Learning from Cities with Typical Mobility

Insights from cities with typical transport profiles in England and Germany

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Key Messages

- **Typical mobility cities in Germany have higher levels of cycling and lower levels of car use (as a share of all trips) than typical mobility cities in England**, mirroring the national picture. Levels of walking and public transport are comparable in both countries.
- **Typical mobility cities in Germany have seen a marked reduction in car use and increase in cycling in the first two decades of the 21st century**, outside of Covid. **In typical mobility cities in England, modal shares have remained more-or-less stable** across car use, public transport, cycling and walking, other than during Covid.
- **Multiple factors appear to affect the shares of cars and sustainable modes, spanning across spatial structure and urban form, transport policies and investments, and culture, politics, and governance**. These levers are situated both within parts of government labelled "transport" and beyond (e.g. industrial strategy, land-use and spatial planning, levels of devolution and local state capacity).
- **The spatial structure and urban form** of a city, including density, mixed-use, proximity, transport infrastructure, economic geography, and land-use and transport integration set the spatial constraints on how many trips can be taken by sustainable modes by affecting average trip distances, public transport viability, and land-use-related accessibility factors.
- **The supply and design of transport infrastructure and services** in typical mobility cities determine which modes of transport are provided for and prioritised by the city for their residents. This, in turn, is a function of political prioritisation, budgets, pricing structures, governance, and economic factors.
- **Cultural, governance, and leadership factors** in typical mobility cities affect both how the land-use and transport systems are shaped over time, and the individual transport choices people make. Cultural factors (e.g. class, individualism vs collectivism) affect the meaning and value people place on transport modes.
- **Data availability for modal share of all trips at the level of the city is good in Germany but poor in England**, where typically city-level modal share data is only available for travel to work (commuting) trips. Furthermore, car ownership data in England is primarily reflected through the census household data rather than the number and type of vehicles registered at city level as in Germany.

Introduction

A top priority for transport policy-makers is to create conditions that enable everyone to move around efficiently, whether they drive, use public transport, walk or cycle. To this end, the UK Government is developing the first national integrated transport strategy for England.[1]

The Government's stated aim is to create a transport system that is "safe, reliable and accessible for everyone – improving passenger experience and unlocking equal access to opportunities across England".[2] For shorter journeys, walking and cycling "should be the best choice". Driving journeys should be "smoother and more predictable", and public transport should be a "more attractive option", offering people "a seamlessly integrated transport network that works for them".

Achieving this vision will require action at both the national and local levels, spanning multiple policy realms. This brief summarises research aimed at informing the implementation of the new strategy by learning from experience in England and Germany. In order to ensure that the findings are widely applicable, the analysis focuses not on exceptional cities such as London or Berlin, but on cities with typical mobility patterns for each country.

In particular, the study looks at cities with 50,000–1,000,000 residents in which rates of car ownership and the share of different transport modes used are representative of mid-sized cities, asking three main questions:

1. Are there significant differences in transport modal share in typical cities in the two countries?
2. What factors appear to shape mobility patterns and observed trends in these cities?
3. What policies and investments should the UK Government consider to achieve its transport goals?

How people travel in England vs. Germany

On a national scale, the two countries have similar transport modal shares, but there are two significant differences: cycling is more than five times as common in Germany as in England, accounting for 11% vs. just 2% of trips, and more trips are made by car in England – 60% vs. 53% (Figure 1).

