

## Ninth Annual Market Monitoring Report

April 2021



# 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  
GR - Greece  
HU - Hungary  
IE - Ireland  
IT - Italy  
KS - Kosovo\*



LV - Latvia  
LT - Lithuania  
LU - Luxembourg  
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

### KEY FIGURES 2019



**30**  
countries\*\*



**5 years**  
of data

#### Main focus this year

Impacts of the COVID-19 crisis on European railway markets during the first half of 2020



### CONTENT OF THE REPORT

- 02** Network characteristics
- 03** Track access charges
- 04** Railway undertakings and European traffic
- 05** The freight market
- 06** The passenger market
- 07** COVID-19 crisis during the first half of 2020

### FOCUS TOPICS

**2014**

Trends analysis

**2015**

Degree of market opening

**2016**

Quality of rail passenger services

**2017**

Competition for the passenger market

**2018**

Competition in the railway markets

**2019**

COVID-19 crisis during the first half of 2020

\*Kosovo: This designation is without prejudice to positions on status and is in line with UNSCR 1244 (1999) and the ICJ opinion on the Kosovo declaration of independence.  
\*\*Republic of North Macedonia did not provide data for the year 2019.

## IRG-Rail – A network of cooperation

The Independent Regulators' Group-Rail (IRG-Rail) was established by 15 European rail regulatory bodies in June 2011. From the beginning, the objective of the group has been to establish a network of cooperation between member regulatory organizations in the railway sector. The group has expanded over the years and today 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 IRG-Rail Market Monitoring Working Group



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

This is the IRG-Rail's Ninth Market Monitoring Report and it refers to calendar year 2019, unless otherwise stated.

### Content of the report



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

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

Each Market Monitoring Report focuses on one or several subjects. The 2019 report concentrates on the impacts of the COVID-19 crisis on the European rail market during the first half of 2020, as well as the main measures adopted by the States and their local transport authorities in view to mitigate those impacts and at the same time to ensure the public health.

### Methodology



It is the responsibility of each regulatory body to gather, quality-check and submit data according to the guidelines agreed upon 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 additional trustworthy sources.

Thirty countries are now contributing to this Ninth Market Monitoring Report<sup>5</sup>. However, most countries were not able to provide a full set of data. 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 selection of the participating countries. In each section of the report, key figures and analyses presented use a consistent sample of countries<sup>6</sup>. Therefore, some sections may not cover all 30 countries. However, detailed information and specific data per country are 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 on [IRG-Rail website](#).

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

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

<sup>5</sup> The Republic of North Macedonia did not participate in the data collection this year.

<sup>6</sup> The perimeter of each figure is specified in a footnote. If this is not specified, the full sample is considered.

# 02

## Network characteristics of the railway market



### IN 2019



#### Network length

**229 853 km**  
total route length

**4.79 km**  
of lines per 100 km<sup>2</sup>  
country area

**4.54 km**  
of lines per 10,000  
inhabitants

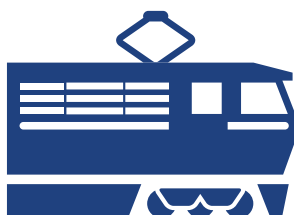


#### Network usage intensity

**55**  
trains per day per route km

**82%**  
for passenger  
services

**18%**  
for freight  
services



**56%**  
share of  
electrified  
route

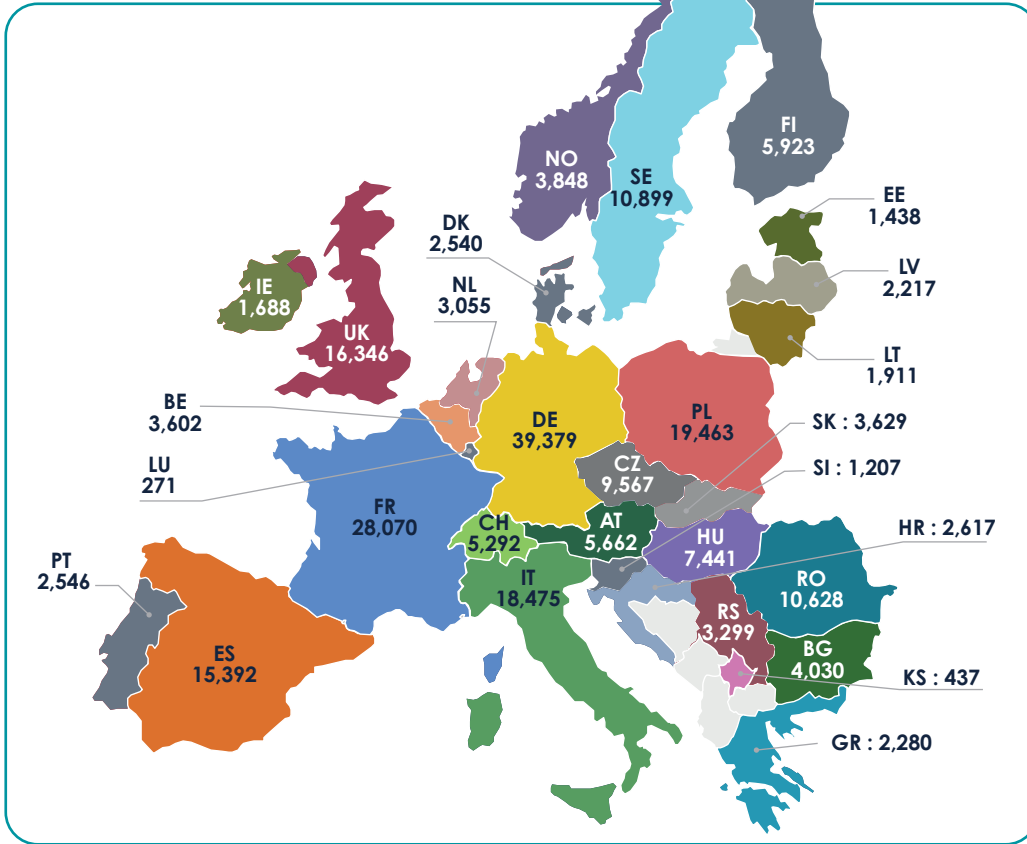


**3.6%**  
share of  
high-speed  
route

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

# European rail network

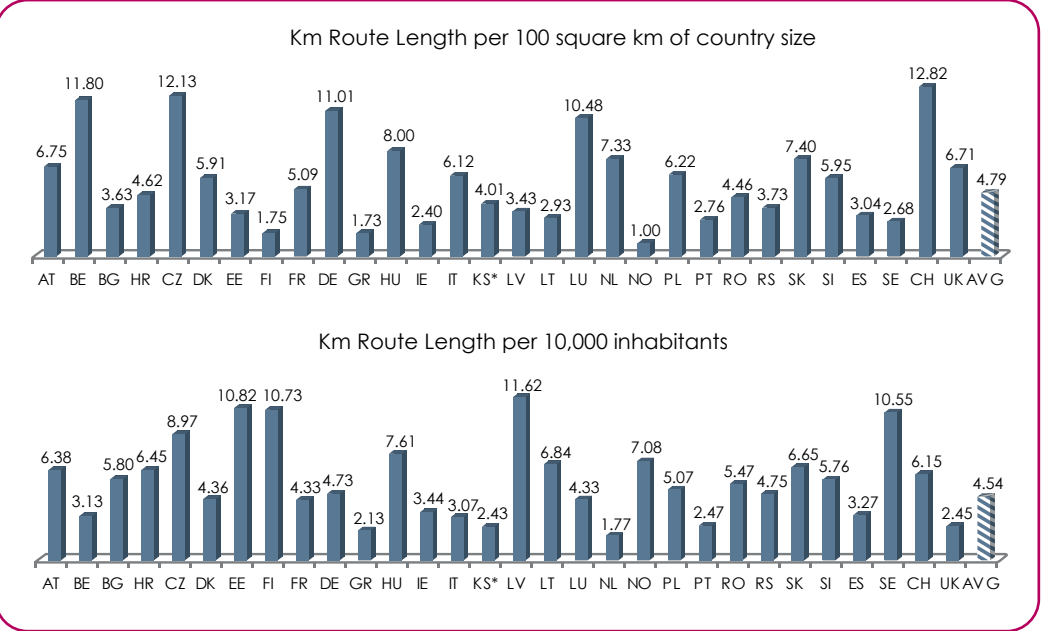
Figure 1 – Route length (in km) in the participating countries in 2019



In 2019, the overall route length for IRG-Rail monitored countries was approximately 230,000 km. More than 50% of this total number comes from the five countries with the longest rail networks. These are Germany, France, Poland, Italy and the United Kingdom. Luxembourg has the shortest network of all participating countries (271 km).

Figure 2 – Network density with regard to country area and population in 2019

The network density is an indicator of the development and coverage of the rail network in each country. Relative to country size, Switzerland has the highest network density (12.82 km of route per 100 square km), followed by the Czech Republic (12.13 km of route per 100 square km). Both 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 with just 1.0 km of route per 100 square km. This is most likely due to the concentration of the rail network in the south of the country around Oslo and Bergen.



Network density can also be presented in terms of route length per 10,000 inhabitants. Latvia, Estonia, Finland and Sweden have the densest networks in terms of route length per population with more than 10 km of route per 10,000 inhabitants. Countries with

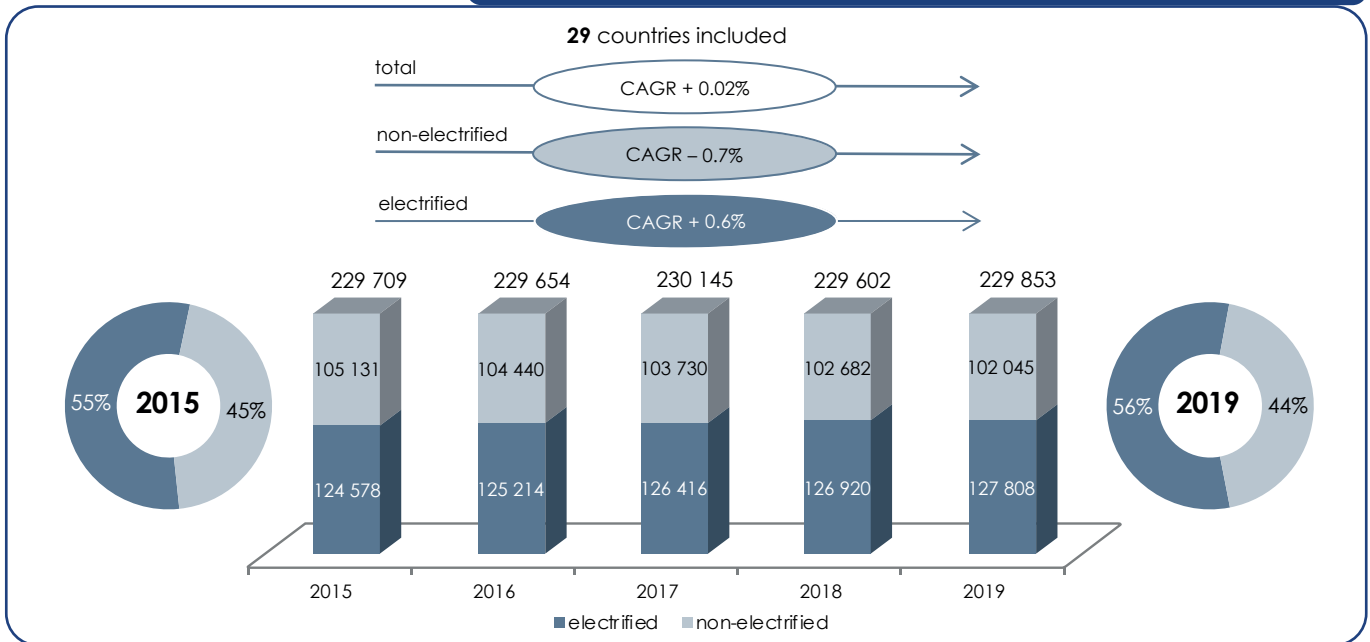
a higher network density relative to population typically show a lower density in terms of country size. This is usually indicative of a relatively low population density or the fact that there are large areas of the country not served by the rail network.

## Electrification of the railway

**Figure 3 – Total route length and electrified share (km) of participating countries from 2015 to 2019<sup>7,8</sup>**

Across 29 countries, 56% of the total route length was electrified in 2019. Since 2015, the length of electrified route across participating countries has been slowly increasing at a rate of 0.6% per annum. Conversely, the length of non-electrified route has declined at an average rate of 0.7% per year.

The overall route length has remained stable (+0.1% increase or 144km) since 2015, which is the result of an increase of 3,230 km in electrified route and a 3,086 km decrease in non-electrified route. This suggests that while some existing non-electrified tracks may have been upgraded with electrification capability or some entirely new electrified routes have been constructed, non-electrified routes have been decommissioned and taken out of service otherwise.

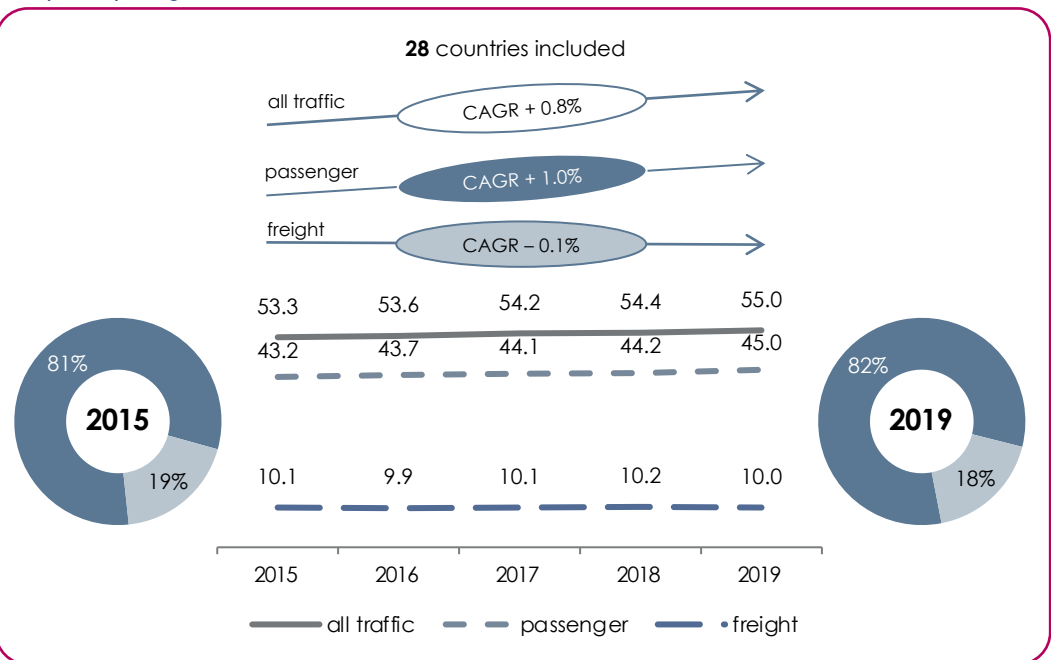


## Network usage

**Figure 4 – Overall network usage intensity (train-km per route km per day) for participating countries from 2015 to 2019<sup>9</sup>**

Network usage across participating countries has increased by 3.2% since 2015. On the one hand, network usage for passenger services has increased by 4.2% since 2015 (1.0% per year on average). This may reflect increases in supply or technological improvements unlocking extra capacity on existing railway networks. On the other hand, network usage for freight traffic has declined by 1.0% over the same time (0.1% per year on average).

Overall, there are approximately four times as many passenger trains on the railway network of participating countries than freight trains. This implies that the increase in passenger usage has driven the increase in network usage for overall traffic.



<sup>7</sup> In this graph and the following, CAGR stands for the compound annual growth rate.

<sup>8</sup> 29 countries are included in this figure (Serbia is missing).

<sup>9</sup> 28 countries are included in this figure (Ireland and Serbia are missing).

