GREENGAUGE21

North VS South

March 2026

An exploration of the differences in rail service provision

Stage 1 report: A review and analysis of available data

Contents

Photos by David Thrower and Jim Steer

Liverpool Lime Street

1.0

Overview and summary

In this new study, Greengauge 21 seeks to understand the different experiences of using trains in the north and south of the country, especially for daily journeys to work, education and training.

The report takes a tour through established data bases that provide hard factual evidence; is commuting in the north so different from in the south -and if so, in what respects?

We aim to use our findings here to establish a focused rail user research programme in a planned second stage of research. Here we marshal available data ('secondary' sources), whereas we intend the next stage to generate new 'primary' data.

We find there are remarkable similarities north and south — as well as clear differences. In both locations, car dominates journeys to work. Overall, levels of public transport use are similar, but with much greater bus use in the north, and greater rail use in the south.

We identify reasons for the differences, which include less of a policy focus on using rail for commuter travel markets in the north. We note evidence of weaker rail infrastructure provision in the north. In the south, the comprehensive pattern of commuter rail services has enabled one city — London — to develop a greater employee catchment area than any other European city. Here, the rail commuter network is both comprehensive and widely cast.

With a growing Government focus on supporting economic growth, this initial piece of research throws some light on what may be needed to offer the great cities of the north the wider commuter catchments needed to foster employment and productivity growth.

Wigan Wallgate

2.0

Government policy

The Northern Growth Strategy announced by the government on 14th January 2026 acknowledges that:

"Nowhere is historic underinvestment in the north felt more than in transport … The productivity of the northern regions has been behind the UK average for several decades, due to a history of underinvestment and the legacy of past economic shocks." [1]

Government's January 2026 policy response centred on a three-stage programme to create 'Northern Powerhouse Rail' (NPR), providing better rail connections between the major northern cities. The NPR programme covers North West England, Yorkshire, and North East England—which is the traditional definition of the substantial area comprising the north of England.

Alongside the work on NPR—which is expected to be undertaken over the period onto the 2040s—Government has stated its intention to pursue an economic plan for the 'Northern Growth Corridor' to maximise more immediate economic opportunities. This is a 'northern agenda', and investment in rail transport is seen as a key part of it.

The Government's aim is to work with local leaders and northern businesses to improve **connectivity within and between city regions**:

> **"developing plans with local leaders to quickly and effectively deliver local infrastructure enhancements, and further deepen the integration of local transport systems".**

The NPR ambitions involve new rail lines but also enhancements to the existing network. But there is more to rail travel than its infrastructure.

Does it provide services which meet passenger needs and does it offer resilience at times of poor weather or disruption?

If the aim is to change the behaviour of travellers and increase rail use, what might be termed "soft measures" could be as important as "hard infrastructure" measures.[2] The second stage of this research will be structured accordingly.

1. https://www.gov.uk/government/collections/northern-growth-strategy

2. See for example Home | Transport For Humans by Pete Dyson and Rory Sutherland, which points out that, as in other fields, railway networks have been designed assuming logical and "utility maximising" travel behaviour. A more holistic, human-behaviour centred approach would consider end-to-end journeys, aspects such as ticket purchase arrangements, passenger information and the joint purpose nature of travel behaviour. Only a minority of commuters have a rail service that offers a door-to-door capability.

3.0

Geographies: defining 'north' and 'south' for comparative purposes

We used this first stage of the research programme to identify the best way to define the terms 'north' and 'south' — at least for the purpose of this research. There are some obvious pitfalls to avoid.

For rail travel in the 'south', London dominates. Within Greater London, the London Underground and Overground networks inter-connect the national rail network to provide onward access to/from terminus stations (London has thirteen of these!) and final commuter destinations. Only in two northern cities are there metro arrangements of this type.[3]

The reality of this gap between the north and south regions' rail networks cannot be ignored. But there is little to be learned from a focus on 'within London's Metropolitan area', given the unique qualities London's extensive public transport system provides.

This thought prompts the idea of looking at the rail network in the south excluding rail travel made only within London. This implies examining the south east's rail network and its usage surrounding London.[4] It also implies a presumption that the question of 'within metropolitan area' travel connectivity in northern cities will need to be examined in due course, alongside any examination of increased rail commuting services into the north's great cities.

Excluding travel within Greater London, implies a definition of the south for the purpose of this research as comprising two English regions: South East England, and East of England — in effect London's commuter belt north and south of the capital. These two southern regions – incorporate the 'home counties' and extend beyond them to the much wider catchment served by commuter train services across what we term here as the 'wider south east'.[5]

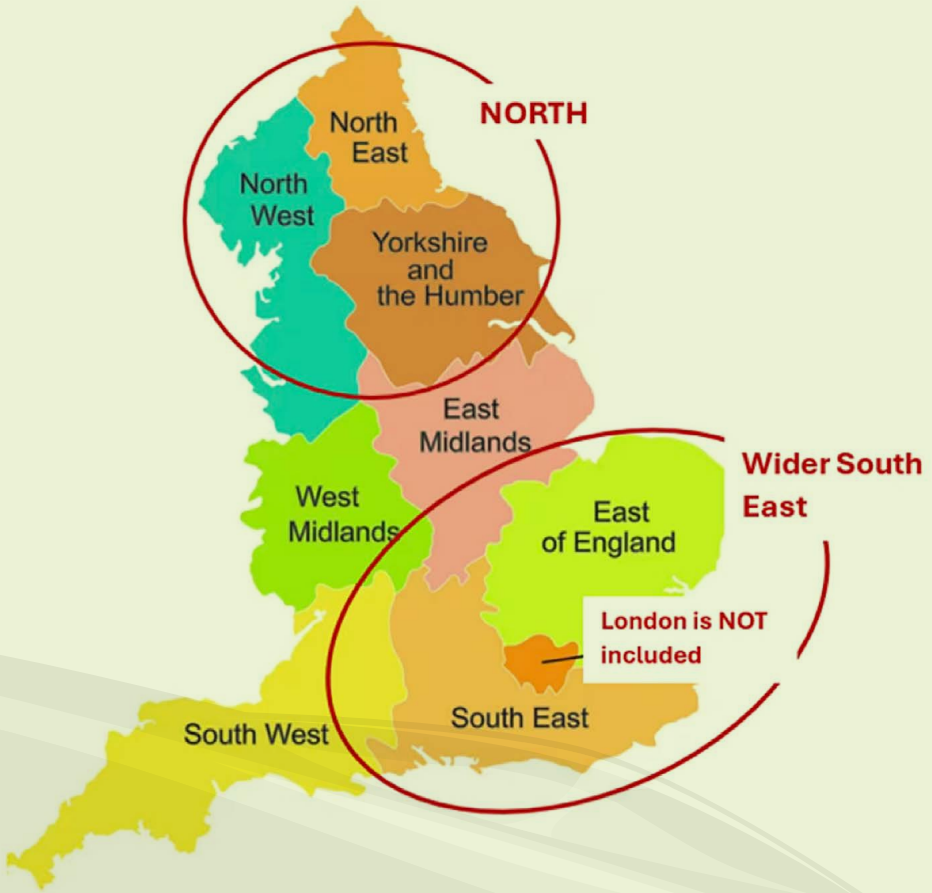
3. Tyne and Wear Metro in Newcastle, the Mersey Electrics network for Liverpool. The tram networks Metrolink in Manchester and Supertram in Sheffield are also relevant.

