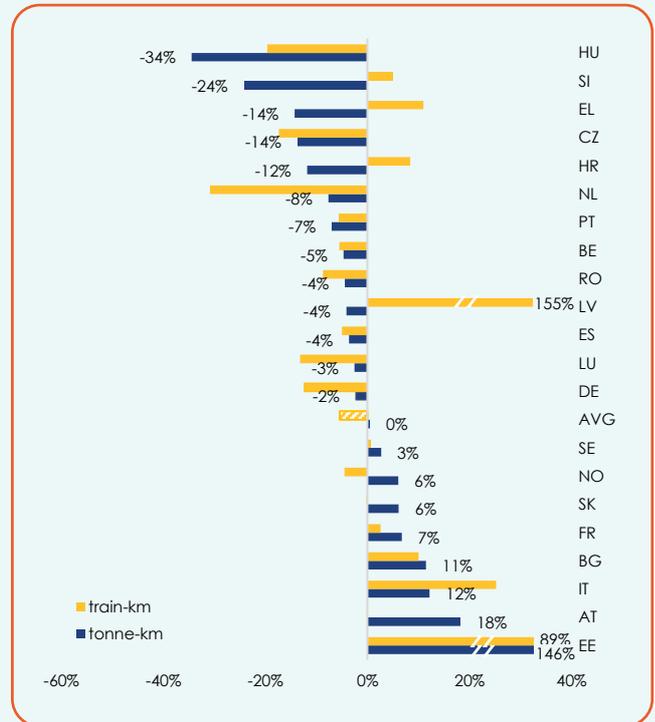
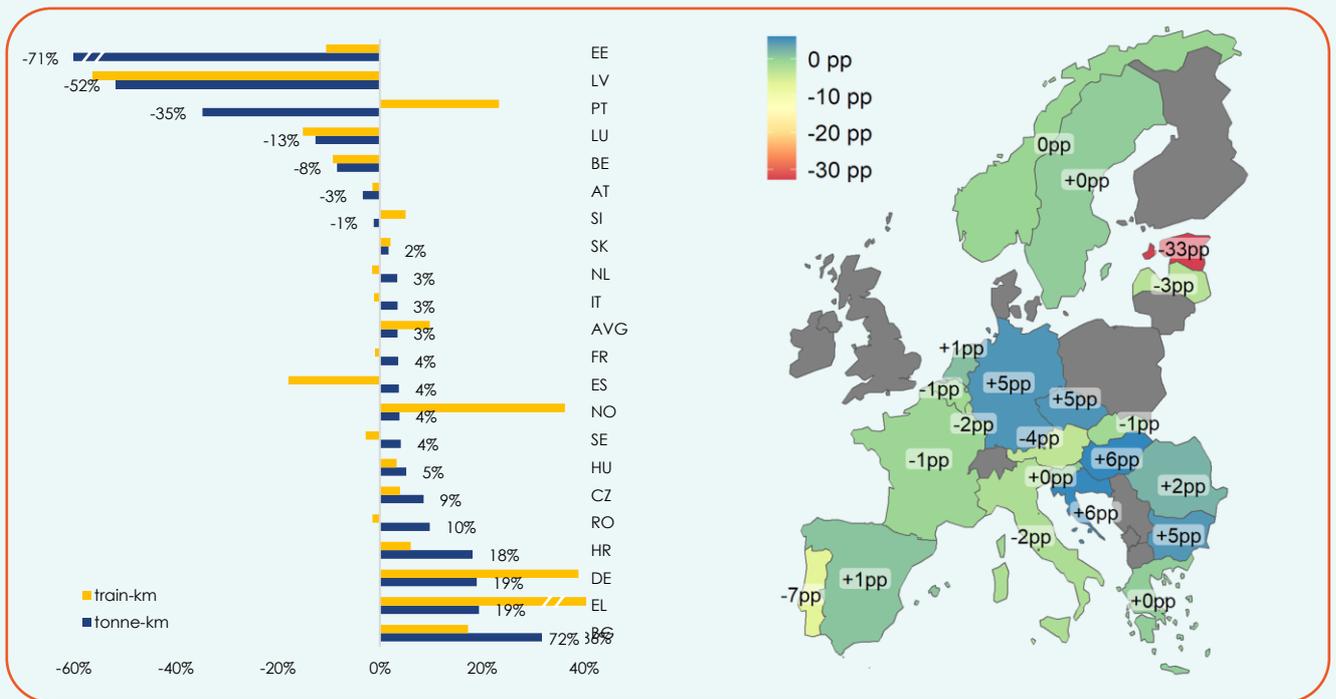
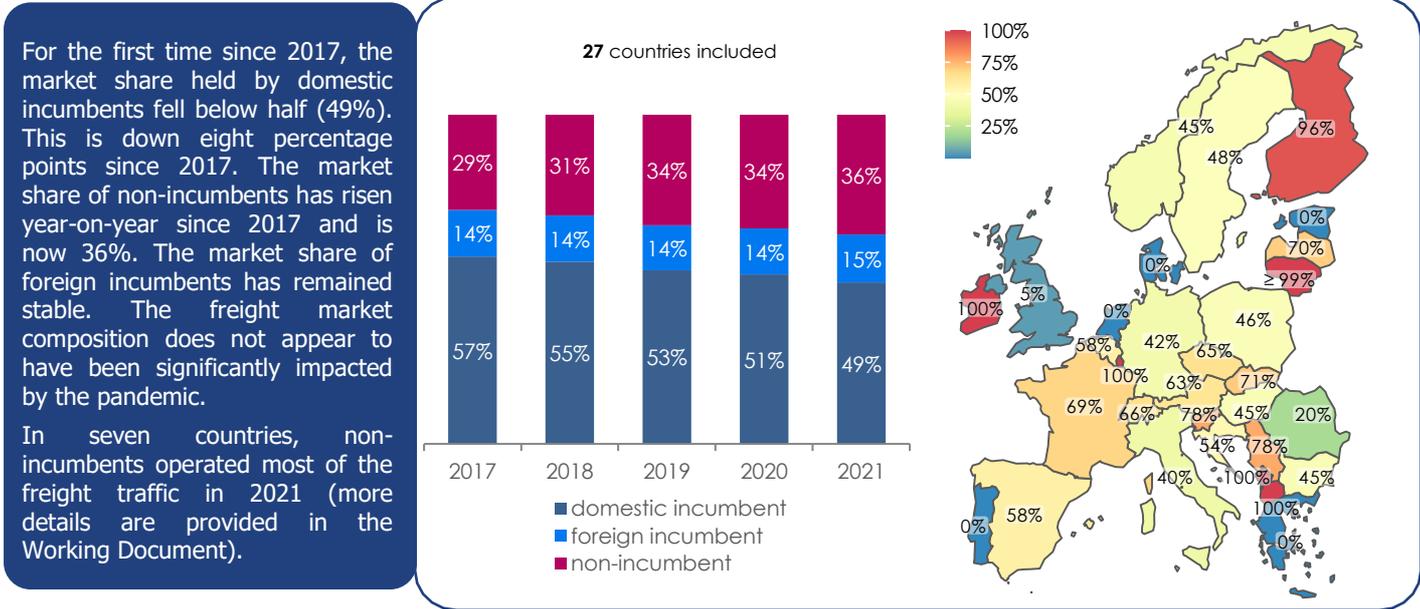


Figure 16 – Trends of freight international traffic (left)<sup>22</sup> and its share (in tonne-km) of total freight traffic (right) in 2021 compared with 2019