# 03

## Track access charges (TAC) paid by railway undertakings for the minimum access package



IN 2019



**€18.85 bn**  
total TAC



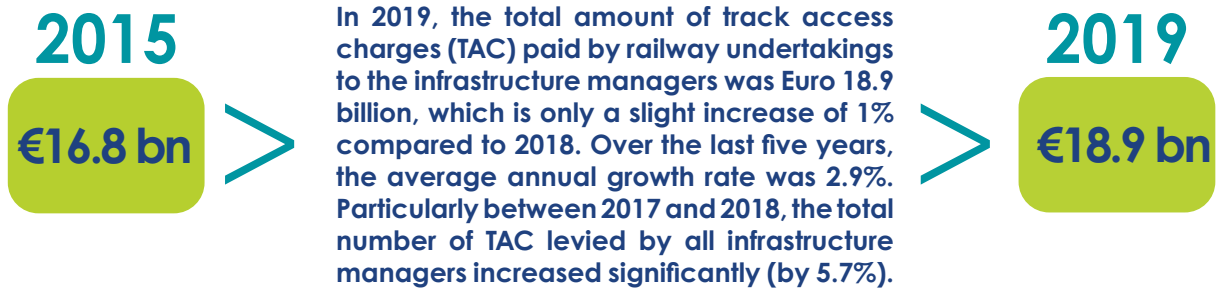
**€4.22**  
average TAC  
per train-km



**90%**  
share of TAC from  
passenger market

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

## Evolution of track access charges<sup>10</sup> (TAC)

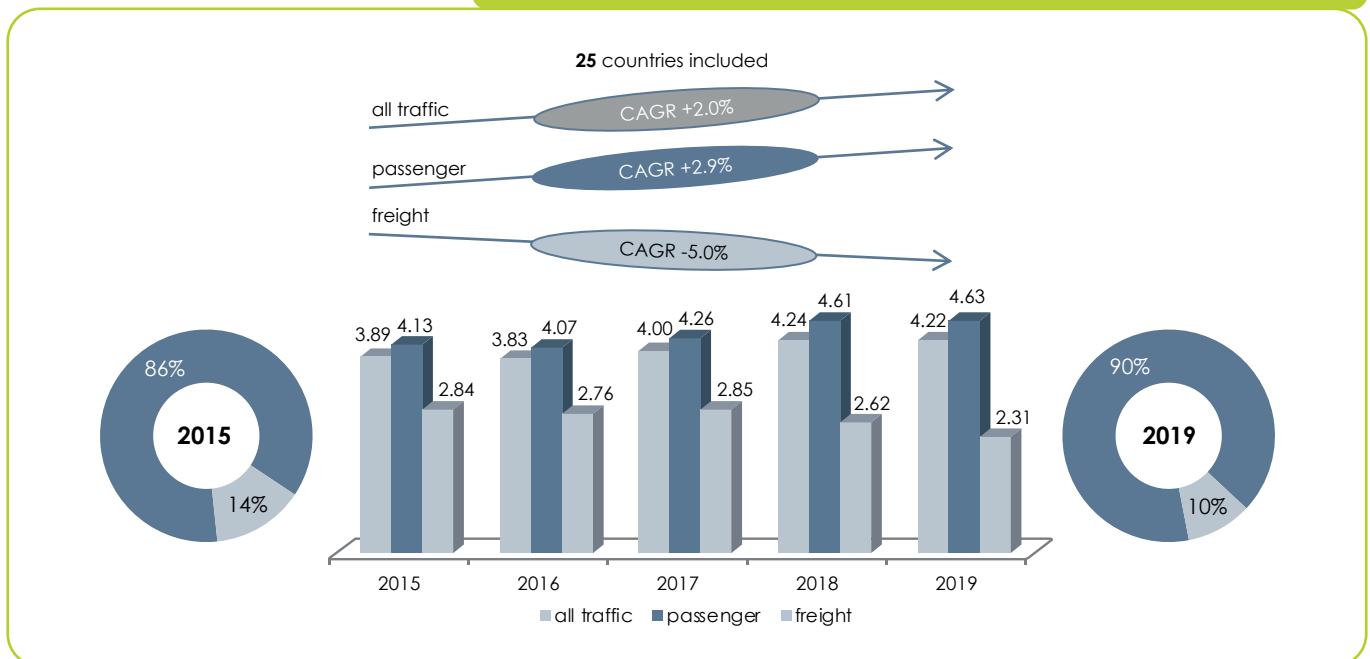


## Total TAC from railway undertakings

Most of the track access charges are paid by passenger services. In 2019, the TAC for passenger services represented 90% of the overall sum, a share which has marginally increased compared to the previous years. This is also a result of the different level of average TAC per train-km for passenger and freight services. Despite the very small increase in 2019, the TAC per train-km for passenger services increased from Euro 4.13 in 2015 to Euro 4.63 in 2019 (2.9% of average annual growth for the last five years) on the one hand. The TAC for freight services on the other hand decreased from Euro 2.84 to Euro 2.31 (average annual decrease of 5%), with comparably large decreases in 2018 and 2019 (-8.1% and -11.6%).

Due to this relatively large decrease of TAC for freight services and the upward trend for passenger services, the difference in average TAC per train-km between passenger and freight services has been increasing for the past five years: the average level of TAC for freight services appears consequently since 2019 two times lower than the level per train-km for passenger services.

**Figure 5** – Infrastructure managers' revenues<sup>11</sup> (in Euro per train-km) from railway undertakings for the Minimum Access Package<sup>12</sup> from 2015 to 2019



<sup>10</sup> 27 countries are included in this figure (Estonia, Kosovo and Serbia are missing).

<sup>11</sup> 25 countries are included in this figure (Estonia, Ireland, Kosovo, Serbia and Sweden are missing).

<sup>12</sup> Directive 2012/34/EU of the European Parliament and of the Council.



# 04

## Railway undertakings and European rail traffic



IN 2019



4.58 bn  
train-km

Between  
2 and 332  
railway undertakings  
in each country



2015 > **+0.8%  
total train-km** > 2019  
(compound annual  
growth rate)

Passenger services:  
**82%** of total  
train-km

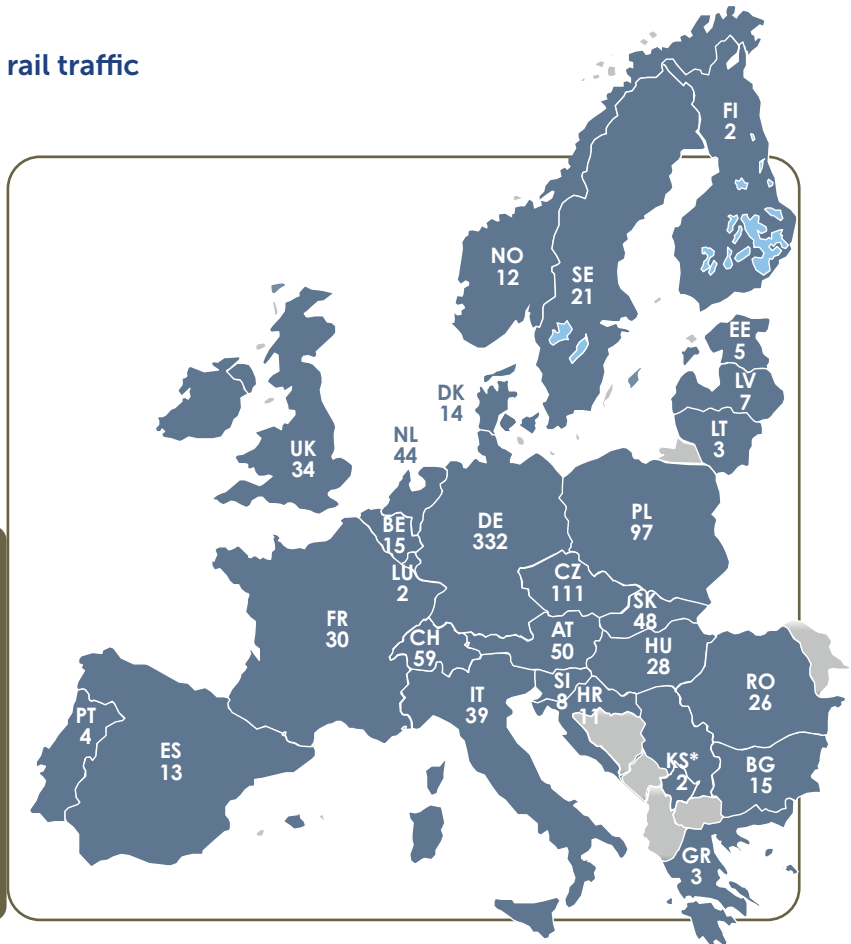


The sample used to calculate these figures is specified in the following pages.

## Railway undertakings (passenger and freight)

**Figure 6 – Total number of railway undertakings by country in 2019<sup>13</sup>**

In 2019 the majority of member countries either reported additional active railway undertakings (15 countries) or the same number as in the previous year (14 countries). Only one country (Estonia) experienced a decline (see Working Document for more details). Across all participants, the number of railway undertakings varies substantially ranging from solely two undertakings in Finland, Kosovo and Luxembourg, up to a maximum of 332 companies in Germany. On average, passenger services are offered by 34% of the overall number of railway undertakings, while freight services are offered by 72%<sup>14</sup>.

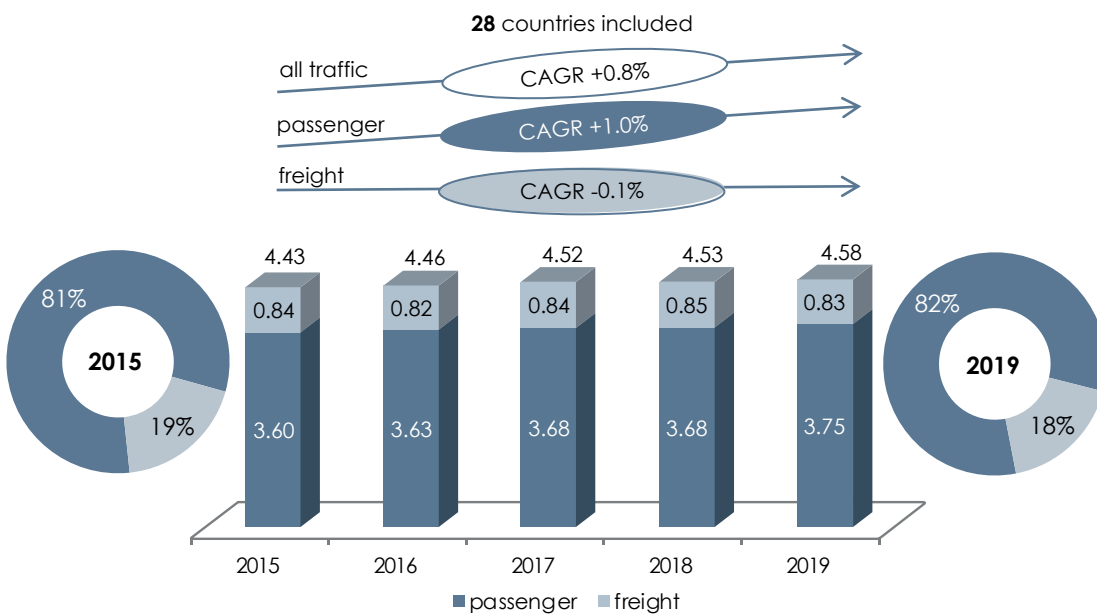


For most member countries (21), the number of active RUs in freight traffic exceeds passenger traffic. Furthermore, the number of freight operators has seen a higher annual increase than the number of passenger operators. This is most probably due to the fact that the opening of the freight railway market is much more advanced across Europe than that of its passenger counterpart. Moreover, the passenger sector can be split up into PSO and non-PSO services. In this

regard, each country has at least one railway undertaking operating under public service contracts. There are two countries (Kosovo and Romania) that only have active railway undertakings in the PSO-segment. Conversely, there are eight countries showing a surplus of railway undertakings operating in the non-PSO segment (with Czech Republic and Germany having the highest numbers in this regard).

## Total rail traffic

**Figure 7 – Passenger and freight traffic (in billion train-km) from 2015 to 2019<sup>15</sup>**



For 2019, a total of 4.58 billion train-km was reported by 28 countries. Of this, passenger services accounted for 82% of total rail traffic and freight traffic contributed 18%. Hence, a relatively low number of railway undertakings active in passenger services are responsible for the vast majority of total rail traffic. Growth rates are low but steady with a compound annual growth rate from 2015 to 2019 amounting to 0.8% for overall train traffic volume, driven upward exclusively by the growth of passenger traffic of 1.0%. Contrariwise, the compound annual growth rate for freight traffic shows a negative trend (-0.1%). This explains why the distribution passenger/freight traffic changed in favour of passenger services, having been 81% vs. 19% in 2015.

<sup>13</sup> The number of RUs in each country may differ a lot from those presented in this figure when the counting is based on the RUs' ownership as many RUs might belong to a same group. Besides, a RU may operate in several countries, through its subsidiaries or not. The overall number of RUs in Europe can therefore not be obtained by simply summing the number of RUs across all countries.

<sup>14</sup> Note that in total this number exceeds 100% since one RU may provide both passenger and freight services.

<sup>15</sup> 28 countries are included in this figure (Ireland and Serbia are missing).

# 05

## The rail freight market



### IN 2019



833 m  
freight train-km

455 bn  
freight net tonne-km

Freight load factor: 547 net tonne-km  
per freight train-km

**48%**  
total market  
share of new  
entrants in the  
freight market  
(in net tonne-km)



**€21.74**  
RUs' revenue  
per freight train-km



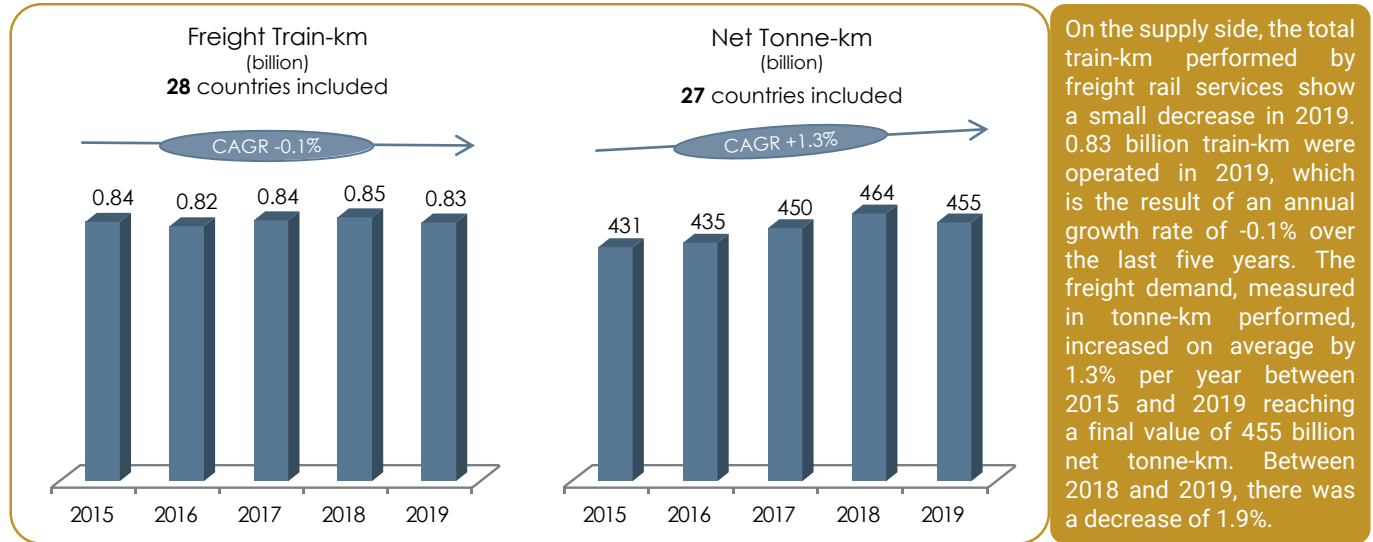
**€cts 3.85**  
RUs' revenue  
per net tonne-km

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

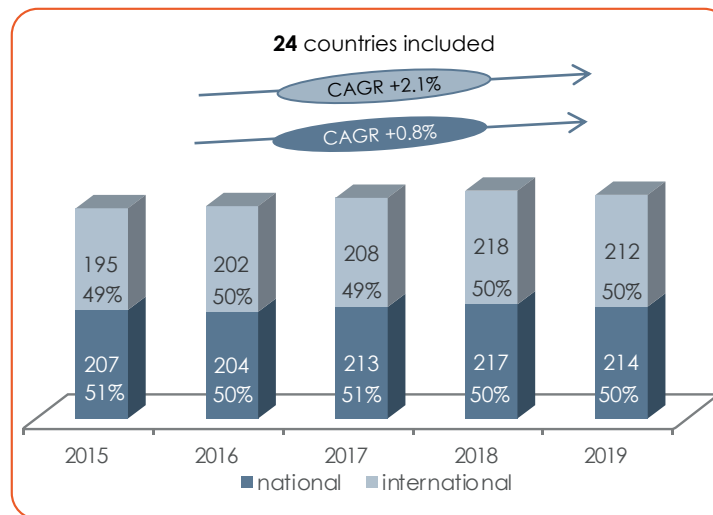
# The rail freight market size

For reference, the modal share of rail freight transport in the European Union, measured in tonne-km, was 18.7% of total freight inland transport in 2018 (source Eurostat)<sup>16</sup>

**Figure 8 – Total freight traffic (billion train-km and net tonne-km) from 2015 to 2019<sup>17</sup>**



On the supply side, the total train-km performed by freight rail services show a small decrease in 2019. 0.83 billion train-km were operated in 2019, which is the result of an annual growth rate of -0.1% over the last five years. The freight demand, measured in tonne-km performed, increased on average by 1.3% per year between 2015 and 2019 reaching a final value of 455 billion net tonne-km. Between 2018 and 2019, there was a decrease of 1.9%.