4. We ruled out including the South West England region in our definition of 'south'. It may be southerly, but in rail terms much of it is as remote from London as is North East England.

5. The Home Counties are generally taken to be the counties of England that border London, traditionally including Berkshire, Buckinghamshire, Essex, Hertfordshire, Kent and Surrey. The wider south east definition also includes Bedfordshire, Cambridgeshire, East and West Sussex, Hampshire, Isle of Wight, Norfolk and Suffolk.

And here's a surprising fact: this definition of the wider south east is almost exactly the same size as the whole of the north and its three regions — North West England, Yorkshire & the Humber, and North East England. **This is true both in terms of scale (area) and population.**

This similarity of scale makes it easier to contrast and understand statistical differences in levels of rail use, north and south.



Study Area Definitions

Note that in excluding London as shown in the diagram above, we are not ignoring travel to or from London, only travel **within** the capital.

4.0

Area profiles: socio economics

The two selected comparator areas, the whole of the north and our selected 'south'—the wider South East—are **remarkably similar** in terms of population, employment levels, and land areas:

- Populations north and south, with these two definitions are **similar** *c.*15.5 million.
- Land areas are **similar**—each around 38 million square kilometres
- (and it follows that) overall population density is **similar** too—at around 410 people/square kilometre.

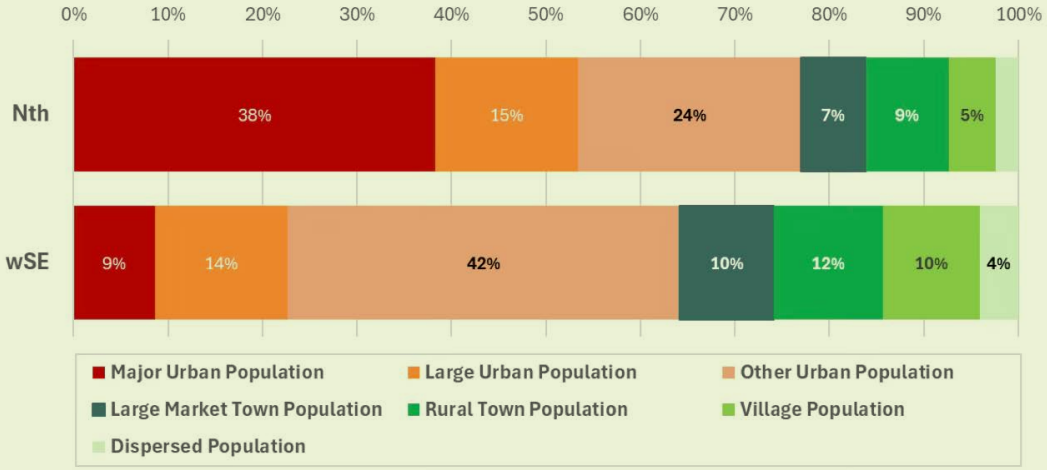
And the **numbers of people in employment are very close too**, at around 7.4 million workers, as shown in Table 1.

	Population	Land Area (km²)	Population Density (people per km²)	People in employment
Wider South East (wSE)	15,642,119	38,218	409	7,398
North (Nth)	15,550,498	37,689	413	7,376

Table 1: Area population, land area and employment

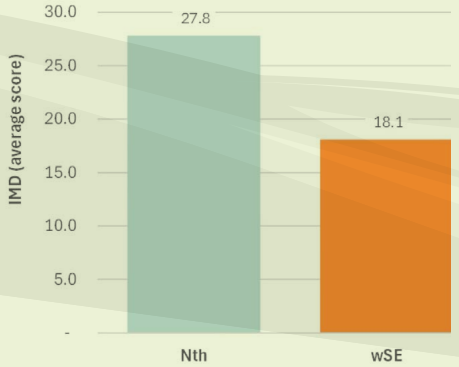
At the next level of detail, the ONS Urban-Rural classification throws up some notable differences.

The north has substantial "Major Urban" populations in cities such as Leeds, Manchester, Liverpool and Newcastle, whereas the south (as defined here) has more "Other Urban" populations based in large towns and smaller cities such as Guildford and Reading. The wider south east also has a larger rural population, including 14% in villages and dispersed populations compared with just 7% in the North.

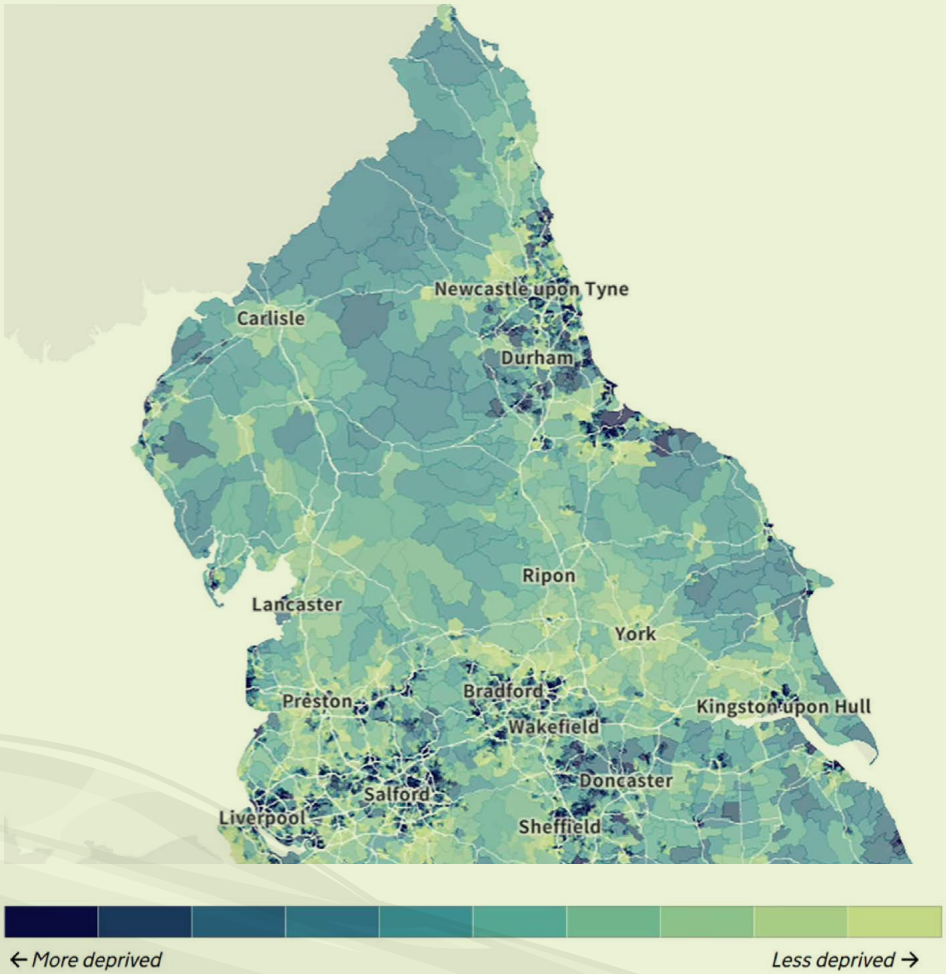


Population distribution, north (Nth) and south (wSE) by scale of settlement

With regard to deprivation levels, there are clear differences between our selected north and south areas: multiple deprivation is much more common in the north, especially in the larger cities which the wider South East lacks.



