

Observatory of transport and mobility

The French passenger rail transport market

2015-2016



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OVERVIEW

The first detailed market report of Passenger Rail Transport in France

ARAFER publishes the first annual market report of Passenger Rail Transport in France. It is based on data collected from railway companies and infrastructure managers. The results and contents presented below are therefore largely unpublished and provide a detailed overview, from the point of view of supply (including quality of service) and demand, as well as financial results for railway undertakings.

This work complements statistics published by other French and European bodies¹. This base of essential information will be updated regularly, and intermodal analyses will also complete the observation plan of the passenger rail transport sector in France.

An extensive national rail network, mainly operated for passenger traffic, with major disparities in the intensity of use

With 28,800 kilometres of railway lines operated² in 2015 and nearly 3,000 stopping points (railway stations and train stops), France has the second-largest railway network in Europe, after Germany.

The French rail network (RFN³), with an average age⁴ of 31 years, is 55% electrified and has 2,030 kilometres of high-speed lines⁵, making it Europe's second largest high speed network after Spain.

In 2016, total traffic on the RFN was 473 million trains-km, 85% of which were passenger trains. The rail network's intensity of use is characterized by large disparities, since 80% of passenger train movements is concentrated on 27% of the rail network, while 31% of the network condenses only 1% of the passenger train movements.

The modal share of rail in passenger transport has declined since 2011 in France, while it has been growing in other European countries

For fifteen years, the development of the TAGV⁶ and TER⁷ enabled the rail mode to reach a modal share of 10% in 2011, coming from a low point in 1995 (7.1%). During this period, the annual growth rate of rail traffic was regularly higher than that of other modes.⁸

Nevertheless, this trend has been reversed since 2011⁹, with passenger rail service (measured in passenger-km) declining, while other modes continue to grow. At the European level, if France has a modal share of the railways¹⁰ higher than that observed in most of its close European neighbours (+1 point with the United Kingdom, +2 points with Germany, +3 points with Spain, +4 points with Italy), this has decreased since 2011, whereas, on the contrary, it is in growth in these countries¹¹ over the same period.

¹ Such as the Statistical Data and Surveys Service (SDES), the Quality of Service Authority in Transport (AQST), Eurostat, etc.

² Excluding Rail network of Corsica, port networks and isolated rail lines.

³ The French rail network is called "Réseau Ferré National" (-RFN).

⁴ See definition and formula for calculating the average age of the network in Appendix 1.1.

⁵ At the end of 2017, the RFN will have nearly 2,800 km of high-speed lines, particularly with the commissioning of the Sud-Europe-Atlantic and Bretagne-Pays-de-la-Loire high-speed lines.

⁶ Train à grande vitesse (TAGV) = High-Speed Trains.

⁷ Train Express Régional (TER) = regional public service obligation by train.

⁸ Air transport, coaches & buses, and private vehicles.

⁹ In 2016, the modal share of the railways is 9.2% in France (source SDES - Transport accounts 2016).

¹⁰ Modal share of rail in land transport - 2015 data, Eurostat source.

¹¹ +0.4 p.p. of railway modal share between 2011 and 2015 for EU-28, +0.2 p.p. for Germany, +0.5 p.p. for Italy, +0.8 p.p. in the United Kingdom, +1.1 p.p. in Spain.

Nearly 1.4 billion passengers transported in 2016, of which 87.7% by “daily trains” (TER and Transilien¹²)

In 2016, approximately 3.8 million passengers were transported daily by 11,000 trains, with 6.6 million seats. The “daily trains” (regional public transport service obligations, TERs and Transilien) alone account for about 90% of the supply¹³ and 87.7% of demand¹⁴, with 70% for Transilien. Comparing passenger traffic to actual supply in 2016, rail services achieved an average occupancy rate of 43%, an increase of 0.8 point over one year, but with significant disparities between services: by 25% in average for TERs up to 67% for domestic TAGVs.

Demand measured in passengers- km and performed mainly by the TAGV, down 1% in 2016 while demand on other modes of transport is growing by 2.7%.

With nearly 87 billion passengers-km in 2016, including 53% transported by domestic TAGV, passenger rail service on the RFN is down 1% year-to-year.

This drop in passenger traffic reflects a relative loss of attractiveness of the rail mode, while other modes of transport show growth over the same period. In 2016, according to transport accounts (Statistical Data and Survey Service - SDES¹⁵), domestic passenger traffic by private vehicles (including carpooling), inter-city coaches and by air increased by 2.7%, 17%¹⁶ and 3.8% over one year.

The occupancy of international and Intercités¹⁷ trains has particularly suffered (respectively -7.8% and -6.5%); TER suffered a more moderate loss (-2.8%). The domestic TAGV activity remained stable (+0.1%) and only the Transilien activity benefited from a rise in passenger traffic (+3.8%).

This overall decrease in demand is however less than that of the commercial supply (in passengers trains-km) which circulated over the same period (-4.2%), which, for the most part, is due to the cancellation of services related to social movements in the 2nd quarter of 2016.

Train deletions ¹⁸(“last minute” cancellations¹⁹ but also descheduling²⁰ previously not taken into account) have reduced the initially planned supply by 5% in 2016; 55% of the minutes lost by passenger trains come from “manageable”²¹ causes either by the infrastructure manager or by the railway undertaking

The use of the RFN (measured in trains-km of passengers and freight) decreased by 5.8% compared to 2015, mainly because of the social movements of the 2nd quarter 2016 which led to the descheduling of passenger trains, also penalizing the movements of freight trains.

In 2016, of the 6,968 passenger trains (excluding Transilien) initially scheduled daily, 229 trains were descheduled (representing a 3.3% descheduling rate) and 115 trains were cancelled “at the last minute” (representing a 1.7% cancellation rate). Thus, in total, the deletion rate of rail passenger services (descheduling and cancellations) amounts to 5%, or 344 trains per day in 2016.

¹² Transilien = Regional PSO by train around Paris (Île-de-France Region).

¹³ In number of train movements and number of seats offered.

¹⁴ In number of passengers transported.

¹⁵ Formerly SOeS.

¹⁶ The increase is mainly due to the development of liberalised intercity coach transport.

¹⁷ Intercités refers to long-distance public service obligations.

¹⁸ Excluding Transilien: the quality of service information of the Transilien activity could not be fully reliable at this stage.

¹⁹ The train could not run (on all or part of its planned route) as it was planned in the transport plan halted the day before its running day at 4 pm.

²⁰ Cancellation of train “anticipated”, that is to say, intervened before setting the definitive transport plan halted the day before the planned running day at 4 pm.

²¹ See definition in Section 4.4 and Appendix 4.5.

Furthermore, an average of 11% of passenger trains (excluding Transilien) having run arrived late at least 6 minutes²² to their terminals in 2016, keeping in mind that the rate of delay is accentuated in “peak periods”.

In total, 115,000 trains were deleted in 2016 (excluding Transilien). Of these deletions, 27% (i.e. 31,000 trains) are “last minute” cancellations and 73% are descheduled (i.e. 84,000 trains), which resulted in an “adaptation of the transport plan”, excluding these deschedulings from the official rail reliability statistics published up to now.

In addition, 78% of the total annual descheduling took place in the second quarter of 2016, during social movements related to the renegotiation of the social framework for railway employees. 94% of the deschedulings that occurred during the second quarter of 2016 concerned TER and Intercités services, for which the daily supply was reduced by more than 40% during these days of disruption.

The “last minute” cancellations are directly related to unforeseeable operational malfunctions and hazards. Their rate does not particularly increase during periods of social movements, but it is however higher for TER services (1.9% of the initially planned supply) than for other services (0.6%).

Finally, according to the Performance Improvement System Committee (COSAP)²³, approximately 11.2 million minutes were lost altogether by passenger trains on the RFN in 2015 (2.7 minutes on average for each train traveling 100 km). 55% of the total volume of minutes lost is induced by disturbances whose causes are known as “manageable”¹⁹, either by the infrastructure manager (23%) or by the railway undertaking in charge of operations (32%).

Railway undertakings income was €13.4 billion in 2015 and 31% of this amount has been used to pay network access charges (fees collected by SNCF Réseau and SNCF Gares & Connexions²⁴)

In 2015, the total income of railway undertakings for all passenger rail services on the RFN amounted to €13.4 billion excluding taxes. Commercial income (income from ticketing, subscriptions, etc.) represented €8.3 billion income (62%) and public subsidies represented €5.1 billion (38%).

In 2015, public subsidies accounted for around one-third of Intercités total income and nearly three-quarters of TER total income. As for the Transilien, fare policy changes linked to the “dezoning of the Navigo pass” led to a drop of nearly 21% of commercial income in 2016²⁵, offset by an increase of public subsidies. As a result, Transilien's overall income remained stable, but the influence of public subsidies rose from 62% to 70% between 2015 and 2016.

The average commercial income per passenger²⁶ also fell between 2015 and 2016 for other domestic services, whether contracted or not. Thus it is 7.8 euros per 100 km in 2016 for TER and Intercités contracted services (-3.2% compared to 2015), with significant differences in structure.²⁷ For domestic TAGV (including iDTGV and Ouigo), this amounts to an average of 9.5 euros per passenger per 100 km, down 2.8% in 1 year.

The network access charges paid in 2015 by the railway companies (including the track access charges collected by SNCF Réseau and the passengers stations access charges collected by SNCF Gares & Connexion) amounted to approximately €4.15 billion excluding taxes, which represented 31% of railway undertakings total income. To this amount paid by the railway companies is added the sum of €2 billion

²²Trains arriving less than 6 minutes late at their terminal stations are not counted in the statistics.

²³ See definition in Section 4.4 and Appendix 4.5.

²⁴ SNCF Réseau is the French infrastructure manager and SNCF Gares & Connexion is the French stations manager.

²⁵ The average income per passenger per 100 km is 5.7 euros excluding taxes in 2016, versus 7.4 euros excluding taxes in 2015.

²⁶ This indicator reflects the income received by the railway undertaking. However, it is necessary to remain cautious about the transposition of these results which are averages in “equivalent price” of a train ticket, because of the importance of the subscriptions for the public services obligations, and from taking into account passengers enjoying free admission in total passenger traffic, these two factors mechanically increasing the standard deviation around the average result provided here.

²⁷ In 2016, the average kilometric income for a TER subscriber amounts to 4.2 euro cents per passenger-km, compared to 10.8 euro cents per passenger-km for a non-subscriber.

excluding taxes, representing the “access fee” paid by the organizing authorities of transport to SNCF Réseau for public service obligations (TER, Transilien²⁸ and Intercités).

For the domestic TAGV activity, the amount of network access charges paid in 2015 by SNCF Mobilités amounted to €1.7 billion, that to say 38% of total income. This ratio is similar for international commercial services on the RFN (36%).

In 2016, for every kilometre travelled per passenger on a regional public service obligation (PSO), the user pays an average of 6.5 euro cents excluding taxes, and the organizing authorities of transport pays the supplementary amount to the railway undertaking, which is 17.7 euro cents excluding taxes (+ 5.6 euro cents excluding taxes paid to SNCF Réseau for the access fee)

The regional rail network presents first of all some great disparities: the Rhône-Alpes Region has the largest number of kilometres of network (nearly 10% of the RFN), but it is in Île-de-France and Nord-Pas de-Calais that the rail network is the densest compared to the regional area.

Then, in terms of intensity of use and rail mobility per capita, Île-de-France stands out by far, with Alsace coming in second. Picardie also has a relatively significant level of demand related to its proximity to Île-de-France .

The supply of seats-km for regional PSO, which represents nearly half of the total traffic of all services combined, contracted by 2.8% between 2015 and 2016. This decrease is explained by the decline in trains-km (decrease in the number of TER traffic by 3.8%, and 2.8% for Transilien), which is only partially offset in the case of TER by an increase in the average carrying capacity per train in 18 of the 20 Regions (+1.2% for all TER activity).

These changes are less the result of the desire to reduce the scheduled offer than the disruption of services related to the strikes of the 2nd quarter of 2016, which played a major role in the decline in traffic. In fact, if the theoretically scheduled supply of TER had been fully realized (in other words if there had been no train cancellations), the amount of traffic (in train movements) would have increased by 2%.

For TER, the decline in demand (-2.8%) is similar to that of supply (-2.7%). In contrast, the Transilien activity, saw an increase in demand (+3.8%). This results into a stagnation of the average occupancy rate for TER and a 1.8 percentage point increase in Île-de-France. The occupancy rate of TER activity is 25% in 2016, and ranges from 15% to 31%, depending on the Region. However, in the second quarter of 2016, a period disrupted by social movements, subscriber occupancy remained stable, while non-subscriber occupancy fell. In other words, the regular users, the subscribers, continued their movements by being forced to adapt to the reduction of the supply related to the deschedulings, while the non-subscribers had more latitude to refer to other modes of transportation, or chose not to travel.

In this context, TER commercial income decreased by 5.2% in 2016. The effect related to the decrease in passenger traffic (in passengers-km) accounts for nearly 54% of the income decline, while the remaining 46% is due to the decrease in average commercial kilometric income per passenger. TER income is 75% of public subsidies, with disparities between Regions (from 65% in Alsace to 90% in Limousin).

²⁸In specific the case of Transilien, the STIF (Île-de-France Mobilités) pays the equivalent amount of access fees to SNCF Transilien who then pays it to SNCF Réseau. For the other activities, the amounts paid by the organizing authorities of transport for the access fee are paid directly to SNCF Réseau and do not pass through the railway undertaking.

INTRODUCTION

The European Directive 2012/34/EU establishing a single European railway area (called the “Recast” Directive) requires sectoral regulators to monitor competition in the rail services market. For this purpose, the regulator is entitled to request information useful to the sector's participants (Article 56).

In France, among the missions that the legislator has entrusted to the regulatory authority for rail and road activities is first of all that of contributing to *“the monitoring and proper functioning, in its technical, economic and financial dimensions, of the national rail transport system, including public service and competitive activities, for the benefit of users and customers of rail transport services.”* (Article L. 2131-1 of the Transport Code).

To carry out this general interest mission, the Authority was entrusted, by decree no. 2015-990 of August 6th, 2015 for the growth, activity and the equality of economic opportunity, with the power to gather information.

Thus, the Authority *“may collect data, carry out expert assessments and carry out studies and any necessary actions of information in the sector [...] It may in particular, by reasoned decision, provide for the regular transmission of information by infrastructure managers, service infrastructure operators, railway undertakings and SNCF.”* (Article L. 2132-7 of the Transport Code).

In addition, for the performance of its tasks, the Authority shall have the right of access to accounting records, in particular from infrastructure managers and railway undertakings, as well as the necessary economic, financial and social information (first paragraph of Article L. 1264-2 of the Transport Code).

On the basis of the data collected from the railway undertakings²⁹ and the infrastructure manager³⁰, in respect of decisions no. 2016-052 of 13 April 2016 and no. 2016-085 of 31 May 2016³¹, a first general assessment of the passenger rail transport business was carried out by the ARAFER studies and market monitoring department for the 2015 and 2016 financial years.

This covers all rail passenger services³² carried out by railway undertakings operating on the French rail network³³: SNCF Mobilités and its various entities, brands, partnerships and subsidiaries, including the Thalys and Eurostar railways, as well as Thello (Trenitalia group). The organization of these services in 2016 is illustrated by the infography shown on the following page.

This first sectoral publication, which is to be updated on a regular basis, is the result of a significant work of almost a year between the services of the Authority and the participants of the sector in order to obtain and process the set of data necessary for its development.

Safely stored by the Authority to ensure confidentiality, these data also constitute an essential basis for regulatory work and give it the means to carry out more precise diagnostics of the issues and to enlighten the stakeholders in the upcoming opening of domestic passenger rail transport to competition.

²⁹ Data relating to the “downstream” market (services offered to travelers in their quantitative and qualitative dimension, traffic carried out and corresponding commercial income, etc.).

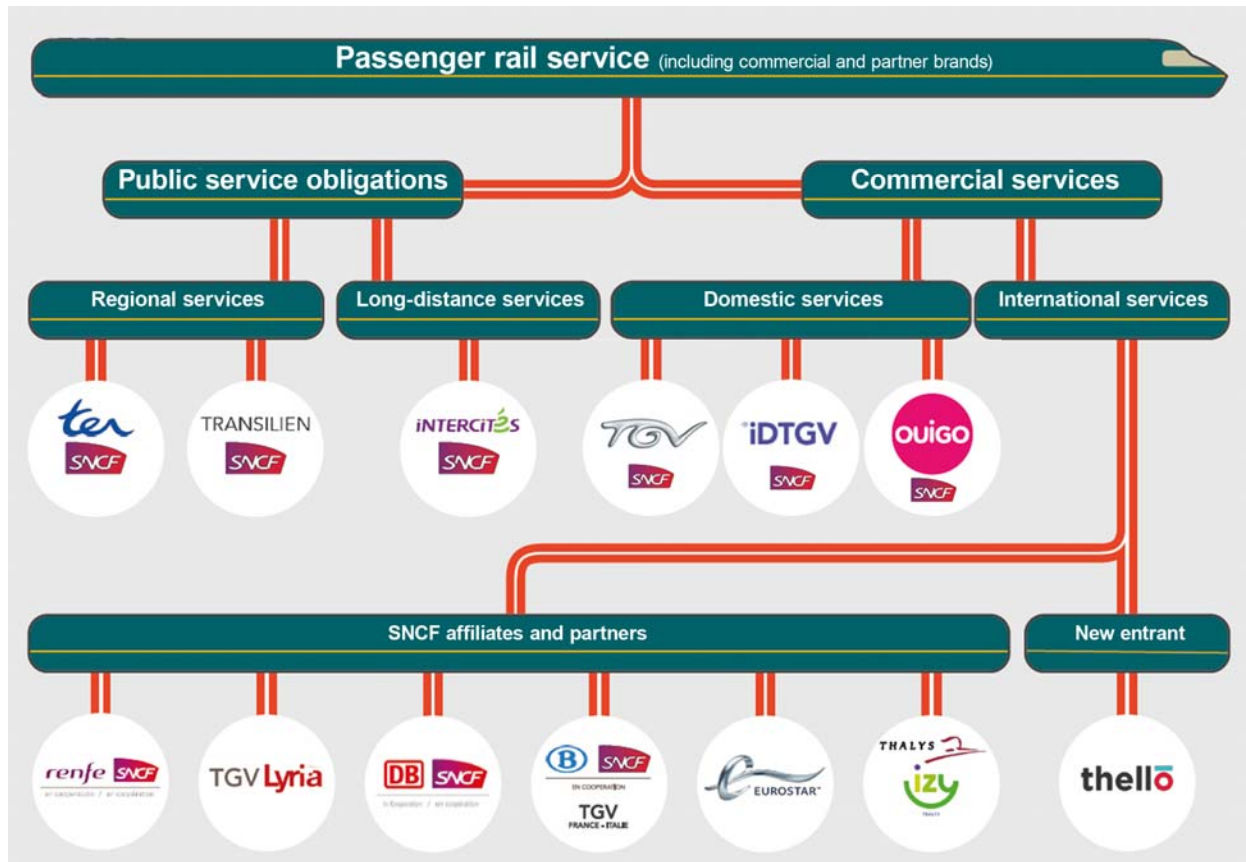
³⁰ Data relating to the “upstream” market (characteristics of the rail network, degree of use, etc.).

³¹ These decisions were updated for the following fiscal years.

³² Domestic/international traffic, regional/national PSO traffic, non-PSO traffic on the RFN.

³³ Outside the field of study: Corsica Railways, RATP network, urban guided transport (metro and tram), tourist railway lines, port railway networks, “isolated” railway lines, not connected to the RFN.

Infography 1 – The organization of passenger rail services in France in 2016



Source: ARAFER

WARNING

The results presented were obtained by statistical processing of the Authority's services, based on data transmitted as part of the data collection provided for by the Transport Code. In this reporting process, it is the responsibility of the railway undertakings and the infrastructure manager to ensure the reliability and completeness of the data before transmitting it to the Authority.

While using the collected data, the Authority's services endeavoured to have any errors or inconsistencies detected in the data transmitted by successive iterations corrected with the participants. However, the Authority cannot guarantee the complete reliability of the data received on behalf of the respondents.

1. CHARACTERISTICS AND DEGREE OF USE OF THE NATIONAL RAIL NETWORK (RFN)

If the general characteristics of the national rail network (RFN) are relatively well known (size and age of the network, electrified portion, high-speed portion, etc.), its degree of use is less known. This Section presents new information on the distribution of passenger traffic on the RFN.

1.1. 2nd European railway, mostly used for passenger transport, with significant geographical disparities in its intensity of use

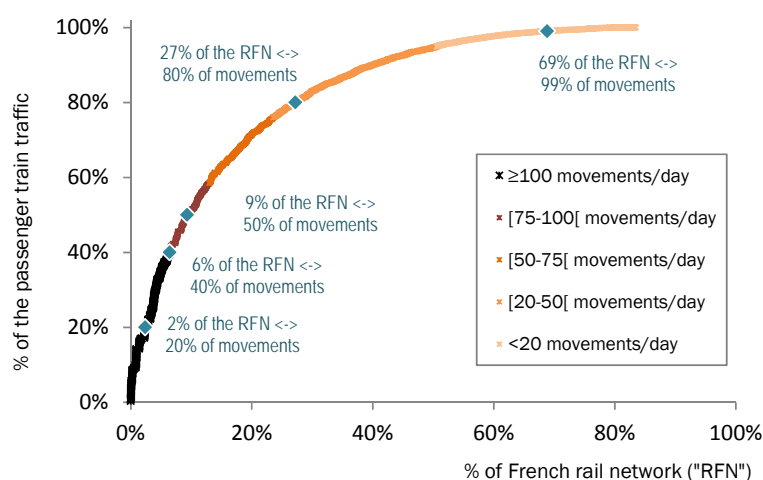
With **28,808 kilometres of lines** operated at the end of 2015, France has the second largest European railway after Germany.³⁴ 55.5% of the RFN is electrified and 7% are high-speed lines.³⁵ The average age of the network is **30.9 years**³⁶ while the average age of the high-speed rail tracks is 19.4 years. Finally, nearly 24% of the tracks were considered to be outdated in 2015. Appendix 1.1 provides additional information concerning the characteristics of the network, by UIC category of tracks.³⁷

Furthermore, **473 million trains-km** (passenger and freight trains) travelled on the RFN in 2016, of which 84.6% were for passenger transport. This volume of trains-km puts France in 3rd position in Europe, after Germany and the United Kingdom (see Appendix 1.2). The share of passenger transport on the rail network in France is also close, for example, to that observed in Belgium, Spain and Norway, slightly above the European average of 81.6% in 2015.³⁸ However, this share is much lower than that of Great Britain (93.5%) and higher than that of Germany (75%).

With an average of **40 passenger trains** traveling every day per kilometer of line and per direction in 2015, France ranks 10th in Europe in intensity of use of its rail network, ahead of Spain, but behind the United Kingdom, Germany and Italy (see Appendix 1.2).

This ranking is explained by the fact that the intensity of use of the RFN holds large disparities since **80% of passenger train traffic is carried out on only 27% of the lines of the RFN**, as illustrated by Figure 1.

Figure 1 - Traffic density of passenger trains per kilometre of line of the RFN in 2015 (in average number of trains per day and per direction of traffic)



Source: ARAFER

Among the 8,040 kilometres of lines constituting this “core RFN” there are 1,760 km of high-speed lines and 6,280 km of conventional lines.

Figure 2 shows the level of use of railway lines, and in particular identifies the most used lines for passenger transport.

³⁴ Source IRG-Rail - Fifth Annual Market Monitoring Report.

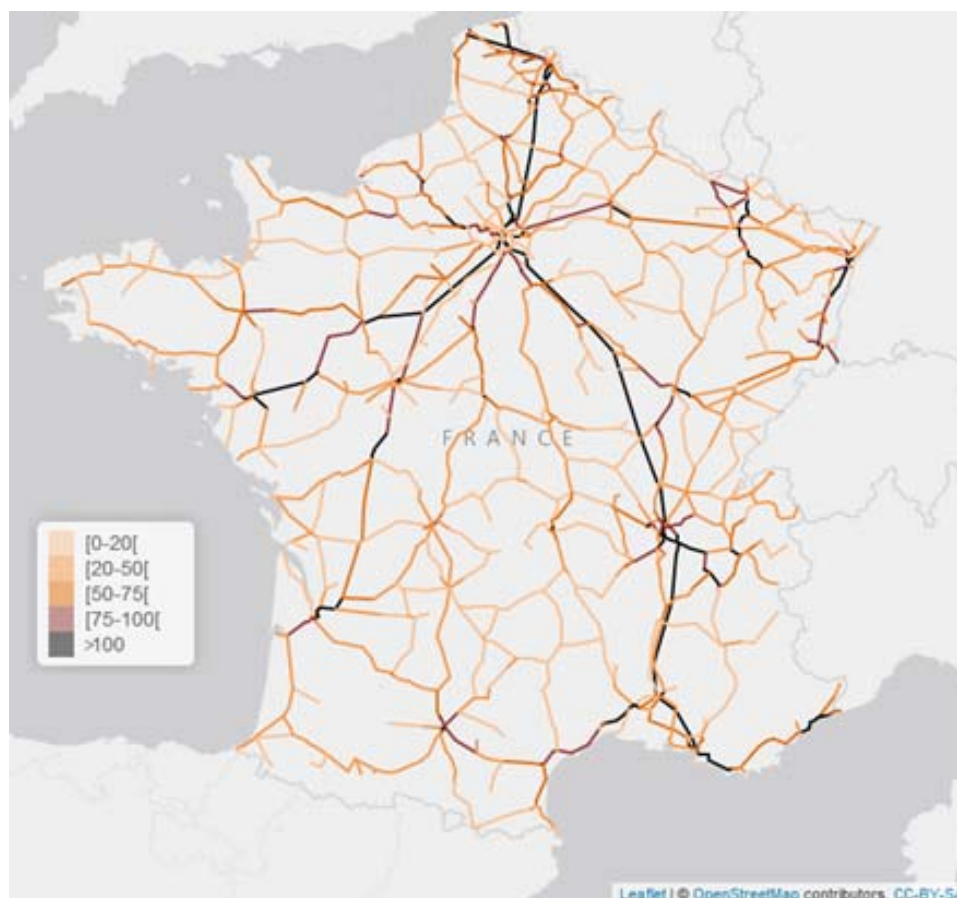
³⁵ France also has the second largest high-speed network in Europe, after Spain.

³⁶ The average age of a track is characterized by the age of its components weighted by the economic weight of each (the rail representing 22.6% of the age of the track, the ties 41.9% and the ballast the rest). This indicator allows us to monitor the effects of regeneration on the network.

³⁷ The UIC categories of railway tracks allow us to classify the tracks according to their intensity of use.

³⁸ This share of passenger traffic has remained relatively stable in France since 2010 (+1 percentage point since 2010). Total rail traffic in France fell sharply between 2015 and 2016 (-5.8%), for both passenger (-5.5%) and freight (-7%) transport.

**Figure 2 - Mapping of railway traffic (all passenger services³⁹) on the RFN in 2015
(average number of trains per day and per direction)**



Source: ARAFER

1.2. The RFN has 2,996 railway stations and train stops, located in 2,634 municipalities

In 2016, **2,634 municipalities are served** by at least one rail service, of which 89% are by TER. 69% of municipalities in metropolitan France are located within 10 km, as the crow flies, from one of the 2,996 railway stations or stops operated, and 90% of the population lives within 10 km of one of these stations. Characteristics of cities served by the railway are detailed in Appendix 1.3.

Of the 2,996 railway stations and train stops operated on the RFN, **245 stations, including 212 in Île-de-France, record more than 100 movements⁴⁰ of regional trains (TER and Transilien) each day** (intensity of use of railway stations by type of service is detailed in Appendix 1.4). The Île-de-France Region is therefore characterized by a greater use of its stations for “everyday” mobility. The municipalities hosting these stations have an average population of 49,780 inhabitants in Île-de-France and 176,635 inhabitants outside Île-de-France. For domestic long-distance services (domestic TAGV and Intercités), only 4 stations (Paris-Montparnasse, Paris-Est, Paris-Gare-de-Lyon and Lyon-Part-Dieu) record more than 100 daily movements, illustrating the “star” architecture of the long-distance network.

³⁹ Mapping of the traffic by type of rail service is available in Appendix 1.2.

⁴⁰ Counted as a movement are: the departures of lines, stops at the final terminal and intermediate stops.

2. COMPARATIVE CHANGES IN PASSENGER RAIL TRANSPORT

This Section provides elements of long-term intermodal and international comparisons, based on available national statistics (SDES and Eurostat). These data provide useful insights into historical trends at a macroscopic level, but should nevertheless be taken with caution. Indeed, some differences in scope and repolation faults have been detected by the Authority, following its analysis of the detailed data collected for the years 2015 and 2016, the results of which are presented starting from Section 4.

2.1. With a modal share of 9.2% in 2016, down since 2011, rail transport has not been benefitting from the development of mobility observed in France

With more than 950 billion passengers-km in 2016⁴¹, domestic passenger transport in France grew by 2.3% year-to-year, representing a growth rate higher than that observed over the last 5 years (+1.2% since 2011) and over a longer period (+1.0% on average since 1990).

This growth is driven by the dynamism of road transport (collective and individual) and air transport (**Erreur ! Source du renvoi introuvable.**). Conversely, rail transport (excluding RATP⁴²) is down 1.5% year-to-year. This situation of relative loss of speed in rail mode in a global market in growth has continued since 2011.

Between 2011 and 2016, demand in rail services shows an annual decrease of 0.5% on average, while other modes are growing in France, such as road (+1.4%) and air (+1.9%).

Table 1 Breakdown of domestic passenger traffic in France

<i>In billions of passengers-kilometres</i>	Level 2016	TCAM 2011-2016	2016/2015 change
Total domestic passenger transport	956.4	+1.2%	+2.3%
<i>with transport in particular vehicle (including carpooling)</i>	<i>756.4</i>	<i>+1.3%</i>	<i>+2.7%</i>
<i>with urban and interurban road transport (including SLO⁴³)</i>	<i>82.0</i>	<i>+2.6%</i>	<i>+3.1%</i>
<i>with air transport (domestic flights to the metropolis)</i>	<i>14.8</i>	<i>+1.9%</i>	<i>+3.8%</i>
<i>with rail transport on the RFN (i.e. excl. RER RATP)</i>	<i>87.8⁴⁴</i>	<i>-0.5%</i>	<i>-1.5%</i>
<i>with other rail transport (RER, RATP, metro IDF and excl. IDF)</i>	<i>15.4</i>	<i>+0.6%</i>	<i>+0.8%</i>

Source: SDES – 2016 Transport Accounts

⁴¹SDES – 2016 Transport Accounts.

⁴² RATP = company providing subway services in Paris and co-operating with SNCF (Transilien) 2 lines of suburban trains (RER A & B)..

⁴³ SLO = liberalized coach services (in French “Services librement organisés”).

⁴⁴ Source SDES - the 2015-2016 passenger-km volume calculated by the ARAFER differs slightly from the SDES values, due to differences in scope: the ARAFER passenger-km statistics are in fact calculated on the physical distance (and not the “commercial distance”) traveled by each passenger transported for a fee and free of charge (the latter category is not included in the SDES scope) by an exclusively rail transport service (the SDES scope of the trains under contract with the Regional Councils includes the services of TER cars).

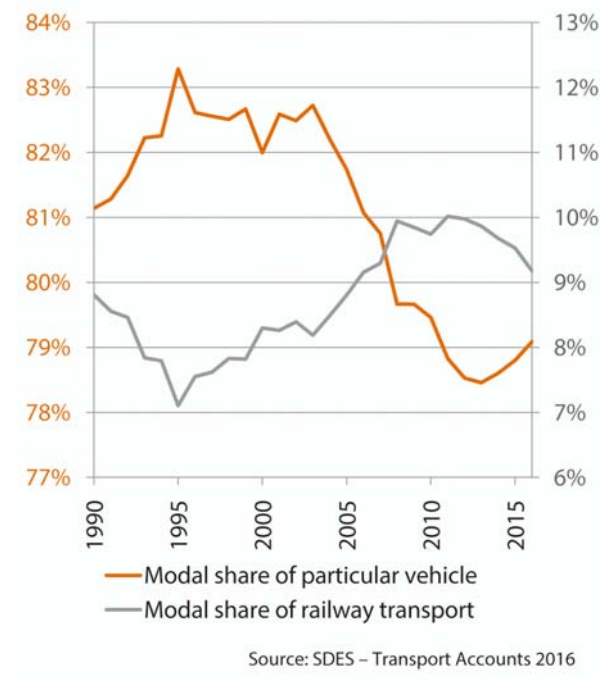
Thus, as shown in [Figure 3](#), the modal share of rail has oscillated between 7 and 10% for almost 30 years, with a low point reached in 1995 following several years of crisis, and a maximum reached in 2011.

For 15 years, the rail mode has experienced annual growth rates of occupancy higher than those of other modes⁴⁵ thanks in particular to the development of the high-speed line network and the development of the TER supply driven by the Regions. However, this trend stopped in 2011, with the cap on TAGV congestion and the decline in TER traffic (especially non-subscribing passengers).

A set of factors, both exogenous (lack of attractiveness following the attacks, development of new modes of mobility such as carpooling and coaches for example) and endogenous (adequacy of supply on demand, price, quality of service for example) can explain the evolution of rail service occupancy.

The identification and quantification of the weight of each of these factors cannot be established at this stage, and requires specific studies.

Figure 3 - Evolution of the modal share (in passengers-km) of the car (left-hand scale) and of the train (right-hand scale) in passenger transport in France since 1990



2.2. Between 2010 and 2015, the European passenger transport market was more dynamic than in France

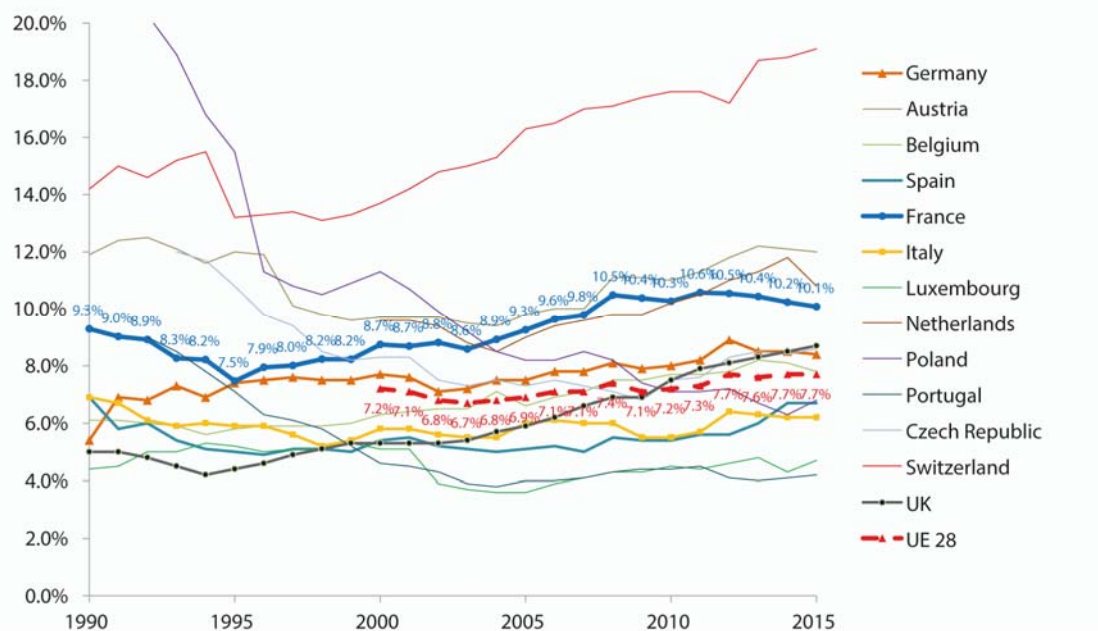
Between 2010 and 2015, with an average annual growth rate of 0.7% in rail traffic, France ranks 10th on this criterion, behind the United Kingdom (2nd, +3.5%), Germany (6th, +1.6%) and Italy (7th, +1.4%). The average annual growth of the IRG-Rail member countries was also 1.5% over the same period, almost twice the growth rate observed in France.

Europe's leading passenger rail market in 2010 (in number of passengers-km transported), but experiencing sluggish growth, France was surpassed in 2012 by Germany, which benefited from more dynamic growth in its number of rail users.