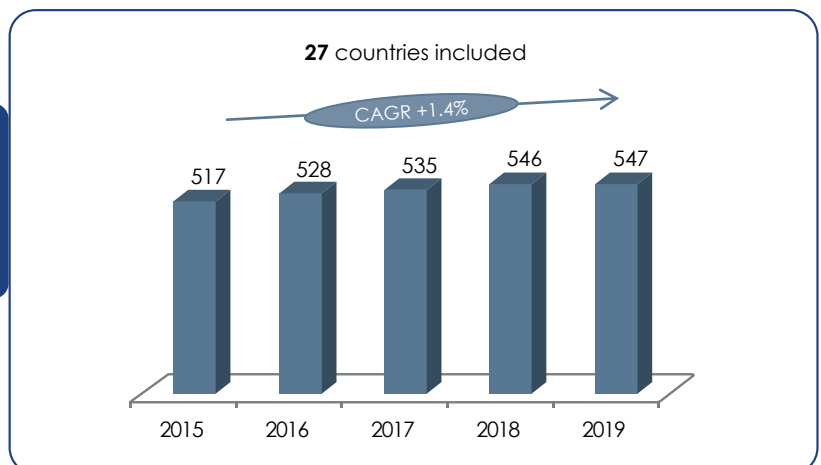
**Figure 9 - National and international freight traffic (in billion net tonne-km) from 2015 to 2019<sup>18</sup>**

In 2019, both national and international freight traffic showed a decrease (-1.4% in the first case and -2.8% in the second case). This development has not altered the 50/50 split between national and international freight traffic: 214 billion of net tonne-km have been carried in the national market, while 212 billion of net tonne-km have been carried in the international market.

Therefore, the trend between 2015 and 2019 showed an average annual growth rate of +0.8% for national freight services and of +2.1% for international freight services, being in both cases lower than the trend observed between 2014 and 2018 where the average annual growth rate observed was +2.0% regarding national freight services and +3.2% regarding international freight services.

**Figure 10 – Freight load factor (net tonne-km per freight train-km) from 2015 to 2019<sup>19</sup>**

The difference between the growth rates in train-km and net tonne-km is expressed by an increase of the load factor. The ratio of net tonne-km over freight train-km has risen by 5.8% since 2015, having an average annual growth of 1.4% and a slight increase of 0.2% between 2018 and 2019.



<sup>16</sup> Data on the modal split of freight transport in the European Union can be found on [Eurostat website](#).

<sup>17</sup> 28 countries are included in the figure for freight train-km (Ireland and Serbia are missing), 27 countries are included in the figure for net tonne-km.

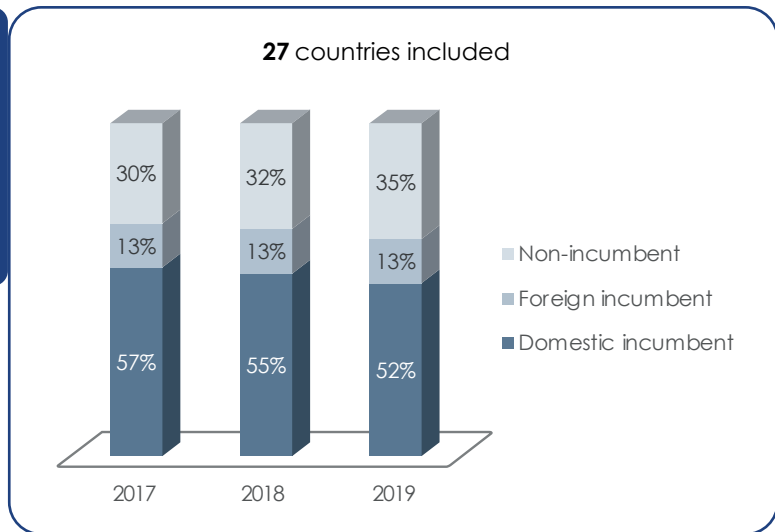
<sup>18</sup> 24 countries are included in this figure (Belgium, Estonia, Ireland, Slovakia, Serbia, Switzerland are missing).

<sup>19</sup> 27 countries are included in this figure (Estonia, Ireland, Serbia are missing).

## Market shares of freight railway undertakings

Figure 11 – Market shares of freight railway undertakings (based on net tonne-km)<sup>20</sup> from 2017 to 2019

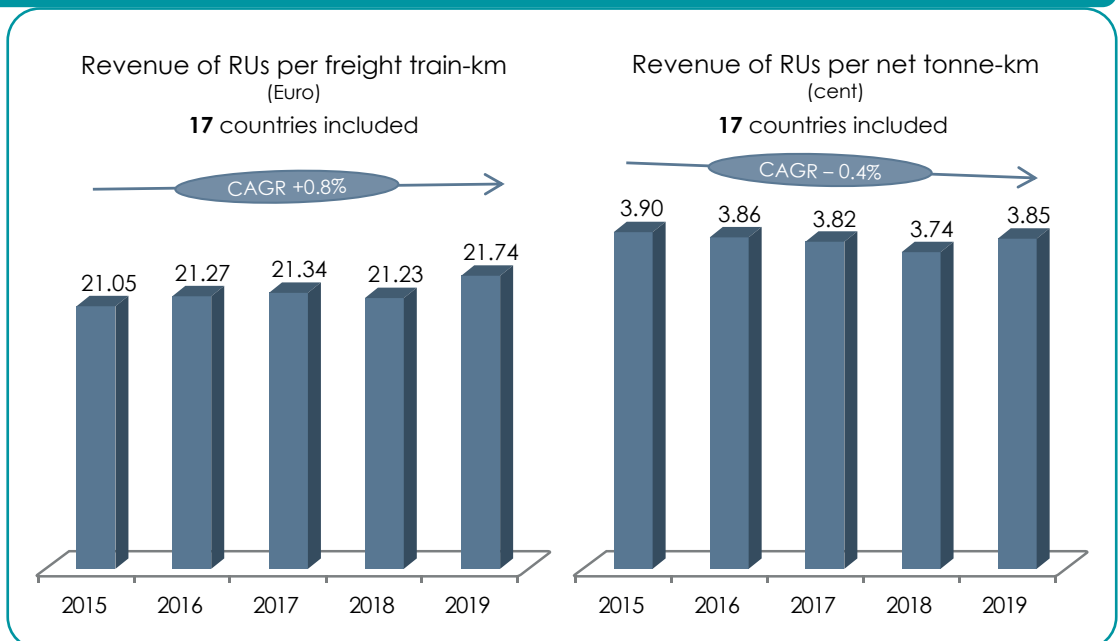
Although the share of domestic incumbents, based on net tonne-km, continues to decrease, it still remains predominant. While the share of foreign incumbents remained stable, the share of non-incumbents has continued to slightly increase over the last three years, growing by 3 percentage points between 2018 and 2019.



## Economic performance indicators of freight railway undertakings

In the period from 2015 to 2019, revenues of freight railway undertakings per train-km remained relatively stable with an annual average growth rate of 0.8% and a total increase of 3.3%. In the same period, revenues per tonne-km dropped by 0.4% on an annual average, with an increase between 2018 and 2019 (2.9%). Amid the decrease of freight traffic services between 2018 and 2019, this improvement of the economic performance could be associated with the favourable evolution of the load factor.

Figure 12 – Freight railway undertakings' revenue per train-km and per net tonne-km from 2015 and 2019<sup>21</sup>



<sup>20</sup> 27 countries are included in this figure (France, Ireland, Serbia are missing).

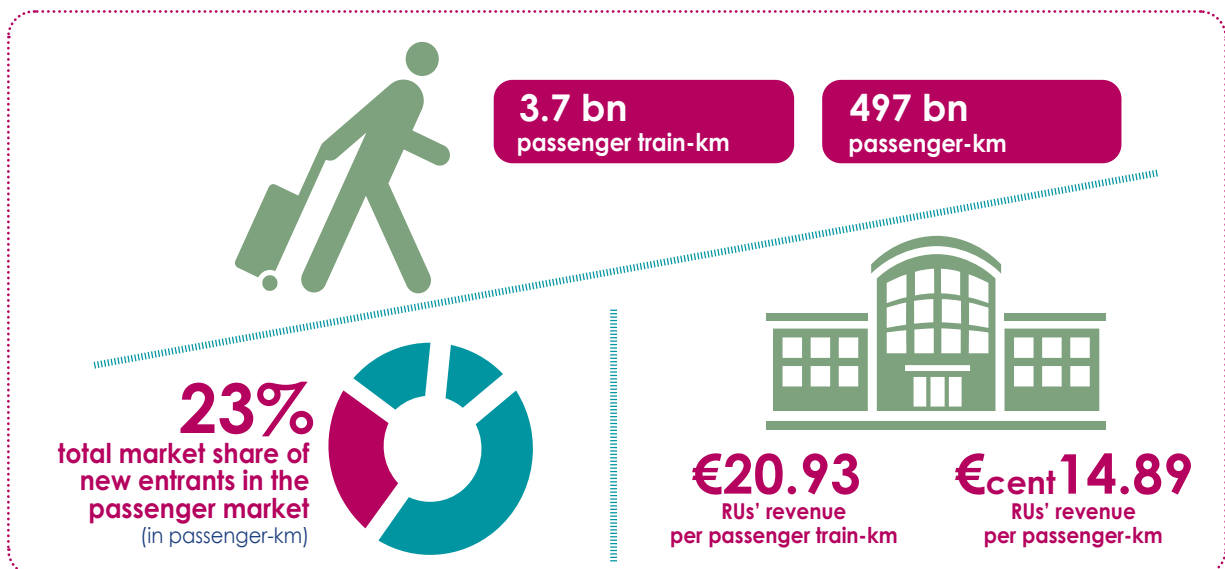
<sup>21</sup> 17 countries are included in this figure (Belgium, Czech Republic, Denmark, Estonia, France, Ireland, Italy, Netherlands, Norway, Slovakia, Slovenia, Serbia, Switzerland are missing).

# 06

## The rail passenger market



### IN 2019



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

## The rail passenger market size

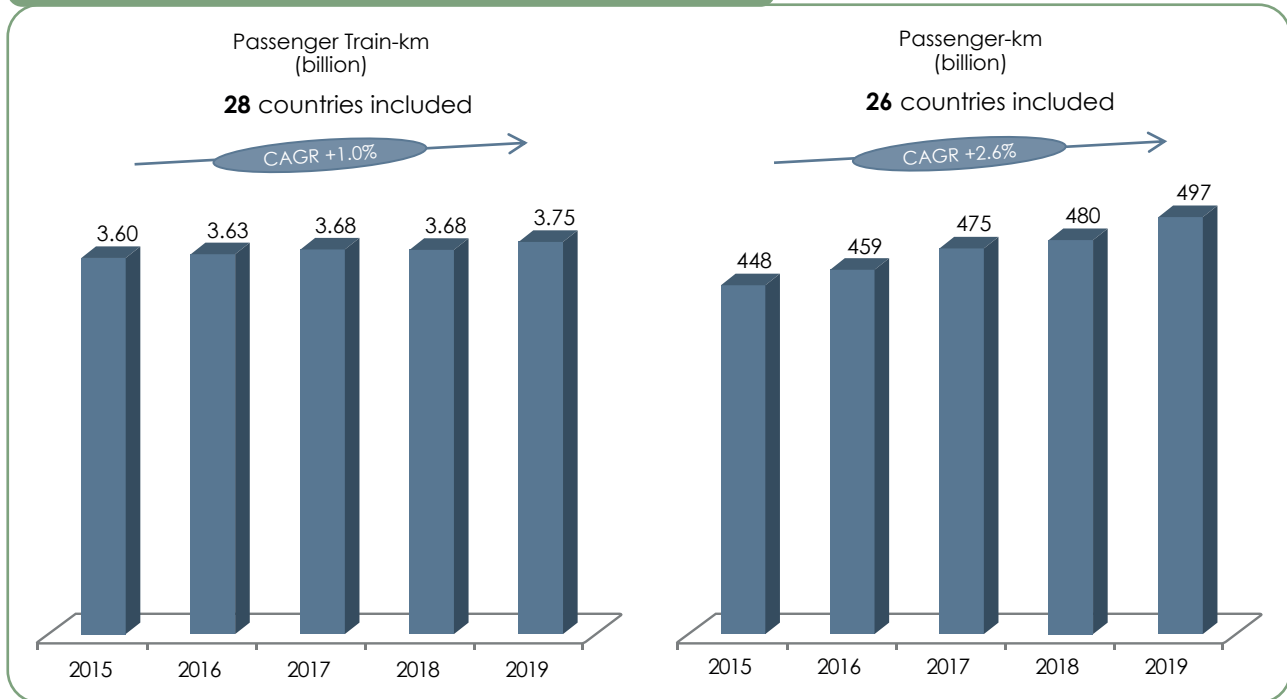
In 2019, the total traffic of passenger railway undertakings amounted to 3.7 billion train-km among 28 monitored countries and corresponded to 497 billion passenger-km among 26 monitored countries.

The data for the most recent five years shows a moderate growing trend on the supply side and a larger increase on the demand side. From 2015 to 2019 the number of train-km has remained relatively constant, with an average annual increase of 1.0%. During the same period, the traffic in passenger-km has continuously increased in the monitored countries, with an average annual growth rate between 2015 and 2019 of 2.6%.

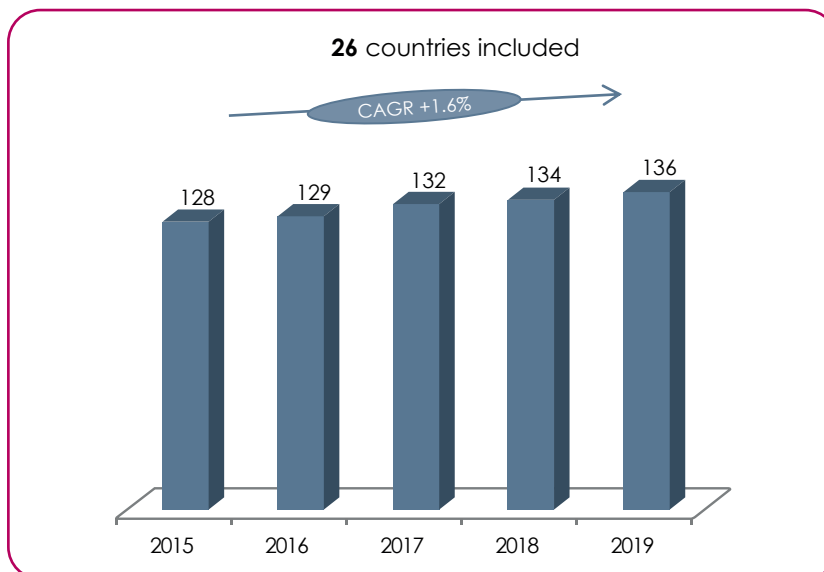
In 2018, in terms of passenger-km, the modal share of rail passenger services in European Union represented 7.9% of the total inland transport.