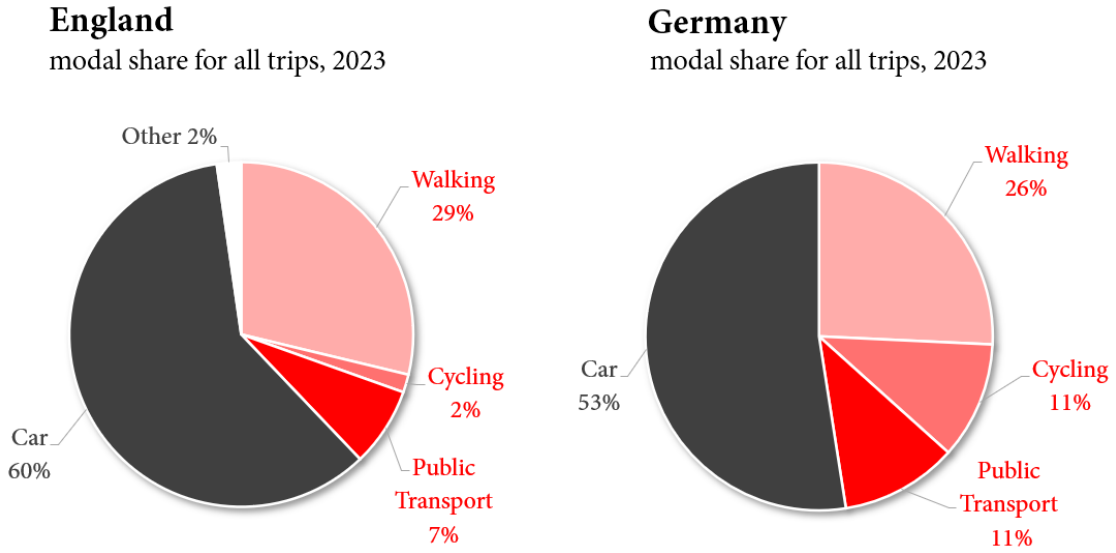

Figure 1: National-level modal share of all trips in 2023

Data sources: Data for Germany are from Mobilität in Deutschland (MiD) in 2023;[3] data for England are from the National Travel Survey in 2023.[4] Note: Taxis are classified as "other" in England, but as "public transport" in Germany.

Looking at trends in each country, the data show that in Germany, the share of trips made by cars decreased by 5 percentage points from 2002 to 2023, from 58% to 53%, while walking, cycling and public transport (including taxis) each increased their mode share by 2 percentage points.[5] In England, meanwhile, the share of trips made by car declined from 63% to 60% over that period, the walking share increased from 24% to 29%, public transport declined from 8% to 7%, and cycling stayed the same (2%).[6]

Identifying cities with 'typical' mobility

The study's focus on mid-size cities excluded all London boroughs and Birmingham and left **98 English lower-tier local authorities** that met the density threshold of less than 10% rural population. In Germany, the sample included districts classified as "Städte" (cities) – **87 German cities** altogether, excluding Berlin, Hamburg, Munich and Cologne.

In order to determine what is "typical" in each country, we analysed six transport variables for which data were available for all cities in national datasets: walking frequency, cycling frequency, public transport use, car use, car ownership and distance travelled.[7] In England, the averages for the 98 local authorities, based on data from 2021-2022, were 30.1% for adults who walk at least five times a week, 9.6% who cycle at least once a week, 9.1% who commute by public transport, 72.4% who commute by car, 76.0% for households owning at least one car, and 0.3 tonnes per capita car energy use (as a proxy for distance travelled by car). Across the 87 German cities, the per-city averages, based on 2017 data, were 24.1% trips by walking, 13.3% trips by cycling, 12.0% trips by public transport, 50.5% trips by car, 530 cars per 1,000 residents, and 36.9 km per day distance travelled.

To identify the 10 most "typical" cities, we created population-weighted scores for each transport variable and summed them across the six values; we also carried out robustness checks and removed places that were not cities/towns. Figure 2 shows the distribution of cities across England and Germany and, in red, the 10 cities identified as "typical mobility cities" in each country – those closest to the average across all six transport variables.