## Market shares of freight railway undertakings

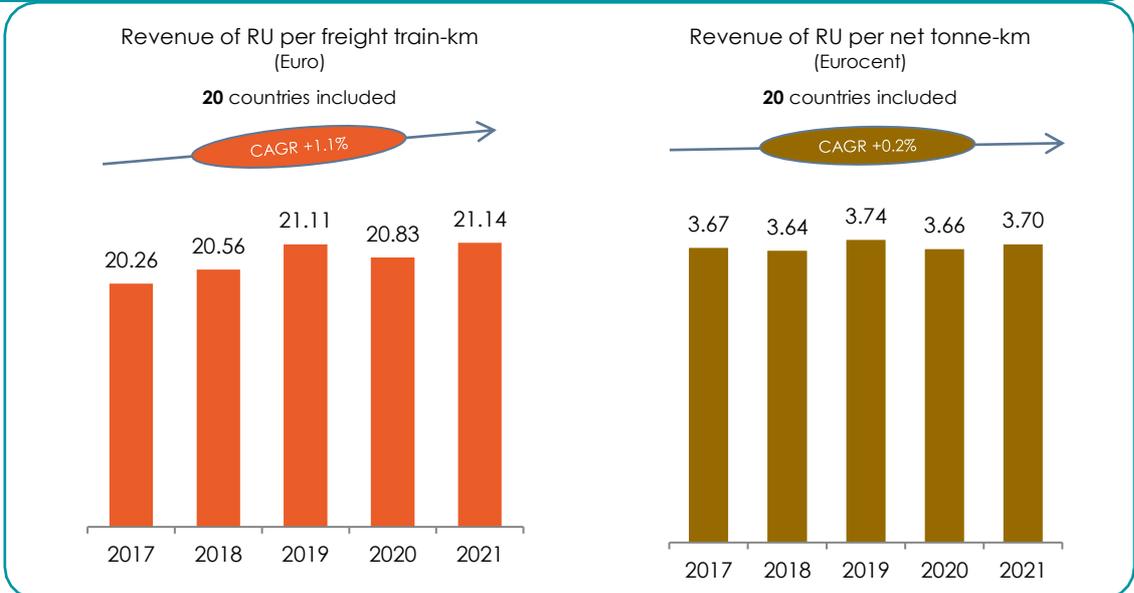
**Figure 17** – Market shares (based on net tonne-km) of freight railway undertakings (left)<sup>23</sup> and share of the domestic incumbent by country in 2021 (right)



## Economic performance indicators of freight railway undertakings

Despite an increase in freight traffic of 1.2% since 2019, freight revenue only increased by +0.4% over the same period. Freight revenue per train-km has remained relatively stable since 2019, with just a +0.2% increase. Freight revenue per tonne-km decreased slightly (down -1.0%), though this can be attributed to changes in the type of goods being carried. Since 2017, the average growth of revenue in the freight market is about +0.9% per year. This can be explained by the steady increase in the freight load factor (see Figure 14) and stability in revenue from freight moved (revenue per tonne-km) (+0.2%), which has resulted in the growth of revenue.

**Figure 18** – Freight railway undertakings' revenue per train-km and per net tonne-km from 2017 to 2021<sup>24</sup>



<sup>23</sup> 27 countries are included in this figure (Ireland, Serbia, North Macedonia and Switzerland are missing). Incumbents include their subsidiaries, if any.  
<sup>24</sup> 20 countries are included in this figure (Belgium, Czech Republic, Denmark, Estonia, France, Ireland, North Macedonia, Slovakia, Serbia, Switzerland and UK are missing).

## Additional analyses: Impacts of the COVID-19 pandemic

Figure 19 – Monthly comparison of freight tonne-km, 2021/2019 change<sup>25</sup>

Figure 19 shows the monthly recovery of freight moved during 2021. There were substantial differences across member countries. In general, freight traffic reverted to 2019 levels by May 2021. In most countries that reported monthly data, freight tonne-km in the second half of 2021 actually exceeded the 2019 levels.

It should be noted that the recovery observed in the freight market was quicker than that observed in the passenger market (see Figure 25).

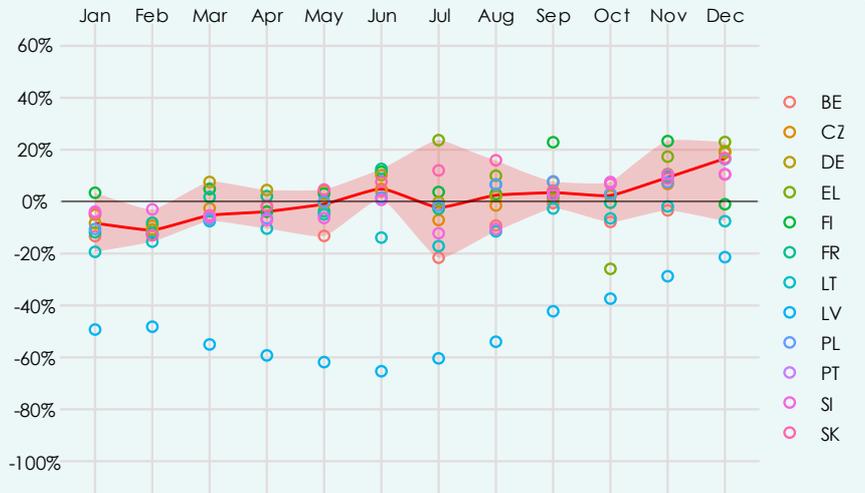
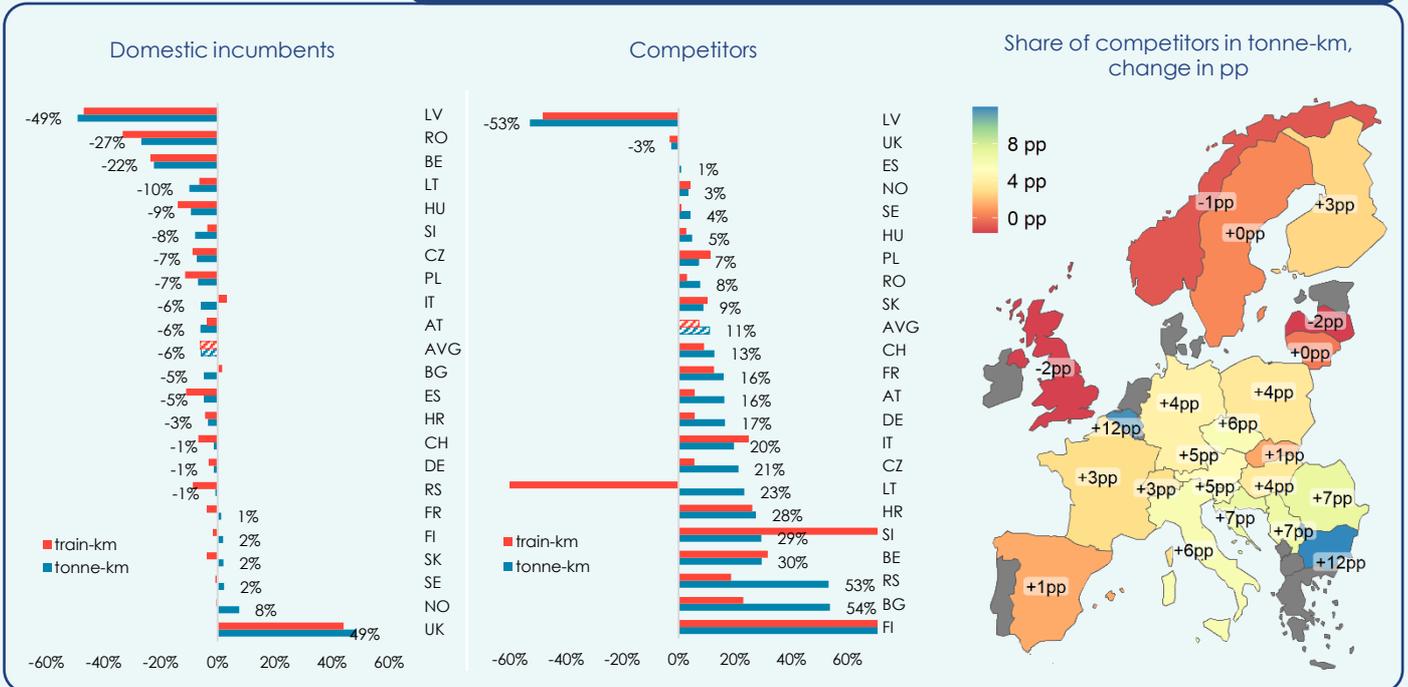


