

British transport in the context of levelling-up: European comparison

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Summary





Does transport play a role in the UK's productivity gap?

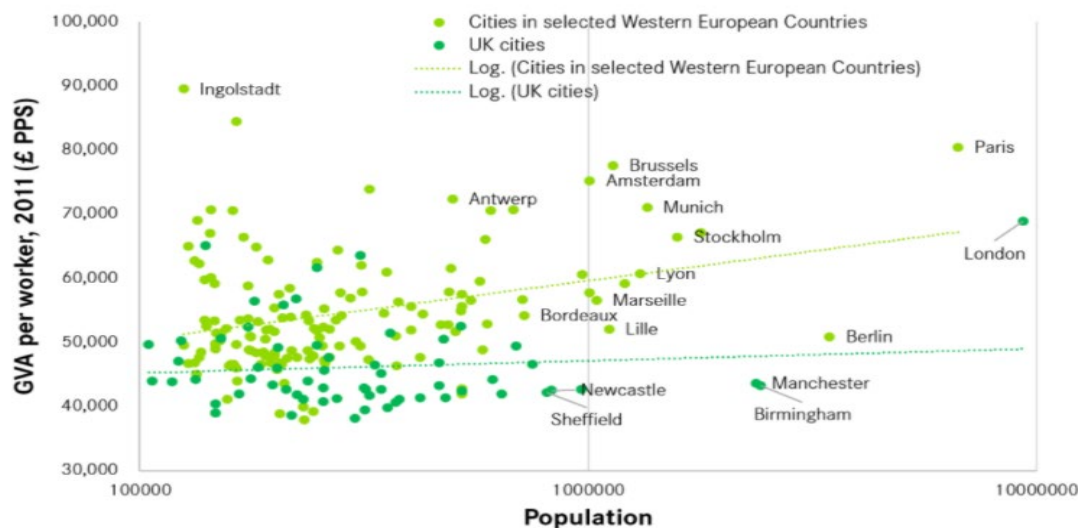
- The limited number of people who can commute by public transport to the centre of large British cities within 30 minutes means that **the 'effective size' of British cities is smaller than what overall population data suggest.**
- For some cities, this is partly due to the more limited distances that can be done via public transport, it is not the whole reason. All large British cities (except London) are much less dense, meaning there are fewer people living close to the centre.
- This density then influences the nature of the public transport network in place – denser cities better support more extensive and frequent public transport services.
- This means that while **there is a requirement to improve the public transport system** in most large cities to help close the productivity gap between themselves and their Western European competitors, this should be done **alongside increasing density within these cities.**
- The urban form of British cities **also have implications for intercity connectivity** by public transport. The lack of density in the city centres, specially next to train stations, limits the benefits of investments such as high speed rail.

Context



Does transport play a role in the UK's productivity gap?

Agglomeration in British cities is substantially lower than in their Western European peers



Source: ONS; Eurostat; Centre for Cities' calculations

- Previous CfC research shows that the existing productivity problem in the UK is mostly driven by the large cities.
- Unlike other European countries, we do not observe a strong relationship between city size and its productivity. This is driven mainly by large British cities and suggests they are not benefiting from agglomeration to the extent their European counterparts are.
- Is transport playing a role?

Methodology

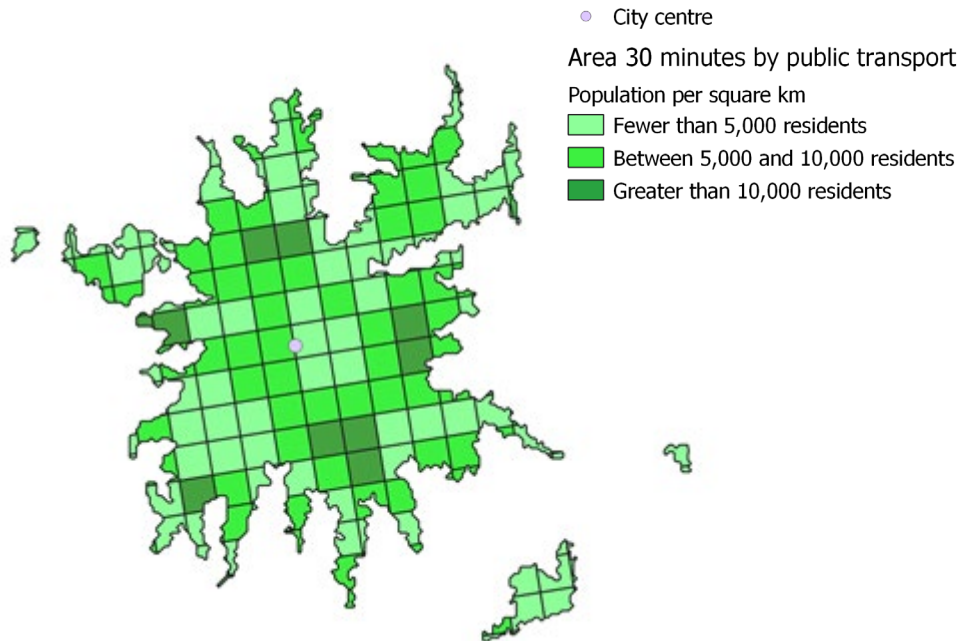


Concepts and methodology

Highlighted area = area that can reach the city centre in 30 minutes, network size.

