

# Getting moving

Where can transport investment level up growth?

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# 00

## Executive summary

Investment in new transport infrastructure is often seen as the answer to kickstart flagging economies across the country. However, new analysis shows that relatively few cities and large towns have poorly-performing transport networks, questioning the need for widespread new investment in infrastructure.

Outside of the largest cities and towns, journeys into most city centres at peak times are on average relatively quick and so further infrastructure investment in these networks is likely to have little effect on economic performance in the short term. Even in some large cities such as Newcastle and Sheffield, the demand to access the relatively weak city-centre economy is not sufficient to unduly strain the transport system at rush hour. **Rather than investing in new transport infrastructure, these cities should focus on making their city centres more attractive for businesses to increase the number of jobs in them.**

It is only in a handful of city centres, which have seen strong growth in the last two decades, where short-term growth is at risk of being held back by a transport system that cannot keep up with the increased travel demands that result from their economic resurgence. This analysis suggests that in London, Manchester, Birmingham, Bristol and Leeds in particular, major new public transport infrastructure – from bus rapid transit to underground systems – is needed quickly to stop congestion and capacity constraints choking off growth.

The National Infrastructure Commission has recommended that the Government should invest an additional £31 billion in major new transport projects in priority cities outside London. **This report seconds this recommendation, and further calls for it to be prioritised in the places where congestion and public transport capacity constraints into the city centre are holding back economic growth.** To unlock government investment, cities should also contribute a share of the costs. These contributions should partly come from money raised from the creation of a city-centre congestion charge.

This report has not looked at the management of existing transport systems, but **cities and large towns, irrespective of economic performance, should look at how to improve the management and efficiency of their existing transport networks**, for example through bus franchising. While management falls outside of the scope of this report, detailed recommendations can be found in *Delivering change – improving urban bus transport* and *Making Transport Work for Cities*.

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This work uses research datasets which may not exactly reproduce National Statistics aggregates.

# 01

## Introduction

The national economy is clustered in cities and large towns – 60 per cent of jobs are located in Britain’s cities and large towns, even though they account for only 9 per cent of land. This is especially the case in city centres. Covering less than 0.1 per cent of the UK, 14 per cent of all jobs, and 25 per cent of the most productive jobs – engineering, legal, financial and technology services – are clustered in city centres.<sup>1</sup> These dense, central locations are the perfect place for high-skilled businesses, especially in services sectors.

As the UK economy continues to specialise in more high-skilled activities, the demand for a city-centre location amongst businesses is likely to grow. Some city centres already offer businesses the benefits of a qualified workforce and dense business environment. But other city centres are lagging behind. They are less attractive to business and as a result have few high-skilled jobs, with implications for job opportunities and pay rates for people who live within commutable distance of them.

An efficient transport system facilitates access to workers from across the city and beyond. Where daily intra-city journeys by millions of commuters are held up by congestion, time is lost, and places become less productive.

Demands for greater transport investment are always at the top of the political agenda. But the focus of transport policy is usually on national and inter-city schemes with large price tags and drastic journey-time reductions. High Speed 2 now has a budget of £88 billion, and Northern Powerhouse Rail will require £39 billion to improve regional inter-city links between major centres. Much less attention is given to supporting schemes within cities that would improve commutes to city centres.

The National Infrastructure Commission (NIC) was established in 2016 with a view to addressing ‘the UK’s long-term productivity problem’. It identified poor intra-city links from suburbs to city centres as a barrier to growth.

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<sup>1</sup> McDonald R and Swinney P (2019) ‘City centres: past present and future’, London: Centre for Cities

The NIC has called for £31 billion in investment in major new transport infrastructure in priority cities by 2040 to boost national productivity, as well as an extra £12 billion on top of planned levels of funding to invest in smaller transport improvements in all cities.<sup>2</sup>

But not all cities face similar transport barriers to growth. This report uses data compiled by the NIC to set out where funding in new transport infrastructure will have the greatest positive impact on improving access to the city centre and on the economy.

### **Box 1: The wider benefits of better transport**

This report is focused on how transport can facilitate strong, growing city centres by efficiently linking workers with jobs.

However, getting people to work is just one of the roles transport plays in a city. Good transport has multiple positive outcomes for people and communities. As well as connecting people to job opportunities, transport policy should also aim to lower carbon emissions, reduce air pollution, encourage a more-active population, and improve access to health and education services for all.

While these objectives are outside the scope of this report, the recommendations given should, indirectly, strengthen cities' abilities to pursue these objectives.

For more on these wider goals, see previous Centre for Cities' reports:

- Access all areas: Linking people to jobs (2011)
- Delivering Change: Making transport work for cities (2014)
- How can UK cities clean up the air we breathe: Lessons from cities taking action to reduce roadside emissions (2018)

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<sup>2</sup> National Infrastructure Commission (2018) National Infrastructure Investment

# 02

## The importance of city centres to the national economy

The clustering of jobs in businesses in cities and large towns, and city centres in particular, shows the central role they play in the national economy. City centres cover less than 0.1 per cent of land but house 8 per cent of businesses and 14 per cent of jobs. Importantly, they are not just home to many jobs – they are particularly attractive to more high-skilled exporting jobs that tend to have higher levels of productivity (see Box 3).

These businesses are attracted to city centres over other parts of the country by the benefits that these areas offer. In particular, there are three benefits to locate in the city centre:

- 1. Matching** – Access to a large number of potential employees from across the city and beyond, and especially to high-skilled workers who are more likely to live in a city on average.
- 2. Sharing** – Access a higher quality of infrastructure which is enabled by the densely-populated city, with many businesses and residents sharing the cost of this investment.
- 3. Learning** – Access to many other firms who are co-located in the city centre, and the ability to work with them and have easy face-to-face interactions. This facilitates innovation and, for firms which are knowledge-based, this can boost their productivity.

The varying performance of city-centre economies suggests that some city centres are more successful at offering these benefits than others. As Figure 1 shows, there is a great deal of variation in the performance of Britain's city-centre economies. While the centres of places such as Manchester, Reading and London have large shares of high-skilled exporting jobs in them, the opposite is the case for the centres such as those of Swansea, Stoke and Middlesbrough.

These cities have struggled to attract exporting jobs, and those that are located there tend to be lower-skilled activities. This affects the job opportunities available and wages on offer to people who live in and around them.

Additionally, Figure 1 shows that the densest city centres are also stronger city-centre economies – most of the cities with dense city centres (indicated by the size of the bubble) are located in the upper-right quadrant. Stronger city centres have on average 180 jobs per hectare, reflecting their attractiveness as places to do business.