Figure 20 shows freight traffic trends for domestic incumbents and competitors, both on the supply side (train-km) and demand side (net tonne-km) between 2019 and 2021. A very different trend can be observed between non-incumbent operators (reporting traffic growth in almost all countries, and +11% increase in tonne-km on average since 2019) and incumbent operators (reporting a decrease in traffic across most countries, and an overall decrease of -6% in tonne-km).

This led to an increase in the market share of competitors between 2019 and 2021 in almost all reporting countries. The market share of domestic incumbents represented 49% of the total freight market in 2021 (in train-km and tonne-km) and showed a decreasing trend since 2017 of -8pp (in tonne-km, and -7pp in train-km).

Figure 20 – Trends of freight traffic in 2021 compared with 2019 of domestic incumbents and competitors<sup>26</sup>



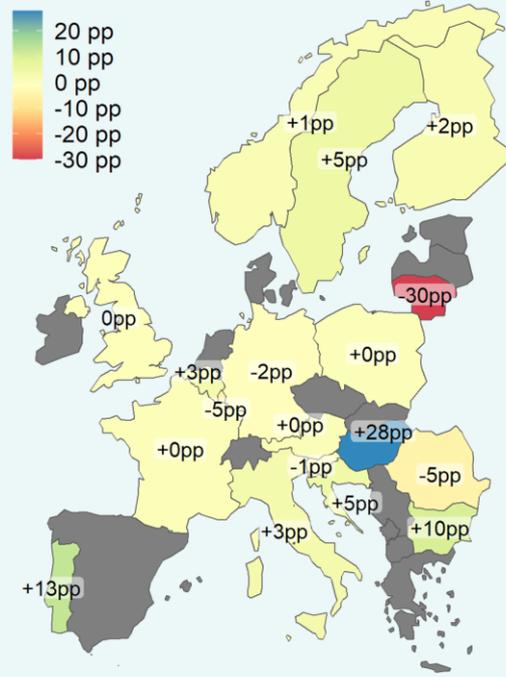
<sup>25</sup> Based on an earlier data collection, the numbers in this figure may be different from those presented elsewhere in this report. The red line is the median value of the sample. The upper and lower bounds of the light red area are the maximum and minimum of the sample excluding the outliers, which are all values that exceed 1.5 times the interquartile range.

<sup>26</sup> This figure only includes the 22 countries that reported data for both domestic incumbent and competitors (Denmark, Estonia, Greece, Ireland, Kosovo, Luxembourg, Netherlands, North Macedonia and Portugal are missing).

## Additional analyses: Impacts of the COVID-19 pandemic

**Figure 21** – Change in percentage points (pp) of freight trains arriving on time\*, comparison 2021/2019

Figure 21 shows how the punctuality of freight trains changed from 2019 to 2021. In most countries, there were improvements in the punctuality of services. This can be explained, in part, by the reduction in freight and passenger trains on the network. This led to less congestion and conflicts between trains paths. The largest increase in punctuality was reported in Hungary, while there was also substantial improvements in the punctuality of services in Portugal and Bulgaria. The punctuality of freight trains deteriorated in five countries. The most notable decrease was in Lithuania (down -30 percentage points).

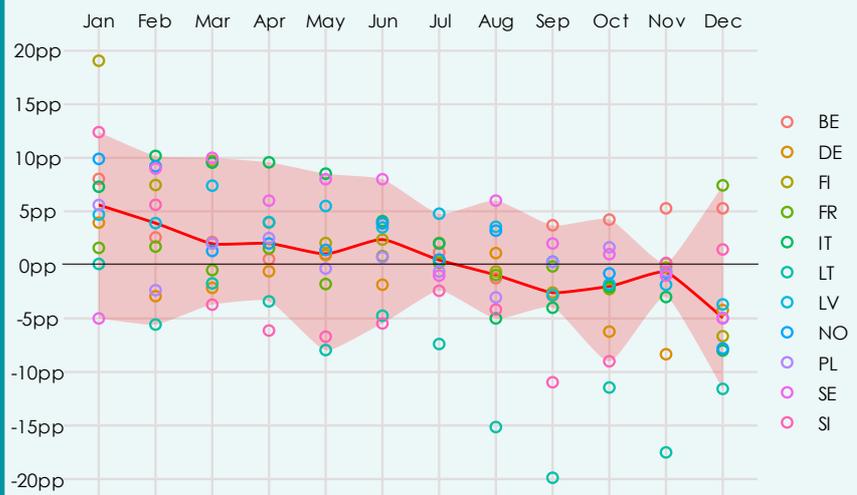


\* Threshold used by country: 15min00s for Bulgaria, France, Germany, Portugal and UK; 15min29s for Finland; 15min59s for Sweden; 30min00s for Austria, Belgium and Hungary; 60min00s for Romania; 5min00s for all other countries.

Looking at the monthly changes in punctuality of freight trains in 2021, we can observe a decreasing trend in the proportion of trains that arrived on-time compared with 2019. This can partly be explained by the increase in the number of freight and passenger services during the second half of the year, suggesting that the volume of traffic impacts the punctuality of freight trains.

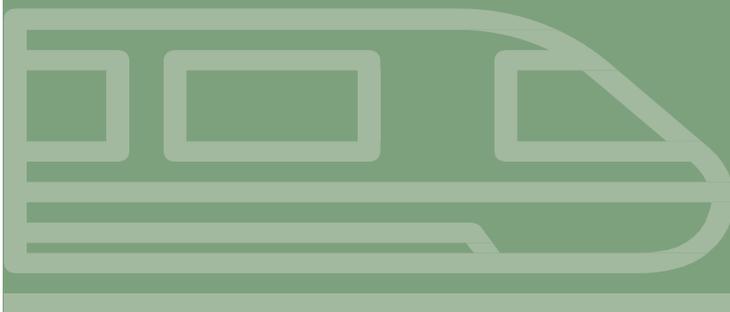
We observed that the annual increase in the punctuality in Belgium was mainly driven by performance in the second half of the year. Meanwhile, in Lithuania, this reduction was predominantly driven by punctuality decreases in the second half of the year.