Colours = population density.

Birmingham



Source: Traveltime; ONS.

- **Transport accessibility:** Share of residents living in the highlighted area.
- **Network size:** How large is the highlighted area, square km.
- **Density:** Population per square metre, in the areas covered by public transport.
- **Effective size:** Total amount of residents within the highlighted area.

Transport connectivity is measured by how easy is to **reach the city centre of each city during peak time in the morning (Monday 26 July 2021)**, based on *traveltime* data.

This means our analysis **do not consider other factors** such as quality of the service and public transport connectivity within city centres.

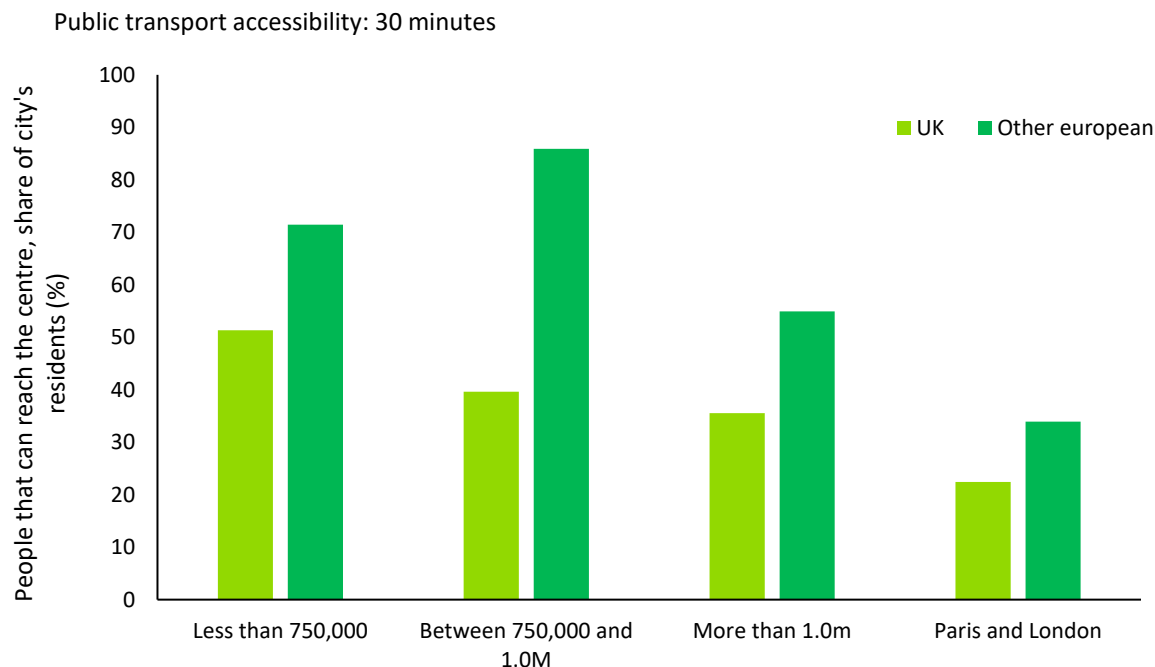
We compare the largest British cities with Western European counterparts with similar population levels.

Analysis



Public transport accessibility in UK big cities is poor

British large cities mostly underperform their European peers in terms of public transport accessibility to 30 mins

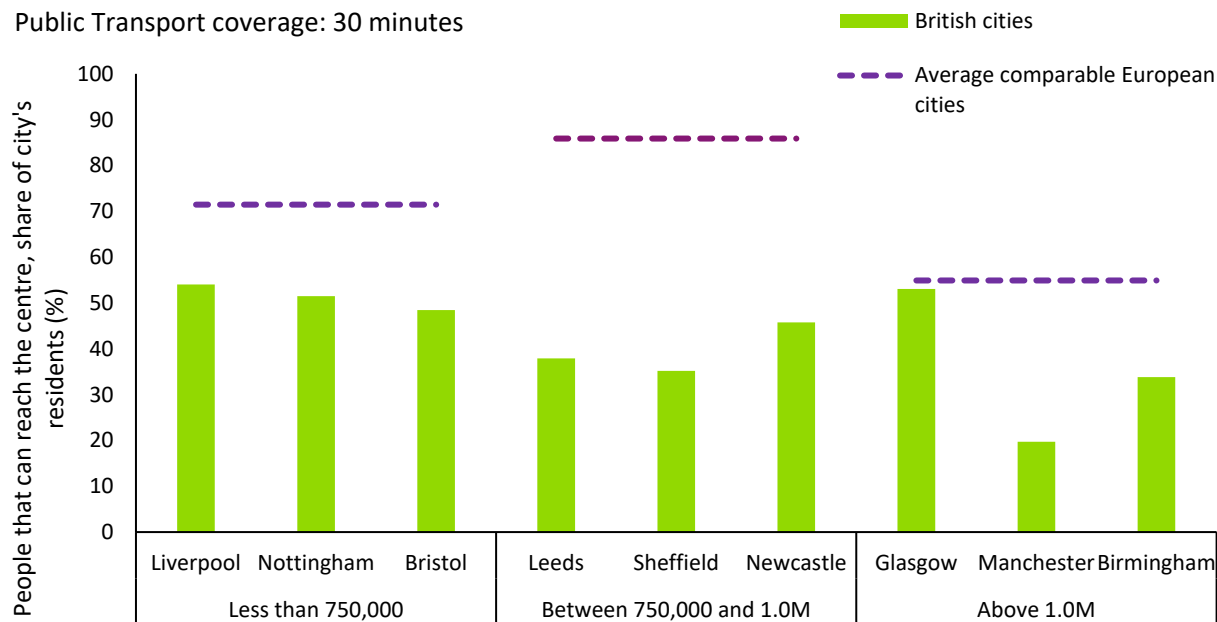


Source: Traveltime; ONS; Eurostat; Centre for Cities' calculations. Coverage above 100 per cent does not necessarily mean that all residents are included as transport network may include residents from different towns and cities.