### **Box 2: Definition of city centres**

To define city centres, a circle was drawn around the centre of a city. The radius of this circle was varied according to the population size of the city.

The radii used were:

- 2.0 miles for London
- 0.8 miles for cities with populations between 600,000 and 2.5 million in 2011
- 0.5 miles for cities with populations under 600,000 in 2011

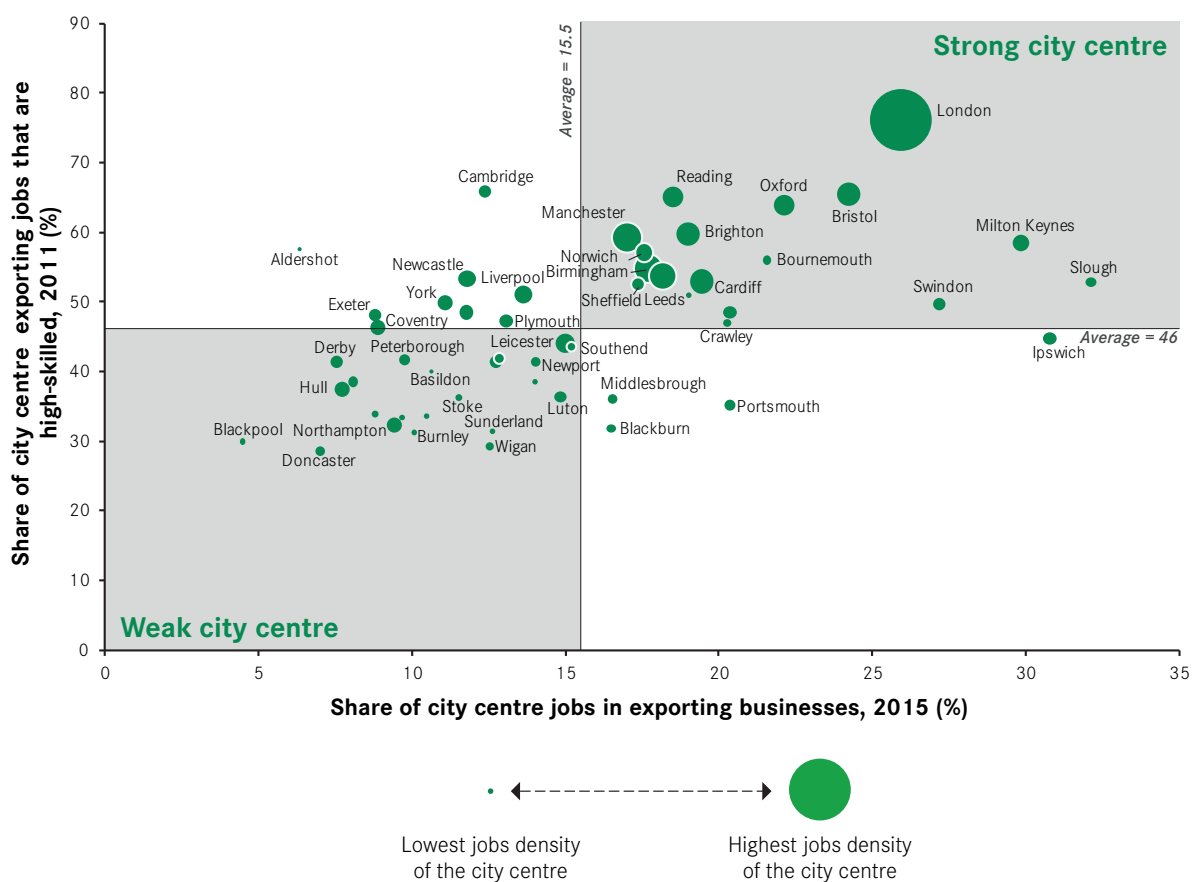
For this report, economically-strong city centres are those with:

- Jobs density over 200 jobs per hectare in 2015
- Growing jobs density between 1998 and 2015 (See Figure 2)

From those under consideration, nine which meet these criteria can therefore be classified as having strong city centres. A more detailed list can be found in Appendix 1.



**Figure 1: The size and composition of a city centre's exporting base and the density of the city centre**



Source: ONS Business Structure Database (2017), 2011 Census

Note: This chart contains data only on cities in England and Wales. Data for Scotland and Northern Ireland is not available.

### Box 3: The role of exporting businesses in city economies

There are two types of private sector businesses:

1. **Local services businesses** sell directly to consumers. They include estate agents and amenities such as hairdressers and cafés. As a result, their location decisions are determined predominantly by where their customers live, work or trade from. They are also known as ‘non-tradable’ businesses.
2. **Exporting businesses**, such as investment banks, advertising agencies and manufacturers, sell their products or services outside their local area to regional, national, and international markets. Unlike local services, these exporting businesses are not tied to one local market. They are also known as ‘tradable’ businesses.

Exporting businesses are important for three reasons:

1. They generate income independent of the performance of their local economy, because they sell to other markets.<sup>3</sup>
2. They tend to be more productive than local services firms and are drivers of productivity increases over time. For example, while a hairdresser is as productive as 50 years ago, a worker in a car factory is now many times more productive.<sup>4</sup>
3. Exporting businesses have a multiplier effect on jobs in local services. The better they perform, the higher the local disposable income in the economy, and the higher the demand for the goods and services of local businesses such as shops and restaurants. All exporting businesses have a multiplier effect, but it is much bigger for high-skilled exporters than for low-skilled exporters. For example, for every 10 new high-skilled exporting jobs created between 1995 and 2015 in urban Britain, 17 new jobs were generated in low-skilled local services.<sup>5</sup>

For the purpose of this research, exporters and local services are defined using Standard Industrial Codes (SIC).<sup>6</sup> These were used to identify jobs in sectors that have the potential to sell to markets beyond their local area.

