



Delivering for Britain and Beyond

The Economic Impact of HS1

steer

March 2020

This report has been prepared by Steer on behalf of HS1 Ltd. Working across cities, infrastructure and transport, Steer is a global business consultancy providing its clients with a commercial and competitive edge.

We have delivered over 6,000 projects in 64 countries, accumulating over 40 years' experience, providing pioneering planning and advisory services to public and private sector clients.

We plan, design, advise and provide expert analysis to deliver commercial insights and practical solutions. Our cross-boundary and cross-service approach creates teams with the best skills and experience for each project.

Foreword

My team and I are proud to be the custodians of the UK's only highspeed railway.

HS1 has changed the lives of hundreds of thousands of people. This report details who these people are and how they have benefited. In terms of the 'how', HS1 delivers in three clear areas - for our economy, for our society and for our environment.

For the economy, the route produces a staggering £427m of economic benefits every year. Cumulatively since opening this amounts to £4.5bn. In part this has been achieved from productivity gains thanks to faster journeys, but also through new jobs created by the businesses that have set themselves up on the route because of the diverse and skilled international workforce now at their fingertips.

For the wider society and the communities we serve, HS1 has brought affordable housing within the reach of tens of thousands of young couples and families. Indeed, it has made the aspiration of owning a home with a garden a reality for many.

For our environment, the shorter journey times permitted by HS1 has made near-Europe short-haul flights even less attractive. This has driven a switch from one of the most environmentally harmful forms of transport to one of the most environmentally friendly. We have reduced CO2 emissions by the equivalent of 60,000 short-haul flights every year.

We have only achieved these benefits with our partners: HM Government, Southeastern and Eurostar. But as much as looking back, this study is an invitation to look forward... We have capacity on our tracks and with our partners, we can deliver more of the benefits outlined here.

Dyan Crowther

Chief Executive, High Speed 1



Executive Summary

High Speed 1 (HS1), and the services which make use of the High-Speed Line, supports more than £427m of economic benefits to the UK and continental Europe every year. This is equivalent to adding 4,600 employees to the national workforce. In the sixteen years since the first section of HS1 opened, cumulative benefits of £4.5bn have been delivered.

Primarily these benefits come from shorter journey times, as well as a significantly improved journey experience for the 11 million international passengers and 15 million domestic passengers who use HS1 each year. Almost 4 million of these passengers have switched from using cars and planes, delivering significant reductions in greenhouse gas emissions that support The Government's commitment to reach net zero carbon emissions by 2050.

London's employees gain from access to more affordable housing in Kent, with average property prices in the catchment area of HS1 almost half that of properties in the wider commuter catchment area to the south east of London. HS1 allows a further 164,000 households in Kent to access job opportunities in London. London's labour market has access to an additional 63,000 highly-skilled individuals with higher education qualifications.

The Kent economy, London and key destinations in Europe also benefit from international services as HS1 contributes to over £400m of annual trade between the South East and Europe, unlocking foreign direct investment and supporting £2bn of tourist expenditure each year.

There is currently capacity available to provide more domestic and international services on HS1 which could result in more than £101m of additional economic benefits and 0.5 million tonnes less carbon emissions each year. This report provides compelling evidence of the benefits delivered by HS1 to date, and sets out what could be achieved through making further use of the capacity that is available.

HS1 is a genuine success story from which the UK and the rest of Europe have benefitted significantly, and will continue to benefit into the future.

Annual benefits delivered by HS1

Total: £427m



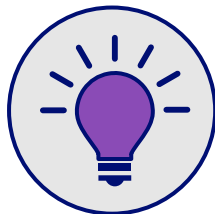
Journey time savings
from domestic services

£83
million



Journey time savings
from international services

£86
million



Productivity improvements
for international passengers

£129
million



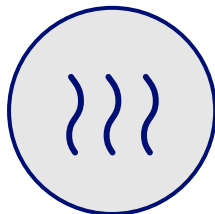
Crowding, reliability and
quality improvements

£23
million



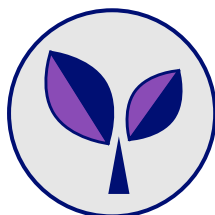
Productivity improvements
from agglomeration

£33
million



International greenhouse gas
emission reductions

£66
million



UK environmental benefits

£7
million

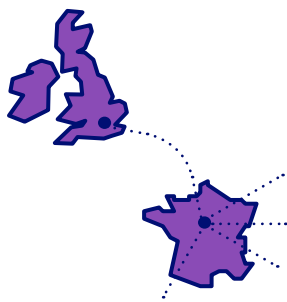


Doubling of journeys

In the six years since 2010-11, demand on domestic high-speed services has almost doubled, increasing by 93% (or 12% per year) to 15 million.

26 million

journeys were made on the HS1 network in 2018.



HS1 carries direct services from the UK to a range of core international destinations including Paris, Brussels, Amsterdam, Calais and Lille.

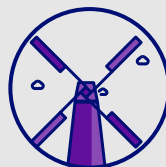
Introduction to High Speed 1

The Channel Tunnel connecting England and France opened in 1994. International services connecting London with Paris, Brussels and a number of intermediate stops commenced the same year. The first section of High Speed Line (High Speed 1) from the tunnel to north Kent opened in 2003, with the entire route to St Pancras International completed in 2007.

HS1 Ltd holds the concession from government to operate, manage and maintain High Speed 1, the UK's only section of High-Speed Rail, as well as the four stations along the route, until December 2040. It works closely with Network Rail (High Speed), who are contracted to maintain and operate the railway infrastructure, and train operating companies which offer both domestic and international services on the railway.

Domestic rail services are provided by the train operating company Southeastern, which operates the UK's 4th largest franchise with 183 million passenger journeys in 2018¹. 15 million of these trips are made on high-speed services using HS1 to locations both on the HS1 corridor and beyond².

International passenger services are currently provided by Eurostar. Direct services run from the UK to a range of international destinations including Paris, Brussels, Amsterdam, Calais and Lille as well as seasonal services to other destinations including Disneyland Paris, Lyon, Avignon, Marseille and the French Alps.



Growth in domestic travel on HS1

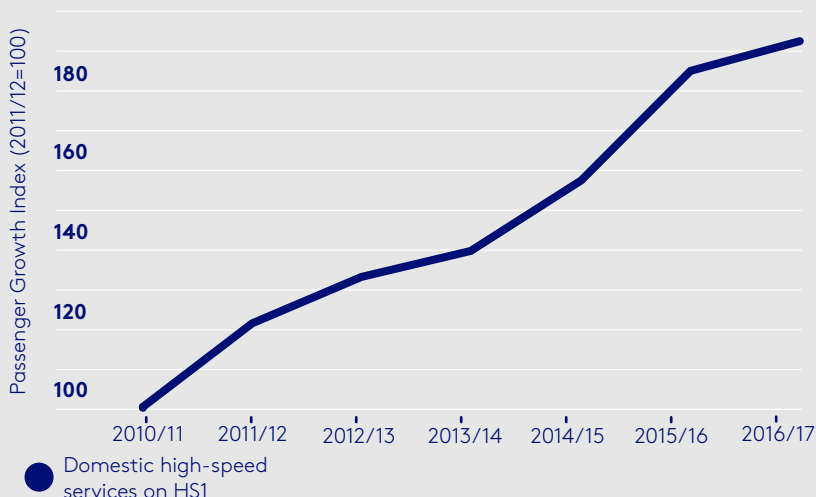
Passenger journeys have grown significantly since regular domestic services on HS1 began in December 2009. In the six years since 2010, demand on domestic high-speed services has almost doubled, increasing by 93% (or 12% per year) to 15 million. This growth, indicative of the popularity of high-speed services, is now leading to increased pressure on the capacity of high-speed trains, particularly during peak hours³.