Indices of Multiple Deprivation



Pattern of Multiple Deprivation in the North

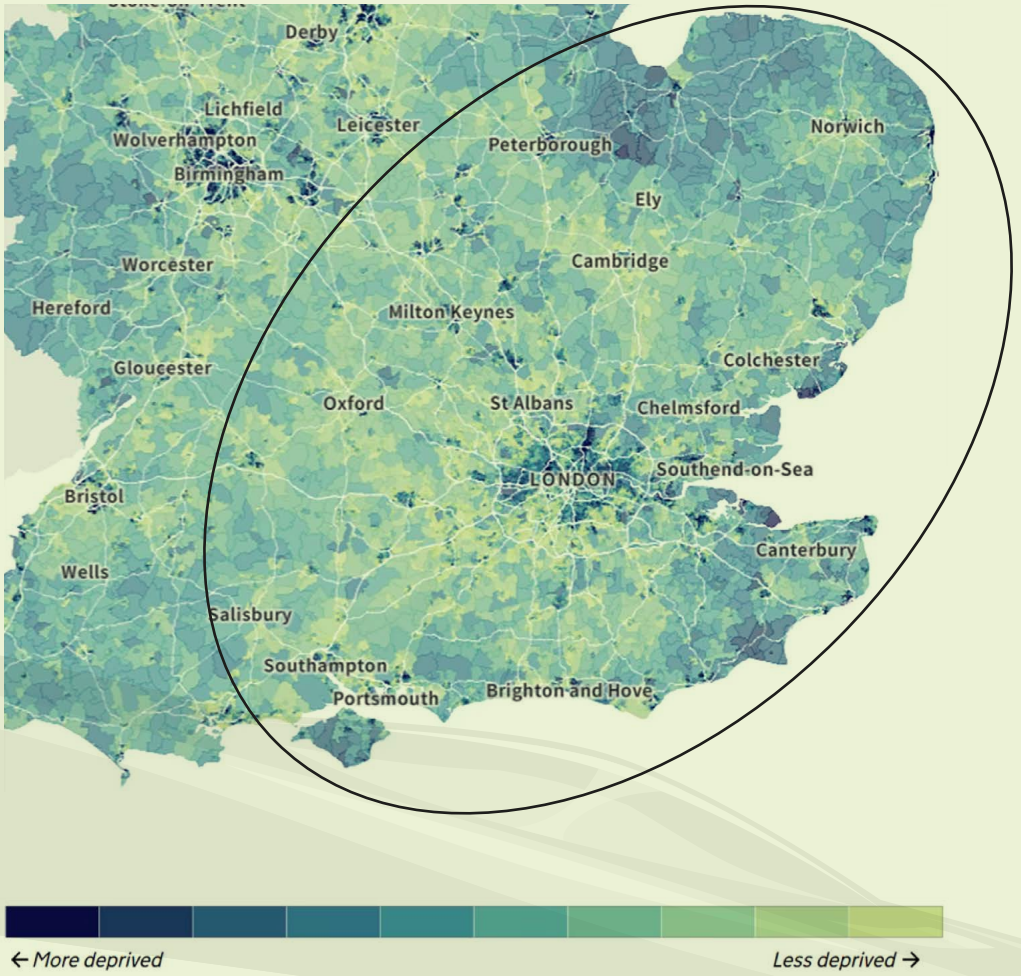
Deprivation in the north centres on former industrial and mining areas, as well as some cities—and some coastal towns. The south never had the industry/mining on an equivalent scale through the 'industrial revolution period'.

In the wider south east, the spatial pattern of deprivation distribution **is primarily worse in coastal areas**.

Affordability

Affordability of housing is assessed by the ONS by relating the cost of housing to the average income to calculate the ratio of house prices to income.

On this measure, the north scores 5.7 but for the wider South East it's 9.4. In the south, housing is less affordable.



Index of Multiple deprivation in the wider South East

Here, there are some deprivation clusters in coastal regions, in rural East Anglia and in Kent (as well as in the capital).

5.0

The economies of the North and wider South East

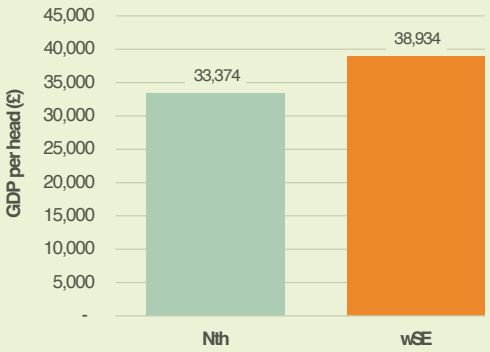
To summarise:

- GDP per head is 17% higher in the wider South East compared to the North

- The mix of jobs in the north and south on our definitions is broadly similar, albeit with slightly more jobs in the **information**, **scientific**, and **finance**, **property**, **business** in the wider South East, and marginally more in the **agriculture**, **manufacture**, **construction**, and **health and education** sectors in the North

- The North benefits from having some major tourist attractions, but the wider South East receives marginally more tourist visits and nights than the North. Overall tourism spend levels are again remarkably similar, with the north attracting £23bn of annual visitor spend compared with £24bn in wider South East.

The economy of the wider South East is more productive than the north, as shown by the gross value added (GVA) per person in the two areas. In the north it is £33k whilst in the wider South East it is £39k, 17% higher.

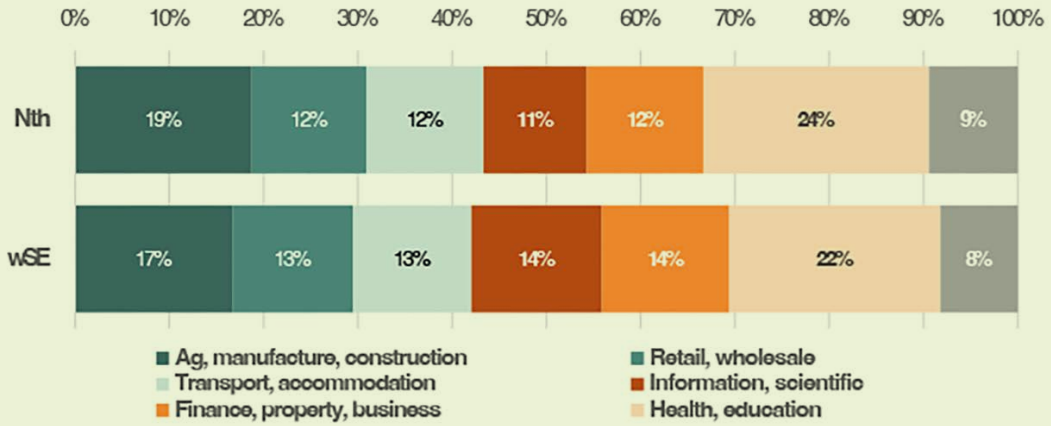


GDP per capita (2023)

Source: ONS

The distribution of jobs across the industrial classification definitions is similar in the north and the wider South East, so this does not explain the differing GDP per capita figures. There are some minor differences: slightly more jobs in the **information**, **scientific**, and **finance**, **property**, **business** in the wider South East, and marginally more in the **agriculture**, **manufacture**, **construction**, and **health and education** sectors in the North.