3 Rowthorne R (2018) Combined and Uneven Development: Reflections on the North-South Divide. *Spatial Economic Analysis* 5 (4) Pages 363-387

4 Moretti E (2013) *The New Geography of Jobs*. New York: Houghton Mifflin Harcourt

5 Magrini E (2019) *Opportunity Knocks? Economic outcomes for low-skilled people in cities*. London: Centre for Cities

6 For detailed definitions see Appendix 2 in: Magrini E (2019) *Opportunity Knocks? Economic outcomes for low-skilled people in cities*. London: Centre for Cities

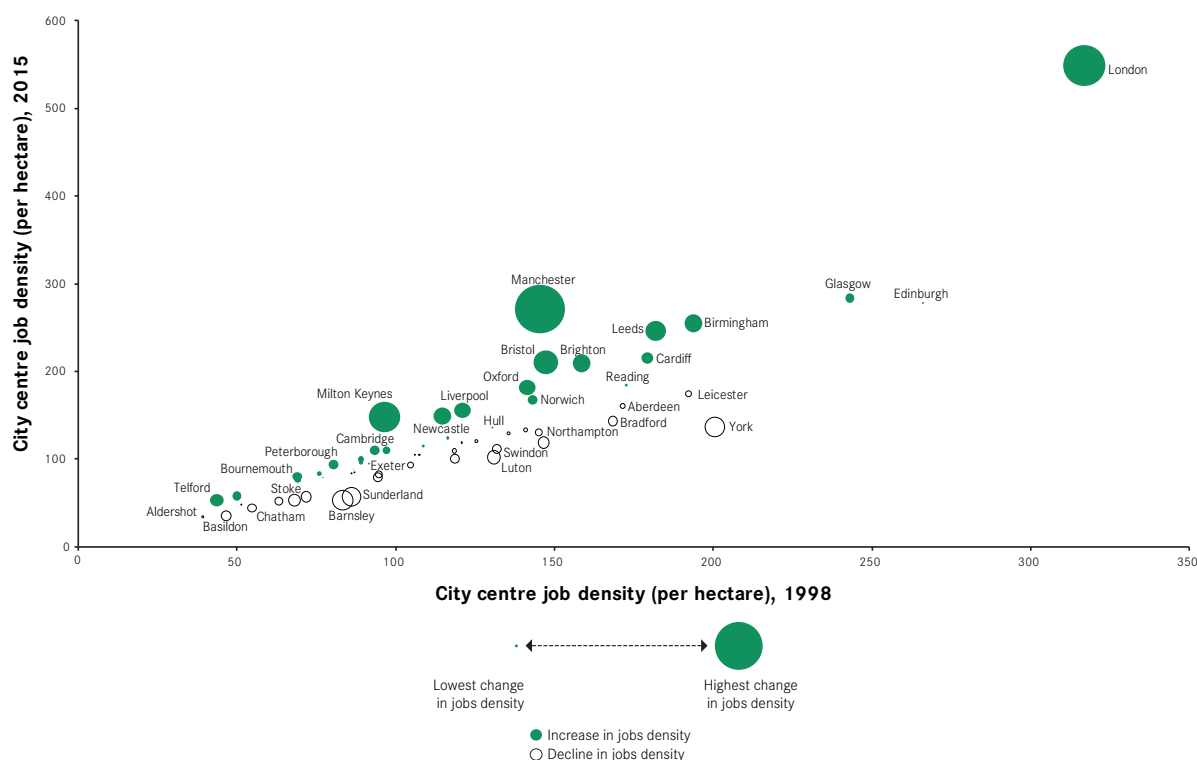
## Cities that are already the densest are the most likely to get even more dense

As the UK economy has increasingly focused on higher-skilled, more knowledge-based activities in recent years, some city centres have become increasingly attractive places to do business. This has meant that a greater number of jobs, in particular high-skilled service exporting jobs have located in very particular geographies, increasing the density of these city centres.

Those city centres that have seen the strongest growth in jobs have tended to be those that already had relatively dense city centres. As Figure 2 shows, there is a positive correlation between jobs density in 1998 and 2015 for city centres as demand to access these city centres has grown. Besides London, the city centres of Manchester, Leeds and Birmingham had a particularly large increase in city-centre jobs. The number of jobs in Manchester city centre, for instance, increased by 84 per cent to 2015.

Given the UK economy is likely to continue to specialise in high-skilled activities, it is probable that city centres will play an ever-larger role in the national economy. But only those city centres that offer the benefits that high-skilled exporting businesses are looking for are likely to profit from this.

**Figure 2: Growth rates of city centre's jobs density over time**



Source: ONS, Business Structure Database

Note: This chart only contains data on cities in England and Wales. Data for Scotland and Northern Ireland is unavailable.

## **Transport has a central role in supporting future city-centre economic growth**

As city centres grow, an increasing number of commuters funnel into a fixed location. This requires a transport system able to cope with an increasingly large number of passengers if its ability to support future growth is to be sustained.

The following section explores in which places in Britain new infrastructure investment could have the largest impact on the local economy to improve economic growth.

### **Box 4: The role transport cannot play**

Transport's direct economic role in supporting a city centre is to widen the pool of labour that can access city-centre jobs as much as possible. The skills level of the local labour market, as well as the profile of the existing business base are the fundamental drivers of city-centre performance and the location decisions of highly-productive firms between areas. While the quality of a city's transport system will have some bearing on this, it is likely to be more marginal compared to these other factors.

# 03

## What role does transport play in densifying city centres?

While much is said about transport and the need for investment in it, there is little information about the performance of transport systems across cities. This, coupled with current and likely future demand generated from the growth of city-centre economies, is an important assessment to make when deciding on investment in new transport infrastructure. To what extent is the lack of transport a barrier to city centre success? And do all cities need additional investment in new transport infrastructure?

### **Box 5: What is meant by investment in new transport infrastructure?**

Transport infrastructure is the permanent fixed network of assets that allow for people and goods to move easily such as roads, railways, ports and airports, as well as the vehicles and facilities to make use of and maintain them. This report focuses on investment in major upgrades, brand new schemes and/or significant improvements to increase capacity and speeds, such as new trams, or upgrading road networks to support Bus Rapid Transit. Investment in new freight transport infrastructure that frees up capacity for more passenger services on existing rail lines should be considered in response to the findings of this report.

This report does not look at the maintenance of existing infrastructure, but this should be supported by government in line with the NIC.

This section looks at data from the NIC that aims to provide a sense of how quickly the transport system in a city links people to job opportunities in city centres (see Box 6). This includes travel by private car and public transport, and combines it with data on how people use the existing transport system to access city-centre jobs to understand where transport may be holding back growth.

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**Box 6: City definition and NIC intra-urban employment accessibility index methodology**

Centre for Cities uses primary urban areas (PUAs) in its analysis of economic activity and how it is concentrated. For the purposes of this report, some of the NIC's data covers a wider area than these PUAs so 'Brighton' covers Brighton and Worthing PUAs, 'Leeds' covers Leeds, Wakefield, Bradford and Huddersfield PUAs, and 'Portsmouth' covers Portsmouth and Southampton PUAs.