The passenger growth highlights the importance that passengers place upon being able to reach their destination as quickly as possible. Alongside rail fares, end-to-end journey times have been identified as the most important factor influencing rail demand⁴.

The value that passengers place on travel time savings is an important concept in policy-making and investment decisions for the transport sector, since savings in travel time typically account for a large proportion of the benefits of major transport infrastructure. The purpose of this report is, therefore, to quantify these and other economic and environmental benefits delivered by HS1.

Growth in Journeys

Source: ORR Data



Demand on the top five fastest growing corridors served by HS1 has increased by more than one million passenger journeys since 2010. The percentage increases in passenger numbers on these corridors are:

Ebbfleet to St Pancras

115.3%

13.6%

Rochester to St Pancras

94.7%

11.7%

Ashford to St Pancras

26.3%

4.0%

Canterbury to St Pancras

53.4%

7.4%

Folkestone to St Pancras

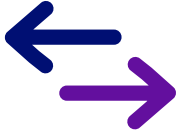
50.6%

7.1%

■ % Increase in journeys

■ % Annual growth rate

Source: Steer analysis of Rail Usage and Demand Drivers (RUDD) dataset



18,000 commuters

use high-speed services on HS1, the majority of these travelling to London from Kent.



15,000 visitors

are carried to a range of leisure and cultural opportunities across both Kent and London each day.



4,000 business trips

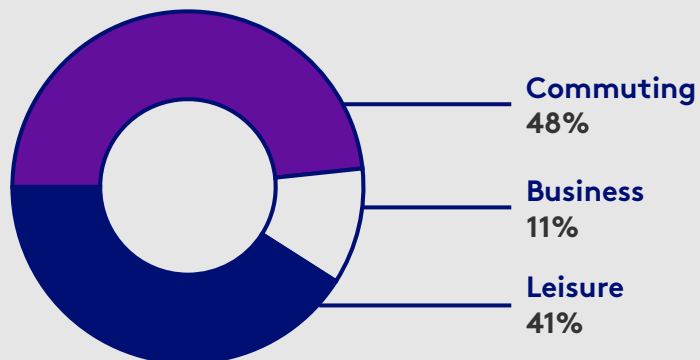
are taken on HS1 services every day, bringing productivity benefits to UK and International companies

Reasons for domestic travel on HS1

The market for rail travel is diverse. Different types of people travel for many different reasons. To understand the importance that rail passengers place upon different features of their journey (travel time, punctuality, on-train facilities etc.) and how they might respond to changes in these factors, it is important to understand the reasons why passengers travel. For example, commuters may place greater importance on reliability and over-crowding than leisure passengers, who are influenced more by affordability and the availability of luggage storage facilities.

Of the 37,000 domestic journeys made on HS1 each day, 18,000 (or 48%) are commuting trips, typically to and from jobs located in London. The market for commuting by HS1 is particularly strong given the overall decline in commuting by rail at a national level, which has seen season ticket sales fall by 12% since a peak in 2015⁵. The faster journey times provided by high-speed services have supported growth in the London labour market, and increased employment among residents of Kent.

Journey purpose on domestic high-speed services (2016)

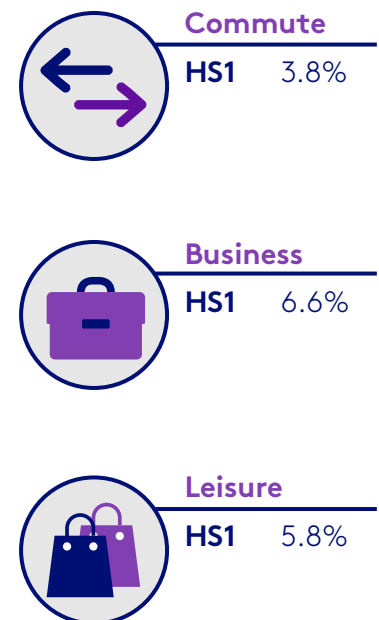


Source: Steer analysis of Rail Usage and Demand Drivers (RUDD) dataset, Department for Transport

A further 15,000 journeys per day (or 41%) are to a range of leisure and cultural opportunities across both Kent and London⁶. 50% of passengers indicating that the availability of high-speed services was a factor in their decision to visit Kent by train (including 10% who would not have visited Kent without the presence of HS1)⁷.

4,000 trips per day are made for work purposes, and is the fastest growing market segment, increasing by 5.8 percentage points every year. From an economic perspective, business trips are important since business travel time savings produce a greater range of direct economic benefits, including improved access to suppliers or customers. This increases productivity by lowering the cost or raising the quality of inputs and widening the market that a business can serve. Consequently, businesses are willing to pay for quicker journeys for their employees.

Annual journey growth, by purpose, on high-speed services and other Southeastern services 2013 - 2016



Source: Steer analysis of Rail Usage and Demand Drivers (RUDD) dataset, Department for Transport

Since the introduction of HS1 domestic services, commuters using HS1 benefit, on average, from the equivalent of four fewer days travelling every year.



£83 million

Journey time savings (domestic services).



£23 million

Crowding, reliability and quality improvements.



£33 million

Productivity improvements (agglomeration).



£7 million

UK environmental benefits.

Source: Steer analysis

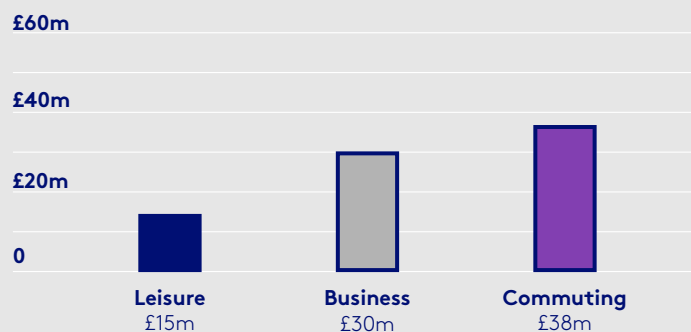
Domestic benefits of HS1

Domestic services using HS1 generate direct socio-economic benefits of £146m each year. These benefits deliver the equivalent economic outputs of an additional 2,150 full-time employees. The most significant source of benefits is from journey time improvements.

Direct benefits: £44m of travel time benefits are from those who travel on the high-speed network. 92% is derived from journeys made exclusively on HS1 services, with 8% from those traveling to/from elsewhere on the rail network.

Secondary benefits: £39m of benefits are from users of the wider network served by Southeastern, who gain journey time and frequency improvements as a result of high-speed services freeing up capacity on the rest of the network.