**Figure 22** – Monthly change of freight trains arriving on-time, comparison 2021/2019 (in percentage points (pp))

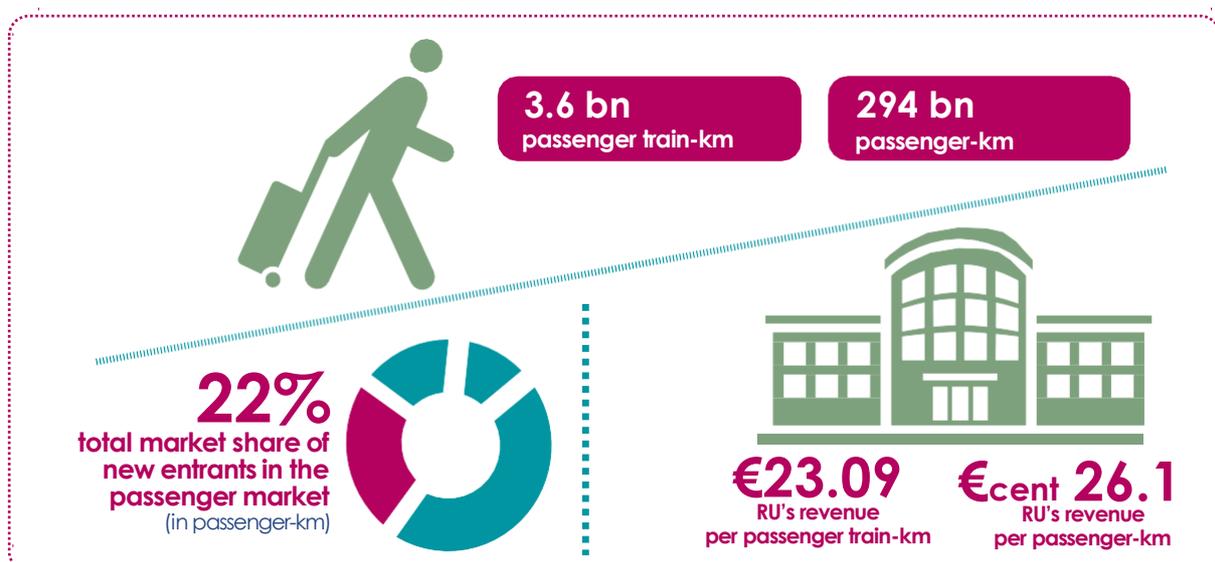


# 06

## The rail passenger market



### IN 2021



The sample used to calculate these figures is specified in the following pages.

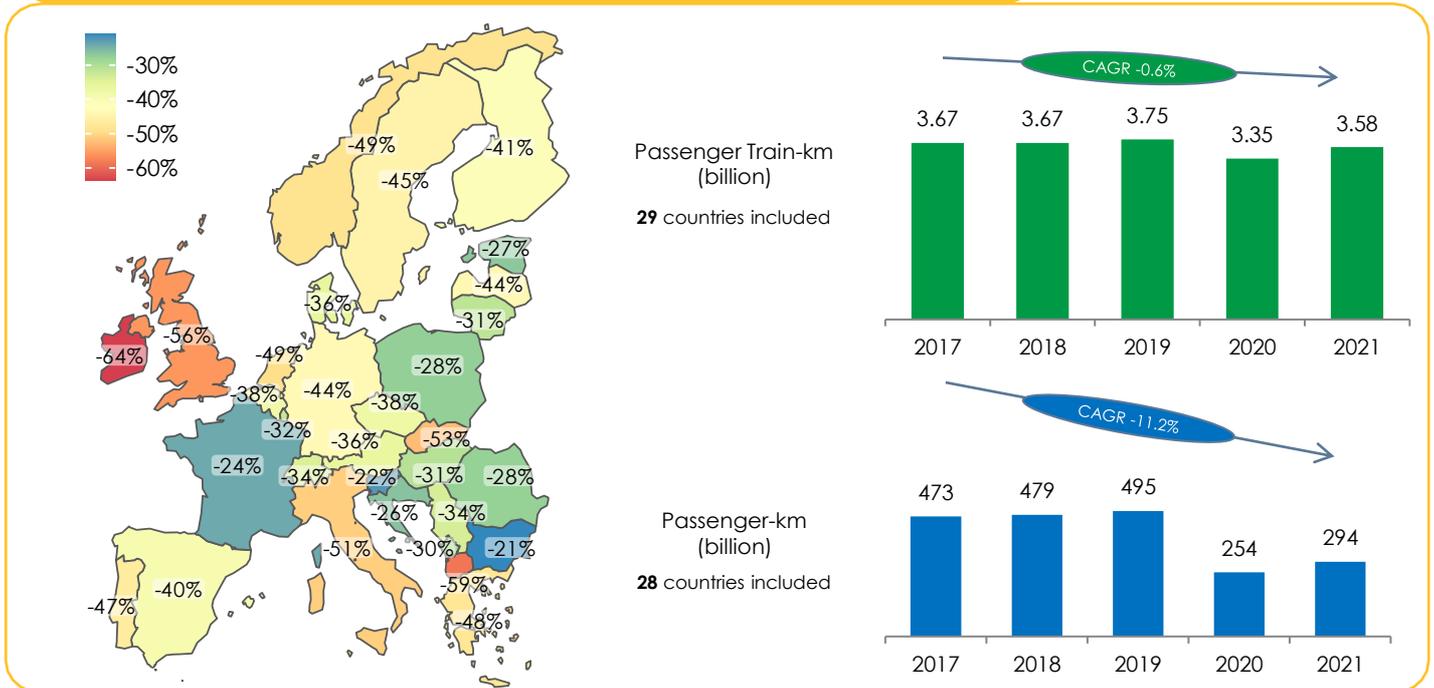
# The rail passenger market size

In 2020, the modal share of rail passenger services in the European Union represented 5.4% of the total inland transport in terms of passenger-km, meaning a decrease of almost 3pp compared with the pre-COVID year of 2019<sup>27</sup>.

In 2021, passenger traffic continued to be impacted by the pandemic. There was an increase in traffic on both the supply side (passenger train-km) and the demand side (passenger-km). Overall, there were 3.58 billion train-km and 294 passenger-km reported.

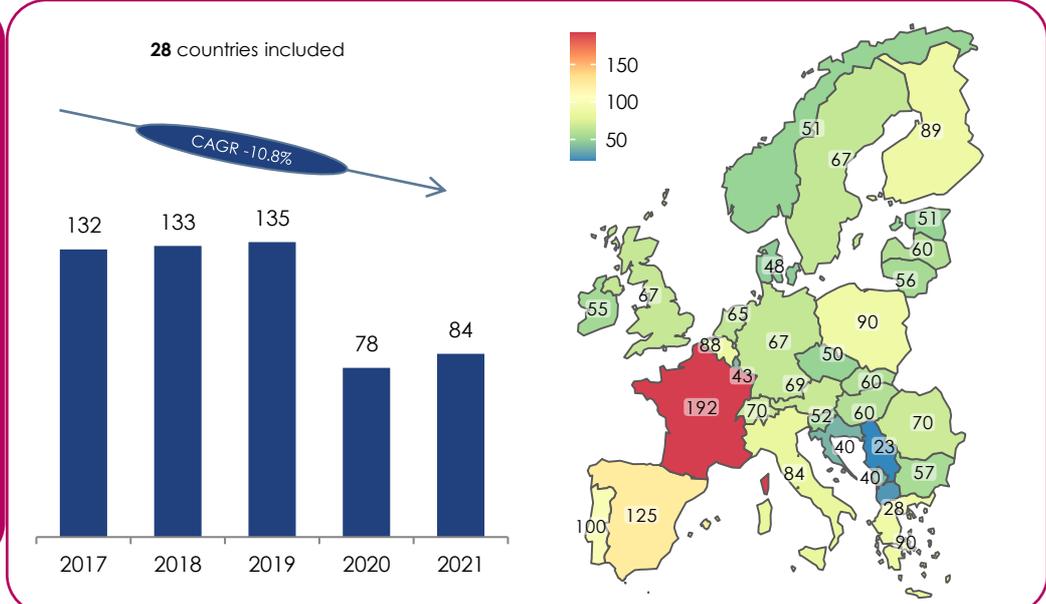
Figure 23 shows the development of passenger traffic since 2017. On the supply side, passenger train-kms increased from 2017 to 2019, before falling by -10% in 2020. In 2021, this increased by +7% compared with the previous year. On the demand side, passenger-km followed a similar trend, although increased by a higher rate in 2021 (+16%) relative to 2020.