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## Box 7: Understanding the data

The data in Figure 3 measures transport connectivity from where people live in each of the Built Up Areas (BUAs) to the centre of the Output Area (OA), or contiguous set of OAs in the BUA with the highest number of jobs. The minimum journey time is calculated from each OA to the defined city centre for (i) the public transport option and the private vehicle option, and (ii) the public transport option only. The public transport option includes average waiting time for peak services.

These outputs are divided by the time it would take to travel in a straight line from the start point to the city-centre destination at 50kph (31mph). A connectivity value of 1 is equivalent to being able to travel at 50kph in a straight line from origin to employment destination in the city centre.

The light green line measures the private vehicle option. Milton Keynes' score of 0.83 suggests that average commutes from within the BUA to the city centre are not too far from achieving 50kph in terms of directness and speed at peak times. The purple line measures the fastest public transport option and is slower in everywhere. Exeter's public transport system is the best in the country for getting workers into the city centre during the peak, with an average score of 0.39, while Telford has the lowest score at 0.16.

This data gives a score based on the average speed of the commute. It does not give direct information about the cost, comfort, convenience or any other factor that also influences whether and by what mode people commute into city centres at peak times. It is also a weighted average across the city, so it does not capture individual corridors or bottlenecks that are impeding connectivity and may make for frustrating individual journeys.

### Why focus on peak-time journeys?

The peak-time accessibility of the city centre is important for two reasons. The first is that the city centre is the single most common destination for journeys in a city because of its economic role. The second is that the peak is the most common time when people are making journeys, when most pressure is put on transport systems. This spatial and temporal concentration of demand for journeys puts transport networks under the greatest strain, leading to congestion on roads or crowded buses, trains and trams.

Peak-time transport accessibility into city centres is growing in importance even as the overall numbers of commuting journeys falls, and changing work patterns mean five-day commuting is in decline.<sup>7</sup> The headline reduction in commuting trips nationally masks the growing number of peak-time journeys into successful city centres on weekdays that make their roads, buses, trams and trains increasingly congested.<sup>8</sup>

7 Urban Transport Group (2019). Number crunch 2019: Urban transport trends in changing times

8 Greater Manchester Combined Authority (2019) Submission to the Williams Rail Review consultation

The NIC data is not perfect. It is limited in that it looks at the average journey and so does not allow for bottlenecks – the average journey for a city may be much quicker than some commuters experience on specific routes. In addition, as Box 7 makes clear, the built-up areas used in the data do not always align with the primary urban areas, which Centre for Cities considers to be a better reflection of the functional economic geography of the places. Nevertheless, the data provides important insight and a consistent national comparison for the nature of transport provision and use in these cities and large towns and how it relates to economic performance.

### **Congestion is not a major issue into many city centres**

In most places accessing city-centre employment by the fastest route is reasonably quick, even at peak times. Figure 3 uses the NIC data to set out the performance of transport networks in British cities and large towns in order of the fastest possible journey into the city centre. The light green bars show the accessibility for a journey by the fastest mode – which the NIC’s modelling calculates is always by car – whereas the purple bars refer to the speed of the journey by the quickest public transport route.

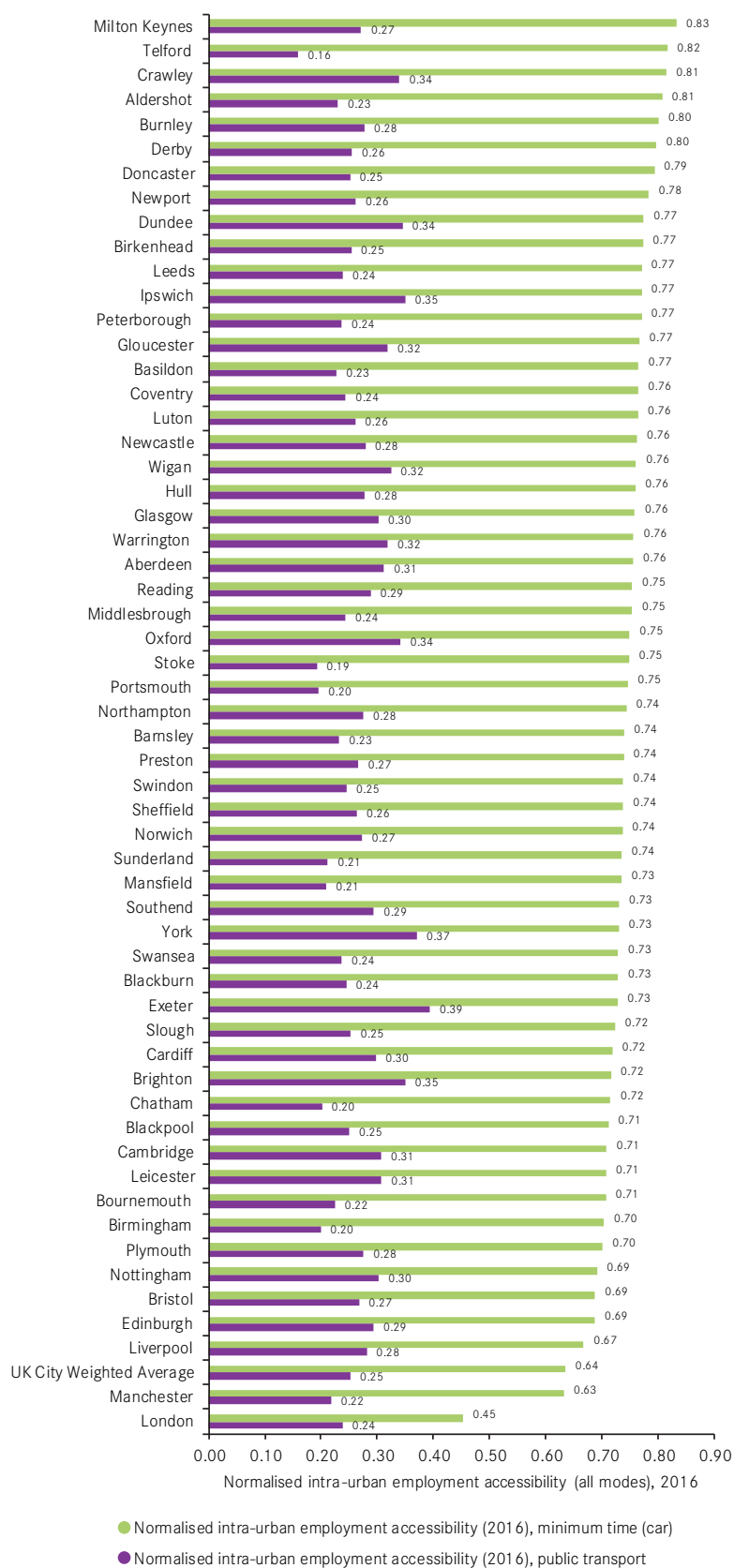
The most striking finding from the data is that, in most places, congestion is likely to be a minor constraint to linking workers with city-centre jobs even if there are some bottlenecks and delays on a few roads at the height of rush hour. Figure 3 shows that in 45 of the 57 cities and large towns measured, the city-centre jobs accessibility score (the fastest journey) is between 0.70 and 0.79 where a score of 1 would indicate a “perfect accessibility”.<sup>9</sup>