Annual benefit, by journey purpose, of shorter journey times



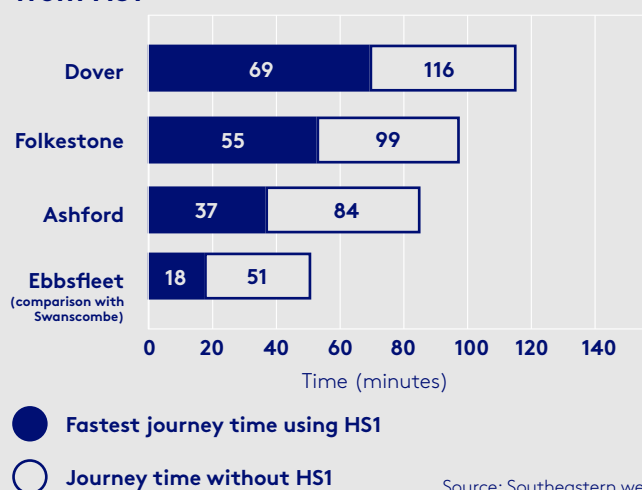
Source: Steer analysis of Rail Usage and Demand Drivers (RUDD) dataset, Department for Transport

Faster journey times bring economic benefits through enabling business users to be more productive, giving commuters additional time at home, and by providing leisure passengers with more time to enjoy their destination.

The magnitude of these benefits is derived from the considerable journey time savings that HS1 provides for journeys to and from London.

In addition to travel time savings, passengers using HS1 benefit from other improvements in service quality such as reduced over-crowding, increased punctuality and reliability, and a higher-quality travelling environment. These improvements are worth £23m each year, over and above the fare passengers are willing to pay to use HS1 services.

Domestic journey time improvements from HS1



Finally, HS1 delivers productivity improvements in the form of agglomeration benefits, worth £33m each year to the economy. These benefits arise because businesses operate more efficiently when they cluster in close proximity to each other. This effect is generated since improved transport links with shorter journey times make it easier for existing businesses to interact with each other, and to share resources.

Over time additional investment benefits may arise as businesses relocate to take advantage of the higher levels of productivity in dense urban areas. As the main employment centre and with the most productive workforce in the country, the majority of these benefits will be experienced in London.



400,000

more workers in Kent now live within a one-hour rail journey of Central London as a result of HS1⁸.

15,000

new homes have been built in regeneration schemes enabled by HS1⁹.

47,000

young families, couples and singles looking to buy or rent affordable homes have chosen to relocate to the HS1 catchment area since 2009¹⁰.

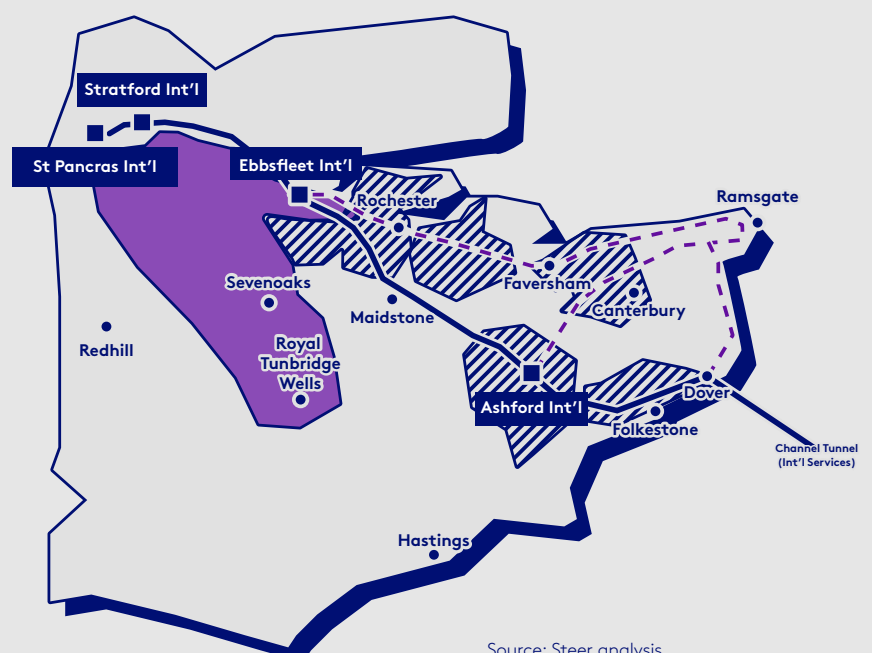
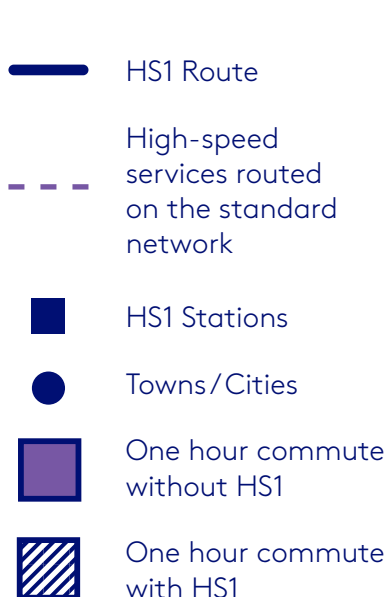
Impact on People and Places

High-speed services have greatly expanded the area of the network that is less than one hour from London by train. This provides access to more employment opportunities and a greater range of jobs to individuals and families living in the area.

Since the opening of HS1, 164,000 more households are now less than one hour by train from Central London. The average price of these homes (£280,000) is almost half of those in the wider commuter catchment area to the south east of London.

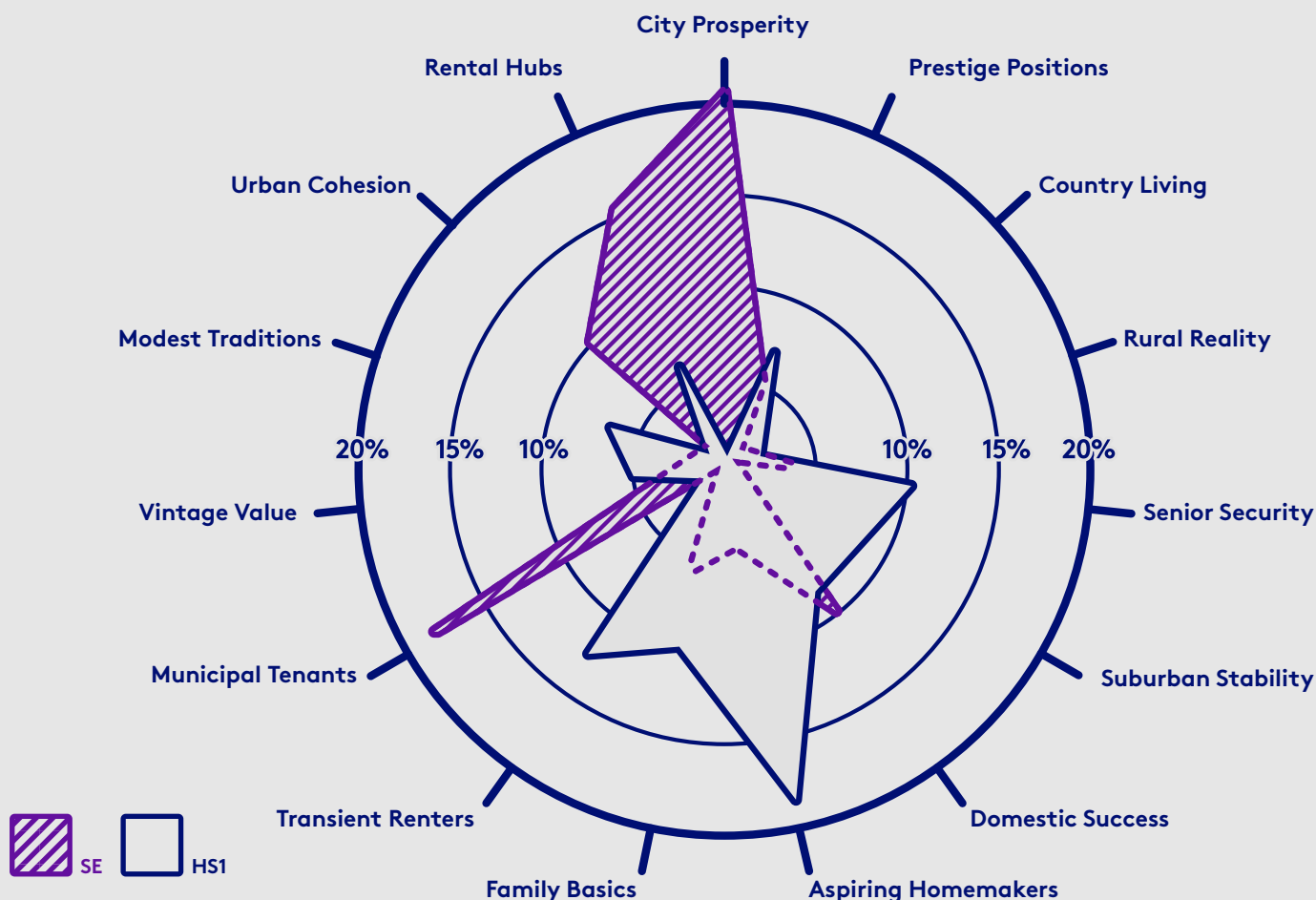
Experian's Mosaic geodemographic classification, which provides a snapshot of UK society to identify 15 broad profiles/person-types, can be used to build a picture of those benefiting from HS1. It shows that a greater proportion of lower-skilled and lower-income individuals are able to access opportunities in London via HS1.