- Public transport is important for commuters going into city centres, where agglomeration benefits are more likely to happen, than to workplaces elsewhere.
- On average, 67 per cent of people can reach the city centre in 30 minutes by public transport in the selected European cities, compared with 40 per cent in Britain.

Public transport accessibility in UK big cities is poor

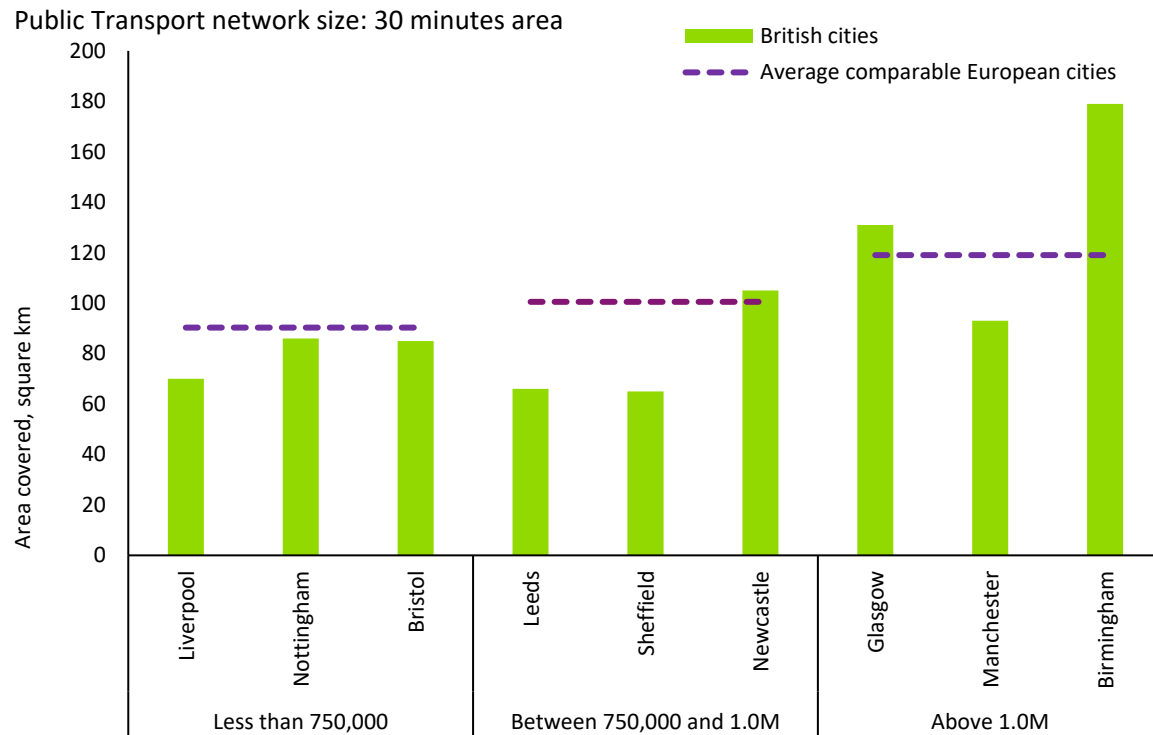
British large cities mostly underperform their European peers in terms of public transport accessibility to 30 mins



- Glasgow is the only city that performs in line with its European peers.
- The gap looks particularly large for Sheffield, Manchester, Leeds, Newcastle and Birmingham.
- Particularly striking as no clear relationship to existing infrastructure (e.g. Metrolink in Manchester or Supertram in Sheffield vs. no metro in Leeds or Bristol).

Lack of infrastructure isn't really the problem – area covered is above average in some big cities

The size of the public transport network is not a problem of all British large cities

