The user's experience

(Qualitative survey of international rail passenger services gained with the help of mystery travellers)

On the rails of Euro Quality-express…

Introduction

The present report seeks to evaluate a qualitative picture of the present situation concerning international rail passenger services, as the passenger perceives them.

It spotlights the differences noted between the experience of the uninformed passenger (perceived quality) and what a passenger is entitled to expect (expected quality). These expectations include the right to be transported over the distance for which a ticket has been acquired, and the privileges and/or drawbacks linked to that specific journey, which the passenger should have been informed about in advance.

In order to understand the expectations and needs of the client, the latter's critical point of view must be adopted, for this often focuses on elements which are invisible to the eye of the professional, and which call for changes to be made to the service which may cost very little.

This report is built up on the strength of a number of observations made by a mystery passenger on various cross-border lines (including one national segment) on the European network in July 2001 and on a series of trial journeys carried out by members of OGM on a professional basis.

These observations are accompanied by proposals or recommendations derived from the experiences gained, including causes of dissatisfaction or comparisons which might be made with what is offered by air transport, over a comparable route.

The observations were checked against the first 7 of the 8 criteria of the European standard for service in public transport, as set out below.

The aim of the exercise is to assist the partners in the European rail network (carriers, constructors, infrastructure managers, providers of associated services) to offer a perceptible, measurable quality of service.

The European standard [prEN 13816]

	dimensions covered under each criterion
1. Availability	*[availability of the equipment]*
2. Accessibility	*[physical and cognitive accessibility, ease of use, intermodality]*
3. Information	*[information in normal and disrupted circumstances, before, during and after the journey, confidence]*
4. Time	*[punctuality, regularity]*
5. Customer care	*[recognition, image]*
6. Comfort	*[cleanliness, design, lighting, temperature]*
7. Security	*[prevention of accidents and attacks]*
8. Environmental impact	*[respect for the environment]*

Case studies

Railways experienced by the mystery customer:

Bruxelles Midi – Paris Nord	Thalys	1st class place aisle seat non smoking	17 July 2001
Paris Austerlitz - Madrid Chamartin	Talgo 'Francisco de Goya'	couchette single compartment upgraded 1st class	17 July 2001

(Madrid – Rome journey carried out by plane)

Roma Termini - Wien Süd bahnhof		couchette T3	18 July 2001
Wien West bahnhof - Nürnberg	ICE 'Prins Eugen'	2nd class place window seat non smoking	19 July 2001
Nürnberg - Köln	IC/EC 'Amalienborg'	2nd class place window seat non smoking	19 July 2001
Köln Hauptbahnhof - Bruxelles Midi	D-Zug	2nd class place window seat non smoking	19 July 2001

Some other experiences of the OGM staff,(those of them dating back more than 3 years are shown in italics).

Paris – Caen - Paris		2nd class	April 2001
Bruxelles Midi – Paris Nord - Bruxelles Midi	Thalys	2nd class	[frequent trips]
London Waterloo – Bruxelles Midi	Eurostar	2nd class	21 & 23 May 2001
Strasbourg – Bruxelles Nord		2nd class	October 2000
Bruxelles Nord – Luxembourg - Bruxelles Nord	EC	2nd class	29 July 2001
Bruxelles - Köln	INT	2nd class	14 June 2001
Bruxelles Midi – Köln - Bruxelles Midi	Thalys	1ère classe	6 July 2001
Köln – Berlin Ostbahnhof	ICE	2nd class	14 June & 6 July 2001
Berlin Spandau - Dresden	EC	2nd class	16 June 2001
Berlin Ostbahnhof - Dresden Neustadt	IC	2nd class	6 July 2001
Dresden – Berlin Ostbahnhof	EC	2nd class	18 June 2001
Dresden - Köln	NZ	2nd class wagon-lit	9 July 2001
Berlin - Bruxelles	NZ	2nd class wagon-lit	16 June 2001
Trois-Ponts - Liège	INT Luxbg - Amsterdam	1ère classe	6 July 2001

Florence – Bruxelles Midi		*2nd class couchettes*	*Summer 1992*
Bruxelles Midi - Bordeaux		*2nd class*	*August 1997*
København airport – Malmö – København airport		2nd class	May 2001
Malmö – Lund - Malmö		2nd class	May 2001
Paris Lyon - Pisa		1st class couchettes	A 6 July R 22 July 2001

and finally an accessibility experience in a brand new TGV station:

Gare TGV Avignon			26 July 2001

Observations and recommendations

1. Availability

[Availability of the equipment]

Due to the complexity of electronic booking systems, it may take some hours to get a couple of train tickets. Often for international connections, sometimes more than five separate tickets need to be issued to obtain the correct reservation and fares. Sometimes it was difficult to find a travel agency providing train fares. In one case it was impossible to book a "last minute" couchette 4h in advance.

2. Accessibility

[Physical and cognitive accessibility, ease of use, intermodality]

Those with physical disabilities need to know that they can travel from Nuremberg to Cologne under very favourable conditions, with an entire carriage set aside for them and those travelling with them, fitted with specially designed toilets.

Out of the 5 other trains tested by our mystery traveller, only 2 had toilets suited for those with physical disabilities, without any other specific adaptation, and only 1 offered special baby seating. This means, for those with mobility problems, that these trains offer particularly poor accessibility and ease of movement.

The 1st class on the Thalys offers assistance for someone with a lot of luggage when s/he boards the train.

At the station at Paris Lyon, and at the station in Pisa, the non-availability of trolleys complicates matters for passengers with a lot of luggage, and the platforms at Pisa station can be reached only by stairs, which means that the less mobile cannot get there.

On the journey made by the mystery traveller (Brussels-Paris-Madrid / Rome-Vienna-Nuremberg-Cologne-Brussels), none of the trains would carry bicycles. Some German IC trains and the Brussels-Luxembourg, Luxembourg-Amsterdam and Malmö-Copenhagen airport lines do accept them, sometimes only with reservation.

Intermodality at Vienna station

The lack of appropriate signage (e.g. of works not completed) makes access to the car park in the new TGV station in Avignon[1] extremely confusing. The 'short-term drop-off parking' (where the first half an hour is free) fails to take account of the queue of traffic awaiting drivers at the car park exit, taking them well over the free half hour and automatically shifting them into a far higher price band.
In contrast to the car park, however, the futuristic design of the station is a perfect match for the modernity of the latest TGV in France.

3. Information

[information in normal and disrupted circumstances, before, during and after the journey, gathered covertly]

Throughout the area studied, there is a mixture of best practice and inadequate service, without there being any clearly defined minimum standards.

[1] The regional press indicates that the same problem occurs at the TGV station in Valence ('Drôme provençale' - 16 August 2001).

Making a reservation requires completely accurate information. If the client's expressed wish reveals a misunderstanding of the range of possible fares, the name of a class or any other aspect linked to the journey being purchased, then it is essential to notify him as fully as possible and guide him in his choice. In response to an express personal request to travel in 1st class, with the maximum of comfort, a woman more than 7 months pregnant found herself being sold a '1st class couchette' ticket because she did not know about, and therefore did not ask for, the '1st class wagon lit' option. This was felt all the more keenly because of the nature of the journey she was making (Paris-Pisa). Giving comprehensive information is also part of the attention paid to the customer by the carrier.

On those occasions when information on the various stops made by the train is provided, it is sometimes done so in 3 ways (orally, on screen and via leaflets), and at other times only orally or only on screen, options which do not always take account of bi- or trilingualism (or of various categories of people with sensory disabilities). On certain stretches of a journey, there is no information whatever (e.g. Brussels-Luxembourg), while on others, it is very detailed (ICE Cologne-Berlin-Cologne).

Exactly the same applies in the case of information regarding on-board services (on the Talgo: non-existent; on the Thalys: acoustic and visual).

The information provided when a service is delayed needs to be given showing an awareness of the consequences for travellers of this delay and in an absolutely sincere way (with no attempt to minimise the event and/or the delay).
And where the risks of delays during a journey are known beforehand at the departure station, they must be notified to the passengers before they leave, allowing them the possibility of opting for some other solution (another means of transport or accommodation at the departure place).

On 3 of the 6 trains tested in July 2001, the staff were authorised to inform the passengers about potential connections; on1 occasion out of 6, they also sold tickets, and in 1 other case, a machine was provided for this purpose.

Out of 10 return journeys made by Thalys in May and June 2001, on 1 occasion out of 2 the bar was not stocked with Metro tickets, which make onward journey easier on arrival, and in addition, the option of buying these was never announced by the guard.

On 3 of the 6 trains taken by the mystery traveller, the company provided a magazine. Where daily newspapers were available on board (either free or for purchase), the delivery was incomplete (newspapers and/or current affairs magazines in Spanish only on the Paris-Madrid train, in German on both the Rome-Vienna and Vienna-Nuremberg trains). Staff claims that this problem only occurs occasionally.

Waterloo Station, May 2001: the departure of the Eurostar was announced as being 20 minutes late – yet it left on time. In this instance it is the confidence in the system that is questionable.

The numbering of the seats on a Caen-Paris service follows a logic that is so unfathomable that it becomes impossible to find the seat that you have paid to reserve!

On the other hand, the signage is excellent and the languages used in the station at Copenhagen airport are greatly appreciated: routinely in two languages (Danish and English) and navigation inside is made extremely easy for passengers looking for timetables, platforms and so on.

However, at Malmö station, English rarely appears in addition to Swedish, which makes matters rather more complex for foreigners.

4. Time

[punctuality, regularity]

With the exception of the TGV, it is clear that air links are often far quicker than rail links (e.g. Paris-Madrid).

Punctuality, in the cases analysed by our mystery traveller, tends to be respected. If we add the experiences in Belgium and Germany, however, the average regularity falls very sharply: delays of between 8 and 60 minutes were recorded on 11 of the 13 journeys made in June and July 2001. In 3 of the 11 cases, the connecting services were alerted about the delay and waited for the passengers.

The only delay occurred to reasons beyond the control of the railway undertakings noted by our mystery client had to do with an exceptional event (the G8 meeting in Genoa imposing a detour using slower routes), which did not entitle him to a reimbursement, although he was given a sandwich and a drink to make up for the inconvenience suffered.

In the summer of 1997, travelling from Brussels to Bordeaux, via Lille and Marne-la-Vallée: arrived at station (in Lille) without any announcement and stopped for ¾ hour without any information whatever and no way of passengers knowing where they were (no signs accessible at passenger eye level) other than by guesswork. On arrival, excuses were given for the length of the delay and passengers were offered the chance to pick up a leaflet to use to get a reimbursement because of the delay; the said reimbursement was made swiftly, accompanied by a letter of apology from Thalys. Things occurring 'live' are not very well handled, but the potential consequences are dealt with very properly.

It seems that reimbursement of Thalys tickets purchased from the machine (Brussels-Cologne-Brussels) can be obtained only in the country where such tickets were issued.

The same applied, in Pisa, when a request was made for the reimbursement of a return ticket (Paris-Pisa-Paris) that which the passenger no longer wanted because the outward journey had been so dreadful (relating to the initial lack of information). The passenger wanted, for his return, to buy a fresh ticket, in a higher class, and get a reimbursement for the one he would not be using. He was told that this was impossible because he had bought the ticket in France (at a counter). Why not offer the same service at each end of the line?

When there is a long delay, it adds insult to injury to find the bar closing at the regular scheduled time, and there is a need for something to be done to improve the situation!

5. Customer care

[recognition, image]

When it comes to reception facilities, the overall quality of service is inadequate because there is generally a lack of recognition given to the needs of the client.

Where telephones are provided on board, they are out of order in ¾ of cases (in 2nd class).

Frequently, a passenger turning up to the bar, for a snack, or to buy a newspaper (where this facility is available on board) with only the currency of his own country (one of the two or three countries linked by the service he is using) could not be served. If his order reaches a relatively high amount, he may pay by credit card. Obviously the Euro will rapidly resolve this difficulty, but it should not have occurred…

It is also not acceptable that a night train ticket on a German route should cost more in Belgium (the country of origin of the entire journey within which the night leg falls) than in Germany.

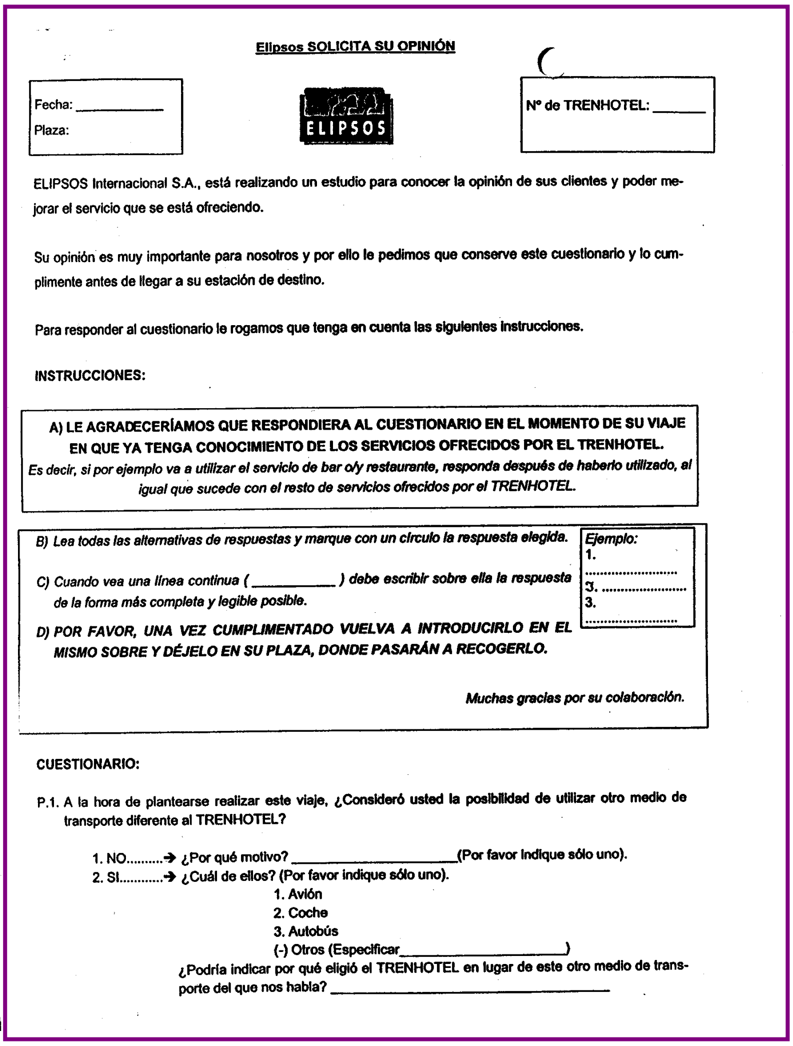
At the station in Malmö, tickets may be bought from the automatic machine only by bankcard. We would advocate a mixed-currency solution that would also take coins and credit cards.

If individualised service still has some way to go, the same can also be said about the reception overall. For example, could European stations not the airports' approach? We need to see an improvement in the reception and customer communication functions. During the holiday season, the number of tourists, i.e. those not accustomed to using the lines (using them only once for the most part) and the number of different nationalities and languages, probably call for a greater effort on the part of the carriers and service providers in places where lines meet. Some thought could be given to developing student jobs for this purpose.