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<sup>9</sup> A score of 1 would be equivalent to travelling a straight line speed of 50 km per hour. Once indirect routes and traffic lights are accounted for, scores in this range are close to the 30 miles per hour speed limit of built-up areas.



**Figure 3: NIC's employment accessibility score by fastest mode (car) and fastest public transport, 2016**



Source: National Infrastructure Commission

Those with the best NIC accessibility scores are either:

- Strongly-performing cities or new towns with relatively small city-centre economies, such as Aldershot, Telford and Crawley. In these places, the more dispersed nature of jobs means that there are fewer bottlenecks which hinder a smooth commute to work. For new towns such as Milton Keynes, which were planned and built for travel by car, their high-capacity road networks have been able to handle the levels of demand to travel into the city centres even where this has grown rapidly.
- Places with weaker city-centre economies, such as Derby and Doncaster, have good intra-urban employment accessibility as the low number of jobs in the centre means there is lower demand to travel there. As a result, the existing capacity of the road network supports largely free-flowing traffic on average. In these cities, good car accessibility is a symptom of a weak city centre economy.

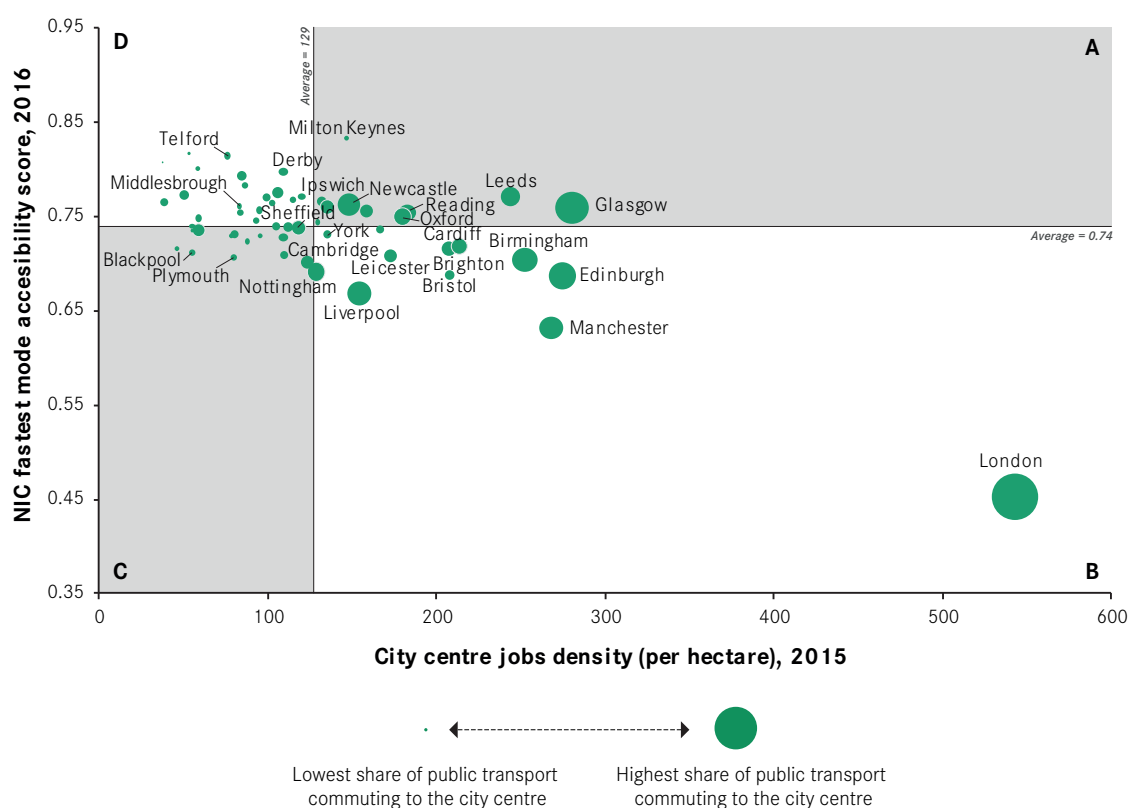
### **City-centre accessibility decreases with increasing jobs density**

According to the NIC data, those cities with the lowest accessibility scores are those with the densest city centres, i.e. those city centres that have the largest funnelling of commuters into them at peak times, and show consequently higher levels of congestion. Figure 4 illustrates this negative relationship between the NIC accessibility score (irrespective of mode) and the density of jobs in the city centre. In the bottom-right quadrant – B – are city centres such as Manchester's, which has 268 jobs per hectare and an accessibility score of 0.63, and London, which has 543 jobs per hectare in the city centre and an accessibility score of just 0.45.

In contrast, city centres in the top-left quadrant – D – are much less dense and have much faster access according to the NIC data. This includes centres such as Aldershot, Telford and Newport. Aldershot's centre for instance has just 38 jobs per hectare and a higher NIC accessibility score of 0.81. Congestion into these city centres is much less of an issue on average.

It is the economic geography of a city or large town that plays a fundamental role in the speed of the transport system into the centre. An increasing number of jobs in the centre, which leads to an increase in journeys into it, necessarily slows down commuting by private transport as more cars compete for limited road space.

**Figure 4: NIC's employment accessibility score by fastest mode (car) against city centre jobs density**



Source: ONS, Business Structure Database; National Infrastructure Commission

These patterns tend to influence whether a commuter decides to travel by public or private transport. As the bubbles in Figure 4 show, commuting by public transport increases as density increases and accessibility falls. While only 12 per cent of city-centre workers in Telford (the place with the highest accessibility score) commuted by public transport in 2011 (the most recent data available), 80 per cent of London city-centre workers did so.