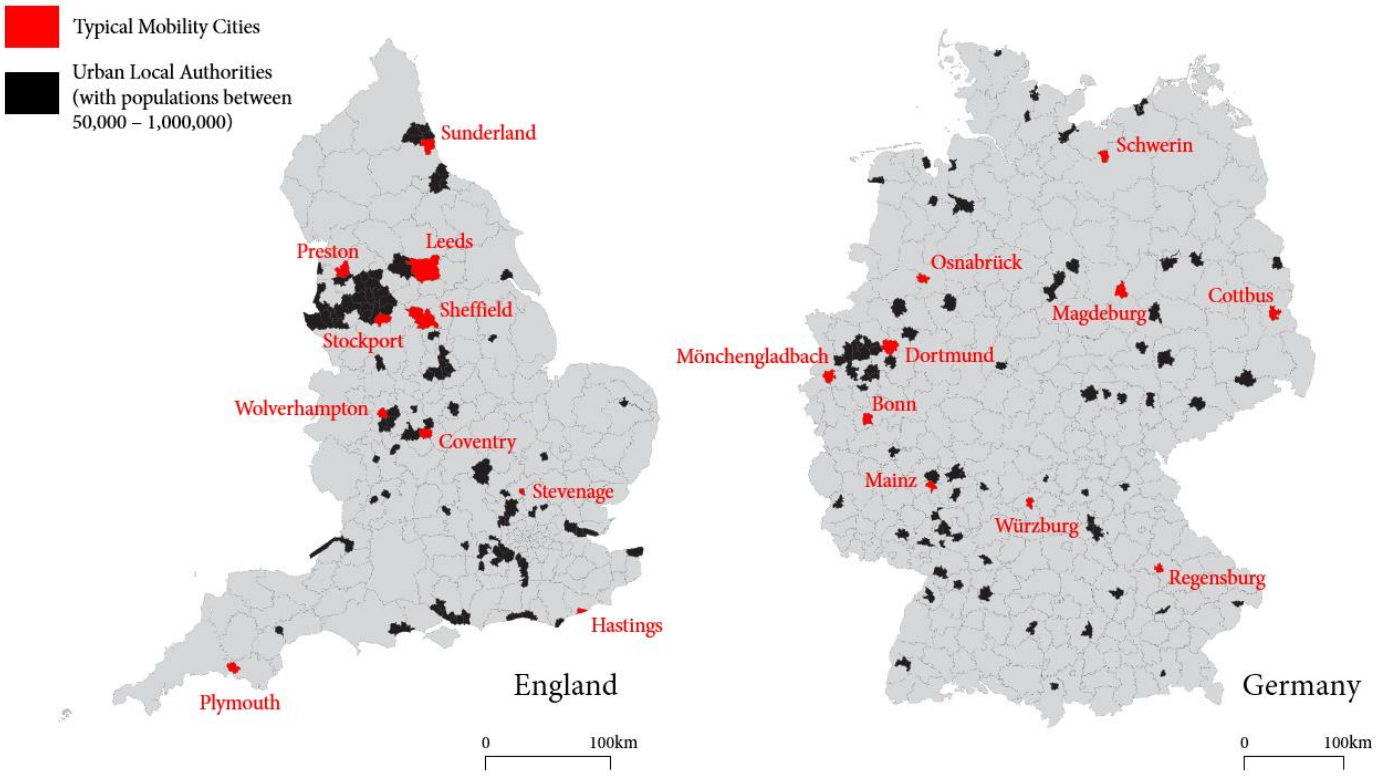

Figure 2: The 98 lower tier local authorities in England and 87 cities in Germany included in the analysis and, in red, the 10 cities in each country identified as most typical of average mobility patterns.

Source: Authors' own work.

How do people travel in 'typical' cities?

The next step of the analysis was to examine city-level mobility data for the "typical" cities. Here we encountered a data constraint. In Germany, all-trip mode share data for every city are collected both by national statistics bodies and by city governments. However, England only collects all-trip modal share data at the national and regional level (through the National Travel Survey). City-level modal share data are typically only available for travel to work (commuting) trips via the census or from local authorities, even though these account for only 15% of all trips.[8]

Figure 3 shows the modal share for commuting trips in the 10 typical cities in England, per the 2021 census, and in the 10 typical cities in Germany, per 2023 city travel surveys. In both countries, the modal shares differ noticeably from the national averages shown in Figure 1. In the 10 English cities, on average, 73% of commuting trips are made by car (as driver or passenger), and only 11% walking. In the 10 German cities, on average, 41% of all trips are made by car, 14% by public transport and 20% on bicycles. Again, note that because the data for England only cover trips to work, the mode shares are not directly comparable across countries. The data for England were also collected amid the Covid-19 pandemic, when car use rose, in part, because many people avoided public transport.