The international language (English) is not routinely spoken by the staff or used in the information provided in writing (this is the case in Spain and Austria).

Elipsos, the company managing the Franco-Spanish trains, asks its passengers for their views via a questionnaire placed in every carriage. But it is provided only in Spanish.

The station at Malmö (cf. point 3) gives information on buying tickets in Swedish only.



Elipsos SOLICITA SU OPINIÓN

Fecha: ____________

Plaza:

ELIPSOS

Nº de TRENHOTEL: _______

ELIPSOS Internacional S.A., está realizando un estudio para conocer la opinión de sus clientes y poder mejorar el servicio que se está ofreciendo.

Su opinión es muy importante para nosotros y por ello le pedimos que conserve este cuestionario y lo cumplimente antes de llegar a su estación de destino.

Para responder al cuestionario le rogamos que tenga en cuenta las siguientes instrucciones.

INSTRUCCIONES:

A) LE AGRADECERÍAMOS QUE RESPONDIERA AL CUESTIONARIO EN EL MOMENTO DE SU VIAJE EN QUE YA TENGA CONOCIMIENTO DE LOS SERVICIOS OFRECIDOS POR EL TRENHOTEL.
Es decir, si por ejemplo va a utilizar el servicio de bar o/y restaurante, responda después de haberlo utilizado, al igual que sucede con el resto de servicios ofrecidos por el TRENHOTEL.

B) Lea todas las alternativas de respuestas y marque con un circulo la respuesta elegida.

C) Cuando vea una línea continua (____________) debe escribir sobre ella la respuesta de la forma más completa y legible posible.

D) POR FAVOR, UNA VEZ CUMPLIMENTADO VUELVA A INTRODUCIRLO EN EL MISMO SOBRE Y DÉJELO EN SU PLAZA, DONDE PASARÁN A RECOGERLO.

Ejemplo:
1. ....
3. ....
3. ....

Muchas gracias por su colaboración.

CUESTIONARIO:

P.1. A la hora de plantearse realizar este viaje, ¿Consideró usted la posibilidad de utilizar otro medio de transporte diferente al TRENHOTEL?

1. NO.........→ ¿Por qué motivo? ________________________(Por favor indique sólo uno).
2. SI...........→ ¿Cuál de ellos? (Por favor indique sólo uno).
   1. Avión
   2. Coche
   3. Autobús
   (-) Otros (Especificar________________________)
   ¿Podría indicar por qué eligió el TRENHOTEL en lugar de este otro medio de transporte del que nos habla? ________________________________

Early in the evening, before crossing the border between France and Spain, the passports of Talgo passengers are collected by the train staff. There is no reason for this. Since the Schengen declaration, this practice of conducting checks on entry into a State signatory to the Schengen Convention should no longer be happening.

Generally speaking, there is more of a client-angled attitude in 1st class than in 2nd.

6. COMFORT

[cleanliness, design, lighting, temperature]

Apart from the punctuality of the trains on both departure and arrival, account needs to be taken of the time spent ON the train. The point is that longer journeys require a level of comfort which should make it possible (or almost) to forget that you are travelling on a train.

This objective has not been achieved in the case of the night train between Rome and Vienna, where the overriding feeling is one of being 'imprisoned': the passenger is a 'hostage' in the carriage, with no more space than that offered by a 2 to 3 m^2 compartment and a 60 centimetre wide corridor opening on to 2 minuscule traditional toilets emptying on to the tracks. We thought those days were well and truly behind us!

Likewise on the same Rome-Vienna service, there is no bar, no restaurant and the pre-packed food (in a compartment which in the event was inaccessible to our mystery traveller) is expensive, variable and served only with wine (which is also expensive). However, each passenger was given a half litre of sparkling water on departure.

Further, there is a lack of any eating facilities on the Cologne-Ostend train, as experienced by our mystery client for the last part of his journey, which was to the terminus at Bruxelles Midi. This represented almost 4 hours without anything to drink (he had not been informed of this situation before boarding the train, and had therefore not been able to organise his own refreshments).

Between Paris and Madrid, the gloominess of the internal corridors and the neon lighting in the 2nd class carriages was stressed, but, on a positive note, there is a bar and a restaurant which are both highly praised. This shows what can be done in providing good refreshment facilities.

There was also praise for the excellent restaurant service aboard the Prins Eugen, the special carriage accompanied by a trolley service, which also collected up all the empty bottles as it passed through the carriages.

There was equal praise for all the snacks and restaurants on the German network, where fresh food was served by courteous staff.

In May 2001, the Eurostar steward passed through the carriages giving out the menu. Passengers then went to the restaurant car, only to be told that because there were so few people travelling (30 passengers), not all the dishes were available and in fact the snack bar could provide only 2 or 3 of the dozen items on the menu distributed by the hard-working steward a quarter of an hour earlier.



Between Vienna and Nuremberg, they no longer talk of 'comfort', but of' luxury.'

Modern furniture, a friendly bar – albeit for smokers – an excellent restaurant, a small meeting room and smiling staff into the bargain.

The individual seats all have a radio (although no headphones), and sometimes even a screen. All that this ICE lacks is the speed of the TGV to make it into a really 21st century train.

The 1st class passengers on the night train arriving at Cologne have access to a lounge, with drinks, newspapers, armchairs and working space.

The D-Zug arriving in Belgium from Cologne has toilets with electric hand-driers and special toilet soap.

Broadly speaking, the cleanliness of the toilets (mostly 2 per carriage) is 'OK' on departure and deteriorates as the journey progresses. The problem here is uncivil behaviour.

There is sometimes increasing untidiness and a gradual deterioration in the cleanliness of the carriage floors. It should be noted that in certain trains, cleaning is also carried out while the train is in motion (Thalys Brussels-Cologne-Brussels and ICE Cologne-Berlin-Cologne).

The state of the waste bins on board is considered to be 'OK' for every section of the journeys; the cleanliness of the windows ranges from 'OK' to 'acceptable'.

Apart from the Talgo, non-smokers can always find specially reserved seats or carriages. Between Rome and Vienna, the ban on smoking applies only when the couchettes are folded out for the night.

On the night service between Florence and Brussels, during a particularly hot summer, the windows on the corridor and compartment sides were stuck in the closed position because the air-conditioning had recently been fitted. But it had broken down ... and the temperature inside the *carriage rose to nearly 35°. There was no bar or restaurant to get a drink in and 'escape' from this strong feeling o fbeing imprisoned.*

The picture was almost the opposite on the Paris-Caen service, where the temperature was so low that, coupled with the noise made by a group of children, it prevented the passenger from sleeping.

The Malmö-Copenhagen airport service is modern and silent. The foldaway seats are attached on the window side and therefore leave plenty of space, both for people to move about (including the less mobile) and for the storage of any bulky luggage or bicycles.

An outstanding rating goes to the station in Malmö, which is attractive, heated, friendly, has seats opposite each other and television screens (some showing the times of arrivals and departures, others with MTV or similar entertainment channels) and lighting which inspires confidence among passengers.

7. Security

[prevention of accidents and attacks]

The carriages on the train from Malmö to Copenhagen airport have safety straps which can be used to secure bicycles.

Between Paris and Madrid, passenger security is given as the reason why it is impossible to go between compartments while the train is moving.

8. Environmental impact

[respect for the environment]

Other than the effects of the vibrations felt in the Talgo, there is little to report in this area.

Conclusion

There is a significant variation in the quality of the service offered to customers, across all criteria.If we compare the analyses of the various lines tested in the context of this report, it is striking to note that what is poor in one case is good in another, and often vice versa, with one line showing the others that a particular service can indeed be provided. Exchanges of good practice would therefore be most productive.

Some examples of good practice:

- *Information* → Cologne-Berlin-Cologne and Berlin-Dresden: very detailed information (various stops on the journey, speed of the train, any delays, connections, services on board), using all possible transmission channels (acoustic, visual and leaflets).
- *Specific services* → Cologne-Berlin-Cologne: disabled toilets and seats; parent and child compartments, with children's area; office carriage, with fax and mobile phone socket; luggage lockers in every carriage.
- *Punctuality / Compensation* → Thalys reimburses for any delay over half an hour.
- *Intermodality* → night trains Dresden-Cologne and Berlin-Brussels: bicycles accepted with a reservation; Brussels-Luxembourg and Luxembourg-Amsterdam: bicycles accepted; German trains: tickets for connections may be purchased on board.
- *Comfort* → ICE Prins Eugen (Vienna-Nuremberg): modern furniture, friendly bar, excellent restaurant, small meeting room, radio and/or screen on every seat.
- *Security* → Malmö-Copenhagen airport: straps for securing bicycles.

If we are to achieve a Europe with top-quality railways, we need:

- to deliver more reliable and standardized procedures: the Thalys bar sells drinks and tickets for connections, yet while the drinks can be paid for by Carte Bleue, the metro tickets cannot; staff on the Thalys from Brussels to Cologne say they are authorised to sell tickets for connections, but on the return leg (Cologne-Brussels), this was not possible; on one departure platform at Bruxelles Nord, the configuration announced for the train did not mirror the reality;
- examples of good practice should be looked for among the airlines (eg.reception) or be exchanged with European partners on the railway network (cf. examples cited above);
- quality standards
  * to be defined
  * to be followed and
  * to be communicated as widely as possible (eg.a charter for train passengers), so that passengers know what service they can expect, both at stations and on board trains;
- optimism so that by working together, the results can be delivered!

August 2001

Study of the Competitiveness of international rail passenger services compared with other modes of transport throughout the European Union

analysis by OGM Brussels
September 2001

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Julian BUHROW

Contents (Annexe page numbers)

1 Introduction

1.1 Purpose of the study

The European Commission aims to assess the actual competitiveness of international rail passenger services throughout the European Union in comparison to other modes of transport such as the plane, the car and the bus. In order to gain a representative picture of the current situation, links have to be chosen where rail competes with other modes of transport, by assessing the respective performance of each transport mode. As the modal choice is principally a question of the journey time, the price and the frequency a service offers[2], these parameters are subject to the present evaluation of the services. The first aim is to assess competitiveness, especially in terms of journey time and offered frequencies. The second aim is to work out the competitiveness of international train passenger services in terms of price according to representative groups of consumers. The intention of that is to see if significant differences exist the perception of certain consumer groups about the competitiveness of international train services.

1.2 Methodology

The aim of the study is to assess the current competitiveness of international passenger railway services. Therefore 70 representative international railway links have been chosen which:

- cover all the European Union Member States and several Accession Countries, for example, Poland, Turkey, Hungary, the Czech Republic and Russia;
- compete with other modes of transport (air, coach and private car);
- offer day services and additionally on some (mostly above 600km) night train services also.

In order to reduce the complexity of the conclusions, the study has been carried out in 3 main steps stages:

1. Dividing the 72 lines into 5 categories by analysing competitiveness by time according to the length of the journey. The result will be a classification for each mode of transport in terms of journey time and frequencies.
2. Analysing competitiveness of the rail services and the concurrent modes of transport from the point of view of four representative groups of consumers, according to price compared to the offered journey time.
3. Assessing, from the above analyses, the overall competitiveness of international train services in comparison to the other modes of transport.

[2] The identification of the determining parameters for the modal choice follows a proposal in: European Commission, Ed.: Interactions between high-speed rail and air passenger transport.

1.3 Conditions of the study

Train lines

The train connections studied have been chosen according to the following criteria:

- First train in the morning for the destination
- Last train in the evening for the destination
- 2 or 3 additional trains that cover the proposed journey (different categories of trains have been taken into consideration in order to see if faster trains are more expensive)
- Different numbers of interchanges (in order to see if direct trains are more expensive)
- Trains on Thursdays and Sundays, in order to include weekday and weekend trains.

The internet site of DEUTSCHE BAHN AG (www.bahn.de) has been consulted for the timetables. The software (HAFAS) is used on other railway companies' internet sites, for example, CFL. Some travel agencies use it too. Where possible, both internet and phone information have been consulted. In some cases, train stations were contacted to obtain the exact timetables. All the prices given are prices from the country of departure. Prices are given in euros. As the fares given could change at any time, the prices have been collected for the same day of travel in order to guarantee a fair comparison between the different modes of transport.

Airlines

The prices for the airfares are in euros. The prices given are for round trip and one-way journeys, using the APEX fare, for flights leaving on Saturdays, returning the following Saturday. The connections and timetables were obtained from a travel agency in Brussels, on Amadeus database. The journey time from the airport to join the town centre (30 mins), and the fees corresponding to these trips (10 Euros) were added.

Coaches

For the coach trips studied, all the prices are in euros, given by EUROLINES. The prices are given from the country of departure. The timetables the analysis is based on are provided by EUROLINES. As the coaches usually serve the city centres, no extra time or fare has been added.

Cars

The type of car used in the analysis is a saloon car, its consumption is 9 l/ 100 km. The fuel used is petrol (cost 1.1 euro/l). The itinerary is the one given by Michelin, see www.viamichelin.com. Additional time for journey breaks has been added as follows: ¼ h every 2 hours and a further 2 hour break after 8 hours journey time. An additional cost is included, to cover prices for insurance, tyres and wear and tear through normal use

2 Competitiveness in terms of journey time according to distance

In the first stage 72 railway lines were chosen. The second stage was to divide these lines into 5 different segments according to the length of the link. This stage has been done according to recommendations from several sources[3]. The intention of that stage was to find out if there are segments in which the train offers a significantly faster or slower connection than its competitors. The results of that research has been analysed according to these 5 categories:

- Cross-border services (9 links)
- Services under 300 km (12 links)
- Services between 301 and 600 km (22 links)
- Services between 601 and 900 km (14 links)
- Services over 900 km (13 links)

The following sections are presented in that order:.

2.1 Cross-border services (9 links)

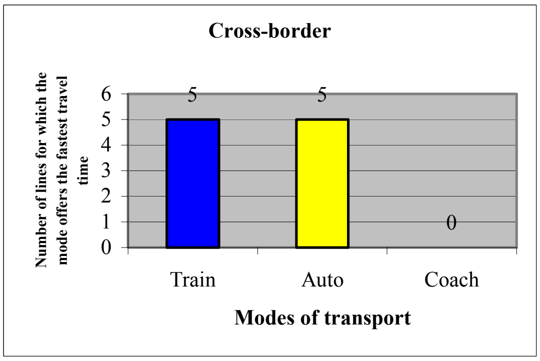
The 9 chosen cross-border services cover more or less the heart of the European Union. The average length of lines in this category is about 56 km. Due to this short distance, planes have been excluded as competitors.

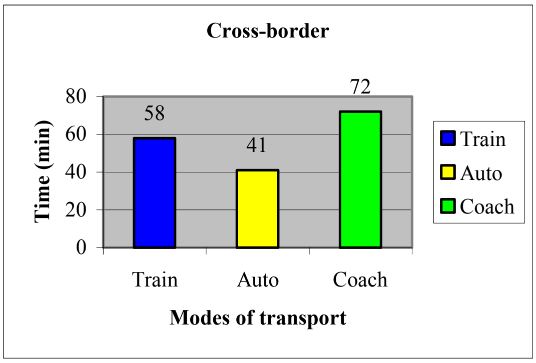
Table 1: Cross-border services

Nb	Cross- border		
1	Menton	Ventimiglia	9
2	Anvers	Eindhoven	87
3	Liège	Maastricht	30
4	Irun	Dax	90
5	PortBou	Figueras	36
6	Groningen	Leer	72
7	Copenhague	Malmö	44
8	Strasbourg	Karlsruhe	80
9	Metz	Luxembourg	62
	Average of the segment		56,66

Average weekday train frequency:	**26,2**
Average weekend train frequency:	**22,7**
Average coach frequency Eurolines:	**1,2**

Source: OGM





Comment

In at least 5 cases, the train offers the same or a better journey time than the car. The coach does not seem to be very competitive in this category, with an average journey time of 72 min; further, it is the slowest way to travel in each link. The car needs only 41 min on average to travel 56 km, which is a third less then the train would need (58 min). Concerning the number of journeys offered, train services, are 20 times more frequent than the coach, even at weekends. Nevertheless the car is on the average the fastest way to travel in this category.