How HS1 expands the areas in Kent that are within a 1 hour train commute of London



Source: Steer analysis

Demographics of population within a 1 hour train journey of London on High-Speed Services (2018)

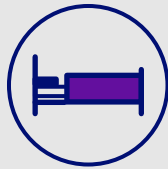


A significant number of young individuals and families (aged 26-35) have moved to Kent to gain access to lower cost housing while still enjoying access to the London jobs market. In particular, 18% of people (and the largest demographic group) living in the HS1 catchment area can be considered as 'aspiring home-makers'.

These are typically young families, couples and singles on the first rung of the property ladder, looking to buy or rent affordable homes and, in some cases, thinking about starting a family. They are driven by affordability when choosing somewhere to live, and typically looking to balance a location close to city centre amenities with cost. This aligns with research that shows how younger families, in their search for more space to bring up families, are moving to the newly developed rural suburbs¹¹.



Other significant groups in the HS1 catchment area include:



Transient Renters (13%)

Broadly younger people looking for lower-cost rented accommodation. Often at the early stages of their careers this group is expected to use rail services for their journey to work.



Senior Security (11%)

Older people of retirement age who have achieved financial security with good pensions and their own homes. This group is expected to use rail services for visiting friends and relatives and other leisure activities



Family Basics (10%)

Families on lower incomes, often living in social housing and with a low propensity to use rail services.

By contrast, without HS1 the dominant demographic groups living within one hour of London via Southeastern services are:



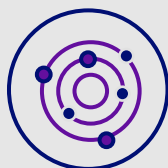
City Prosperity (21%)

Well-educated, confident and ambitious individuals who work in high status positions. Commanding substantial salaries they are able to afford expensive urban homes.



Municipal Tenants (18%)

Long-term social renters living in low-value multi-storey flats in urban locations, or small terraces on outlying estates.



Rental Hubs (14%)

Rental Hubs contains predominantly young, single people in their 20s and 30s who live in urban locations and rent their homes from private landlords while in the early stages of their careers.

It is clear that HS1 reaches into areas with a very different socio-demographic profile to the rest of the Southeastern network. In practice this means that:

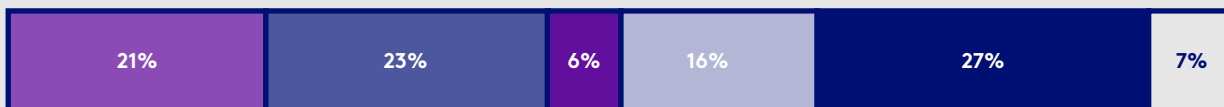
- HS1 provides access to London for people with a broader range of qualifications than standard rail services alone.
- By offering a wider range of opportunities, residents of these areas may, in time, choose to develop skills that meet the opportunities on offer.

Skills profile of population within one hour of London using HS1 or other Southeastern services

Southeastern



HS1



Highest qualification attained

GCSE ● GCSE (A* - C) ● Apprenticeship ● A-Level ● Higher Education ● Other ○

Source: Steer Analysis of UK Skills Data, Department for Education

- They may also choose not to stay in Kent having developed those skills. With the exception of the East Midlands, the South East has the lowest graduate retention rate of all English regions¹².
- Despite the above, for Kent residents with fewer academic qualifications, access to London is highly beneficial for job prospects. For example, London still has, by far, the highest density of apprenticeships in the country¹³.
- At the same time, London benefits from a deeper pool of labour (with HS1, 63,000 more people with higher education qualifications are now within commuting distance of the capital).



33 minutes

the reduction in journey time for international passengers due to HS1.

Bringing London closer to the world

Growth in international travel on HS1

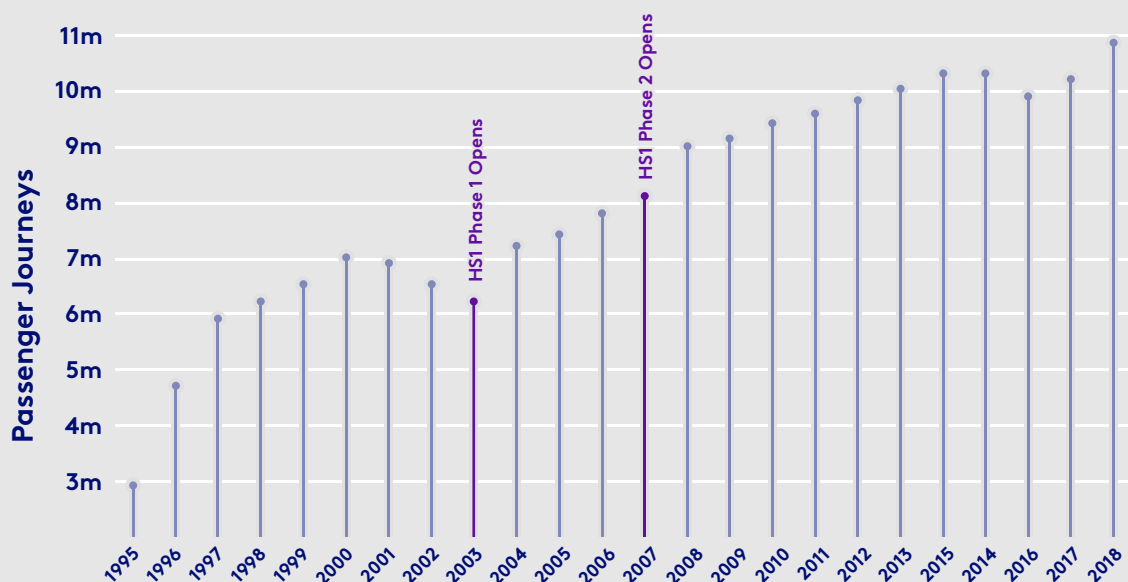
HS1 has driven growth in international rail journeys between the UK and the rest of Europe by enabling high-speed services between the Channel Tunnel and St Pancras International and delivering faster journey times as a result. Compared with travel times to the previous international terminus at London Waterloo, Phase 2 of HS1 reduced international journey times by 20 minutes. This is in addition to the 13-minute travel time saving delivered by Phase 1.