**Figure 23** – Total passenger traffic from 2017 to 2021<sup>28</sup> (right) and 2021/2019 change in passenger-km (left)



**Figure 24** – Passenger load factor (passenger-km per passenger train-km) from 2017 to 2021 (left)<sup>29</sup> and 2021 level by country (right)

The impact of the pandemic on passenger traffic is also reflected in the passenger load factor. Figure 24 shows the average number of passengers per train since 2017, which is derived by dividing passenger-km by passenger train-km. In 2021, there were an average of 84 passengers per train. This is up by +7% compared with 2020. Like total passenger-km, the passenger load factor increased steadily from 2017 to 2019, before a significant fall in 2020 (-42%). This has resulted in a large negative CAGR over the past five years of more than 10%.



<sup>27</sup> Data on the modal split of passenger transport in the European Union can be found on [Eurostat website](#).

<sup>28</sup> 29 countries are included in this figure for train-km (Ireland and Serbia are missing). 28 countries are included in this figure for passenger-km (Belgium, Ireland and Serbia are missing).

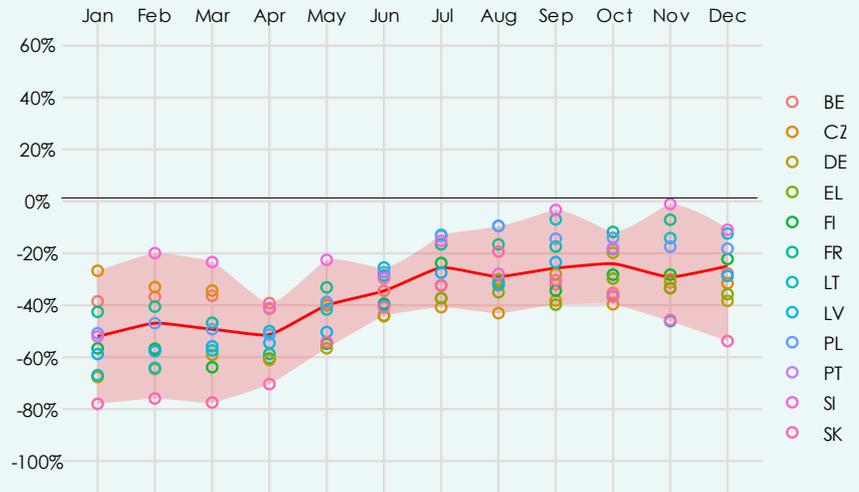
<sup>29</sup> 28 countries are included in this figure (Belgium, Ireland and Serbia are missing).



## Additional analyses: Impacts of the COVID-19 pandemic

In 2021, the passenger market was significantly impacted by the COVID-19 pandemic. The effect on passenger traffic varied across countries and over the course of 2021. Figure 27 shows a monthly comparison of passenger-km between 2021 and 2019 across selected countries. In each of the countries that reported monthly data, there was an increase in passenger km from April to July, although not sufficient to restore traffic back to 2019 levels. Following this, there was a fall across all countries during August and November and another increase in September and October.

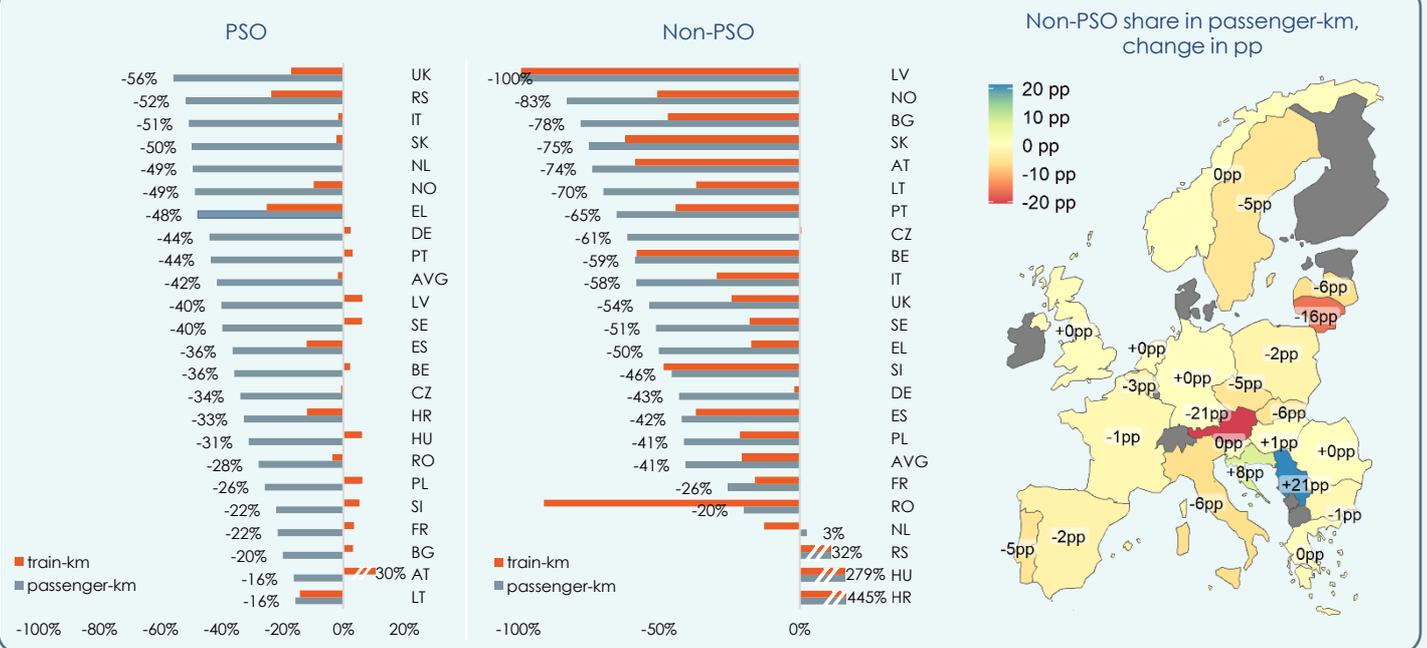
Figure 27 – Monthly comparison of passenger-km, 2021/2019 change<sup>32</sup>



There was a substantial reduction in passenger traffic for both PSO and non-PSO services, however the impact was greater for non-PSO services. All countries that provided data reported a decrease in the non-PSO share of total passenger-km, with the exception of Slovenia. This can be partly attributed to the introduction of several new international non-PSO services running from Czech Republic and Slovakia to Croatia via Slovenia.

Overall, the decline in passenger-km was more pronounced than it was for train-km. On average, passenger-km fell by -48% for PSO services and by -52% for non-PSO services, compared with a -7% and -30% fall in train-km for PSO and non-PSO services, respectively. Across all monitored countries, we can observe that the downturns in passenger-km and train-km show a stronger correlation for non-PSO services than for PSO services. This is likely given public transport was widely maintained during lockdown periods.

Figure 28 – Trends of passenger traffic in 2021 compared with 2019 of PSO and non-PSO services<sup>33</sup>



<sup>32</sup> Based on an earlier data collection, the numbers in this figure may be different from those presented elsewhere in this report. The red line is the median value of the sample. The upper and lower bounds of the light red area are the maximum and minimum of the sample excluding the outliers, which are all values that exceed 1.5 times the interquartile range.