But spatial GDP measures comprise values put on corporate incomes as well as those from individuals' employment earnings. The south likely has an advantage from this corporate component.



Standard Industrial Classification of jobs

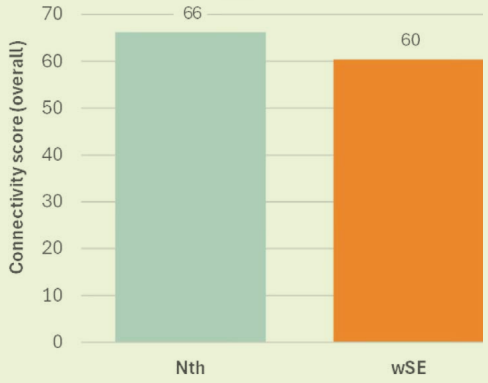
Manchester Oxford Road

6.0

Transport provision, north and south

The Department of Transport has created a connectivity measure[6] which calculates which destinations can be reached from each origin within 60 minutes. It is calculated for the following trip purposes: education; healthcare; leisure; shopping / personal business; employment; social visits (visit friends at a private home).

The public transport connectivity measure is based on all public transport modes (bus, rail, light rail, underground and ferry) plus walking for getting to and from the stop / station. Bus networks are far more extensive than rail, so this overall public transport measure is likely to reflect bus connectivity more than rail connectivity. This explains why the north has a 10% higher connectivity score than the south as shown, see chart, right.



Public transport connectivity score (overall)

Source: DfT

6. https://www.gov.uk/government/publications/transport-connectivity-metric/transport-connectivity-metric#overview-of-connectivity-metrics

7.0

Rail service provision and use, north and south

Rail service provision

Here we compare some of the fundamentals of the rail networks and services, north and south. looking at:

- the level of station provision
- the extent of 4-tracked sections of route, and
- the extent of electrification.

These factors together have a significant effect on rail service coverage, service reliability, customer appeal and environmental impacts.

[i] Stations

There are broadly similar numbers of rail stations in the Wider South East (647) compared with 582 in the north (i.e. the north has around 10% fewer stations).

[ii] Multiple track provision

Four-tracked sections of railways allow fast train services to avoid being impeded by stopping trains. They also provide resilience and operational flexibility at times of service disruption or train failure. All of the main lines (apart from Chiltern Railways into Marylebone and c2C into Fenchurch Street) have 4-track sections of route running directly into their respective London termini.[7]

Across our definition of the north, the three English regions have just 60 miles of four-tracked railways west of the Pennines, and a further 40 miles to the east (principally the York-Darlington section of the East Coast Main line, which accounts for nearly 30 miles).

Very largely, these sections of 4-track railway in the north are on the main lines which pass by the largest cities—Leeds, Liverpool, Manchester, Hull, Bradford, Sheffield. The additional network capability on the east and west coast main lines was seen many years ago as essential for 'mixed-traffic' operation over the 4-track sections of these routes, in particular to keep separate freight and passenger trains which operate at differing line speeds.

Along with parallel working of slow/fast train services, the use of 4-tracking also inevitably often has led to the common adoption of 'flying' junctions which allow for the de-confliction of train moves, for instance where services join or leave a main line.

So the availability of this facility which allows a mix of stopping and limited stop 'commuter' train services in the wider South East is simply not available in the North.

7. Fenchurch Street also had a 4-track approach but a pair of its tracks were given over to form the Docklands Light Railway line to Tower Gateway and Bank station.

Even the critical approach through Stockport into Manchester Picadilly, which is nominally a 4-track section of line, is not configured to operate in a slow/fast service segregated manner, so limiting service potential.

In our south definition (the South East and East of England regions) there are around 220 miles of quadruple track outside the Greater London boundary. The main lines serving London termini at Euston, St Pancras, Kings Cross, Liverpool Street, London Bridge, Victoria, Waterloo and Paddington all have quadrupled lines stretching to the Greater London boundary (these within-London 4-track sections are not included in the 220 mileage estimate).

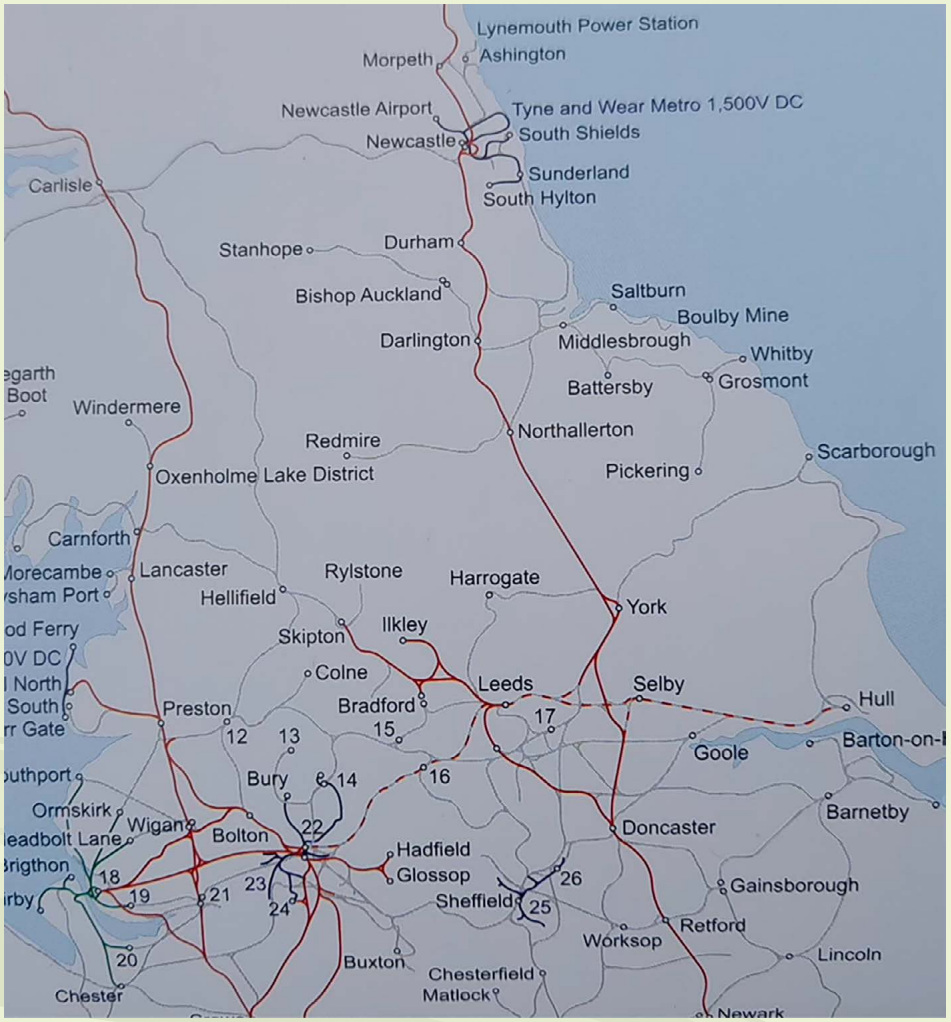
The wider south east has more than twice as much 4-tracked railway lines as the north, and the 4-track mileage that does exist in the north doesn't in general serve the largest cities, where the train mix, local and long-distance, is most pronounced.