This occurs because of the shift in balance of the relative costs and benefits between travelling by car and public transport that a larger city-centre economy creates. As the NIC data above shows, car travel is still quicker than public transport into every city centre in Britain. But the narrowing of this gap for the densest city centres, combined with other associated costs, such as parking charges, and in London's case, the Congestion Charge, means that in Manchester and Birmingham around half of all city-centre commuters chose public transport in 2011.

Of course, public transport is not the only alternative to the car – walking and cycling are options too. But these options are far more popular choices in smaller cities such as Cambridge and York (where walking and cycling account for 41 per cent and 40 per cent of city centre commutes respectively) than for larger cities such as Liverpool or Manchester.

Bristol stands out as a major city with very high levels of walking and cycling into the city centre (32 per cent), which is a function of the higher share of city centre workers living in neighbourhoods around the city centre. These may be desirable because of the quality of housing, schools or shopping and cultural amenities. It may also be that the weakness of public transport accessibility further out from the city centre puts a higher premium for city-centre workers on housing within walkable distance.

There are two implications. Firstly, a growing city centre needs a transport system that allows an increase in commuters into it, and **significant growth requires substantial public transport capacity** as the roads become congested for cars.

Secondly, most cities with weak city-centre economies – those in quadrant D – have significant road capacity to support jobs growth in the city centre without leading to congestion. These **weaker cities should focus on encouraging more jobs to locate in the city centre and maintaining bus speeds**. It is unlikely that new public transport infrastructure or upgrades will be of tangible economic benefit to residents or businesses in these cities in the short- or medium-term.

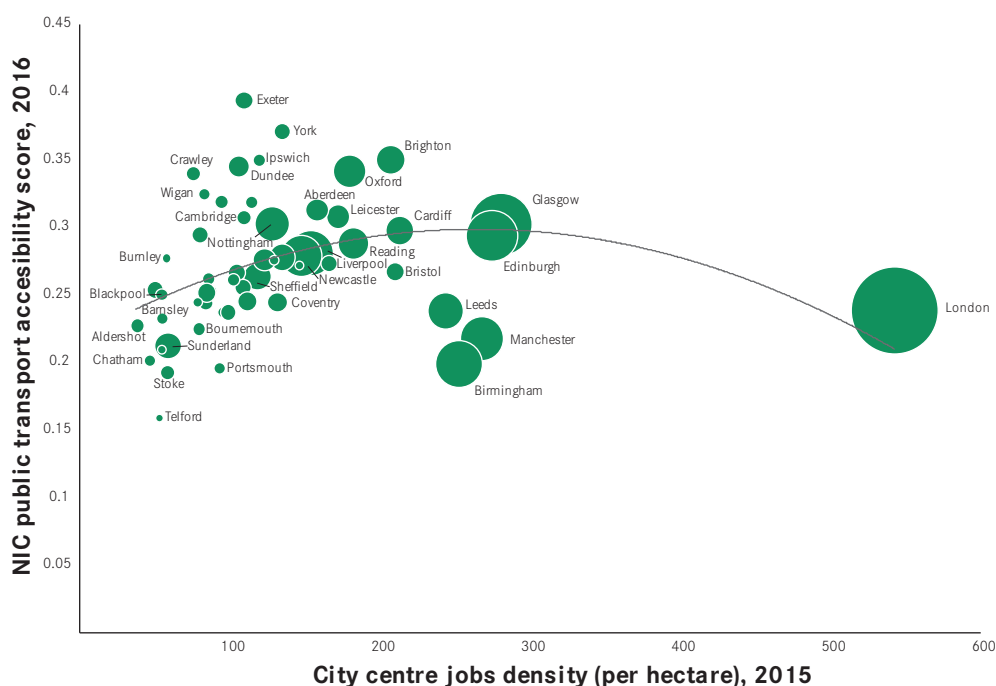
In contrast to the strongly-negative relationship between city-centre accessibility by car and jobs density, the relationship between public transport accessibility and jobs density is bell-shaped: accessibility to the city centre initially increases with jobs density but decreases after having exceeded a certain level of density (see Figure 5).

It is particularly the weaker and less-dense city centres that have worse public-transport accessibility. Lower demand to access the smaller number of jobs in the weakest city centres makes public transport less viable, meaning less frequent services that increase average waiting times and worsen public transport accessibility. Conversely, denser and stronger city centres generate higher levels of demand for services to access more jobs. This supports the provision of more-frequent city-centre services to meet this demand, bringing down average waiting times for passengers and increasing public transport accessibility.<sup>10</sup>

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10 Urban Transport Group (2019), What scope for boosting bus use? Leeds: Urban Transport Group

**Figure 5: NIC's employment accessibility score by public transport against city centre jobs density**



Source: ONS, Business Structure Database; National Infrastructure Commission

Figure 5 suggests that there is a turning point in this relationship. While the relationship is positive up to around 200 jobs per hectare, after this point public transport accessibility begins to fall. This could be because greater competition for road space slows buses down after a certain point, or the necessary increase in traffic lights and junctions makes journeys longer. As the bubble sizes suggest though, this does not appear to deter public transport usage, suggesting that public transport remains the most efficient mode of transport to get people to work in these cities.

In part, this is because of other public transport options that are available that are not competing for limited road space. In these cities, the rail network has overtaken the bus or car as the single most important transport mode to access the city centre at peak times. Rail journey reliability and times are less affected by the higher demand that worsens car and bus accessibility. This does mean though that residents reliant on buses have seen their feasible commutable distance shrink (see Box 9) while rail commuters have seen the number of jobs they can access grow.

Besides London, seven cities – Manchester, Birmingham, Bristol, Leeds, Edinburgh, Glasgow and Cardiff – have city centres with jobs density above 200 and public transport accessibility of 0.3 or below. Manchester, Leeds and Birmingham in particular stand out for their slow public transport.

The more reliable and faster parts of the public transport networks into the city centre at peak times, such as rail, tram and busways, are at capacity, while buses exposed to road congestion have spare capacity largely due to unreliability and unjustifiable commuting times (see Figure 6). The future jobs growth in these city centres is most at risk of being constrained by their inadequate transport infrastructure.

### **Box 8: How Brighton has supported city-centre growth by better use of the road network**

**Brighton** has managed to push the limits of jobs density in its city centre (207 jobs per hectare – up 31 per cent between 1998 and 2015) while maintaining public transport accessibility (0.35). A key element of this has been ensuring that local bus services are not caught up in growing traffic. Buses are segregated from cars and prioritised using bus priority junctions, bus lanes and bus gates. The city also suppresses demand from car users through high parking charges in the city centre – the city raises more than Manchester and Birmingham councils combined from parking. This raises funds to invest in schemes that improve the bus offer to residents still using the car, such as park and ride.