[3] E.g.: »Un nouveau défi du chemin de fer européen : les services internationaux de voyageurs, Rail international 02/2001 – Prof. Dr. Ing. Andres Lopez Pita.

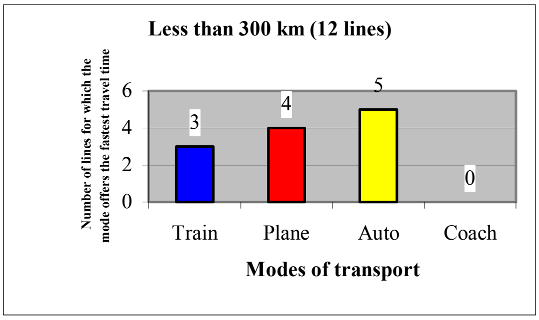
2.2 Services under 300 km (12 links).

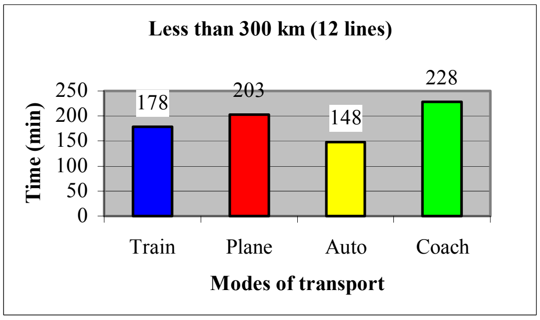
Table 2: Services under 300 km

Nb	Less than 300 km		
1	Amsterdam	Bruxelles	212
2	Luxembourg	Francfort	235
3	Vienne	Budapest	246
4	Luxembourg	Bruxelles	215
5	Munich	Kitzbühel	125
6	Londres	Lille	237
7	Bruxelles	Lille	113
8	Strasbourg	Stuttgart	147
9	Innsbruck	Bolzano	118
10	Munich	Salzburg	139
11	Dublin	Belfast	168
12	Berlin	Malmö	262
	Average of the category		**184,75 km**

Source: OGM

Average weekday train frequency:	**20,0**
Average weekend train frequency:	**16,6**
Average plane frequency:	**4,5**
Average coach frequency Eurolines:	**2,4**





Comment

The car is the most competitive on lines less than 300 km with the 5 fastest lines and an average journey length of 148 min. The train offers the shortest journey time on 3 lines. Comparing the average journey lengths, the train is in second position with 178 min behind the car. The major disadvantage of the plane in this category is that the airports are situated far outside the cities and this requires a longer journey time of 203 min on average. The coach is the slowest way to travel with 228 min. The train offers about four times higher frequencies than the plane in that category on weekdays. The number of daily coach services is again half of that of the plane: 2,4.

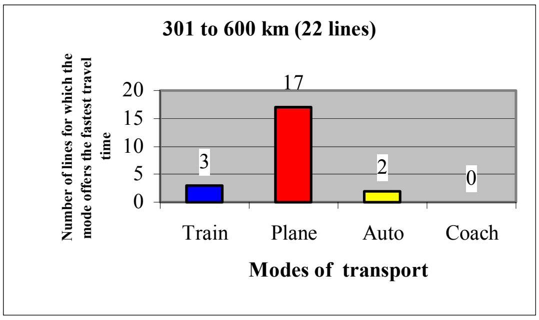
2.3 Services between 301 and 600 km (22 links)

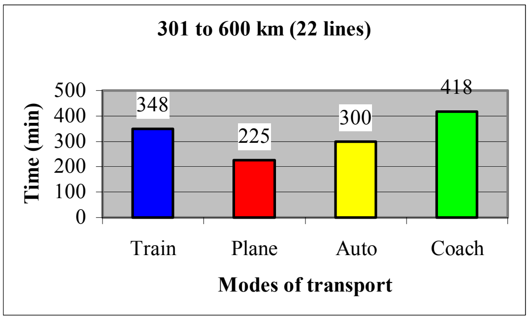
Table 3: Services between 301 and 600 km

Nb	between 301 and 600 km		
1	Hambourg	Copenhague	322
2	Paris	Francfort	579
3	Amsterdam	Francfort	429
4	Amsterdam	Hannovre	386
5	Milan	Munich	491
6	Lyon	Turin	305
7	Lyon	Milan	441
8	Marseille	Barcelone	503
9	Marseille	Genova	396
10	Munich	Vienne	399
11	Paris	Cologne	487
12	Mulhouse	Francfort	318
13	Aalbörg	Hambourg	453
14	Copenhague	Brême	437
15	Berlin	Prague	342
16	Berlin	Varsovie	594
17	Vienne	Venise	577
18	Paris	Bruxelles	309
19	Londres	Bruxelles	329
20	Paris	Londres	415
21	St Petersbourg	Helsinki	388
22	Paris	Dusseldorf	495
	Average of the category		**412,4 km**

Source: OGM

Average weekday train frequency:	**14,6**
Average weekend train frequency:	**13,9**
Average plane frequency:	**6,6**
Average coach frequency Eurolines:	**1,9**





Comment

In this category the plane is the fastest mode of transport on 17 lines. On three lines no direct air connection exists so the train is the fastest mode. On two lines (Berlin-Prague and Marseille-Genova) the car is the fastest choice. On average the plane is obviously the fastest mode with 225 min. The car is about 25% slower than the plane (300 min). In third position is the train with 348 min. The coach needs approximately double the time of the plane (418 min in comparison to 225). Looking at frequency of service, the train is obviously the one with the best performance, with on average more than double the services offered per day than the plane.

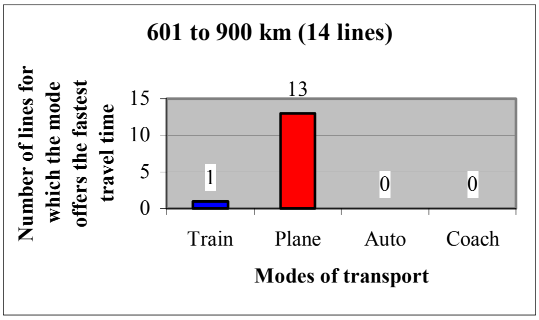
2.4 Services between 601 and 900 km (14 links).

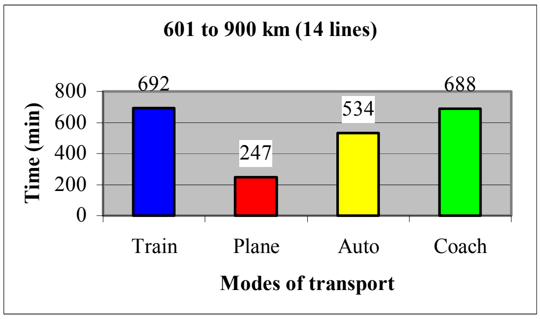
Table 4: Services between 601 and 900 km

Nb	between 601 and 900 km		
1	Lyon	Barcelone	633
2	Vienne	Francfort	714
3	Manchester	Bruxelles	670
4	Marseille	Rome	874
5	Bruxelles	Milan	888
6	Berlin	Bruxelles	755
7	Vienne	Milan	830
8	Berlin	Vienne	624
9	Lyon	Innsbruck	707
10	Madrid	Lisbonne	634
11	Bruxelles	Bourg St Maurice	864
12	Copenhague	Stockholm	668
13	Bordeaux	Turin	861
14	Thessaloniki	Istanbul	662
	Average of the segment		**741,71 km**

Source OGM

Average weekday train frequency:	**11,4**
Average weekend train frequency:	**10,6**
Average plane frequency:	**8,1**
Average coach frequency Eurolines:	**1,2**





Comment

In the segment between 600 and 900 km the advantage of the plane is clearly visible. With the exception of one case (Brussels-Bourg St Maurice) where no direct flight is available, the plane is the fastest mode of transport on 13 lines. Regarding the average journey time, the car needs double the time (534 min) of the plane. With 534 min an average journey time, it offers the second best choice for that category. Coaches (688 min) and trains (692 min) are very close together in time and are the slowest modes of transport, although the study included high-speed trains if available on the chosen links. Both are approximately 60% slower than the plane. In comparison to the previous categories, the train frequencies are slightly lower (about 11), while the plane is nearly level, with an offer of 8,1 flights, representing only 20% fewer services per day than the train. A long way last is the coach with 1,2 services per day on average.

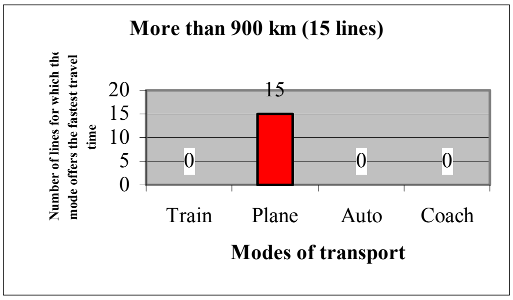
2.5 Services over 900 km (15 links).

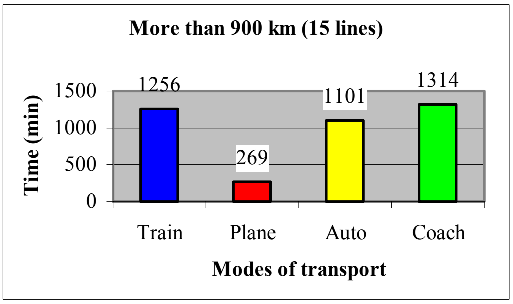
Table 5: Links over 900 km

Nb	More than 900 km		
1	Milan	Paris	903
2	Barcelone	Milan	979
3	Paris	Prague	1030
4	Marseille	Bruxelles	1048
5	Stockholm	Hannovre	1147
6	Lyon	Madrid	1234
7	Rome	Prague	1302
8	Paris	Budapest	1493
9	Paris	Varsovie	1609
10	Paris	Naples	1630
11	Vienne	Athènes	1783
12	Paris	Lisbonne	1792
13	Paris	Malaga	1814
14	Hambourg	Istanbul	2505*
15	Paris	Istanbul	2771*
	Average of the segment		**1536 km**

Source: OGM

Average week frequency train:	**9,3**
Average wee-end frequency train:	**8,5**
Average frequency plane:	**5,6**
Average frequency coach Eurolines:	**0,7**





Comment

The plane is -not surprisingly- the fastest mode of travel on all 15 lines in that category. Interesting: the coach is the slowest way to travel with 1314 min in the average. Further interesting: The car is only about 10% faster than the train (1256 min) and the coach. The plane is more than 4 times faster then the other three modes of transport with 269 min.

Concerning the frequencies the picture is as follows: The train is less frequent than in the previous categories (about 9 services), idem for the plane, which offers only a bit more than the half of the train (about 5). The coach, far secluded with even less than one service per day in the average (0,7).

*If the extreme observations of Hamburg-Istanbul (2505 km) and Paris-Istanbul (2771km) will be excluded, the average distance of the category declines slightly on 1366 km. The results are not significantly changing. The plane is -not surprisingly- still the fastest mode of travel then on all 13 lines in that category. The coach is again the slowest way to travel with 1233 min in the average. The car (958 min) is then about 30% slower than the train (708 min). The plane (254 min) is about 3 times faster than the train.

2.6 Synthesis of all categories: commercial speeds and frequencies

Table 6: Relationship between train and fastest mode of transport

Category	Cross-border	0-300 km	300- 600 km	600- 900 km	> 900 km
Average distance	56,7 km	185 km	412 km	742 km	1536 km
Average train speed	59 km/h	62 km/h	71 km/h	64 km/h	73 km/h
Average plane speed	-	55 km/h	109 km/h	180 km/h	342 km/h
Average car speed	83 km/h	75 km/h	82 km/h	83 km/h	83 km/h
Average coach speed	47 km/h	49 km/h	59 km/h	65 km/h	70 km/h
fastest mode in relation to average speed train	**1 – 1,4**	**1 – 1,2**	**1 - 1,5**	**1 – 2,8**	**1 – 4,7**

Source: OGM

In the cross-border category, the car is 40% faster than the train. This relationship decreases to 20% in the category of lines less than 300 km, where trains offer an average speed of 62 km/h in comparison to 75 km/h for the car. The longer the distance, the higher is the margin of the fastest mode in comparison to the train, up to 1-4,7.

In the first few categories, the average speed of the train is relatively constant at about 65 km/h, increasing to up to 73km/h in the category of lines over 900km. The plane starts with 55 km/h and reaches 342 km/h in the longest category. For the coach this figure increases from 47 km/h (cross-border) up to 70 km/h (more than 900km). The average speed of the car remains more or less constant about 80 km/h, whatever the category.

Table 7: Daily average frequencies of train, plane and coach

Category	Cross-border	0-300 km	300- 600 km	600- 900 km	> 900 km
Average distance	56,7 km	185 km	412 km	742 km	1366 km
Average train frequency (Weekend)	26,2 (22,7)	20,0 (16,6)	14,6 (13,9)	11,4 (10,6)	9,3 (8,5)
Average plane frequency	-	4,5	6,6	8,1	5,6
Average coach frequency	1,2	2,4	1,9	1,2	0,7

Source: OGM

Train frequencies increasingly decline as the category lengthens, going from about 26 in the cross-border category to 9 in the category “900 and more”. When considering the plane, despite the fact that the number of daily flights increases from 4,5 in the “0-300km” category up to 8,1 in the “600-900 km” category, these represent only half the frequency of trains in the “more than 900 km” category. The most important category for the coach is the “0-300 km” category where coach services achieve their highest frequency. The private car has been excluded due to its 24 hours availability.