[iii]Electrification

Electrified routes allow for most cost effective train operation, with lower operating costs, faster train timings and better travel conditions for passengers. All of the main line London termini listed above are served by electrified routes (Marylebone, which serves a secondary route to the West Midlands, being an exception).

Electric trains also are more popular with customers as well as offering lower overall carbon emissions and reduced air pollution, especially at and surrounding stations.

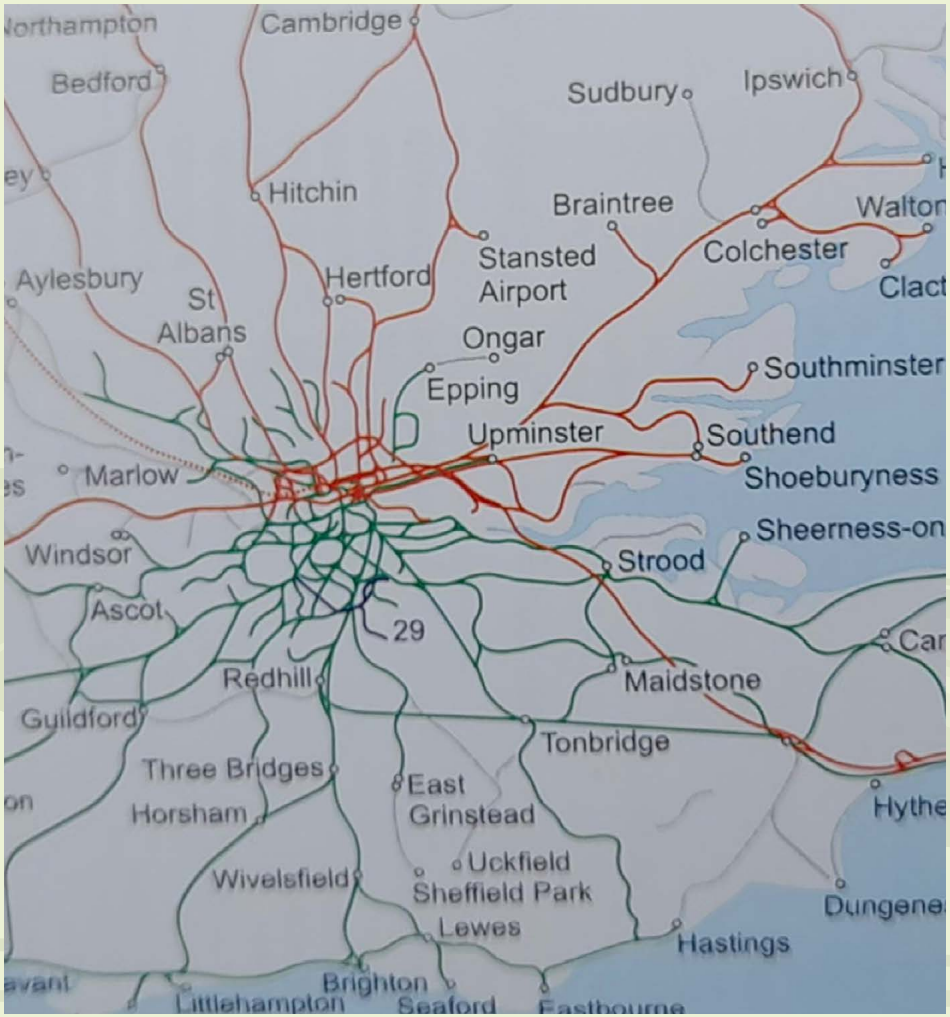
A comparison of the extent of electrification, north and south is shown in the following diagrams, in which lines with the various types of rail electrification are shown in colours (red, blue, green), and those which are unelectrified, in grey. Most of the north is grey—first map—the outstanding exceptions being the east and west coast main lines and their major tributaries.



North—extent of rail electrification -essentially the east and west coast main lines

Note: dashed red lines are those for which electrification may be planned or is in hand

The second map shows the south, where it can be seen that all routes except a few (shown in grey) branches are electrified (shown in colour).



South—extent of rail electrification

Source (both): Rail Atlas Great Britain and Ireland 16th edition, OPC, Crecy Publishing

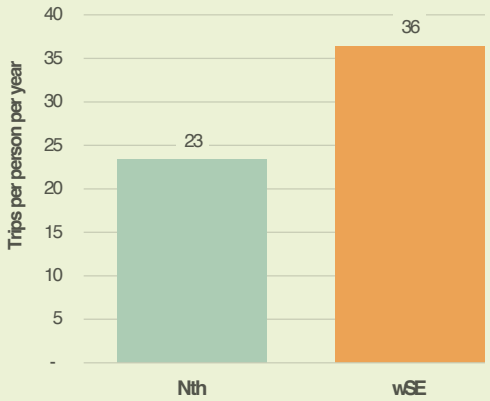
Rail Use

In summary:

- The overall rail trip rate/head in the Wider South East is 1.6 times that of the north
- Greater use of rail in the south is also reflected in the mode share for rail which is significantly higher—1.8 times that for the north.
- For commuting, the disparity is even higher with the rail share in the south being 2.4 times that for the north, according to Census travel to work data.
- The length of rail trips also differs between the two areas, with rail trips in the north tending to be shorter, with 66% under 25 miles compared with 45% in the south where there are noticeably more trips in the 25-50 mile range.

Overall **public vs private** transport mode shares in the north and south are broadly similar. But **the rail share in the North is noticeably lower** (1% compared to 2.2% in Wider South East).

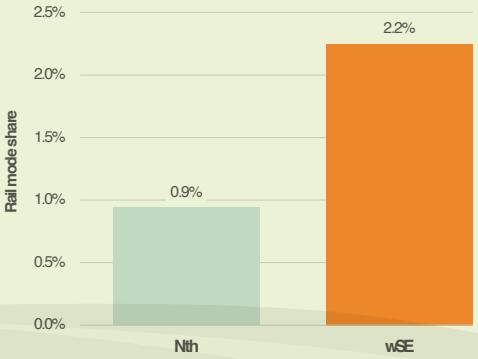
Conversely, bus mode share in the North is twice that of the wider South East (4.2% v 2.1%). **Car dominates in both areas** with 61% share in the North and 65% share in the south.