By making the road network less efficient for cars, Brighton has increased its efficiency at carrying passengers. This has allowed the city centre to continue growing without significant new rail services or tram infrastructure.

### **Box 9: Repairing links to city-centre opportunities through bus priority measures**

**Birmingham** city centre attracted 30 per cent more jobs between 1998 and 2015. The demand to access these jobs has reduced the efficiency of the road network and slowed down buses. Work by the Open Data Institute Leeds and Transport for the West Midlands found that over 10 years, bus speeds have fallen by 10 per cent and pushed 216,000 residents beyond a 45-minute bus commute of the city centre.<sup>11</sup> Increasingly, commuters are travelling by train.<sup>12</sup> Residents of parts of the city reliant on buses for public transport face longer and less-reliable peak journey times by bus, putting city-centre jobs out of reach for some. In response, Transport for the West Midlands is introducing plans to speed up bus journeys and increase reliability using funding from the recently-announced National Bus Strategy.<sup>13</sup>

11 ODI Leeds (2018). Real Journey Times Project

12 Transport for West Midlands (2017). West Midlands Travel Trends

13 Department for Transport (2019). Government takes the first steps in a bus revolution

## **A lack of spare capacity supports the case for further major infrastructure investment**

As well as speed, capacity is also an issue that should be considered when looking at the performance of the transport network and requirements for investment. A system with a lot of spare capacity is unlikely to need large infrastructure investment. While data on usage is patchy, estimates are available for the primary centres of England's combined authorities (see Figure 6).<sup>14</sup>

This more limited dataset suggests that the denser the city centre, the less spare road and train capacity there is. In the West Midlands, for instance, 83 per cent of road capacity, and 63 per cent of national rail capacity in the city centre is being used at peak time – one of the highest of any of the areas measured.

But the averages presented in this overall city score do not capture particular lines and routes into city centres that are at capacity. In Greater Manchester, for instance, the Metrolink line from Altrincham into Manchester city centre is full at peak times and has been since soon after opening, leaving some commuters unable to board services, while elsewhere on the network, peak-time trams from Rochdale are not full.<sup>15</sup>

Bus capacity stands out for its lower capacity utilisation. In several of these cities, the share of bus capacity used into the city centre is much lower than for national rail and road. In the West Midlands, less than half (46 per cent) of the bus capacity is used and in West Yorkshire only 63 per cent is used despite more than 80 per cent of road and rail capacity being taken up.

This raises the question as to why capacity utilisation is not higher given the nature of its accessibility score and the density of its city centre. Work by the Open Data Institute Leeds for the West Midlands Combined Authority shows that it is the inefficiency of the system – especially the irregularity of and delays to services at peak times – that makes the bus an unattractive option.<sup>16</sup> Given this, policy should look at what investments, such as bus lanes, can improve the efficiency of existing services.

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<sup>14</sup> Collected data not available for Cambridge and Peterborough.

<sup>15</sup> TfGM (2017) DSD REPORT 1912 Transport Statistics 2016 Rail & Metrolink Section

<sup>16</sup> ODI Leeds (2018). Real Journey Times Project

Figure 6: Combined authority primary-city centre jobs density and transport-capacity utilisation (see Box 10)

Primary centres of England's Combined Authorities	City-centre jobs density (jobs per hectare)	Road use		National rail use		Bus use		Metro/tram use		Active travel
		Peak hour capacity	% of capacity used	Peak hour capacity	% of capacity used	Peak hour capacity	% of capacity used	Peak hour capacity	% of capacity used	
Manchester	268	27,000	77	27,000	58	30,000	51	15,000	57	5,600
Birmingham	252	32,000	83	33,000	63	35,000	46	3,000	37	3,300
Leeds	244	18,000	85	19,000	80	23,000	63	N/A	N/A	5,300
Bristol	208	21,000	68	7,000	58	16,000	61	N/A	N/A	14,200
Liverpool	154	29,000	54	24,000	45	22,000	31	N/A	N/A	4,300
Newcastle	148	25,000	49	6,000	36	23,000	52	22,000	27	5,300
Sheffield	118	23,000	40	7,000	48	17,000	46	6,000	36	4,200
Middlesbrough	84	14,000	29	2,000	28	6,000	31	N/A	N/A	2,000

Source: National Infrastructure Commission

Note: Peak hour capacity is the total passenger capacity to reach the city centre between 0800-0900.



**Box 10: NIC urban transport capacity data**

The capacity of different transport modes in each city given in Figure 6 is taken from the Urban Transport Capacity Metric, prepared by Steer for the NIC. It represents the capacity utilisation for each mode entering a city centre cordon area in the AM peak, over a one-hour period. It has been calculated by establishing the total capacity on each mode entering the area and estimating total demand into that same area.<sup>17</sup>

**‘Build it and they will come’ cannot be justification for major transport infrastructure investment**

A counter-argument sometimes put forward is that investing in better public transport now will spur the growth of a city-centre economy, rather than the other way round. But the relatively free-flowing nature of the transport network into many city centres suggests that this is not a constraint on growth, and further investment will make little fundamental difference. ‘Build it and they will come’ is unlikely to be a successful strategy.

This also applies to the type of transport that infrastructure investment is used to support. While the political allure of a large new tram or underground system is clear, it may not be the most appropriate intervention. Cities should consider the mix of modes and their performance carefully when planning new infrastructure investments. Box 11 considers the case of investment in tram lines in Manchester and Sheffield.

<sup>17</sup> Urban Transport Analysis: Capacity and Cost, National Infrastructure Commission, Study Report July 2018

### Box 11: Build it and they still might not come

Transport infrastructure investment in Sheffield and Greater Manchester illustrates the importance of building new high-capacity transport in line with demand and as part of a wider city-centre strategy. Both cities have an extensive tram network, but the share of commuters using public transport to access the city centre looks very different (see Figure 6). That is because of the different performance of their city centres.

Opened in 1992, **Greater Manchester's** Metrolink tram first connected the city's prosperous southern suburbs and Bury through the city centre. These added capacity and higher-frequency services to an existing heavy rail line. The improvement is one part of Greater Manchester's wider efforts to support the city centre – the fastest growing for jobs and population in recent years<sup>18</sup> – as a place for business, housing, education and leisure. The higher-than-expected ridership on this route<sup>19</sup> has also provided an operational surplus to help the city fund maintenance and expansions to Oldham, Rochdale and to Trafford Park.