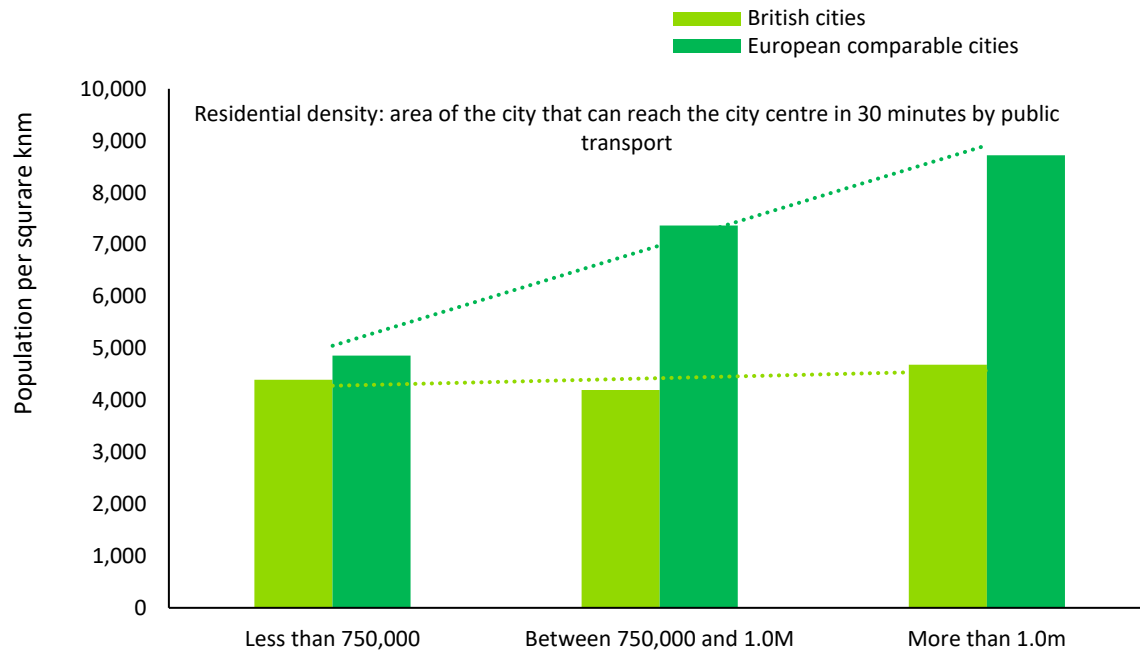


Source: Traveltime; ONS; Eurostat; Centre for Cities' calculations. Coverage above 100 per cent does not necessarily mean that all residents are included as transport network may include residents from different towns and cities.

- No chronic underperformance when considering the size of each network (square km covered that can reach the city centre within 30 minutes):
 - Birmingham, Glasgow, Newcastle have larger networks than the European average within their groups, but they still lag behind in accessibility (share of population who can reach the centre, shown in the previous slide).
 - Leeds, Sheffield and Manchester have comparatively small public transport networks – the current level of service provision is likely to have the biggest negative impact in these cities.