Rail's modal share in passenger land transport is still close to 10% in France, which is higher than the European average (7.7%) and above the level seen in the four major neighbouring countries (Germany, United Kingdom, Italy, Spain), whose modal share is between 6 and 8%. However, the gap is decreasing because of the growth differential explained in the first paragraph, as shown in [Figure 4](#).

⁴⁵See Appendix 2.1 for more details.

Figure 4 – Changes in modal share of rail in land passenger transport (excluding domestic air transport, excluding urban public transport)⁴⁶



Source: Eurostat

3. OVERVIEW OF THE MARKET IN 2015/2016

From this Section and to the end of the document, the data presented stems from the Authority's use of data collected from railway undertakings and infrastructure managers. The results and contents presented are therefore largely unpublished and provide a complete overview of the passenger rail transport market in France, both from the point of view of supply (including quality of service) and demand, as well as the financial results for the railway undertakings.

To this end, the Authority has had to clarify and make more reliable the scope of analysis corresponding to the passenger rail transport market carried out on the RFN, which has led to discrepancies with the national statistics available up to now.

The three main sources of discrepancy are as follows: (i) here the TER traffic is only rail and thus excludes traffic in coaches TER⁴⁷; (ii) traffic statistics in domestic TAGV (trains-km, passengers-km) are calculated on the basis of the actual kilometres travelled by trains and passengers (it is therefore the “physical” distances which are taken into account and not “commercial” distances⁴⁸); (iii) demand statistics include all passengers on board trains, including those who receive free services.⁴⁹

These corrections in scope make possible to more accurately reflect the weight of this market and its changes.

⁴⁶ The scope of the modes of passenger transport concerned is not the same as in the previous part, since domestic air transport is not taken into account in the Eurostat data.

⁴⁷ Or “Cars-TER”. Note that in the Transport Accounts, the “PSO Trains from regional transport authorities” includes the traffic carried out in TER Cars.

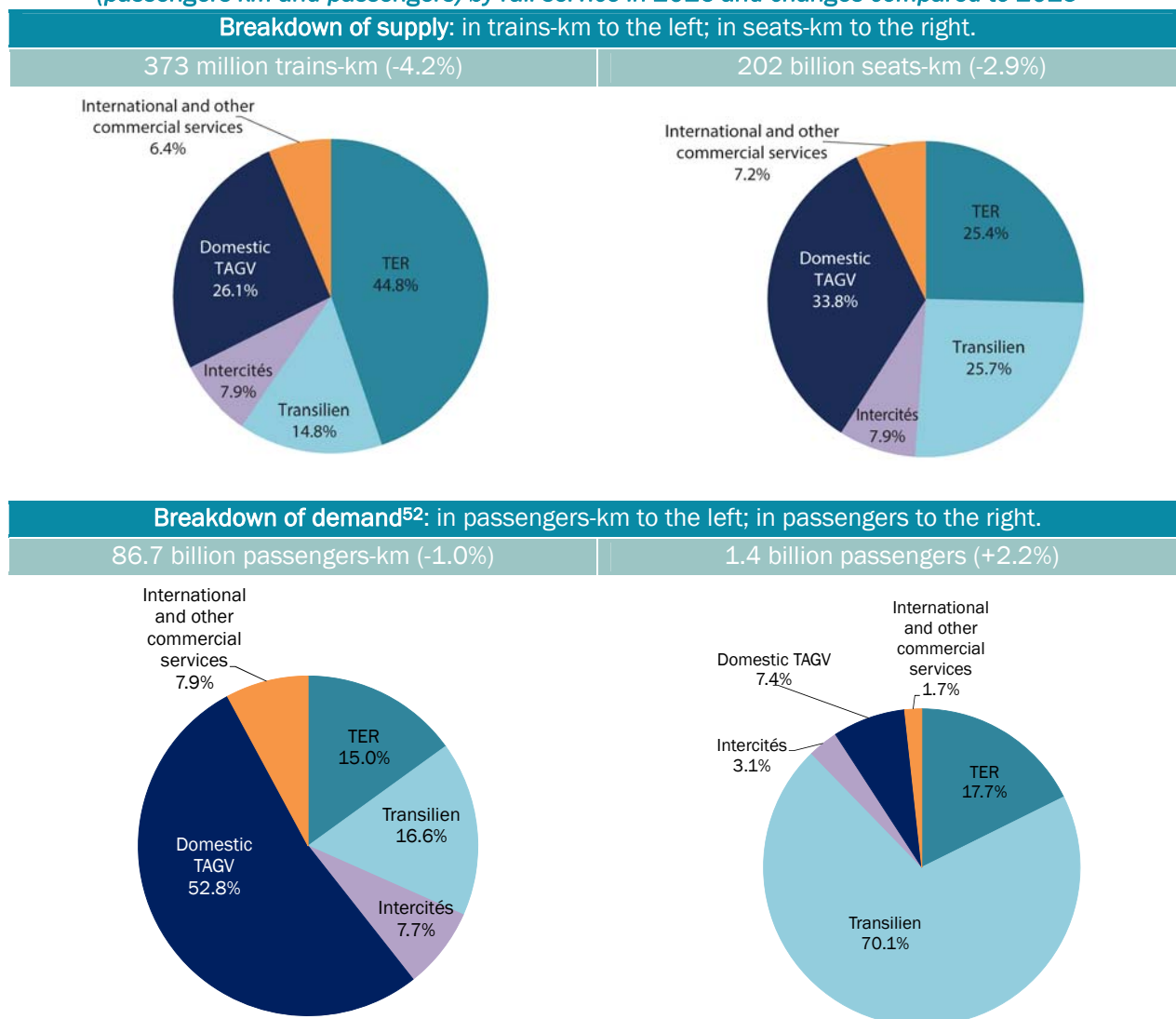
⁴⁸ The national statistics available so far are presented in physical trains-km and in commercial passengers-km. For example, on a Paris-Lyon route using LGV, the “physical” distance is 427 km, and the “commercial” distance is 511 km, which leads to an overestimation of about 20% of passenger traffic.

⁴⁹ Demand of free passengers was not included in other available statistics.

3.1. 1.4 billion passengers transported by train in 2016, with 88% in TER and Transilien

In 2016, nearly **1.4 billion passengers** and **87 billion passengers-km** were transported on the RFN, which on average represents approximately 3.8 million passengers per day on one of the 11,200 daily passenger trains on the RFN.

Figure 5 – Distribution of supply⁵⁰ (trains-km, seats-km) and demand (passengers-km and passengers) by rail service in 2016 and changes compared to 2015⁵¹



Source: ARAFER

Public service obligations (TER, Transilien and Intercités) supply **68% of the trains-km** and **59% of the seats-km**. These trains transport **39% of the passengers-km** but **91% of the passengers**.

This structural difference, depending on the measure used, is mainly due to the fact that users of Transilien services, which alone accounted for 74% of passengers in 2016, make much shorter journeys (in distance) than other passengers.

⁵⁰ Appendix 3.1 provides the traffic in 2015 (trains-km and passengers-km) as well as its quarterly change in 2016. Appendix 3.2 also provides a breakdown of the characteristics of the rail service supply, including the distribution of supply in terms of occupancy and seats offered daily by the different services.

⁵¹ The 2015 data is available in Appendix 3.

⁵² Passengers who have made "cabotage" trips on an international high-speed service are included in the "Domestic TAGV" activity.

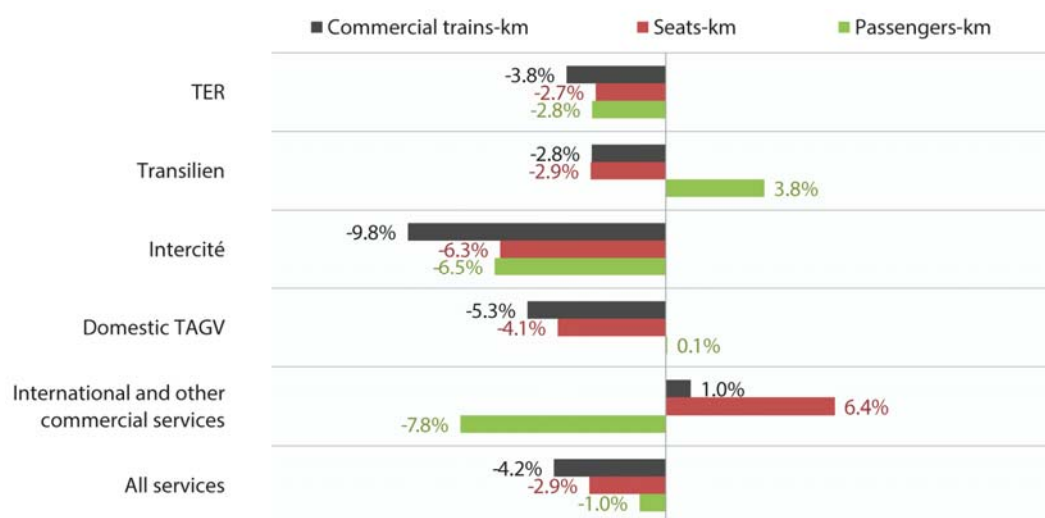
In fact, the average distance travelled per passenger is 350 km for long-distance domestic services (TGV and Intercités), 53 km for TER services, and finally 15 km for Transilien services.

3.2. The commercial supply realised in 2016 contracted much more than the demand

Between 2015 and 2016, the commercial supply of all rail services, measured in trains-kilometres, contracted by 4.2% (-2.9% in seats-km), affecting all rail services, in different degrees (Figure 6).

The contraction in supply was accompanied by a drop in occupancy of 1% (in passengers-kilometres). This decrease is due to a decrease in kilometres travelled on average per trip (-3.4%), considering that the total number of passengers transported increased by 2.4%, thanks to Transilien.

Figure 6 – Changes in supply (trains-km) of passenger rail services and occupancy (passengers-km) between 2015 and 2016



Source: ARAFER

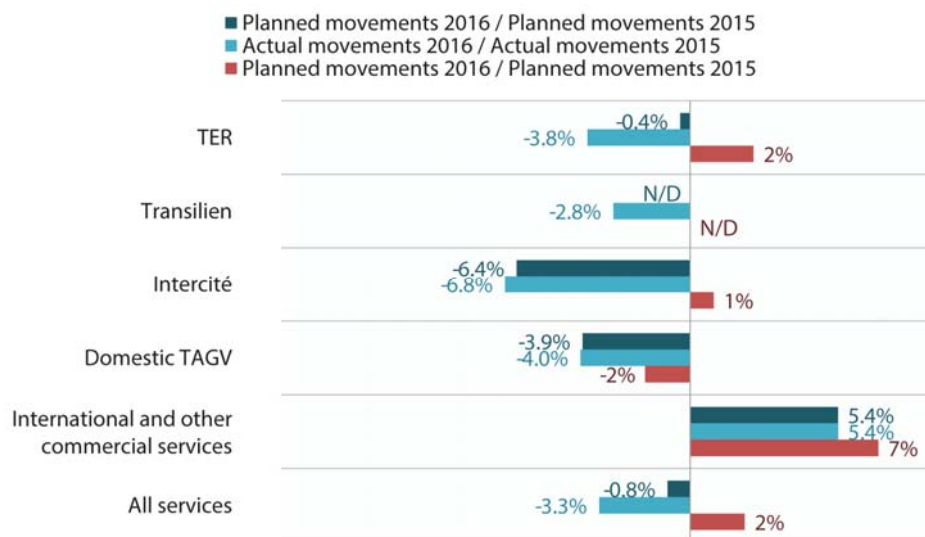
The drop in the supply made in 2016 is mainly due to the 9.8% fall in the trains-km supply achieved in the second quarter of 2016 (all services included), compared to the previous quarter. Business in the 2nd quarter of 2016 was certainly disrupted by social movements that led to the descheduling of trains (see Section 5).

Figure 7 compares the actual traffic to the expected traffic. In particular, we can see that if the expected supply had been fully realized, in other words if there had been no train cancellations, the amount of TER and Intercités traffic would have increased by 2% and 1% respectively. In the end, the actual TER and Intercités movements decreased respectively by 3.8% and 6.8% due to train cancellations, and in particular the deschedulings in the 2nd quarter of 2016.

On the other hand, the scheduled supply of domestic TAGV in 2016 already included a decrease in traffic of 2% compared to the supply made in 2015. The cancellations of traffic were added to obtain a reduction of actual traffic of 4%.

As for international trains, the increase in traffic actual (+5.4%) in 2016 is relatively close to that which had been scheduled (+7%).

Figure 7 – Changes in scheduled supply and supply actually made between 2015 and 2016



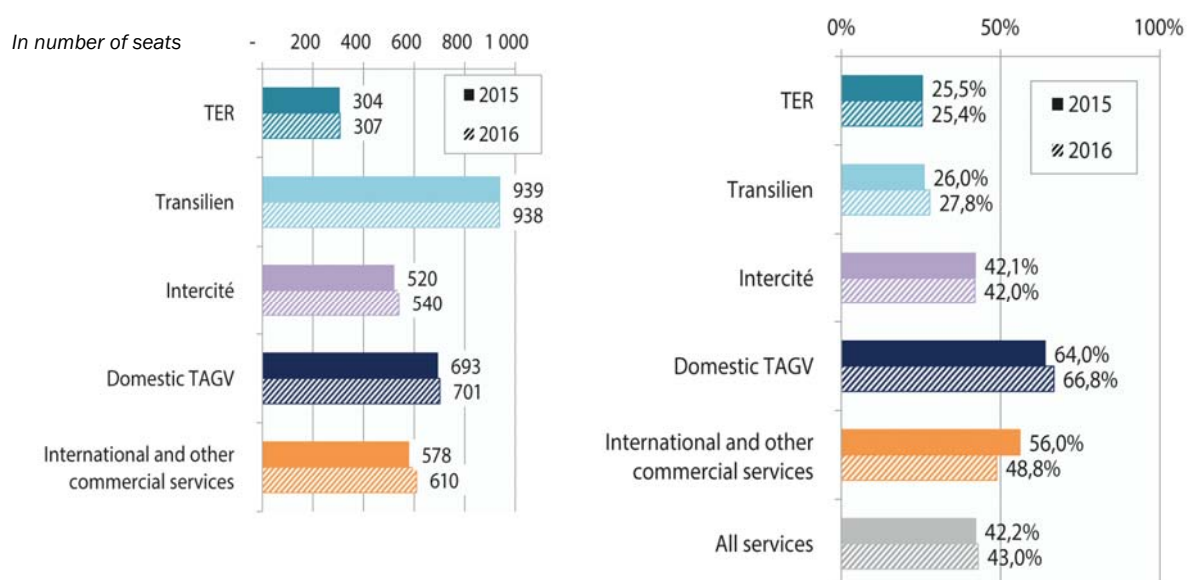
Source: ARAFER

Note for the reader: between 2015 and 2016, the Intercités train schedule forecast a 6.4% drop in the number of routes to be operated. Due to the balance of deschedulings and cancellations during the year (as well as possible late over-scheduling) this decrease was 6.8%.

3.3. The average occupancy rates were between 25% for TER and 67% for TGV

Domestic TAGVs are the services with the highest occupancy rate, averaging 67% in 2016, and close to 70% in the second and third quarters of 2016⁵³. On the other hand, the regional services (TER and Transilien) have an average occupancy rate of less than 30%, while Intercités and international trains are less than 50% occupied.

Figure 8 - Carrying capacities⁵⁴ (graph on the left) and average occupancy rates (graph on the right) by type of service in 2015-2016



Source: ARAFER

⁵³The quarterly changes in occupancy rates is available in Appendix 3.1

⁵⁴ Carrying capacity measurement is based on seat counting only.

We can also note the marked increase in the occupancy rate of TER services during the second quarter of 2016 (+2.1 points compared to the average of the other 3 quarters) due to a drop in occupancy in much smaller proportions, than the supply of trains-km (-6% of passengers-km compared to the first quarter of 2016, vs. -14% of trains-km). This result confirms that during this period of social movements, TER passengers continued to use the service while being forced to adapt to a reduced supply of almost half (see Section 5).

Finally, it should be noted that additional data is needed to distinguish occupancy rates for peak and off-peak periods. This complementary analysis would better reflect the actual experience of peak-time rail passengers, including the contracted regional services (Transilien and TER).

3.4. More than 26,500 domestic rail routes⁵⁵ (excluding Transilien) are offered in 2016, with 2,300 by several parallel rail services

The **26,500 domestic railway routes** operated in 2016 have different characteristics depending on the type of rail service offered. For example, around 80% of TER services are provided by connections of less than 100 km on which 70% of passengers using these services travel (see Annex 3.2). However, a majority of Intercités (53%) and TGV (89%) passengers travel on routes of more than 200 km. The Intercités supply offers connections with a wider range of distances travelled (reflecting regional, inter-regional and national journeys).

Furthermore, **2,300 railway routes (8.7% of the routes)** are operated by at least two different railway services.⁵⁶ These routes, for which several railway offers (both PSO and not) coexist, were used by **38% of passengers** in 2016.

The coexistence of several rail services on the same connection raises the question of their possible complementarity/substitutability. From the point of view of the use of the network capacities as well as that of user preferences, the coexistence of several services on the same portion of infrastructure is only justified if these services have sufficiently different characteristics (for example: commercial speed, frequencies, time slots, prices, quality of service, etc.).

All sorts of situations are observed, notably:

- 88% of the rail routes (Figure 9) are operated only by a PSO (TER or Intercités) and represent 18% of the domestic demand (Figure 10).
- More than 84% of the routes are operated exclusively by a TER service, 12% of passengers used them in 2016.
- Nonetheless, 5.7% of the routes are operated both by a TER service and an Intercités service, representing nearly 10% of the traffic. On these routes the Intercités demand represented nearly 62% of the passengers transported versus 38% for TER (Figure 11).
- 28% of passengers travelled on a route for which there is both a contracted supply (TER and/or Intercités) and a non-PSO supply (domestic TAGV). On these routes, nearly 46% of passengers used a TAGV service, 25% an Intercités service and 25% a TER.

The mapping of connections serviced by multiple services is provided in Appendix 3.4.

⁵⁵Including cabotage routes, operated within the framework of international lines.

⁵⁶ This analysis is carried out in first approach on the sole criterion of the origin/destination of the route (same town of origin/same common destination), without taking into account other criteria of substitutability. Among the connections operated by different rail services, it is possible that the traveler does not have the choice of the service according to the day or the time of travel (for example, a route operated during the week only by a TER service, and also by an Intercités service on weekends).

Figure 9 - Breakdown of the number of rail routes operated in 2016 by type of service (excluding Transilien)

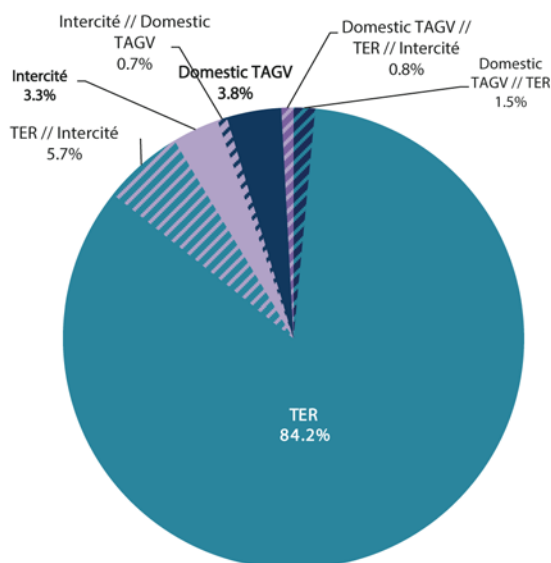
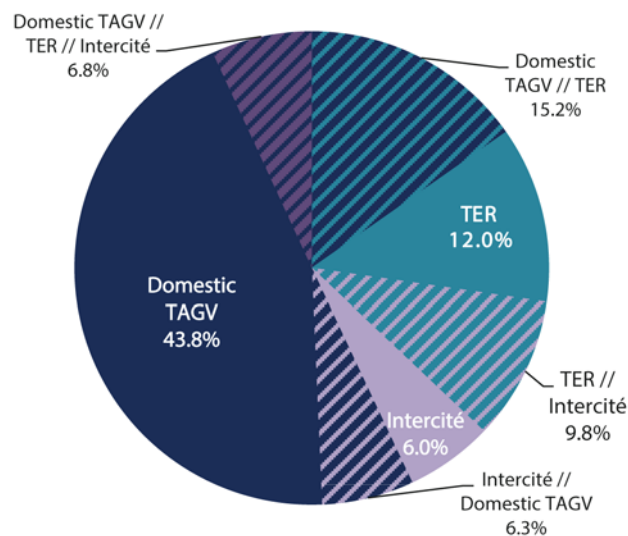


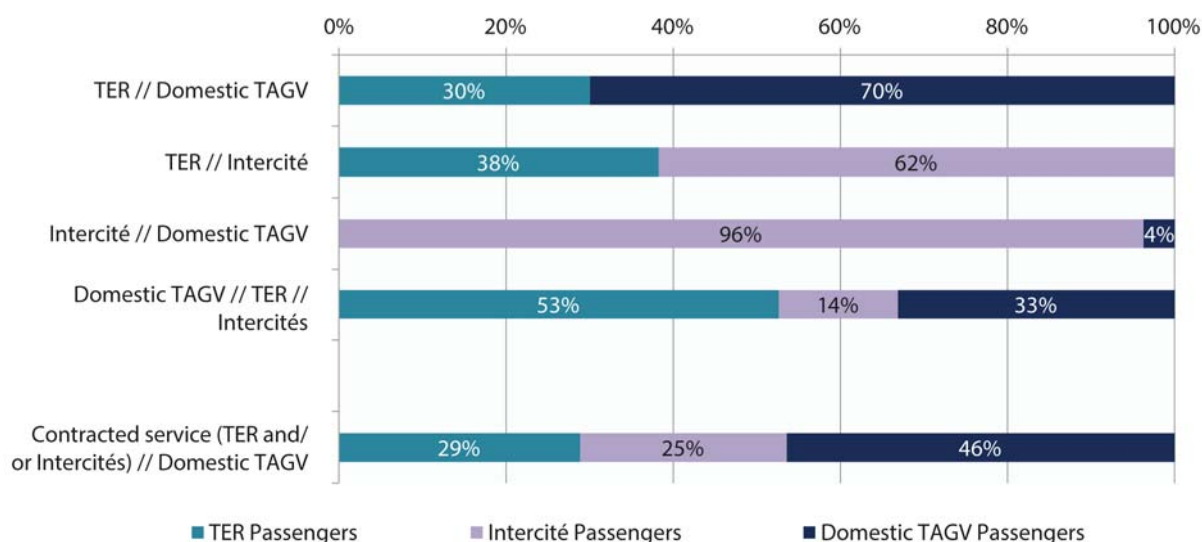
Figure 10 - Breakdown of demand in 2016 (in passengers) based on the supply of routes of rail services (excluding Transilien)



Source: ARAFER

Note for the reader: nearly 5.7% of the domestic connections were operated on all or part of 2016 by a TER service and an Intercités service. To this is added 0.8% of the connections operated in 2016 by a TER service, an Intercités service and a TAGV service. In 2016, these 5.7% of connections represented 9.8% of the number of passengers on domestic routes (excluding Transilien) in number of passengers.

Figure 11 - Breakdown of demand in 2016 (in passengers) on routes operated by more than one rail service



Source: ARAFER

Note for the reader: on the routes operated by a TAGV, TER and Intercités service in 2016, nearly 53% of the passengers carried used a TER service, 14% an Intercités service and 33% a high-speed service.

4. QUALITY OF SERVICE OF PASSENGER RAIL TRANSPORT

Service quality covers multiple dimensions. In France, the Quality of Transport Service Authority (AQST) measures and publishes statistics on cancellations and delays, particularly on rail services. The AQST statistics are calculated as follows:

- Cancelled trains are counted to evaluate the reliability of services. Only the trains whose routes were deleted (totally or partially⁵⁷) were counted when it was anticipated in the definitive transport plan set the day before at 4 pm. For example, cancellations may stem from personal accidents or even unavailability of equipment.⁵⁸ In the rest of the study, these cancellations will be called “last-minute cancellations” or “operational cancellations”;
- Delays on arrival are measured at the terminal station of the route, according to the thresholds established by SNCF Mobilités for domestic services. Only trains whose traffic was disrupted are counted, resulting in a delay at the terminal of at least 5min 59sec for regional services and long-distance trips of less than 1h 30min, 10min 59sec for trips between 1h 30min and 3hrs and 15min 59sec for trips longer than 3hrs.

In order to refine the measurement of the reliability of rail services and to better reflect the travellers’ feelings, ARAFER has calculated, in addition to the “last minute” cancellations, train descheduling. Thus, among the trains whose traffic has been scheduled, trains that have been cancelled for whatever reason are included in the operational transport plan, i.e. in the route schedule which is set the day before departure at 4 pm. For example, trains that are cancelled a few days before their movement due to a strike notice will be counted in this category. This innovative indicator provides a complete view of train deletions explaining the difference between the theoretical supply and the actual supply.

In addition, the 5:59 delay threshold was adopted by the Authority for all domestic rail services, regardless of the distance travelled, in order to facilitate the comparability of the results.

This quality of service information is not currently available for Transilien services, which is therefore not included in this Section. Further work will be carried out to integrate them into the future publications of the Authority. Moreover, with regard to international services, the punctuality thresholds differ significantly and make it impossible to make comparisons.

It should be noted that, following its decision no. 2017-045 of 10 May 2017, the Authority should have a more detailed view of the descheduling, as of the 2017 service schedule, which will enable it to distinguish in particular the descheduling which took place in the 3 days preceding the departure. This should help to better characterize the effect of these disturbances on travellers. Additionally, the Authority will collect data on trains that are at least 5 minutes and 0 seconds late (instead of 5min 59sec) and for each service point on the train route (instead of the terminal station only). This change will make it possible to more accurately measure the number of passengers affected by service disruptions, while converging towards a harmonization of the measurement of delays at the European level.⁵⁹

In order to subsequently analyse the determinants of travellers’ modal choices and, in particular, the weight of the quality of service in these arbitrations, it seems necessary to first produce statistics that better reflect the quality perceived by travellers. Future work will be required to assess the number of travellers affected by service disruptions, particularly during peak hours. The inclusion of comfort indicators is also relevant, like models developed, among others, in the United Kingdom.⁶⁰

⁵⁷ Only part of the planned route has been completed.

⁵⁸ See the causes for delays and cancellations on the AQST site. (<http://www.qualitetransports.gouv.fr/>)

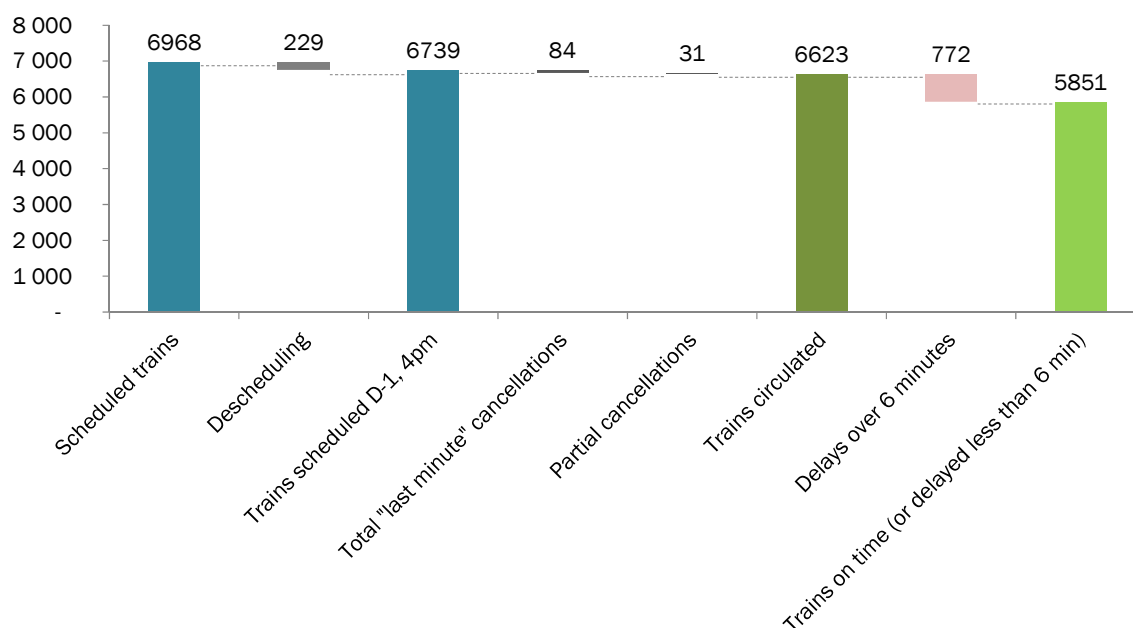
⁵⁹ The European Commission recommends a threshold of 5 minutes and 0 seconds for calculating these delays (<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016SC0427&from=EN>)

⁶⁰ <https://www.itf-oecd.org/measuring-and-valuing-convenience-and-service-quality>

4.1. In 2016, 5% of scheduled trains were cancelled and 11% of circulating trains arrived with a delay of more than 6 minutes at their terminal station

The graph below (Figure 12) illustrates the degree of completion of the daily scheduled supply for TER, Intercités and TGV services in 2016.⁶¹

Figure 12 – Daily reliability and punctuality⁶² of passenger rail services in France in 2016 (excluding Transilien)



Source: ARAFER

Note for the reader: on an average of 6,968 trains scheduled per day in 2016 (trains whose running was announced), an average of 229 were descheduled before D-1 at 4 pm (in particular for adjustments to the transport plan and strike notices), 84 trains were deleted daily between D-1 4 pm and their running date (run cancelled completely), 31 trains were partially cancelled (i.e. before their arrival at the terminal station), and of the 6,623 trains having run, 772 arrived with a delay greater than 5:59 minutes at their terminal station.

Of the 6,968 passenger trains scheduled daily in 2016, 229 trains were descheduled (representing a **3.3% descheduling rate**) and 115 trains were cancelled “at the last minute” (i.e. **cancellation rate of 1.7%**). Thus, in total, the deletion rate of rail services (descheduling and cancellations) amounts to 5%, or 344 trains per day in 2016.

In other words, not taking into account the descheduling in the official statistics of service deletions is to consider only one third of the deletions that actually took place. This can be problematic especially when it comes to comparing themselves at the European level. In many other countries, the cancellation rate provided to the European Commission⁶³ corresponds to the sum of all the train deletions that took place, regardless of the delay in their occurrence.

It should also be noted that the sixth annual IRG-Rail report, which will be published in early 2018, will specify the criteria for national measures for cancellations and delays in several European countries.

⁶¹ The circulation of tram-trains outside Île-de-France is not included in the reliability and punctuality analyses to allow for counting in the scope of calculation in all regions.

⁶² See appendices 4.2 to 4.4 for additional details (by type of service).

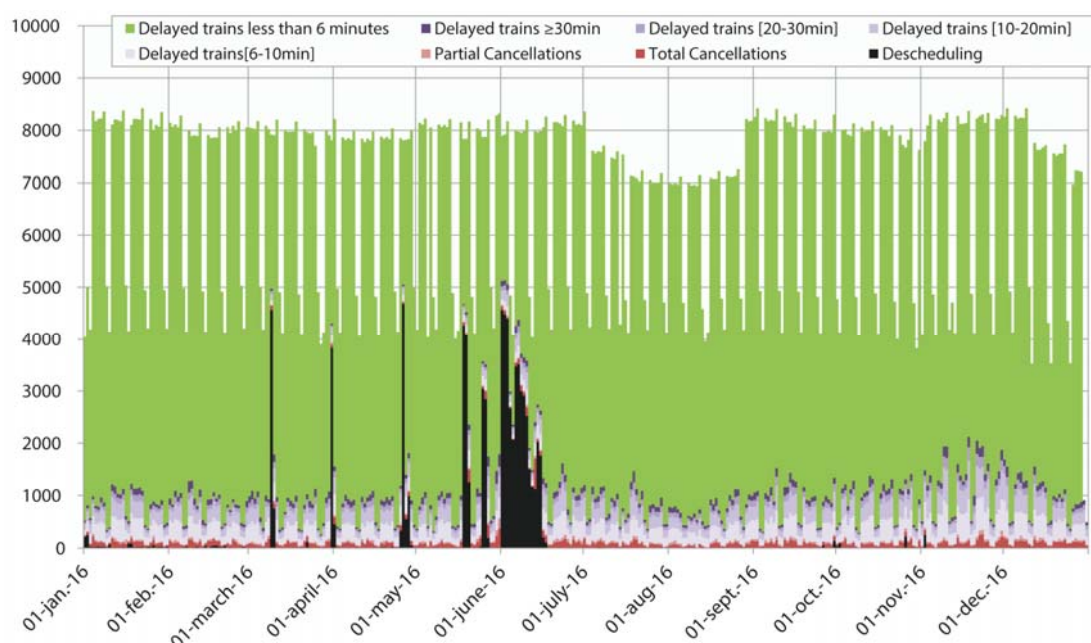
⁶³ The full reports and their appendices are available at the following link:

https://ec.europa.eu/transport/modes/rail/market/market_monitoring_en. Graphs relating to the reliability of rail services are presented in Appendix 4.1 of this report from the Authority.

Moreover, out of the 6,623 trains that were scheduled daily (**95% of the planned supply**), 11% (or 772 trains) arrived at their terminals with a delay greater than or equal to 6 minutes⁶⁴.

The graph below (Figure 13) also shows that the descheduling focused on the 2nd quarter of 2016 (black bars) as well as on 3 strike days in March and April.

Figure 13 – Daily reliability and punctuality⁶⁵ of TER, Intercités and TGV services in 2016



Source: ARAFER

Note for the reader: each bar represents all scheduled daily train traffic of TER, Intercités and TGV that took place between 1 January 2016 and 31 December 2016. On average, nearly 8,000 trains were scheduled during weekdays in 2016, and fewer than 5,000 trains for each weekend day (hollow bars).

For a given day, the scheduled traffic is broken down into a number of trains whose traffic was “descheduled” before D-1 16h (in black), trains that were cancelled totally or partially “at the last minute” (in red and pink), trains that ran to the terminal station with a delay greater than 5min 59sec (in mauve and purple), and the “balance” of trains that circulated without delay (or with a delay less than or equal to 5min 59sec) (in green).

3 black bars in March (9/03 and 31/03) and April (26/04), as well as a block of black bars between May and June (18/05 to 15/06) represent volumes of trains descheduled mainly because of the railway strikes that took place in the second quarter of 2016. Nearly 1,000 train routes are also affected daily by last-minute delays or cancellations, which were more pronounced in the last quarter of 2016.

4.2. Descheduling focuses on a few days during which the initially planned TER and Intercités supply was reduced by more than 40% (-24% for TGV)

In 2016, 3.4% of TER traffic was descheduled, i.e. 73,200 trains descheduled out of the 2.1 million TERs initially planned to run. These deschedulings occurred mostly (86%) during the 23-day strike⁶⁶ in spring 2016, related to the renegotiation of the social framework of SNCF employees. During these strikes, descheduling reduced the initially scheduled offer by 43%. Throughout the rest of the year, there was an average of 30 deschedulings per day, a descheduling rate of 0.5%. TER services also have a **last-minute cancellation rate of 1.9%**, the highest among the services. This represents 40,000 TER cancelled “last minute” in 2016, distributed with relative homogeneity throughout the year, with no correlation to strike periods.

⁶⁴ Appendix 4.1 also presents the first European comparisons of the delay rates proposed by the European Commission.

⁶⁵ See appendices 4.2 to 4.4 for additional details (by type of service).

⁶⁶ 36,600 cancellations over the first 15 days of June, 14,600 over 5 days in May, and 11,700 over the 3 days of SNCF strike on 9 March, 31 March and 26 April.

Intercités services show a **descheduling rate of 4%**. Of the 104,000 Intercités scheduled in 2016 (290/day on average), nearly 4,200 Intercités were descheduled, including 3,000 during the 23-day strike in spring 2016. The descheduling rate during strikes was 48%, compared to 1% not in the strike period. Intercités services also show a **descheduling rate of 1%**.

Finally, out of the 299,000 **high-speed trains** scheduled in 2016 (820/day), 3,800 trains were descheduled during the spring 2016 strikes, i.e. 166 per day, compared with 6 deschedulings of TGV per day outside the strike period (or an annual descheduling rate of 24% during a strike and 1% outside the strike period). High-speed services also show a **descheduling rate of 0.5%**. Note that this last minute cancellation rate has remained relatively stable throughout the year.

Finally, it should be noted that PSO rail services (Intercités and TER) have a descheduling rate of around 3.5% for the whole year, compared to 2.2% for high-speed commercial services. During the strike period, the descheduling rate of contracted services is 43% vs. 24% for high-speed services.