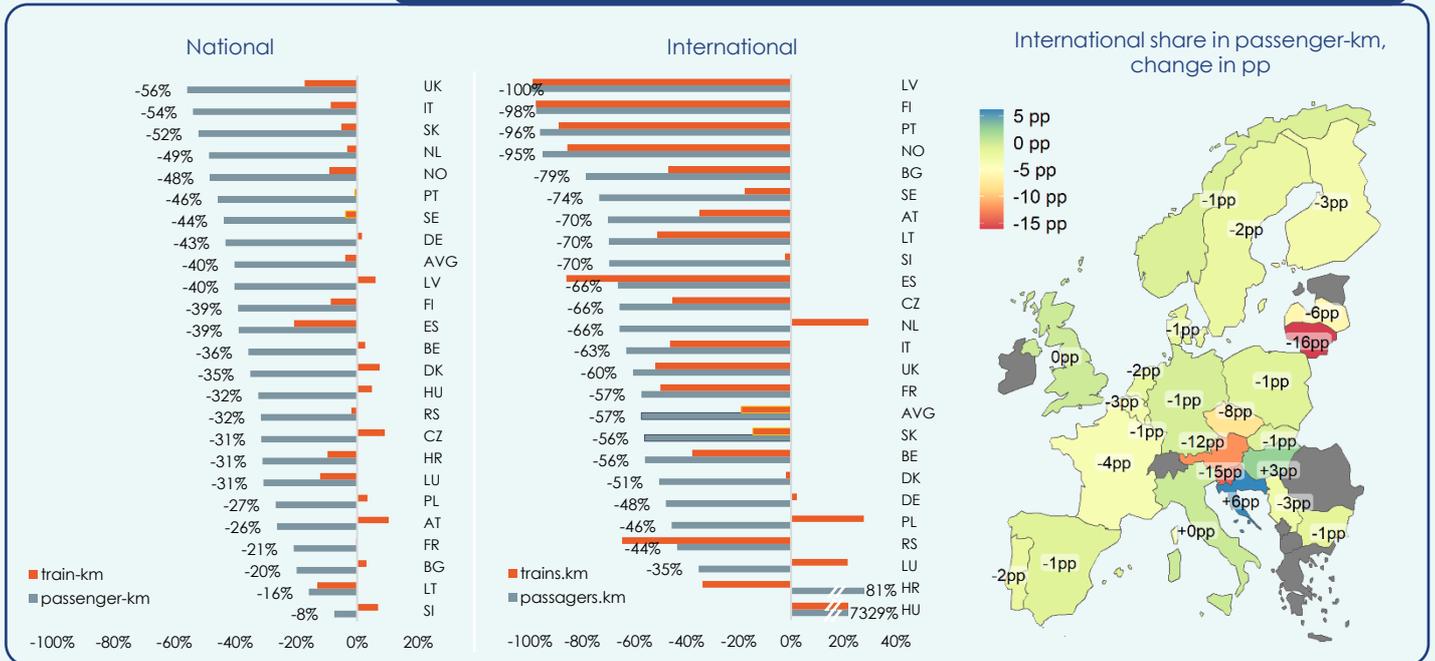
<sup>33</sup> This figure only includes countries that reported data for both PSO and non-PSO traffic (Denmark, Estonia, Finland, Ireland, Luxembourg, Kosovo, North Macedonia and Switzerland are missing). Note : some trends can be primarily caused by statistical changes regarding the classification of trains. This was confirmed for example for Hungary for which the classification of international trains (split between PSO and non-PSO services) is available since 2020 only.

## Additional analyses: Impacts of the COVID-19 pandemic

The pandemic impacted both national and international traffic. Figure 29 presents the impact on national and international traffic, both in terms of train-km and passenger-km. As previously seen, the impact of the pandemic was more pronounced when looking at passenger-km rather than at train-km.

**Figure 29** – Trends of passenger traffic in 2021 compared with 2019 of national and international services<sup>34</sup>

In terms of national services, on average, there was a -40% decrease in passenger-km and a -4% fall in train-km. Meanwhile, for international services, there was a -57% reduction in passenger km and a -19% fall in train-km compared with 2019. Overall, the reduction in traffic was more apparent for international services, which is the case for all countries presented in Figure 27. This can be attributed to the restrictions on international passenger traffic that were imposed by many countries throughout 2021.



**Figure 30** – Trends of passenger traffic in 2021 compared with 2019 of domestic incumbents and competitors<sup>35</sup>

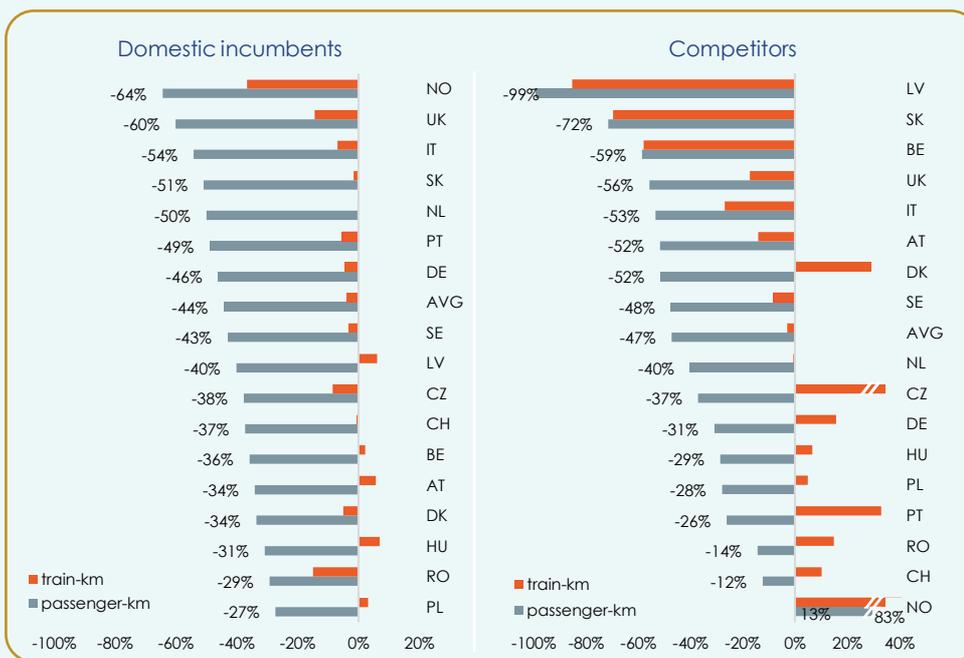


Figure 30 presents the impact of the pandemic on domestic incumbents and competitors in terms of their passenger traffic. It can be observed that the impact was almost the same for competitors and for domestic incumbents. This holds for both indicators (train-km and passenger km).

On average, passenger-km fell by about half for competitors (-47%) compared with -44% for domestic incumbents. Meanwhile, in terms of train-km, there was a -3% reduction for competitors compared with -4% for domestic incumbents.

<sup>34</sup> This figure includes only countries that reported data for both national and international traffic and for which the share of national traffic is below 100% in 2021 (Estonia, Greece, Ireland, Kosovo, North Macedonia, Romania and Switzerland are missing or with national traffic only). See also note 33 regarding the analysis of trends for this figure.

<sup>35</sup> This figure only includes countries that reported data for both domestic incumbent and competitors (Bulgaria, Estonia, Spain, Croatia, Finland, France, Greece, Ireland, Kosovo, Lithuania, Luxembourg, North Macedonia, Serbia and Slovenia are missing). Incumbents include their subsidiaries, if any.