Source: Eurostar Website and First Interim Evaluation of the Impacts of High Speed 1, Atkins

Given the magnitude of these improvements, the completion of the two phases of HS1 saw notable step changes in demand. The opening of Phase 1 (from the tunnel to North Kent), in fact, saw a reversal of the fall in demand observed between 2000 and 2003.

International Demand (1995 - 2018)

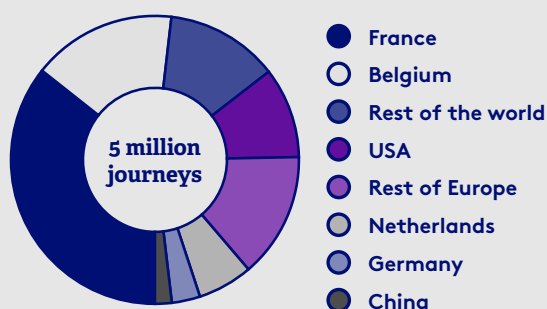


Source: Eurostar Press Office Releases

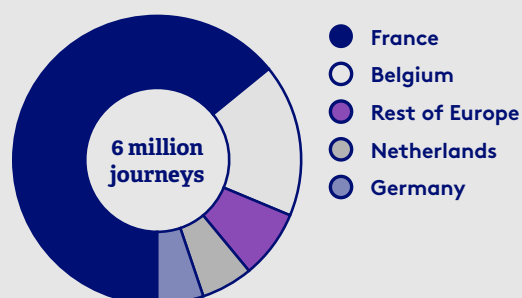
Passengers from the UK undertake 6 million international rail journeys on HS1 each year, a considerable majority of whom travel to France¹⁴. Less than one-fifth of passengers continue their journey beyond France or Belgium.

By contrast, of the 5 million international rail passengers that commence their journey outside the UK each year, only half are residents of France and Belgium. Almost a quarter of such journeys are taken by non-EU residents, mainly from the USA and China, with a further quarter from the rest of Europe. This indicates that HS1 is an important gateway for overseas visits to the UK, and that it supports both business and leisure trips made, in many cases, as part of a wider European itinerary.

Country of residence of passengers using the Channel Tunnel to travel to the UK (2018)



Destination of passengers using the Channel Tunnel to travel from the UK (2018)



Source: Steer Analysis of International Passenger Survey
Travelpac Dataset, Office for National Statistics



£86 million

per year of passenger benefits generated by reduced journey times¹⁵.

£129 million

per year of benefit created by business passengers being more productive whilst travelling on trains rather than planes¹⁶.

£66 million

of benefit per year in Greenhouse gas emission reductions¹⁷.

International benefits of HS1

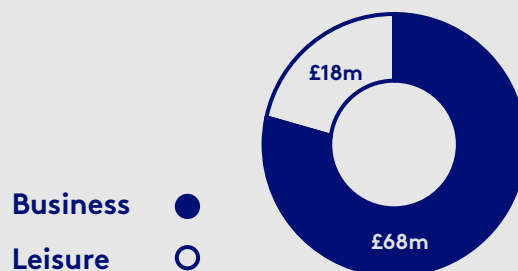
International services using HS1 generate direct socio-economic benefits of £281m each year.

As with domestic services, the most significant source of benefits derive from journey time improvements, which are worth £217m each year.

However, for international passengers these arise through two separate mechanisms:

- All passengers travelling between the UK and the rest of Europe by rail since HS1 opened have benefited from a windfall journey time improvement of 33 minutes (for each one-way trip) from travelling on HS1. These benefits are worth £86m each year.

Benefits of international journey time savings by purpose



Source: Steer Analysis of Eurostar Passenger Number Press Release and Journey Purpose Data, JC Decaux

- All business passengers choosing to travel by rail rather than by air benefit from a significant increase in productivity due to reduced time spent idle in transit to/from distant airports, at check-in, security and passport control, during take-off and landing etc. These benefits are worth £129m each year.

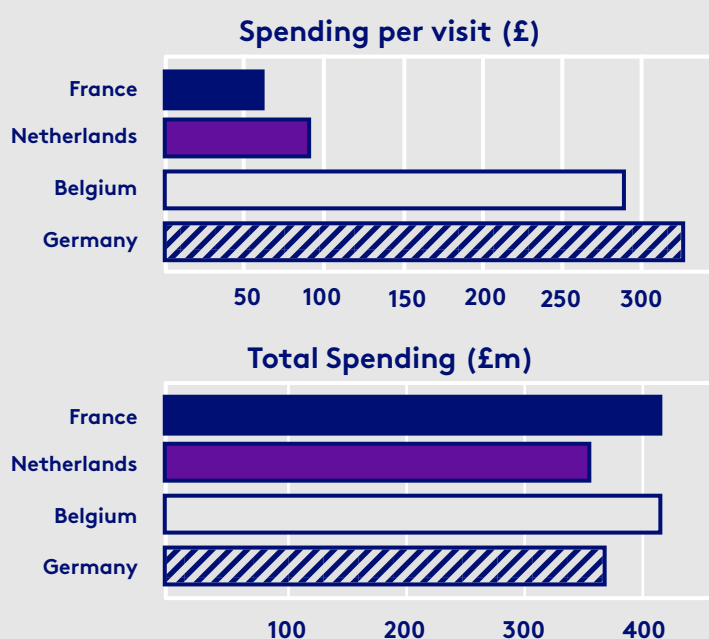
Assuming that the benefits of these journeys are experienced at the place of origin of the trip, £118m of the benefits accrue to the UK, with the remaining £99m experienced elsewhere.

When combined, these two productivity improvements deliver an additional economic output equivalent to 2,500 full-time employees.

Tourism

Other than business passengers, international high-speed rail services carry a considerable number of leisure travellers, many of whom are tourists. Excluding transport costs tourists arriving via HS1 spend £2bn in the UK economy each year¹⁷.

Spending by visitors to the UK by country of origin



Source: Steer Analysis Based on Eurostat Data

The income to UK businesses generated by this spending creates jobs both directly in the tourism industry and more widely in the supply chain that supports it. The number of jobs supported is equivalent to 3,600 full-time employees.

While this expenditure undoubtedly supports the UK tourism sector it has not been counted within the overall benefits reported since it is both difficult to identify the proportion of spending that is 'additional' to the UK economy, and then to attribute this expenditure directly to the presence of HS1.

A previous study by Visit Kent and Destination Research, however, found that HS1 plays a key role in supporting tourism in Kent. It identified 10% of employment in Kent as being in the tourism and visitor sector where HS1 was found to have had an impact of £73m in 2016 alone, and more than £300m in the decade since 2007¹⁸.

By encouraging people to take the train rather than drive, HS1 provides benefits to the UK from:



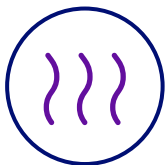
Better air quality.

£0.1 million



Reduced noise pollution.

£0.1 million



Reduced greenhouse gas emissions.