The share of rail passenger services has slightly increased over the last year (Eurostat data)<sup>22</sup>.

**Figure 13 – Total passenger traffic (in billion train-km and passenger-km) from 2015 to 2019<sup>23</sup>**



**Figure 14 – Passenger load factor (passenger-km per passenger train-km) from 2015 to 2019<sup>24</sup>**



In 2019, there were on average 136 passengers per train. This indicator, which is obtained by dividing passenger-km by train-km, has been growing between 2015 and 2019 with an average annual growth rate of 1.6%. The increase of passengers per train can be explained by reasons such as higher capacities or higher occupation rates per train.

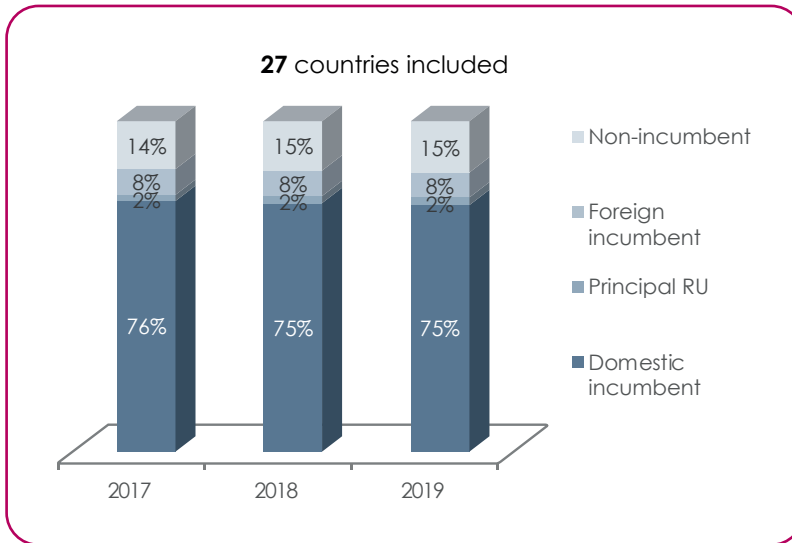
<sup>22</sup> Data on the modal split of passenger transport in the European Union can be found on [Eurostat website](#).

<sup>23</sup> 28 countries are included in this figure for train-km (Ireland, Serbia are missing). 26 countries are included in this figure for passenger-km (Belgium, Estonia, Ireland, Serbia are missing).

<sup>24</sup> 26 countries are included in this figure (Belgium, Estonia, Ireland, Serbia are missing).

## Market shares of passenger railway undertakings

**Figure 15** – Market shares of passenger railway undertakings (based on passenger-km) from 2017 to 2019<sup>25</sup>



In 2019, incumbents by far still had the biggest market share in passenger rail services of the monitored countries, with 75% of all passenger-km. During the past two years the market shares per category of railway undertaking have remained constant. The market share of foreign incumbents is still 8% and the market share of non-incumbents is 15%.

Hence, domestic incumbents still have a much higher market share on the passenger market than on the freight market (52%, see Figure 11 in Chapter Five).

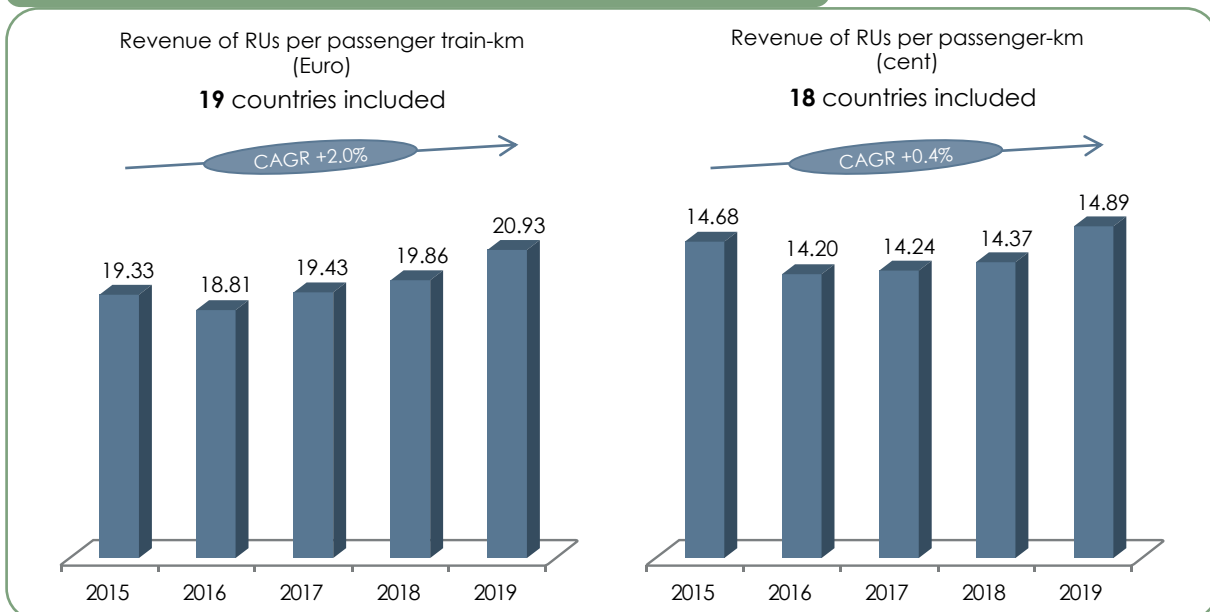
The market shares of incumbent and non-incumbent railway undertakings are an important indicator of the potential for competitive advantages for incumbent operators, and of possible barriers to new entrants.

## Economic performance indicators of passenger railway undertakings

For 2019 we can see an increase in revenues (global revenues from fares and compensations), both per train-km and passenger-km.

The average revenue of passenger railway undertakings was Euro 20.93 per train-km and 14.89 Euro cent per passenger-km. The average revenue of passenger railway undertakings, in terms of train-km, has increased during the past five years. The annual growth has been +2.0% and we can see a particularly sharp rise within the last year (+5.4%). The average revenue per passenger-km has also increased during the past five years. In the recent five years this indicator shows a moderate growing trend while the indicator of average revenue per train-km shows a greater increase.

**Figure 16** – Passenger railway undertakings' revenue (from fares and compensations) per train-km and per passenger-km from 2015 to 2019<sup>26</sup>



<sup>25</sup> 27 countries are included in this figure (Belgium, Ireland, Serbia are missing).

<sup>26</sup> 19 countries are included in this figure for passenger train-km (Belgium, Czech Republic, Denmark, Ireland, Italy, Netherlands, Norway, Slovakia, Slovenia, Serbia, Switzerland are missing), for revenue per passenger-km Estonia is additionally missing.



# 07

## Impacts of the COVID-19 crisis and national responses on European railway markets in the first half of 2020



### INTRODUCTION



The coronavirus (COVID-19) pandemic significantly impacted European railway markets due to its effect on the global mobility of European passengers and freight transport in 2020. In line with regulatory bodies' responsibility to monitor their respective markets, this chapter provides a general overview, from the regulatory bodies' perspective, of the consequences of the COVID-19 pandemic on rail markets observed in the first six months of 2020 (compared with 2019).

.....  
This chapter examines changes in:



- Freight and passenger rail traffic and demand
- Quality of service (punctuality of trains)
- Revenue for railway undertakings and infrastructure managers
- Additional impacts and specific measures adopted for the rail sector by country.



.....  
This overview is based on data collected by IRG-Rail at the end of 2020 focusing on indicators which highlight the impact of the pandemic during the first half of 2020.

As part of this data collection, countries were able to flag their data as confidential. This data has been excluded from country analysis and IRG totals.

## Overview



Looking at the development of rail transport during the first half of 2020, it clearly appears that the COVID-19 crisis had major impacts on supply, demand and the economic performance of rail transport. The biggest impact was seen in Quarter 2 of 2020, April to June.

**Passenger traffic was more affected than freight transport, with a decline of 75% on average in Q2 2020** for the monitored countries, whereas **freight transport declined by 17% in Q2 2020**.

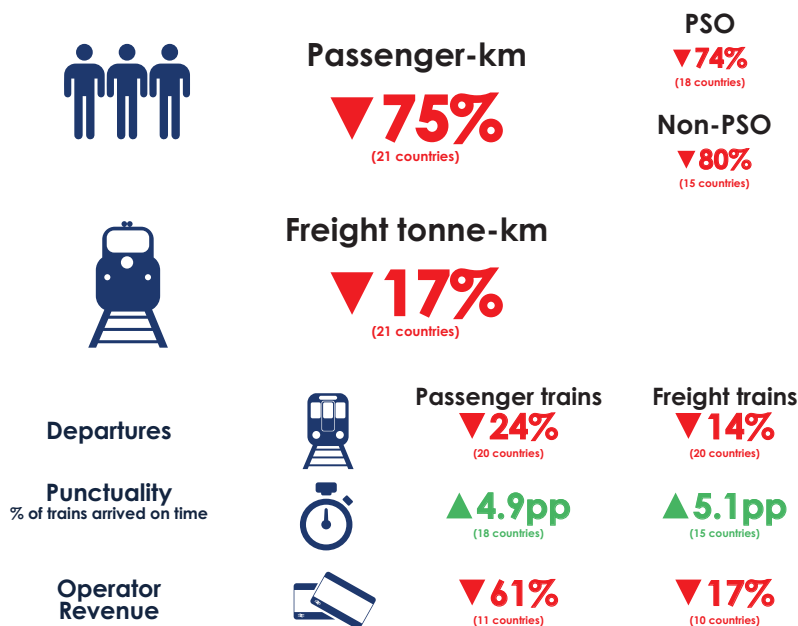
The development of rail transport during the first months of the crisis suffered direct consequences due to the responses of public authorities to face the COVID-19 crisis (restrictions of passenger mobility) as well as the impact of a global setback of the economic activity (leading to a drop of demand for freight transport). This led to decreases for transport demand in general. The smaller decline of the rail transport supply (**-24% for departures of passenger trains**) can probably be explained by the will of most governments to uphold traffic (in order to guarantee minimum public services but as well to reduce traffic congestion).

Despite some temporary or permanent financial measures adopted to limit the impact of the pandemic on the railway sector (for example adjustment of track access charges or state aids) the first economic consequences observed for railway undertakings are consistent with the changes observed for traffic, showing a **drop of 61% of direct passenger revenues and 17% of freight revenues** for monitored countries in Q2 2020.

The “temporary” status of these restrictions, impacts and responses has been highly reviewed in regard to the lasting effects of the COVID-19 crisis. It is therefore important for IRG-Rail to continue to monitor these impacts and responses for the second half of 2020 as well as for the coming years, in order to provide an overview of the consequences of this on-going crisis among IRG-Rail member countries as well as to assess how the European railway markets will recover from the COVID-19 crisis. To support this work IRG-Rail plans to publish a short report looking at the impact of the crisis over the full year of 2020. This will be published later in the summer of 2021.

## Impacts of the COVID-19 crisis on European Railways

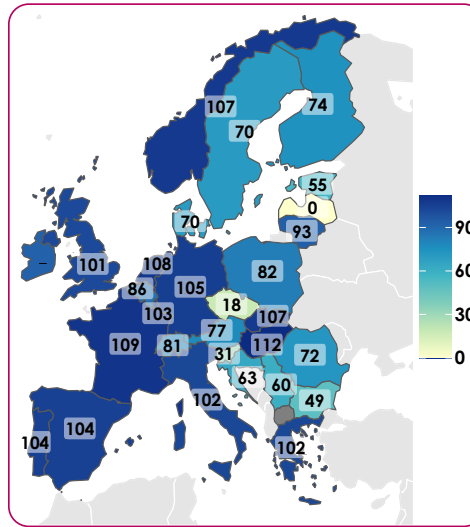
Comparing 2020 Quarter 2 with 2019 Quarter 2



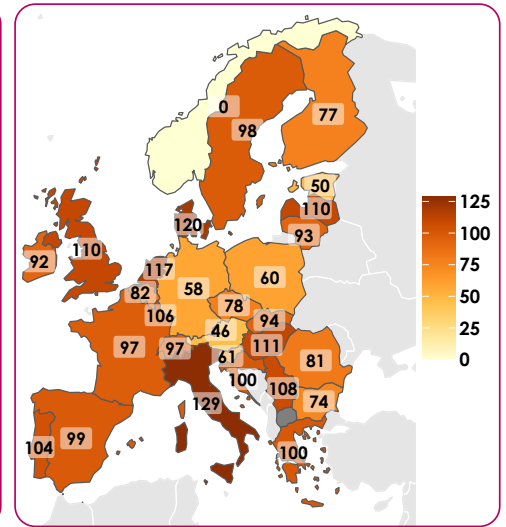
Note: All comparisons are for 2020 Quarter 2 (April-June 2020) relative to 2019 Quarter 2 (April-June 2019). The number of IRG member countries compared are provided under each metric.

## Global restrictions on rail transport demand

**Figure 17** - Number of days during the first half of 2020 with movement restrictions<sup>27</sup>



**Figure 18** - Number of days during the first half of 2020 with "stay at home" requirements/recommendations<sup>27</sup>



In March 2020, most European countries implemented strict measures to restrict internal movement. These measures resulted in a major drop in global mobility in all countries, affecting demand for rail transport as well as for other modes of transport.

On average, the first set of restrictive measures for internal movements lasted for almost the whole second quarter, with differences among countries though.

There were differences in lockdown measures and their impact on rail transport demand:

- **The implementation of measures to specific passenger (PSO/non-PSO) and/or freight services.** These movement restrictions did not apply identically to passenger and freight transport. In several countries there was no regulatory restriction on the transport of goods, and some freight services even saw an increase in their demand for domestic distribution (e.g. UK).
- **The implementation by geographical region.** Some internal restrictions on movement varied at a regional level, as well as for national and international travels. This was the case for example in Italy, UK and Germany. Almost all Schengen countries also progressively reintroduced land, air and sea border control in light of the COVID-19 pandemic, banning or at least restricting international movements.

The drop in passenger demand due to lockdown measures and transport restrictions imposed by the national authorities had a direct impact on the economy of the railway sector. Other derived impacts have also been seen by railway undertakings or the infrastructure managers as a result of the pandemic.



### Other impacts observed for railway undertakings and infrastructure managers

- **Limiting the capacity of transport:** some countries implemented rules to limit the capacity of trains by as much as 50% (e.g. **Italy, France, Portugal, Spain**) or to prohibit the sale of more tickets than the available seats (e.g. **Denmark**);
- **Timetable adjustments for train services:** reduced timetables were put in place (e.g. **Austria, UK, Italy, Belgium**) especially for PSO services, with the aim of ensuring minimal passenger services and essential connections or a higher reliability of the train services, or allowing more capacity for freight services. The scheduled timetable was maintained during this period in **Sweden**. For freight transport the conditions of proposal of alternative rail/road public services were facilitated in some countries (e.g. **Poland**);
- **Implementation of sanitary measures to prevent the spread of the virus:** there were extra costs for railway undertakings associated in some countries, due to implementing extra measures to prevent the spread of the virus (e.g. **Romania**);
- **Decrease of tariffs for wagon rentals** due to the decrease in freight transportation was also noted in some countries by freight railway undertakings (e.g. **Estonia**);
- **Temporary relaxation of legal terms** for passenger ticket change or cancellation or the extension of the validity period of passenger tickets were adopted in **Finland** or **France**;
- **Extension of validity period of legal documents** (e.g. safety certificate and train driving licence) and the deadlines for staff training for railway undertakings (e.g. **Poland, Spain**);
- **Infrastructure managers:** some countries (e.g. **Belgium**) reported having to suspend planned rail maintenance due to the subcontractors being unavailable. Other countries (e.g. **Austria**) indicated that due to reduced traffic the main infrastructure manager was able to focus on construction and maintenance work.