3 Competitiveness in terms of price and journey time according to different purchasers

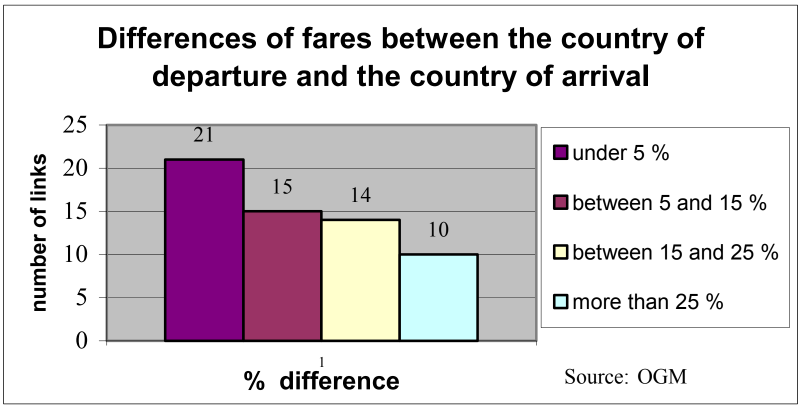
Chapter 2 was dedicated to the analysis of the journey time achieved by each mode of transport and the available frequencies. Here, the comparison between the different modes seeks to evaluate the price as it is presented to the customer and to relate it to the journey time provided by the respective transport mode. As there are different fares for different consumer groups, the analysis has been done from the purchaser's point of view, that is the fare prices were collected for each of the following purchasers:

- Teenager, under 18 years old
- Business traveller, using first class train fares
- Family, consisting of 2 adults, and 2 children under 12 years old
- Seniors, 2 people over 60 years old

Due to the wide choice of international train services (high-speed/ EuroCity/ stop trains) there are considerable differences between fares. Obviously there is a relation between a given price and the resulting journey time. In general this is a negative linear relation so that higher prices mean a shorter journey time over the same distance. Using this relation, the analysis had been done in two ways:

- Shortest duration time with a comparable fare
- Cheapest price with a comparable duration

These categories correspond to the descriptors in the graphs presented. The database for the following part of the analysis is the 72 lines analysed in chapter 2.



While collecting all the necessary prices for the analysis it became clear that there are considerable differences between the prices of tickets according to the country of purchase, even if it is the same line or just going in the opposite direction. The graph above shows the differences that were found.

- About 1/3 of the links have the same price, regardless of the purchase country
- Half of the fares have a difference of 5 to 25 %
- 1/6 of the fares have a difference of more than 25 %

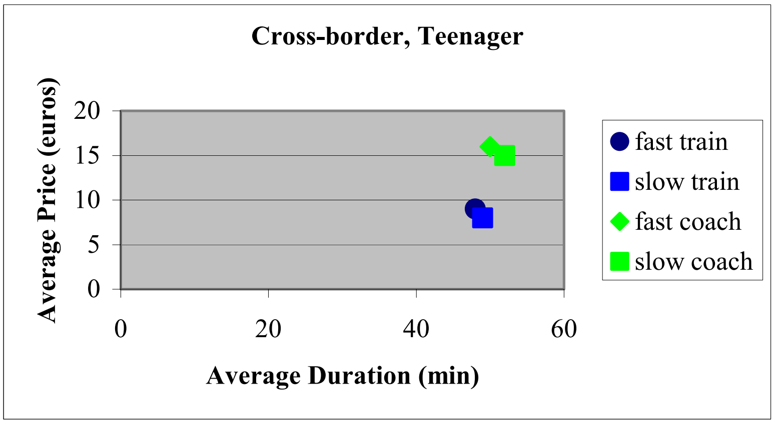
Similar results were discovered during the mystery travellers' experiences. It was often difficult to obtain the right and the cheapest train fare.

3.1 Cross-border services

With an average length of 56 km, cross-border services are a different segment in comparison to international long distance train services. Cross- border services also play an important role in the daily traffic demand, as, for example, between Luxembourg and France. The plane has been excluded due to its high price and journey time on such short distances. The competitiveness for different types of consumer is as follows:

Teenager

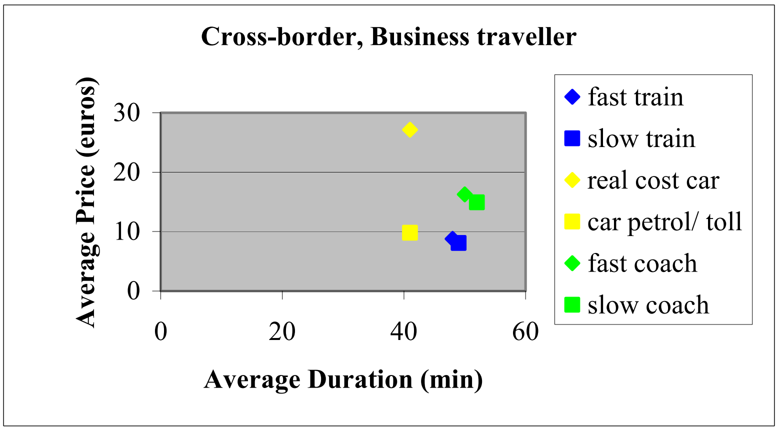
For reasons of age, the private car has been excluded.



Comment

In general on cross-border lines the train is in advantage in both the dimensions of price and journey time. As teenagers are being considered the car has been excluded. The coach seems to be less competitive because of its higher price (nearly 50% more than the train) and its journey time, which is slightly longer.

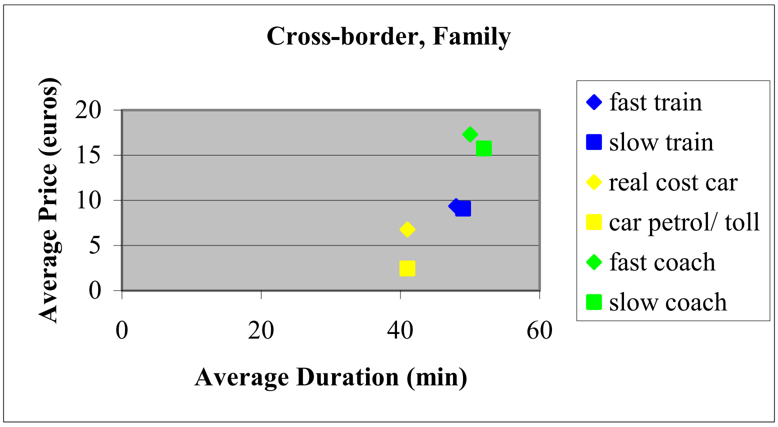
Business traveller



Comment

For business travellers in the cross-border segment, the car is the most expensive (28 Euro). The real costs are approximately double the fare for the coach (about 15 Euro). The train is in close competition to the costs of the car if we consider only the latter's petrol consumption (both about 10 Euro). The train is on average slightly slower- nearly 50 min.- in comparison to 40 min. in the car.

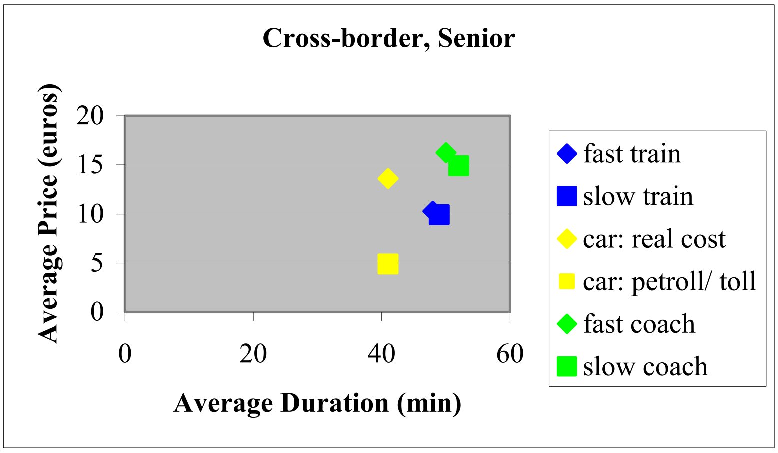
Family
All the modes are in competition
2 adults plus 2 juniors, and the price is per person (total divided by 4)



Comment

For families, the car offers the cheapest choice. Even if we consider the total costs, the price per person is very attractive (7 Euro per Person). The train is about 10 Euro for a 10 min. longer journey. The coach represents the slowest mode (55 min.) and at the same time is the most expensive, at about 13 Euro per person.

Seniors
All the modes are in competition
2 seniors, and the price is per person (total divided by 2)



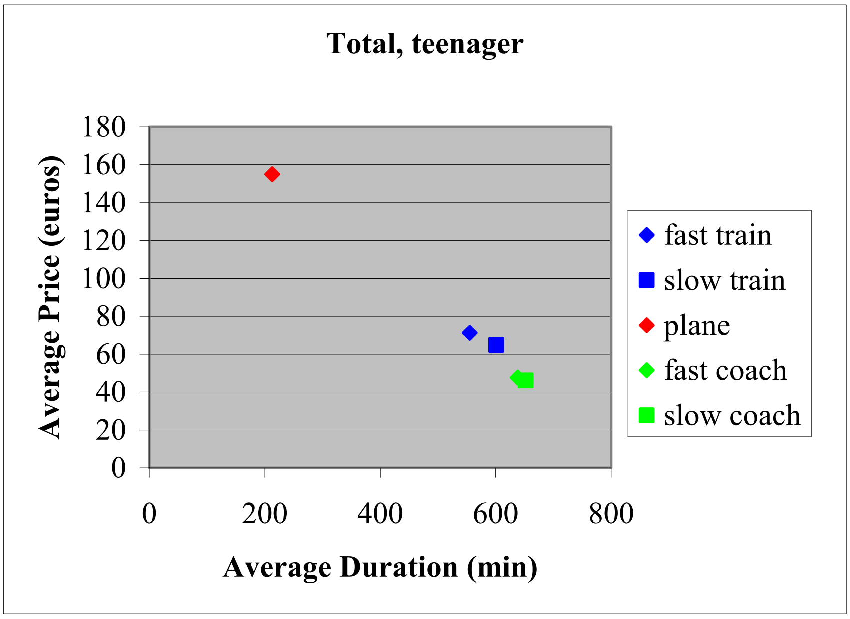
Comment

For seniors, the car seems to be the most attractive transport mode if only the consumption is counted (5 Euro per person). But if we consider the total costs, the train (10 Euro) is cheaper than the car, which now costs about 14 Euro per person. The journey time is on average 10 min. longer by train. The coach is less competitive: about 15 Euro per person for a journey of about 50 min.

3.2 International long distance trains

Teenager

Can't drive a car
Alone for the trip



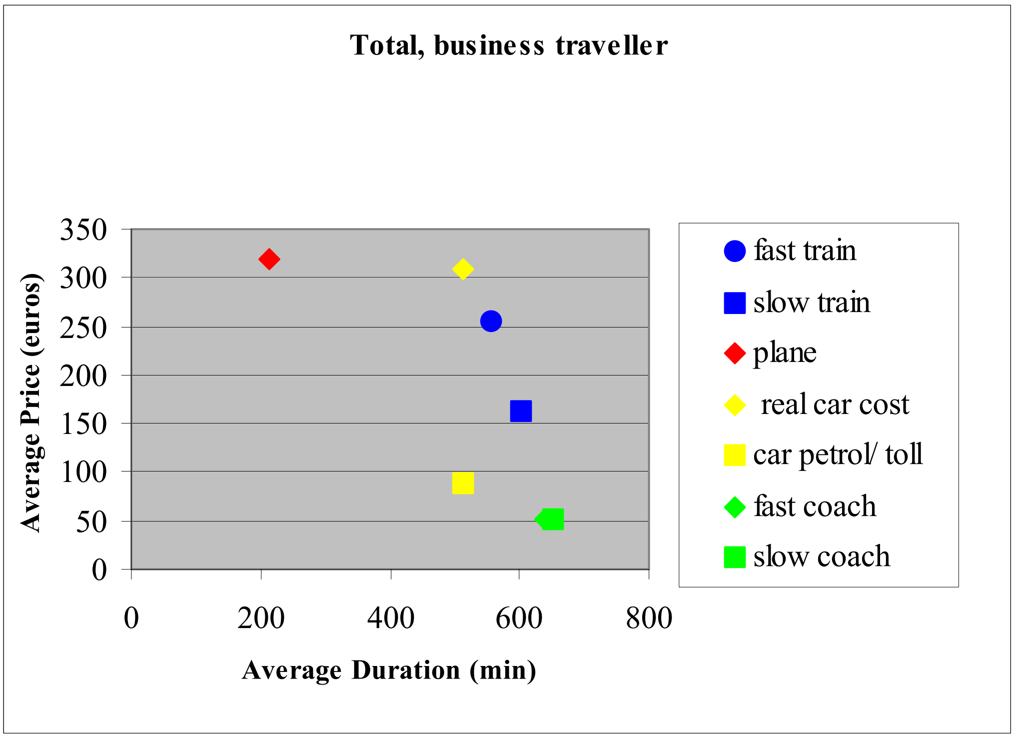
Comment

Teenagers do not usually own a car. The plane (150 Euro) costs about double the train (70 Euro), which is slightly cheaper when a journey time of about 20 min longer is considered.

The coach represents the cheapest way to travel for teenagers It costs on average 45 Euro for a journey lasting about 630 min.

Business Travellers

All modes of transport are in competition. The person is travelling alone, using first class train fares.

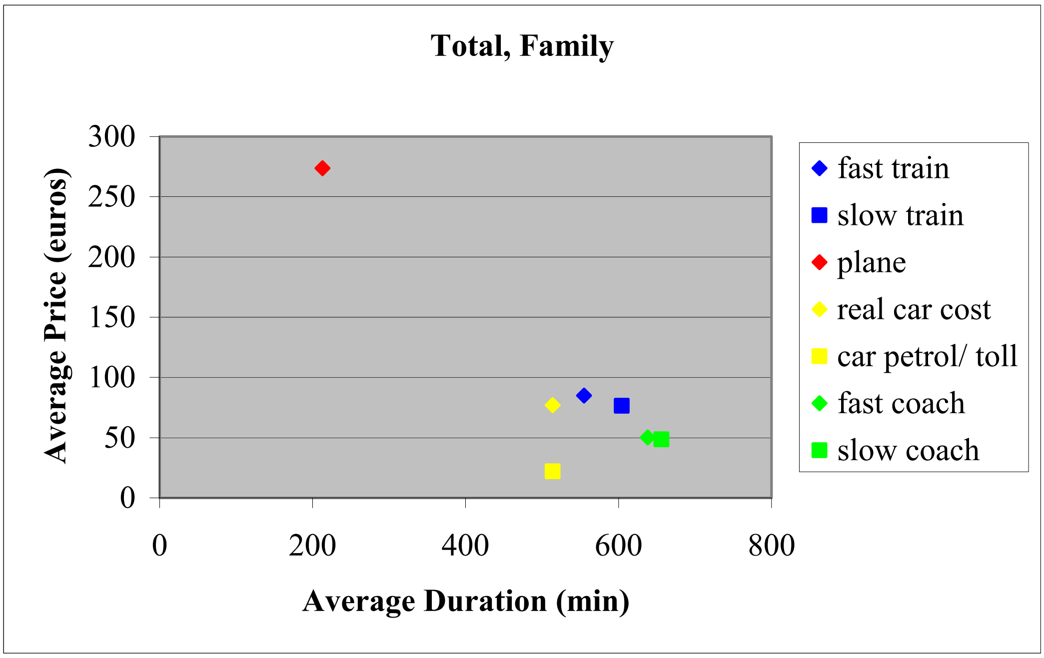


Comment

For business travellers the plane (320 Euro) costs about 20% more than the train (260 Euro). If we consider the total cost of the car (300 Euro for 500 min), it is slightly cheaper than the plane. Even if consumption only is counted, the car is on average slightly more expensive than the train. The cheapest train service needs about 50 min. more journey time.