£0.4 million



Lower traffic accident rates.

£0.9 million



Less congestion.

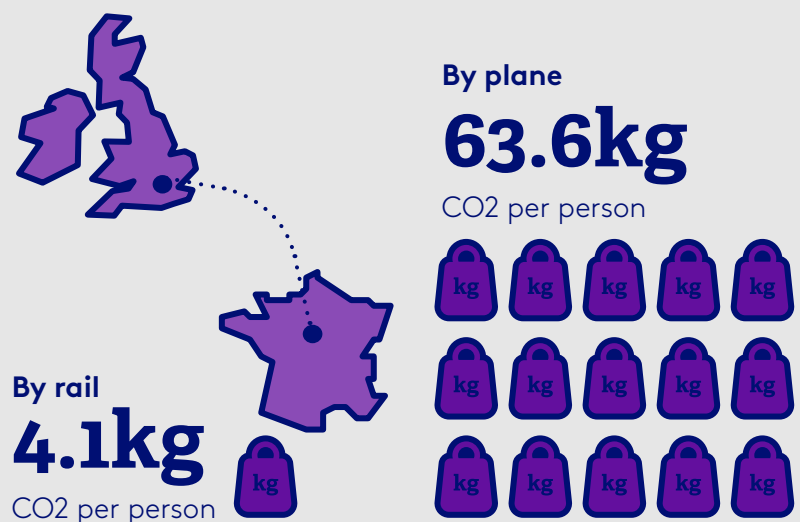
£5.5 million

Environmental benefits

Domestic: The use of road vehicles incurs both private costs borne by the driver (such as fuel costs and vehicle maintenance) and external costs borne by others. £7m of environmental and social benefits are generated each year as a result of people choosing to take the train rather than drive. HS1 reduces net emissions equivalent to removing 6,000 cars from the roads every year.

International: £66m of environmental benefits are generated each year as a result of people choosing to take the train rather than fly. This shift away from flying, to significantly more environmentally friendly rail journeys, reduces annual emissions by the equivalent of 750,000 tonnes of CO₂e, or 60,000 short-haul flights, every year.

Comparison of London to Paris journey emissions



Source: Eurostar

Investment

In order to facilitate trade, international businesses invest in other countries to:

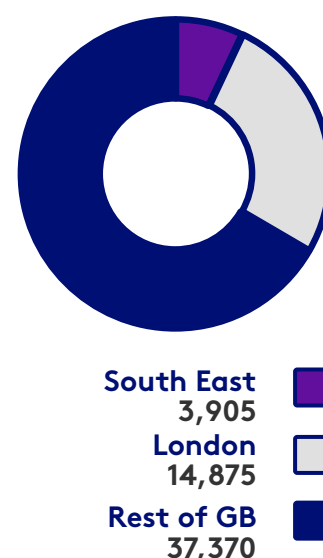
- source components;
- locate production in cost-efficient or skills-abundant locations; and
- get closer to their customers.

Controlling for size, industry, age and region, studies have shown that labour productivity is around 75% higher in foreign-owned businesses¹⁹. Moreover, foreign-owned firms invest more in research and development, spending roughly 5 times the amount that domestic firms spend and accounting for 50% of the UK total²⁰.

The UK consistently attracts more Foreign Direct Investment (FDI) than any other country in Europe. Between 2016-17 and 2018-19 more than 3,000 investment projects, creating 65,000 jobs have been delivered in the South East alone²¹. This is supported by HS1 and the high-speed service to continental Europe it provides.

When the Channel Tunnel opened in 1994, Belgium became directly connected to the UK by Rail. Following the opening of HS1, Belgium increased its investment stake in the UK six-fold. While this position has since fallen-back, Belgium still holds investments of £15bn (or £1,350 per capita) in the UK²². By contrast Germany, which is less well connected to the UK by rail, reduced its investment in the UK by 10% over the decade since 2008 (to £770 per capita)²³.

New jobs supported by FDI (2018-19)



FDI projects (2018-19)



Source: Inward Investment Results 2018-19, Department for International Trade

The role of HS1 in attracting inward investment

The availability of reliable infrastructure and transport services are important factors when businesses are choosing where to invest. The domestic and international transport links located around King's Cross - St Pancras, Stratford, Ashford and Ebbsfleet have attracted investment to these areas and driven regeneration.

According to the World Bank's Investment Climate Surveys, about 10% of respondents rate transport as a "major" or "severe" constraint to investing. Among larger firms, who are most likely to invest overseas, this figure rises to 15%²⁴.

The 2019 EY Attractiveness Survey: UK notes that "59% of investors identified some form of transport infrastructure as a [domestic] priority", higher than improvement in skills (32%)²⁵. At a more local level, 50% of businesses said international high-speed services were a decisive factor in setting up locations in London, particularly around St Pancras International²⁶.

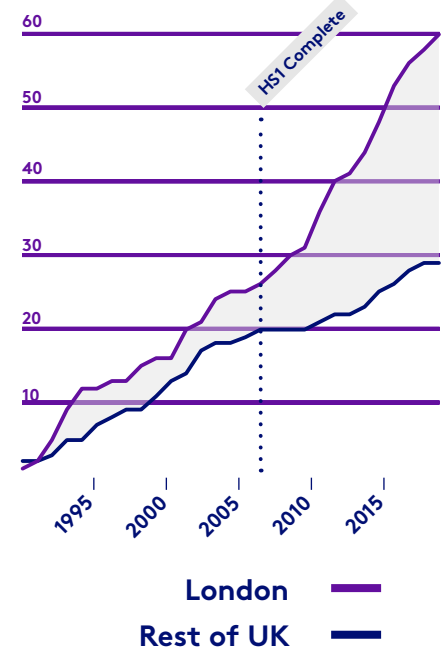
Interviews with 18 Anglo-French businesses carried out by Leeds Business School in 2019 reported that:

- 95% of businesses use HS1 for corporate travel, with an average of just over 7 trips per month;
- 72% of businesses reported a positive impact on them since HS1 opened. The principal reasons given were the speed and convenience of rail travel relative to air travel, with some noting this is because they can work on the train; and
- 78% said they would be negatively affected if HS1 did not exist.

French company registrations in the UK, and particularly within the HS1 catchment area, have increased significantly since the opening of HS1. Between 1990 and 2007, 26 French businesses were registered in London, with a further 20 elsewhere in the UK. Since the completion of HS1 in 2007, however, 34 net additional French companies have been registered in London, with just 9 registrations in the rest of the UK²⁷.