4.3. The rates of delay increase in peak periods, and are higher for long-distance services

Figure 14 shows, on the left, the average delay rate at the terminal stations of the TER, TGV and Intercités services in 2016 by time slot and according to the peak periods of each service⁶⁷. Each train is classified in the time slot corresponding to its departure time. On the right of the graph, a pie chart represents the distribution of late trains at the terminal station according to the actual delay observed on arrival. It should be noted that only trains over 5 minutes 59 are taken into account in this breakdown.⁶⁸

Finally, **the delay rate of TER services was 10% for 2016**. During weekdays, the delay rate exceeds the 10% threshold during peak service hours, that is, between 6 am and 8 am in the morning and after 4 pm in the afternoon. Furthermore, 1/4 of the delays recorded are greater than 20 minutes. Note that a TER travels on average 53

km in 59 minutes.

Regarding the TGV, the average rate of delay increased to 18%. It exceeds 20% between 14h and 20h and reaches 25% during the peak time of Friday afternoon. Almost 20% of the delays are greater than 30 minutes. Note that the average route of a TGV is 2hrs 46min, for a distance of 430 km.

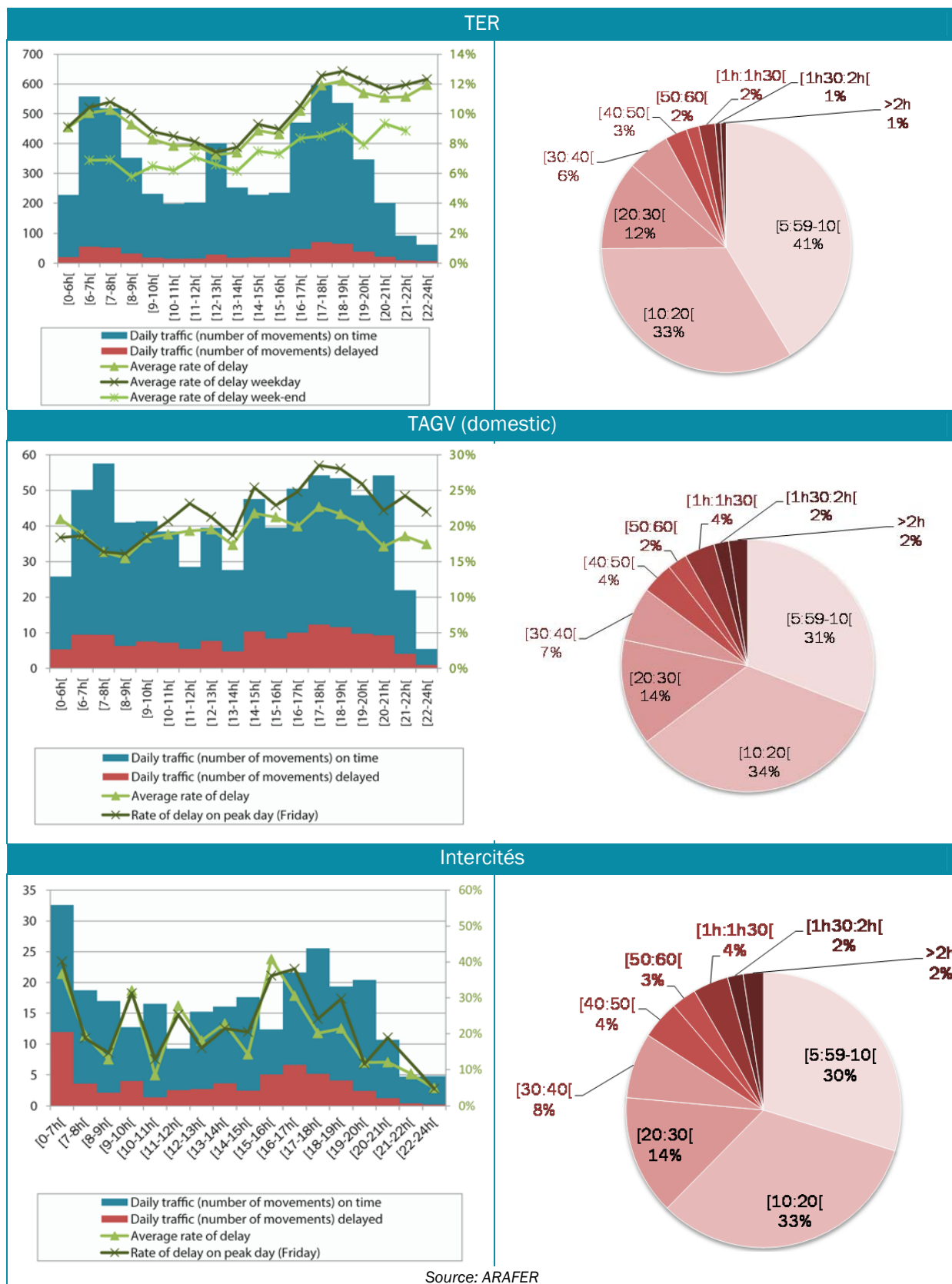
Finally, **the delay rate of Intercités services is 22% on average**. It exceeds 30% between 9 am and 10am, between 4 pm and 5 pm and at night (between midnight and 7 am). On peak days (the day before the weekend) this rate remains similar. 1/4 of the delays are over 30 minutes. Note that the average route of an Intercités is 2hrs 52min.

It can also be pointed out that the base of trains eligible for passenger compensation, for delays of 30 minutes or more, is about 14% of late TERs, 21% of TAGVs and 23% of Intercités trains.

⁶⁷ The peak periods were evaluated for each service according to the rail supply, that is to say, by the number of runnings per day and time slot. An evaluation by occupancy of services is not possible in the current state of available data.

⁶⁸ In other words, there is no category [0; 5: 59], since these trains are considered "on time".

Figure 14 – Delay rate by time period in 2016 and breakdown of late trains



Source: ARAFER

4.4. 55% of the minutes lost by passenger trains are linked to so-called “manageable” causes by SNCF Réseau and the railway companies

To improve the regularity of rail traffic, Directive 2001/14/EC, which was replaced by Directive 2012/34/EU of the European Union, has created incentives to improve performance.⁶⁹ In France, the System for Performance Improvement (SAP⁷⁰) was introduced in 2014 and allows the tracking of an indicator of minutes lost per 100 kilometres travelled by trains and the causes of delay. A system of penalties is put in place to encourage players to perform better.

The operation of the SPI is described in more detail in Annex 4.5. This Appendix also specifies the lost minutes by type of rail service as well as the causes of delays according to the SPI. In summary, 55% of the minutes lost by passenger trains in 2015 are linked to so-called “manageable” causes. This represents:

- 2.6 million minutes lost for “manageable” causes by the infrastructure manager (SNCF Réseau): “infrastructure failure”, “construction site management”, “overall slowdown” or “traffic management”;
- and 3.6 million minutes lost for “manageable” causes by the railway undertaking: “rolling stock failure”, “stopover”, “train driving”, “train preparation” or “non-compliance with the scheduled route”.

⁶⁹ Article 35 and point 2 of Appendix VI to Directive 2012/34/EU of 21 November 2012 establishing a single European railway space.

⁷⁰ In French : Système d’Amélioration des Performances (SAP).

5. FINANCIAL RESULTS OF THE RAILWAY SECTOR

This Section details, first, commercial income and public contributions received by the railway undertakings, by type of service. Second, the track access charges paid by the railway undertakings and the transport authorities (AOT) are presented, also by type of railway service. These data are provided for information purposes only, based on data collected by the Authority (see Disclaimer on p.10).

5.1. Passenger rail companies earned €13.4 billion of income in 2015: €8.3 billion of commercial income⁷¹ and €5.1 billion from public subsidies⁷²

Revenues from tickets sales and subscriptions amounted to **€8.3 billion** in 2015, representing 62% of the total income collected by passenger railways on the RFN.

Public subsidies paid to railway undertakings came to **€5.1 billion**, distributed as follows:

- approximately €3 billion for TER (which is 75% of the total TER income);
- approximately €300 million for Intercités trains (which is 32% of the total Intercités income);
- approximately €1.7 billion for Transilien (62% of the Transilien activity income);
- approximately €100 million (only for fare compensations) for the TGV activities which are non-PSO services (i.e. 3% of the income).

Figure 15 – Income⁷³ per activity in 2015 and weight of the public subsidies

	RU incomes (sum in millions of euros excl.taxes)	% of public subsidies in the incomes
TER	3 971	74%
Transilien	2 733	62%
Intercités	927	32%
Domestic TAGV	4 593	3%
<i>Domestic transport sub-total</i>	12 223	41%
International et TGL non conventionné	1 146	0,4%
<i>Total rail transport on RFN</i>	13 369	38%

Source: ARAFER

Note for the reader: the income of TER activity in 2015 amounted to nearly €4 billion excluding taxes in 2015. 74% of this income (nearly 3 billion euros) come from public subsidies. For all rail transport on the RFN, these public subsidies account for €5.1 billion, or 38% of the income of the railway undertakings.

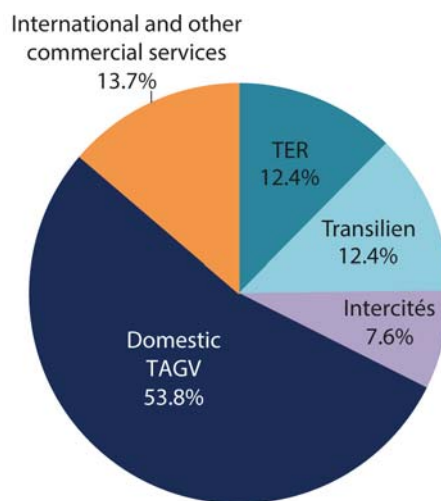
In 2015, 2/3 of commercial income generated by passenger rail transport on the RFN come from non-PSO activities (Figure 16), which is €5.6 billion.

⁷¹Income from tickets commercial and subscriptions, excluding public contributions and fare compensations.

⁷²Fare compensations (all services) and balance contributions (PSO services).

⁷³ Excluding internal services invoiced between entities of the same Group (e.g. services provided by the TER activity on behalf of the Intercités activity) and excluding other products.

Figure 16 – Breakdown of commercial income on the RFN in 2015, by type of service



Source: ARAFER

For domestic transport activities only⁷⁴, commercial income decreased by 6.4% between 2015 and 2016 (Table 2). This decrease is essentially linked to a negative “kilometric income” effect of -6.0 % (which is the contribution of the decline in the income per kilometre per passenger), while the “demand” effect stood at -0.4 % (which is the contribution to the decline in demand in passengers-km). In addition, it is the significant drop in commercial income from the Transilien activity, which accounts for half of the total decline in commercial income for domestic transport activities over one year.

Table 2 Change in commercial income per activity between 2015 and 2016

in millions of euros excl. taxes	Commercial income 2015	Commercial income 2016	Change 2016/2015	"Kilometric income" effect	"Occupancy" effect
TER	1 029	976	-5.2%	-2.4%	-2.8%
Transilien	1 030	815	-20.8%	-24.1%	3.3%
Intercités	634	568	-10.4%	-4.0%	-6.4%
Domestic TAGV	4 471	4 346	-2.8%	-2.8%	0.0%
Domestic transport sub-total	7 164	6 705	-6.4%	-6.0%	-0.4%
International and other commercial services	1 141	N.C.	N.C.	N.C.	N.C.
Total rail transport on RFN	8 304	N.C.	N.C.	N.C.	N.C.

Source: ARAFER

Note for the reader: SNCF Mobilités received 976 million commercial income in 2016 for the operation of TER services, down 5.2% compared to 2015. This is due to a decrease in the kilometric income per passenger whose contribution to the decline in commercial income is 2.4% and a decrease in TER passengers whose contribution is 2.8% compared to 2015. The decline in TER commercial income contributes to 12% of the decline in total commercial income for domestic rail services.

⁷⁴ This information for 2016 cannot be provided to date for international transport.

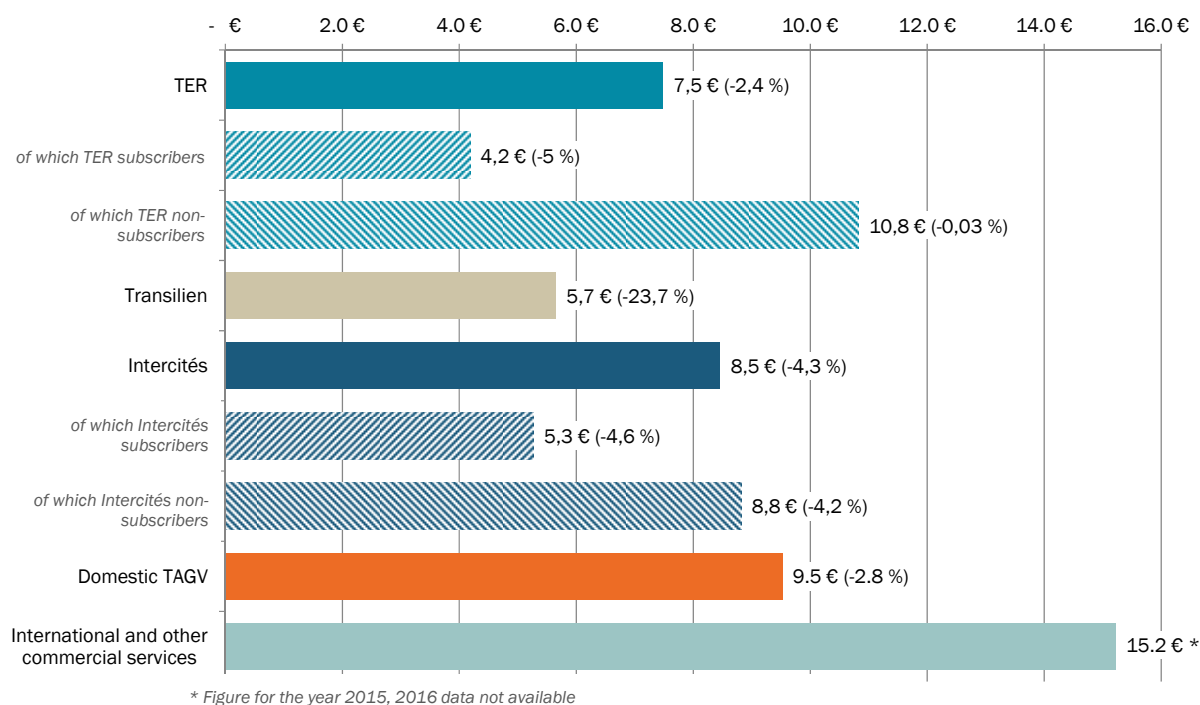
5.2. Commercial income per passenger-km decreased by 5.7% in 2016, and amounted to 8.4 eurocents on average (all services included)

Methodological precision

The kilometric income per passenger-km makes it possible to approximate the income collected by the railway undertakings. It does not, however, reflect the price of tickets paid by travellers. In fact, this income per kilometre is a result of commercial income from the sale of tickets but also subscriptions whose prices vary greatly. In addition, the demand data includes passengers enjoying free rail services. For example, this represents nearly 5% of passengers-km using a domestic TGV in 2016.

The kilometric commercial income per passenger-km is a component representing most of the income growth in 2016. Its development is detailed below, service by service.

Figure 17 – Average commercial income per passenger in euros excluding taxes for 100 km (and 2016/2015 Change in %)



Source: ARAFER

The commercial income per passenger-km of **TER services** was reduced by 2.4%, which can be explained in particular by a more marked drop in the number of non-subscribers (-5%) compared to subscribers (-0.5%), given the significant difference in commercial income per kilometre received from these two categories of travellers. In 2016, non-subscribers accounted for 71.8% of TER income for 49.6% of passenger traffic. For an average TER trip of 53 km, the railway undertaking receives 3.4 euros excluding taxes per subscriber and 8.7 euros excluding taxes per non-subscriber (see [Figure 18](#)).

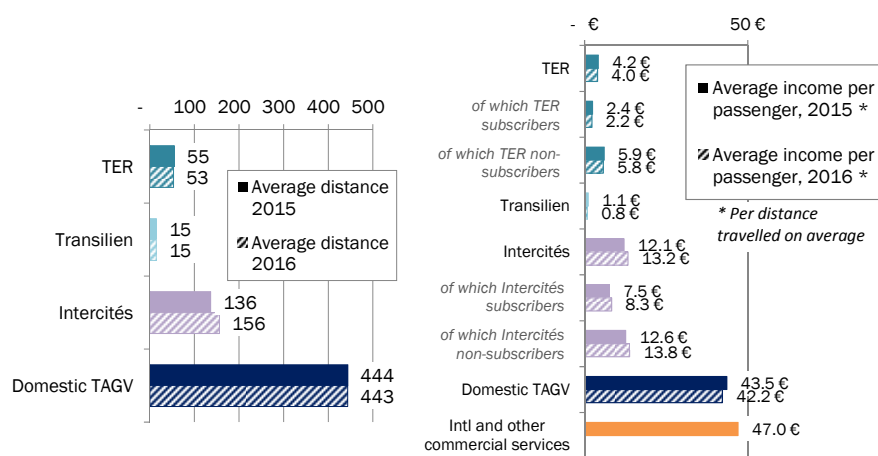
Transilien services benefitted from an increase of 3.8% of their demand in one year. In addition, the average commercial income per passenger shows a significant decrease of 23.6% between 2015 and 2016. The application of a single rate for the “Navigo” subscription as of 1 September 2015 has resulted in a reduction in the subscription price for users residing outside Paris and its neighbouring municipalities (zones greater than 3). Thus, in 2016, the Transilien activity received about 1 euro excluding taxes per traveller (for an average trip of 15 km).

The average commercial income per passenger-km for **Intercités services** decreased by about 4.3%. Thus, for an average trip of 156 km, the commercial income received by the railway undertaking amounts to 13.2 euros excluding taxes.

Demand on **domestic high-speed services** was stable in 2016 (+0.1%), while income per passenger-km decreased by 2.8%. Thus, the average commercial income of the railway undertaking is 42.2 euros excluding taxes in 2016 for an average trip of 443 km.

The kilometric commercial income per passenger for **international services** stands out in comparison with that of domestic TAGVs because they carry a significant share of passengers enjoying free services, which is not the case for international services. In addition, the commercial offer of domestic TAGV offers a wider range of discount cards and fixed price subscriptions.

Figure 18 – Change in the average distance and income collected per passenger



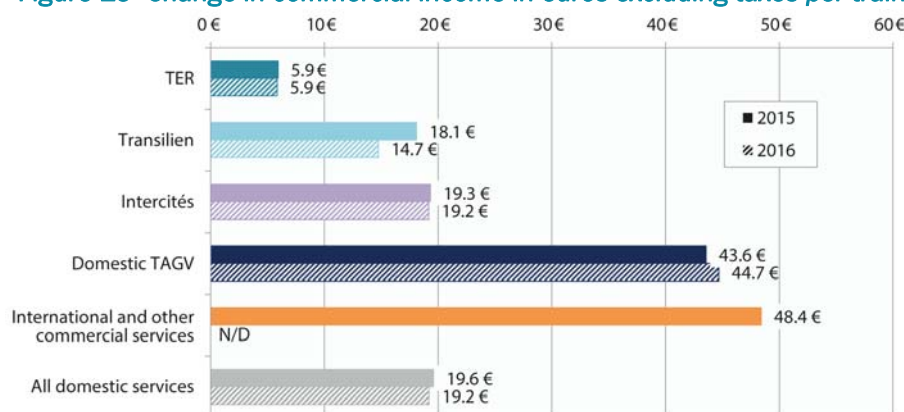
Source: ARAFER

Note for the reader: the average distance travelled per TER passenger was 53 km in 2016 (vs. 55 km in 2015). On an average trip per TER passenger, the income collected was €2.4 in 2015 and €2.2 in 2016 for a subscriber passenger versus €5.9 in 2015 and €5.8 in 2016 for a non-subscriber TER passenger. The average distance of international services is not indicated because only the distances travelled on the RFN are collected by the Observatory.

5.3. The income per train-km increases for TGV but declines for public service obligations

As for the domestic TAGV activity, there is a 2.6% increase in the commercial income per train-km in 2016, due to the reduction in the supply of trains-km, coupled with the increase in carrying capacity and the occupancy rate between 2015 and 2016. There were therefore more passengers on board each train, which made it possible to compensate for the relative decline in commercial income that each of them generated compared to 2015. On the other hand, the income per train-km of the PSO activities fell, despite the drop in supply.

Figure 19- Change in commercial income in euros excluding taxes per train-km



5.4. Fees paid by the railway undertakings represent on average 31% of their income in 2015, 38% for the domestic TAGV activity

From the point of view of the railway undertakings⁷⁵, the track access charges they paid in 2015 with the SNCF Réseau and SNCF Gares & Connections were **€4.15 billion excluding taxes**, or about **31% of their total income (consisting of commercial income and public subsidies)**. It should be noted that SNCF Gares & Connections received around 15% of this amount for basic station services.

For the PSO activities, the railway undertakings dedicate approximately 26% of their income to the track access charges (network + stations), i.e. 2 billion euros. In addition, the AOTs also pay SNCF Network the same amount, i.e. € 2 billion, for the access fee. If the access charges were paid directly by the railway companies, the toll/income ratio would come to 31% for Transilien, 45% for TER and 49% for Intercités.

For the domestic TAGV activity, the amount of track access charges paid in 2015 by SNCF Mobilités amounted to **€1.7 billion, or 38% of the income collected**. This ratio is similar for international commercial services (36%).

Table 3 Comparison of income collected and track access charges paid by the railway undertakings in 2015

<i>in millions of euros excluding taxes</i>	Commercial income on the RFN in 2015	Public subsidies ⁷⁶ paid to RU in 2015	Incomes of the RU on the RFN in 2015	Track access charges paid ⁷⁷ by the RUs to SNCF Réseau	Passenger station charges paid ⁷⁸ by the RUs to SNCF Gares & Connexion	Total network access charges paid by the RUs in 2015	Ratio of network access charges on income
	(1)	(2)	(3)=(1+2)	(4)	(5)	(6)=(4+5)	(7)=(6/3)
TER	1,029	2,941	3,971	761	279	1,040	26%
Transilien	1,030	1,703	2,733	605	137	742	27%
Intercités	634	293	927	186	52	238	26%
Domestic TAGV	4,471	122	4,593	1,605	119	1,724	38%
Domestic market total	7,163	5,060	12,223	3,157	587	3,744	31%
International and non-PSO long-distance services	1,141	5	1,146	375	34	409	36%

Source: ARAFER

⁷⁵ Thus excluding access fees paid by the transport authorities.

⁷⁶ Tariff compensations (all activities) and lump sum compensations (TER, Transilien, Intercités).

⁷⁷ Including platform fees. Excluding access fees paid by the organizing authorities (for Transilien, the amount paid by STIF was excluded to allow comparability of the amounts paid by the RU, see Section 2.2 for more details).

⁷⁸ Amount collected under the basic service, excluding supplementary services.

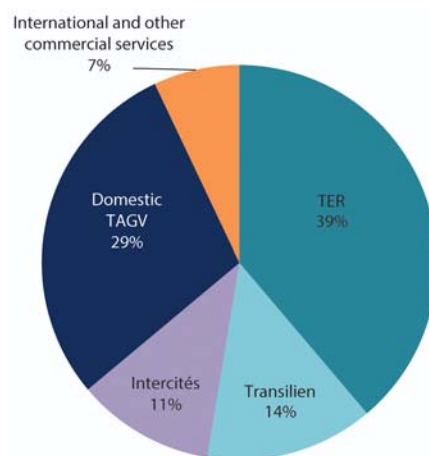
Side note: Track access charges paid by SNCF Réseau

In 2015, SNCF Réseau, railway infrastructure manager, received **€5.7 billion** in infrastructure fees (for minimum benefits⁷⁹), of which 97% came from passenger transport.

Thus, SNCF Réseau received **€5.5 billion** in infrastructure charges for use of the network by passenger trains in 2015, of which nearly 2/3 were paid by passenger railways and 1/3 by AOTs, for access fees.

Of the **€3.5 billion** in fees received for PSO rail services, the access fees, paid by AOT, actually represent nearly **€2 billion**.

Figure 20 – Breakdown of amount of infrastructure fees collected by SNCF Réseau in 2015, by type of passenger rail service



Source: ARAFER

Appendix 5.1 specifies the distribution of track access charges by type of fee and the amount and weight of access fees by type of public service obligation. Although the access fees are fixed lump sums, and therefore not directly related to the number of trains-km traveled, it is interesting to report the amount of fees collected per activity to the number of trains-km traveled by each of them in order to create a comparison key.

The fees collected by the infrastructure manager, including access fees, i.e. public subsidies from the organizing authorities, represent on average **13 euros per train-km** all services combined (see Appendix 5.1), or even **6.3 eurocents per passenger-km**.

⁷⁹ Infrastructure fees include access, reservation, circulation, electric circulation and platform fees.

6. FOCUS ON THE REGIONAL PUBLIC SERVICE OBLIGATIONS (TER AND TRANSILIEEN)

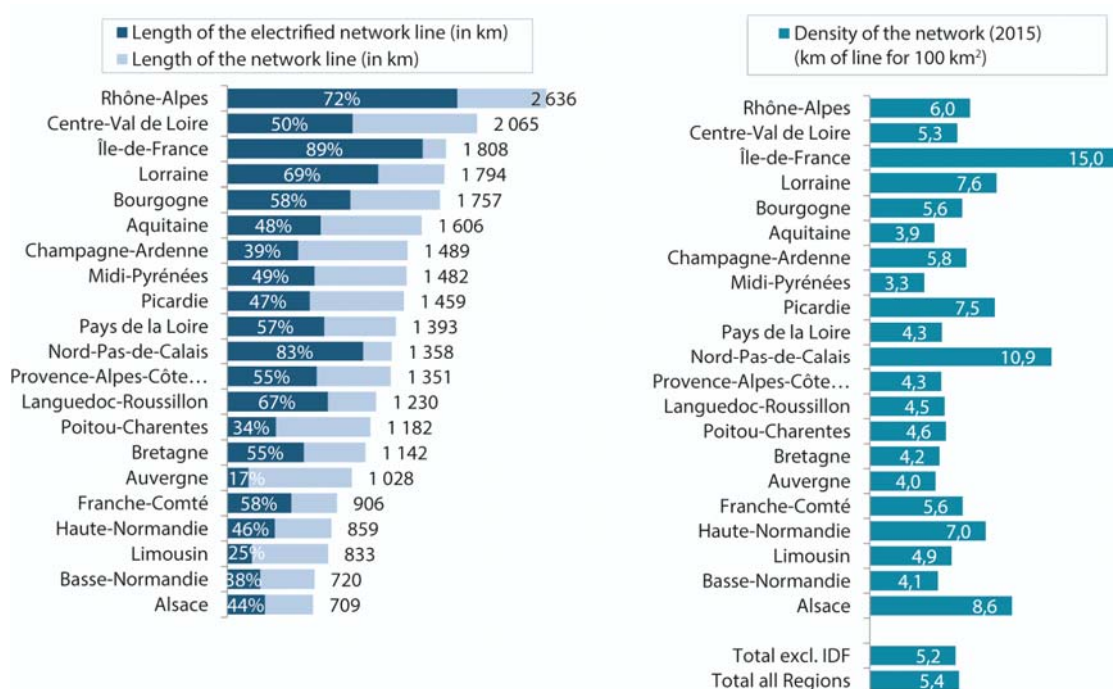
This Section provides, for the first time, an overview of regional rail services (TER and Transilien) offered to travellers, Region by Region.⁸⁰

6.1. Characteristics of the regional rail networks: nearly 10% of the RFN is located in the Rhône-Alpes Region, but compared to the regional area the rail network is the densest is in Île-de-France and Nord-Pas-de-Calais

The structure of the railway network shows large disparities between the Regions (Figure 21). Of the 28,808 km of lines, the two regions with the largest rail network are Rhône-Alpes and Centre-Val de Loire (with 9% and 7% of the rail network, respectively). However, it is in Île-de-France and Nord-Pas-de-Calais that the ⁸¹ railway network is the densest, with more than 10 km of line per 100 km² of surface area.

It should be noted that nearly half of the high-speed lines are concentrated in four regions: Île-de-France, Rhône-Alpes, Lorraine and Nord-Pas-de-Calais. Finally, the average age of the network, which is 30.9 years old, shows significant disparities between the regions: Île-de-France is the region with the “newest” network (25 years on average), followed by Rhône-Alpes and Franche-Comté (26 years old)⁸². Conversely, the Centre-Val de Loire, Languedoc-Roussillon and Limousin regions have a network nearly 40 years old. Appendix 6.1 shows the portion of the population of each region residing in a town located at least 10 km from a station offering a regional rail service. On average, 89% of the population resides in a municipality located less than 10 km from a station offering a TER service, this rate increases to 99.6% in Île-de-France.

Figure 21 – Characteristics of the rail network by Region in 2015: length of the line and density



Source: ARAFER

Note for the reader: the Franche-Comté network includes 906 km of lines, of which 58% are electrified. Density of the network in this region comes to 5.6 km of line for 100 km².

⁸⁰The scope used was that of the former Regions (in force before 1 January 2016), to be consistent with the scope of the TER agreements.

⁸¹ 100*number of train-km of line/surface area of the Region.

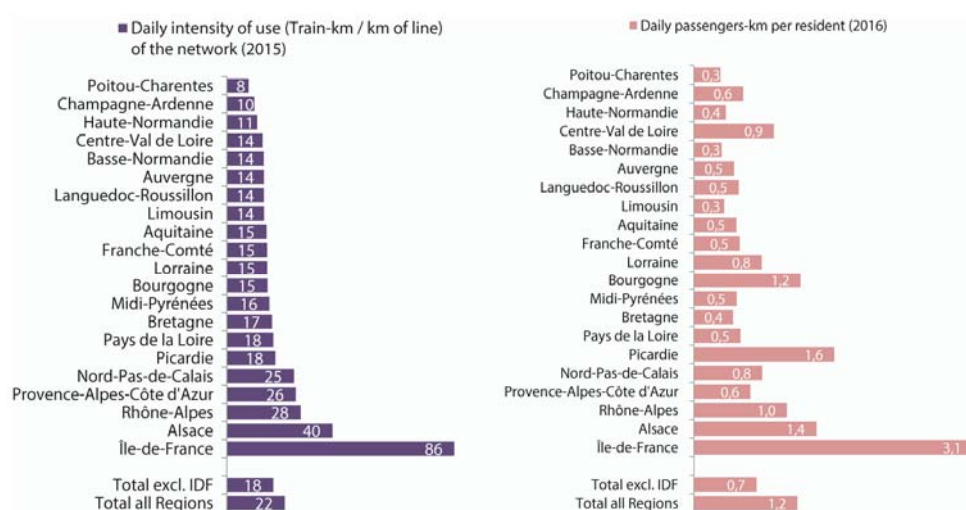
⁸²Appendix 6.1 lists the age of the network and evolution of traffic in train-km by Region.

6.2. Intensity of use of the network and railway mobility per inhabitant: Île-de-France stands out greatly in terms of intensity of supply and demand, followed by Alsace; Picardie also has a relatively high demand intensity linked to its geographical position bordering Île-de-France

Even though Alsace has the smallest regional network, with 709 km of line, the intensity of daily use⁸³ by regional trains in Alsace is particularly high, with an average of more than 40 daily routes⁸⁴ per kilometer of line, much higher than the national average of 22 daily regional trains per kilometer of line (Figure 22). The Île-de-France Region has the highest intensity of use with 86 trains per kilometer of line.

Île-de-France is also the region in which the number of kilometers traveled daily per train per capita is the highest (3.1 kilometers), well above the national average of 1.2 kilometers per capita and per day. The Alsace and Picardie Regions also stand out, with respectively 1.4 and 1.8 kilometers traveled per train per inhabitant.

Figure 22 – The network's intensity of use (2015) and demand per inhabitant (2016) per Region



Source: ARAFER

Note for the reader: the intensity of use of the network by TER activity in Lorraine amounts to 15 daily trains per km of line. In 2016, there is also a daily occupancy of 0.8 passenger-km per inhabitant in the Lorraine Region, potentially a daily one-way trip of 80 km for 1% of the regional population, or 1 daily return trip of 20 km for nearly 2% of the inhabitants of the Lorraine Region.

6.3. With more than 103 billion seats-km offered in 2016 (including 50% in Île-de-France), the most abundant supply of seats in relation to the population is in Île-de-France, as well as Bourgogne and in Picardie

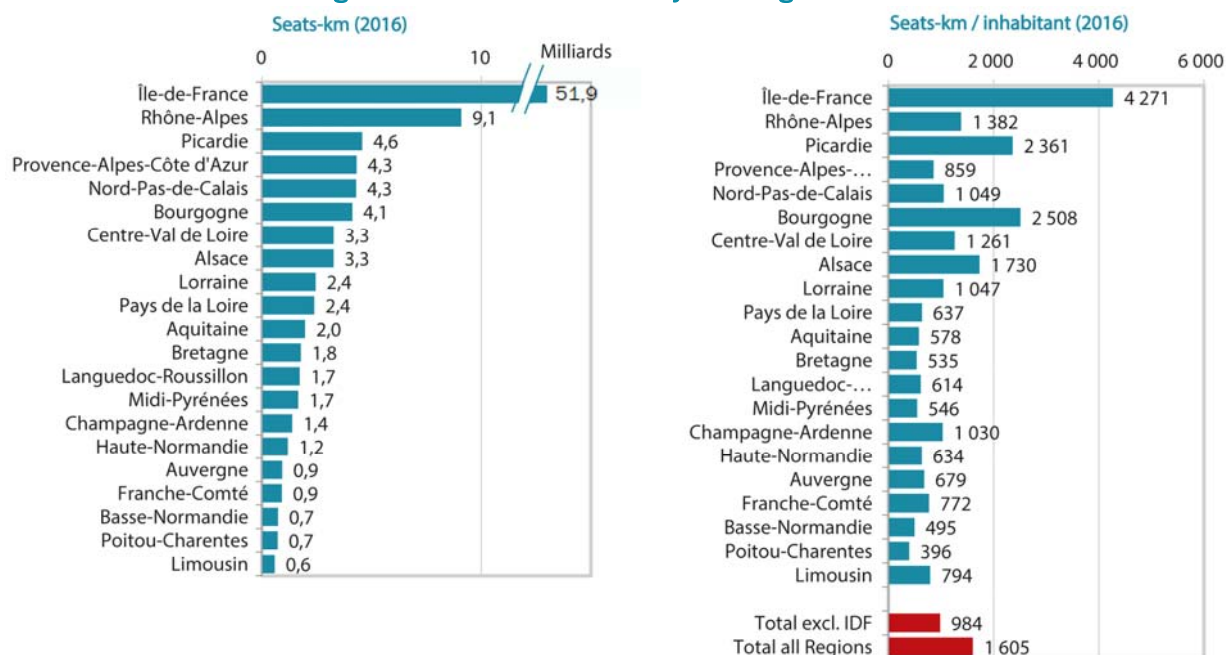
The supply of seats-km is divided equally between the Transilien and the TER services. With 9 billion seats-km⁸⁵, the Rhône-Alpes Region concentrates nearly 18% of the total supply of seats. It's almost twice as big as Picardie (second TER region with the most seats-km, see Figure 23 and Appendix 6.2). In relation to the number of inhabitants, Picardie and Bourgogne offer the most seats-km of TER services (respectively 2,361 and 2,508 seats-km per inhabitant).

⁸³ Number of trains-km for TER or Transilien/length of railway network located in the Region/365 days.

⁸⁴ In all directions, that is to say 20 trains TER or Transilien in each direction per average network line with 2 traffic lanes.

⁸⁵ The number of seats-km is the quantity of actual train routes multiplied by the average distance traveled and the average carrying capacity of the trains. Appendix 5.2 shows the number of train routes, the average distance traveled by train and the average carrying capacity for the regional services.

Figure 23 - Seats-km offered by TER Region in 2016



Source: ARAFER

Note for the reader: in Alsace, 3.3 billion seats-km were offered in 2016 for the TER, which is 1,730 seats-km per inhabitant.

Île-de-France offers an even larger number of seats-km per inhabitant (4,271). Indeed, a little less than one regional train out of two runs in Île-de-France (1.6 million for the Transilien activity versus 2 million for TER). The relative importance of the Île-de-France offer can also be explained by the fact that the capacity of 938 seats per train is high compared to 307 on average for the TER. However, the average distance travelled by train in Île-de-France is relatively short (34 km) in comparison with TER regions (83 km).