Overall Rail trip rates

Source: Greengauge 21 analysis of ORR data

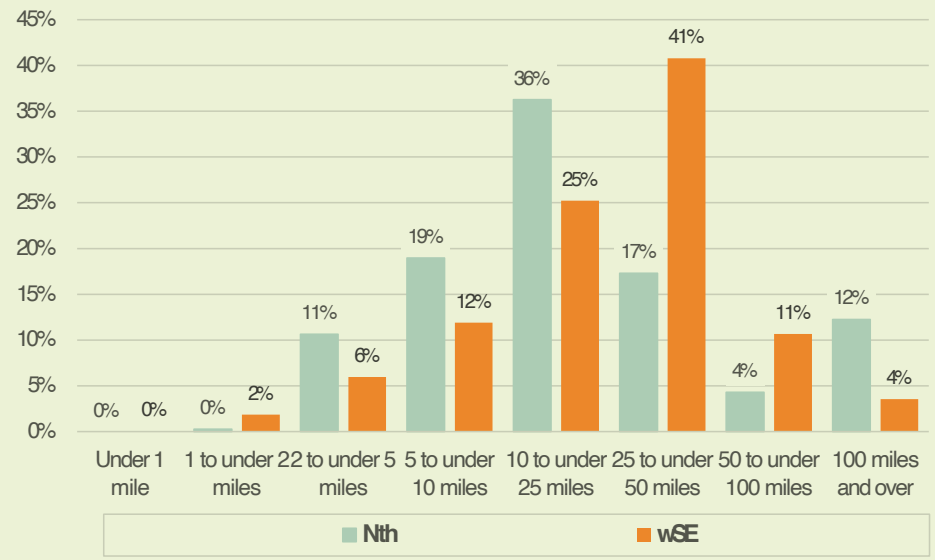
The 2021 Census provides data on the mode used to travel to work and this indicates that the commuter rail mode share in the wider South East is 2.4 times that in the North.



Rail commuter mode shares (2021)

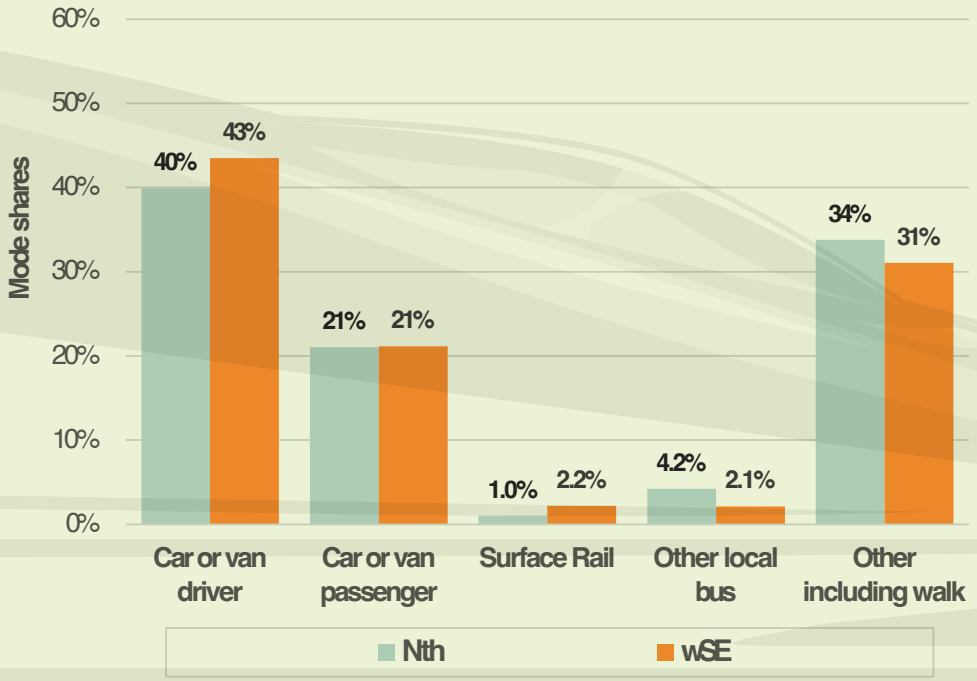
Source: Census 2021 (Travel to Work), Greengauge 21 analysis

The length of rail trips differs somewhat between the two areas, with rail trips in the north tending to be shorter, with 66% under 25 miles compared with 45% in the wider South East area (south) where there are noticeably more trips in the 25-50 mile range.



Distribution of rail trip lengths

Source: National Travel Survey 2023



Mode shares (2023)

Source: National Travel Survey 2023

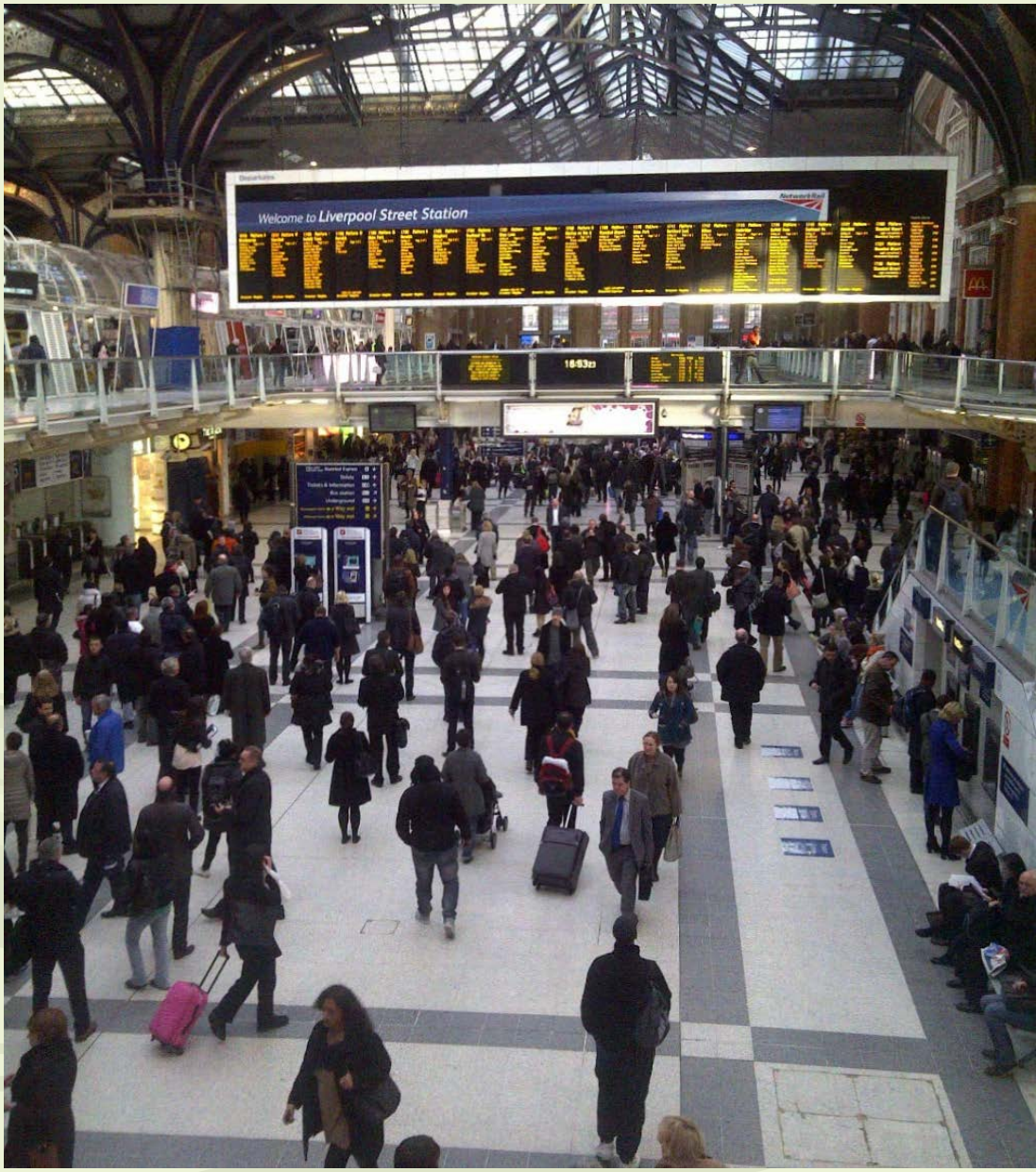
Summary

We can summarise travel behaviour similarities and differences, north and south, as follows:

- private transport (car) is the dominant mode for travel in both the north and south (61% and 64% respectively)
- the somewhat lower car driver share in the north reflects lower car ownership levels
- whilst the rail mode share in the north is half that of the south, for bus it is twice that of the south.