<sup>27</sup> Source: Oxford COVID-19 Government Response Tracker, indicators C7 and C6 - The indicator of "Restrictions on internal movement" records subnational (state-level) border closures where a state restricts entry from another state, as well as recording restrictions on movement within the state. The indicator "Stay at home requirements" records orders (either requirements or recommendations) to "shelter-in-place" and otherwise confine to the home - The detailed calendars of flags per day and per country can be found in the Annex of the Working Document.

## Global restrictions on rail transport demand



Some temporary or permanent financial measures were adopted in 2020 to limit the impact of the pandemic on the railway sector by the states or infrastructure managers:

- **Adjustment of track access charges:** Several countries noted adjustments in the charging principles applied by infrastructure managers for rail activities. These adjustments could be applied as:
  - **Raw discounts** of global or specific charges (e.g. **France, Italy, Slovakia**),
  - **Changes of the references** for charges or discount schemes to take into account the sudden decrease of volumes: in **Estonia** the basis of calculating infrastructure fee were changed from usual yearly based volume to monthly based volume, whereas in **Spain** the charging basis took into account the decrease of seats available for sale by the railway undertakings;
  - **Removal of the reservation penalties** for capacity allocated but not used (e.g. **Austria, Belgium, Croatia, Italy, Poland, Portugal**). It was noted however that such measures could also lead to artificial blocking of the capacity (e.g. **Poland**).

It is also worth noting that in some countries there was no change in the main charging principles caused by the COVID-19 crisis (for freight transport in **Estonia**, for all services in **Portugal**).

- **Suspension of performance regime:** Several countries applied relief measures or did not impose penalties (e.g. **Slovenia**) related to the performance of operators.
- **State aids to railway undertakings or infrastructure managers** have been provided in various ways to limit the impacts for the railway sector:
  - **Temporary unemployment aid and short-term work** was granted in several countries where the suspension of contracts or the reduction of working times had an impact (e.g. **Austria, Belgium, France, Italy, Romania, Slovenia, Sweden**)
  - **Loan facilities or credit guarantees, or postponing of public charges or debts** were proposed to railway undertakings for example in **Belgium, Finland, Italy, Poland, Romania** and **Sweden**.
  - **Compensations for the loss of revenue for the railway undertakings** or specific subsidies for operator services were granted in **Denmark, France, Germany, Italy, Poland, Romania, Sweden, UK**. Some funding could also be granted as incentives for new projects (for example in France to develop night train services or freight highways)
  - **Compensation for the loss of revenue for the infrastructure manager** or specific funding and incentives for infrastructure projects (or direct capital increase) were granted in **Denmark, Finland, Germany, Italy**.
  - **Reorganisation of non-PSO traffic:** The **Austrian** government turned the main non-PSO route (Vienna-Salzburg) into a PSO-route by endowing the incumbent and its competitor with an “emergency PSO-contract” for several months. This contract in return obliged the RUs to adhere to predetermined timetables and stops as well as to accept tickets issued and sold by business rivals.



This overview of global impacts and measures taken by States / Regulatory bodies / Infrastructure managers is based on free text-field answers collected by IRG-Rail at the end of 2020 focusing on indicators which highlight the impact of the pandemic during the first half of 2020. This section aims to show a synthesis of factors cited by countries but does not represent an exhaustive overview of impacts and measures observed for every country in the panel.

The complete answers to these two qualitative questions (below) can be found in the Annex of the Working Document:

- Were there specific other impacts on RUs/IMs due to measures imposed by the national authorities in the context of COVID-19? (e.g. limitation of the total capacity offered by RUs (%); others)
- Have any financial measures been adopted by RB/states/IMs/RUs ? (e.g financial compensations and/or state aids; temporary relaxation of charges, payment terms, time limits; changes in performance indicators; others)

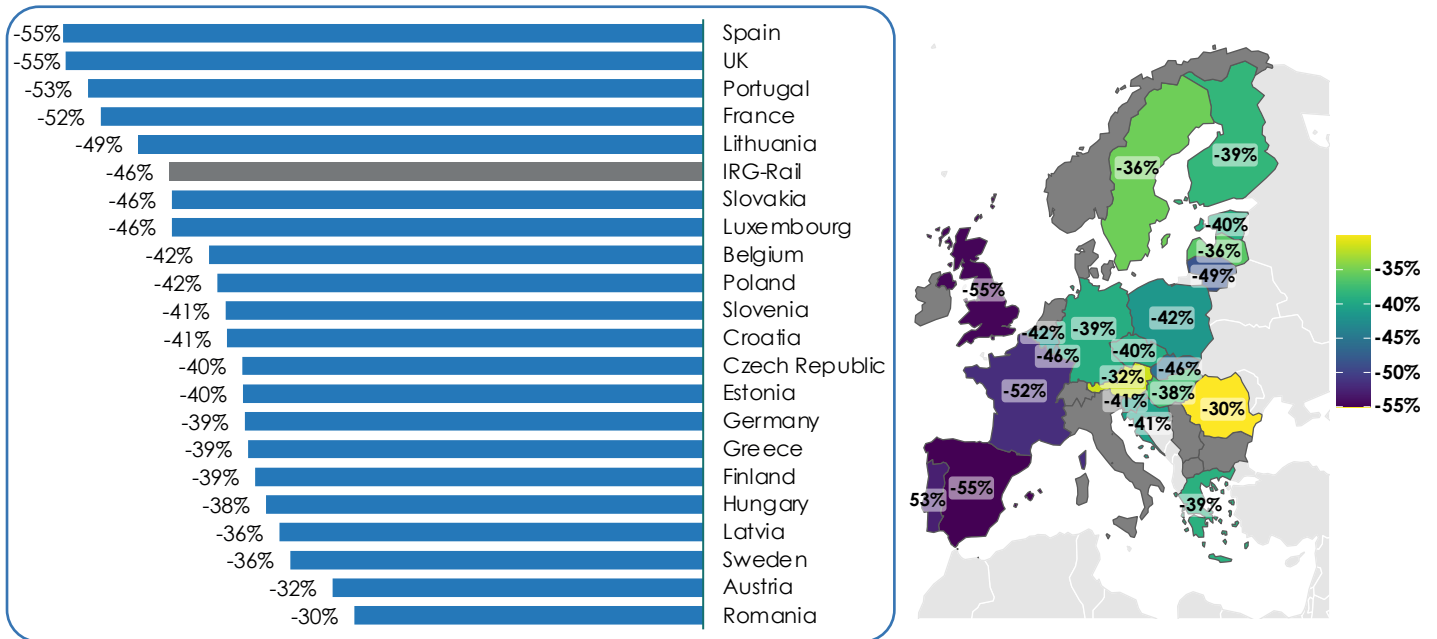
## Passenger traffic



Passenger traffic decreased severely during the first wave of the coronavirus (COVID-19) pandemic. During the first half of 2020, a total of 110.2 billion passenger-km were recorded in 21 member countries. This was a drop of nearly half (-46%) compared to the same time period in 2019, when a total of 205.4 billion passenger-km were recorded.

The decreases observed in the monitored countries are substantial, ranging from -30% to -55%.

Figure 19 – Change in passenger-km, half year comparison

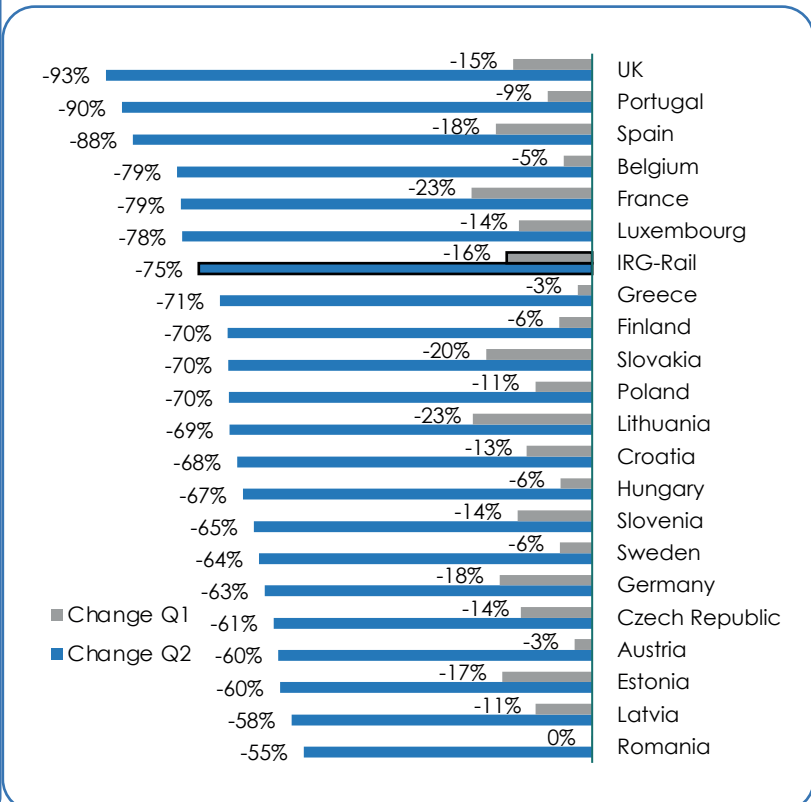


During the **first quarter of 2020** the impacts of the pandemic varied substantially between countries. In total, passenger-km decreased by 16% compared to 2019 (data from 22 countries). All monitored countries experienced decreases in traffic, but the extent of it varied. In three countries (Romania, Greece and Austria) the decrease was less than 5%. However in other countries (France, Lithuania and Slovakia) the traffic decreased by more than 20% during the first quarter. In France, a contributing factor to this was a strike in January 2020 that limited traffic.

During the **second quarter of 2020**, the effects of the pandemic were more obvious throughout all of Europe. In total, taking an average across 22 countries, passenger-km decreased by 75% compared to 2019. This highlights that it was during this period when restrictions and other measures had the strongest impact on rail passenger transport. The drop in traffic exceeded 50% in all monitored countries. Three countries experienced declines of more than 80% (UK, Portugal and Spain).

The largest drop was in the UK, due to 'stay at home' measures being introduced from 23 March and travelling was only allowed if absolutely necessary. Due to the large decrease, measures were introduced which transferred cost and revenue risk from the train operators to the UK government - meaning the state became responsible for financing the costs of sustaining passenger services.

Figure 20 – Change in passenger-km, quarterly comparison

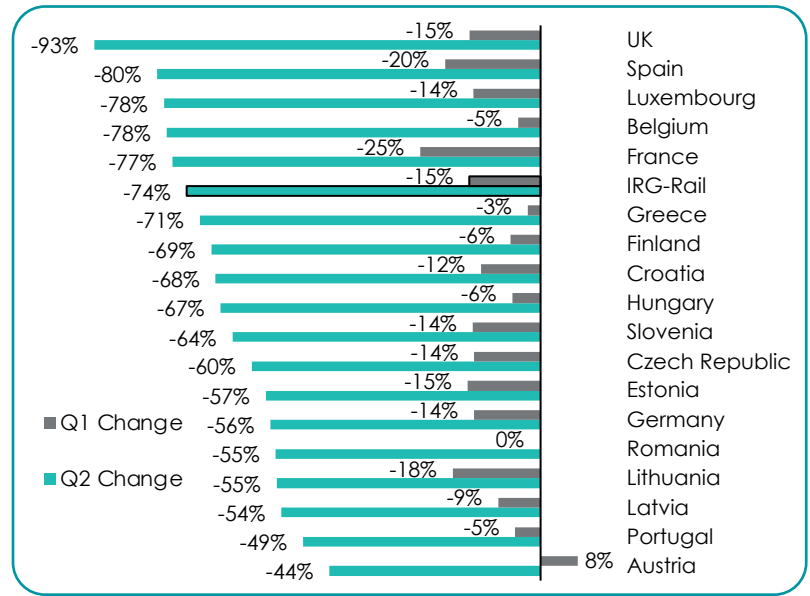
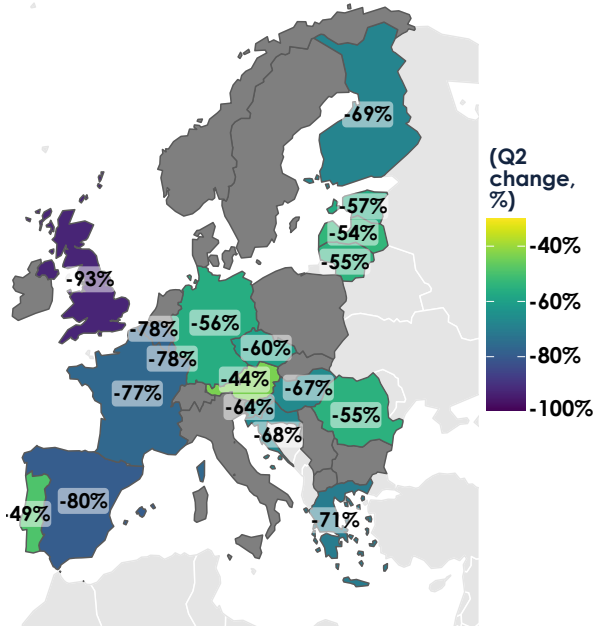


## Passenger traffic – PSO and non-PSO traffic



**For PSO-traffic**, passenger-km in 18 countries decreased to 66.6 billion during the first half of 2020. This can be compared to 120.0 billion during the same time 2019, implying that approximately 45% of the traffic was eliminated. The largest decrease took place in the second quarter, as the total passenger-km fell by 75%. The largest decrease was in the UK and the smallest decrease was in Austria. In Austria, private competitor WESTbahn halved its (fully non-PSO) traffic Vienna-Salzburg by the end of 2019. From April 2020 onwards, long-distance trains from Vienna to Salzburg (including incumbent's trains) were temporarily made PSO until the end of June.

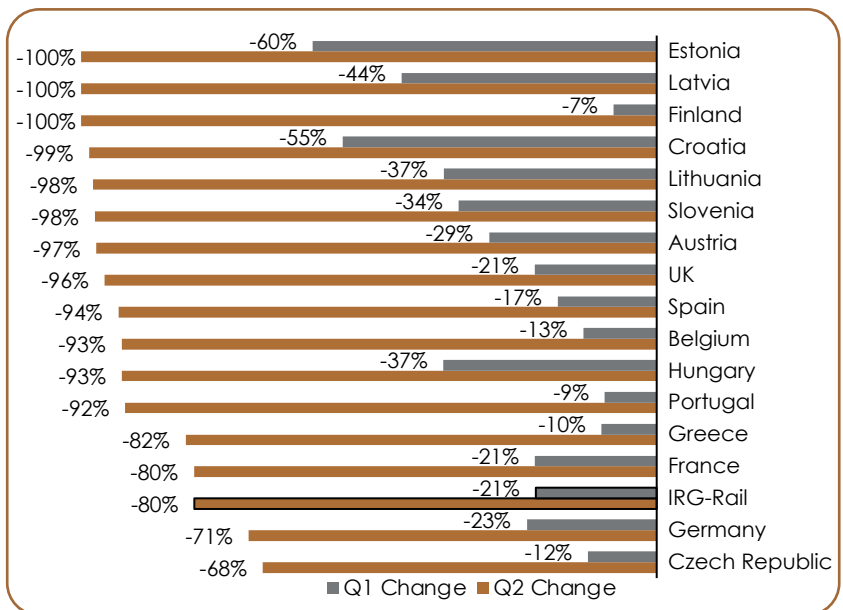
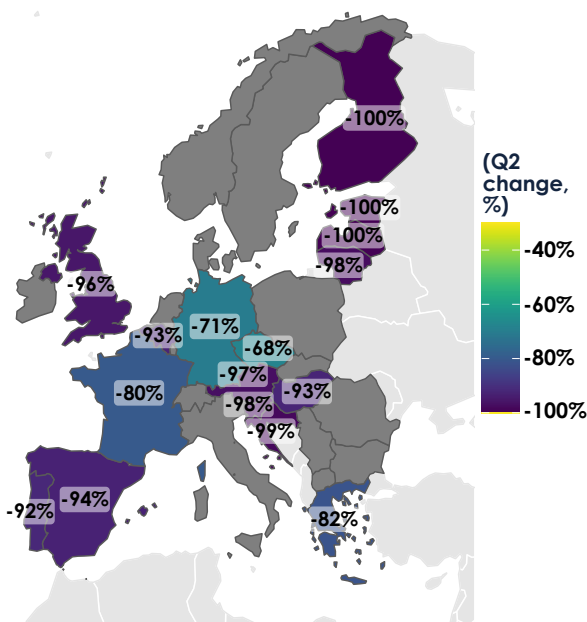
Figure 21 – Change in PSO passenger-km, quarterly comparison



**For non-PSO traffic**, passenger-km in 16 countries that could provide data decreased to 31.8 billion during the first half of 2020. This can be compared to 65.7 billion during the same time 2019 meaning that more than half of the non-PSO traffic was eliminated. The half-year drop exceeded 50% in 13 of the 16 countries and even 80% in four countries.