Outside the Île-de-France Region, the Rhône-Alpes Region ran the most trains (over 304,000 over the year), ahead of Nord-Pas-de-Calais (around 200 000), Alsace (around 199,000), and the PACA Region (around 164,000).

Although the seats offered are generally linked to the carrying capacity of the trains, some Regions such as Picardy and Bourgogne size their rolling stock higher (490 and 434 seats, respectively). This is because of the high carrying capacity of their trains that these two regions offer the highest per capita seats per kilometre of the TER supply (2,361 for Picardy and 2,508 for Bourgogne).

In Picardy, the large carrying capacity can be explained by its proximity to Île-de-France. Last, we can point out that the Languedoc-Roussillon Region offers relatively long routes (122 km on average) for a relatively small amount of traffic (49,293).

Between 2015 and 2016, the overall supply of seats-km attained by the regional PSO, excluding Île-de-France, showed a contraction of 2.7% (Figure 24).

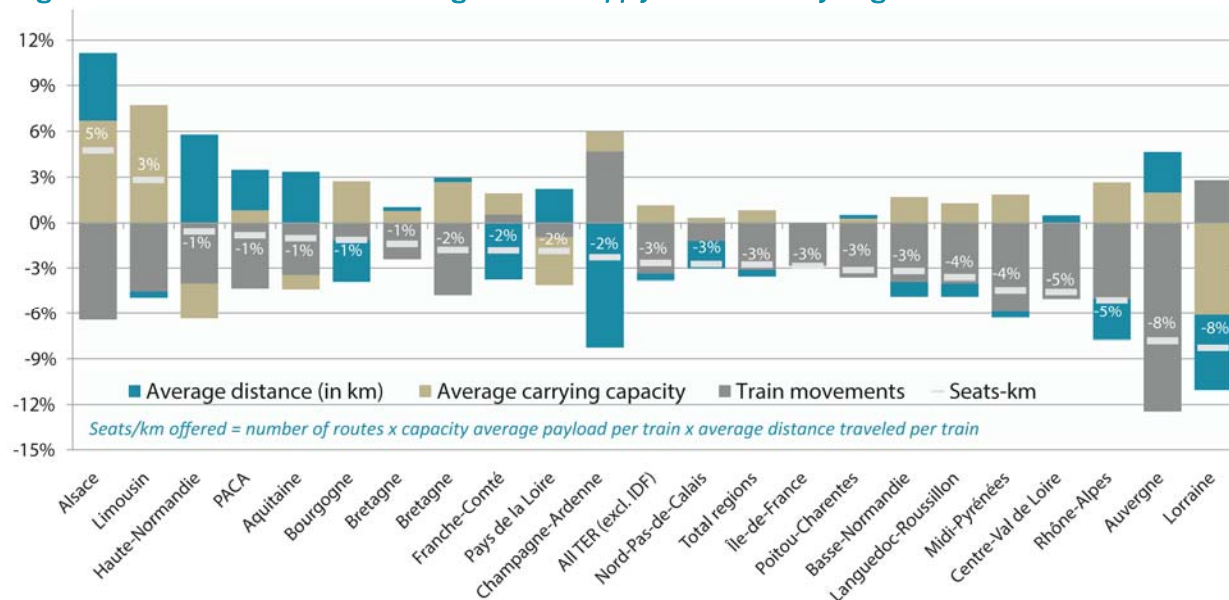
It is the decrease in the number of traffic actually carried out which explains this decline (-3.4%), and in particular the deletions of services (descheduling and cancellations). Conversely, other supply components contributed positively to the change in seats-km with an average distance travelled per train remaining relatively stable (-0.4%) and an average carrying capacity per train increased by 1.2% (see Appendix 6.2).

The reduction in the number of circulations is explained in part by the strike in June. Thus, excluding the second quarter⁸⁶, the decline in the amount of TER traffic is only 1.1% versus 3.4% for the whole year. In

⁸⁶Main period affected by the strikes in 2016.

detail the regions most affected by the decrease in traffic in 2016 are Auvergne (-12.2%), Alsace (-6.1%), and Midi-Pyrénées (-5.8%).

Figure 24 - Contributions to the change in total supply of seats-km by Region between 2015 and 2016



Source: ARAFER

Note for the reader: In 2016, the total supply of seats-km of all the Regions decreased by 2.8% compared to 2015. This decrease is the result of a negative contribution from the amount of traffic (-3.1%) and the average distance travelled (-0.4%) partly offset by an increase in average carrying capacity (contribution of +0.8%). The details on these changes per Region are available in Appendix 6.2.

The number of trains in circulation increased in two Regions, Champagne-Ardenne (+4.8%) and Lorraine (+3.0%), which at the same time decreased the distance travelled by train by 8% and 5% respectively. This redefinition of supply was also accompanied in Lorraine by a reduction in carrying capacity of 6.2%. Therefore, the Auvergne Region is the one that saw its overall supply of seats-km contract the most (-8%). Outside Lorraine, Pays de la Loire, Haute-Normandie and Aquitaine, transport capacity has increased in all regions.

Despite a reduced number of circulations, the Alsace and Limousin Regions saw their offer of seats-km increase between 2015 and 2016, thanks to a significant increase in the average carrying capacity by train (up to +6.8% and +7.9%), coupled, in the case of Alsace, with a greater distance travelled per train (+4.4%).

Although the Transilien activity also saw the number of circulations decrease with the strikes (-0.9% outside the second quarter and -2.9% for the whole of the year), the supply structure was not changed (train carrying capacity and average distance travelled have remained stable).

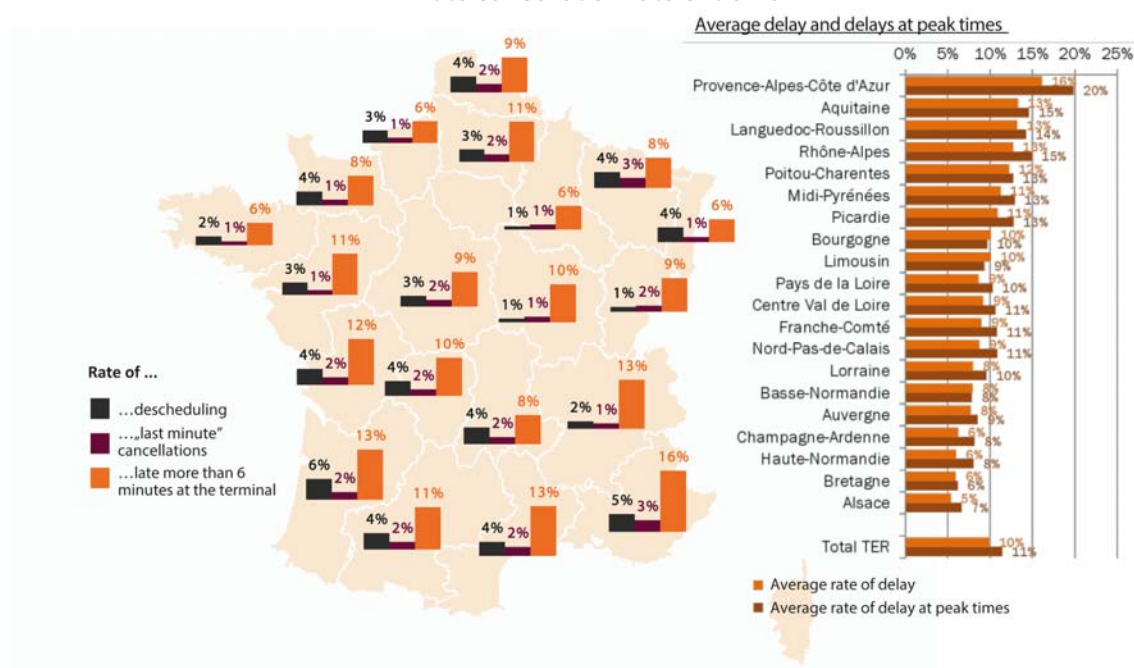
Side note: Reliability and punctuality of TER rail services

Descheduling, partial or total deletion of regional rail services took place in 2016, particularly in connection with strike movements in June. The Regions most affected by descheduling were Aquitaine, PACA, Auvergne, Midi-Pyrénées and Poitou-Charentes with respective descheduling rates of 5.5%, 4.7%, 4.4%, 4.3% and 4.3%. It should be noted that, on average, the descheduling rate for the entire TER activity amounts to 3.4%.

In addition to the descheduling that occurs during a strike, “last-minute” cancellations occurred throughout the year and reflect operational malfunctions of the railway undertaking and/or the infrastructure manager. On average, this rate increases to 1.9% for TER. 5 Regions have a cancellation rate higher than 2%: PACA (3.1%), Lorraine (2.7%), Languedoc-Roussillon (2.4%), Nord-Pas-de-Calais (2.2%) and Aquitaine (2.0%).

Finally, with regard to punctuality on arrival, half of the regions have a late arrival rate at terminal of over 10%. Only four regions have a delay rate of less than 7%: Alsace (6.1%), Bretagne (6.0%), Haute-Normandie (6.0%) and Champagne-Ardenne (6.3%). However, though the TER delay amounts to 10.5% on average, it increases by 1.5 points during peak period (11%). At the regional level, the rate of delay increases during peak periods, except for Bourgogne, Limousin and Basse-Normandie. Appendix 6.3 shows the delay rate by time period in 2016 by Region.

Figure 25 – Average daily reliability and punctuality of TER services in 2016, and punctuality/last-minute cancellation rate of trains



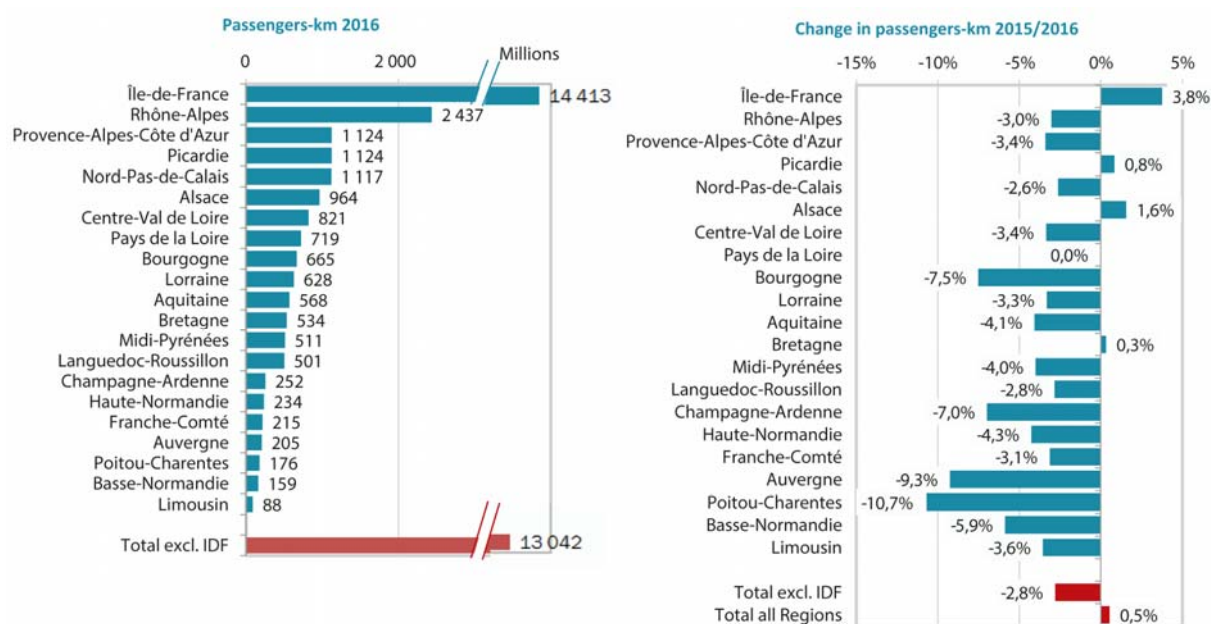
Source: ARAFER

Note for the reader: in Alsace, the deprogramming rate is 4%, the last minute cancellation rate is 1%, and the delay rate of more than 6 minutes is 6%

6.4. The demand of regional services is increasing in Île-de-France, Alsace, Picardie and in Bretagne.

Occupancy in Île-de-France grew (+3.8%). Only three other Regions saw their demand increase: Alsace (+1.6%), Picardie (+0.8%) and Bretagne (+0.3%), while the decline in demand was particularly marked in Poitou-Charentes (-10.7%), in Auvergne (-9.3%), in Bourgogne (-7.5%) and in Champagne-Ardenne (-7%). Demand for all regional services increased by 0.5%, thanks to the contribution from Île-de-France, which represents 52% of the total demand of regional services.

Figure 26 - Passengers-km transported on TER by Region in 2016 and 2016/2015 change



Sources: ARAFER

Note for the reader: in 2016, TER services in Limousin Region transported 88 million passengers-km, down 3.6% compared to 2015

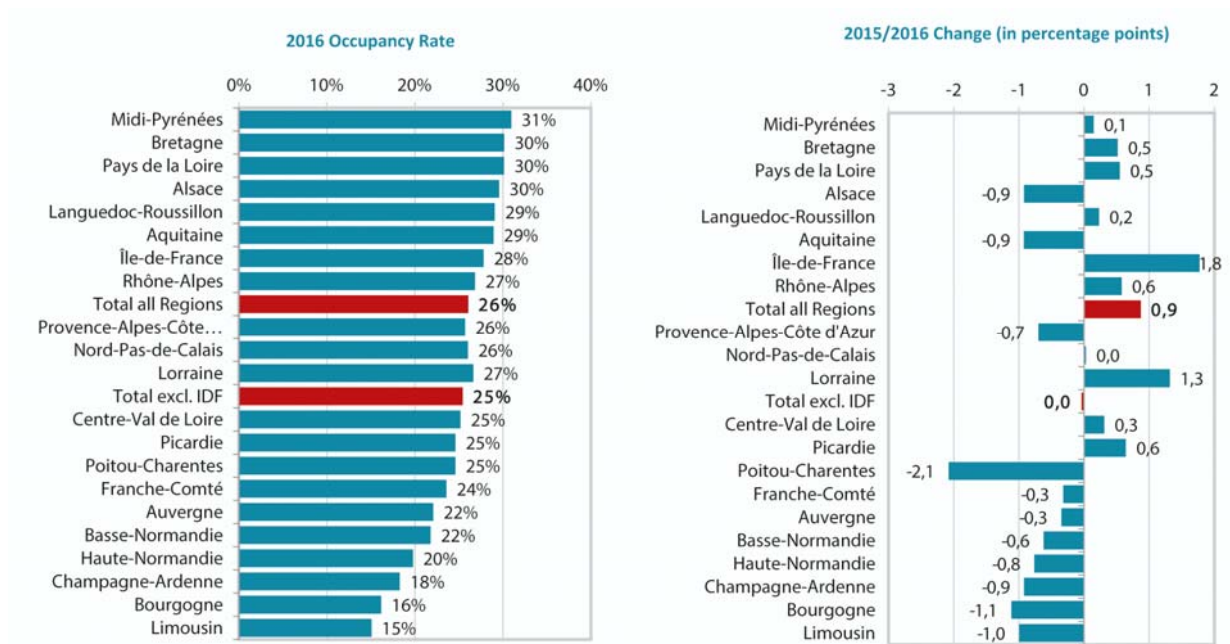
6.5. The average occupancy rate of the regional services is stable for TER and increases in Île-de-France, but it remains lower than or equal to 30% in all Regions

The decrease in demand (-2.8%) for TER is similar to the fall in supply (-2.7%), allowing the occupancy rate to remain stable at an average of 25% (Figure 27). As for the Transilien activity, its average occupancy rate increased as its demand has increased while its offer has declined. The occupancy rate is 28%, with an increase of 1.8 percentage points between 2015 and 2016.

The virtual stability of the average occupancy rate actually hides large regional disparities. For example, the relatively low occupancy rate in the Bourgogne Region (16%) is explained by relatively high carrying capacity (434 seats versus 307 for all Regions). The largest decline in occupancy rate appears in Poitou-Charentes (-2.1 points) and is mainly due to the sharp contraction in demand (-10.7%).

Finally, Lorraine recorded the largest increase in occupancy rate (+1.3 points) related to changes in its offer to increase the frequency of traffic while decreasing the distance travelled.

Figure 27 - Occupancy rate in 2016 and 2015/2016 changes



Sources: ARAFER

Note for the reader: in 2016, the average occupancy rate of TER trains operating in Midi-Pyrénées is 31%, an increase of 0.1 percentage point compared to 2015

6.6. Financial results of regional services

Warning (note)

As mentioned in the introduction (page 10), information on financial results by region, and in particular the breakdown of operating accounts by destination, is presented for information purposes only. For operating expenses, the scope of these items remains relatively imprecise and not completely specified, which requires a note of caution in their interpretation.

6.6.1. In 2016, public subsidies accounted for 73% of income from regional public service obligations (69% in 2015); the share of public competitions in Transilien's income increased by 8 percentage points over one year (+1 point for the TERs)

Incomes received for the realization of regional PSO rail services amounted to €6.7 billion excluding taxes in 2016, 73% of which was from public subsidies (€4.9 billion). The structure of the income varies significantly from one Region to the next. Thus, in Alsace public subsidies have the least weight in the total income received, showing 65%, which is also decreased compared to 2015 (only the Brittany Region also saw the portion of public subsidies decrease in 2016). Conversely, the share of public subsidies reaches 90% of total income in the Limousin Region.

For the Transilien activity, the stability of total income in 2016 (Table 4) is the result of the increase in public subsidies of 215 million euros (+12.6%), offset by the decline in commercial income (-20.8%) caused by cancelling the "Navigo Pass" subscription from September 2015.

Table 4– Total income from regional rail transport, including portion of public subsidies in 2016 (and changes compared to 2015)

	Incomes of the RU in 2016 in millions of euros excluding taxes (2016/2015 change)	% of public subsidies in the 2016 Income (2016/2015 change)	Daily demand in millions of passengers-km/day (2016/2015 change)	Public subsidies in eurocents per passenger-km in 2016 (2016/2015 change)
Île-de-France (Transilien)	2,734 (0%)	70% (12.6%)	39.5 (3.8%)	13.3 (8.6%)
Total TER (20 Regions)	3,925 (-1.2%)	75% (1.4%)	35.7 (-2.8%)	22.6 (3.1%)
Limousin	76 (-3.5%)	90% (0.6%)	0.2 (-3.6%)	77.9 (0.7%)
Auvergne	112 (-4.2%)	84% (1.3%)	0.6 (-9.3%)	46.3 (7%)
Champagne-Ardenne	128 (-0.5%)	84% (1.6%)	0.7 (-7%)	42.8 (8.7%)
Basse-Normandie	80 (1.2%)	83% (2.3%)	0.4 (-5.9%)	41.6 (9.9%)
Franche-Comté	101 (-1.3%)	83% (0.5%)	0.6 (-3.1%)	39.1 (2.4%)
Poitou-Charentes	70 (-6.5%)	82% (0.8%)	0.5 (-10.7%)	32.7 (5.5%)
Aquitaine	218 (6.1%)	78% (3.4%)	1.6 (-4.1%)	29.8 (14.4%)
Haute-Normandie	87 (-2.1%)	80% (1.8%)	0.6 (-4.3%)	29.6 (4%)
Midi-Pyrénées	187 (-0.8%)	80% (1.1%)	1.4 (-4%)	29.2 (4.5%)
Lorraine	205 (-0.8%)	78% (1.3%)	1.7 (-3.3%)	25.5 (3.9%)
Provence-Alpes-Côte d'Azur	364 (2.5%)	76% (2.8%)	3.1 (-3.4%)	24.7 (9%)
Nord-Pas-de-Calais	316 (-0.4%)	79% (0.4%)	3.1 (-2.6%)	22.3 (2.7%)
Languedoc-Roussillon	151 (-0.1%)	74% (2.8%)	1.4 (-2.8%)	22.3 (5.7%)
Bourgogne	200 (-1%)	73% (2.9%)	1.8 (-7.5%)	21.9 (10.2%)
Pays de la Loire	197 (1%)	73% (1%)	2 (0%)	20 (2%)
Bretagne	136 (-1.5%)	71% (-1.5%)	1.5 (0.3%)	18 (-3.3%)
Centre-Val de Loire	208 (-6.1%)	70% (3%)	2.3 (-3.4%)	17.7 (0%)
Rhône-Alpes	607 (-4%)	69% (-0.1%)	6.7 (-3%)	17.1 (-1.1%)
Picardie	260 (-1.4%)	74% (3.6%)	3.1 (0.8%)	17.1 (1.3%)
Alsace	221 (-1.1%)	65% (-1.4%)	2.6 (1.6%)	14.8 (-4%)

Source: ARAFER

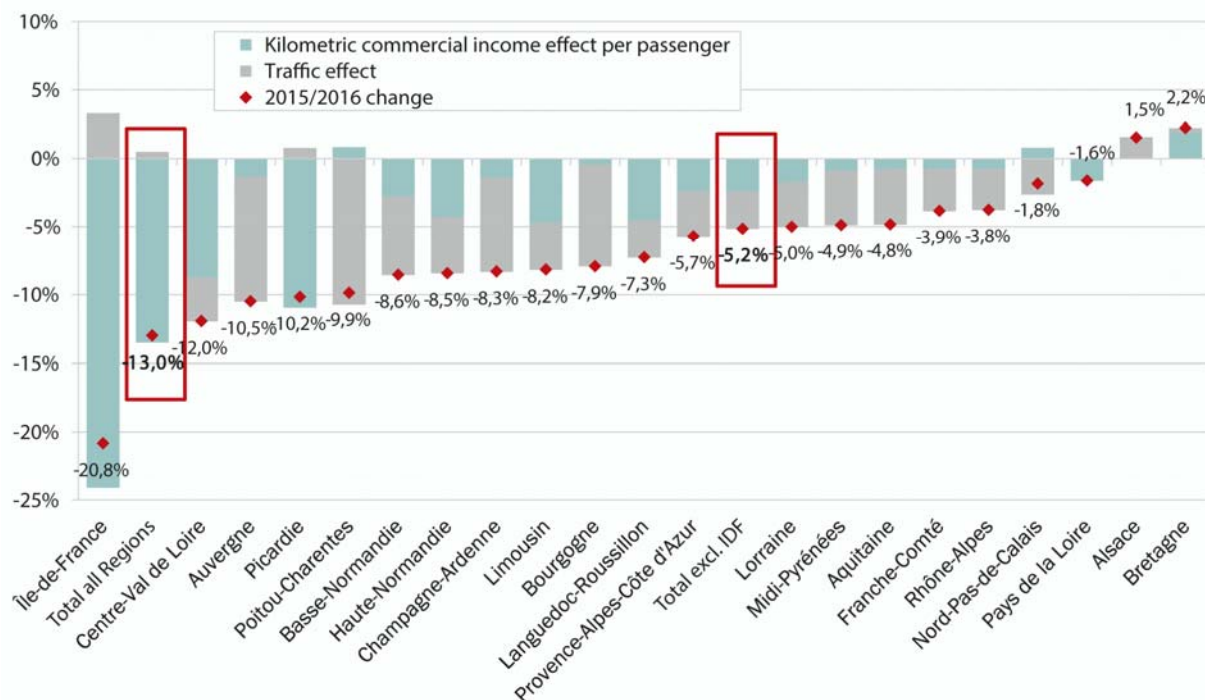
Note for the reader: in Languedoc-Roussillon, the total income received by SNCF Mobilités for the TER activity in 2016 amounted to €151 million, down 0.1% compared to 2015. 74% of this income are composed of public subsidies (and thus 26% from commercial income). The weight of public subsidies in total income increased by 2 percentage points between 2015 and 2016. The TER of the Languedoc-Roussillon Region transports on average 1.4 million passengers-kilometres daily and the amount of the AOT subsidy in this region amounts to 30.2 euro cents for every kilometre travelled by a passenger within TER.

6.6.2. The decline in commercial income from the TER services (-5.2%) is due both to the drop in the number of travelers and to the decrease in the commercial income received per passenger-km, with notably an erosion from non-subscriber travelers

Between 2015 and 2016, commercial income for the TER decreased by 5.2%. Only two Regions saw commercial income of their services increase, namely Alsace (+1.5%) and Bretagne (+2.2%). The variation in commercial income can be explained by two factors: a “traffic” effect and a “revenue” effect (see Figure 28 and Appendix 6.4).

In the case of Transilien, the decrease in income per passenger-km related to the introduction of a single fare for the “Navigo pass” was partially offset by the increase of traffic.

Figure 28 - Changes in commercial income by Transilien and TER Region between 2015 and 2016 and the “demand effect” and “kilometric commercial income effect per passenger”



Source: ARAFER

Note for the reader: in Lorraine, the commercial income decreased by 5% from 2015 to 2016. This is explained, first, by a decrease in the income per kilometre per passenger whose contribution amounts to 1.7% and, second, by a decrease in occupancy, measured in passengers-km, whose contribution to the decline in commercial receipts is 3.3%.

The drop in demand (expressed in passengers-km) is observed in all the Regions, with the exception of Alsace, Bretagne, Picardie and Île-de-France, and contributes 54% of the drop in TER commercial income.

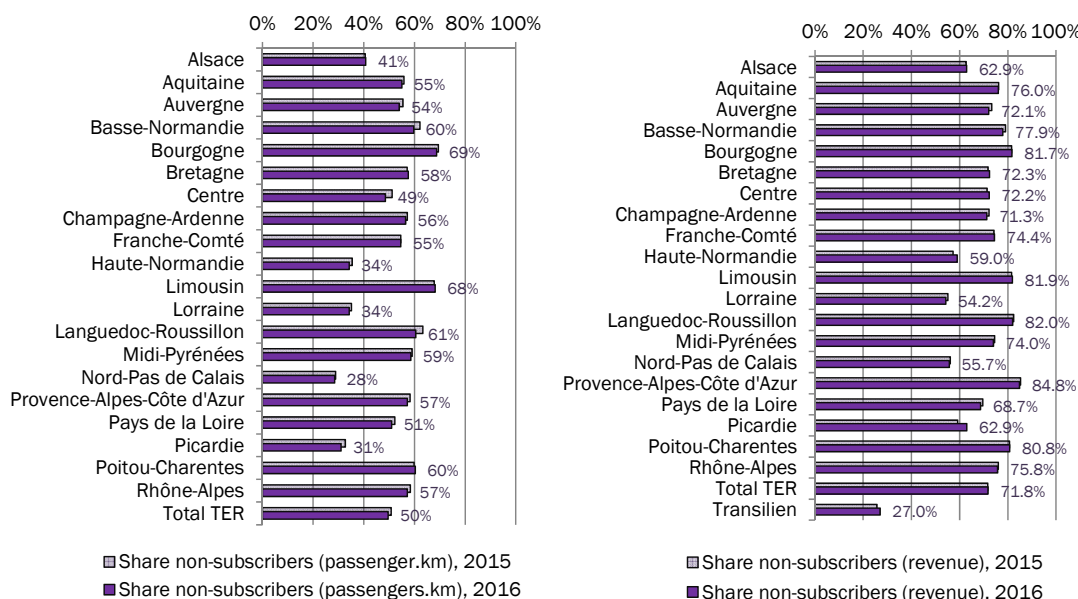
Changes in the commercial income per kilometre between 2015 and 2016 explains 46% of the change in total TER commercial income. Several factors can explain the change in commercial income received per passenger-kilometre, in particular the changes in the structure of the customer base for TER.

In fact, TER subscribers (mainly “commuters”) represent on average 50% of the traffic (in passengers-km) but only 28% of commercial income in 2016 (Figure 29).

In addition, the share of non-subscribers was reduced between 2015 and 2016 (-1.2 points), which accentuates the loss of commercial income per passenger-km, since this is relatively higher for a non-subscriber than for a subscriber⁸⁷ (see Figure 30).

⁸⁷ In 2016, the average kilometric commercial income for a TER subscriber amounts to 4.1 euro cents per passenger-km, compared to 10.7 euro cents per passenger-km for a non-subscriber.

Figure 29 - 2015/2016 Changes in the share of TER non-subscribers in occupancy (graph on left) and commercial income (graph on right)

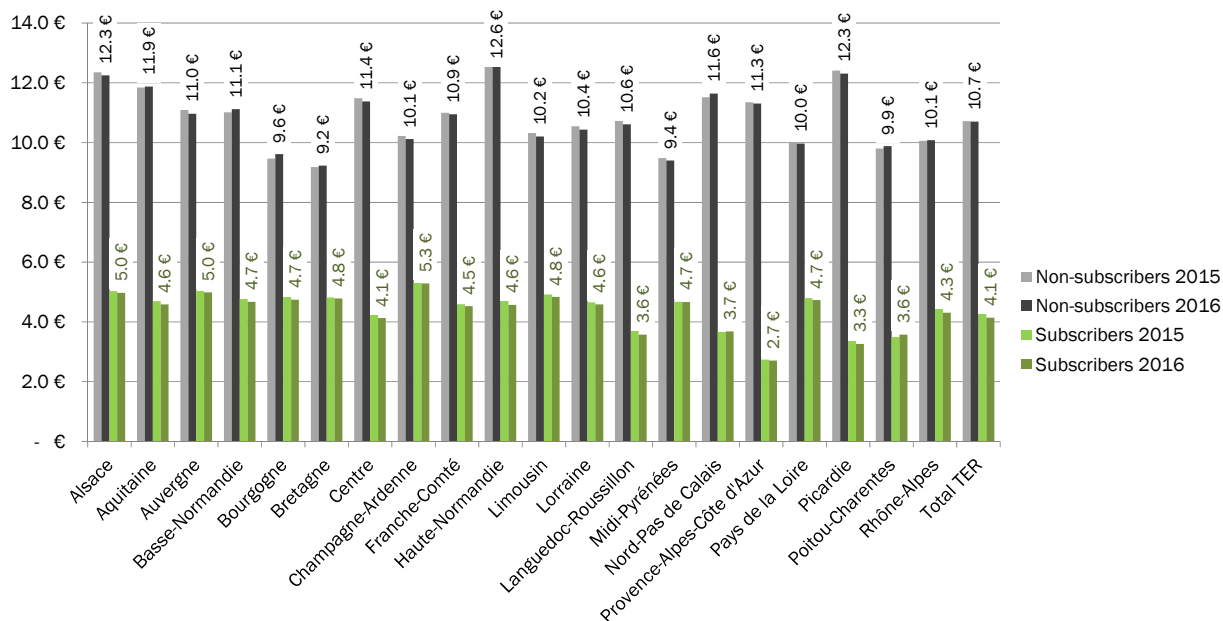


Source: ARAFER

Note for the reader: in Provence-Alpes-Côte d'Azur, 60% of the passengers-km are non-subscribers. The portion of passengers in the commercial income rose to 85%.

In 2016, the average kilometric commercial income for a TER subscriber amounts to 4.1 euro cents per passenger-km, compared to 10.7 euro cents per passenger-km for a non-subscriber. Finally, we note that commercial income per subscriber decreased by 5.1% while it decreased by only 0.2% for non-subscribers (for an average commercial income per kilometre down 2.8%, all types of transport tickets combined).

Figure 30 - Average TER commercial income (in euro cents per kilometre) per traveller whether a subscriber or non-subscriber in 2015 and 2016



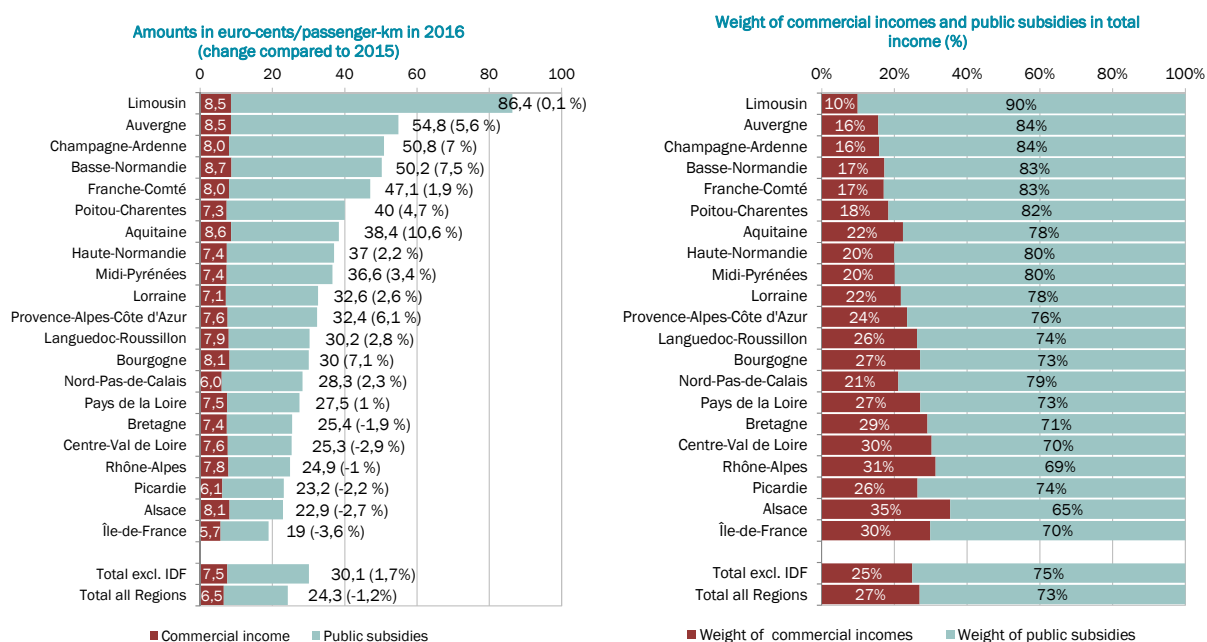
Source: ARAFER

Note for the reader: in Haute-Normandie, the average income of a subscriber amounts to 4.6 euro cents per passenger in 2016, and that of a non-subscriber amounts to 12.6 euro cents.

6.6.3. In 2016, for every kilometer traveled per passenger on a regional public service obligation, the user pays an average of 6.5 euro cents, and the transport authority pays the supplementary amount (to the railway undertaking) of 17.7 euro cents

The income per passenger-kilometre earned by SNCF Mobilités for the completion of TER and Transilien services amounts to 24.3 euro cents in 2016, down 1.2% compared to 2015. This average, however, hides disparities, first between Transilien and TER services, for which the income is higher (30.1 euro cents per passenger-km, versus 19.0 euro cents for Transilien). In addition, among the TER Regions, income received by SNCF Mobilités vary from 22.9 euro cents per passenger-km in Alsace to 86.4 euro cents per passenger-km in Limousin (Figure 31).

Figure 31 – Regional PSO income per passenger-km in 2016



Source: ARAFER

Note for the reader: the total amount of income from the operation of TER services in 2016 in Picardie amounts to 23.2 euro cents per passenger-km, including 6.1 euro cents of commercial income (which represents 26% of total income). This income is down 2.2% compared to 2015.

6.6.4. Track access charges represent an average of 26% of income for regional public service obligations, down 0.5 points year-to-year; this weight varies from 20% to 32% depending on the Regions

The fees paid by SNCF Mobilités for its TER activity for access to the network and passenger stations represent approximately €1 billion in 2016, or about 25% of total income. The amount of track access charges dropped 3.9% in 2016, in connections with the reduction in supply of trains actually running.

The weight of track access charges in income varies significantly depending on the Region: from 20% in Basse- Normandy to 32% of income in Centre-Val-de-Loire (Table 5).

For Transilien, the amount paid for track access charges amounted to €739 million, representing 27% of total income from the activity, also down 0.3% compared to 2015.

Table 5– Amount of network access charges and weight of track access charges in income from TER and Transilien activities in 2016 (2015/2016 change)

	Amount of network access charges ⁸⁸ in millions of euros excluding taxes paid by the RU in 2016 (2016/2015 change)	Weight of network access charges compared to total income in 2016 (2016/2015 change)
Île-de-France (Transilien)	739 (-0.3%)	27% (-0.1 pt)
Total TER (20 Regions)	1,000 (-3.9%)	25% (-0.7 pt)
Rhône-Alpes	161 (-4.3%)	27% (-0.1 pt)
Centre-Val de Loire	65 (-7.2%)	32% (-0.4 pt)
Lorraine	62 (0.4%)	30% (0.3 pt)
Bourgogne	58 (-0.2%)	29% (0.2 pt)
Alsace	62 (-2.4%)	28% (-0.4 pt)
Languedoc-Roussillon	43 (-2.4%)	28% (-0.6 pt)
Franche-Comté	28 (-8.7%)	27% (-2.2 pts)
Champagne-Ardenne	33 (-4.7%)	26% (-1.1 pt)
Haute-Normandie	23 (-5.7%)	26% (-1 pt)
Nord-Pas-de-Calais	80 (-2.5%)	25% (-0.6 pt)
Provence-Alpes-Côte d'Azur	88 (-4%)	24% (-1.6 pt)
Pays de la Loire	47 (0.5%)	24% (-0.1 pt)
Bretagne	32 (-0.6%)	24% (0.2 pt)
Poitou-Charentes	17 (-7.2%)	24% (-0.2 pt)
Aquitaine	49 (-5.2%)	22% (-2.7 pts)
Midi-Pyrénées	41 (-8.8%)	22% (-1.9 pt)
Limousin	17 (-5.2%)	22% (-0.4 pt)
Picardie	55 (-6.5%)	21% (-1.1 pt)
Auvergne	24 (-8%)	21% (-0.9 pt)
Basse-Normandie	16 (3.1%)	20% (0.4 pt)

Source: ARAFER

Note for the reader: in Languedoc-Roussillon, the total income received by SNCF Mobilités for the TER activity in 2016 amounted to €32 million, down 0.6% compared to 2016. This amount represents 24% of the total income.