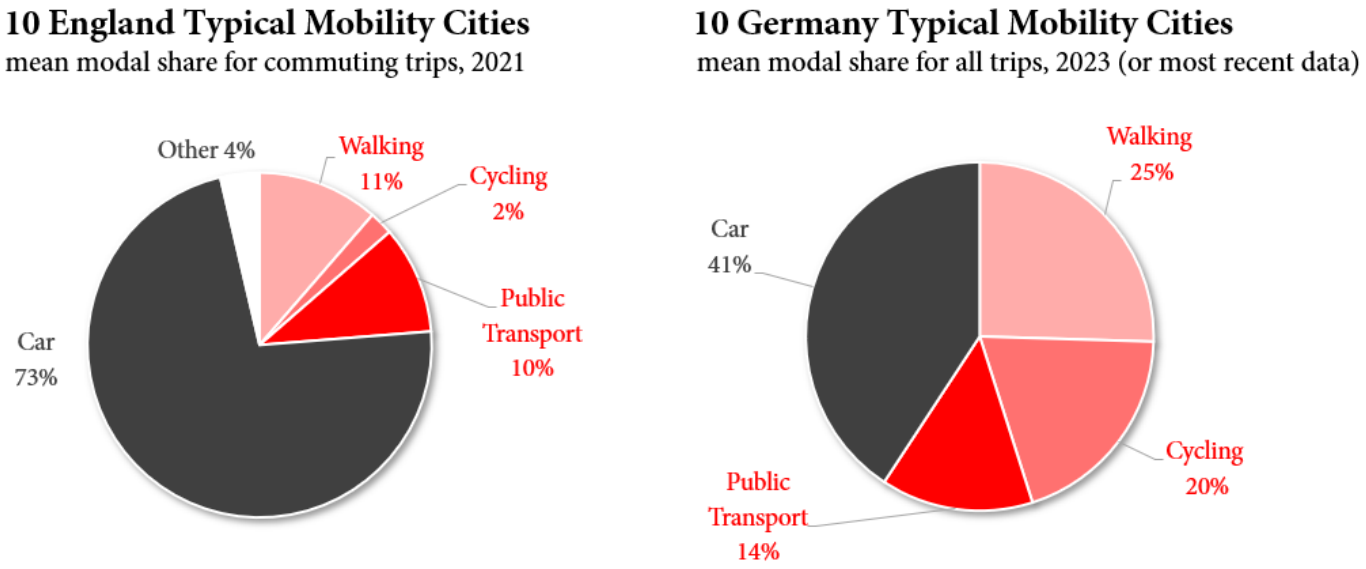

Figure 3: Average modal shares in 10 typical mobility cities in England (commuting trips only, not including working from home) and Germany (all trips).

Source: Authors' analysis of 2021 UK census data and German 2023 city travel survey data (see Annex).

All-trip mode share data are available for one typical city in England: Stevenage. In 2022, 60% of all trips there were made by car, 28.5% on foot, 7.7% on public transport, and only 2.7% by cycling.[9] This is just one city, but it appears reasonable to assume both that reliance on cars for non-commuting trips is lower than for trips to work, and that overall, people in typical cities in England drive more and cycle considerably less than their counterparts in Germany.

We also analysed trends in modal share in each country's 10 typical cities. As shown in Figure 4, in England, the share of commuting trips made on foot or on a bicycle has held steady, while car use was up and public transport use was down in 2021, reflecting a national pattern following Government guidance during the Covid-19 pandemic.[10] In contrast, the most recent city data in Germany are from 2023, after conditions had returned more-or-less to normal post-Covid. Public transport use has also declined in German cities, but cycling has increased, and car use decreased, consistent with the national trends described above.