Overall, the public transport share is higher in the north (5% compared with 3% in the south), with greater bus use outweighing less rail use. Scores on customer satisfaction are available by train service company, only a few of which serve both our selected regions, so this is revealing of passenger attitudes north vs south.[8]

8. Note that 'Great Northern ' train operating company serves territory north of London in the wider South East, not the geographic North. Longer distance 'intercity' operators are excluded since local commuting travel is a relatively small part of their customer base.



London Liverpool Street

8.0

Passenger satisfaction

Scores on customer satisfaction are available by train service company, only a few of which serve both our selected regions, so this is revealing of passenger attitudes north vs south.[9]

- Passenger satisfaction is highest for Merseyrail; London Overground; c2c and Chiltern; and

- Lowest for Thameslink; Northern and Southern.

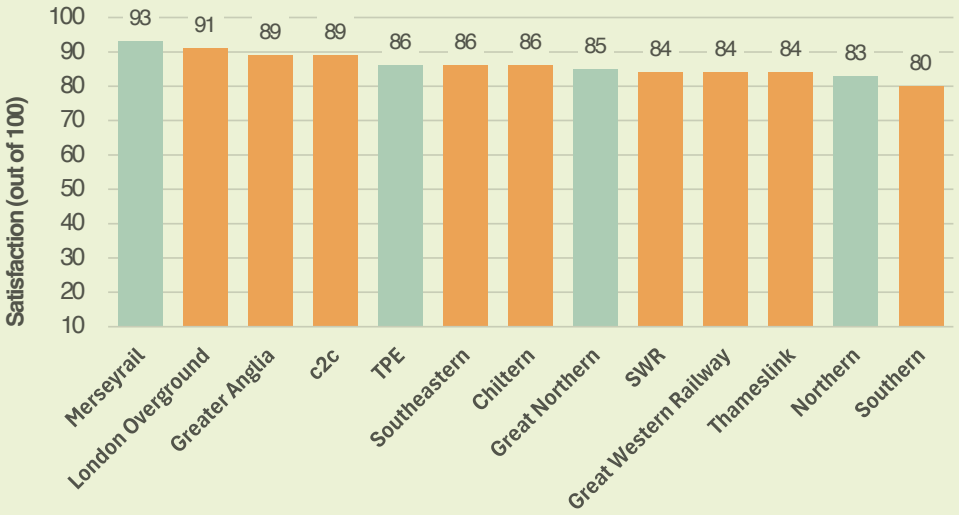
It is interesting that the highest satisfaction levels seem to be gained by the more focussed commuter train service providers. The closer to a metro service, the greater the customer satisfaction. But comparing the two largest train operating companies focussed on the north—Trans Pennine Express (TPE) and Northern Trains— shows that the longer distance operator (TPE) gets higher satisfaction ratings than Northern Trains—see chart below.

Overall, there are better than average—and worse than average— train operators in both the North and the Wider South East. The following charts show overall satisfaction and scores against specific service attributes—punctuality, service frequency, value for money and lateness.

On punctuality, Merseyrail comes top, but Northern Trains joint bottom.

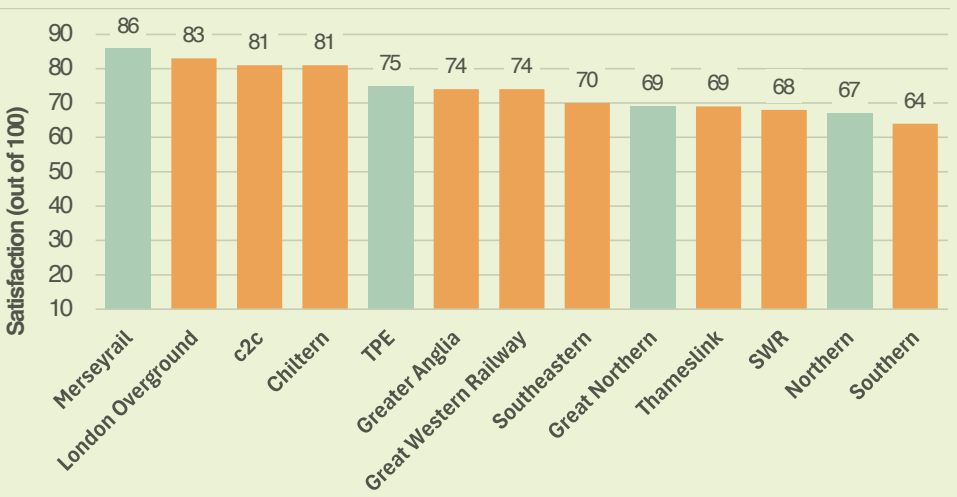
Liverpool Lime Street

9. Note that 'Great Northern ' train operating company serves territory north of London in the wider South East, not the geographic North. Longer distance 'intercity' operators are excluded since local commuting travel is a relatively small part of their customer base.



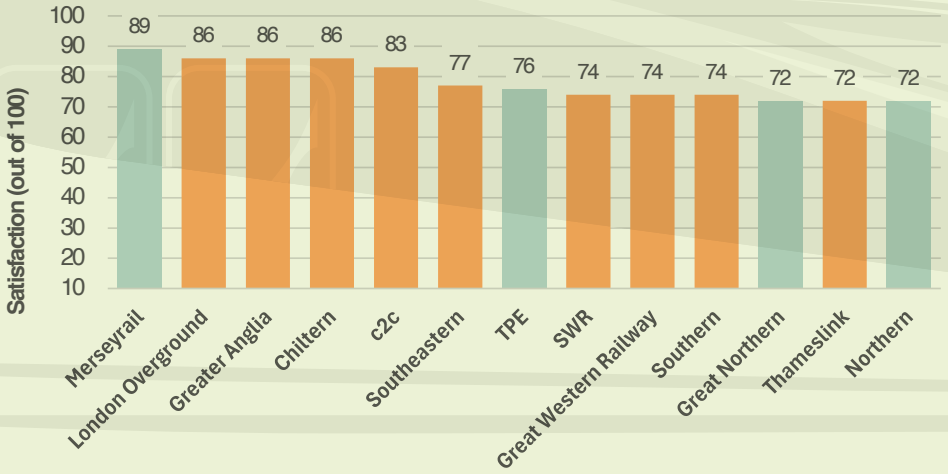
Overall rail customer satisfaction by train operating company