6.6.5. Operating expenses amounted to 4 million euros, down 0.5% compared to 2015.

Although having falling by a total of 0.5% between 2015 and 2016, the operating expenses of the TER activity⁸⁹, compared to the actual supply offered in 2016, amount to an average of €23.8 per train-km produced, up 3.4% from 2015 (Figure 32). This change is due to the 3.8% fall in the trains-km supply achieved between 2015 and 2016 (instead of an increase of 2%, if it had been entirely completed such as scheduled, see Figure 7

For each train-km run, infrastructure track access charges amount to 6 euros, with wide variations between Regions: 4.1 euros per train-km in Limousin and in Basse-Normandie and around 7 euros per train-km in PACA, in Languedoc-Roussillon and in the Centre-Val de Loire.

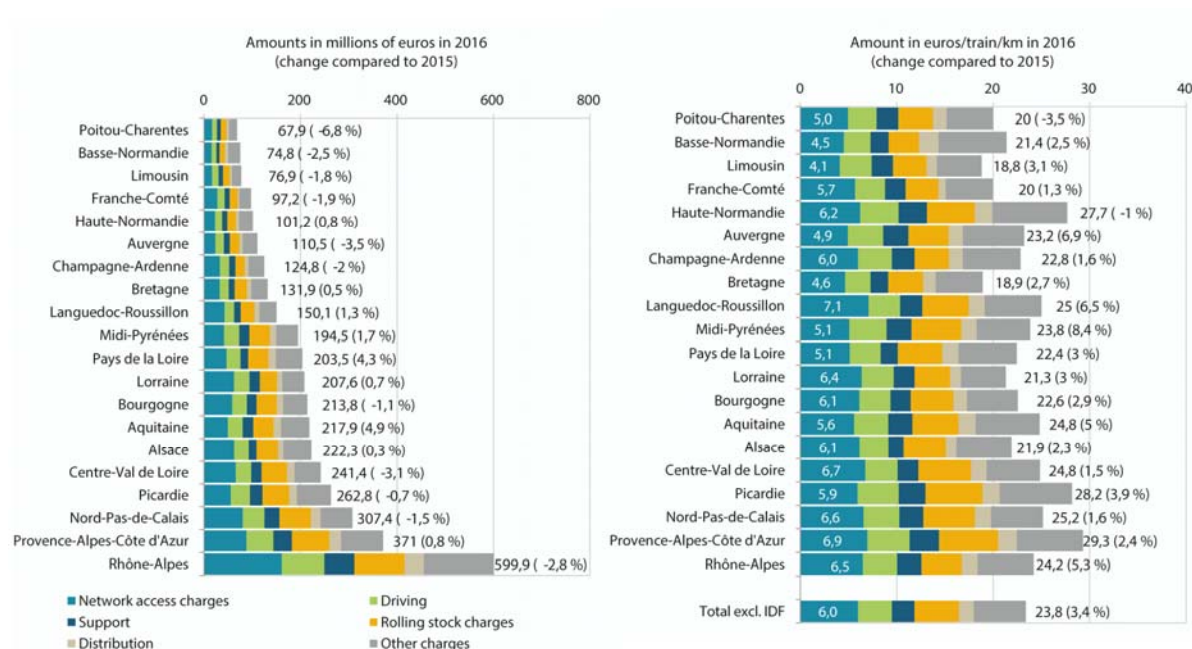
The Transilien activity pays infrastructure charges per train-km significantly higher than the TER activity: they amount to 13.4 euros per train-km.

⁸⁸ Fees paid to SNCF Réseau and SNCF Gares & Connections (excluding RCTE and excluding additional services). This amount does not include access fees paid directly by the AOTs to SNCF Réseau In the particular case of Transilien, the amount equivalent to this access charge, paid by STIF, has been restated in Transilien's accounts to ensure the comparability of the ratios.

⁸⁹Excluding "Cars-TER" (coaches) activity.

With regard to the TER activity, driving, support and rolling stock expenses amount to an average of 15%, 10% and 19% respectively, of total expenses in 2016. Note, the scope of these items remains however imprecise and not completely specified, which requires a note of caution in their interpretation.

Figure 32 - Operating costs ⁹⁰ for TER services in 2016 (2015/2016 change)



Source: ARAFER

Note for the reader: in Bourgogne, operating expenses amounted to 213.8 million euros, down 1.1% compared to 2015. Compared to the supply, this corresponds to 22.6 euros of operating expenses per train-km.

In addition, income per train-km for regional services amounted to 30 euros, including 8.1 euros of commercial income. Île-de-France stands out with income of around 50 euros per train-km (see Appendix 6.4).

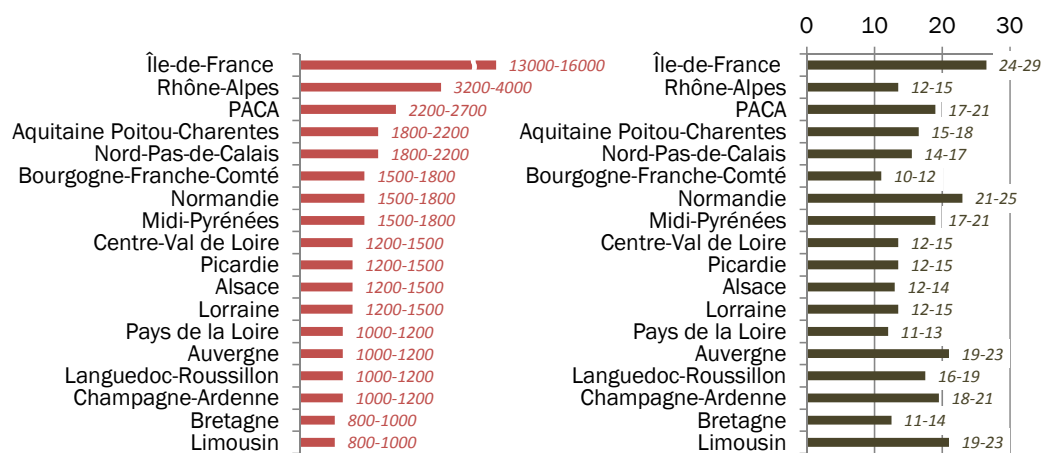
6.6.6. More than 40,000 employees of SNCF Mobilités operate the regional public service obligation (TER and Transilien), with an average ratio of about 18 agents per 100,000 trains-km produced in 2015

The ratio of “staff for 100,000 trains-km” is a primary element for evaluating productivity. By comparing the workforce working on behalf of the TER/Transilien activities to the volumes of commercial trains-km made by regional convention, we can observe a ratio of manpower per 100,000 trains-km produced in 2015 which fluctuates according to the TER Regions, of [10-12] employees per 100,000 trains-km in Bourgogne-Franche-Comté, up to [21-25] employees per 100,000 trains-km in Normandie. In Île-de-France, this ratio is [24-29] employees for 100,000 trains-km, taking into account the Transilien and TER employees.

NOTE: the SNCF Mobilités Group employees assigned, in each Region, to the TER/Transilien activities may also perform services on behalf of other activities of the SNCF Mobilités Group (Intercités and TGV), as well as services provided for TER contracted by other Regions.

⁹⁰ The operating costs for Transilien have not yet been provided for 2016. In addition, the cost items differ between the Transilien activity and the TER activity, which does not allow for comparability of the latter.

Figure 33 - TER and Transilien employees per Region at the end of 2015 (graph to left) and ratio of employees for 100,000 trains-km realised in 2015 (graph to right)



Source: ARAFER

Note for the reader: between 1200 and 1500 agents work in the Lorraine Region. Compared to the supply, this corresponds to 12 to 15 agents for 100,000 trains-km in 2015.

Appendices - Passenger Rail Transport Market 2015/2016

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1. FRENCH RAIL NETWORK (RFN): CHARACTERISTICS AND DEGREE OF USE

Appendix 1.1 - Characteristics of the RFN

28,808 km

Length of the RFN at the end of 2015, in cumulative kilometres of the railway line. This corresponds to 49,253 km of track (some lines containing multiple tracks).

55.5% of the lines are electrified (69% of the tracks¹).

The high-speed rail lines represent 7% of the network (8% in number of tracks).

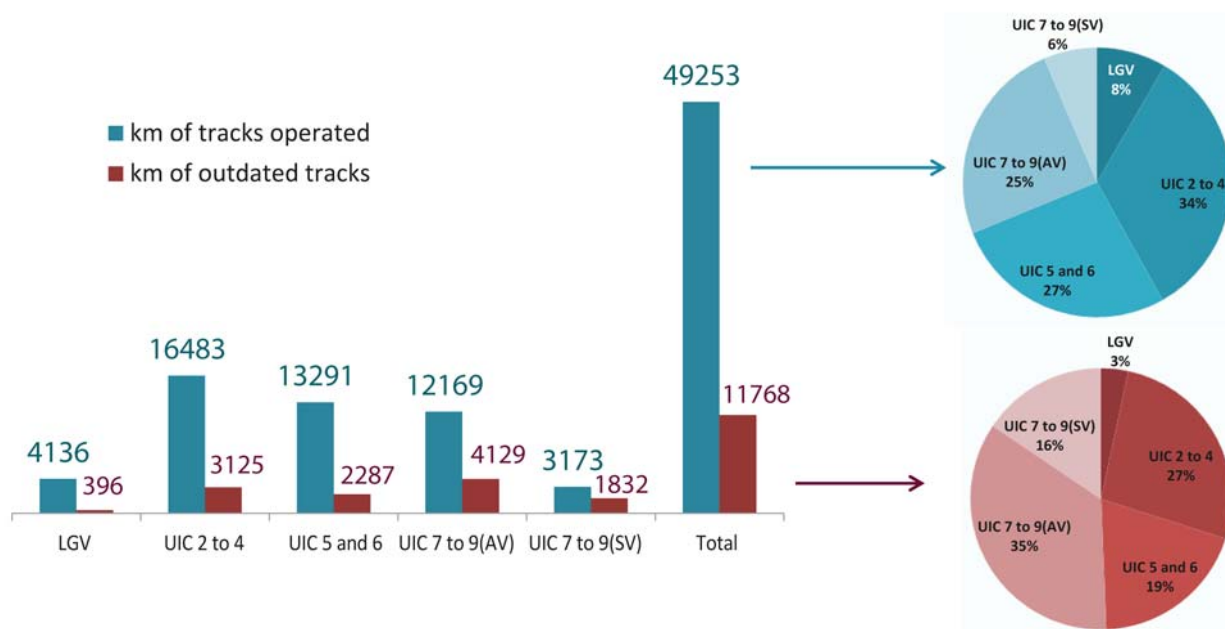
30.9 years

Average age of the RFN²

The average age of the high-speed rail tracks is 19.4 years.

The UIC categories of railway tracks allow us to classify the tracks according to their intensity of use. Figure 1 specifies the kilometres of track in each of these categories for the RFN, as well as the kilometres of outdated track.³

*Figure 1 - French Rail Network used in 2015 per UIC category:
km of track and km of outdated track*



Source: ARAFER

¹The electrified lines more often contain 2 tracks (1 for each direction of travel).

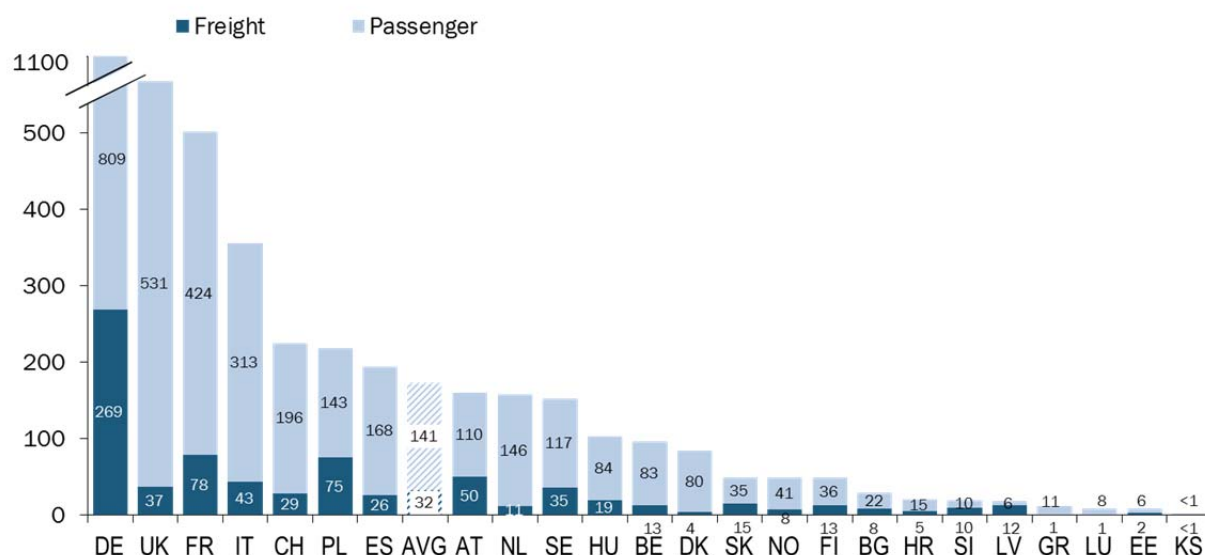
²The average age of a track is characterised by the age of its components weighted by the economic impact of each (the rail representing 22.6% of the age of the track, the ties 41.9% and the ballast the rest). This indicator allows us to monitor the effects of regeneration on the network.

³ SNCF Réseau determines a theoretical life cycle for each component of the track. The "outdated track" qualification is determined on the basis of the components of the track whose age is beyond the regeneration threshold defined in the regeneration policy that concerns them.

Appendix 1.2 - Use of the RFN and European comparison⁴

France lies in 3rd position in Europe in terms of total volume of rail traffic (measured in trains-km of passengers and freight).

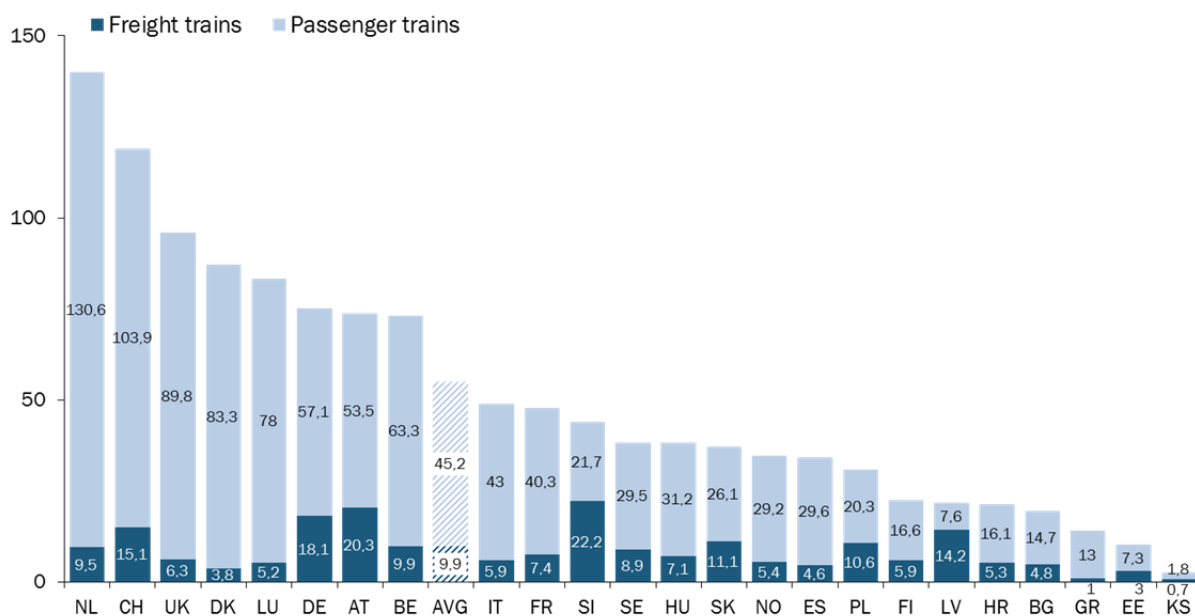
Figure 2 – Railway traffic on the national rail network (millions of trains-km of passengers and freight) in 2015



Source: IRG-Rail

France lies in 10th position in Europe in terms of average intensity of use of its rail network.

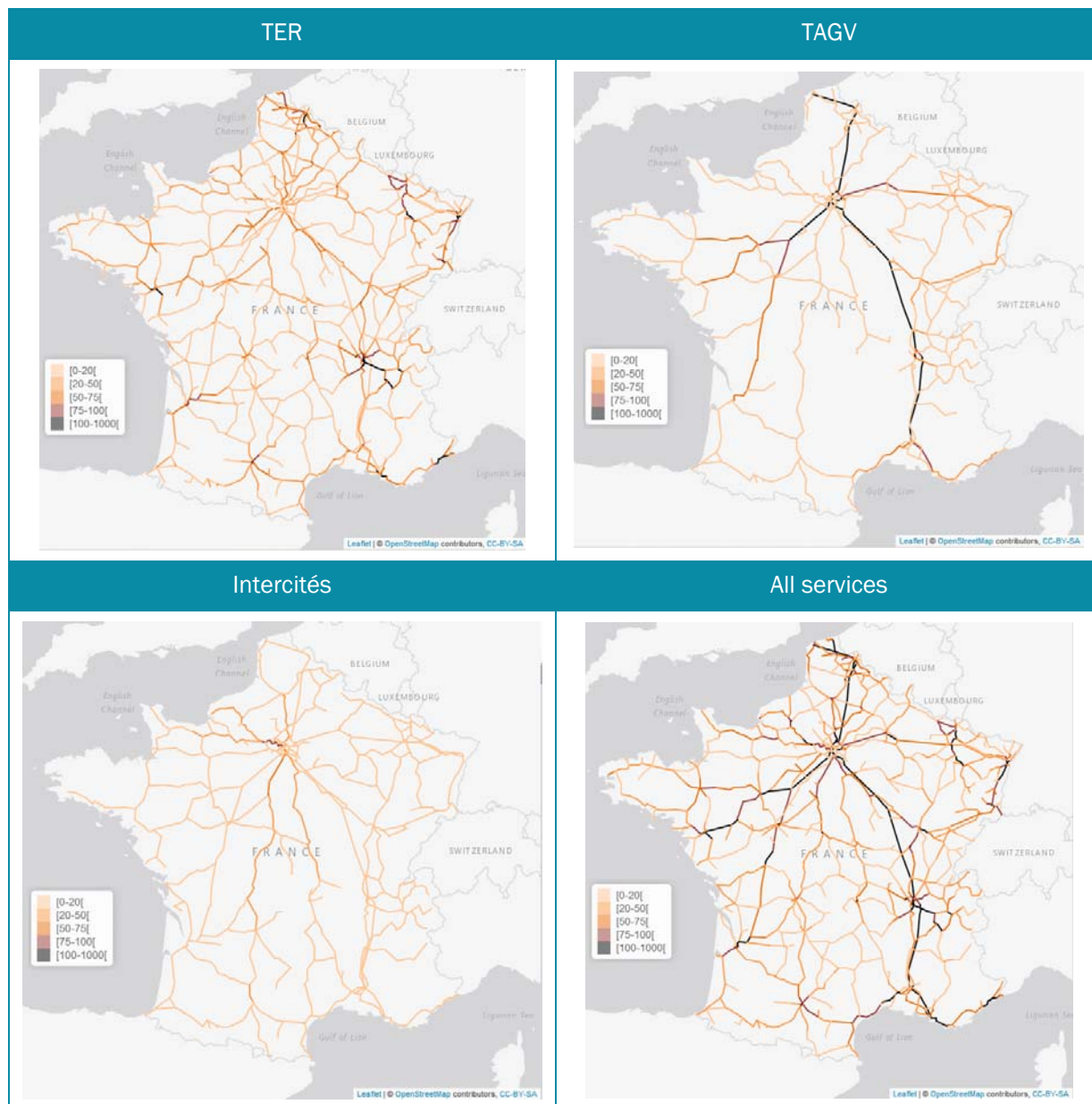
Figure 3 - Average intensity of use of the rail network (trains-km per km of network per day) in 2015



Source: IRG-Rail

⁴ A full comparison is available in the IRG-Rail annual report: <https://www.irg-rail.eu/download/5/51/IRG-Rail162-IRG-RailAnnualReport2015.pdf>

Figure 4 - Mapping of commercial service traffic (excluding international traffic) on the RFN in 2015
Average number of trains per day and per direction



Source: ARAFER

Appendix 1.3 - Characteristics of cities served by the railway

Table 1 - Characteristics of cities⁵ served in 2016

	TER			Intercités			TAGV		
Municipal population	Number of cities served	Breakdown of cities served	% of cities served	Number of cities served	Breakdown of cities served	% of cities served	Number of cities* served	Breakdown of cities served	% of cities served
< 1 000	494	21 %	2 %	36	11 %	0 %	6	3%	0%
1 000 - 5 000	1069	46 %	14 %	97	29 %	1 %	23	13%	0%
5 000 - 10 000	354	15 %	32 %	53	16 %	5 %	16	9%	1%
10 000 - 25 000	253	11 %	44 %	68	20 %	12 %	38	21%	7%
25 000 - 50 000	104	4 %	49 %	37	11 %	17 %	39	22%	18%
> 50 000	74	3 %	65 %	49	14 %	43 %	58	32%	51%
Total	2348	100 %		340	100 %		180	100 %	

* Cities served on all months of the service schedule 2016

Source: ARAFER

Note for the reader: of the 2,348 cities served by TER services in 2016, nearly 46% (1,069 municipalities) are cities with a population of 1,000 to 5,000 inhabitants (INSEE 2013 census); This panel of 1,069 municipalities represents 14% of French cities with 1,000 to 5,000 inhabitants.

Note: for the TAGV activity, several TGV stations bear the name of a large city but are actually located in a different town. Example: the Besançon-TGV station is located in the town of Auxons (2,571 inhabitants), located 11 kilometres from Besançon.

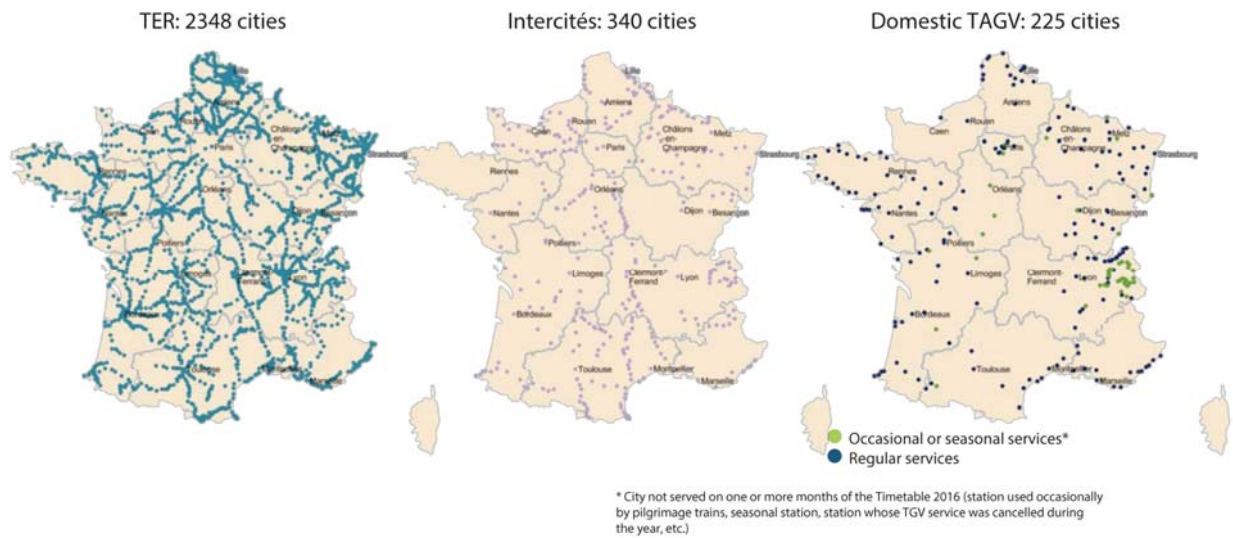
Table 2 - Characteristics of cities served by a TAGV in 2016 according to the type of urban area to which they belong

	Effective	%
Town outside urban area (fewer than 15,000 residents)	9	5%
Urban area with fewer than 15,000 residents	16	9%
Urban area of 15,000 to 49,999 residents	24	13%
Urban area of 50,000 to 99,999 residents	24	13%
Urban area of 100,000 to 499,999 residents	70	39%
Urban area > 500,000 residents	37	21%
... including urban area of Paris	7	4%
Total	180	

Source: ARAFER

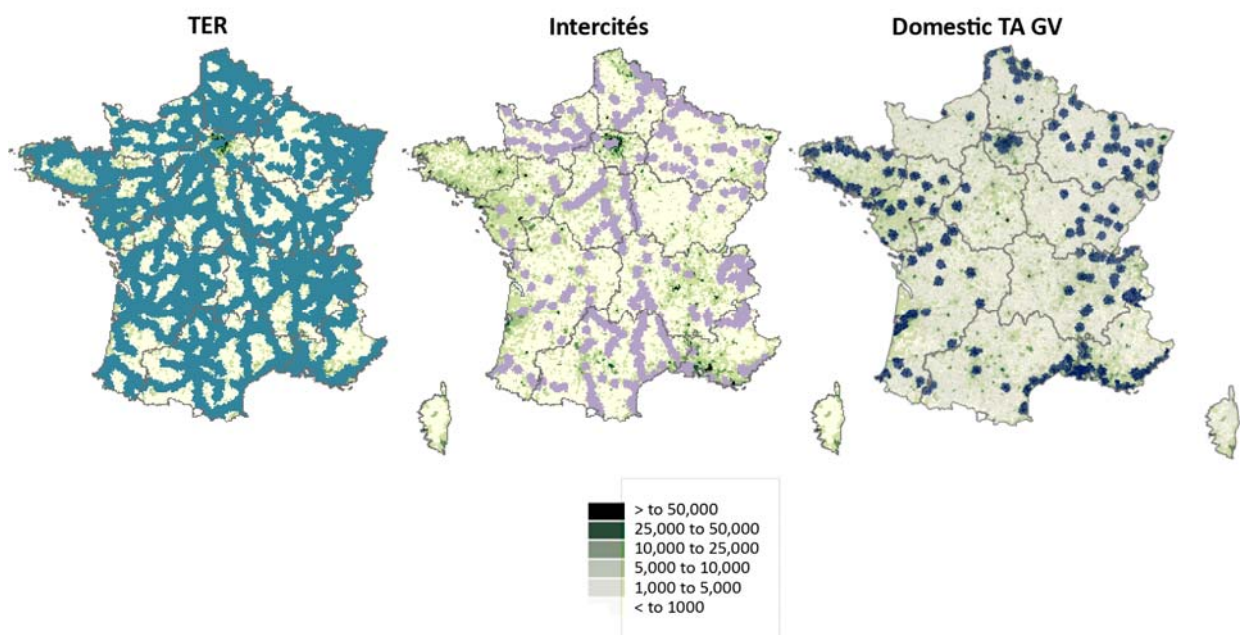
⁵The TGV stations are assigned to the municipality where they are geographically located, which sometimes differs from the major city whose name they carry.

Figure 5 - Cities served by type of railway service in 2016



Source: ARAFER

Figure 6 - Mapping of zones served* by type of railway service in 2016

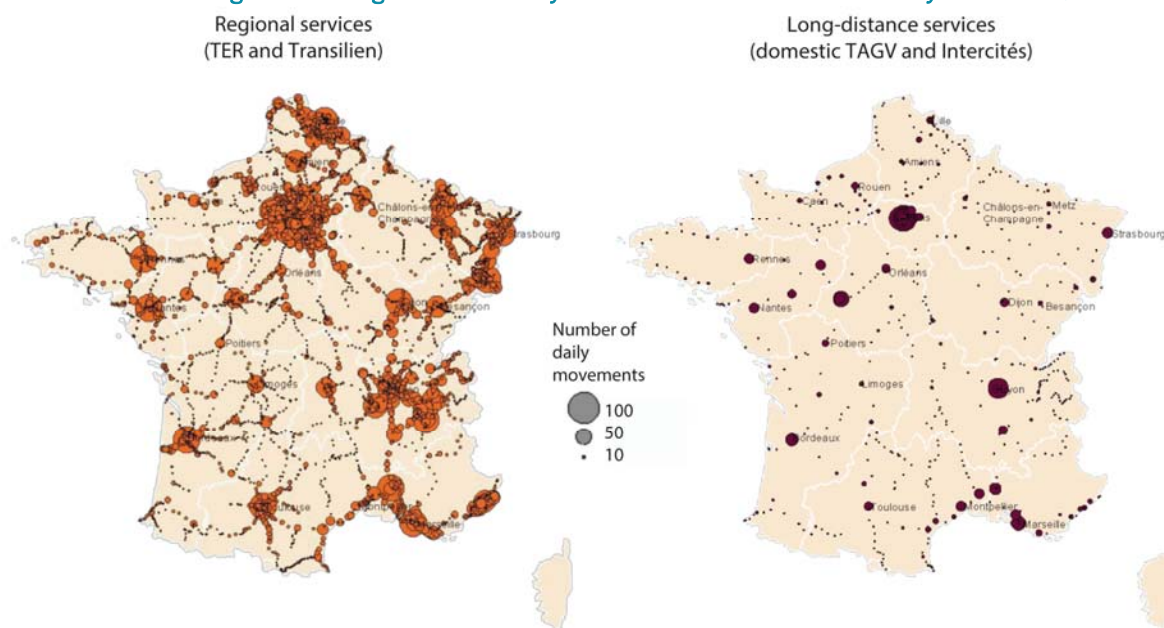


*Zones served: towns within a radius of 10 km around a city served by a rail service. For domestic TAGV, only the 180 cities served on all months of the 2016 service schedule are considered.

Source: ARAFER

Appendix 1.4 – Intensity of use of the railway stations

Figure 7 - Average number of daily movements for domestic services by station in 2016

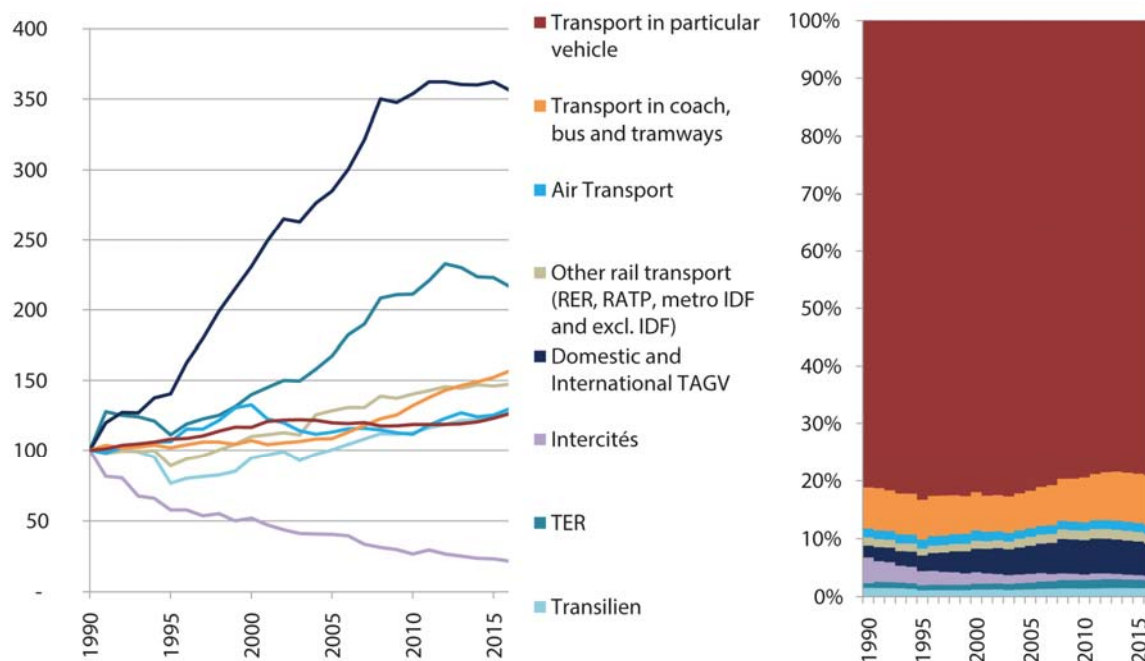


Source: ARAFER

2. COMPARATIVE CHANGES IN PASSENGER RAIL TRANSPORT

Appendix 2.1 - Changes in modes of transport over long period in France

Figure 8 - Growth of domestic passenger transportation and breakdown by mode between 2000 and 2016 (in passengers-km, basis of 100 in 2000)

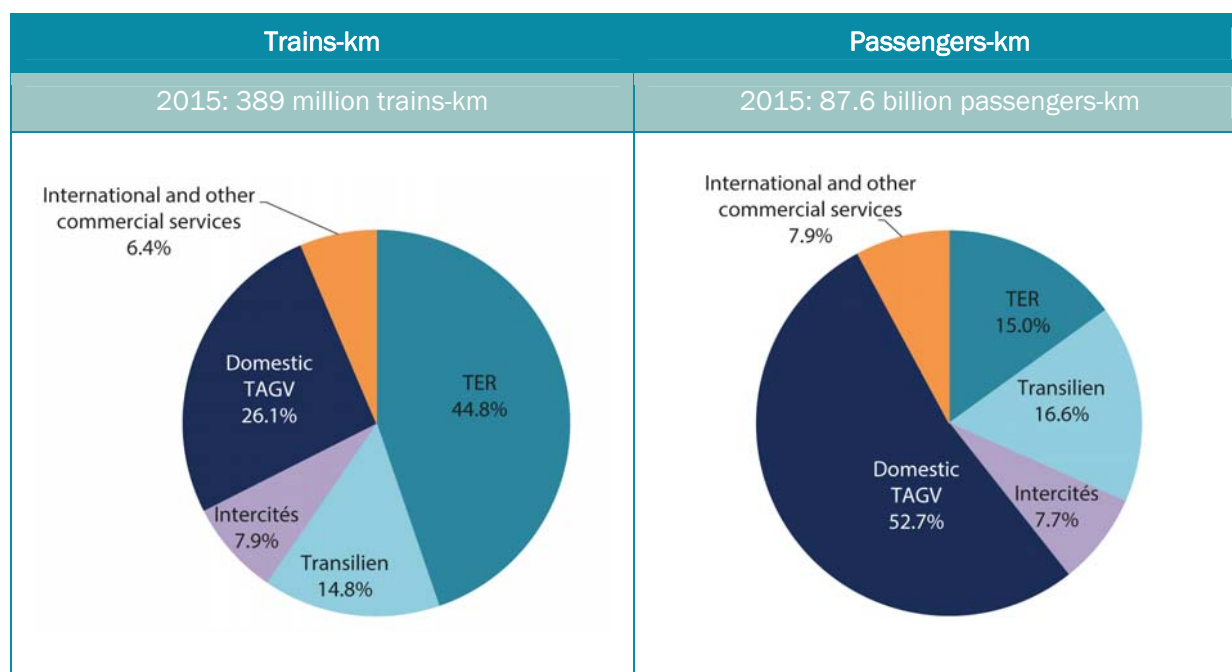


Source: SDES – Transport Accounts

3. THE PASSENGER RAILWAY MARKET IN 2016: OVERVIEW

Appendix 3.1 - Railway traffic in 2015 and quarterly changes in 2016

Figure 9 – Traffic by type of passenger service in 2015 (distribution of trains-km on the left and passengers-km on the right)



Source: ARAFER

Figure 10 - Quarterly changes in supply by type of passenger service in 2015 and 2016 (in millions of trains-km)



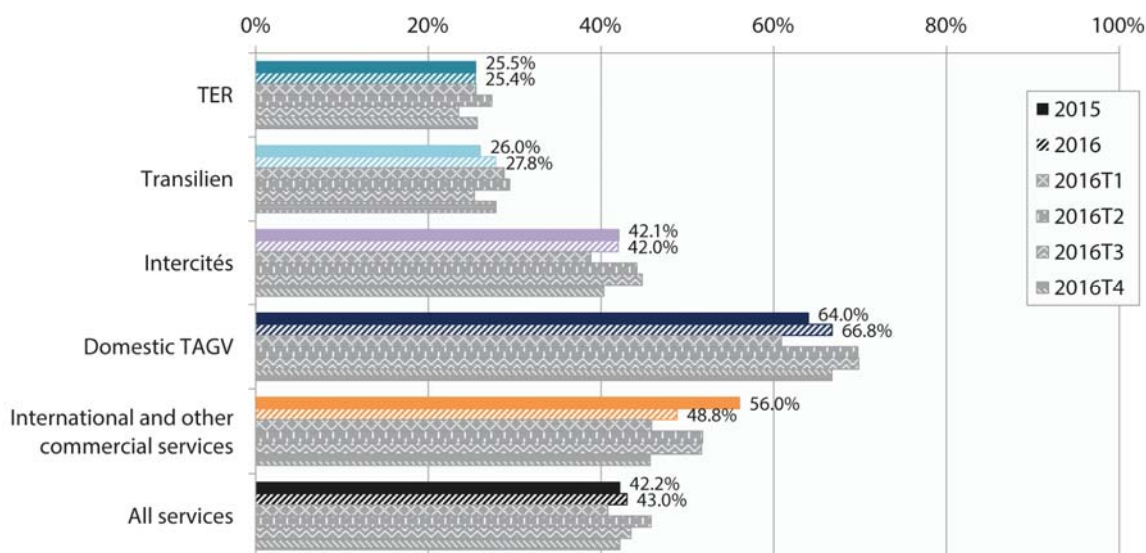
Sources: ARAFER

Figure 11 - Quarterly changes of frequency of railway service in 2015 and 2016
(in millions of transported passengers-km)



Source: ARAFER

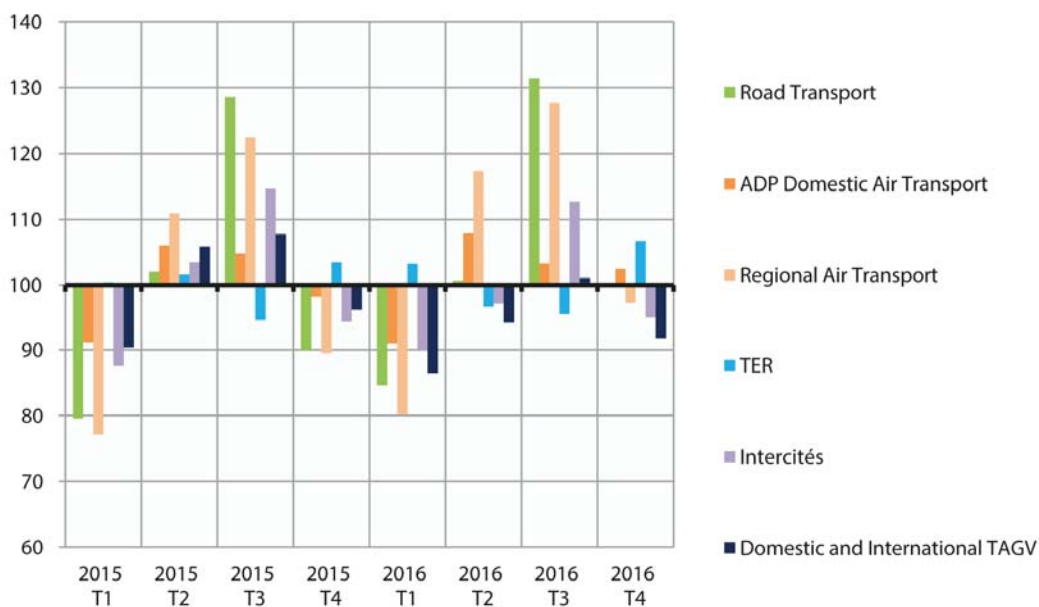
Figure 12 - Average occupancy rate of trains by service in 2015 and 2016



Source: ARAFER

The quarterly change in rail traffic is affected to a certain extent only by the seasonality of passenger transport in France.