In the second quarter, non-PSO services stopped running entirely in Estonia, Finland and Latvia. In Finland and Latvia, the non-PSO traffic consisted of services to third countries which were terminated due to COVID-19.

Figure 22 – Change in non-PSO passenger-km, quarterly comparison





## Passenger train-km

A total of 1.3 billion passenger train-km were recorded for the 22 countries which submitted data. **This was a 16% reduction from 1.5 billion passenger train-km in the previous year.**

This drop can be attributed to travel restrictions and a reduced number of trains in many countries. However, we note that in several countries PSO services were partly or fully maintained by public authorities to guarantee a minimum access to public transport.

Passenger train-km decreased for the half year period for every country, apart from Latvia (unchanged) and Hungary (increased by 2%). In Hungary, operators were not requested to significantly reduce their PSO services. This helped ensure safe distance could be maintained on trains. The largest decrease was in France, with a drop of 41% which was also due to the strike that impacted traffic at the end of 2019 and the beginning of 2020 right before the COVID-19 pandemic.

Figure 23 – Change in passenger train-km, half year comparison

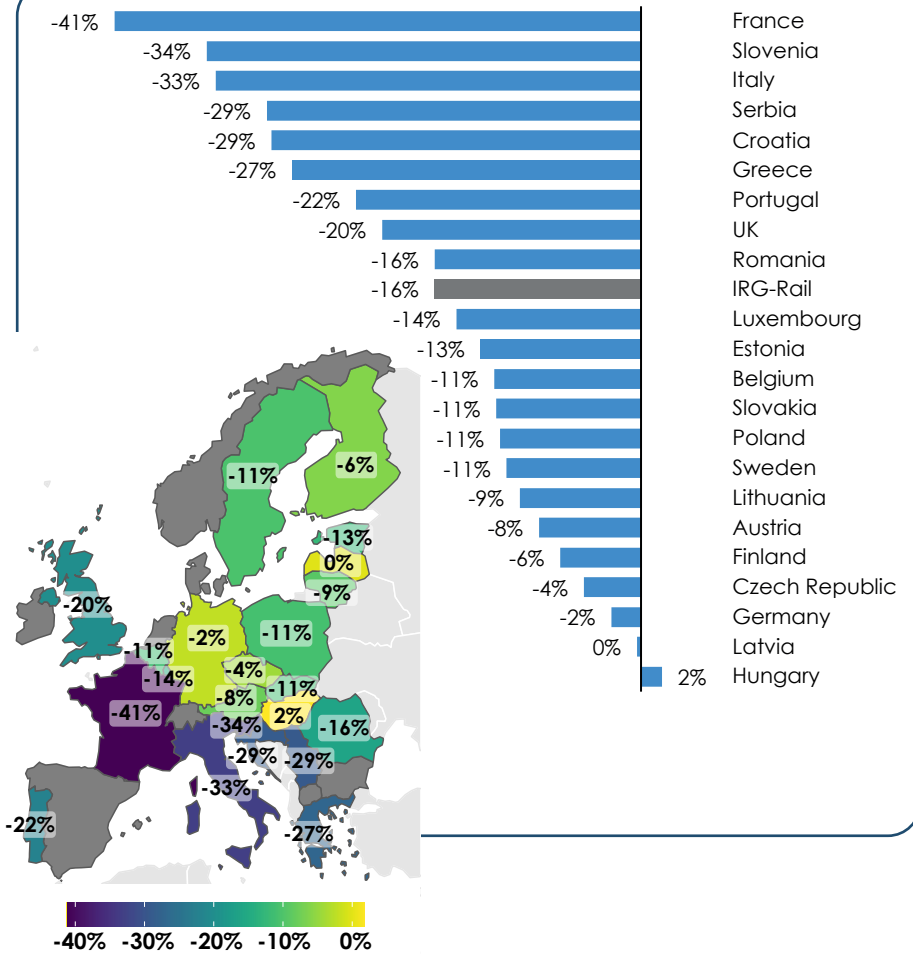
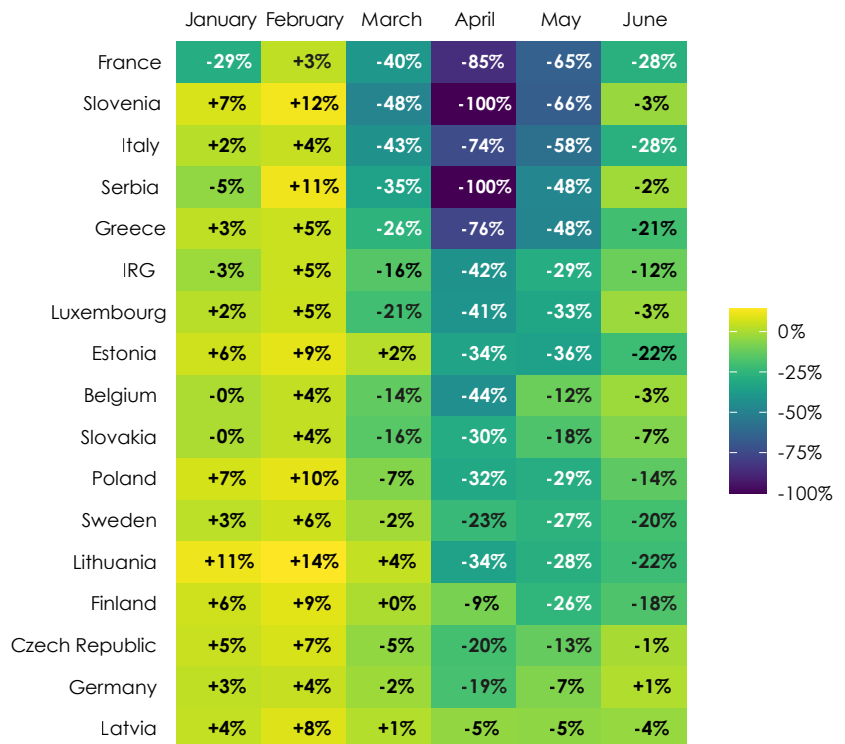


Figure 24 – Change in passenger train-km, monthly comparison

In January and February, there was an increase in passenger train-km in nearly every country (apart from France which experienced a strike and Serbia).

In March, the IRG total across 16 countries fell by 16% with the largest decrease in Slovenia (-48%). Passenger train-km did increase in Lithuania, Estonia and Latvia which might be due to different travel or lockdown restrictions.

The IRG total decreased by 42% in April and by 29% in May. All countries experienced decreases ranging from 100% in Serbia and Slovenia to -5% in Latvia (where the domestic rail traffic has grown steadily in recent years due to improvements in passenger services). In June, the train-km increased in comparison to May, but were still below the previous year's levels in all countries (apart from a small 1% increase in Germany due to relaxed lockdown measures).



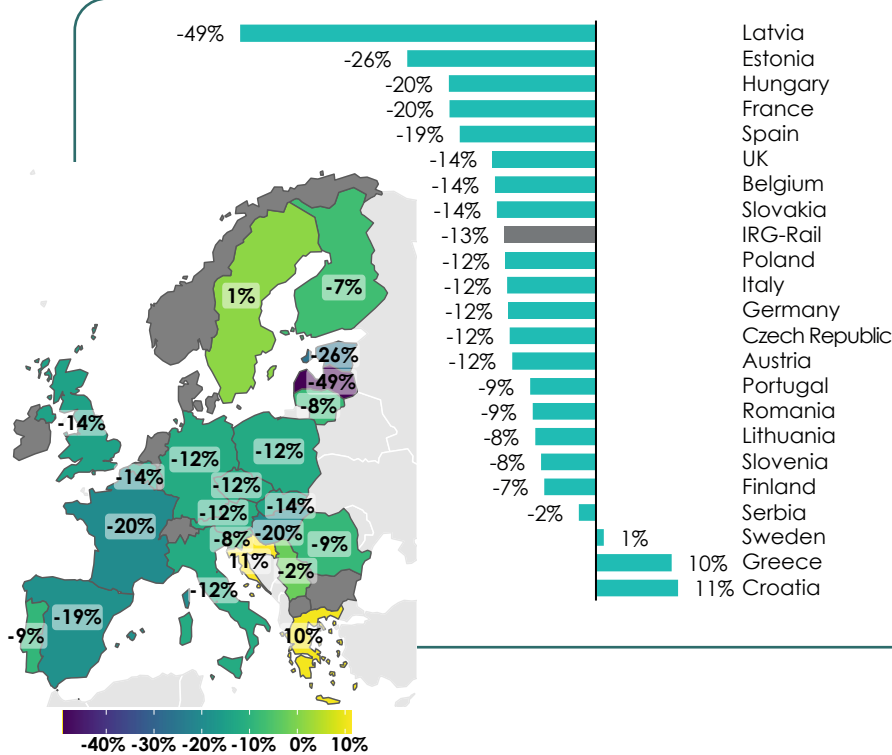


## Freight traffic

In general, freight traffic was much less affected by the COVID-19 pandemic than passenger traffic during the first half of 2020. In the 22 monitored countries a total of 179.9 billion net tonne-km were moved. This was a decrease of 13% compared to the reference period 2019, when a total of 207.8 billion net-tonne km were moved.

The differences between the monitored countries are significant (and similar in tonne-km and train-km). In Latvia freight traffic decreased in tonne-km by more than 50%. Estonia also experienced a severe drop just over 30%. Most countries experienced decreases, but net tonne-km actually increased in Croatia and Greece.

Figure 25 – Change in freight train-km, half year comparison



A total of 345 million freight train-km were recorded for the 22 countries that submitted data. This was a 13% reduction from 394.3 million freight train-km in the previous year.

This fall can be attributed to reduction in freight services during the pandemic and closed borders between some countries. Globally, the international supply chain was disrupted due to grounded planes and some cargo ships were denied entry to ports. This disruption could have affected rail freight.

Freight train-km decreased for the half year period in most countries. There were small increases in Sweden, Greece and Croatia. The largest decrease was in Latvia, with a drop of 49%. Latvia also showed the greatest reduction in freight train numbers. There was an increase in transportation in 2019 as a large coal terminal in Russia was closed, so cargo was diverted to other ports. After the reopening of this coal terminal and the development of other terminals in Russia, freight was reduced in Latvia. Russia has also reduced the amount of freight transported through Latvia, in response to sanctions imposed on Russia. The largest increase of 11% in Croatia was due to high demand for cereals in the Italian market. Freight carriers expanded their services and transported grain on routes from Romania and Hungary, via Croatia and Slovenia, to Italy.

In January, decreases were observed in freight train-km in every country except for Greece. The largest decrease was in Latvia where freight train-km fell by almost half compared to the previous January (due to increased activity after diversion from closed Russia terminal in January 2019). February was a mixed picture, with falls of almost half in some countries and increases over 10% in others.

The largest decreases were in April and May, with an IRG total of -22% and -18%. However, one can observe different patterns across countries where the largest national decreases did not always occur in the same month. In April, eight countries reported their biggest decrease, but two countries had their biggest decrease in May and two in February. In January, March and June one country reported the biggest decrease. This suggests factors other than the pandemic may have affected freight train-km, and border measures came into force at different points in time.

Greece followed a different pattern as freight train-km increased every month compared to 2019, except March and June. For the half year, the train-km increased 10% from 457,400 train-km. In Quarter 2, there was an increase of 9% compared to IRG total falling by 17%.

Figure 26 – Change in freight train-km, monthly comparison

	January	February	March	April	May	June
Latvia	-51%	-48%	-48%	-45%	-45%	-56%
Estonia	-27%	-30%	-26%	-26%	-24%	-23%
France	-22%	-5%	-22%	-34%	-28%	-9%
Belgium	-6%	+1%	-14%	-25%	-27%	-12%
Slovakia	-15%	-12%	-12%	-16%	-14%	-13%
IRG	-10%	-6%	-11%	-22%	-18%	-8%
Poland	-12%	-6%	-15%	-20%	-12%	-8%
Italy	-1%	+5%	-11%	-30%	-23%	-11%
Germany	-8%	-6%	-7%	-22%	-22%	-7%
Czech Republic	-10%	-4%	-10%	-20%	-17%	-9%
Lithuania	-18%	-6%	-7%	-7%	-5%	-5%
Slovenia	-4%	-4%	-8%	-14%	-12%	-3%
Finland	-5%	-27%	-6%	-2%	+0%	-3%
Serbia	-2%	+14%	-4%	-6%	-13%	+2%
Sweden	-5%	+2%	-1%	-7%	+19%	+3%
Greece	+23%	+34%	-16%	+21%	+8%	-1%





## Passenger train departures

The number of **passenger trains** fell during the first wave of the pandemic, particularly during the months March to May. During the first half of 2020, there were 18.6 million passenger trains running in 21 countries. This was a decrease of 14% compared to the same period in 2019, when a total of 16.0 million passenger trains ran and shows that many countries were running reduced timetables. The number of trains is not directly linked to passenger numbers, as capacity on trains was reduced to meet social distancing restrictions. Running reduced services also helped protect essential frontline railway staff. Services were kept running for the use of key workers, and services were adjusted in stages.

Looking at the first six months of 2020, all participating countries experienced a fall in passenger train departures. The largest decrease was in Slovenia, where passenger train departures fell by 40% due to suspension of services between 22 March and 10 May. The next largest decreases were in France (-37%), Croatia (-29%), and Italy (-28%). There was very little difference in train numbers in Hungary as services ran as planned to ensure social distancing could be maintained onboard. Although the number of departures increased in some countries in Q1, the large decreases in Q2 meant no countries experienced an increase in passenger train departures in the first half of 2020.