Source: Transport focus Rail User Survey June 2025



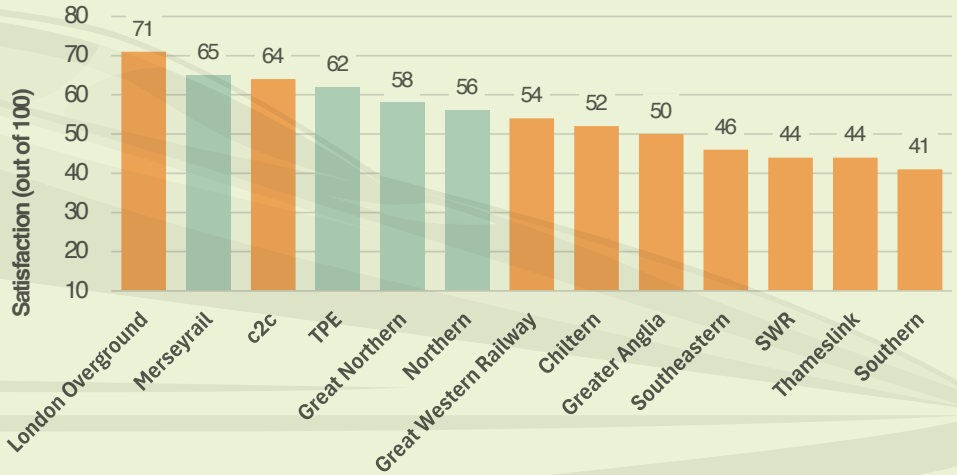
Satisfaction with frequency

Source: Transport focus Rail User Survey June 2025



Satisfaction with punctuality

Source: Transport focus Rail User Survey June 2025



Satisfaction with value for money

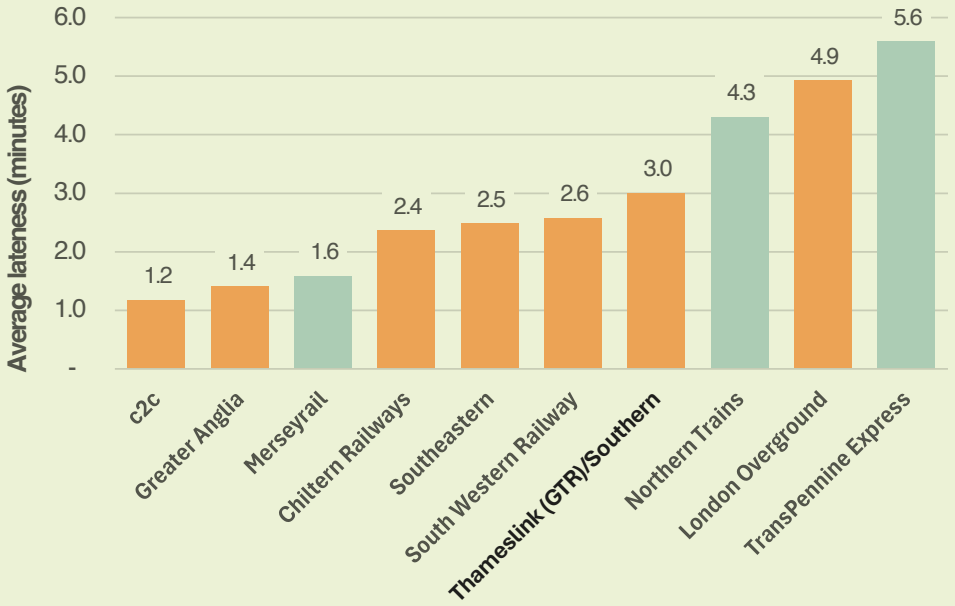
Source: Transport focus Rail User Survey June 2025

On the value for money measure, train operating companies in the north perform better than their southern counterparts, perhaps reflecting the (on average) longer—and so more expensive—commutes in the south.

Rail service performance

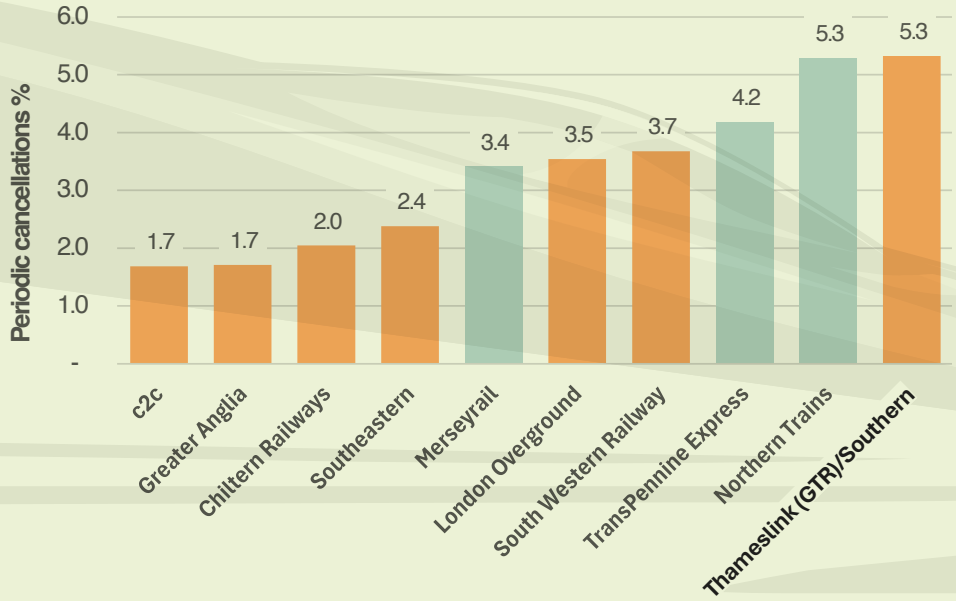
The operators with the best rail service performance as reflected in the scores on lateness and cancellations in the next two charts are: c2c; Greater Anglia; and Chiltern Railways, with Merseyrail scoring well on lateness but not so highly on cancellations.

Northern Trains and TransPennine Express are amongst the worst performing on both scores.[10]



Average lateness

Source: ORR



Cancellations

Source: ORR

10. The poor (mid-table) Merseyrail score on cancellations may be temporary, as currently there are continuing problems with the introduction of a new train fleet.

9.0

Summary rail use and customer satisfaction, north and south

The North and wider South East areas have considerable variations within them. But neither of these 'two super-regions' we have used to compare and contrast rail use, north and south, is in any way homogeneous.

It is certainly true that the south offers better rail service in part because it has seen essential investment that the north lacks—in electrification , and in 4-tracking, in particular.

Overall rail use is lower in the north than south, with the difference largely made good by higher bus use. Car use dominates commuting in both of the regions. Customer satisfaction, interestingly, is greater with the most 'metro-like' train service providers. Where customers are most satisfied—north and south—is where the train service provider is operating higher service frequencies and a more 'metro' type of service.

Knutsford station, Mid Cheshire line

10.0

Next steps

This is the first of a planned two-stage research programme.

By carefully developing suitable definitions for 'north' and 'south' we start to see what differentiates the provision of rail services for commuting—to work, education and training.

This first stage analysis of available data sources reveals some telling differences between rail service provision, its performance and customer reactions, north and south.

The second stage will involve primary research exploring how the differing rail service provision in the north and south have shaped how people view rail travel in the respective areas.

Cheddington, WCML in the Chilterns