Figure 13 - Seasonality of the frequency of transport by mode (basis of 100 in year 2015)



Source: ARAFER

Appendix 3.2 - Characteristics of the supply of rail services in 2016

The **TER rail services** offer 1.7 million seats to travellers via an average of 5,600 flights per day, serving 2,348 cities. That is 50% of the daily passenger train traffic on the RFN. The **Transilien services** offer 4.2 million seats via 4500 trips per day on average, which is nearly 40% of the daily traffic. The **Intercités services** offer 149,000 seats via 280 trips per day on average, serving 340 cities. That is 2% of the daily traffic.

The **domestic high-speed services** offer 436,000 seats via 620 trips per day on average, serving 225 cities.⁶ That is 6% of the daily traffic. Finally, the **international services** offer 112,000 seats via 180 trips per day on average, serving nearly 50 French cities. That is 2% of the daily passenger train traffic on the RFN (6% of the trains-km).

⁶Of which 45 cities were served during a part of the timetable 2016. These are the seasonal services, occasional services (ex: pilgrimage trains), or for towns whose TGV service has been eliminated during the year.

Figure 14 - Breakdown of the number of daily trains by rail service in 2016

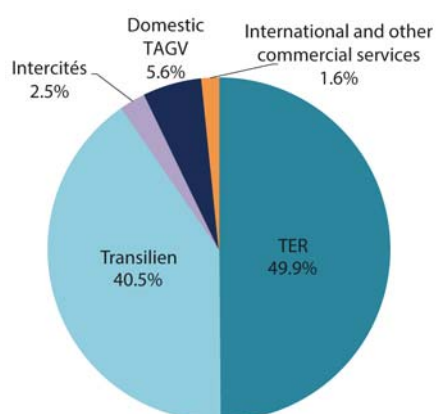
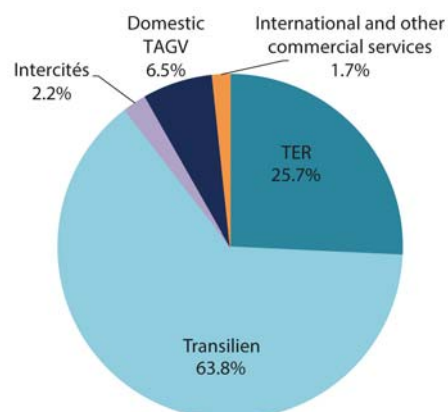


Figure 15 - Breakdown of the number of daily seats offered per service in 2016



Source: ARAFER

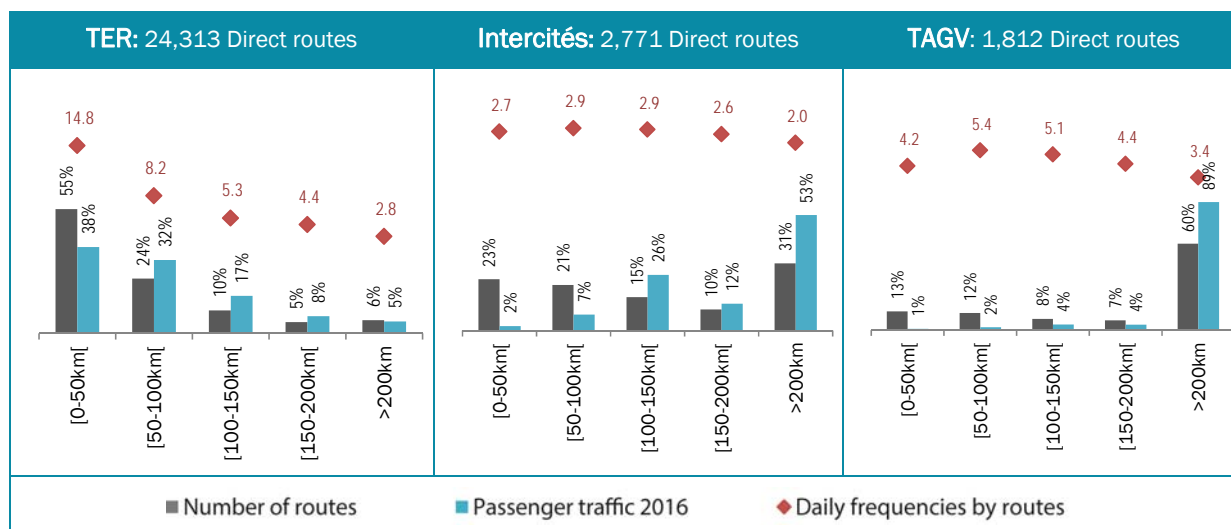
Table 2 outlines the general characteristics of the rail supply for travellers, by type of service, in 2016.

Table 3 - Supply of railway services by type of service in 2016

TER	TAGV	Intercités	Transilien	
2348	225	340	311	Cities served in France
5026	1345	445	627	Lines (Single stop policies)
24313	1812	2771	4473	Direct connections
5580	800	280	4530	Average daily traffic
1.7M	0.55M	0.15M	4.2M	Seats offered per day on average
82	430	295	34	Km travelled per train on average
0h59	2h46	2h52	n/a	Average travel time per line
83 km/h	155 km/h	103 km/h	n/a	Average commercial speed

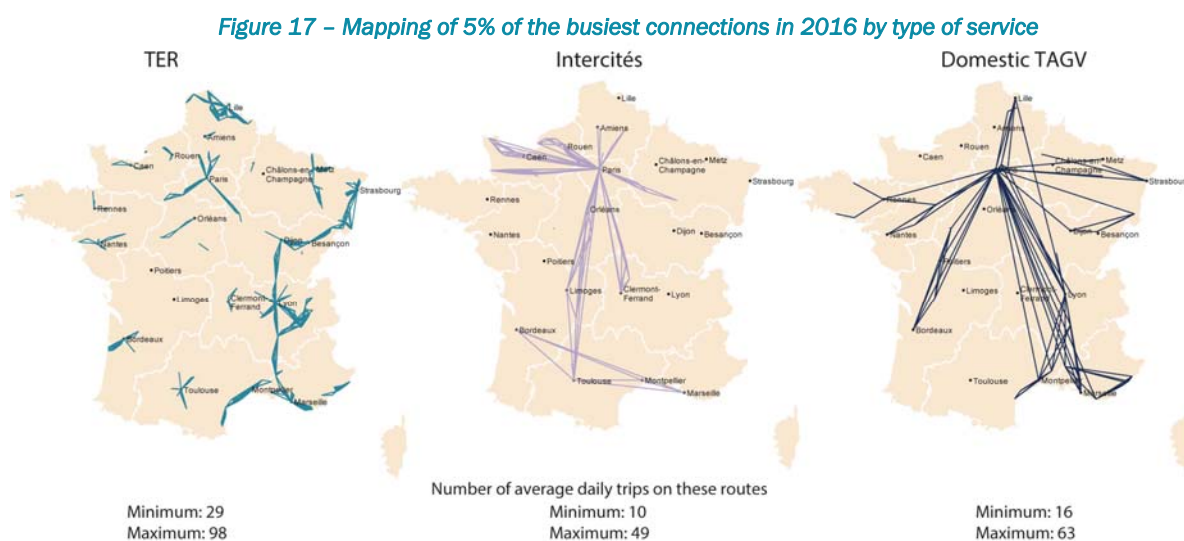
Source: ARAFER

Figure 16 – Breakdown, by distance class, of the number of direct connections, the number of train movements and the frequency (number of passengers) in 2016



Note for the reader: Of the 24,313 direct routes marketed in TER, 55% are less than 50 km and represent 38% of the traffic. On average, these connections are operated 15 times per day (which is 7.5 round-trips).

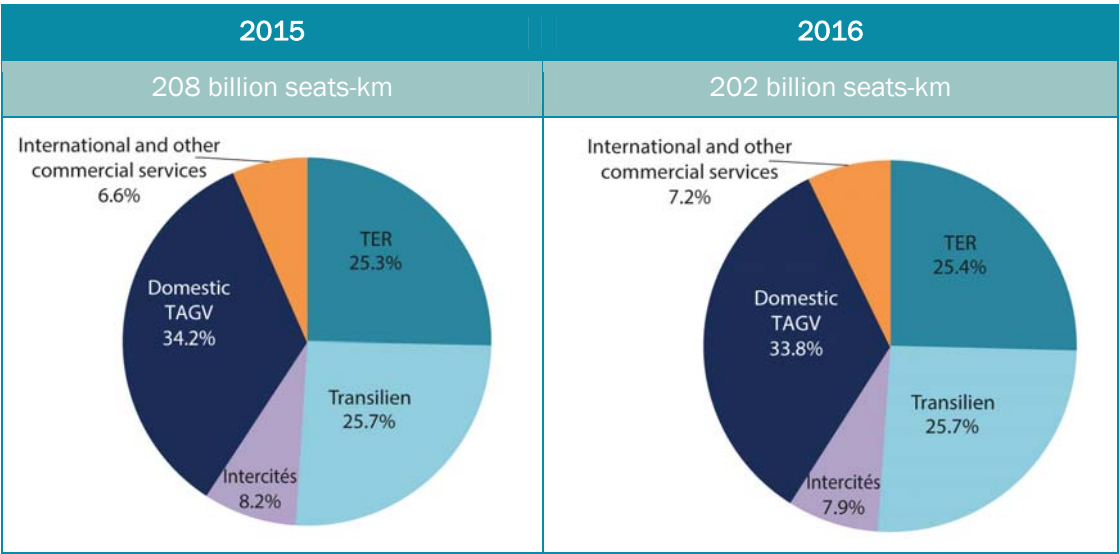
Source: ARAFER



Source: ARAFER

Appendix 3.3 - Carrying capacity per service

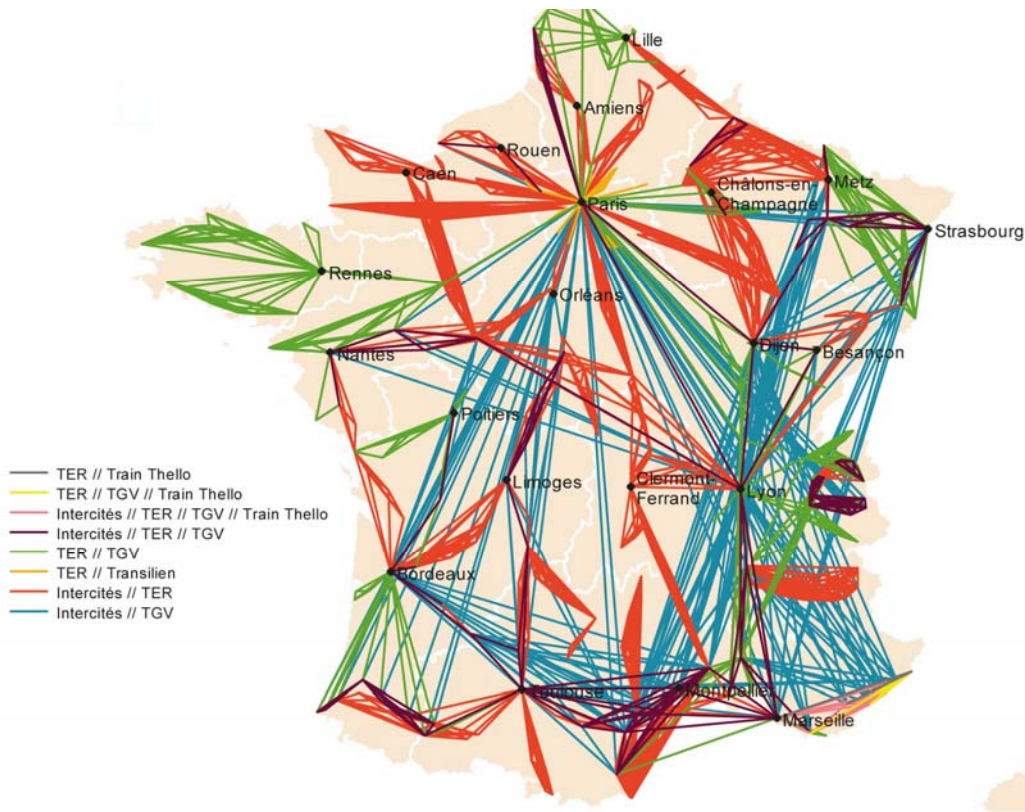
Figure 18 – Breakdown of the carrying capacity by rail service (% of the seats-km offered)



Source: ARAFER

Appendix 3.4 - Complementary of rail supply

Figure 19 - Mapping connections serviced by multiple services

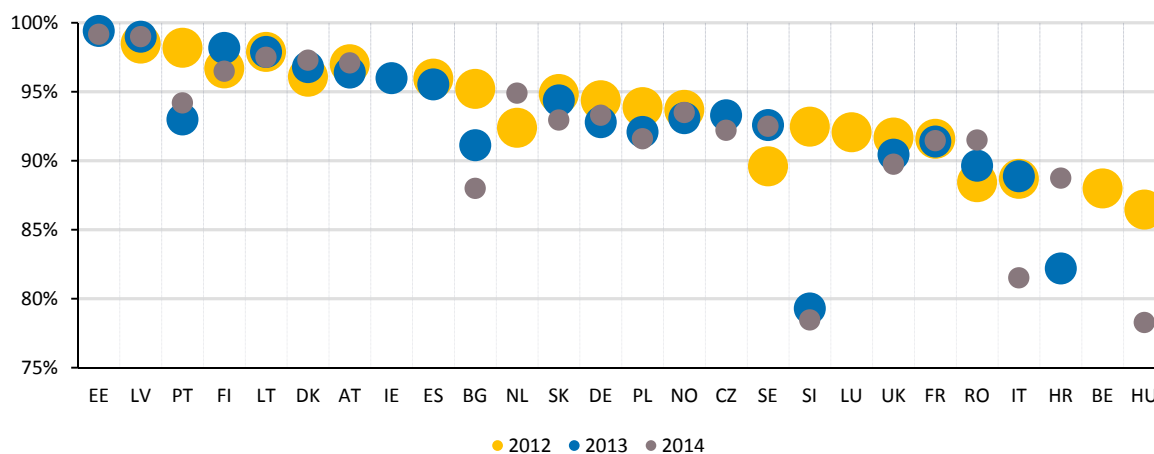


Source: ARAFER

4. SERVICE QUALITY

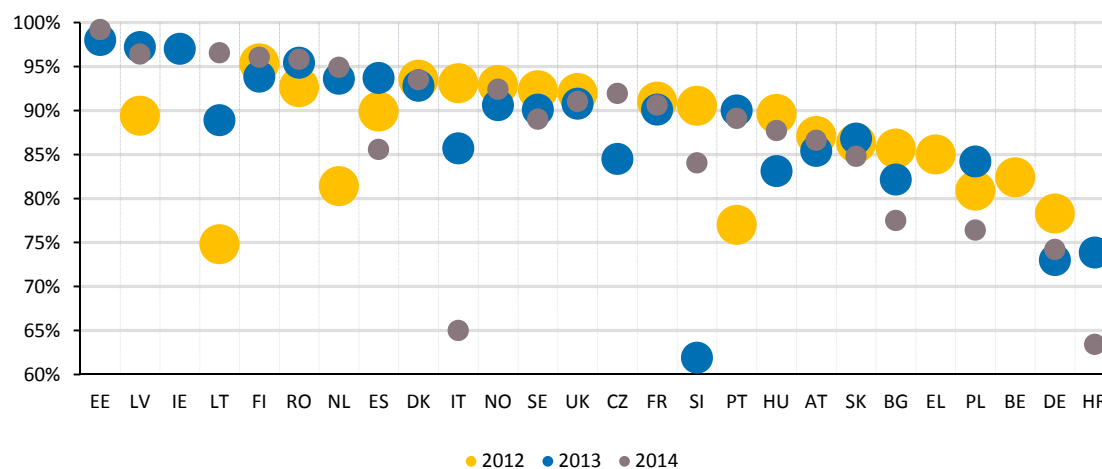
Appendix 4.1 - Reliability and punctuality of rail services in Europe

Figure 20 – Punctuality of regional and local rail services in Europe (% of trains per hour)



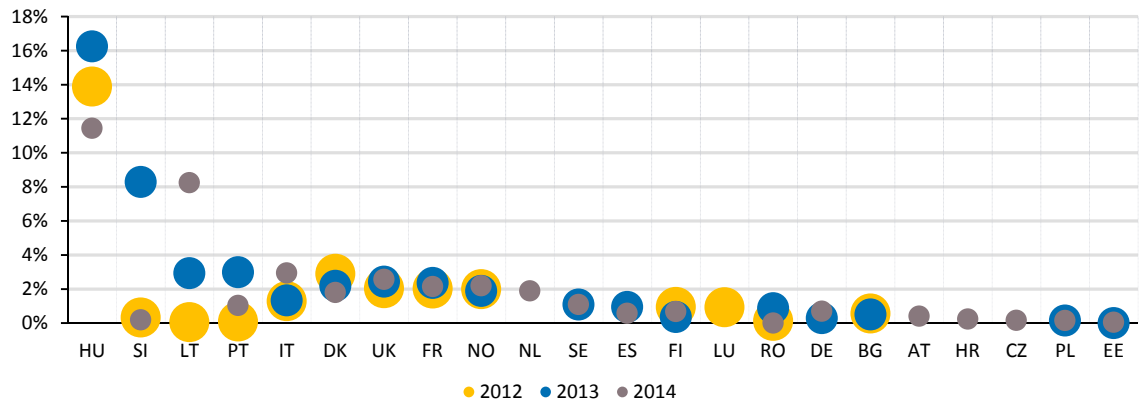
Source: Study on Prices and Quality of Rail Passenger Services, based on RMMS data

Figure 21 – Punctuality of long-distance rail services in Europe (% of trains per hour)



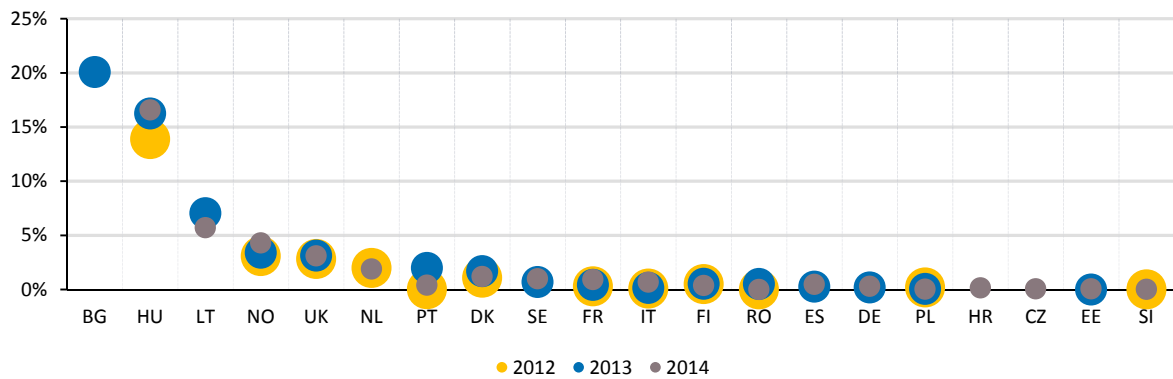
Source: Study on Prices and Quality of Rail Passenger Services, based on RMMS data

Figure 22 – Reliability of regional and local rail services in Europe (% of trains per hour)



Source: Study on Prices and Quality of Rail Passenger Services, based on RMMS data

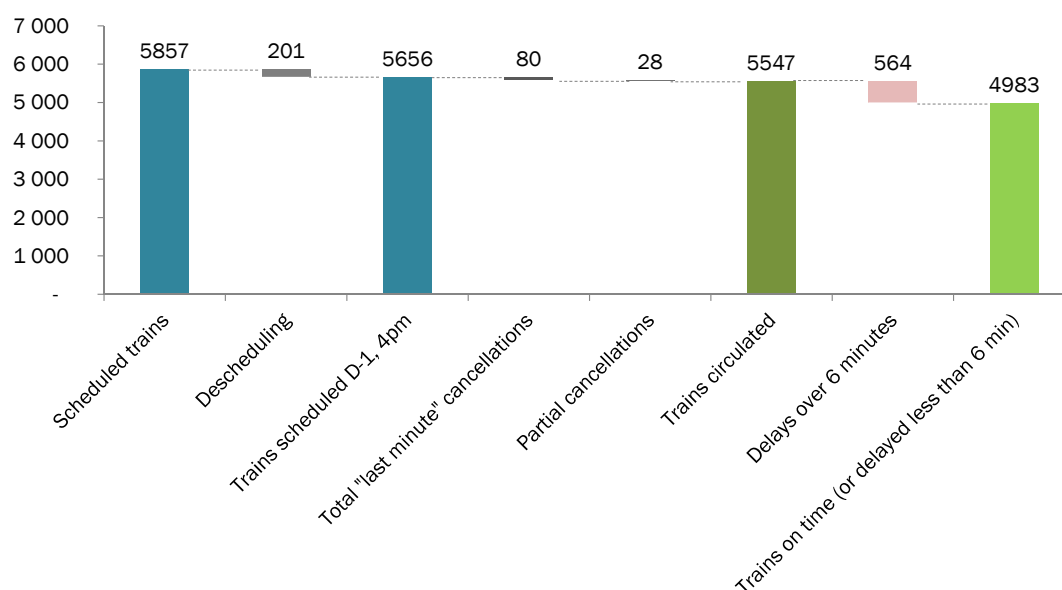
Figure 23 – Reliability of long-distance rail services in Europe (% of trains per hour)



Source: Study on Prices and Quality of Rail Passenger Services, based on RMMS data

Appendix 4.2 - Daily reliability and punctuality of TER

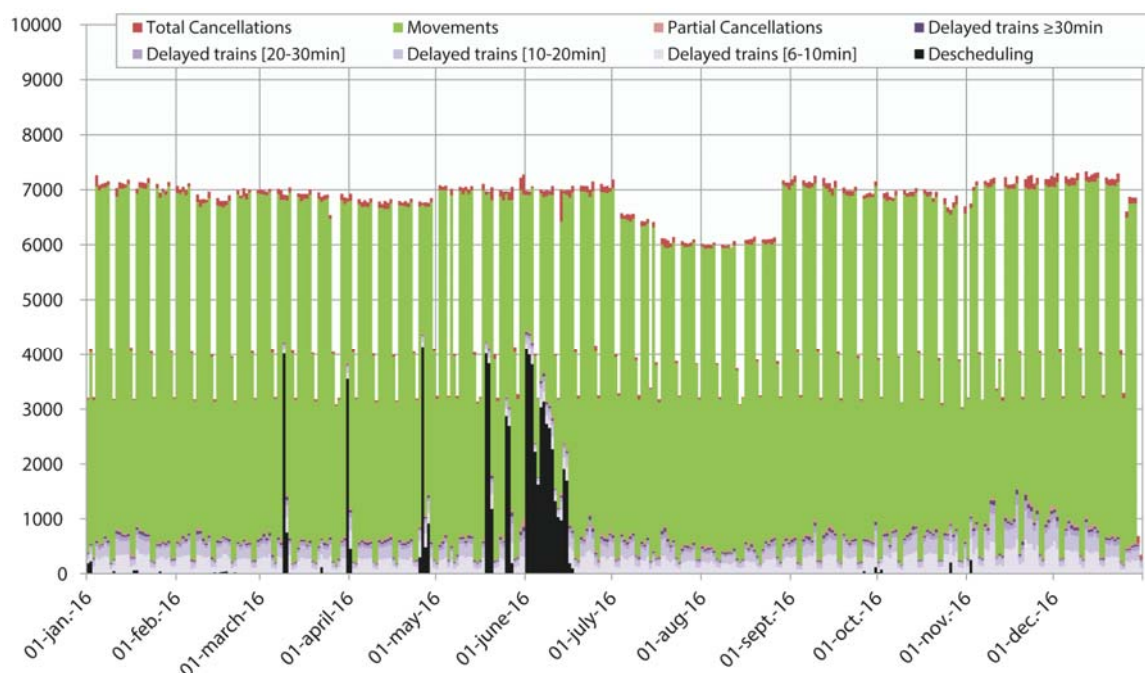
Figure 24 – Average number of TER trains running daily on the RFN in 2016 and quality of service



Source: ARAFER

Figure 25 provides a breakdown of the number of regional trains that ran daily in 2016 (green zone), deducting deprogrammed trains (in black), total cancellations (in red) and partial cancellations (in pink). It also specifies, in shades of grey, the daily delays of the regional services, representing on average nearly 565 trains late per day.

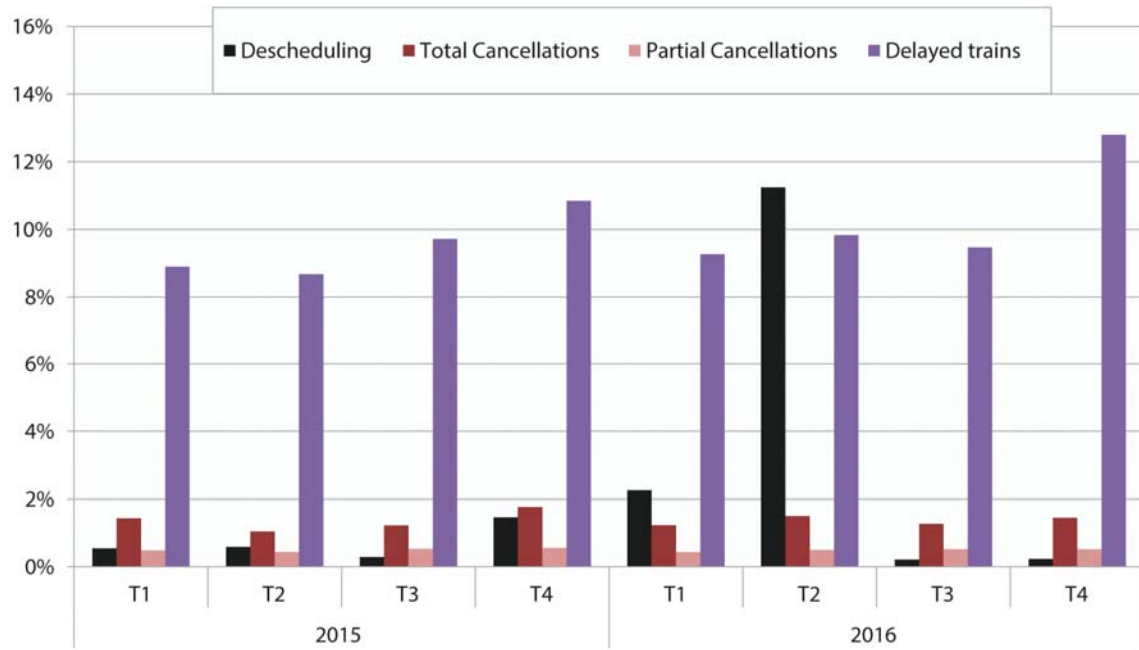
Figure 25 – Details of the daily TER train traffic in 2016 and quality of service



Source: ARAFER

Figure 26 summarises the rates of deprogramming, cancellation and delay of TER trains per quarter in 2015 and 2016.