Figure 27 – Change in passenger train departures, half year comparison

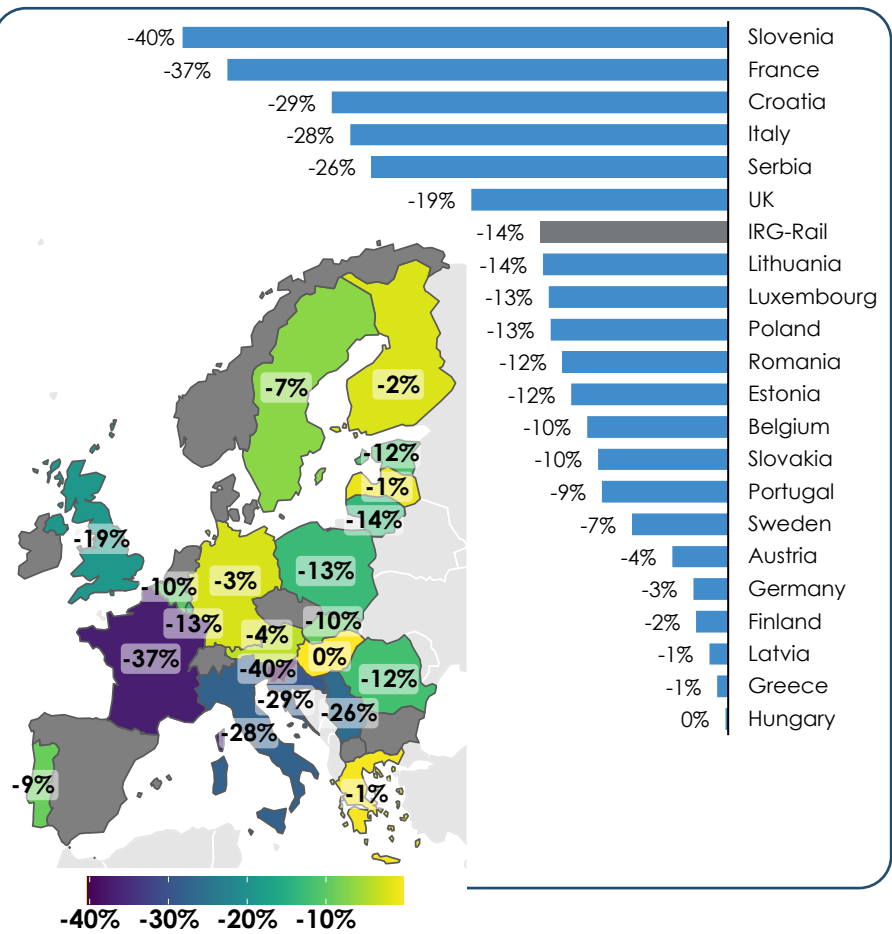
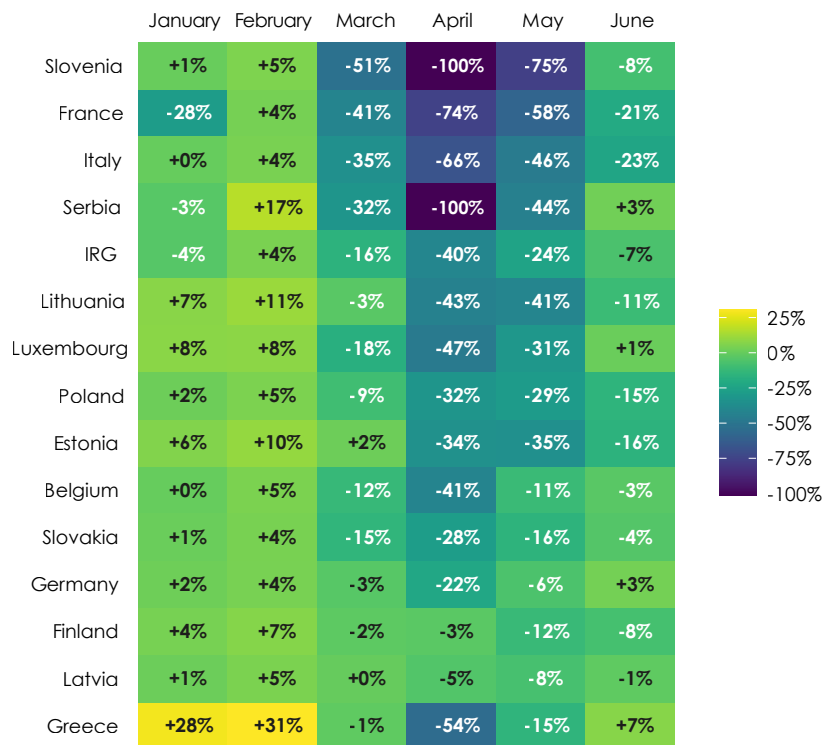


Figure 28 – Change in passenger train departures, half year comparison

The combined monthly data from 14 countries show the number of passenger train departures fell by 4% compared to the previous year in January, a slight increase in February and then 16% decrease in March. The largest decrease was in April where numbers fell by 40%, from 2.0 million trains to 1.2 million. There was a 24% decrease in May, followed by a smaller decrease of 7% in June as more services started running due to relaxation in lockdown measures.

In April and May the number of departures decreased in all countries, ranging from 3% fall to 100% fall (no trains ran). In Slovenia all passenger services were suspended between 16 March and 10 May 2020, and the largest decrease in train numbers in March was in Slovenia as a result of this. In Serbia, trains were also suspended between 21 March and 18 May.





## Freight train departures

Figure 29 – Change in freight train departures, half year comparison

The number of **freight trains** fell during the first wave of the pandemic, particularly during April and May. During the first half of 2020, there were 2.2 million freight trains running in 21 countries. This was a decrease of 10% compared to the same period 2019, when a total of 2.0 million freight trains ran. Although numbers were reduced, some countries prioritised freight services as passenger train numbers had decreased. Freight services were needed for the rising demand in goods such as food, fuel and medicine during the pandemic.

21 countries provided data for the first six months combined. Although the IRG total for all countries combined was a decrease of -10%, there were some increases in departure numbers (Sweden, Greece and Croatia). As for train-km, the largest increase was seen in Croatia (5%).

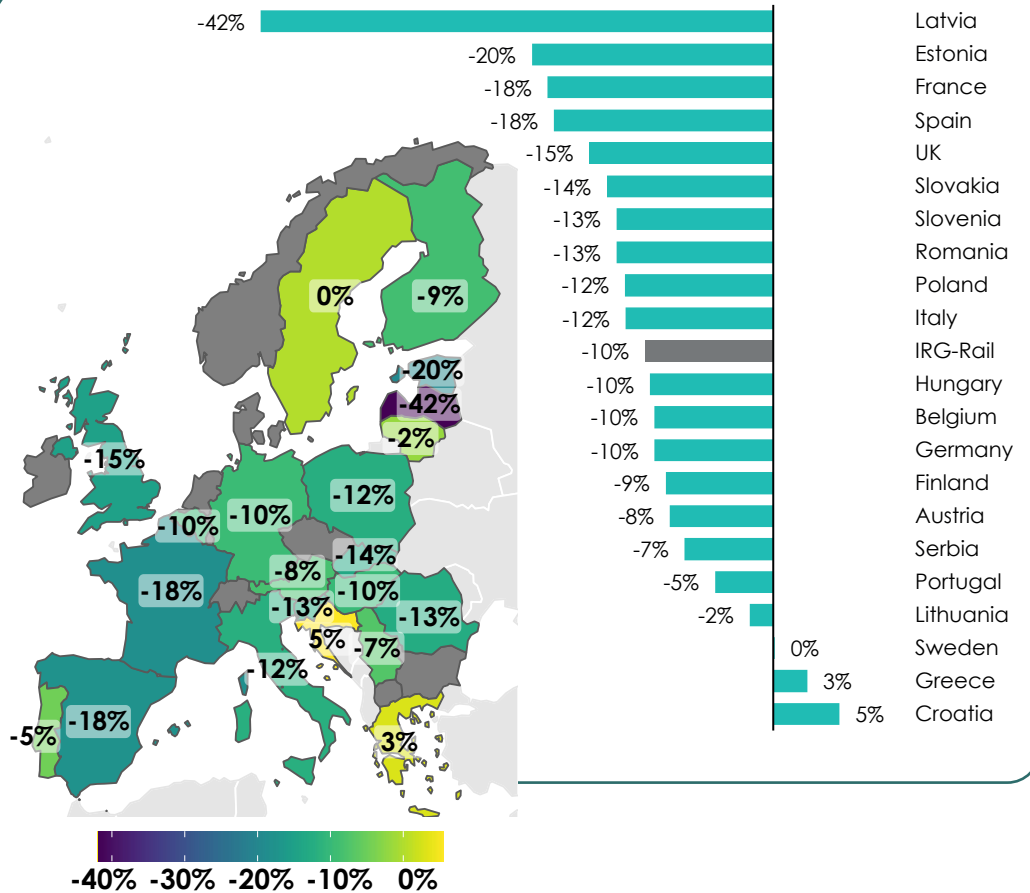
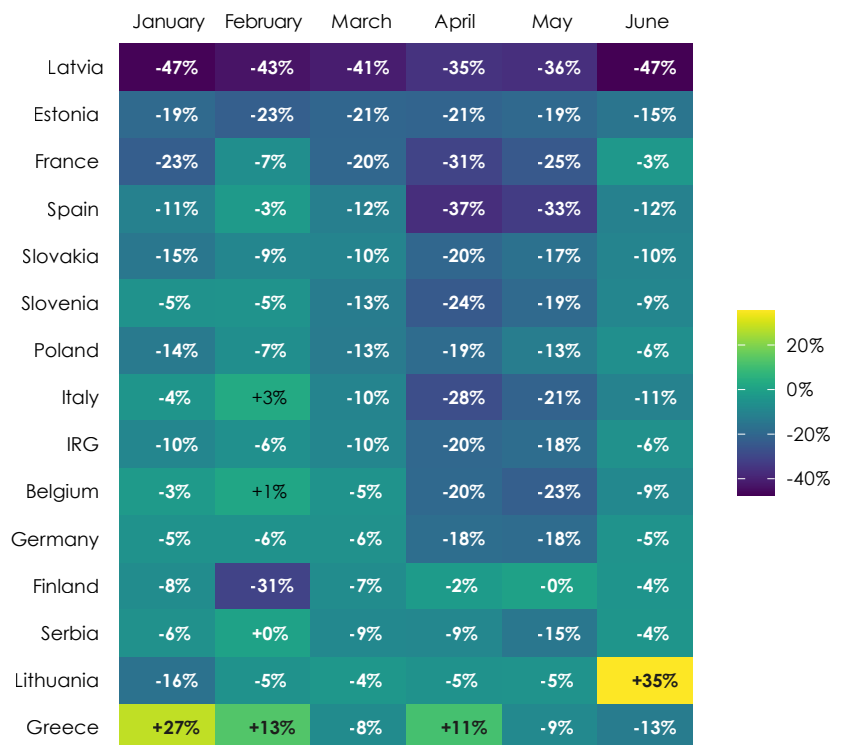


Figure 30 – Change in freight train departures, half year comparison

The number of freight departures fell by 10% compared to the previous year in January and by 6% in February. This suggests the numbers of freight trains fell due to reasons other than the pandemic. The largest decrease was 20% in April, from 248,000 trains to 199,000.

In Greece, the number of freight train departures increased for the months January, February and April. Overall for the first six months of 2020, the number increased by 3%. Other than Greece and Finland, in April and May the number of departures decreased in all countries, ranging from 2% fall to 37% fall. The largest decreases were in Latvia, due to changes in world market meaning less cargo was transported through Latvian ports, and Russia and Belarus reduced traffic through ports.





## Punctuality of service – passenger services

This measure looks at the percentage of passenger trains that arrived on time/within schedule. Most countries used a threshold of 5 minutes 0 seconds to assess if a train was on time, but there were some countries that used a slightly different threshold (e.g. 5 minute 59 seconds, 3 minutes 0 seconds, 5 minutes 29 seconds). This difference in thresholds should not affect the data, as the same 'on-time' measure was used consistently by a country in both 2019 and 2020.

Of the eighteen countries that submitted half year data, the percentage arriving by threshold increased in sixteen countries. In Lithuania the percentage of trains arriving on-time fell slightly from 97.9% to 97.8%. In France the percentage of punctual trains fell from 89.8% to 89.2% in 2020, however this could have been affected by the January strike.

This pattern of improvements in punctuality can be attributed to multiple factors. The number of passengers boarding trains reduced and there was less crowding at stations. This meant trains needed to spend less time in stations (dwell-time) and were therefore able to depart on time. There were fewer trains running, meaning 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.

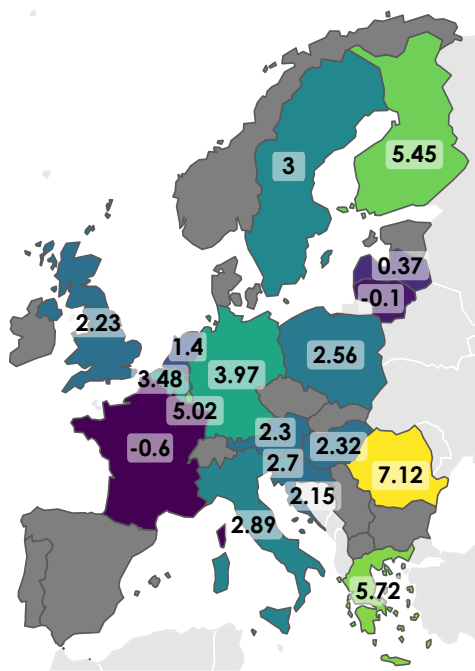


Figure 31 – Change in percentage points (pp) of passenger trains arriving on time, half year 2020 and 2019

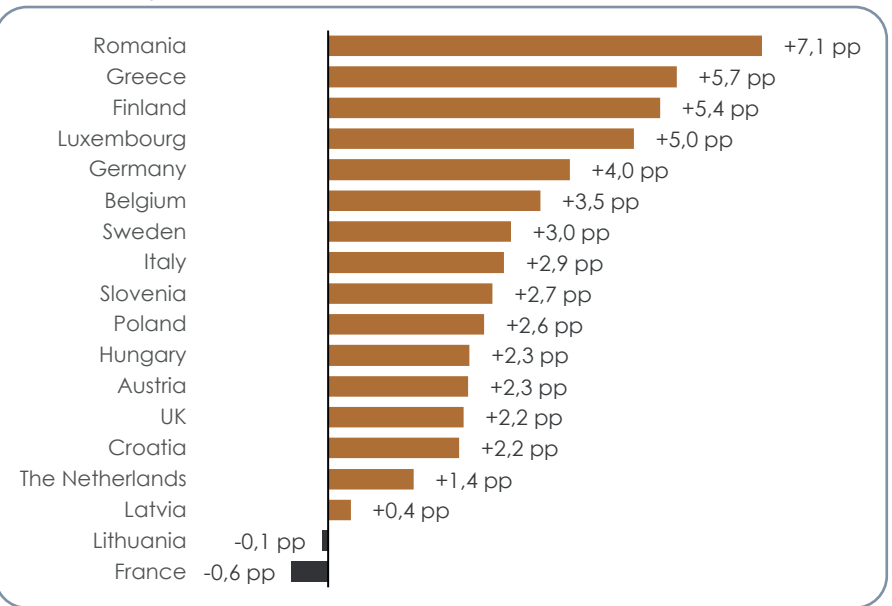
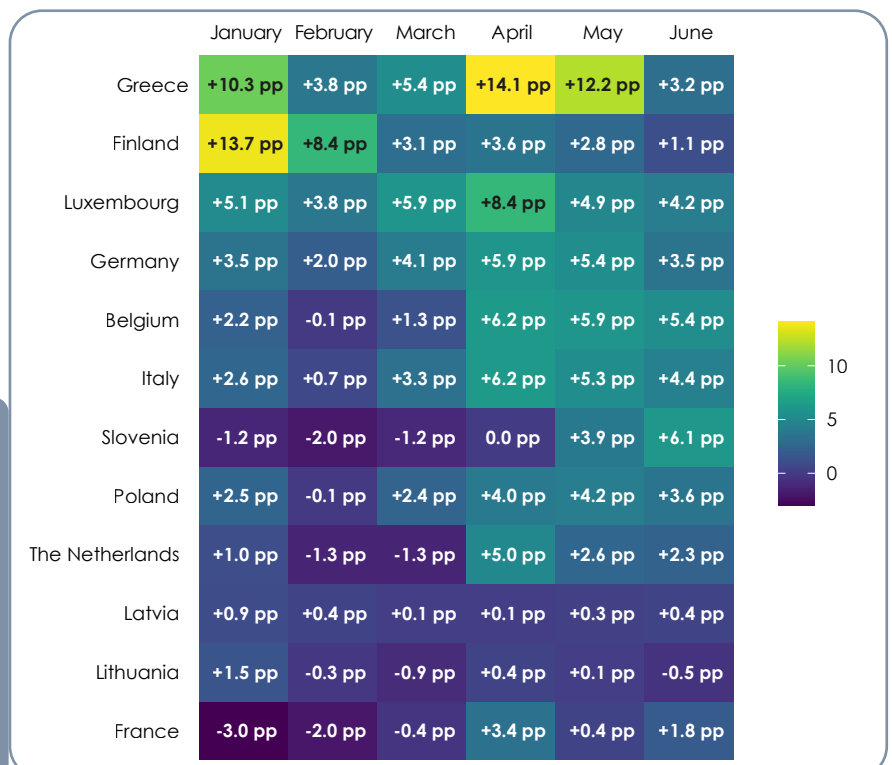


Figure 32 – Change in percentage points (pp) of passenger trains arriving on-time, half year 2020 and 2019

There were some increases in punctuality for passenger trains in January and February. These increases were not affected by COVID-19 as lockdown measures had not yet come into force.

In April and June the punctuality increased compared to 2019 in eleven countries, and in May all twelve countries had an increase in punctuality compared to May 2019. The average increase was highest in April, and April had the largest decrease in trains running. As the number of trains running increased in each country, the percentage of trains running on time typically fell.