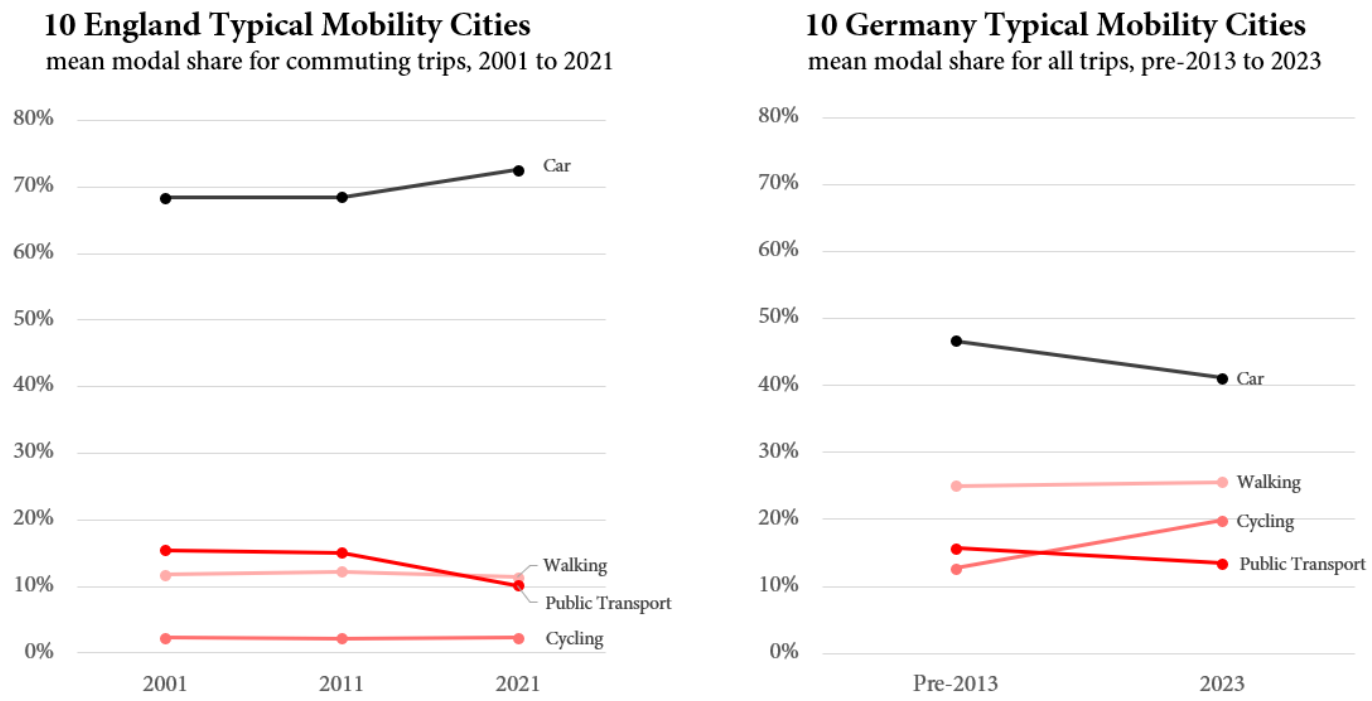

Figure 4: Trend in average share of different travel modes for commuting trips only (not including working from home) in the 10 typical mobility cities in England (left) and for all trips in the 10 typical mobility cities in Germany (right).

Source: Authors' analysis of UK census data and German city travel surveys (see Annex).

A closer look at four 'typical' cities

To try to understand the trends in cities in both countries, we looked more closely at four cities with diverging transport trends: Stevenage and Sunderland in England, and Mainz and Dortmund in Germany.

Figures 5 and 6 show trends in transport modal share in the four cities in the past two decades. In Sunderland, car use for commuting has risen sharply, while public transport use has declined. In Stevenage, car use for commuting has changed minimally, while public transport use has declined, and active travel has increased slightly. In Dortmund, both public transport and car use have been increasing – in contrast to the average trend for German typical cities. In Mainz, meanwhile, active travel has increased (due to a nearly tripling of the cycling share), there has been a large drop in car use, and a small drop in public transport.

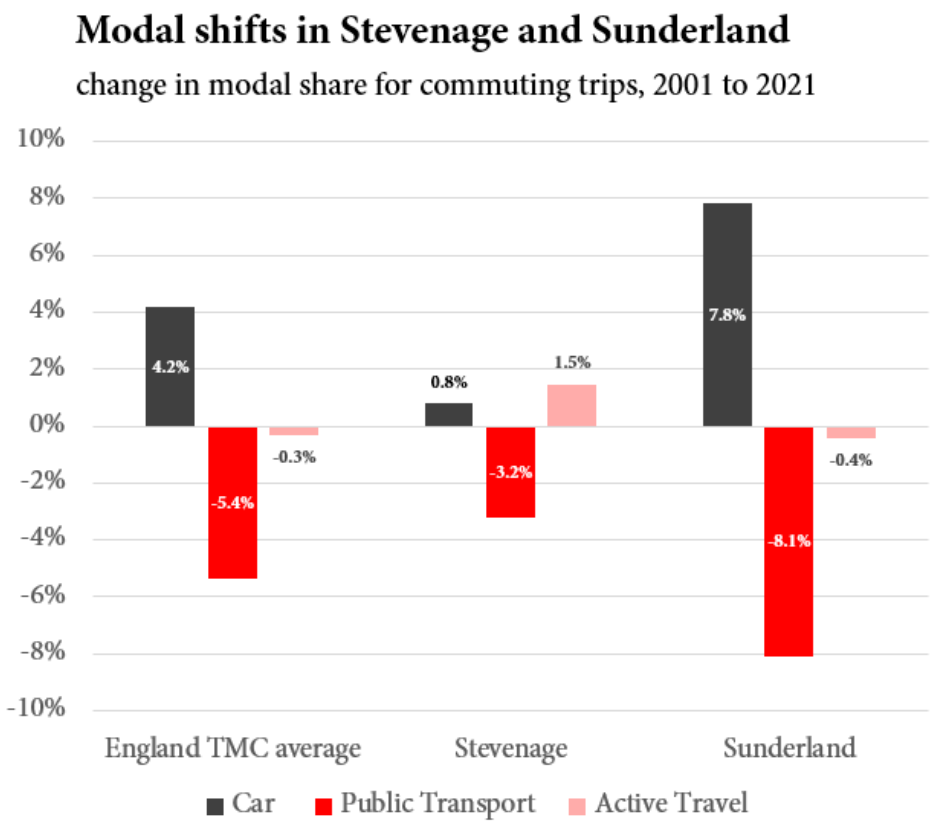

Figure 5: Percentage point change in mode shares of car, public transport and active travel (commuting trips only) in Stevenage and Sunderland from 2001 to 2021, compared with the average across England typical mobility cities (TMC).

Source: 2021 UK census.