Family

All the modes are in competition.
2 adults plus 2 juniors, and the price is per person (total divided by 4)



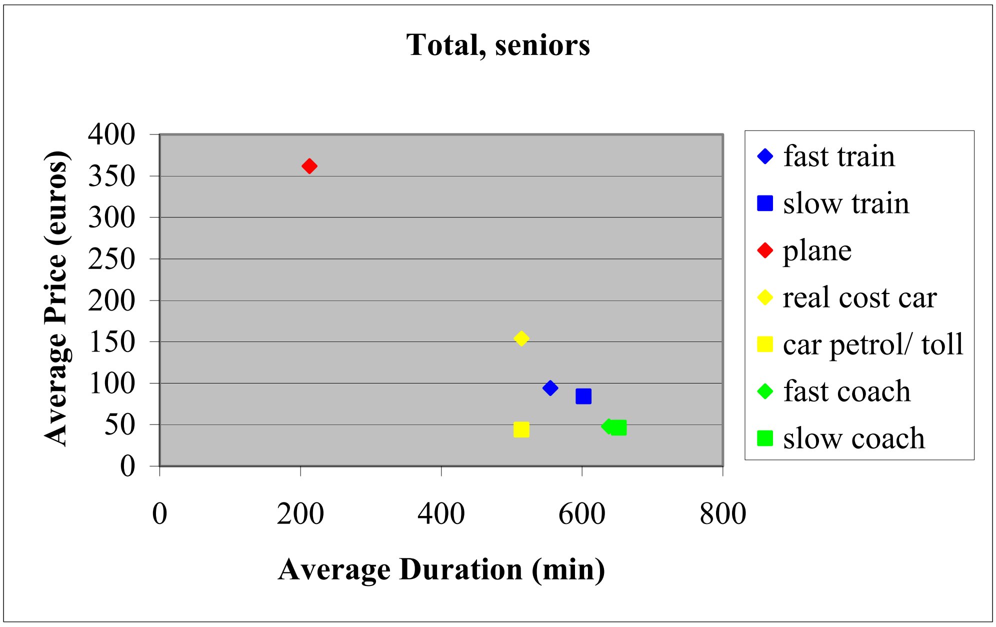
Comment

The cheapest travel mode for families is the car, which costs about 15 Euro per person if only consumption is considered. If the full costs of the car are included, the price will be approximately the same as it is for the train- about 80 Euro per person.

In comparison to the car the coach is about a third cheaper (50 Euro), but needs on average 1 h more journey time than the car and about 40 min. more than the fastest train.

Seniors

All the modes in competition
2 seniors, and the price is per person (total divided by 2)



Comment

The plane offers the fastest but also the most expensive mode of transport (360 Euro per person). The cheapest choice is the car, if only consumption is considered (45 euro), followed by the coach, which costs about 50 Euro per person.

The train (about 100 Euro) is double the price of the car (if only consumption is counted) and the coach. If the full costs of the car are considered, the train is a third cheaper than the car (150 Euro).

3.3 Synthesis

The following table shows the relation between the fare of the train per person for each group of customers and the fare for the cheapest mode of travel in that category. E.g. 1.15 means the average train fare is 1.15 times more expensive than the cheapest mode of travel.

Table: Relation between cheapest mode of travel and train fare

consumer	0-300 km	300-600 km	600-900 km	> 900 km
Teenager	1.51	1.20	1.62	1.64
Business	1.55	1.42	1.71	1.75
Family	1.85	1.53	1.83	1.73
Seniors	2.08	1.79	2.22	1.99

Source: OGM

The synthesis shows that for teenagers and business travellers, this relation decreases in the category of 300-600 km and then increases to up to 1.64/ 1.75. For families and seniors, this relation varies approximately 1:2.

Table: Relation between cheapest plane fare and cheapest train fare

consumer	0-300 km	300-600 km	600-900 km	> 900 km
Teenager	6.3	3.0	2.6	1.3
Business	6.1	2.9	2.6	1.2
Family	6.7	4.6	3.6	2.3
Seniors	8.1	5.4	4.2	3.0

Source: OGM

The relation between cheapest plane fare and cheapest train fare decreases for every type of consumer as the journey length increases.

Table: Relation between costs of the car and train fare

consumer	0-300 km	300-600 km	600-900 km	> 900 km
Teenager	-	-	-	-
Business	2.7	4.4	4.7	5.4
Family	0.6	0.87	1.0	1.2
Seniors	1.1	1.6	1.8	2.2

Source: OGM

For the business travellers and seniors the relation cost of car/ cost of train is increasing strongly as the journey length increases, particularly for the business traveller, while travelling alone. For families the car is an attractive alternative in terms of price up to about 900km.

General conclusions

1. International train services are in a very competitive position in relation to their closest competitors, coach and car. In the cross-border segment in particular, they offer better fares than the car if total costs are considered.
2. The longer the distance, the more competitive the plane becomes in terms of journey time. Nevertheless, international train services do offer a cheaper choice in comparison to planes and are in very close competition to coaches, which represent the slowest mode of travel.
3. The train is the mode that offers the largest choice of prices and travel times. Even if it is not the fastest or the cheapest mode, it is always in close competition with all the modes, and therefore is at the heart of the international passenger transport services offered across Europe.

Synthesis paper on recent studies dealing with rail

The present chapter of the Annexe seeks to summarise key findings from the desk research.

"Study of Transport Demand of Certain Passenger Transport Modes"[4]

The objective of the study is to "collect all available statistical data and produce estimates in order to provide a coherent picture of the development of transport demand (passenger-km) of non-UIC railways, urban rail, sea transport, and air transport in the period 1995-1998 in the European Union".

There are four main objectives of the study:

1. Collection of existing statistical information on the transport volume (passengers) and transport performance (passenger-km) of the following modes: non-UIC railways, urban rail (tram, metro), air and sea;
2. Production of estimates where data is missing (differential between official data and estimated/recalculated data requested), in order to provide a coherent database of the development of transport demand of the modes identified above;
3. Provision of information about statistical sources used, the quality of these sources, methodologies and definitions, and the scope of data in these sources;
4. Provision of information on how estimates were made and which data and which models were used to produce the estimates.

The study covers the European Union area, by Member State. One of the major problems facing researchers and practitioners is the level of inconsistencies in the reported figures. Some data is missing, corrections are needed and estimates must be produced. As a result, the data is not always reliable. Reported figures are presented in origin-destination matrixes for both, sea and air data, but not for railways. As far as railways are concerned, the study presents an overview of the number of passengers and passenger-kilometres by Member Statesand for the years 1990, 1995, 1996, 1997 and 1998.

Comment

As the study is of more use for information about data on the air, maritime and road sectors, it is therefore considered valid for the ***international*** *rail passenger services. The figures reported therefore represent statistical data, valid only at a national level. It is even unclear whether or not the figures concerning international rail passengers are integrated into these tables. Nevertheless the tables on the next two pages may indicate general trends of the number of rail passengers or the passenger- kilometres in the member states.*

[4] "Study of Transport Demand of Certain Passenger Transport Modes", European Commission Directorate General – Transport (contract n° B99-B27040-SI2.110794/ETU TRL/P E1 99 15), Final report (June 30, 2000).

	Rail Passengers (in millions)														
	1990			1995			1996			1997			1998		
	UIC	Non-UIC	Total	UIC	Non-UIC	Total	UIC	Non-UIC	Total	UIC	Non-UIC	Total	UIC	Non-UIC	Total
Austria	168,4	17,3	185,7	194,0	24,1	218,1	193,4	25,7	219,1	183,9	26,9	210,8	179,5	27,1	206,6
				15,2%	*39,3%*	*17,4%*	*-0,3%*	*6,6%*	*0,5%*	*-4,9%*	*4,7%*	*-3,8%*	*-2,4%*	*0,7%*	*-2,0%*
Belgium	142,4		142,4	144,0		144,0	141,7		141,7	143,6		143,6	145,6		145,6
						1,1%	*-1,6%*		*-1,6%*	*1,3%*		*1,3%*	*1,4%*		*1,4%*
Denmark	146,0	11,4	157,4	145,0	12,0	157,0	144,0	12,0	156,0	144,4	11,0	155,4	148,7	12,0	160,7
				-0,7%	*5,3%*	*-0,3%*	*-0,7%*	*0,0%*	*-0,6%*	*0,3%*	*-8,3%*	*-0,4%*	*3,0%*	*9,1%*	*3,4%*
Finland	46,0		46,0	44,0		44,0	47,0		47,0	50,0		50,0	51,0		51,0
				-4,3%		*-4,3%*	*6,8%*		*6,8%*	*6,4%*		*6,4%*	*2,0%*		*2,0%*
France	834,2		834,2	741,0		741,0	786,5		786,5	807,2		807,2	822,9		822,9
				-11,2%		*-11,2%*	*6,1%*		*6,1%*	*2,6%*		*2,6%*	*1,9%*		*1,9%*
Germany	1 514,3	200,0	1 714,3	1 334,2	200,0	1 534,2	1 392,5	200,0	1 592,5	1 347,2	200,0	1 547,2	1 332,0	201,0	1 533,0
				-11,9%	*0,0%*	*-10,5%*	*4,4%*	*0,0%*	*3,8%*	*-3,3%*	*0,0%*	*-2,8%*	*-1,1%*	*0,5%*	*-0,9%*
Greece	12,1		12,1	11,5		11,5	12,8		12,8	13,3		13,3	13,2		13,2
				-5,0%		*-5,0%*	*11,3%*		*11,3%*	*3,9%*		*3,9%*	*-0,8%*		*-0,8%*
Ireland	25,0		25,0	27,1		27,1	27,9		27,9	29,5		29,5	25,4		25,4
				8,4%		*8,4%*	*3,0%*		*3,0%*	*5,7%*		*5,7%*	*-13,9%*		*-13,9%*
Italy	429,4		429,4	462,5		462,5	468,3		468,3	461,0		461,0	440,5		440,5
				7,7%		*7,7%*	*1,3%*		*1,3%*	*-1,6%*		*-1,6%*	*-4,4%*		*-4,4%*
Luxembourg	12,7		12,7	11,2		11,2	11,1		11,1	11,5		11,5	11,7		11,7
				-11,8%		*-11,8%*	*-0,9%*		*-0,9%*	*3,6%*		*3,6%*	*1,7%*		*1,7%*
Netherlands	255,7		255,7	305,0		305,0	306,5		306,5	315,6		315,6	318,9		318,9
				19,3%		*19,3%*	*0,5%*		*0,5%*	*3,0%*		*3,0%*	*1,0%*		*1,0%*
Portugal	225,8		225,8	187,5		187,5	177,0		177,0	178,1		178,1	177,9		177,9
				-17,0%		*-17,0%*	*-5,6%*		*-5,6%*	*0,6%*		*0,6%*	*-0,1%*		*-0,1%*
Spain	274,4	98,9	373,3	365,5	99,9	465,4	388,6	79,0	467,6	452,5	42,9	495,4	474,0	46,6	520,6
				33,2%	*1,0%*	*24,7%*	*6,3%*	*-20,9%*	*0,5%*	*16,4%*	*-45,7%*	*5,9%*	*4,8%*	*8,6%*	*5,1%*
Sweden	77,0	11,0	88,0	98,0	11,0	109,0	101,0	11,0	112,0	107,0	11,0	118,0	111,0	11,0	122,0
				27,3%	*0,0%*	*23,9%*	*3,1%*	*0,0%*	*2,8%*	*5,9%*	*0,0%*	*5,4%*	*3,7%*	*0,0%*	*3,4%*
United Kingdom	816,5		816,5	775,3		775,3	821,0		821,0	867,6		867,6	917,2		917,2
				-5,0%		*-5,0%*	*5,9%*		*5,9%*	*5,7%*		*5,7%*	*5,7%*		*5,7%*
Total	4 979,9	338,6	5 318,5	4 845,8	347,0	5 192,8	5 019,3	327,7	5 347,0	5 112,4	291,8	5 404,2	5 169,5	297,7	5 467,2
				-2,7%	*2,5%*	*-2,4%*	*3,6%*	*-5,6%*	*3,0%*	*1,9%*	*-11,0%*	*1,1%*	*1,1%*	*2,0%*	*1,2%*

Source: Study of Transport Demand of Certain Passenger Transport Modes

Comment: *This table shows that the total number of rail passengers (UIC and non-UIC railways) throughout the EU declined from 1990 to 1995, from 5.320 mln to 5.190 mln and then consistently risen to about 5470 mln in 1998.*

	Rail Passenger-kilometers (in millions)														
	1990			1995			1996			1997			1998		
	UIC	Non-UIC	Total	UIC	Non-UIC	Total	UIC	Non-UIC	Total	UIC	Non-UIC	Total	UIC	Non-UIC	Total
Austria	8 575,0	477,8	9 052,8	9 755,0	668,9	10 423,9	9 689,0	703,8	10 392,8	8 140,0	731,8	8 871,8	8 200,0	728,3	8 928,3
				13,8%	40,0%	15,1%	-0,7%	5,2%	-0,3%	-16,0%	4,0%	-14,6%	0,7%	-0,5%	0,6%
Belgium	6 539,0		6 539,0	6 757,0		6 757,0	6 788,0		6 788,0	6 984,0		6 984,0	7 085,0		7 085,0
						3,3%	0,5%		0,5%	2,9%		2,9%	1,4%		1,4%
Denmark	4 855,0	200,0	5 055,0	4 783,0	204,0	4 987,0	4 718,0	197,0	4 915,0	4 990,0	195,0	5 185,0	5 369,0	188,0	5 557,0
				-1,5%	2,0%	-1,3%	-1,4%	-3,4%	-1,4%	5,8%	-1,0%	5,5%	7,6%	-3,6%	7,2%
Finland	3 331,0		3 331,0	3 184,0		3 184,0	3 254,0		3 254,0	3 376,0		3 376,0	3 415,0		3 415,0
				-4,4%		-4,4%	2,2%		2,2%	3,7%		3,7%	1,2%		1,2%
France	63 761,0		63 761,0	55 560,0		55 560,0	59 529,0		59 529,0	61 831,0		61 831,0	64 602,0		64 602,0
				-12,9%		-12,9%	7,1%		7,1%	3,9%		3,9%	4,5%		4,5%
Germany	61 024,0	787,0	61 811,0	60 514,0	787,0	61 301,0	62 239,0	787,0	63 026,0	59 628,0	787,4	60 415,4	59 184,0	896,0	60 080,0
				-0,8%	0,0%	-0,8%	2,9%	0,0%	2,8%	-4,2%	0,1%	-4,1%	-0,7%	13,8%	-0,6%
Greece	1 977,0		1 977,0	1 569,0		1 569,0	1 751,0		1 751,0	1 884,0		1 884,0	1 816,0		1 816,0
				-20,6%		-20,6%	11,6%		11,6%	7,6%		7,6%	-3,6%		-3,6%
Ireland	1 226,0		1 226,0	1 291,0		1 291,0	1 295,0		1 295,0	1 387,0		1 387,0	1 579,0		1 579,0
				5,3%		5,3%	0,3%		0,3%	7,1%		7,1%	13,8%		13,8%
Italy	45 512,0		45 512,0	49 700,0		49 700,0	50 300,0		50 300,0	49 500,0		49 500,0	47 285,0		47 285,0
				9,2%		9,2%	1,2%		1,2%	-1,6%		-1,6%	-4,5%		-4,5%
Luxembourg	261,0		261,0	286,0		286,0	284,0		284,0	295,0		295,0	300,0		300,0
				9,6%		9,6%	-0,7%		-0,7%	3,9%		3,9%	1,7%		1,7%
Netherlands	11 060,0		11 060,0	13 977,0		13 977,0	14 091,0		14 091,0	14 425,0		14 425,0	14 759,0		14 759,0
				26,4%		26,4%	0,8%		0,8%	2,4%		2,4%	2,3%		2,3%
Portugal	5 664,0		5 664,0	4 840,0		4 840,0	4 503,0		4 503,0	4 563,0		4 563,0	4 602,0		4 602,0
				-14,5%		-14,5%	-7,0%		-7,0%	1,3%		1,3%	0,9%		0,9%
Spain	15 476,0	1 257,0	16 733,0	15 313,0	1 269,0	16 582,0	15 800,0	1 004,0	16 804,0	17 326,0	545,0	17 871,0	18 281,0	593,0	18 874,0
				-1,1%	1,0%	-0,9%	3,2%	-20,9%	1,3%	9,7%	-45,7%	6,3%	5,5%	8,8%	5,6%
Sweden	6 076,0	113,0	6 189,0	6 219,0	138,0	6 357,0	6 218,0	147,0	6 365,0	6 814,0	147,0	6 961,0	6 997,0	147,0	7 144,0
				2,4%	22,1%	2,7%	0,0%	6,5%	0,1%	9,6%	0,0%	9,4%	2,7%	0,0%	2,6%
United Kingdom	33 432,0		33 432,0	31 733,0		31 733,0	34 785,0		34 785,0	37 092,0		37 092,0	38 676,0		38 676,0
				-5,1%		-5,1%	9,6%		9,6%	6,6%		6,6%	4,3%		4,3%
Total	268 769,0	2 834,8	271 603,8	265 481,0	3 066,9	268 547,9	275 244,0	2 838,8	278 082,8	278 235,0	2 406,2	280 641,2	282 150,0	2 552,3	284 702,3
				-1,2%	8,2%	-1,1%	3,7%	-7,4%	3,6%	1,1%	-15,2%	0,9%	1,4%	6,1%	1,4%