Launched two years later, **Sheffield's** Supertram linked a weaker city centre with Meadowhall, an out-of-town shopping centre, and industrial zones along the Don Valley to less affluent suburbs. The city centre has struggled in recent years, with the number of jobs actually falling between 1998 and 2015.<sup>20</sup> Disappointing Supertram ridership meant that local councils ended up paying the costs of construction, rather than the tram franchisee as had been hoped. It now has the highest proportion of concessionary journeys of any tram in the country, at 32.5 per cent.<sup>21</sup> Initial plans by the local transport authority to expand the Supertram beyond Sheffield to other local authorities across South Yorkshire have been stopped, despite all local authorities helping to fund its construction through council tax contributions.<sup>22</sup>

18 McDonald R and Swinney P (2019) City centres: past present and future London: Centre for Cities

19 National Audit Office (2004) Improving public transport in England through light rail

20 McDonald R and Swinney P (2019) City centres: past present and future London: Centre for Cities

21 Department for Transport (2018) Light rail and tram statistics: 2017/18

22 Rail Magazine (2015) Sheffield Supertram's logical progression <https://www.railmagazine.com/infrastructure/light-rail/sheffield-supertram-s-logical-progression>

# 04

## What needs to change

This research shows that there is a strong case for new transport infrastructure investment in some cities and large towns. But this only applies to a handful of places where the current transport system is struggling to support the growth of their city-centre economies.

At present, transport systems provide relatively fast commutes for car users to access city-centre job opportunities in most British cities. Poor public transport is not the cause of weak city centres; rather it is the low numbers of commuters attracted into weak city centres – and the ease of driving – that make frequent and extensive public transport services commercially unviable. Funding for new transport infrastructure in these cities will do little to spur economic growth.

**In these cities, demand for new major transport infrastructure investment must be generated first.** That means that these cities must focus on growing their city-centre economies to generate the densities that support higher productivity and better public transport accessibility. The existing transport network is likely to be able to support this growth, in the short term at least, if it occurs. It is important to stress that these cities should still have access to funding streams to support the existing local transport infrastructure and services and the efficient management of the system.

**Instead, it is cities with already strong and growing city centres, where public transport usage is high, and journey times are relatively slow that need new investment in major transport infrastructure.** London, Manchester, Birmingham, and Leeds in particular stand out for their slow and/or at-capacity public transport networks. Bristol, Cardiff, Edinburgh and Glasgow face similar though less-severe transport barriers for residents and businesses.

The National Infrastructure Commission identified £31 billion additional investment for new transport infrastructure in priority cities outside London up to 2040. The Government should take up this recommendation. While large, this sum is significantly smaller than the £88 billion for HS2 and equivalent £39 billion promised for Northern Powerhouse Rail. This money should be primarily focused on the cities identified above. The £31 billion should be available to these cities providing they meet two conditions:

1. **Cities contribute a share of the costs locally** so that risks are shared between local and national government; and
2. **This local contribution includes revenues from a city-centre congestion charge.**<sup>23</sup> If these cities are serious about improving their transport networks, they need to also take politically-tough decisions locally to do so.

Of those cities and large towns requiring new infrastructure, the increasing demand for space and the growing inability of private transport to supply the city centre with workers at peak times means **investments in new infrastructure should enlarge the public transport network**. The exact nature of this should respond to the specific requirements of each city centre. Whereas some may benefit from a tram line to respond to demand for extra journeys, others such as Manchester will require tunnelling to provide the space for extra trams or trains to enter and exit the thriving city centre.<sup>24</sup>

This report has not looked at the management of existing systems. If new infrastructure investment were coupled with initiatives to better manage existing transport, particularly buses, this would further boost the efficiency and equity outcomes of such investments. **All cities and large towns should look at how to improve the management and efficiency of their existing networks**. While management falls outside of the scope of this report, detailed recommendations can be found in two further Centre for Cities reports: *Delivering change – improving urban bus transport* and *Delivering change – Making Transport Work for Cities*.

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<sup>23</sup> The charge to access this transport infrastructure fund to improve city-centre job accessibility must be based on a vehicle's contribution to congestion that reduces accessibility rather than its emissions. Clean Air Charges target only a small sub-section of vehicles and are not intended to have an impact on congestion. Any impact on congestion is unintentional and short-term.

<sup>24</sup> Transport for Greater Manchester (2019). Our Prospectus for Rail

## Appendix I

### Strength of city centres based on jobs density in 2015 and growth in jobs density since 1998

For this report, economically strong city centres are those with:

- Jobs density over 200 jobs per hectare in 2015
- Growing jobs density between 1998 and 2015

City	Jobs density per hectare (2015)	Growth in jobs density (1998 – 2015)	City	Jobs density per hectare (2015)	Growth in jobs density (1998 – 2015)
London	543	71%	Derby	109	-8%
Glasgow	281	15%	Dundee	106	0%
Edinburgh	275	3%	Preston	105	-2%
Manchester	268	84%	Luton	102	-22%
Birmingham	252	30%	Huddersfield	101	-15%
Leeds	244	34%	Peterborough	99	11%
Cardiff	213	19%	Swansea	95	7%
Bristol	208	41%	Warrington	95	4%
Brighton	207	31%	Wakefield	94	-10%
Reading	183	6%	Portsmouth	93	16%
Oxford	180	27%	Slough	88	1%
Leicester	172	-11%	Newport	86	-1%
Norwich	166	16%	Doncaster	85	-1%
Aberdeen	158	-8%	Middlesbrough	84	-11%
Liverpool	154	27%	Wigan	83	9%
Newcastle	148	29%	Southend	80	-15%
Milton Keynes	147	52%	Bournemouth	80	16%
Bradford	142	-16%	Blackburn	79	2%
York	135	-33%	Crawley	76	10%
Hull	135	3%	Worthing	62	1%
Coventry	132	-6%	Sunderland	59	-32%
Northampton	130	-11%	Stoke	59	-18%
Nottingham	128	-5%	Burnley	58	16%
Plymouth	123	6%	Barnsley	55	-33%
Ipswich	120	-4%	Mansfield	55	-19%
Southampton	118	-19%	Blackpool	55	-13%
Sheffield	118	-2%	Telford	53	22%
Gloucester	115	5%	Birkenhead	50	-1%
Swindon	112	-15%	Chatham	47	-14%
Cambridge	110	17%	Basildon	39	-16%
Exeter	110	13%	Aldershot	38	-4%
London	543	71%			



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