Key problem – the built environment and density

Larger the city, the biggest the density problem

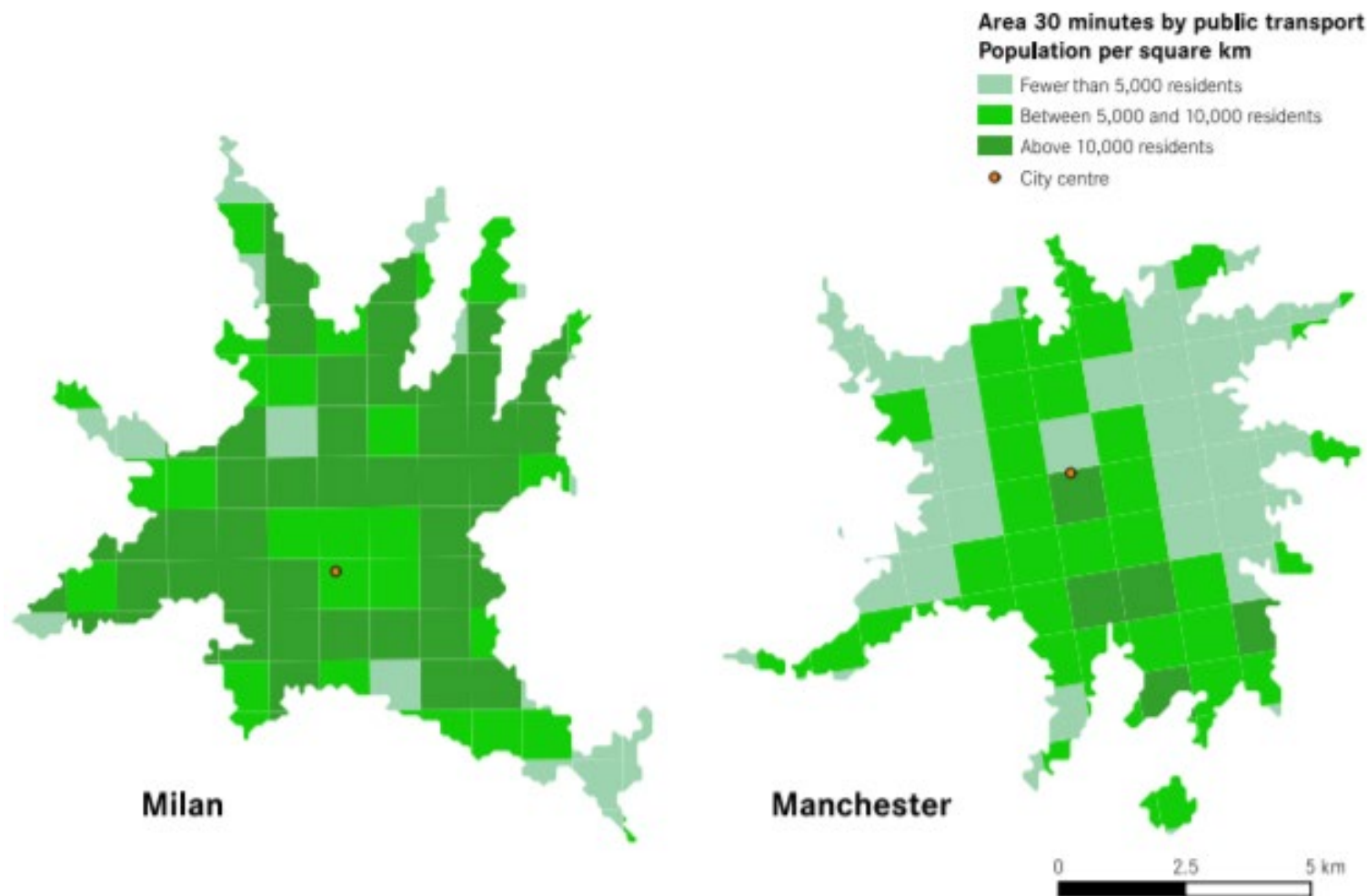


Source: Traveltime; ONS; Eurostat; Centre for Cities' calculations. Coverage above 100 per cent does not necessarily mean that all residents are included as transport network may include residents from different towns and cities.

- A large portion of UK's transport problems are result of residential density and not directly from public transport infrastructure – **fewer people live close to the centre.**
 - There is a **lack of people living next to good public transport connections**, especially in the largest British cities (Manchester and Birmingham). People are forced to live far away from public transport due to how our planning system controls development
 - **More infrastructure and more track will not be enough to tackle the existing problems in accessibility** - case study of Leeds in the following slides shows this.

Key problem – the built environment and density

Despite similar network sizes, Manchester underperforms Milan



- Milan has approximately 630,000 more residents than Manchester, living 30-minutes or less from the city centre.
- Unlike Milan, Manchester has several with less than 5,000 residents per square km in its 30-minutes commuting belt.

This differences are easily identified

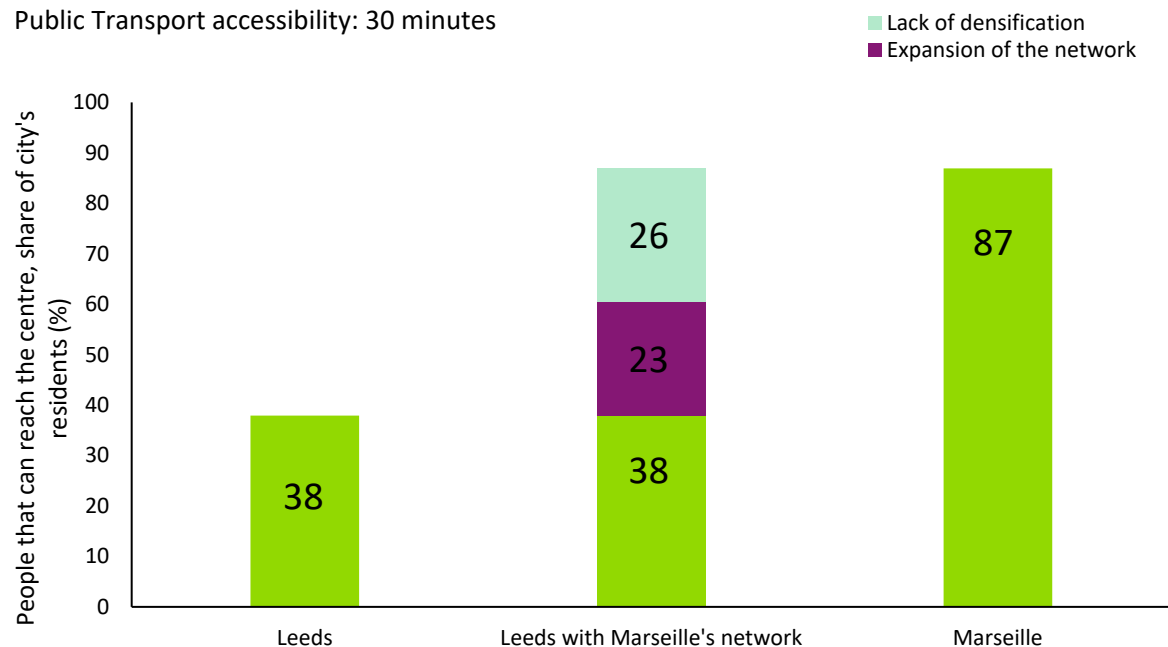
Milan and Manchester, approximately 15 minutes from the city centre by public transport



Case study: Leeds' network expansion will not be enough

Leeds is significantly smaller than Marseille when considering public transport 'effective size'

Public Transport accessibility: 30 minutes



- Leeds has a similar population to Marseille but a **smaller 'effective size' because** only a fraction of its residents can reach the city centre in 30 minutes or less.
- Leeds does have a smaller public transport network than Marseille. But extending the size of Leeds' public transport to Marseille's levels – approximately by doubling the existing area that can reach the centre in 30 minutes – **would only close around half of the gap between those cities.**
- Without further densification, British cities will need significantly larger public transport networks than its peers to achieve the same outcome.

Source: Traveltime; ONS; Eurostat; Centre for Cities' calculations. Coverage above 100 per cent does not necessarily mean that all residents are included as transport network may include residents from different towns and cities.