Sources: Study of Transport Demand of Certain Passenger Transport Modes

Comment: *Concerning the rail passenger kilometres the same trend is visible: from 1990 to 1995, there was a slight declie from about 271.600 mln to 268.500 and then up to 284.700 mln in 1998.*

Rail matrix 1982 (trips/year x 1000)

orig \ dest	France	Belgium	Luxembourg	Netherlands	Germany	Italy	United Kingdom	Ireland	Denmark	Total
France	.	1008	63	402	1953	2052	1262	42	36	6818
Belgium	1078	.	10	352	581	149	328	26	29	2554
Luxembourg	43	7	.	13	28	22	14	1	3	131
Netherlands	634	409	14	.	1619	292	266	27	76	3337
Germany	2500	790	48	1849	.	2551	383	27	484	8632
Italy	2821	35	8	31	525	.	45	15	11	3491
United Kingdom	1633	419	17	258	514	448	.	657	46	3993
Ireland	26	6	0	8	12	26	145	.	2	226
Denmark	81	31	3	90	640	87	43	12	.	987
Total	8817	2703	162	3005	5873	5628	2487	808	688	30170

Comment: *In the year 1982 D, F, and UK were the countries with the highest* ***departure rates*** *for international trips by rail. In contrast, the order of the highest* ***destination rates*** *by train trips was: 1. France, 2. Germany, 3. Italy. Unfortunately, data for 1982 was not available for certain countries.*

Sources: NEA

Rail matrix 1995 (trips/year x 1000)

orig \ dest	France	Belgium / Lux	Netherlands	Germany	Italy	United Kingdom	Ireland	Denmark	Greece	Portugal	Spain	Norway	Sweden	Finland	Austria	Switserland	Total
France	.	2463	622	2215	666	2297	12	13	1	14	1608	1	4	0	313	53	10282
Belgium/Lux	2463	.	15773	1066	30	402	7	9	2	2	50	0	2	0	70	11	19887
Netherlands	622	15773	.	3991	33	330	6	29	6	2	29	1	7	1	83	44	20958
Germany	2215	1066	3991	.	581	273	4	471	1	10	102	12	50	4	1854	2986	13620
Italy	666	30	33	581	.	38	1	9	11	1	16	1	3	0	359	1219	2968
United Kingdom	2297	402	330	273	38	.	413	5	1	6	126	2	1	0	113	10	4018
Ireland	12	7	6	4	1	413	.	0	0	0	2	0	0	0	3	0	449
Denmark	13	9	29	471	9	5	0	.	1	0	3	3	567	2	24	13	1150
Greece	1	2	6	1	11	1	0	1	.	0	0	0	0	0	2	4	27
Portugal	14	2	2	10	1	6	0	0	0	.	339	0	0	0	2	0	376
Spain	1608	50	29	102	16	126	2	3	0	339	.	0	1	0	19	3	2300
Norway	1	0	1	12	1	2	0	3	0	0	0	.	19	2	1	0	43
Sweden	4	2	7	50	3	1	0	567	0	0	1	19	.	72	5	2	734
Finland	0	0	1	4	0	0	0	2	0	0	0	2	72	.	1	0	84
Austria	313	70	83	1854	359	113	3	24	2	2	19	1	5	1	.	82	2930
Switserland	53	11	44	2986	1219	10	0	13	4	0	3	0	2	0	82	.	4428
Total	10282	19887	20958	13620	2968	4018	449	1150	27	376	2300	43	734	84	2930	4428	84255

Sources: NEA

Comment: *In the year 1995 the ranking of international rail trips shows more or less the same picture: The NL dominates, followed up by B/L and D, forth important country is France. Considerably fewer international train trips have been undertaken for GR,N, and FIN.*

Un nouveau défi du chemin de fer européen: les services internationaux de voyageurs

In a paper published in the February 2001 edition of the magazine "Rail International", professor Andrés Lopez Pita gives his views on the international passenger services for European railways[5]. International railway services are characterised by their qualitative impact rather than their impact on demand. The table below shows the evolution of the market share of the different transport modes for the total travel market in the area served by Thalys (Paris-Brussels-Köln/Amsterdam and extensions).

Transport mode	1994	1997	1998
Private car	63%	50%	43%
Coach	8%	6%	5%
Plane	5%	4%	4%
High Speed Rail (Thalys)	24%	40%	48%

Source: Rail international 2001

The author divides the international daily services according to the distance (around 300 km, around 500 km, around 600-800 km, around 900-1,000 km, around 1,200-1,500 km). The following table summarises the international links mentioned in the paper.

International link	Distance (km)	Travel time		Commercial speed (km/h)		High speed rail Market share	Additional information
		2000	2005	2000	2005		
Paris-Brussels	314	1h25		222		48%	
Paris-London	494	3h00	2h30	165	198	60%	
Paris-Amsterdam	540	4h13	3h15	128	166	40%	
Paris-Köln	*≈ 500*	*4h00*	*3h00*			*40%*	
Paris-Zurich	614	6h05	3h15	101	190		2 services a day
Paris-Milan	821	7h00	4h15	117	193		3 services a day
Brussels-Bordeaux	957	6h06	3h50	157	250		
Brussels-Montpellier	1,087	6h08	4h45	177	229		
London-Bourg St Maurice	1,222	8h00		152			
Brussels-Nice	1,455	9h20	8h00	156	182		
Brussels-Geneva		*5h00*					
Paris-Frankfurt	*≈ 500*		*4h15*				

Source: Lopez 2/ 2001

Between 300 and 500 km: high speed is achieved on part of the network (between 53 and 67%). Improvements in the network will lead to a decrease in the travel time and additional services, and as a result, high-speed rail market share will probably increase.

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[5] "Un nouveau défi du chemin de fer européen: les services internationaux de voyageurs", Rail international, February 2001.

Interactions between High-Speed Rail and Air Passenger Transport

The European Commission has ordered a study about the "**Interactions between High-Speed Rail and Air Passenger Transport**" in the framework of COST Action 318. The main goal of the project is to identify and analyse the interactions and complementarities between high-speed rail and air passenger transport, and to stress the benefit,for the users and society in general, arising from these combined activities. The main fields of interest are:

- Effects of high-speed rail on air passenger transport (in terms of future development, better utilisation and co-ordination of rail and air capacities, better distribution of transport demand amongst airports, the level of services needed, the resultant savings on high-speed rail transport)
- Reverse effects of air passenger transport on high-speed rail (forerunner and model for high-speed rail, more flexible than high-speed rail, saving important investment costs)
- Interactions between high-speed rail (HSR) and air passenger transport (APT)

As a general result, it can be emphasised that the area of influence of rail and air transport will alter significantly if HSR operates for all connections with a high traffic load: the best results occur if both HSR and APT-networks are connected by efficient railway stations at all important airports. While for distances of more than 300 km the competitive edge of conventional railways is rapidly declining, for HSR this only applies for distances of over 600-700 km. In a future where HSR operates, APT will predominate on long distance connections.

A consequence of this shift in the area of influence, is that air traffic will be reduced for certain connections by up to 50% if HSR provides a successful alternative. But also, with a fully functioning HSR network of about 30.000 km (2015 expected) in Europe, the medium air transport reduction in the rail/air modal split will probably be 15-20%. Therefore important effects are expected in the reduction of environmental damage (especially on air quality and the reduction of congestion at airports). The consequence of all these modifications will be a new and more sustainable balance of long distance trips, distributed between rail and air transport (and road traffic).

Discussions on complementarity lead to some general questions: Who should transport systems be designed for? Should they first and foremost be built for travellers, or for businesses, for making a profit or for something else? The goals of a national transport policy are usually varied and are aimed at both citizens' needs as well as those of businesses. A comprehensive analysis of travel markets, as well as studies of the conditions for competition and complementarity, benefits from the adoption of different viewpoints: in other words, a perspective analysis is required. An appropriate application of the method calls for a consideration of travellers', traffic companies' and society's views.

- In principle, a journey has no intrinsic value. Its merit is the good it does for **the traveller**. Thus, when we analyse transport systems from travellers' perspectives we start from a basic condition that offers the possibility of understanding the overall benefits of a transport system. Individual travellers want a supply that is as "good" as possible and travel costs that are reasonable. Basically, travellers desire smooth, comfortable and effective transport between two locations.
- **Transport companies** (and airport administrations, etc.) strive to supply services that attract sufficient travellers in order to be profitable. This perspective also include the views of travel agencies, travel organisers, etc. Transport and travel enterprises are key actors in the transport market and have a decisive impact on system design. Thus, an understanding of their operations provides insights into system development. Knowledge of their business can also help identify unnecessary or outdated laws and regulations and also help develop functional and fair rules. An analysis according to traffic companies' perspectives can also highlight the needs for additional infrastructure investment.
- **The general public** has a wider view of transport systems. Of course, the traveller's perspective has to be a major concern for society but it also has to take other viewpoints into consideration. The transport system should provide transport services sufficient to facilitate the transport needs of both people and businesses. Transport should not cause unacceptable or undesirable external effects in other sectors. Issues concerning accessibility for minorities (disabled, countryside residents, etc.) are another important aspect. According to this, Swedish transport policy for instance points out five areas for special concern: efficiency, accessibility, environmental impact, safety and the promotion of regionally balanced development.

A further conclusion of the study is: as the European passenger transport system consists mainly of the three modes - road, air and rail -, these modes should provide connections to the main cities with reasonable travel times, not only at national level but also at the European level. Distances and topology can support or hinder the different systems in fulfilling their transport tasks.

The distribution of the big centres and main transport routes is looked at in the study. Large agglomerations such as Paris, the Rhine-Ruhr region, also London, Berlin, Hamburg, Madrid, Lyon, Milan and Rome can be clearly distinguished. They are suitable for high-speed rail transport because of their distances to each other and their concentration of population since HSR can only function successfully if there is a high demand, on routes with travel times of up to 3 to 4 hours. Most of the 500 million European inhabitants live in about 300 cities with more than 200.000 citizens.

Further, there are several less populated regions which, however, contain important urban areas. As mentioned in the study, M. Walrave, the former secretary general of UIC, named three particular zones on east-west axes. Firstly, one corridor runs from the UK via continental Europe to Warsaw, where more than 140 million people live. Secondly, there is a central corridor between Paris, South-Germany and Budapest with about 80 million inhabitants and finally a southern corridor from Barcelona via Southern-France, Northern-Italy to Belgrade with 60 million inhabitants. In future, rail, especially HSR, will compete with air on some routes. But, as has already been mentioned, HSR transport is commercially feasible only on city-pairs with a high passenger volume.

By 2015, the high speed rail network will also consist of a central region that corresponds to the part of Europe with the highest density of population and that connects the most important urban areas - eight gateways- and also peripheral areas. The 8 gateways are: 1) London for Great Britain, 2) Hamburg for Scandinavia, 3) Warsaw for the Baltic states and Russia, 4) Budapest for Moldavia and Russia, 5) Belgrade for the Balkans, 6) Milan (Bologna) for Italy, 7) Paris for Spain and Portugal, 8) Barcelona for Spain and Portugal. The network should contain a well developed central hub with fast access from the border areas.

Finally, rail services are seen as a complementary service to take a feeder function to big airports. Therefore the following parameters should be improved:

- Comfort at railway stations for HSR transport should be equal to the standard for airports
- Higher comfort: new design for vehicle structures
- Less vibration > higher comfort
- Resistance to sudden internal pressure changes > hermetic sealing similar to that of aircraft
- Good insulation against sound and heat
- Adjustable seats, flight information and reservation systems

General remarks are that in contrast to aircraft, rail transport sets a high value on offering considerable space. HSR potential advantages: comfort, opportunities to work while travelling, proximity of terminals to origins and destinations, …The Orient Express can help us visualise the railway's service potential. In principle, all the services that can be provided in an airplane cabin can also be provided in a train. Further, trains can be used more flexibly: a concept of half trains leads to higher efficiency and better adaptation to demand. In consequence a higher load factor can be obtained.

The impact of the Eurostar services through the Channel Tunnel on the traffic of Ile de France residents to London adds an international example to this list, showing the ability of HSR to compete with APT: from the panel recruited to follow up the effects on Northern Europe of HSR, it seems that the corresponding air market share has dropped from 72% before the opening of the Tunnel, to 39% during the first year after, with the rail market share moving from virtually nothing to 32,5%. (p. 52)

Complementarity by substitution between rail and air passenger transport: 3 distinct ranges were considered:

- Up to 350 km travel distance: HSR advantages clearly dominate
- From 350 km to 1000 km travel distance: HSR and APT compete
- Over 1000 km travel distance: APT dominates (p. 59)

In addition, a pattern that emerged from the variety of data studied, was the distinction between private and business travellers, where the former are more price sensitive compared to the latter, who are more time sensitive.

There was an evaluation of a package of individual factors, including price, total travelling time, trip frequency, time distribution/schedule, service, comfort, work opportunities, proximity to departure/arrival, parking and connections. As a result, the study found price to be an important factor in the modal choice. Airlines are very active in this field, as they offer bonuses as a reward for loyalty. Travel time was found to be a crucial factor compared with travel speed,which is certainly interesting from a marketing point of view. In general, total travel time is one of the most important and decisive factors in the competition between air and rail traffic.

When HSR can provide door-to-door-trips at travel times roughly equal to those of air traffic, evidence shows that the major part of the market will be won. However, it is not only the relative travel time between the two modes that is important. Travel time in absolute terms is also crucial. Travel time short enough to allow business visits during the day increases the market potential considerably. In the HSR context, therefore, we often hear about the "3-hour principle", in order to be able to compete seriously in the crucial market sectors represented by the demands of business-class and one-day travellers.