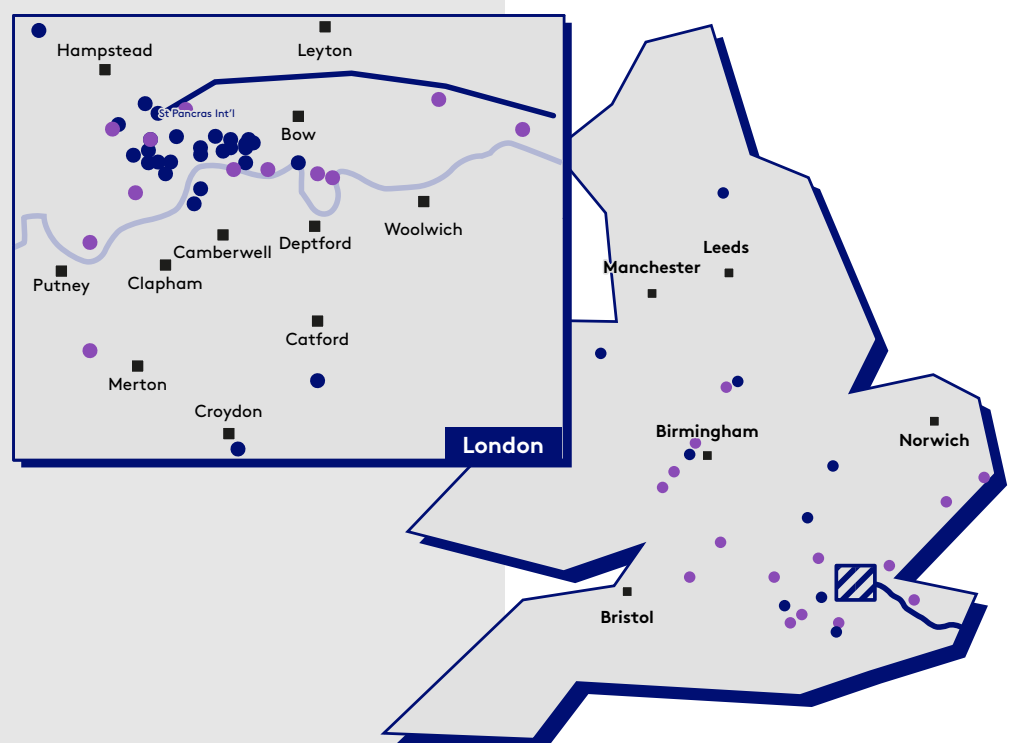
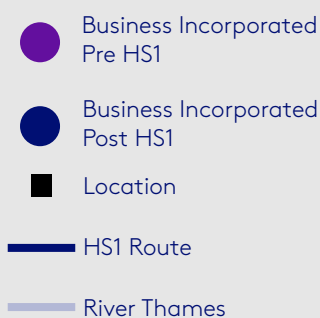
Of the 34 French companies that have set up offices in London since 2007, a considerable majority of these are in the banking, finance and insurance sectors. London has a significant share of the European market in these sectors and is the banking capital of Europe. For non-UK companies, there are both benefits and costs associated with establishing an office in London. By providing better links to the continent, HS1 has lowered the cost to non-UK businesses of accessing the London market and therefore has contributed directly to the increased presence of French firms in the UK.

French company registrations in the UK since 1990 (cumulative)



Source: Steer analysis of Companies House Data

French business locations (UK)



Source: Steer analysis of Companies House Data

In 2017, HS1 was responsible for approximately



£300m
worth of imports.



£100m
worth of exports.

And in the ten years since opening, HS1 has supported an additional



£1,350m
worth of imports.



£480m
worth of exports.

Trade

The UK runs a trade surplus in services with the rest of the world. International rail connectivity is very important to many key service sectors due to their high-dependence on face-to-face contact. Since knowledge-based sectors strongly rely on visiting clients overseas, greater frequency and choice of services increase the flexibility with which business meetings can be arranged and with which they can be rescheduled at short notice.

As such, HS1 facilitates trade in services, enabling UK and European entrepreneurs to have easier and more effective access to a variety of international customers. Moreover, having a direct rail link to continental Europe provides Kent, London and the wider South East with enhanced resilience for businesses wishing to travel to continental Europe during periods of disruption to air services.

At an economy-wide level, international trade, and openness to trade, play a significant role in explaining differences in economic growth between countries.

At present, other factors which affect the level of trade, such as strong economic growth across the EU, are historically favourable. This indicates that potentially much larger payoffs (than historically) can be achieved by lowering transport costs. For example, recent research suggests that halving shipping time increases trade by 50%²⁸.

Between 1950 and 2003 the value of global exports increased 145 times, and research by the United Nations indicates that eight percent of this growth can be directly attributed to lower transport costs²⁹.

In 2017, the South East exported goods and services to France and Belgium worth £6.3bn and received imports worth £12.4bn. This represents growth of almost 30% in exports (£1.3bn) and 45% growth in imports (£3.9bn) in the decade since HS1 opened. Applying the relationship between transport costs and trade growth identified above suggests that in 2017, approximately £100m of exports and £300m of imports can be attributed to HS1. In the ten years since its opening, therefore, an additional £480m of exports and £1,350m of imports have been supported by HS1.

The benefits of additional HS1 services

Future domestic services

The growth of businesses in London is expected to continue, delivering an annual increase in employment of 0.6% until 2040³⁰. This continued growth needs to be supported by the building of large volumes of new homes to accommodate the additional labour force required. Development in London cannot deliver enough housing alone, therefore the surrounding regions including Kent will play an important part in meeting this demand.

Ebbsfleet Garden City, adjacent to Ebbsfleet international, is a nationally important development, which is planned to deliver 15,000 homes by 2035. At its inception, HS1 was an essential consideration in the planning process and a key part of enabling these homes to be built sustainably; through providing faster links to London and increased capacity on the remainder of the local rail network. To date just over 1,500 of these homes have been built.

At the same time, growth in demand from households choosing to live on the HS1 route has meant that services are becoming increasingly crowded, particularly impacting peak times and passengers commuting into London. The completion of Ebbsfleet Garden City is expected to generate 1.4 million journeys per year on HS1. With just over 10% of these homes built, the viability of the rest, along with the benefit they would bring, will be constrained without more services on the HS1 route. An increase in high-speed services will unlock not only the Ebbsfleet development but other developments along the route.



1.4million

Journeys generated per year upon the completion of Ebbsfleet Garden City.



15,000 more homes

for young families who work in London but need access to more affordable housing.



Employment opportunities

for a lower income households via improved access.

**Journeys by air
between London and
destinations accessible
by HS1 services
within five hours**



Luxembourg	0.53m
Belgium	0.71m
Switzerland	2.26m
France	3.34m
Germany	3.68m
Netherlands	5.06m

Source: Civil Aviation Authority

Increasing commuting services into London will not only help London grow but continue to benefit Kent as well by:

- providing homes for young families who work in London but need access to more affordable housing; and
- further improving access to employment opportunities for a broad demographic of people.

Expansion of domestic high-speed services can also continue to grow tourism in Kent. Some destinations, such as Canterbury, although already served by high-speed services have only one train per hour or even lower frequency in the off-peak. Increasing the frequency will make these destinations more accessible and therefore attractive to visitors, particularly those coming from London and its surrounding area.

There is capacity on the existing network that would allow the introduction of more off-peak services and at least one additional service during peak times. The main constraint on providing more services is the availability of trains in the existing fleet. Because they are already heavily utilised, new trains will be needed to deliver these additional services.

Future International Services

As with domestic services, capacity exists on the international high-speed network and can allow both new destinations to be served and existing destinations to be served more often. A key challenge to reaching new destinations will be installing juxtaposed border controls at new termini; the speed and simplification of boarding and alighting that these offers being one of the key attractions for people using international high-speed rail. Enabling juxtaposed border checks will require both political agreement between the UK and newly served countries as well as a financial investment from governments and other stakeholders.

Serving new locations will add a significant volume of international economic activity within easy reach of the UK via high-speed rail.

Rail Passenger Demand Forecasting

Journey time

4hr30	30%
4hr	43%
3hr30	60%
3hr	72%
2hr30	86%
2hr	93%

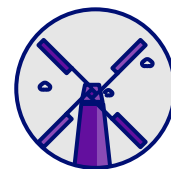
Rail share

As the rail journey time along a corridor decreases, the rail market share increases, relative to air.