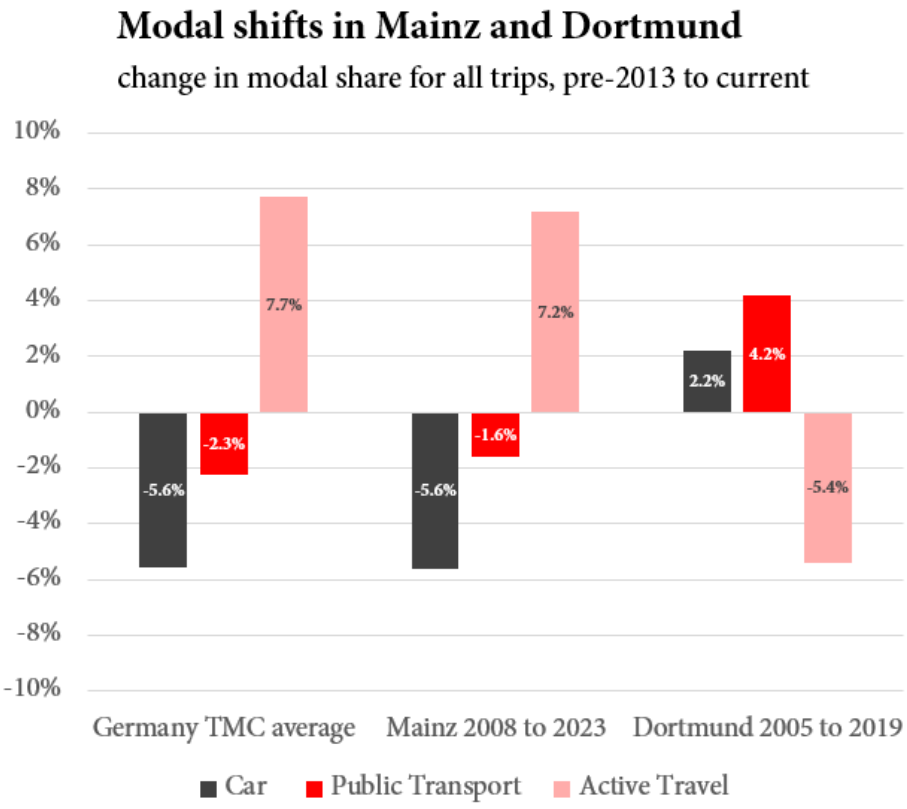

Figure 6: Percentage point change in mode shares of car, public transport and active travel for Dortmund (2005–2019) and Mainz (2008–2023), for all trips, compared with the average across the 10 Germany typical mobility cities (TMC) from pre-2013 to 2023.

Source: Germany city travel surveys (see Annex).

What explains these mobility patterns and trends? We interviewed local stakeholders and undertook desk research to better understand the four cities, focusing on three dimensions highlighted in the literature on urban mobility:

Spatial structure and urban form: The density of urban development; the proximity of housing to jobs, retail and services; whether there is a single urban core or there are scattered clusters; and the design of street and road networks, including whether they facilitate or cut off access to some areas, all affect how far people must travel and which modes are seen as feasible.

Transport infrastructure and services: The design of streets and roads; the travel modes that are prioritised; the supply and design of active transport infrastructure; the ease and cost of parking; the quality, routes, cost and frequency of public transport; and the amount of friction and perceived cost associated with each mode all affect people's choices.

Culture, governance and leadership: Local demographics and culture shape perceptions of different transport modes as well as public support for different transport policies and investments. The system of government and state capacity determine how much cities can control their own development and transport infrastructure and services. The levels of activism and public participation in policy can influence what gets priority. Individual leaders can champion or hinder change.

The brief profiles below summarise what we learned.

Sunderland: Driving out to where the jobs are

Sunderland, a port city in the North East, with 274,200 residents as of 2021, grew around now-closed shipyards and collieries. For decades after World War II, the city centre declined, and development was concentrated on the city's outskirts – including a large Nissan plant opened in 1986, the Doxford International Business Park, established in the early 1990s, as well as housing and retail.

Most new major transport infrastructure, especially to connect the city to out-of-town employment sites, has been road expansions. The one exception is the Tyne & Wear Metro, which connects Sunderland to Newcastle – but not to Nissan or Doxford. Meanwhile, bus services have declined, particularly affecting former mining villages in the hinterland.

Sunderland has a largely working-class population, and the prominence of the Nissan plant may make cars both aspirational and practical, especially as public transport is not a viable option for many. A low level of devolution and fragmented local governance has meant power over key spatial and infrastructure decisions has been led by the national government with influence from major employers.

Stevenage: Cycling infrastructure, but few cyclists

Stevenage is a New Town built after World War II about 45 miles north of London, with 89,500 residents as of 2021. It was designed to be self-contained economically, with amenities close to people's homes, a pedestrianised town centre, a segregated cycle network expected to be used daily by 40% of residents, but also roads built for free-flowing traffic.