From the travel company's point of view, business trips, with their greater ability to pay, are the decisive market segment for both air and HSR. A large share of all business trips takes place during the same day. Both business economics and social factors must be considered here. It is expensive for an employer to have an employee stay overnight in another place. If a trip can be completed in one day instead of two, extra costs for overtime, per diem and hotel will be saved. In addition, travelling out and back on the same day makes it possible for the traveller to have a more normal private life.

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Normenkader Veiligheid Light Rail 4.1 Concept

The document "**Normenkader Veiligheid Light Rail 4.1 Concept**"[6] describes the elements of a safety norm for light rail. The document in itself is very technical, describing the safety needs and potential measures to be taken in the various stages of the life cycle of rolling stock as well as a description of the roles of the different actors involved in safety issues.

In the Netherlands, the province of Groningen issued a call for proposals for the provision of certain rail services[7]. This was part of an experiment allowed by the law on passenger transport (Wet personenvervoer). The province invited interested rail transport operators to submit proposals for the exploitation of rail services on the lines Groningen – Roodeschool, Groningen – Delfzijl en Groningen – Nieuweschans – Leer (Germany) from May 28, 2000 to May 28, 2005. The lines and services were described in detail.

The goals to be pursued by public authorities are given as: 1) to provide rail services in a manner at least as good as before tendering in terms of services and levels of quality and in an economically efficient way, 2) to experiment with market mechanisms in the field of rail service, 3) to help build an integrated and efficient transport system (with rail, light rail, buses, …).

In a similar way to a "cahier des charges", the document describes in great detail the different elements the bidder will have to comply with (licences, level of service, ticketing and pricing, information, …).

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[6] "Normenkader Veiligheid Light Rail – 4.1 Concept" (Light Rail Safety Framework Norms), Ministerie van Verkeer en Waterstaat, Directoraat-Generaal Personenvervoer (Dutch Ministry of Transport – DG Passenger transport), January 16, 2001.
[7] "Aanbestedings-document regional spoorvervoer provincie Groningen 2000-2005", Provincie Groningen, December 17, 1998.

Evaluation of transport advantages

The ECMT has published a book on the “evaluation of transport advantages”.

Country	Euro per hour
Switzerland	27,3
Luxemburg	13,5
Ireland	11,3
Spain	10,0
United-Kingdom	9,9
France	9,5
Norway	7,8
Netherlands	7,8
Belgium	7,8
Denmark	7,2
Sweden	5,4
Turkey	4,8
Germany	4,6
Finland	4,6
Canada	4,5
Portugal	4,3
Greece	3,8

Travel motives: business vs. private (leisure or work related).

One of the main criterion when choosing a job is the journey time between home and the place of work.

Economic development > cost reduction, financial cost of travelling and journey time.

Business: value of journey time

Gains in journey time: business trip – willingness to pay is a function of several factors (reason for travelling, distance, mode of transport, urban or interurban context, waiting time or journey time, personal income / other economic incentives or restrictions).

Studies have been conducted to assess the value of journey time (INFRAS 1998 – ECMT Survey on internalisation policies, Interministerial instructions – data source DIW 1998). The table on the left presents some of the results obtained. The measure is about the average value of journey time for European countries and Canada (Canada and Norway: leisure only, Turkey: as seen by the driver, Finland: business and leisure). An important point is that journey time is often linked with comfort. There are also differences between the week and the weekend (since there are fewer business trips during the weekend, the value of journey time is also less). The value of journey time is also influenced by distance: the longer the distance, the higher the value (comfort of private car against effects of being tired; distance > 50km).

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Better Connections in European Passenger Transport

The project **CON*PASS*** (contract n°1999-RD.10480) about “**Better Connections in European Passenger Transport**”[8] specifically aims its research “at the analysis and improvement of cross-border local and regional Public Transport in urbanised areas” and gives “special emphasis […] to public transport connections”[9]. The general background about conditions concerning public transport is given in the introduction to ‘Deliverable 1’ There are four conditions in total, and the main elements of each will be briefly summarised below:

European integration of public transport

Public transport is valuable for three key reasons: 1) it saves space where the latter is costly, 2) it reduces environmental damage caused by emissions and noise, and 3) it provides mobility for those without access to private transport. Since a border region and more specifically a cross-border region can be seen as instrumental in creating real integration for the new Europe, public transport can be viewed as an important tool to reach that goal.

Public transport is developed where there is a combination of an accumulation and concentration of people, economic development and government regulation. Highly populated areas tend to show a higher potential for public transport, though economic development might also have adverse consequences in that people are less dependent on public transport, but at the same time, the economic situation allows the government to support the system, in terms of investment and operational cost, in order to provide a good and attractive public transport service. Furthermore, the study notes that cross-border operations are difficult for the development of public transport because of the multiple (usually two) different national regulation systems it has to comply with.

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[8] The CONPASS reports we analysed consist of Deliverable 1 Final Version “State-of-the-art Overview, Methodology for Case Study Analysis and Manual for the Case Study Analysis” (January 31, 2001) and Deliverable 2 Draft Version “Basic Case Study Reports and Cross Findings of Basic Case Studies” (May 16, 2001).

[9] Deliverable 1 Final Version “State-of-the-art Overview, Methodology for Case Study Analysis and Manual for the Case Study Analysis” (January 31, 2001), p. 1.

Markets for public transport

The market for public transport can be roughly divided into:

- a “captive market” for people without an alternative to private transport, and
- a “competitive or free market” for people with an alternative

Both markets have their importance. The first one, through its contribution to the integration of quite substantial numbers of people into economic and social activities, is socio-economically important. The second one is commercially important for the metropolitan centres, their growth and mutual relations.

Captive passengers are people who need to make certain rides, for example for education or health reasons, and have no other choice than public transport. The competitive market needs to attract clients by the relative quality offered. Attractive features are speed (as measured by the journey time), accessibility (no changes or a few easy ones, few stops, good access to centres of activity) and comfort (good environmental quality in every sense, including security). Fast trains are amongst the systems providing more than one of these qualities.

National regulations and the markets for transport and travelling

There are two ways to regulate the market for the different types of travellers, travel and transport:

- Process: there are four alternatives: 1) standardising transport itself, 2) protecting it by granting exclusive rights or restricting competition, 3) tendering by granting exclusive rights to the cheapest bidder or to the one offering the best service, 4) subsidising by supporting all or some services.
- Competence: through its degree of hierarchical and functional centralisation.

In addition, the reality of why people travel has different layers for each of which are constraints. The table below gives a brief overview of the relative difficulties or constraints by travel motive.

Travel motive	Difficulties/constraints to border-crossing
For work	Diplomas of national educational institutes
	Insurance and taxation
For education	Different national curricula
For health	Different national bases of health service provision
	Non-compatibility of services
For public administration	By essence

Source: Better Connections in European Passenger Transport

The travel motives for which there is little to dissuade people from crossing the border are: unskilled labour, university education, non-insured medical care, shopping for primary needs, social visits, cultural events and sight-seeing.

As a result, the markets for collective public transport in neighbouring countries may be different, in terms of structure as well as support, and the market for cross-border public transport generally suffers from a lack of important travel motives, which also impacts on private transport.

The Absence or presence of cross-border public transport

The study also presents a list of reasons explaining why public transport may be absent or present in a cross-border region. These are set out in the following table.

Reasons why public transport across national borders is inherently weak	Reasons why public transport across national borders is present in some volume and quality
Relatively weak cross-border contacts	Stronger cross-border relations in terms of place and time
Commercial unattractiveness due to lack of typical public transport motives such as education and work	Large conurbations (100.000 inhabitants and more), densely built centres extending across the border
Lack of provision for captive riders	Attractive labour market in the area across the border
Difficulties in obtaining information about schedules, …	Cheaper products and services offered in the area across the border
Development of complex government regulations for application in national territory	Attractive housing market in the area across the border
Problems arising in organisation and funding of cross-border transport due to regional or municipal support	Common language or original dialect
	Presence of original ethnic/linguistic minorities on one or either side of the border
	Relatively recent national border
	Private transport made difficult by geography or infrastructure
	Modest car ownership
	Policy restricting car use

Source: Better Connections in European Passenger Transport

The study aims at giving "a state-of-the-art overview of the current extent of cross-border public transport throughout the European Union". It also aims at producing, applying and disseminating the knowledge and tools needed to improve cross-border connections. Therefore, the study provides a data collection and analysis methodology as well as a toolbox of best practices. The empirical findings should provide guidance to those involved in cross-border public transport.

The survey is based on several criteria, parameters and indicators, regrouped in different topics[10] covering aspects related to the:

1. understanding of the case study area (features of the region, cross-border public and private transport supply, cross-border demand figures);
2. identification of relevant actors (type);
3. identification of barriers and potential solutions (including the point of view of both the operators and passengers).

The objectives of the study were to find the main barriers for cross-border local and regional public transport, to explore the solutions for overcoming these barriers and to evaluate the results obtained in a joint process including all partners, to find solutions which have general applicability for the future. The main problems concerning cross-border public transport, which discourage potential users are:

4. Lack of supply,
5. High fares,
6. Timetables which are badly co-ordinated or difficult to obtain,
7. Access to the public transport system itself.

From the operators' point of view, legal and financial barriers are seen as the most serious. Institutional aspects, such as different responsibilities within the administrations, are also seen as constraints.

The following table summarises the barriers from the perspective of both the passengers and the operators.

Barriers for passenger	Barriers for operators
Language problem	Different responsibilities within the administrations
Too few lines	Different financial instruments of public transport financing (e.g.: granting of subsidies, …)
Low frequency	Different legal framework
Missing co-ordination of the different timetables	Licence/concession reasons
Not available/badly disseminated information	Lack of tariff integration
Too difficult to get information	Difficulty obtaining the usual subsidies

[10] CONPASS, op. cit., p.44-53.

Level of fares (higher across, higher on board)	Differences in the transport supply level between both sides of the border
Time losses caused by cross-border procedure	

Source: Better Connections in European Passenger Transport

The study includes some eastern border sites. They are slightly different from the other sites, as far as the definition of a cross- border barrier is concerned. There are more prominent language problems, passengers are confronted with cross-border procedures – a serious and time-consuming obstacle – there are bigger legal differences, different labour conditions in the public transport operations and relatively high economic disparities between the two sides of the border.

With the main barriers identified, both the passengers and the operators were asked to express their views on potential solutions. These are shown in the next table (the frequency is the percentage of times the solution was cited by respondents in the survey).

Specific solutions			
Passenger perspective	Frequency	Operator perspective	Frequency
Making it mutual available	1 (55,1%)	Regular contact between both sides	1 (57,9%)
Improvement of the supply	2 (52,3%)	Financial aid	2 (43,9%)
Harmonisation of the different tariff systems	3 (51,4%)	EU promotion	3 (41,1%)
Better dissemination of information	4 (47,7%)	Harmonisation of legal framework	4 (40,2%)
Multilingual information	5 (38,3%)	Regionalisation of responsibilities and funds	4 (40,2%)
		Creating a cross-border operators union	5 (29,0%)

Source: Better Connections in European Passenger Transport

The panel of experts involved in the study emphasised the problems related to the availability of information, and pointed out that "supply is in many cases better than the information about it".

Four conclusions were drawn from the analysis:

- Information is a key prerequisite in creating good cross-border public transport;
- Reasons for subsidising public transport do not end at the borders (environmental and socio-economic reasons);
- Co-operation is essential but meets with many obstacles (legal, administrative, economic, "cultural");
- Legal barriers need to be broken down and a common European model developed; this is seen as a key factor in promoting cross-border public transport.

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The development of cross- border networks – between technical interoperability and cultural adaptation[11].

It is the case that international transport is flourishing, but apart from high speed train connections, only in air transport. These developments are in sharp contrast to the ideal of European integration, for which cross-border regions are of primary importance, offering an experience of different cultures, social systems and administrative organisations.

In this context, UITP organised a conference on cross-border public transport in order to address the issues involved in cross-border public transport projects and on regional developments in general. The conference was organised around the Øresund link, a massive bridge-tunnel combination crossing the straits between Denmark and Sweden, which has resulted in a unique degree of integration between the railway services on both sides of the border.

A number of questions were raised during the conference: 1) what and which are the new European regions?, 2) what is the market for public transport in these regions?, 3) what are the problems which confront cross-border public transport ?, 4) what can Europe do to decrease these problems ?, 5) what can EU regions do to support public transport?, 6) what is done at the regional level and where?, 7) which conditions are more and which are less conducive to developing public transport?, 8) what can be done to address the imbalance ?

[11] "The development of cross border networks – between technical interoperability and cultural adaptation", by Dr. Enne de Boer, reflections following the UITP conference: "Public transport in new European regions", Copenhagen & Malmö, 4-6 December 2000.

New European regions

Urbanised areas now stretch out across one or more national borders They may have grown because of similar favourable conditions (mining districts, river ports, …). These common features imply that there are similar problems and potentials between such areas. Some additional motives for integrated development may be present. Working together might improve the region's position both nationally and internationally.

The market for public transport

The usual travel motives of work and education tend to be absent in cross-border transport. If travel motives exist, shopping and recreation are dominant. Substantial commuting may be expected especially where the cross-border regions present complementarities, for example, more intense or varied activities on one side of the border, a cheaper housing market on one side, no language problem, and travel time is not prohibitive.

Problems for cross-border public transport

Some problems exist: services often stop at the border, are badly connected or require a change of traction and staff; there are difficulties in getting travel information; tickets are difficult to buy and the ticketing system is different and not immediately clear. A general problem is that everything is different on either side of the border (between different countries one can find a completely different system with its own regulations, level of subsidy, pricing policies and operators).

The contribution of the EU

As viewed by the author and the participants at the conference, the ideal situation for the development of an integrated transport network in the "new regions" would be regionalisation on both sides and the creation of one transport authority. The EU should take this into account when shaping the liberalisation process.

The contribution of EU regions

As one of the tools of European integration, the Euro regions, which mostly consist of regional and local governments, have cross-border co-operation goals (economic development, research and development, …). They can act as a conduit for bringing people together and for acquiring subsidies to fund initiatives in the field of cross-border transport.

Activities in the regions

The Øresund link is a particularly significant development because it is integrated into the railway network on both sides. Ticketing is integrated and ticket machines are widely available. The system is clearly regional although it is an integrated part of a heavy rail link.

In addition to the Øresund link, other cross-border public transport case studies were presented during the conference, most of which are urban in nature. The main objectives encountered in the cases are linked to economic and urban development, traffic management (commuters, leisure), promotion and tourism, integration, improved connections and profitability.

The following table presents the basic qualified characteristics of a number of cross-border case studies presented during the conference.