This differences are easily identified

Marseille and Leeds, approximately 5 minutes from the main station by public transport

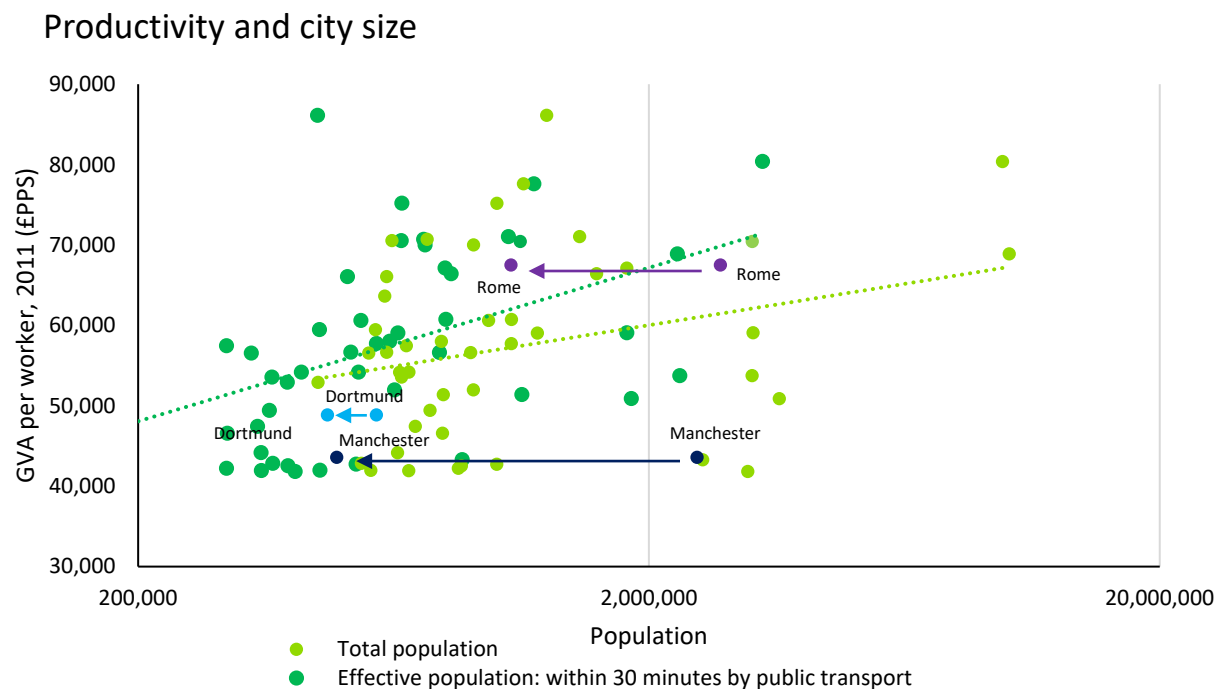


Consequences for levelling-up



The role of public transport in levelling-up: example of Manchester

Effective population and productivity: Manchester looks more similar to Dortmund than to Rome.



Source: Traveltime; ONS; Eurostat; Centre for Cities' calculations. Coverage above 100 per cent does not necessarily mean that all residents are included as transport network may include residents from different towns and cities.

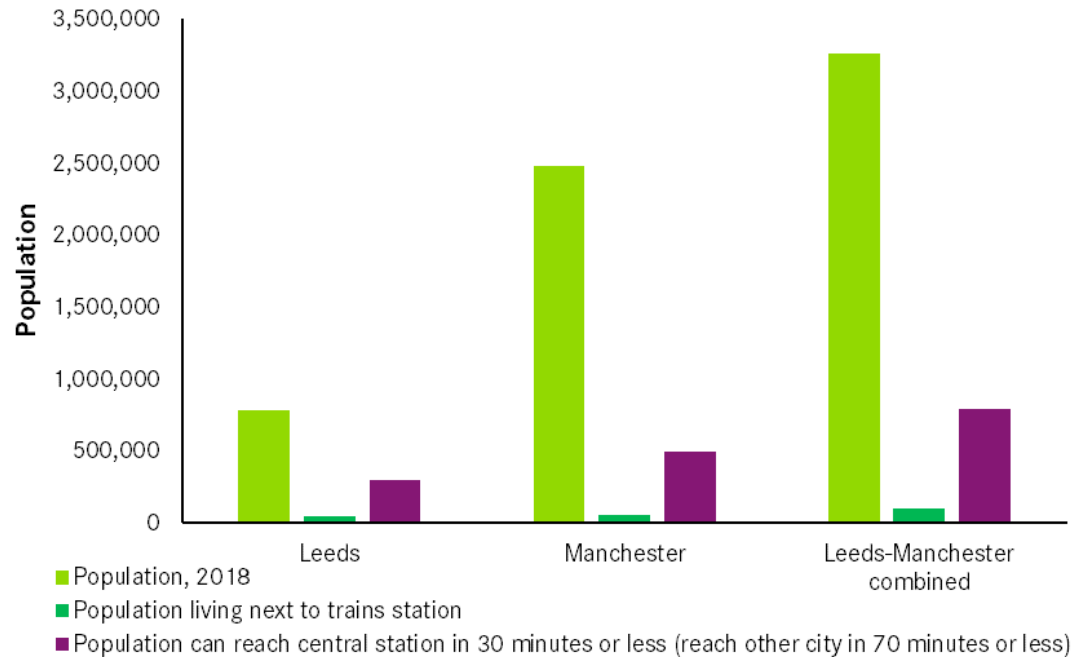
- Despite similar total population levels between Manchester and Rome, Manchester's effective population (population 30 minutes from city centre by PT) is closer to Dortmund.
- Manchester looks more similar to the German city than Rome in productivity terms: 12 per cent less productive than Dortmund and 57 per cent for Rome.
- These examples shows the importance of connectivity, density and the effective total population to promote agglomeration benefits – which will impact productivity.
- Simple estimates suggest this costs £23.1 billion a year.