Over the decades, car ownership and use rose sharply, however, linked at least in part to a decline in local job opportunities in the 1980s and 1990s that led people to seek jobs in London, Cambridge and elsewhere. This was accompanied by an increase in edge-of-town retail and low-density car-oriented new housing on the outskirts of Stevenage.

Generous road infrastructure has also made driving easy and convenient, whereas the segregated cycle infrastructure is poorly used and perceived as unsafe (e.g. underpasses associated with crime). Rail is relatively well used because there are good links to large employment sites, but ridership on buses, run by private operators, has declined in line with nationwide patterns.

Culturally, the rise in car ownership in the 20th century was linked with rising individual wealth and social mobility. The governance of Stevenage, meanwhile, shifted from a development corporation to a two-tier local authority system, with Hertfordshire County Council controlling transport decisions and spending. Given that Hertfordshire has a large rural population who are more car-dependent, transport policies and investments have typically favoured car travel.

Dortmund: A polycentric city with a car-friendly history

Dortmund, a post-industrial city in the Ruhr Area with 586,800 residents as of 2021, was shaped by the coal and steel economy. Since the 1990s, through significant brownfield mixed-use regeneration projects, the local economy has shifted to technology and services. The city has multiple district centres, but also a strong urban core for retail and entertainment, given strong limits on building out-of-town retail sites.

Dortmund has high commuter flows with neighbouring cities in the Ruhr area, and there is significant rail and road infrastructure. After World War II, a large, dense road network was built to support growing traffic but, in recent decades, the city shifted to an integrated mobility system approach and stopped expanding roads. Since the 1980s, light rail (the Stadtbahn) has been expanded, creating a large underground network linking the districts with the city centre, though with limited inter-district connectivity. The cycling network was expanded in the 2010s but remains patchy.

The city's political leadership has reflected the sensibilities of a highly working-class population, with strong influence from large industries. Over time, however, mounting environmental and civic pressures have shifted the historically car-friendly political culture. With greater devolution than England, local leaders can heavily influence infrastructure projects, but limited budgets and the need for multi-party support have often delayed implementation.

Mainz: A dense, walkable city where cycling has skyrocketed

Mainz, a city on the Rhine River with 217,556 residents as of 2021, lost 80% of its centre during World War II. Efforts to rebuild it as a "car-friendly" city stagnated in the 1960s, and pedestrianisation began in the Old Town and expanded over time. Today the city has an attractive and dense centre, with a large university and other high-skill employers. While there are suburbs, land-use policies since the 2000s have promoted density and proximity to points of interest.

A large public broadcaster (ZDF) has its head offices on the outskirts of Mainz, but it is connected to the centre by tram, off-road cycle lanes, and roads. Cycling has increased sharply since the early 2010s, supported by investment in cycle priority infrastructure, a public bike rental scheme, and cycling culture, and many people walk in the city centre. Mainz's large tram network has expanded since 2003, and there are strong bus and rail connections to nearby Frankfurt.

Champions in government have played a key role in making Mainz like this. From 2011 to 2021, the Mainz City Government actively promoted the expansion of active transport, backed by a population that includes many students. Indeed, there has been cross-party support for sustainable transport in the city dating back to pedestrianisation in 1960s and 1970s. The tram network was nearly decommissioned in 2003 but was saved after public outcry. The city government also benefits from strong capacity and high levels of horizontal integration between departments, with the head of planning overseeing transport, spatial development and civil engineering. The state and federal level provide support for infrastructure costs as well, but the city has more control over infrastructure decisions than local authorities in England.

Explaining mobility patterns in the four 'typical' cities

The city profiles we built were based on several hypotheses we had formed, based on the literature on urban mobility. Below we discuss what we learned about each of the three dimensions we explored.

Spatial structure and urban form

We expected that more compact cities organised around a dense centre would be less car-dependent, as there is greater proximity to points of interest (POIs) such as shops, services, amenities and workplaces. This is closely linked to cities' economic geography – whether development and job growth are concentrated in the centre or on the outskirts, which impacts commuting distances and whether jobs can be reached by public transport, thus affecting how people travel.

Figure 7 shows the population density of each of the four cities, as well as a measure of proximity. The maps show that Sunderland and Dortmund, both with histories of coal mining, are polycentric, while Stevenage and especially Mainz have a single centre where people are concentrated. The much shorter distances between POIs and homes in Mainz and Stevenage suggest more potential for active travel than in Sunderland and Dortmund, where longer average distances are likely to result in more travel by car or public transport.