Case	Scope	Travel purpose	Transport mode	Aim
Copenhagen – Malmö	Interurban	Tourism	Regional train	Economic development
Vienna – Bratislava	Interurban	Work + other	Regional train	To alleviate car traffic
Bayonne – San Sebastian	Urban	?	Light rail	Economic development / To alleviate car traffic
Geneva	Suburban	Work + other	Suburban	To alleviate car traffic
Basel – Mulhouse	Urban/Suburban	Work + other	TGV/Light rail	Economic development / To alleviate car traffic
Saarbrücken – Sarreguemines	Urban	Work + other	Light rail	To alleviate car traffic
Bodensee	Regional/Urban	Tourism	Boat	Business activity development
Aachen – Parkstad	Urban	Work + other	Express bus	To alleviate car traffic
Winterswijk – Münster	Regional	Tourism	Express bus	Strategic
Niebüll – Tönder	Regional	Tourism	Regional train	Business activity development
Plauen – Cheb – Marktredwitz	Regional	Tourism	Regional train	Strategic
Groningen – Leer	Regional	Tourism	Regional train	Strategic
Enschede – Gronau	Urban/Suburban	Tourism	Regional train	Business activity development / To alleviate car traffic

Source: de Boer

Interoperability

Technical interoperability is an essential issue, the objective of which is to allow operations on different networks through a standard design for locomotives and railcars. This will open up the national markets to neighbouring countries' operators. The integration of systems is progressing slowly.

Conditions for integration

Technical differences and standards between systems, national systems that have been made less accessible for outsiders to prevent intrusion of foreign companies, existing monopolies and cultural differences and divisions must all be dealt with in order to achieve integration. Some of the actions that can be taken include a definition of mutual interest and comparisons of transport policies and regulations.

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Table: Cross- border sections with the highest passenger transport flows in EU countries

Country	Border crossing section with the highest number of passengers	Passengers per year (in 1000)
Austria	Salzburg - Rosenheim	4.508
Germany	Salzburg - Rosenheim	4.508 1)
Italy	Chiasso - Milano	4.052
France	Mulhouse - Basel	3.997
United Kingdom	Folkestone - Calais	2.738
Spain	Hendaye - Irun	2.767
Netherlands	Roosendaal - Essen	2.584
Belgium	Essen - Roosendaal	2.584
Luxemburg	Kleinbettingen - Arlon	1.506
Denmark	Rodby - Puttgarden	720
Sweden	Helsingor - Helsingborg	400
Ireland	Newry - Dundalk	288
Portugal	Guillarei – Valenca do Minho	170
Finland	Vainikkala - Vyborg	139
Greece	Kulata - strimonas	65

1) including corridor trains Salzburg-Innsbruck not shopping in Germany

source: INTRAPLAN/Tetraplan study: Transport flows on the European railway network, Munich 1998

Comment: *The table shows clearly that the cross-border sections with comparably high passenger numbers are mainly situated in central Europe.*

Table: Number of rail cross-border connections

Relation	Number of rail connections
E – P	4
F - I	4
E -F	3
F -B	5
B - NL	2
NL - D	4
D - DK	2
S - D	1
S – DK	1
PL – D	5
SK - A	2
GB - F	1
A - HU	2
D – A	4
I – A	2
I - CH	2
CH – F	4
F - D	2
L - F	1
L - B	1
L - D	1
I - SLO	1
GR - BUL	1
GR - TY	1
GR - Macedonia	1
N - S	3
SLO - A	2
TOTAL	**62**

Source:Thomas Cook: Rail map of Europe, 13th edition

4 Case studies

This chapter of the Annexe seeks to summarise the information, collected during interviews and desk research, carried out by OGM and presented here because they provide additional findings of interest.

THE HSL SOUTH

HSL South is the name of a project for building, maintaining and organising services on the Dutch part of the new high-speed line Amsterdam- Belgium border. The decision to build this line was based on international studies around the Paris- Brussels- Cologne- Amsterdam- London (PBKAL) network. In the Dutch territory, two new lines were defined:

- The Northern part between Rotterdam and Schiphol Airport
- The Southern part from a point south of Rotterdam to the Belgian border.

From Amsterdam to Schiphol Airport and within Rotterdam, the services would use the existing (improved) infrastructure. There were several possible routes. Regarding the Southern part, in cooperation with Belgium a variant has been chosen that is proportionally longer on the Belgian side. As compensation the Netherlands are paying a part of the Belgian infrastructure costs. The building of the line has been contracted out in two different ways:

- one on six parts of the building of the substructure
- one on building and maintenance of the superstructure.
- Payment takes place 25 years after completion, and premiums and fines are given according to the level of availability. By adopting this procedure it is intended to minimise the life-cycle costs.

At first Dutch Railways was asked to offer an exclusive bid for ten years operation. This bid was rejected however and a tendering procedure was instigated. Out of four consortia showing interest three were asked to make a bid. In principle a consortium including Dutch Railways has won using this procedure; until the contract has been signed another consortium is held in reserve. The major Dutch airline KLM and a British bus operator are included in the winning consortium. The winner has the right to operate domestic services and to take part in an international consortium for the operation of international services, presently operated byThalys. Part of this international consortium already includes the national Belgium and French Railways, having obtained these rights from their national governments.

Source: OGM/Groot

The case of Saarbahn (Sarrebrück – D and Sarreguemines – F)

A tram-train connection operates between both cities. The link in France represents 1.500 metres. This service "captures" 60 % of the market of work purpose trips in peak hours. The operator collects all revenues.

The possibility of operating a single type of equipment in two countries is seen as the result of the development of good relationships, in order to overcome the administrative and technical difficulties (signalling, safety). The responsibility for transport policy lies with the Region. But as it is an international link, it was necessary to involve the national ministry in Paris, and this has seriously increased the complexity of the procedure.

Moreover, this service has experienced a severe reduction in performance. The necessary investment in the infrastructure was undertaken late, with the result that the services experienced serious delays. Although the reinvestment required for upgrading the infrastructure was of a lesser amount (150 000 Euro), it was said during the interviews that the company responsible for the infrastructure needed several weeks to do the necessary maintenance work.

For services like that described above,, the industry standards are perceived as too constraining and should be reassessed (cost reduction).

Source: Interviews

The case of Saarlorlux area.

The initiative for developing a trans-frontier ticket came from several sources, including the SaarLorLux region, DB AG, Ministry for Environment and Transport. Right from the start, there was political interest in increasing the use of public transport in the region. The development of such a fare in the Saarlorlux area has been seen as an experiment. Several meetings (round tables) took place where the three railway undertakings concerned and representatives from the Region were involved. The outcome was the SaarLorLux ticket, easily recognizable and valid in every participating country.

Objectives of the ticket

There were two main objectives in developing such a ticket:
To offer an attractive easy to handle tariff in the region, in order to improve the offer of public transport in SaarLorLux
To generate an interest in cultural, historical and touristic exchanges in the region at the weekend.

Inauguration

The ticket itself was inaugurated on 30.05.99. This inauguration had been accompanied by a massive marketing campaign and by political support. For the marketing, a single promotion had been developed by a marketing company. The intention was to have one single layout, name and type of leaflet in order to recognize the ticket easily. Each company had separately borne the costs of the campaign for its domestic market (CFL DB SNCF). For the inauguration an official party took place at METZ (F) with several political representatives from the ministries present in order to underline the political willingness to offer such cross- border tickets.

The offer

The ticket is valid on the following networks: Germany and France (on some routes), Luxembourg (complete network). The Saar-Lor-Lux-Ticket costs per person DM 30,- (15 Euro, 100 FF or 640 LUF), the second to the fifth person costs DM 15,- (7,50 Euro, 50 FF or 320 LUF). It is valid on Saturday from 00:00 to Sunday 3:00 or Sunday from 00:00 to Monday 3:00. It offers an unlimited number of second class journeys. A special leaflet is distributed with it, indicating the usable network.

Revenue

As the ticket was considered successful from the point of view of each railway undertaking involved, they decided to continue. The revenue share was also an experiment: everybody receives the revenue generated in his country. It was not possible to ascertain the total ticket sales but the number is increasing. With the inauguration of the EURO the price is increasing to 17 Euro.

Effect: SNCF discovered that the ticket was used mainly in France for domestic journeys so they decided to develop for 2002 a ticket with a lower price than that of the SaarLorLux ticket which will be valid only in France.

Obstacles

All the people contacted confirmed that it was easy to operate the ticket. Only in the case of DB AG were problems faced: As DB is split into 2 different and independent companies, one responsible for the regional traffic (DBRegio) and one for long distance traffic (DBReise und Touristik), this ticket is not valid on long distance trains like IR and IC/EC/ICE in Germany. As DBRegio receives the total revenue of the German part, DB Reise und Touristik did not allow their trains to be used, with only two exceptions: on the lines Trier-Luxembourg and Saarbruecken-Metz, where all trains use the ticket.

Source: Interviews/ Internet

Comment of the Consultant

The inauguration and the procedure for developing such a ticket seemed to be extremely straightforward. Everybody confirmed how important political willingness was in initiating action. The aim was to bring the countries closer together by offering a simple and cheap ticket that guarantees easy handling of cross- border services from the customer's point of view. The success of the ticket can be seen as a result of that simple and cheap offer. Particularly impressive is the simple way, which was found to share the costs. The offer, valid at weekends, is able to attract passengers doing leisure trips by train.

The Groningen-Leer case

The railway line Groningen Leer is an international link between the Dutch province of Groningen and the German "Land Niedersachsen". The line is single track, not electrified, and it carries only passenger traffic. Up to the eighties there were through trains between Groningen and Bremen, but in the nineties the line was only served by three regional train pairs a day running between the city of Groningen and Leer. The number of passengers had dropped below the level of 100 a day and closure was being considered.

Within the framework of Euregio, four Dutch provinces and two German "Länder", working together as the Neue Hanse InterRegio, commissioned a study by NEA and BVU on the future of the line, seen in the light of local, regional and long distance travel. This study, partly financed by the EU, showed that in the future, due to the integration process in Europe, regional and interregional travel would develop in a way that justified such a railway line. Acting on this conclusion, the authorities decided not to close the line, but to improve its infrastructure up to the standards of interregional trains, to make the line suitable for international freight traffic and to organise a passenger service during a time period where running without subsidies had not been feasible.

The improvement of the infrastructure has been financed with the help of European funds. In 2000 the improvement works started and buses have replaced the passenger service. On the German side the improvements have not yet taken place. It has not yet been settled who will become the operator after the reopening. The authorities foresee reopening sometime in 2002.

The invitation to bid for that service was one of three invitations issued by "Landesnahverkehrsgesellschaft Niedersachsen". The intention of both the NL and D authorities was to intensify the railway services between the two countries. They therefore launched an invitation to bid containing several options (for example a bid was required for 3 pair of trains per day and also for 6 pairs). DB AG did not take part and neither did Connex. The German authorities had the impression that DB was too busy in its domestic market so they did not have a genuine interest in competing for this "small" bid. Also, further constraints made this process very restrictive:

The condition of NS was: the new operator had to take over responsibility for all rolling stock running on the line, and for the staff working there.

Rolling stock had to be maintained in the workshops of NS – but under conditions involving prices that were both unclear and high.

Every bidder was obliged to indicate the exact costs expected for each country – but in the Netherlands the bidder doesn't have to pay trace prices whereas in Germany he is obliged to do so.

In fact subsidies will flow from both sides: both Nord Net Provinz Groningen and Niedersachsen will finance the project. The bidder has to make his costs transparent. These include the following: trace price per train 0.47 Euro /km,25 Euro per Stop per train at the station, further costs for materials, depreciation, publicity and service. The total of these costs will be compared with ticket sales and the difference between the two will be subsidised by each public authority for the part of the line in its own country[12].

Source: Interviews

[12] Information from Landesnahverkehrsgesellschaft Niedersachsen

List of people interviewed

No.	Organisation	Function	Name	Date of Interview	Interviewer
		Railway companies			
1	Georg Verkehrsorganisation GmbH	Director	Rolf Georg	2/8/01	JB
2	Connex	Directeur	Michel Quidort	14/08/01	JBYM
3	Connex	Director for passengers in Germany	Hans Leister	30/7/01	YM JB
4	TPG	Directeur général	Christophe Stukki	8/08/2001	YM
5	SNCF	Directeur Voyageur	Guillaume Pépy	2/08/01	YM
6	SNCF	Directeur stratégie	Philippe Citroën	27/06/01	YM
7	SNCB	Administrateur directeur	Leo Pardon	31/7/01	YM
8	NS	Corporate Communicatie Public affaires	Wim Oosterwijk	31/7/01	YM JB
9	DBAutoZug AG	Director	Dr. Eckardt	24/08/01	JB
10	City-Night-Line	Director	M. Czilwa	24/08/01	JB
11	OBB	Director Infrstructure	M. Klugar	29/08/01	JB
12	Trenitalia	Direttore Strategia	Dr Paolo CELENTANI	1/08/01	AN
13	Trenitalia	Strategie Merci	Dr Sergio DE LAZZARI	1/08/01	AN
14	SBB	Affaires internationales	Daniel Trolliet	10/10/01	YM
15	SBB	Passenger transport development	Beat Huerzeler		YM
16	Compagnie des Wagons Lits (Accor)	Directeur Général Délégué	Philippe HAMON	06/09/01	CB
17	Stagecoach Holding	Executive Director Rail	M. ECCLES	07/09/01	JB
18	Eurostar	Director	M. Azéma	07/09/01	JB
19	National Express Group	Commercial Director, Rail Development Director	M. Brown and Richard Goldson,	07/09/01	JB
20	Saarbahn	Director	Dr. Keudel	27/08/01	JB
		Manufacturer			
21	Alsthom	Directeur	Thinière	21/08/01	YM
22	Siemens	Business Development	Rainer Kehl	3/8/01	JB
23	Bombardier	President European affairs	Klaus Milz	31/7/01	YM JB
		International organisations			
24	CEMT	Economist	Steve Perkins	28/06/01	YM
25	UNIFE	Secrétaire general	Drewin Nieuwenhuis	29/06/01	YM
26	IATA	Chief economist	Peter Moris		YM
27	CER	Secretary General	Anna T. Ottavianelli	31/7/01	YM JB
28	IATA (ATAG – aviation transport action group)		Martina Priebe		YM JB
29	UIC	Directeur voyageurs	Jacques Cornet	28/06/01	YM
		Consumer organisations			
30	Forum européen des personnes handicapées			20/07/01	YM
31	BEUC	Advisor	Mr Forest	30/07/01	YM
32	ProBahn German consumer Organisation	Expert	M. Barth	29/08/01	JB
		Field of tourism			
33	Wasteels Belgique	Directeur	Taïbi	15/06/01	YM
34	Nouvelles Frontières	Directeur de la communication	Christian ROCHETTE	By phone August	CB
35	Guide du Routard		Marie Burin Des Rosiers	By phone August	CB

36	Lonely Planet	Responsable public affaires	Arnaud Le Bonnois,	By phone August	CB
37	Hachette Tourisme	Directrice Collection des Guides Bleus	Mme De Moucheron	By phone August	CB
38	IFTO	President	Martin Brackenbury	By phone August	CB
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41	FraPort Airport company	Responsible Marketing	Mrs. R-Lehmann	31/08/01	JB
42	ERAA European regional Airport association	Director	Andrew Clarke	31/08/01	JB BC
43	ASSAEROPORTI	affaires légales.	Dott.ssa Daniela Colferai	01/08/01	AN
44	ASSAEROPORTI	consultant pour les affaires internationales	Avv. Paolo Fiorilli	01/08/01	AN
others					
45	Transport Newspaper	Transport Expert	M. Jegminat	24/08/01 by phone	JB
46	Landesnahverkehrsgesellschaft Niedersachsen(D)		M. Weisbrich	By phone 28/08/01	JB

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