Urban form and inter-city connectivity: Case Studies



Intercity connectivity: role of the urban form

Leeds-Manchester: Population by proximity to main train stations



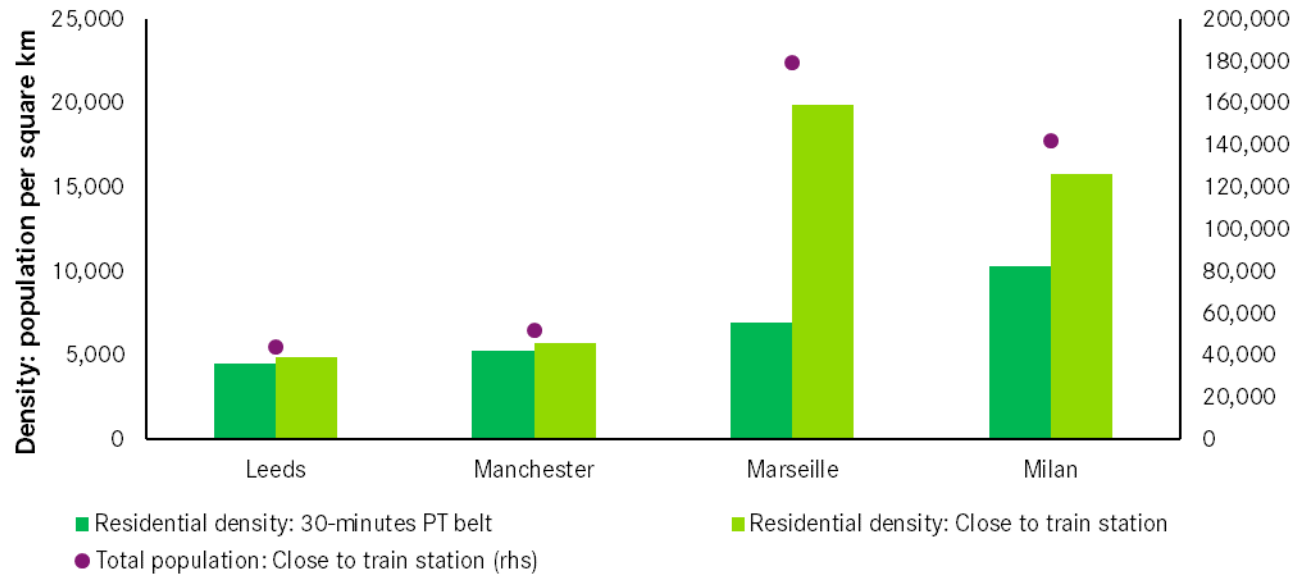
- The lack of density in the areas close to the city centre restricts the number of people who can fully benefit from high speed rail in the UK.
 - High speed rail alone does not make commuting between Leeds-Manchester fast (**'Park&Ride + HS ≠ High Speed Rail'**)
- Less than 3 per cent of Leeds-Manchester population live next to the train stations.
- Even considering people are willing to commute up to 60-70 minutes (twice the average commuting time): **only 24 per cent of the population could do it.**

Source: Traveltime; ONS; Eurostat; Centre for Cities' calculations. Coverage above 100 per cent does not necessarily mean that all residents are included as transport network may include residents from different towns and cities. Close to train station: area of 9 square km with the centre in the main train station.

Intercity connectivity: role of the urban form

Marseille and Milan has much more residents next to their main train stations

Density and total population



- Again, this is partially explained by urban density in the UK.
- Cities like Leeds and Manchester, when compared with Marseille and Milan, have significantly fewer residents in the areas surrounding their train stations.
 - **Marseille and Milan has more than twice the residents of Leeds and Manchester.**

Source: Traveltime; ONS; Eurostat; Centre for Cities' calculations. Coverage above 100 per cent does not necessarily mean that all residents are included as transport network may include residents from different towns and cities.
Close to train station: area of 9 square km with the centre in the main train station.