Source: Rail Passenger Demand Forecasting Handbook (Version 6)

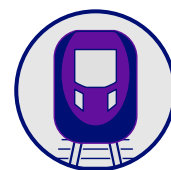
For international services, the main competitor to high-speed rail is air travel. In 2018, there were approximately 15 million air trips between London and destinations within a five-hour rail journey time of London.

Historic evidence shows that as the rail journey time along a corridor decreases, the rail market share increases, relative to air. Using this relationship between journey time and mode share and combining it with information regarding the size of the international air market, it is possible to estimate the number of air passengers that may choose to travel on new or additional high-speed rail services.



Significant growth

in passenger numbers since services from London to Rotterdam and Amsterdam commenced in April 2018.



Three services

to from London Rotterdam and Amsterdam per day at present, with plans to increase service levels to five in the future..



4.9 million

more passenger journeys by high-speed rail could be made each year based on current air travel patterns.

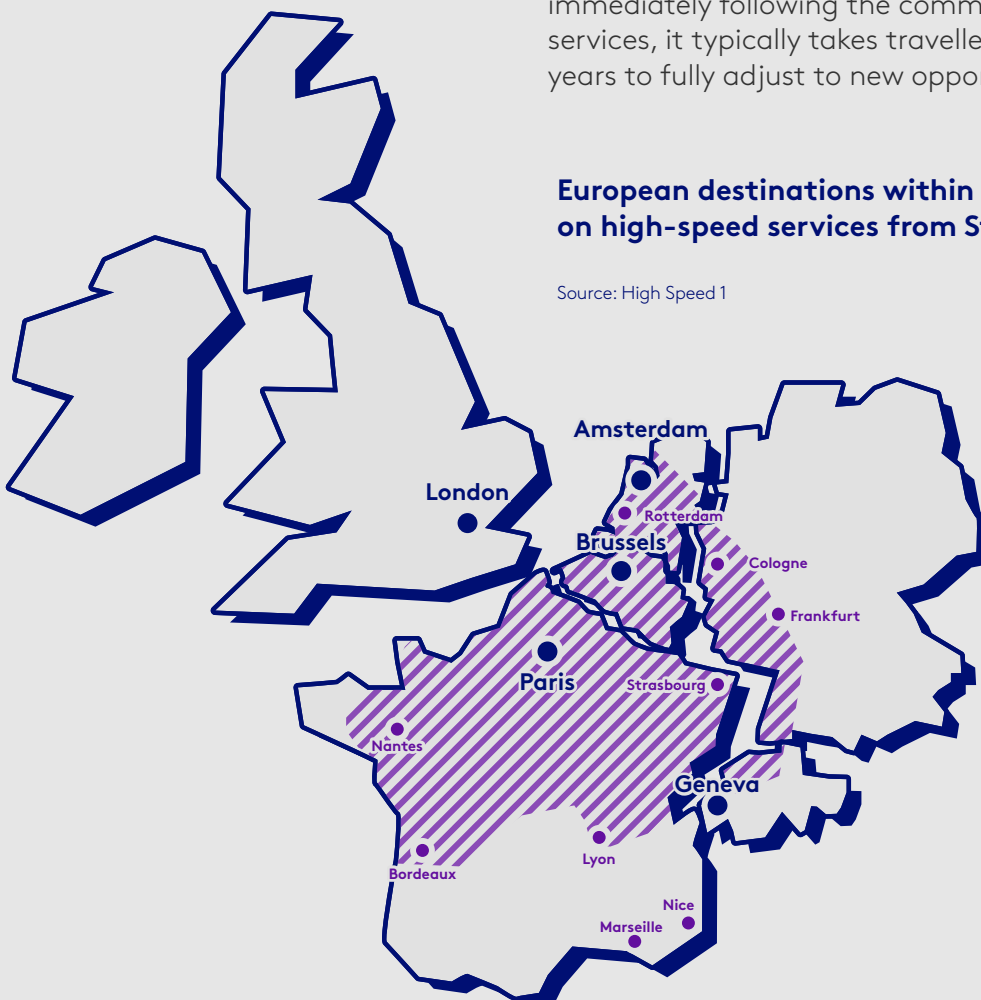
Based on current air travel patterns, should new destinations in France, Germany and Switzerland (namely Bordeaux, Dusseldorf, Cologne, Frankfurt and Geneva) be linked directly to London via HS1, up to 1.6 million more passenger journeys by high-speed rail could be made each year to and from these locations. Taking into account all other destinations accessible within five hours via HS1 this figure rises to 1.9 million additional trips.

These estimates should be considered to be prudent since the evidence upon which they are based does not take into account recent trends including the normalisation of international high-speed rail travel, modern working patterns and communications equipment, the shift in quality between high-speed rail travel and low-cost air travel, and increasing environmental awareness and engagement.

While we would expect to see a significant number of passengers use these new rail links immediately following the commencement of services, it typically takes travellers around three years to fully adjust to new opportunities to travel.

European destinations within a 5 hour journey time on high-speed services from St Pancras International

Source: High Speed 1



Notwithstanding this, the recently introduced Eurostar service to Rotterdam and Amsterdam has seen high passenger numbers ever since services commenced in April 2018, with plans to increase service levels from 3 trains per day at present to 5 in the future.

Using the same methodology to understand the market potential for high-speed rail from Paris, Brussels and Amsterdam suggests that there is a considerable additional demand that could be captured from airlines. Up to 3 million more trips per annum could be made by high-speed rail (via HS1) if these destinations were served by more regular services and new low-cost operators which could attract more price-sensitive passenger groups.

On the basis of 4.9 million additional passengers, HS1 could generate an annual benefit of £101m in addition to the £281m already generated by existing international passengers. Journey time savings contribute £26m to this total. The majority of this benefit (£20m) would come from people travelling in the course of work and would contribute directly to the economies of the UK and Europe. The more productive travel time that these business passengers benefit from when they choose to travel by train as opposed to flying, would provide a further economic contribution of £31m per year. The combined impact for business passengers of shorter journey times and more productive travel time would be the equivalent of the annual economic output of 360 full-time employees.

The remainder of the direct benefit comes from the choice of both business and leisure passengers to travel by high-speed rail instead of flying; reducing the number of short-haul flights each year by a further 26,000. This would result in a reduction of emissions of 470,000 tonnes of CO₂e producing an annual benefit of £41m.

New passengers would also contribute to the UK and European economies through spending on goods and services throughout their stay. New passengers using international high-speed services could spend £0.9bn in the UK and £1.2bn in European destinations, and will undoubtedly benefit the visitor and tourist economies in these places. In the UK this would support the equivalent of 1,700 full time jobs per year in the sector.

International journeys per year

Existing	11m
Future	15.9m
Difference	+4.9m

Shorter journeys

Existing	£86m
Future	£112m
Difference	+£26m

More productive travel

Existing	£129m
Future	£160m
Difference	+£31m

Emissions reduction

Existing	£66m
Future	£108m
Difference	+£42m

Reduction in emissions

Existing	750,000t CO ₂
Future	1,200,000t CO ₂
Difference	+450,000t CO₂

Visitor spending (UK)

Existing	£2.0bn
Future	£2.9bn
Difference	+£0.9bn

Visitor spending (EU)

Existing	£2.6bn
Future	£3.8bn
Difference	+£1.2bn



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