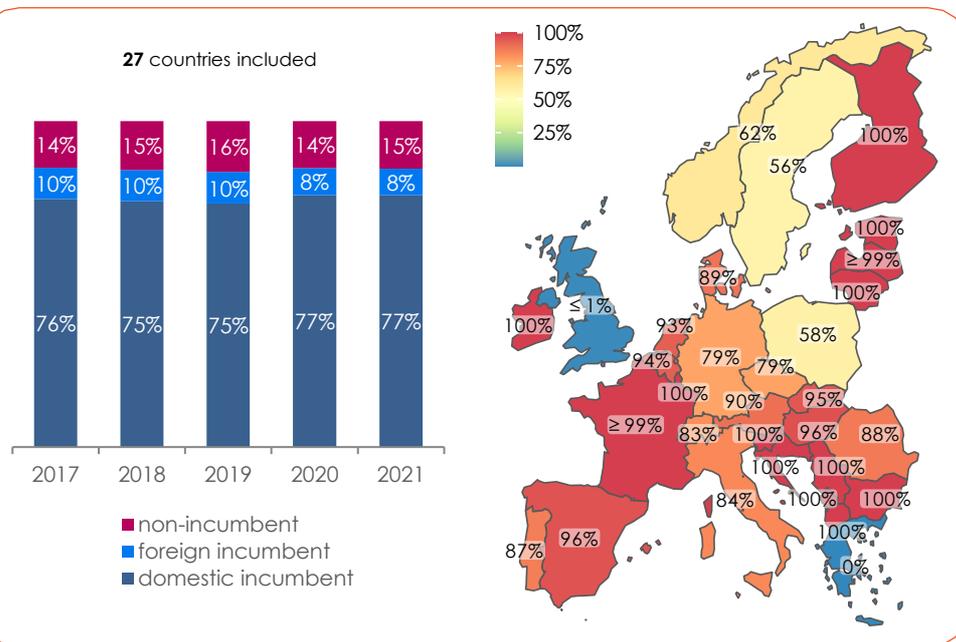
## Market shares of passenger railway undertakings

In 2021, domestic incumbents continued to possess the largest share of the passenger market with 77% of all passenger-km (+2pp since 2019). Competitors (non-incumbents and foreign incumbents) saw a reduction in their respective market shares compared with 2019. The pandemic has affected domestic incumbents less severely than their competitors.

In 2021, 13 countries reported having a de facto monopoly, with all passenger traffic being operated by domestic incumbents and their subsidiaries.

The market shares of incumbent and non-incumbent railway undertakings are an important indicator of the potential for competitive advantages for incumbents and of possible barriers to new entrants.

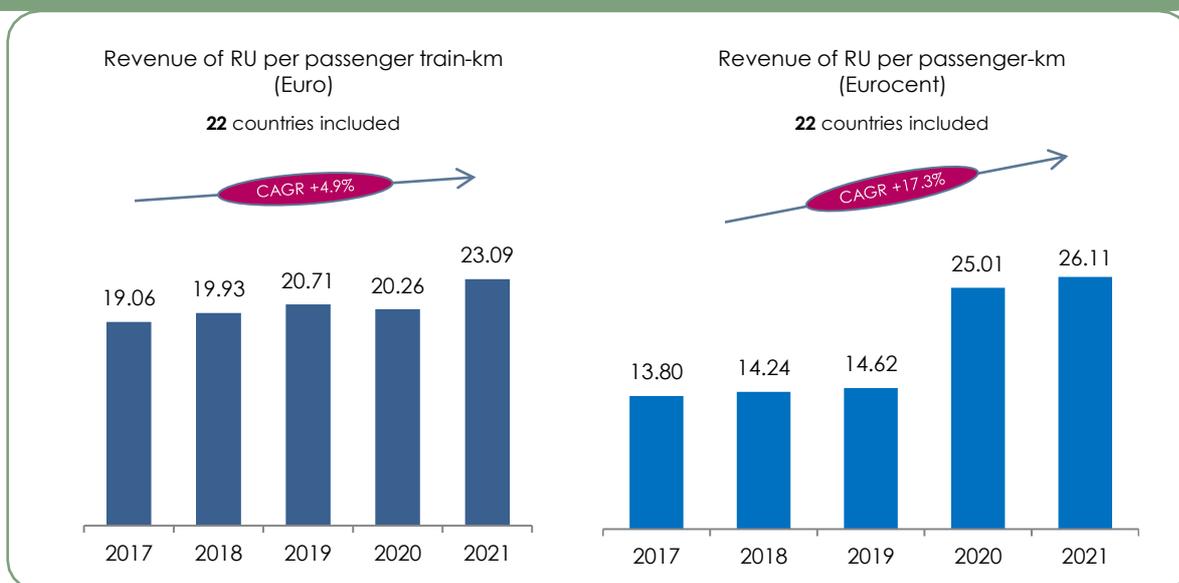
**Figure 31** – Market shares (based on passenger-km) of passenger railway undertakings (left)<sup>36</sup> and share of domestic incumbent per country in 2021 (right)



## Economic performance of passenger railway undertakings

In 2021, the average revenue for passenger railway undertakings was €23.09 per train-km and €26.11 cent per passenger-km. Figure 32 shows how revenue for passenger railway undertakings has evolved since 2017. Supply-side revenue had been increasing steadily, before a -2% fall in 2020 as a result of the pandemic. On the demand side, revenue per passenger-km had been moderately increasing from 2017 until 2019, before a significant increase in 2020 (+47%). This increase in revenue can be attributed to the decrease in passenger-km, which is greater than that of the total revenue. The reduction in total revenue was moderate since large amounts of compensation were granted to railway undertakings in 2020. Total public compensation in the 25 countries that reported revenue data almost doubled from 2019 to 2021, increasing from €22.8 billion to €44.8 billion.

**Figure 32** – Passenger railway undertakings' revenue (from fares and compensations) per train-km and per passenger-km from 2017 to 2021<sup>37</sup>



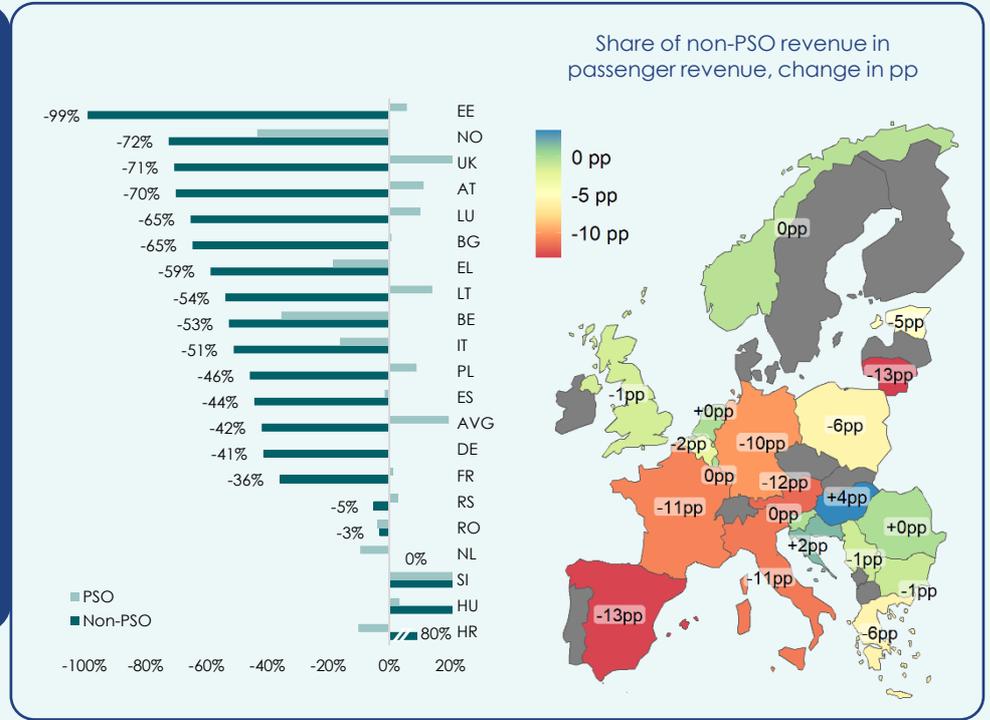
<sup>36</sup> 27 countries are included in this figure (Belgium, Denmark, Ireland and Serbia are missing). Incumbents include their subsidiaries, if any.