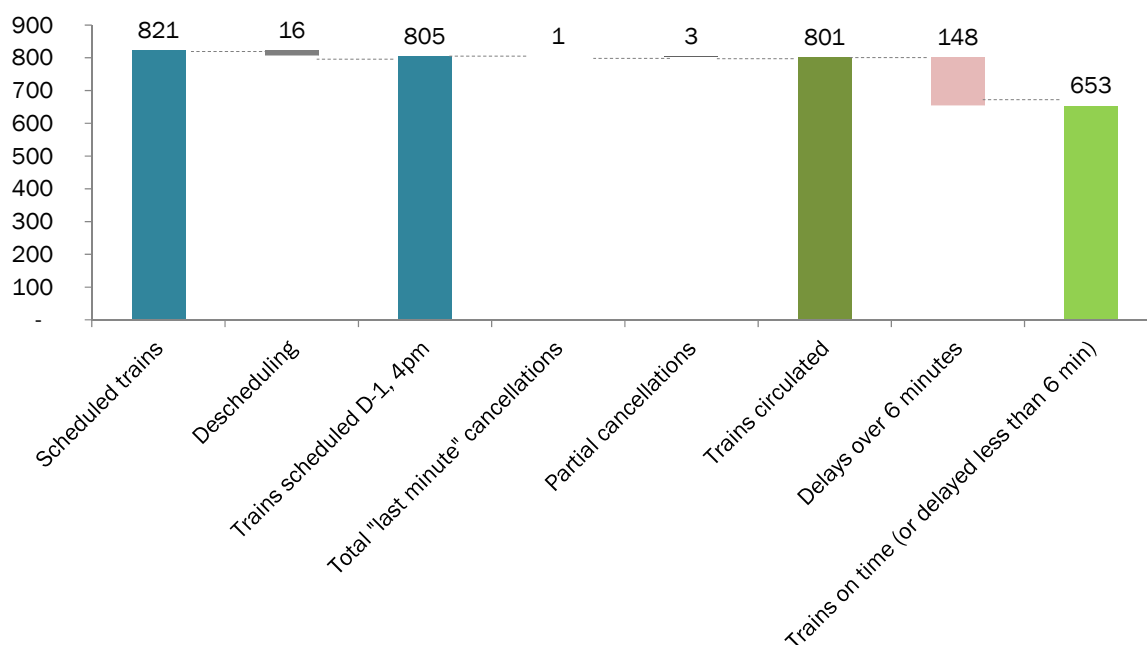
Figure 26 – Rates of descheduling, cancellation and delay of TER trains



Source: ARAFER

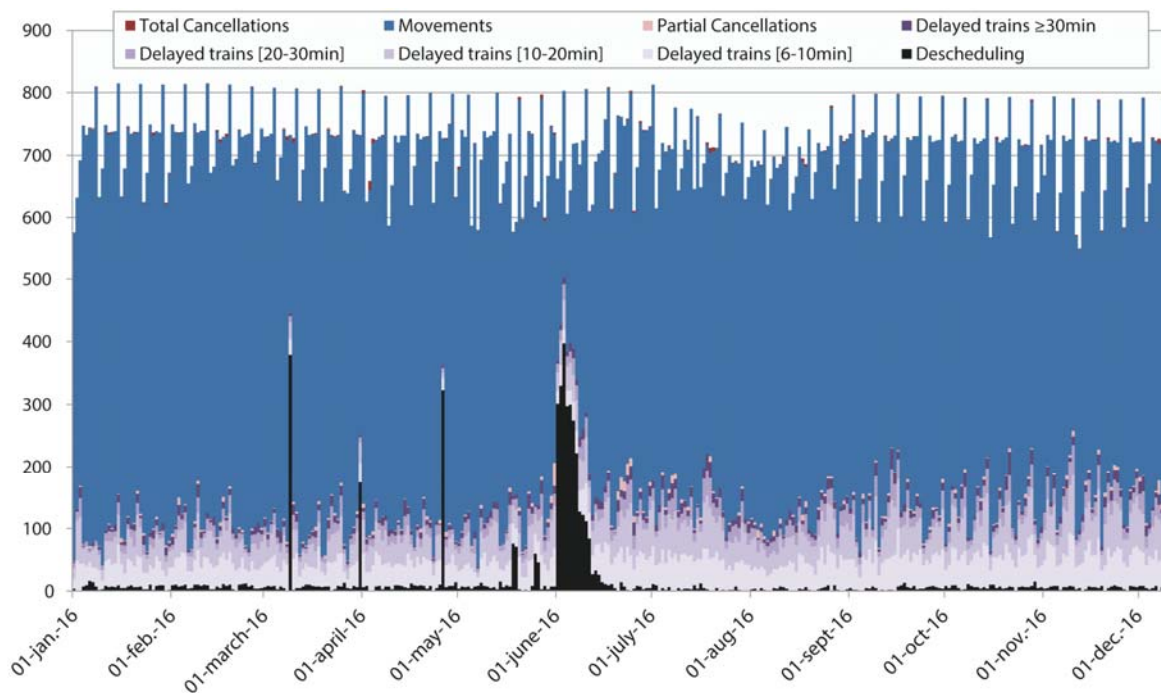
Appendix 4.3 - Daily reliability and punctuality of TGV

Figure 27 – Average number of TGV trains run daily on the RFN in 2016 and quality of service (SNCF Mobilités perimeter)



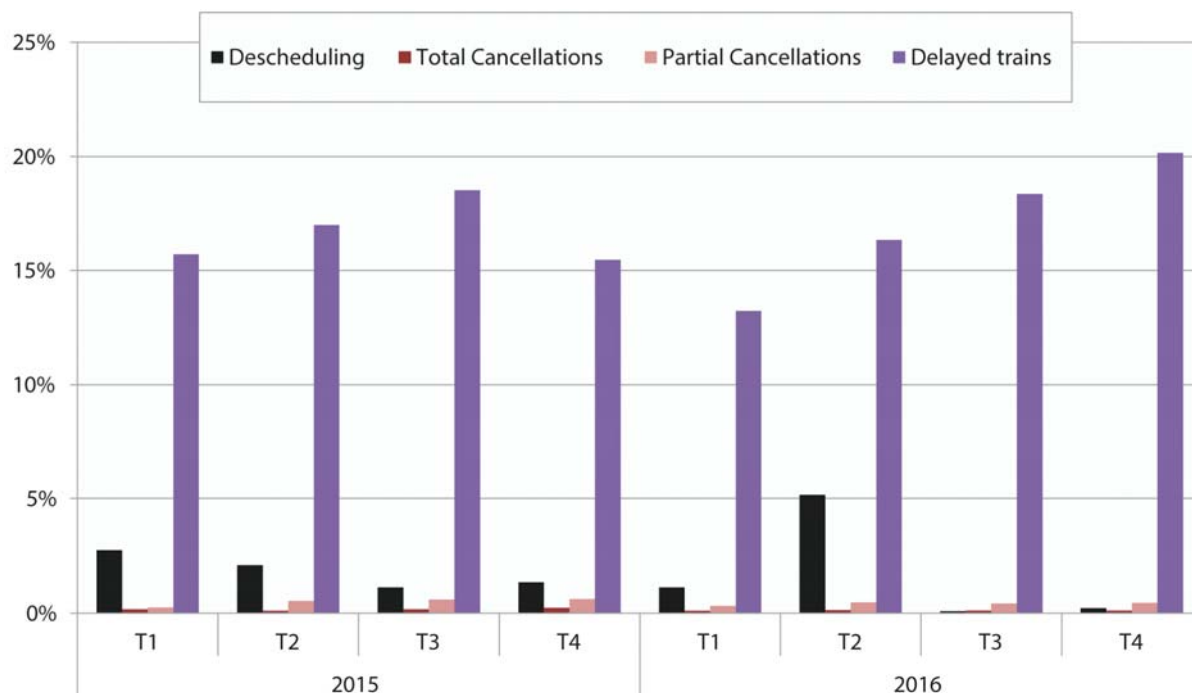
Source: ARAFER

Figure 28 – Details of the daily TGV train traffic in 2016 and quality of service (SNCF Mobilités perimeter)



Source: ARAFER

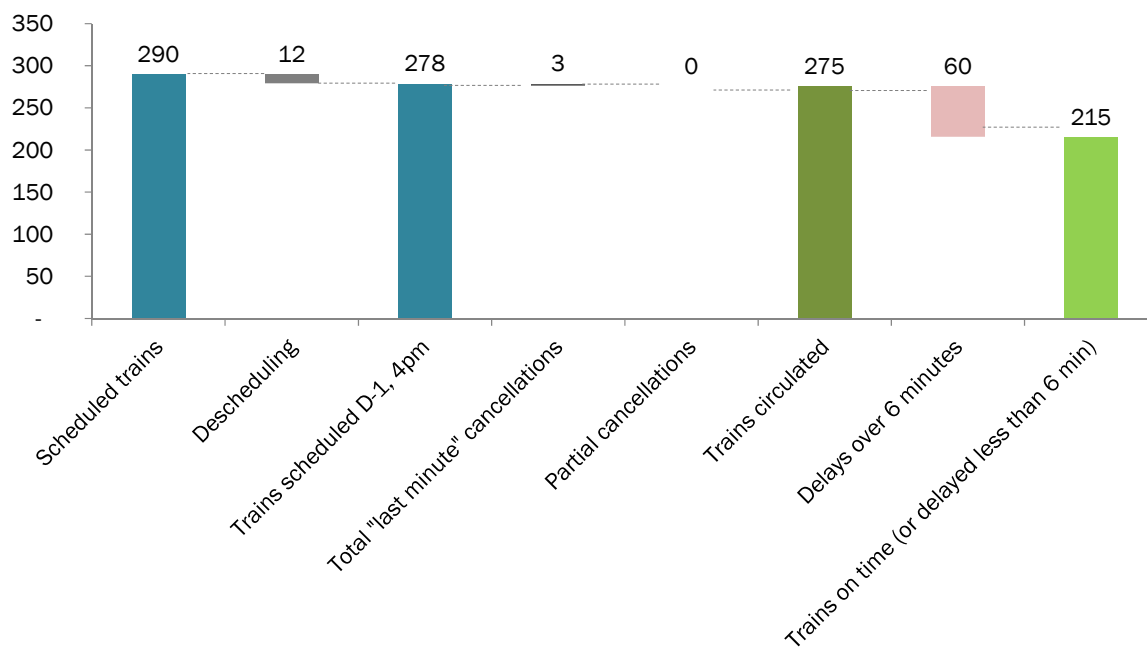
Figure 29 – Rates of cancellation and delay of high-speed trains



Source: ARAFER

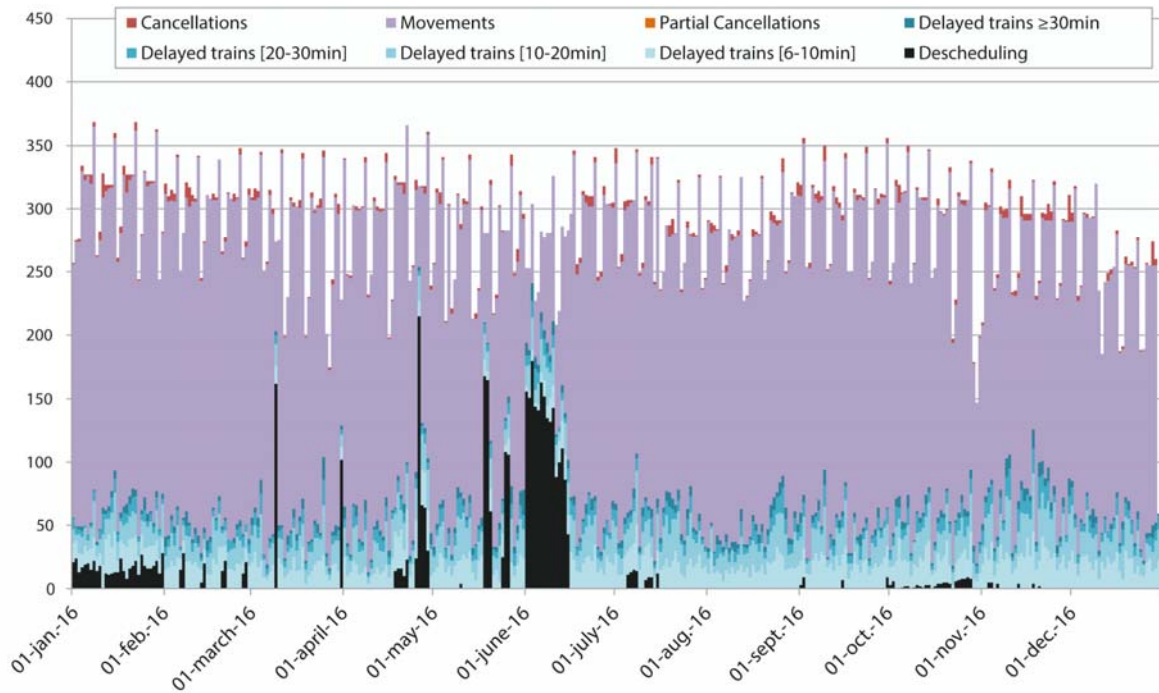
Appendix 4.4 - Daily reliability and punctuality of Intercités trains

Figure 30 – Average number of Intercités trains run daily on the RFN in 2016 and quality of service



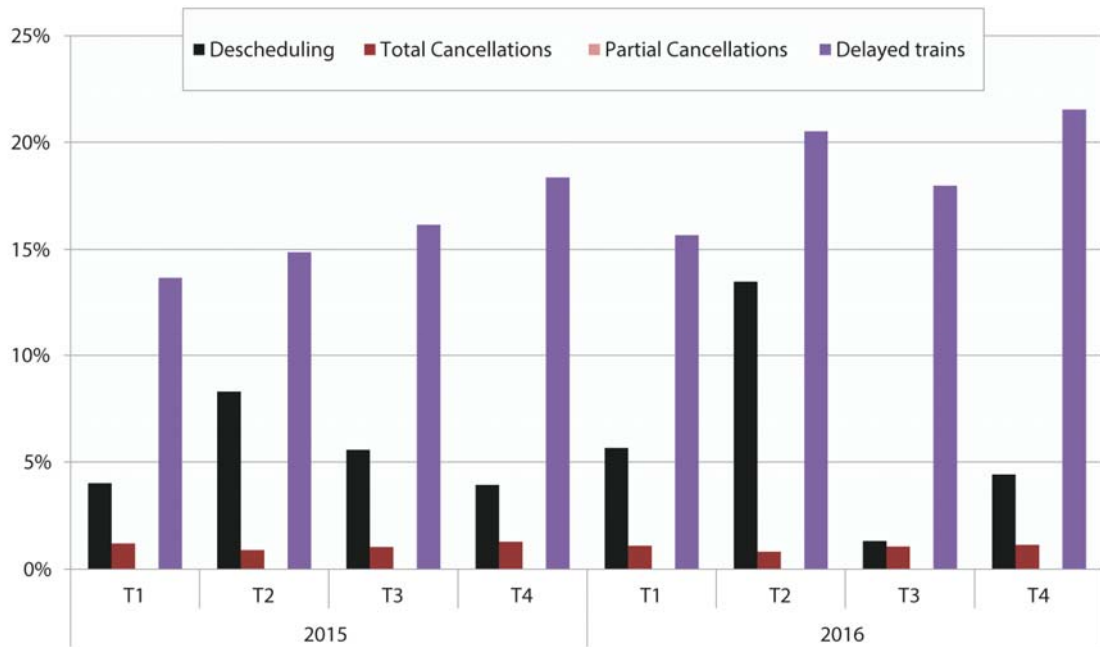
Source: ARAFER

Figure 31 – Details of the daily Intercités train traffic in 2016 and quality of service



Source: ARAFER

Figure 32 – Rates of descheduling, cancellation and delay of Intercités trains

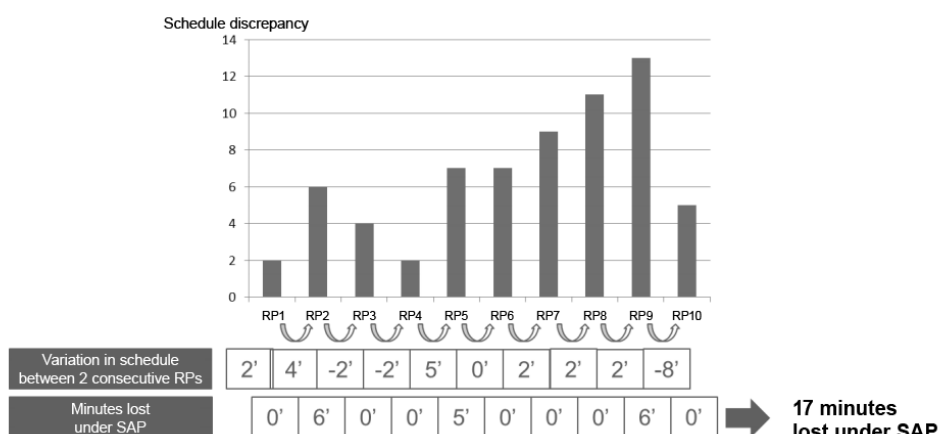


Source: ARAFER

Appendix 4.5 - System of Performance Improvement (SPI)

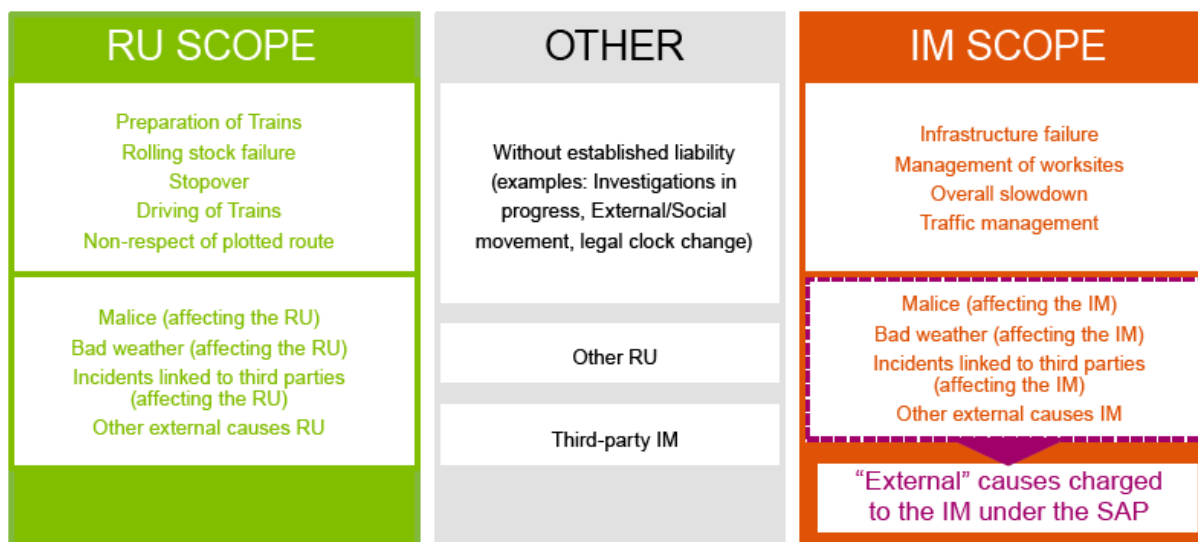
According to the definition adopted by SNCF Réseau⁷, the calculation of the minutes lost for train traffic is constructed as follows: for a given traffic route, the difference in schedule fluctuations between two consecutive remarkable points (RP) constitutes a Schedule Variation Gap (SVG). The indicator of minutes lost under the SAP is calculated by aggregation of the Schedule Variation Gap of each of the routes of an operator from 5 minutes 59 seconds delay (see example below).

Figure 33 - Example of measurement of minutes lost for a train route



Source: SNCF Réseau

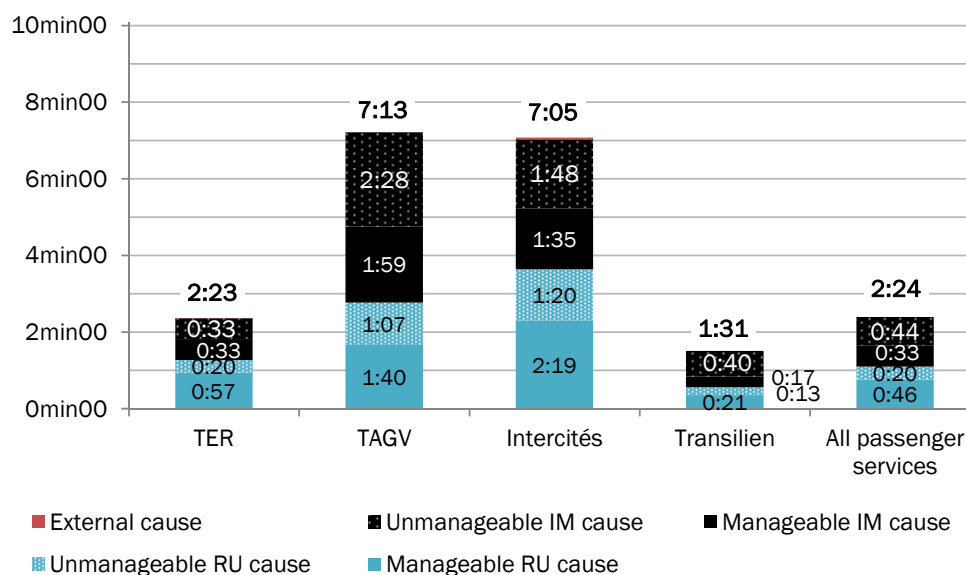
Figure 34 - Causes for delay - SAP



Source: COSAP

⁷Cf. Reference for System of Performance Improvement (Système d'Amélioration des Performance, SAP in French): http://www.sncf-reseau.fr/sites/default/files/upload/DRR/documents-techniques-referentiels/Referentiel_RFN-IG-TR_04_C-01-n014.pdf

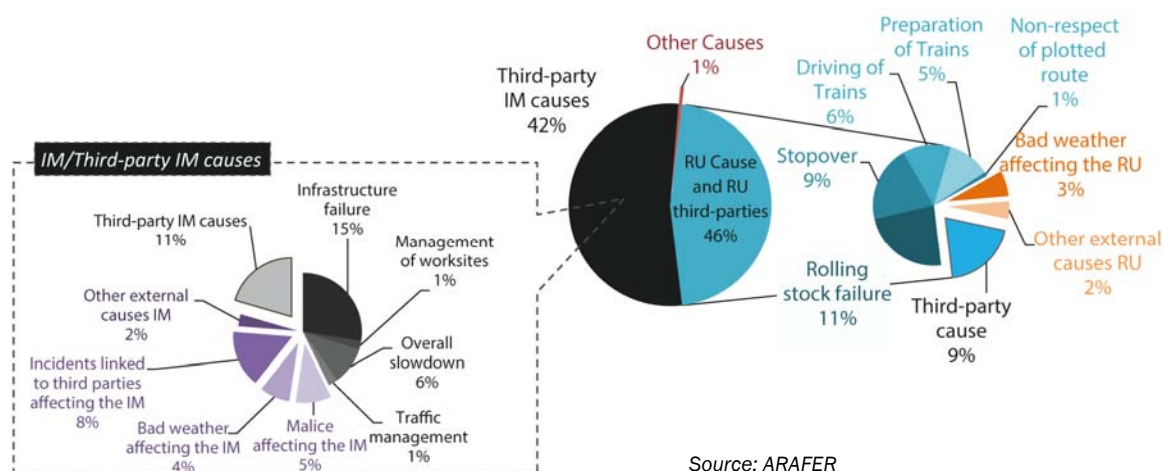
Figure 35 – Average minutes lost per train in 2015



Source: ARAFER

Note for the reader: each TER loses on average 2 min 23 on its theoretical schedule once it arrives at its terminal: 57s are manageable causes due to the demand Effect, 1 min 06 is due to the RU(s) (of which 50% of causes are manageable), 20 seconds are due to not manageable RU causes (for example: perturbations due to other RUs, external causes, etc.).

Figure 36 – Breakdown of minutes lost on the network in 2015



Source: ARAFER

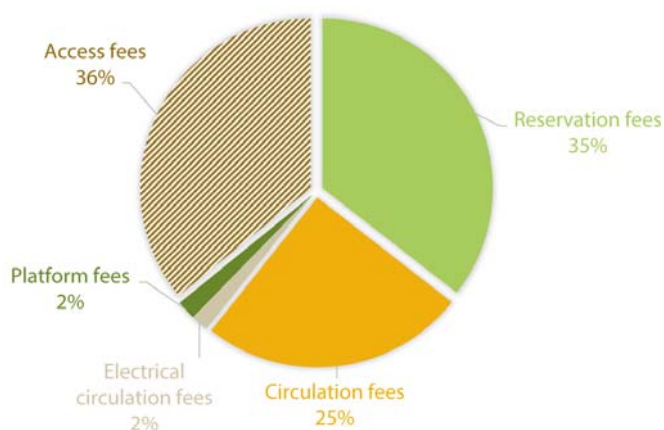
5. FINANCIAL RESULTS

Appendix 5.1 - Revenues

The fees collected by SNCF Réseau are composed of a fixed rate for the licensed activities (network access fee⁸), paid directly by the transport authorities (the State for the Intercités activity, the State on behalf of the Regions for the TER business, and STIF via SNCF Mobilités⁹ for the Transilien business), and also four royalties (for minimum services) paid by the passenger RUs, including the and calculation formulas are specified in the Network Reference Document¹⁰, for the 2015 timetable:

- reservation fees;
- route fees;
- electrical route fees;
- platform fees.

Figure 37 – Breakdown of amount of revenues collected by SNCF Network for passenger rail transport in 2015



Source: ARAFER

Table 4 indicates the amount of the access charges paid by the Organizing Authorities for Transport (AOT) and their share in the total fees collected by SNCF Réseau, for each type of contracted service.

Table 4 - Access fees by type of rail service in 2015

Type of rail service (Organising Authority for Transport)	Amount of access fees (billions of euros)	Access fees / total fees collected by the IM
TER (Regions ¹¹)	1.38	65 %
Transilien (STIF ¹²)	0.16	21 %
Intercités (State)	0.44	70 %
Total	1.98	56 %

⁸ The amounts of the TER and TET access charges were estimated respectively in 2007 (during the IGF-CGPC mission on the pricing of the national rail network) and in 2011 (in the network's 2012 reference document). These amounts, which must enable the SNCF Réseau to cover the fixed infrastructure costs attributable to the contracted activities, are calculated in proportion to the number of trains running on the main tracks.

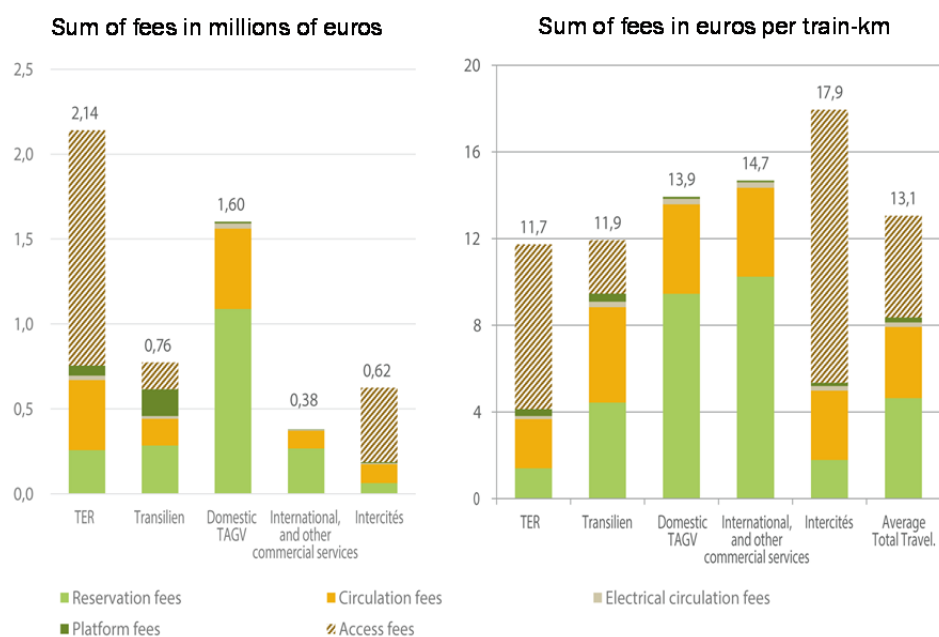
⁹ In the case of STIF, the public contribution relating to access to the infrastructure and paid to the carrier (SNCF Mobilités) which then transfers the amount to the SNCF Réseau.

¹⁰ Document de Référence du Réseau (DRR).

¹¹ The access fee related to TER services is paid by the State for the account of the Regions which are AOT.

¹² In the case of Transilien, STIF pays the equivalent amount of access fees to SNCF Mobilités, who then pays it to SNCF Réseau.

Figure 38 - Revenue from infrastructure management by type of passenger service
(in billions of euros and in euros per train-km in 2015)



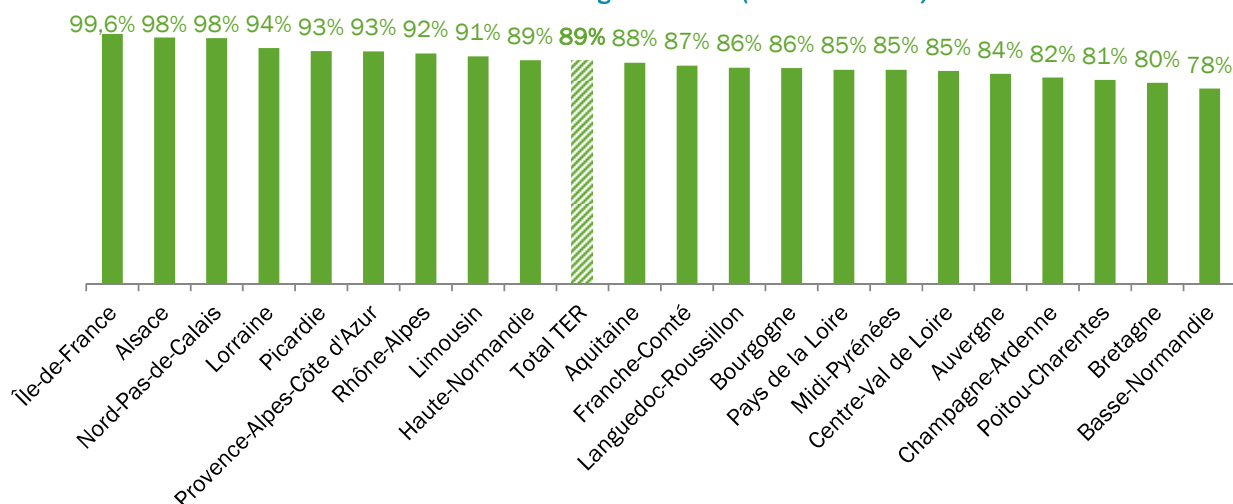
Source: ARAFER

Note for the reader: for the TER activity as a whole, the infrastructure manager receives 2.14 billion euros, which represents 11.7 euros per train-km, including 4 euros paid by the railway undertaking, the complement from public subsidies (access fee).

6. FOCUS ON REGIONAL PASSENGER RAIL TRANSPORT

Appendix 6.1 – Characteristics of the regional infrastructure and supply in train-km

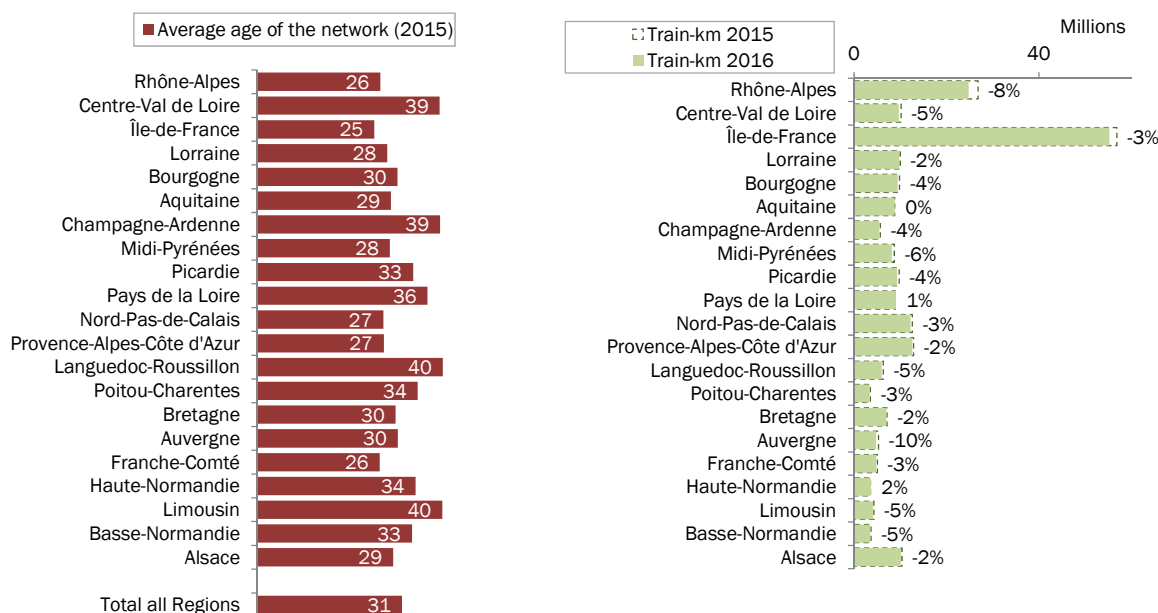
Figure 39 - Share of the population of each region residing in the municipality located within 10 km of a regional station (TER or Transilien)



Source: ARAFER

Note for the reader: in Lorraine, 94% of the population lives in a municipality located less than 10 km from a TER station. In Île-de-France, 99.6 % of the population resides in a municipality located less than 10 km from a Transilien station.

Figure 40 – Average age of the network and supply by Region



Source: ARAFER

Note for the reader: the network in Limousin is on average 40 years old. In this Region, the supply in trains-km decreased 5% between 2015 and 2016

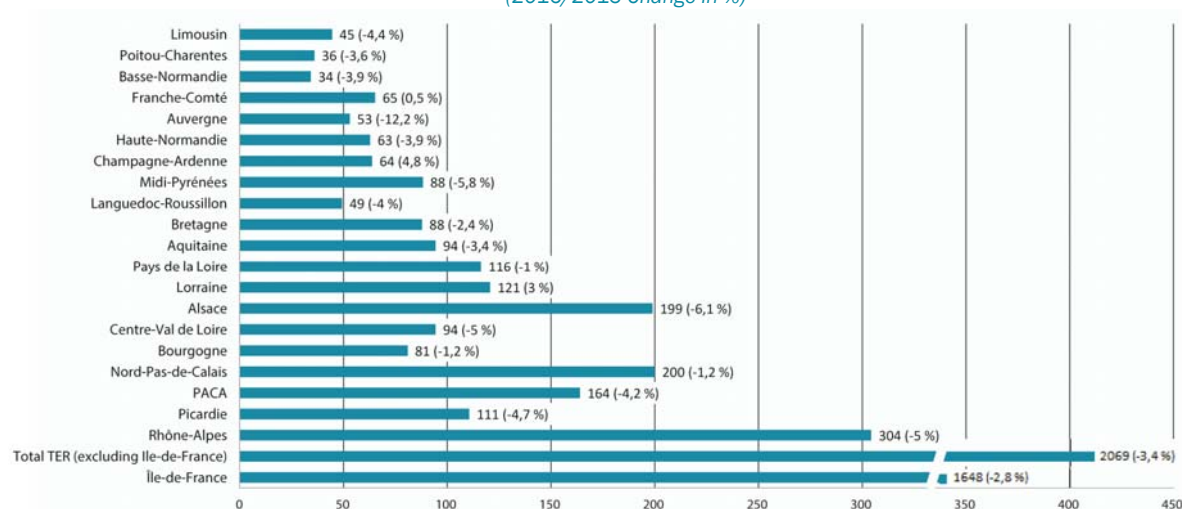
Appendix 6.2 - The TER rail traffic by region

Figure 41 – Number of routes and towns served by the TER services in 2016

Region	Number of sub-regional routes	Number of inter-regional routes	Number of cities served
Champagne-Ardenne	577	434	73
Picardie	848	625	142
Haute-Normandie	322	348	64
Centre-Val de Loire	927	898	145
Basse-Normandie	268	317	47
Bourgogne	1014	886	120
Nord-Pas-de-Calais	2,156	353	176
Lorraine	1661	573	159
Alsace	988	247	135
Franche-Comté	552	294	68
Pays de la Loire	816	600	122
Bretagne	736	238	110
Poitou-Charentes	452	316	77
Aquitaine	1291	310	160
Midi-Pyrénées	965	657	128
Limousin	390	333	73
Rhône-Alpes	2218	834	228
Auvergne	531	759	71
Languedoc-Roussillon	1180	621	114
Provence-Alpes-Côte d'Azur	1027	558	109

Source: ARAFER

Figure 42 – Total number of regional trains running in millions (TER and Transilien)
(2016/2015 Change in %)

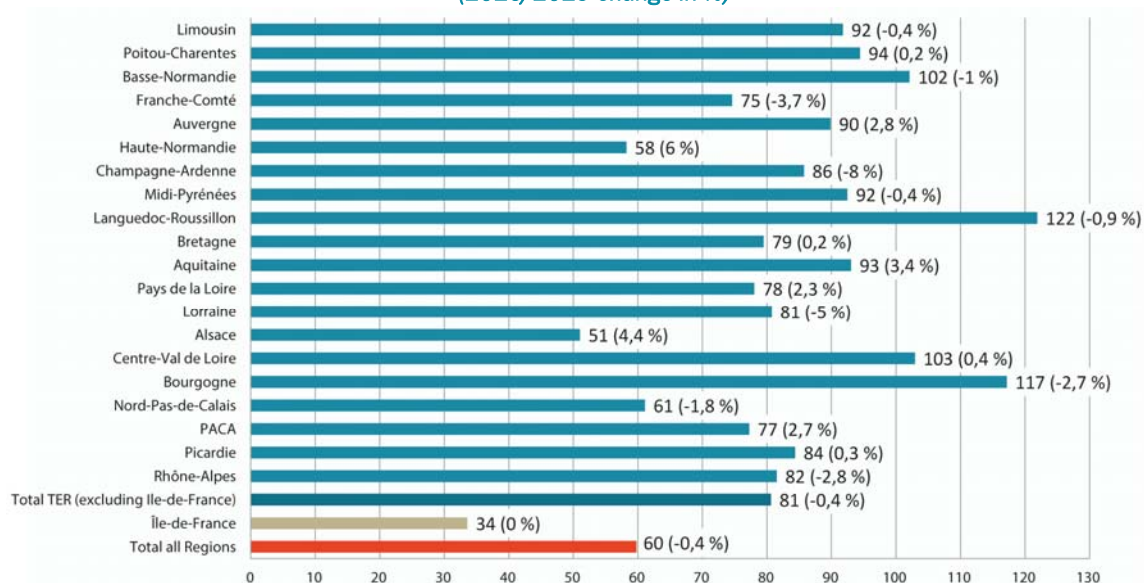


Methodology note: the number of movements per calendar year 2016 is an estimate. The information collected by the Authority is related to the 2016 service schedule. Circulations made after 10 December 2016 will be updated during the 2017 service schedule collection.

Source: ARAFER

Note for the reader in 2016, 304,000 TER trains were run in the Rhône-Alpes Region.

**Figure 43 - Average distance run in km per regional train (TER and Transilien) in 2016
(2016/2015 Change in %)**



Source: ARAFER

Note for the reader: in 2016, the average distance travelled by a TER in Champagne-Ardenne is 86 km between its point of origin and its terminal station, a decrease of -7.9% compared to 2015.

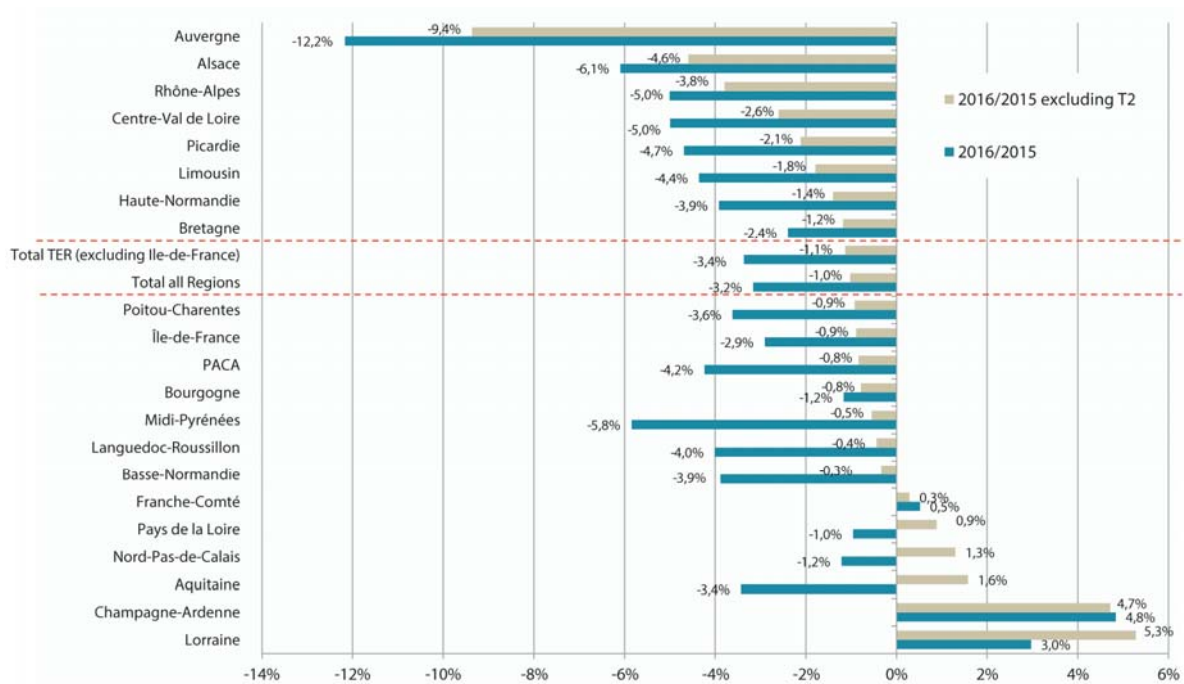
**Figure 44 - Average carrying capacity of regional trains (TER and Transilien) in 2016
(2016/2015 Change in %)**



Source: ARAFER

Note for the reader: in 2016, the average carrying capacity of TER trains was 307 seats, up +1.2% compared to 2015.