Conclusions an recommendations





Conclusions

- Connectivity by public transport likely to be a **factor driving UK's productivity downwards but it is far from explaining the overall productivity gap;**
- There is **little evidence that private-vehicle infrastructure is an issue in UK's largest cities;**
- Accessibility problems cannot be solved simply by expanding the existing networks: **densification will also be necessary, especially in largest cities** such as Birmingham and Manchester;
 - A European-style public transport network in Leeds, without plans for further densification, will not be enough to address Leeds' 'effective size' problem.
- The existing low coverage explains why public transport commute is comparatively low in British cities.
- This has implications in terms of intercity public transport investments. Long commutes to the main train stations will offset the benefits of High Speed Rail.
- But densification is really difficult in UK cities thanks to case-by-case discretionary planning system! See: <https://www.centreforcities.org/publication/sleepy-suburbs-housing-crisis/>



What needs to change to advance levelling up

- Public transport investments and funding should be linked to densification commitments in areas covered by public transport.
- Local government can densify those areas with **Local development orders** or **releasing parts of the green belt** next to stations.
 - Not just using LDOs for new infrastructure, but along existing networks.
 - New investment in PT should be conditional on some deployment of LDOs
- Planning reform to improve certainty and reduce case-by-case decision making, like the one currently under discussion, would further support densification where it is needed.
 - Renewal areas would help
- If we move to a rules-based planning system, integration of transport and land-use planning becomes easier, as no longer required to make plans at exactly the same time

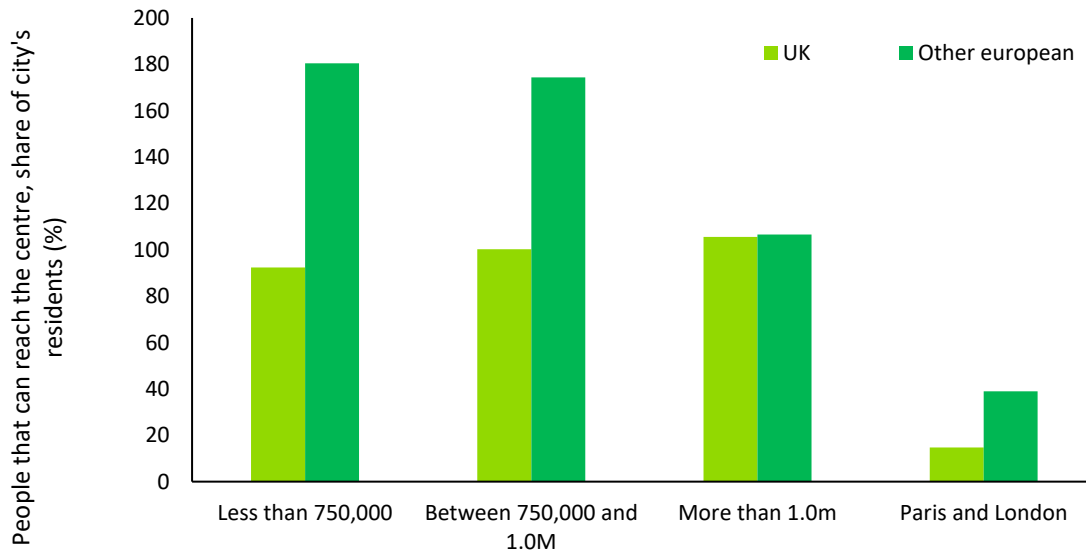
Additional charts and figures



Private transport does not seem to be the problem

Private transport in British cities is able to cover most of the population within a 30-minute drive

Private vehicle accessibility: 30 minutes



Source: Traveltime; ONS; Eurostat; Centre for Cities' calculations. Coverage above 100 per cent does not necessarily mean that all residents are included as transport network may include residents from different towns and cities.

- In some groups, private transport coverage is lower than the European counterparts. **However, it is always close to 100 per cent in British cities. This suggests that effective size of British cities by private transport is not the reason behind the productivity lags.**
- European numbers are partially boosted by German cities close to each other (e.g. Dortmund and Essen; Cologne and Bonn), which **do not necessarily reflect an increase of the effect size of such cities.**
- For cities above 1 million (Manchester, Birmingham and Glasgow) **we do not observe any kind of underperformance** compared to their European counterparts.

Concepts and analysis

Cities by population group

Groups	British cities (avg. population)	European Cities (avg. population)
Less than 750,000	Bristol, Liverpool and Nottingham (689,350)	Stuttgart, Frankfurt am Main, Dortmund, Toulouse, Leipzig, Dusseldorf, Essen, Bremen, Nantes, Bordeaux, Dresden, Nice, Zaragoza, Palermo, Seville, Genoa (615,891)
Between 750,000 and 1.0M	Sheffield, Leeds and Newcastle (831,775)	Lille, Marseille, Valencia, Rotterdam, Bilbao, Turin (876,374)
Above 1.0m	Glasgow, Manchester and Birmingham (2,014,618)	Berlin, Brussels, Stockholm, Munich, Copenhagen, Barcelona, Hamburg, Milan, Rome, Lyon, Dublin, Amsterdam, Madrid, Cologne, Napoli (2,045,383)
Mega cities (+9M)	London (10,151,260)	Paris (9,845,879)

Source: ONS; Eurostat.

- We compare the largest British cities with some of their comparable Western European counterparts as shown below.
- This approach help us understand how British cities should look like both in terms of residential density but also the size of their public transport network.

Levelling-up and transport: far from explaining the full gap

Productivity gap falls when looking at 'effective population'

PUA	GVA loss due to weak accessibility, 2020 (£ million)
Manchester	£8,860
Birmingham	£3,628
Leeds	£2,754
Sheffield	£2,304
Bristol	£1,787
Newcastle	£1,684
Nottingham	£1,049
Liverpool	£936
Glasgow	£137
Combined effect	£23,138

Source: Traveltime; ONS; Eurostat; Centre for Cities' calculations. Coverage above 100 per cent does not necessarily mean that all residents are included as transport network may include residents from different towns and cities.