<sup>37</sup> 22 countries are included in this figure (Belgium, Czech Republic, Denmark, Ireland, North Macedonia, Norway, Serbia, Slovakia and Switzerland are missing).

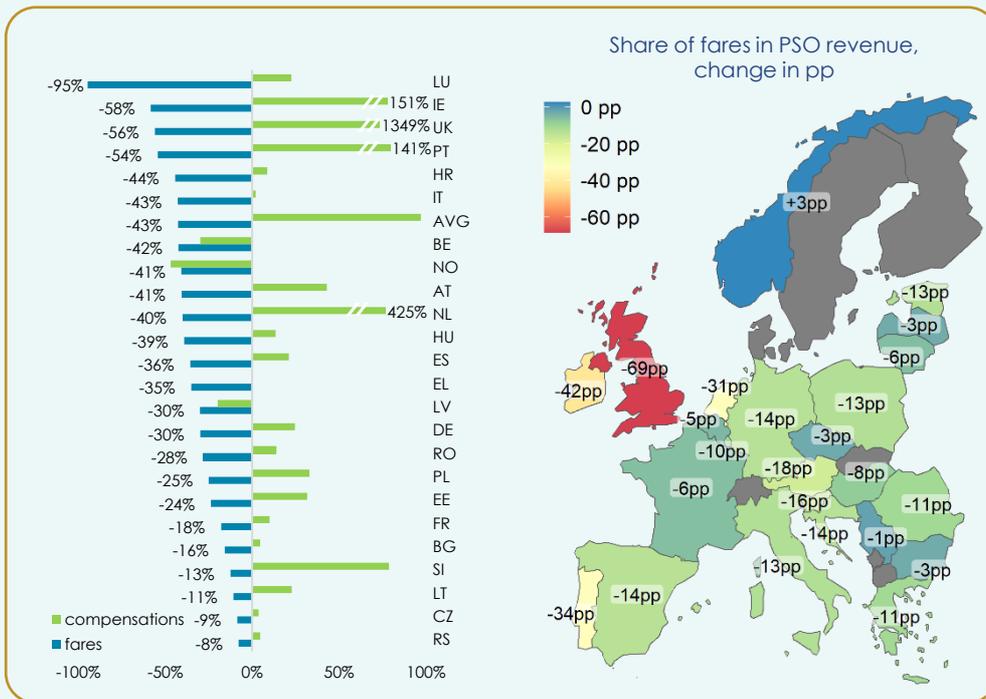
## Additional analyses: Impacts of the COVID-19 pandemic

**Figure 33** – Trends of RUs' revenues from passenger services in 2021 compared with 2019

Due to reductions in passenger traffic throughout 2021, there was a substantial reduction in non-PSO revenue generated by railway undertakings from passenger services compared with 2019. Figure 33 presents the impact on both PSO and non-PSO operators by country. On average, revenue from PSO services increased of +19% and non-PSO revenue fell of -42% compared with 2019. In Estonia, revenue from non-PSO services fell of more than -90%.<sup>38</sup> Given that the impact was more pronounced in the non-PSO sector, the share of non-PSO revenue (as a proportion of total revenue) fell in most countries that submitted data.



**Figure 34** – Trends of RUs' revenues from PSO services in 2021 compared with 2019



Given the reduction in passenger traffic compared to 2019, there was a sharp fall in revenue generated from fares compared to previous years. Figure 34 shows how revenue for PSO services generated from fares and compensations evolved across monitored countries. On average, revenue from fares fell by -43%. However, there was substantial variation between countries, ranging from a fall of 95% in Luxembourg to just 8% in Serbia. Meanwhile, on average, there was an 100% increase in revenue generated from compensations due to a rise in government support for PSO passenger service operators in order to compensate for the impacts of the pandemic. Without surprise, the share of fares in operators' revenue from PSO services decreased in all countries.

<sup>38</sup> The decrease in Latvian revenue from non-PSO services was due to methodological changes.

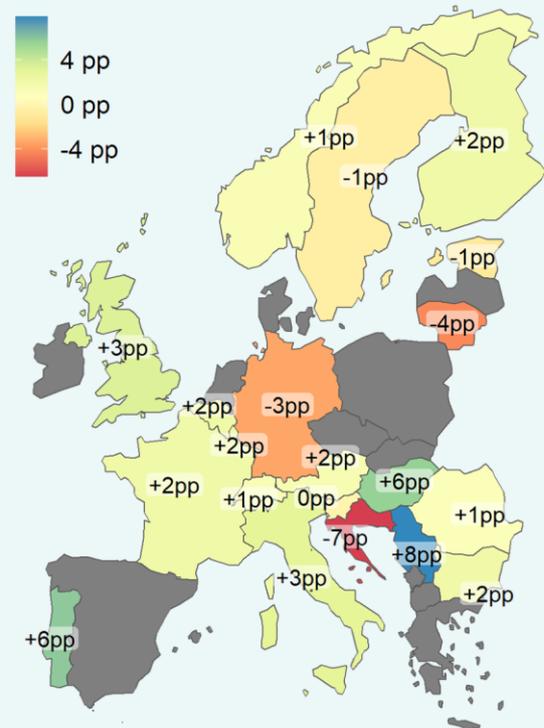
## Additional analyses: Impacts of the COVID-19 pandemic

**Figure 35** – Change in percentage points (pp) of passenger trains arriving on time\*, comparison 2021/2019

Looking at the full year of 2021, 14 of the 20 countries that submitted data reported an improvement in the punctuality of their services compared with 2019. As Figure 35 shows, the largest increases were observed in Serbia, Portugal and Hungary, where punctuality improved by more than five percentage points. There were also notable improvements of more than two percentage points for six other countries.

As previously explained, these improvements in punctuality can be attributed to multiple factors. This includes the reduction of traffic compared with pre-pandemic levels, as well as the reduction of passenger numbers. This has resulted in less crowding and subsequently the time spent at stations (“dwell-time”). This has allowed trains to run closer to their agreed timetable. With fewer trains running, there was less wear and tear on the network and less congestion. This reduced the likelihood of knock-on impacts on other services when incidents occurred.

We have observed notable decreases in punctuality rates in some countries, including Croatia (-7 pp), Lithuania (-4 pp) and Germany (-3 pp). In the case of Lithuania and Germany, this trend is observed for both passenger and freight services. In Germany, worsening performance can be attributed in part to increase maintenance and construction work on many crucial parts of the network.



\* Threshold used by country: 3min00s for Switzerland; 5min29s for Austria and Finland; 5min59s for Belgium; 20min00s for Romania; 5min00s for all other countries.

**Figure 36** – Monthly change in share of passenger trains arriving on time, comparison 2021/2019 (in percentage points (pp))

Figure 36 shows how the punctuality of passenger services changed over the course of 2021 (compared to 2019). There were notable increases in punctuality during the first half of the year.

In Italy, punctuality increased by between 5 and 10 percentage points between January and June. The fall in punctuality in Germany was most significant in October and November 2021, whereas other countries (e.g. Lithuania) experienced a constant fall in punctuality over the whole year.