**Figure 45 - Change in the total number of regional trains having actually run during the year
(TER and Transilien)**



Methodology note: the number of routes per calendar year 2016 is an estimate. The information collected by the Authority is related to the 2016 service schedule, thus circulations made after 10 December 2016 will be updated during the 2017 service schedule collection.

Source: ARAFER

Table 5 – Changes in the supply of trains-km of regional services

In millions of trains-km	Levels		Change
	2015	2016	2016/2015
Île-de-France	56,882	55,280	-2.8%
Picardie	9,761	9,328	-4.4%
Aquitaine	8,793	8,782	-0.1%
Franche-Comté	5,027	4,866	-3.2%
Bourgogne	9,854	9,479	-3.8%
Limousin	4,289	4,086	-4.7%
Auvergne	5,275	4,762	-9.7%
Pays de la Loire	8,955	9,070	1.3%
Champagne-Ardenne	5,667	5,465	-3.6%
Bretagne	7,131	6,977	-2.1%
Rhône-Alpes	26,860	24,805	-7.7%
Nord-Pas-de-Calais	12,597	12,217	-3.0%
PACA	12,867	12,660	-1.6%
Lorraine	9,964	9,742	-2.2%
Languedoc-Roussillon	6,312	6,007	-4.8%
Basse-Normandie	3,674	3,497	-4.8%
Alsace	10,348	10,148	-1.9%
Midi-Pyrénées	8,701	8,159	-6.2%
Centre-Val de Loire	10,179	9,714	-4.6%
Haute-Normandie	3,591	3,656	1.8%
Poitou-Charentes	3,518	3,399	-3.4%
Total TER (excl. Ile-de-France)	173,363	166,820	-3.8%
Total	230,244	222,100	-3.5%

Source: ARAFER

Table 6 – Change in the supply seats-km of regional services

In billions of seats-km	Levels seats-km		Change 2016/2015			
	2015	2016	Seats-km	Carrying capacity	Distance (km)	Frequency (movements)
Île-de-France	53.39	51.86	-2.9%	0.0%	0.0%	-2.8%
Picardie	4.65	4.57	-1.8%	2.8%	0.3%	-4.7%
Aquitaine	1.98	1.96	-1.0%	-0.9%	3.4%	-3.4%
Franche-Comté	0.93	0.91	-1.8%	1.4%	-3.7%	0.5%
Bourgogne	4.16	4.11	-1.1%	2.8%	-2.7%	-1.2%
Limousin	0.57	0.58	2.8%	7.9%	-0.4%	-4.4%
Auvergne	1.01	0.93	-7.8%	2.1%	2.8%	-12.2%
Pays de la Loire	2.43	2.39	-1.9%	-3.1%	2.3%	-1.0%
Champagne-Ardenne	1.41	1.38	-2.3%	1.3%	-8.0%	4.8%
Bretagne	1.80	1.77	-1.4%	0.8%	0.2%	-2.4%
Rhône-Alpes	9.57	9.08	-5.1%	2.8%	-2.8%	-5.0%
Nord-Pas-de-Calais	4.41	4.29	-2.7%	0.3%	-1.8%	-1.2%
PACA	4.35	4.31	-0.8%	0.8%	2.7%	-4.2%
Lorraine	2.66	2.44	-8.3%	-6.2%	-5.0%	3.0%
Languedoc-Roussillon	1.79	1.72	-3.6%	1.3%	-0.9%	-4.0%
Basse-Normandie	0.76	0.73	-3.2%	1.7%	-1.0%	-3.9%
Alsace	3.11	3.26	4.7%	6.8%	4.4%	-6.1%
Midi-Pyrénées	1.73	1.65	-4.5%	1.9%	-0.4%	-5.8%
Centre-Val de Loire	3.42	3.26	-4.5%	0.0%	0.4%	-5.0%
Haute-Normandie	1.19	1.18	-0.6%	-2.3%	6.0%	-3.9%
Poitou-Charentes	0.74	0.72	-3.1%	0.3%	0.2%	-3.6%
Total TER (excl. Île-de-France)	52.68	51.27	-2.7%	1.2%	-0.4%	-3.4%
Total	106.1	103.1	-2.8%	0.8%	-0.4%	-3.1%

Source: ARAFER

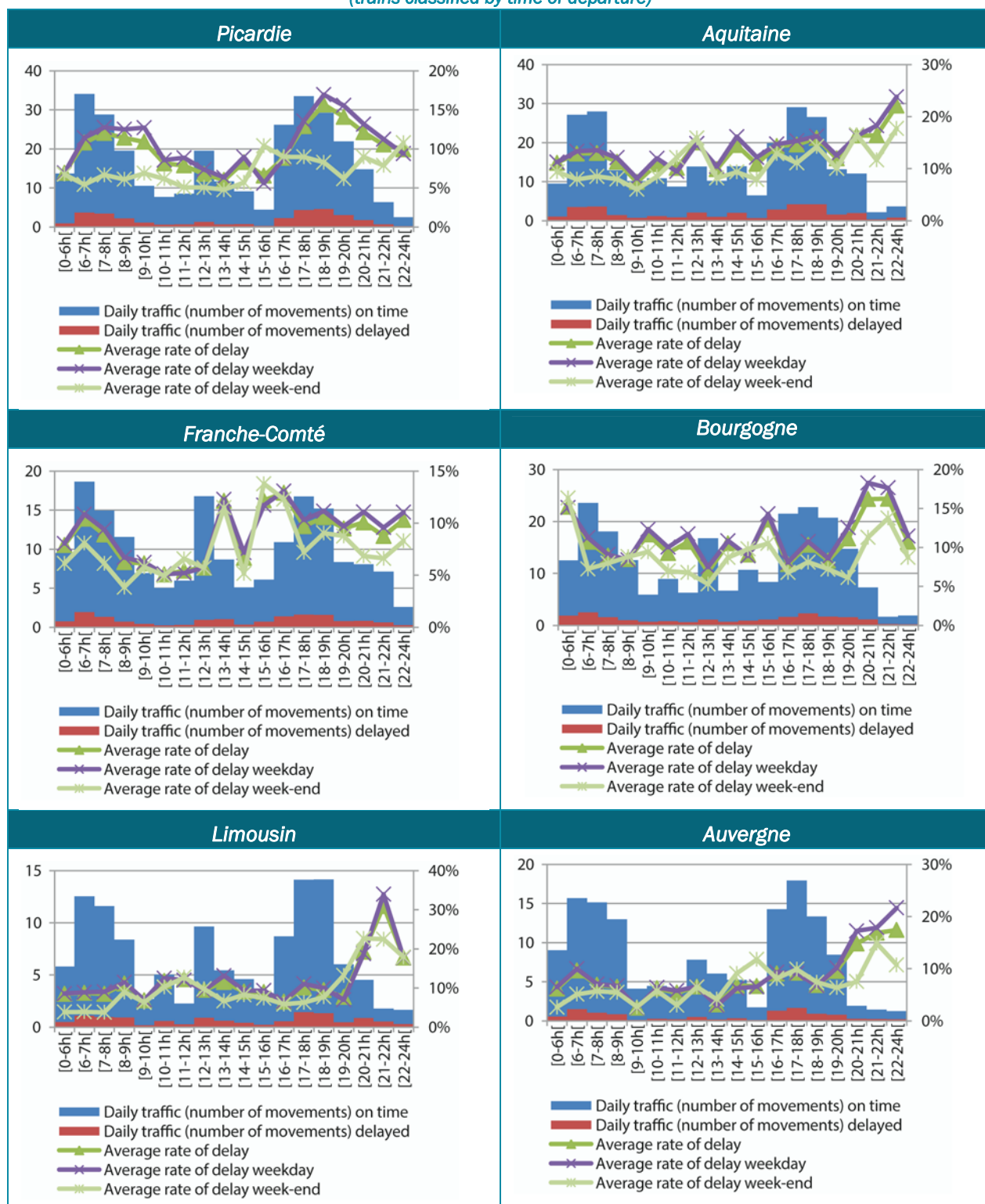
Table 6 - Supply, Demand and occupancy rate for regional public service obligations

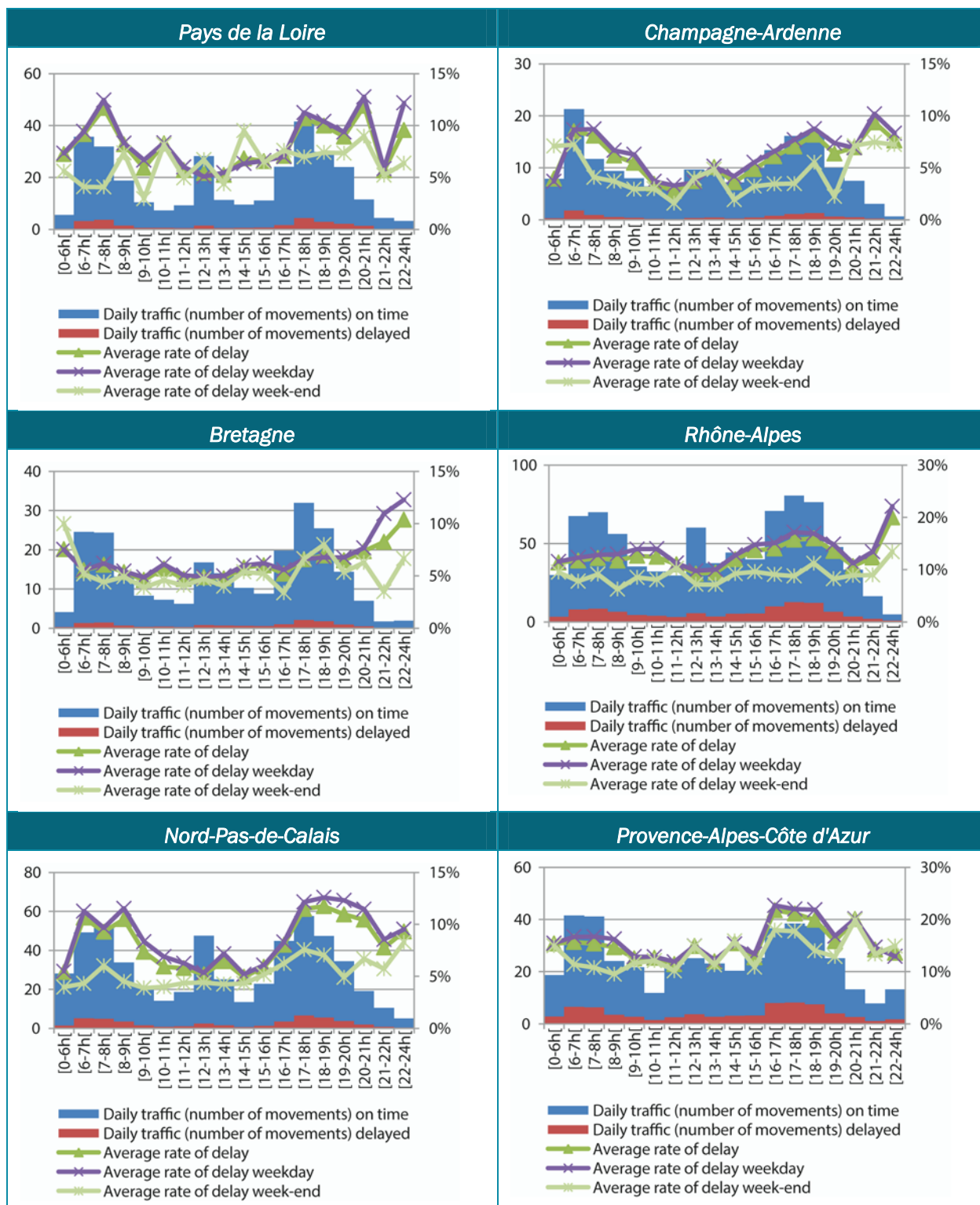
In billions of passengers-km	Levels passengers-km		Change 2016/2015		
	2015	2016	Passengers- km (%)	Occupancy rate (% point)	Supply seats-km (%)
Île-de-France (Transilien)	13.89	14.41	3.8%	+1.77 pt	-2.9%
Picardie	1.11	1.12	0.8%	+0.64 pt	-1.8%
Aquitaine	0.59	0.57	-4.1%	-0.92 pt	-1.0%
Franche-Comté	0.22	0.21	-3.1%	-0.32 pt	-1.8%
Bourgogne	0.72	0.67	-7.5%	-1.11 pt	-1.1%
Limousin	0.09	0.09	-3.6%	-0.99 pt	2.8%
Auvergne	0.23	0.20	-9.3%	-0.35 pt	-7.8%
Pays de la Loire	0.72	0.72	0.0%	+0.55 pt	-1.9%
Champagne-Ardenne	0.27	0.25	-7.0%	-0.92 pt	-2.3%
Bretagne	0.53	0.53	0.3%	+0.52 pt	-1.4%
Rhône-Alpes	2.51	2.44	-3.0%	+0.58 pt	-5.1%
Nord-Pas-de-Calais	1.15	1.12	-2.6%	+0.03 pt	-2.7%
PACA	1.16	1.12	-3.4%	-0.70 pt	-0.8%
Lorraine	0.65	0.63	-3.3%	+1.32 pt	-8.3%
Languedoc-Roussillon	0.52	0.50	-2.8%	+0.23 pt	-3.6%
Basse-Normandie	0.17	0.16	-5.9%	-0.62 pt	-3.2%
Alsace	0.95	0.96	1.6%	-0.92 pt	4.7%
Midi-Pyrénées	0.53	0.51	-4.0%	+0.15 pt	-4.5%
Centre-Val de Loire	0.85	0.82	-3.4%	+0.31 pt	-4.5%
Haute-Normandie	0.24	0.23	-4.3%	-0.76 pt	-0.6%
Poitou-Charentes	0.20	0.18	-10.7%	-2.08 pt	-3.1%
Total TER (excl. Ile-de-France)	13.42	13.04	-2.8%	-0.04 pt	-2.7%
Total	27.31	27.46	0.5%	+0.87 pt	-2.8%

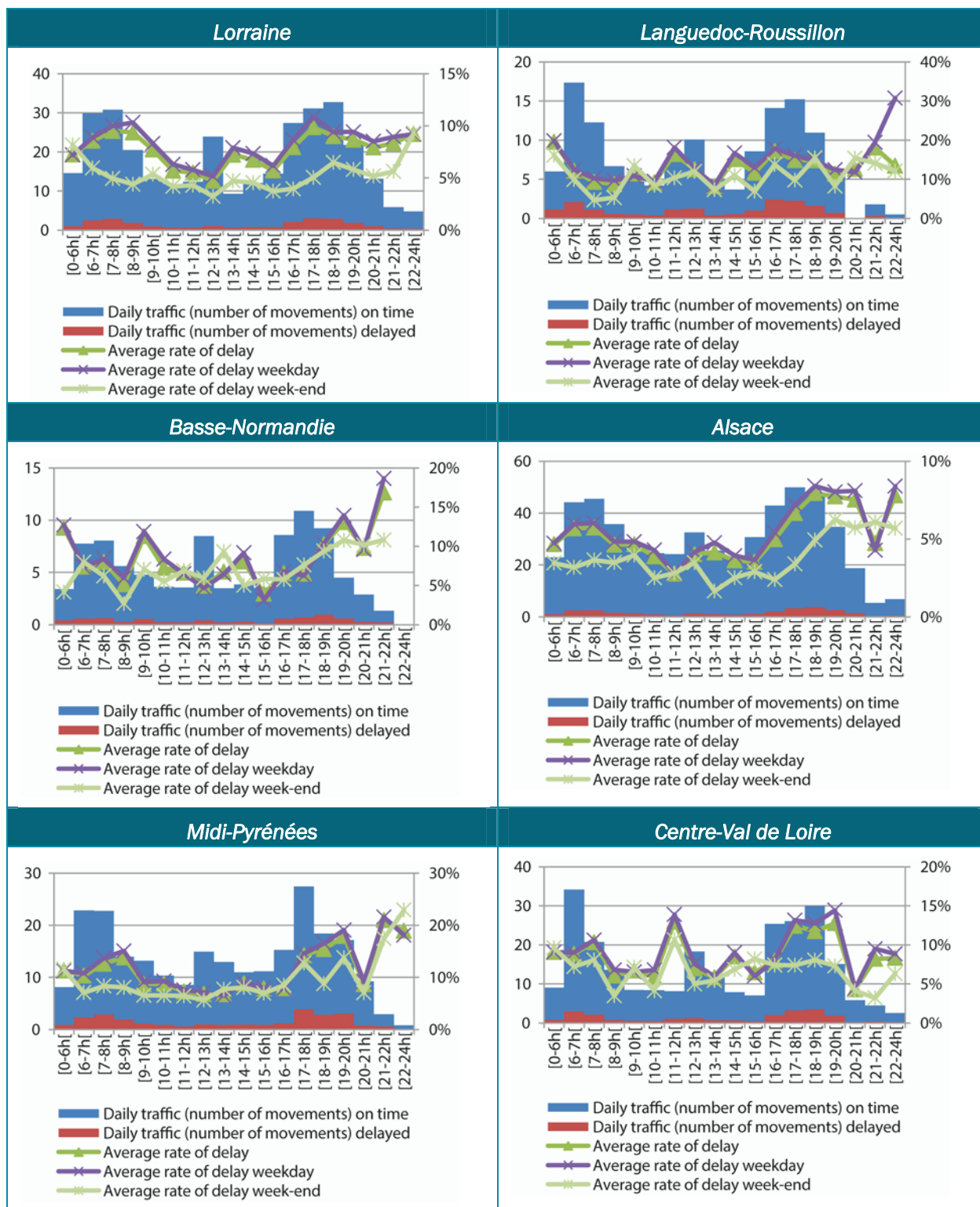
Source: ARAFER

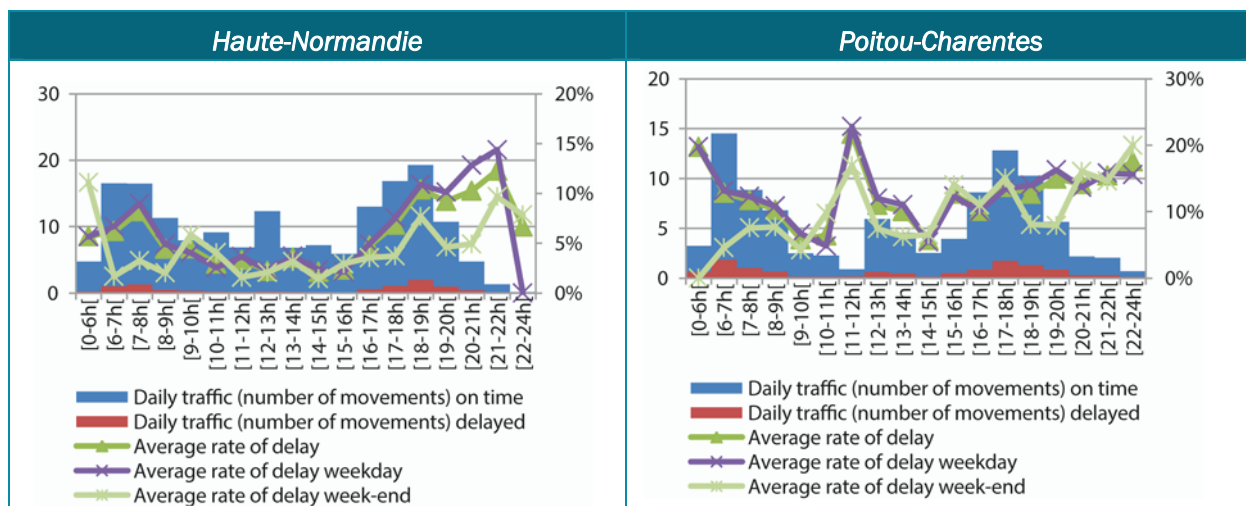
Appendix 6.3 - Punctuality of TER services by region (delay rate)

Figure 46 – Delay rate by time period in 2016 by region
(trains classified by time of departure)









Source: ARAFER

Appendix 6.4 - Economic and financial results of contracted regional services

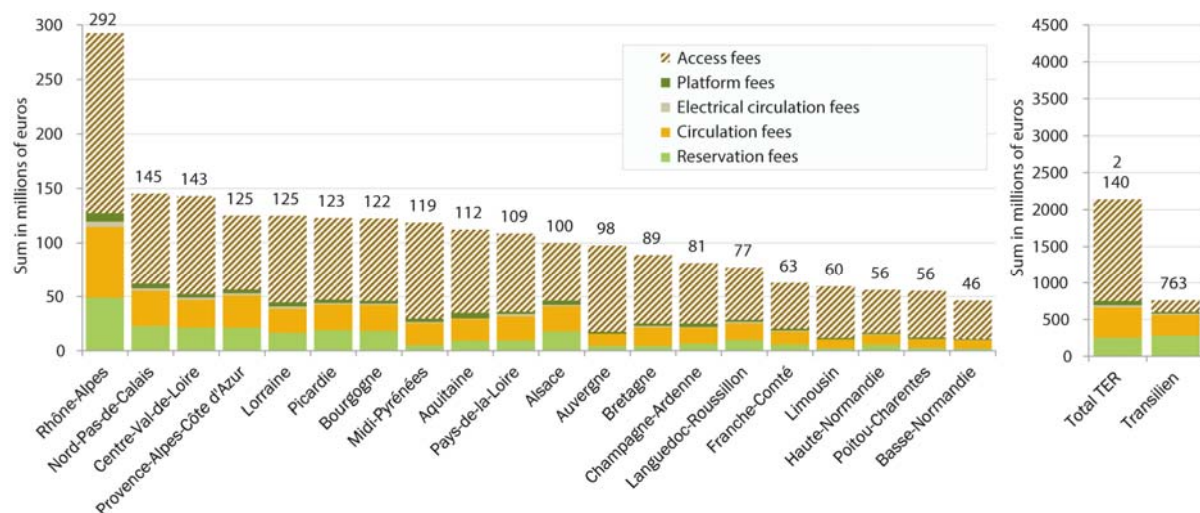
Table 7 - Access fees by TER contract in 2015 (Transilien for Ile-de-France)

<i>in millions of euros</i>	Sum of access fees	Weight of the access fees in the total fees per contract
Alsace	53	53%
Aquitaine	77	69%
Auvergne	80	82%
Basse-Normandie	35	76%
Bourgogne	76	62%
Bretagne	63	71%
Centre-Val-de-Loire	90	63%
Champagne-Ardenne	56	69%
Franche-Comté	42	67%
Haute-Normandie	40	70%
Languedoc-Roussillon	48	63%
Limousin	48	80%
Lorraine	80	64%
Midi-Pyrénées	89	75%
Nord-Pas-de-Calais	83	57%
Pays-de-la-Loire	72	67%
Picardie	75	61%
Poitou-Charentes	43	78%
Provence-Alpes-Côte d'Azur	68	55%
Rhône-Alpes	165	56%
Total TER (excl. IDF)	1,385	65%
Île-de-France (Transilien)	157	21 %
Total all Regions	1,542	53%

Source: ARAFER

Note for the reader: the total amount of access fees in Aquitaine amounts to 77 million euros, which represents 69% of the total infrastructure charges levied by SNCF Réseau for the TER Aquitaine activity (the remaining 21% being paid by SNCF Mobilités)

**Figure 47 - Revenue received in 2015 by SNCF Réseau for the TER activity, by Region
(in millions of euros)**



Source: ARAFER

Note for the reader: the total amount of infrastructure charges for the Nord-Pas-de-Calais Region amounts to 145 million euros. This total is broken down into reservation fees of €23 million, routing and electrical routing fees (€33 million and €2 million, respectively), platform fees of €8 million and access fees, for 165 million euros.

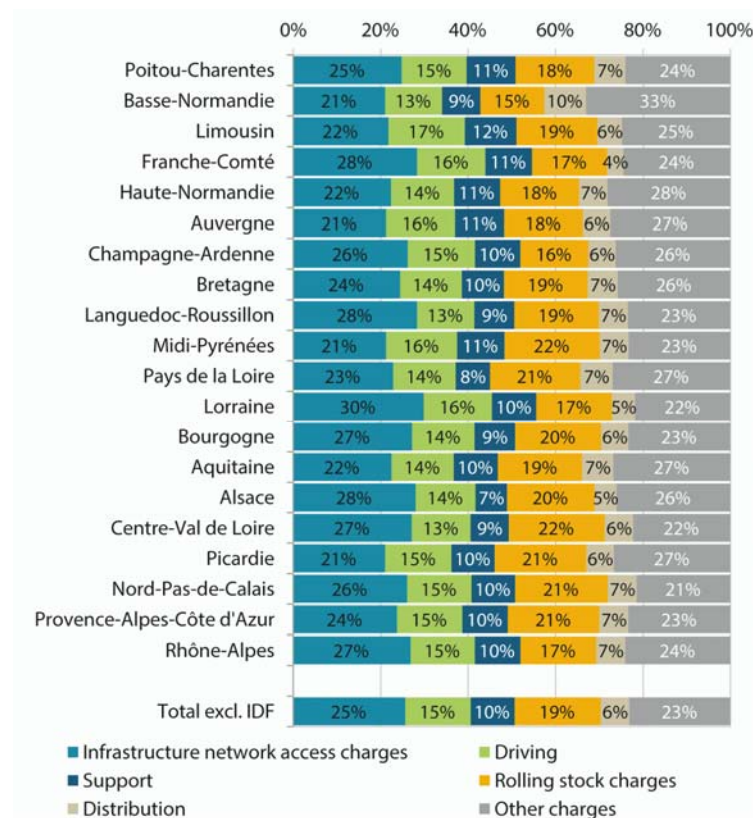
Table 8 - Changes in commercial incomes by TER region between 2015 and 2016 and decomposition between the "price" effect (commercial income per kilometre per passenger-km) and the "volume" effect (demand in passengers-km)

<i>in millions of euros excl. taxes</i>	Commercial incomes 2015	Commercial incomes 2016	2015/2016 change	Kilometric commercial incomes result per passenger-km	Demand Effect
Alsace	77.0	78.2	1.5%	0.0%	1.6%
Aquitaine	51.2	48.7	-4.8%	0.0%	-4.9%
Auvergne	19.5	17.5	-10.5%	-1.4%	-9.1%
Basse-Normandie	15.1	13.8	-8.6%	-2.8%	-5.8%
Bourgogne	58.8	54.1	-7.9%	-0.5%	-7.5%
Bretagne	38.7	39.5	2.2%	1.9%	0.3%
Champagne-Ardenne	22.0	20.2	-8.3%	-1.4%	-6.9%
Centre-Val-de-Loire	71.3	62.8	-12.0%	-8.7%	-3.2%
Franche-Comté	17.9	17.2	-3.9%	-0.7%	-3.1%
Haute-Normandie	18.9	17.3	-8.5%	-4.3%	-4.2%
Languedoc-Roussillon	42.7	39.6	-7.3%	-4.5%	-2.8%
Limousin	8.2	7.5	-8.2%	-4.7%	-3.5%
Lorraine	46.9	44.6	-5.0%	-1.7%	-3.3%
Midi-Pyrénées	39.5	37.6	-4.9%	-0.9%	-4.0%
Nord-Pas-de-Calais	67.8	66.5	-1.8%	0.8%	-2.6%
Provence-Alpes-Côte d'Azur	90.7	85.5	-5.7%	-2.4%	-3.4%
Pays-de-la-Loire	54.5	53.6	-1.6%	-1.6%	0.0%
Picardie	76.4	68.6	-10.2%	-11.0%	0.8%
Poitou-Charentes	14.3	12.9	-9.9%	0.8%	-10.7%
Rhône-Alpes	197.8	190.3	-3.8%	-0.8%	-3.0%
Total TER (excl. IDF)	1029.3	976.1	-5.2%	-2.4%	-2.8%
Île-de-France	1,029.6	815.2	-20.8%	-24.1%	3.3%
Total all Regions	2,058.9	1,791.3	-13.0%	-13.5%	0.5%

Source: ARAFER

Note for the reader: in Bretagne, commercial incomes increased by 2.2% between 2015 and 2016 (from 38.7 million euros in 2015 to 39.5 million euros in 2016). This increase is 85% related to the increase in revenue per passenger-km and 15% to the increase in occupancy (in passengers-km).

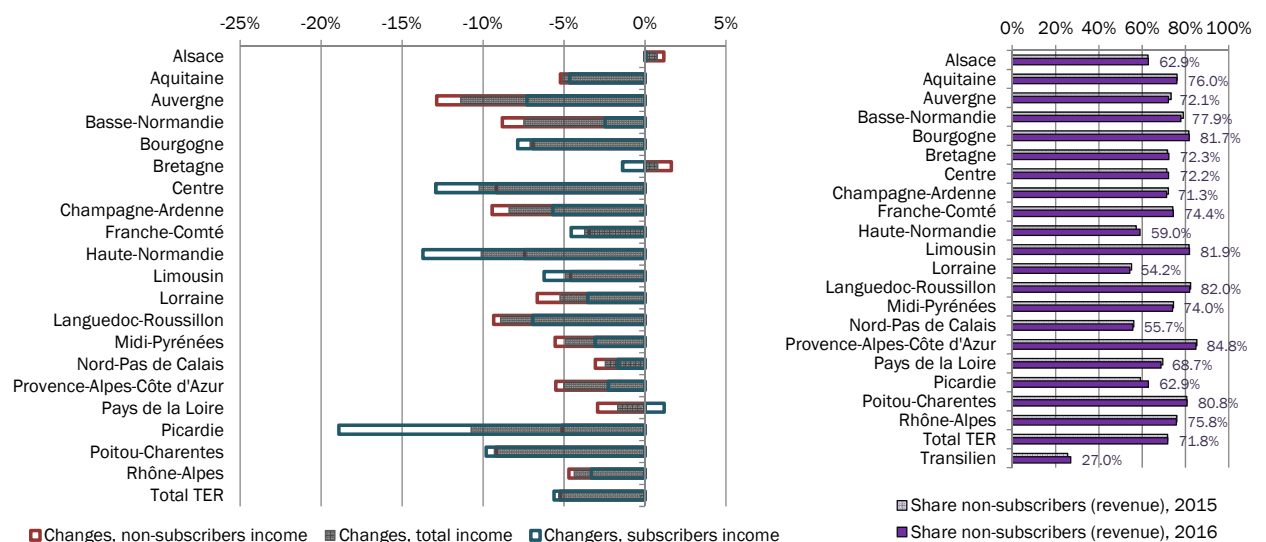
Figure 48 – Weight of operating costs for the TER activity (excl. Cars-TER lines), by Region



Source: ARAFER

Note for the reader: in Alsace, infrastructure network access charges account for 28% of operating costs, driving 14% and rolling stock costs 20%.

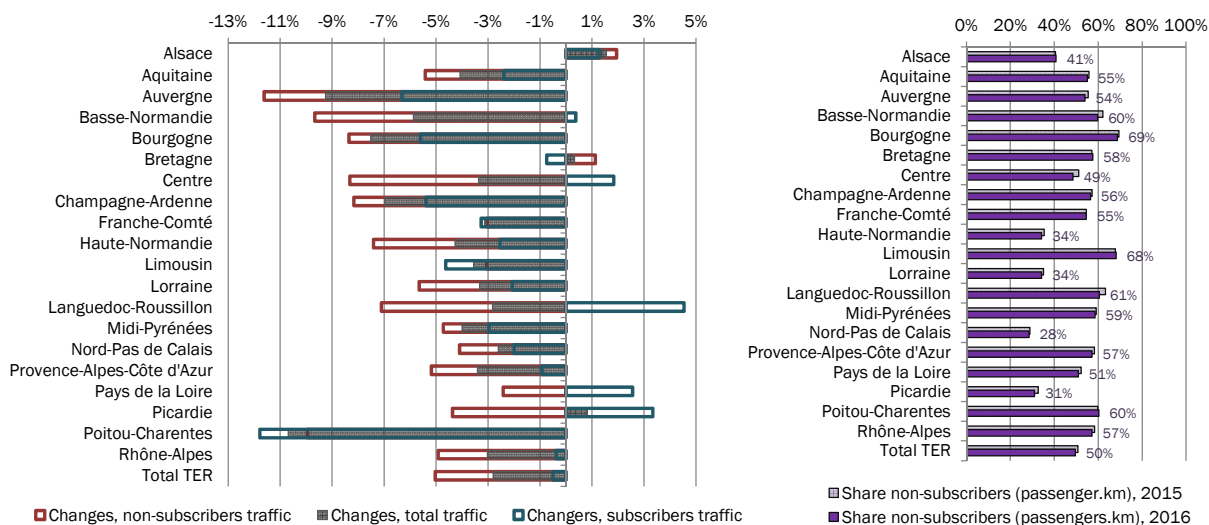
Figure 49- Change in commercial income by type of transport ticket



Source: ARAFER

Note for the reader: in Pays-de-la-Loire, subscribers income rose by 1.2% between 2015 and 2016, while non-subscribers income decreased by 2.9%, which led to a 1.7% drop in Pays-de-la-Loire.

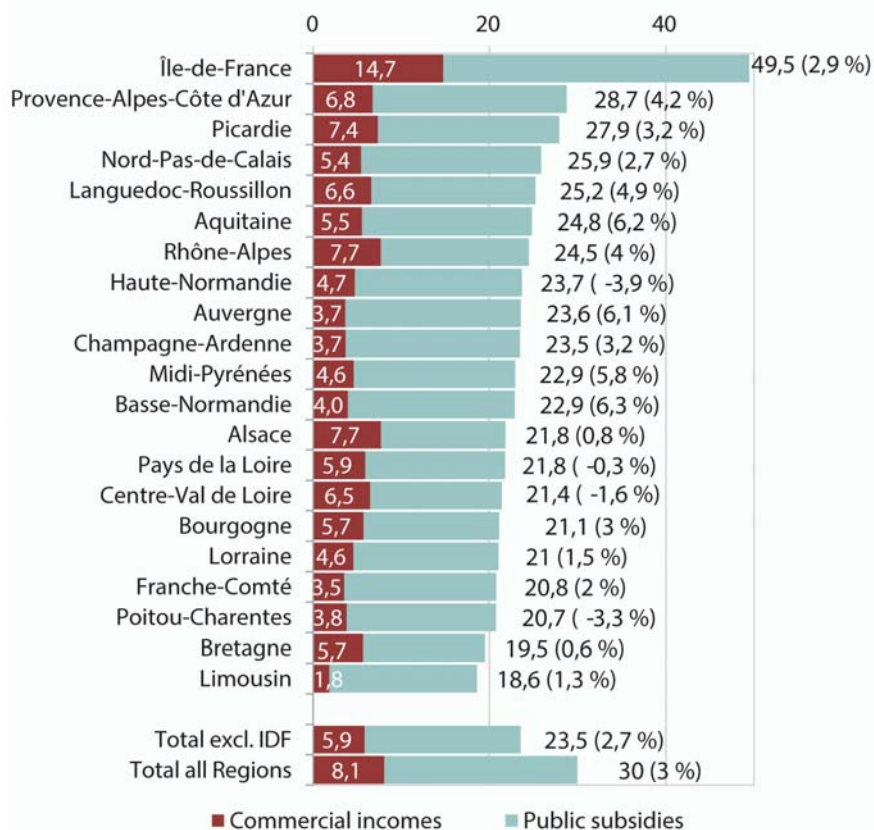
Figure 50- Annual change in traffic by type of transport ticket



Source: ARAFER

Note for the reader: in Rhône-Alpes, the average demand for subscribers increased by 3.3%, and the average demand for non-subscribers fell by 4.4%, which led to an overall increase in demand of 0.8% in this Region.

Figure 51 - Total revenue in euros/train-km in 2016 (change compared to 2015)



Source: ARAFER