## Punctuality of service – freight services

For freight, there was an increase in the percentage of trains that ran on time. Countries use different time thresholds for measuring punctuality, ranging from within 5 minutes, 30 minutes or 60 minutes. There was a greater increase in percentage points (pp) for freight services compared to passenger services. For passenger services, the increase ranged from 0.4pp to 7.1pp (a decrease was noted in France and Lithuania), while for freight the increase ranged from 1.1pp to 15.2pp (and stability was noted in Romania and a decrease in Lithuania and The Netherlands). The highest increase was in Finland, from 66.0% to 81.2%

Similar to passenger trains, the reduction in freight train numbers led to increased punctuality. As the number of trains on the network was reduced, there was less congestion. This reduced the likelihood of knock-on impacts on services when incidents occurred. Lower network usage also reduced conflicts between train paths. As freight was prioritised, it meant freight trains were given priority in slot allocation and there were more slots available due to cancelled passenger services. The increase in passenger trains punctuality had a positive impact on freight punctuality, as delays were generally reduced across the network.

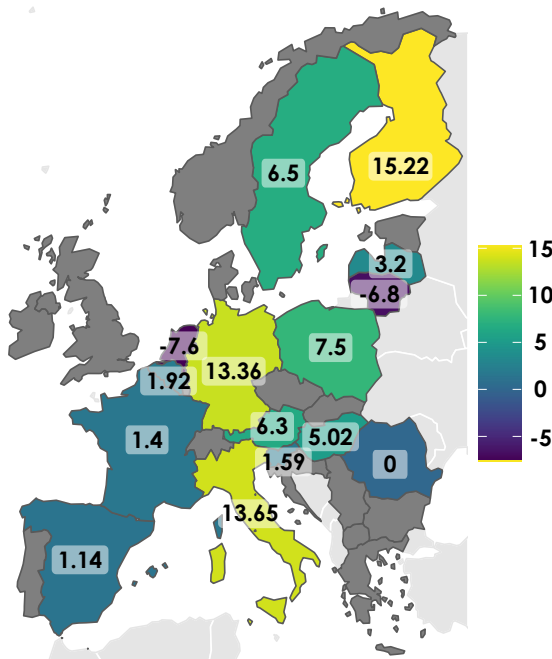


Figure 33 – Change in percentage points (pp) of freight trains arriving on-time, half year 2020 and 2019

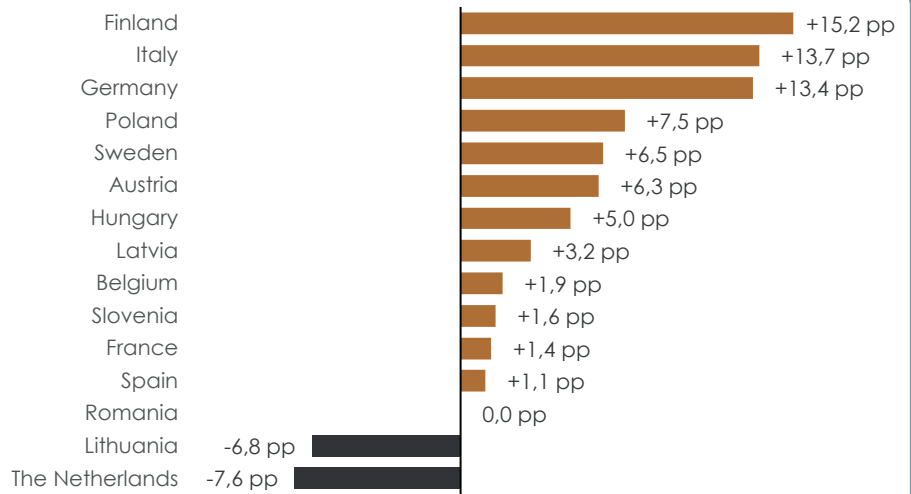
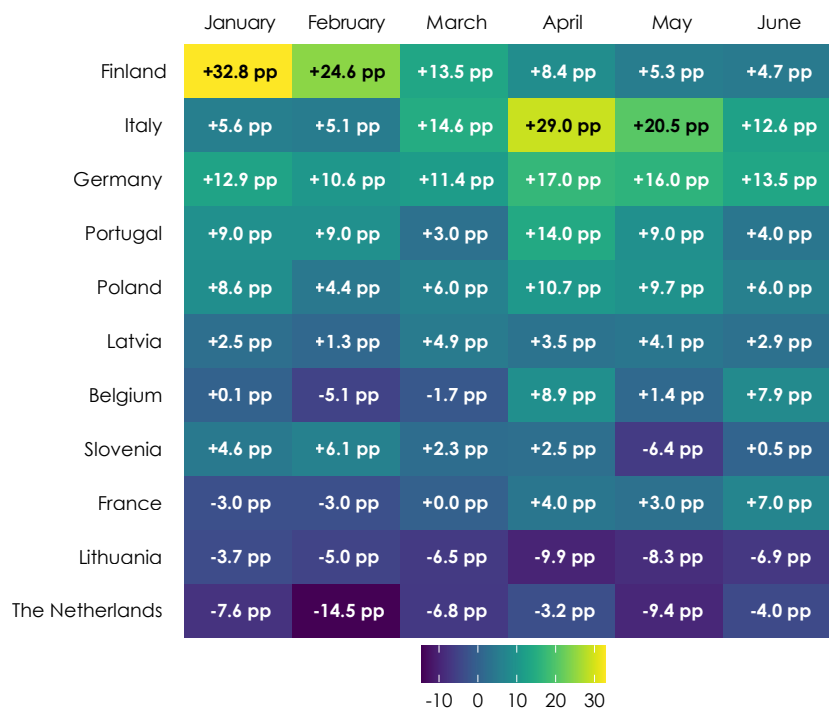


Figure 34 – Change in percentage points (pp) of freight trains arriving on-time, half year 2020 and 2019

For freight, there were larger increases in the percentage of trains that ran on time. For six countries, the greatest increase in percentage points was in April. This corresponds to the largest decrease in April of freight train departures (IRG average). However the percentage of trains arriving on schedule fell for both Lithuania and the Netherlands in each of the six months.





## Financial impacts – passenger revenue

This section shows the changes in operator passenger revenue (from fares and public subsidies) during the first half of 2020 compared to 2019 for each country in the panel. It also includes the change in traffic indicators (train-km and passenger-km).

Greece and France<sup>28</sup> appear to be the most affected countries (respective drop of half-year revenue of -61% and -55%). In these countries, as well as in Hungary, the drop appears larger than the drop of passenger-km, indicating a decrease in the average revenue per passenger-km (this decrease can be explained by changes in the structure of the traffic or by a real change in average fares per passenger-km). The significant drop of revenue in France can be explained by the fact that public subsidies are not included in the evolution. Fares are more correlated with traffic especially for non-PSO services that represented 47% of passengers-km in 2019 and only 30% in 2020.

Alternatively, revenue decreased in Croatia (-17%), Estonia (-9%), Germany (-16%) and Romania (-15%). This appeared to be lower than the impact observed in terms of passenger-km and train-km in these countries. This can be explained by the continuation of public financial aids for PSO services during the period even if rail traffic was reduced or suspended.

In Luxembourg the revenues for passenger rail services are no longer linked directly to number of passengers as public transport is free of charge for passengers since March 2020. The state is providing subsidies which mainly contribute to the revenue and are not correlated with the number of passenger-km.

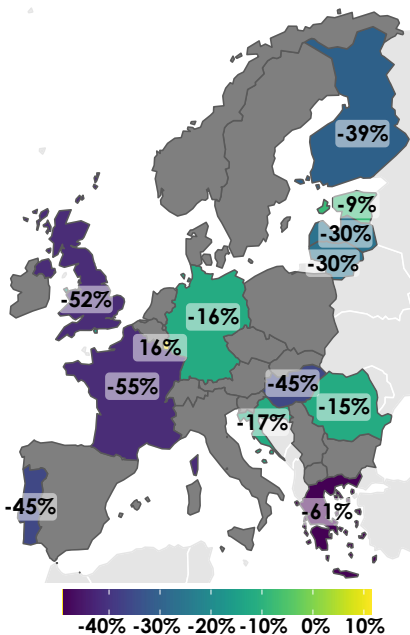
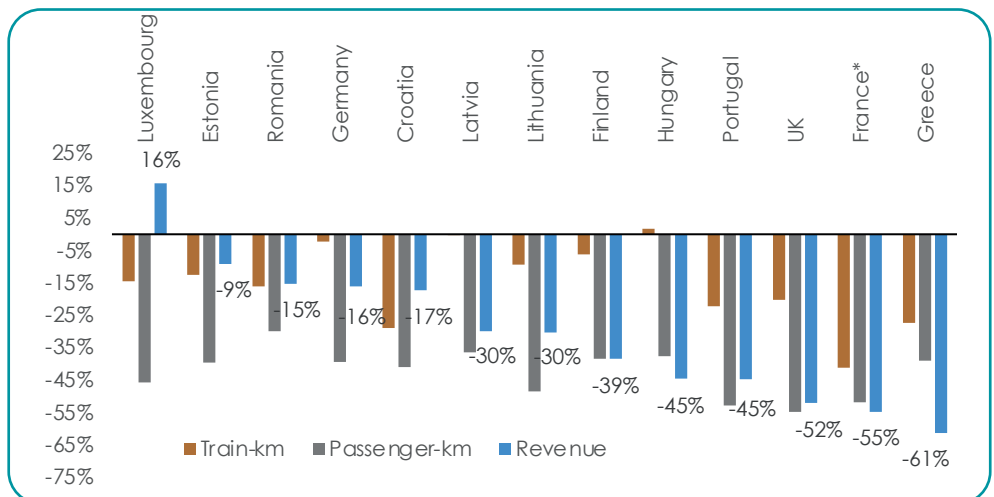


Figure 35 – Trends of passenger operators' revenue and traffic during the first half of 2020 compared to 2019



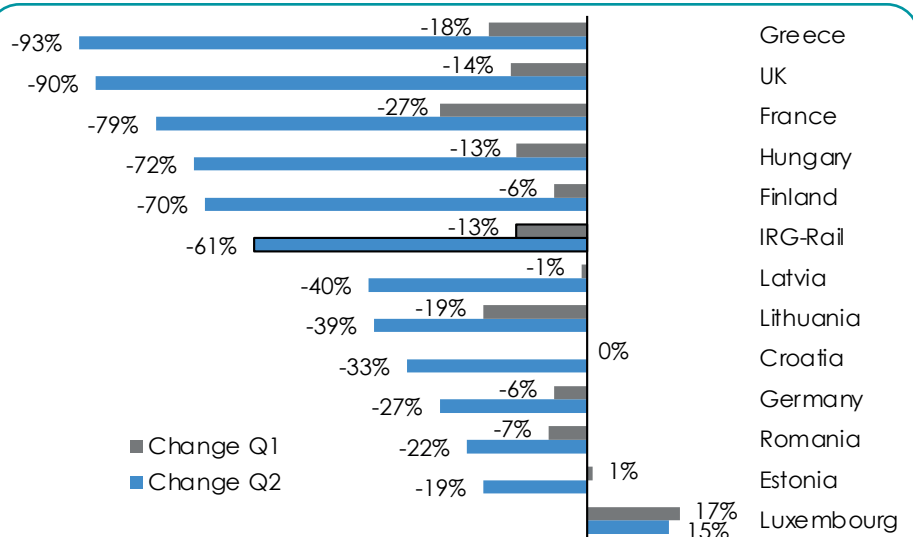
\* For France the statistic of revenue presented on this chart does not include public subsidies (see footnote 28) – for other countries the statistics of revenue include fares and (if present) public subsidies.

Looking at the quarterly evolution of passenger operators' revenue during the first half of 2020 compared to 2019, we can note that for each country the reduction is larger during the second quarter. The drop is particularly large in Greece (-93%) and UK (-90%).

In the UK, all non-essential travel was prohibited during lockdown, and people were encouraged to avoid public transport outside of lockdown. As a result of passenger income and other income reducing, the UK government increased financial support and became responsible for paying the costs of running most passenger services. Provisional figures show payments for over Euro 2.3 billion between April to June to PSO operators.



Figure 36 – Trends of passenger operators' revenue during the first and second quarter of 2020 compared to 2019



<sup>28</sup> Only revenue from fares was available for France at the time of the production of this analysis. The absence of public subsidies (that accounted for 38% of total passenger revenue in 2019) partly explains the sharp drop of revenue compared to traffic for France (as the level of public subsidies is less sensitive to traffic than revenue from fares).

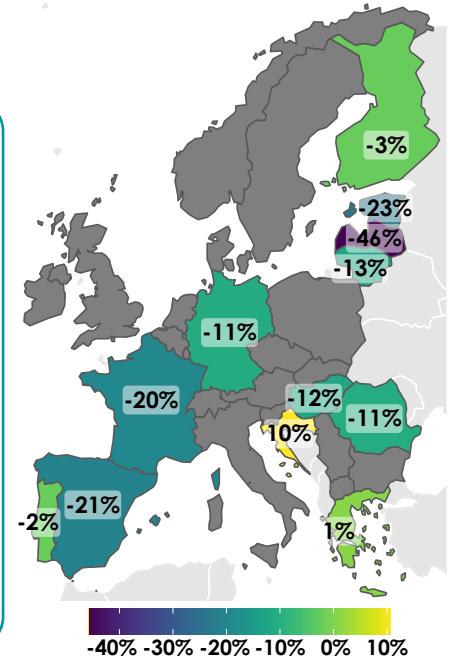
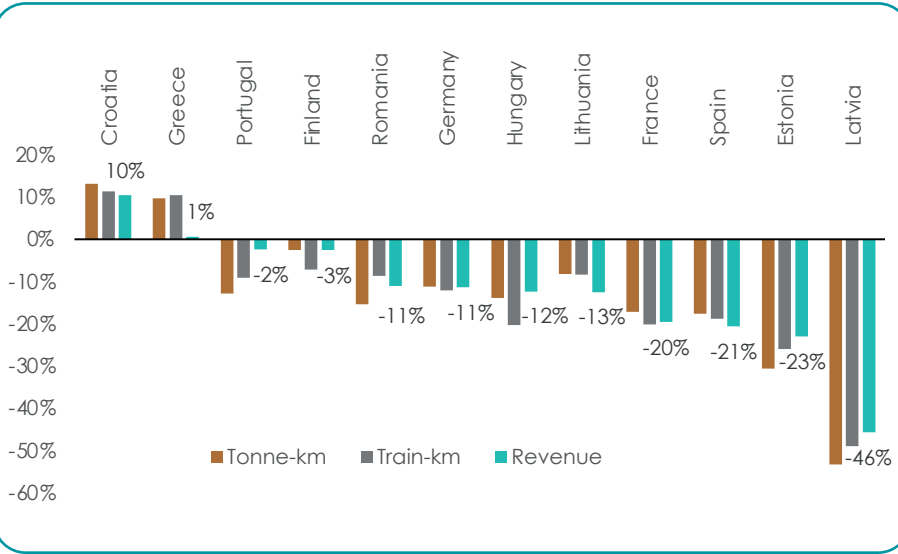


## Financials impacts – freight revenues Global track access charges

The freight sector appears less affected in terms of revenue by the COVID-19 crisis than the passenger sector. The largest reduction was for Latvia with a decrease of 46% of revenue during the first half of 2020 compared to 2019 (due to larger than normal freight activity in January 2019). The evolution of freight operator's revenue seems to be more correlated to traffic than passenger operators' revenue.



**Figure 37 – Trends of freight operators' revenue and traffic during the first half of 2020 compared to 2019**



The evolution of global track access charges (TAC) for freight and passenger services during the first half of 2020 compared to 2019 shows a decrease in every country in the panel. As a result of a limited decrease of train-km, TAC in Germany were relatively stable (-2%) in 2020. This was also the case in Croatia where the evolution of TAC seems less impacted by the change in train-km. In Slovenia, track access charges increased between 2019 and 2020 (of 27%) despite a decrease of train-km (-20%) as PSO passenger trains were exempted for paying TAC till the end of 2019.



**Figure 38 – Trends of track access charges and traffic during the first half of 2020 compared to 2019**