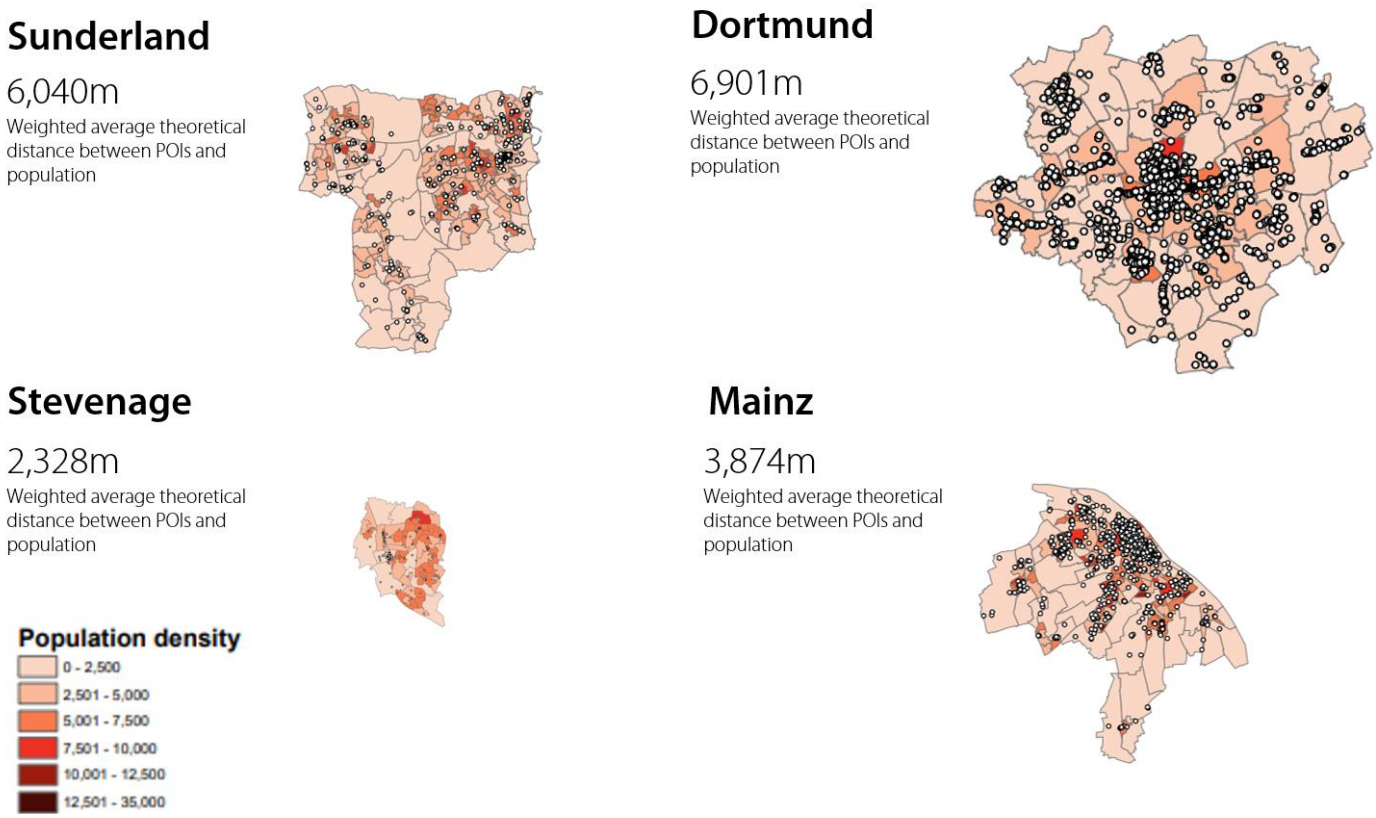

Figure 7: Population densities and a measure of proximity – the weighted average theoretical distance between points of interest (POIs), shown as small circles, and population – for the four deep-dive cities.

Source: Authors' own work, based on sources: City of Mainz, Open Data Dortmund, OpenStreetMap, Office for National Statistics.[11-15]

Sunderland is a good example of how a changing economic geography can affect modal share. From 1998 to 2008, jobs increased by 10.5%, but mostly on the outskirts, in enterprise zones set up in the 1990s.[16] The city centre shed jobs, accounting for just 13.3% of private sector employment by 2008. Census data on transport modal share reflect this: the share of commuting trips made by car grew by 4 percentage points from 2001 to 2011, even though car use in typical mobility cities across England held steady on average (Figure 8). From 2010 to 2022, jobs in Sunderland increased by just 0.1%,[17] and car use for commuting also rose from 2011 to 2021, but no longer at a faster rate than other typical cities. This suggests that the 4-percentage point increase in commuting by car in Sunderland between 2001-2011 was due, at least in part, to out-of-town job growth.

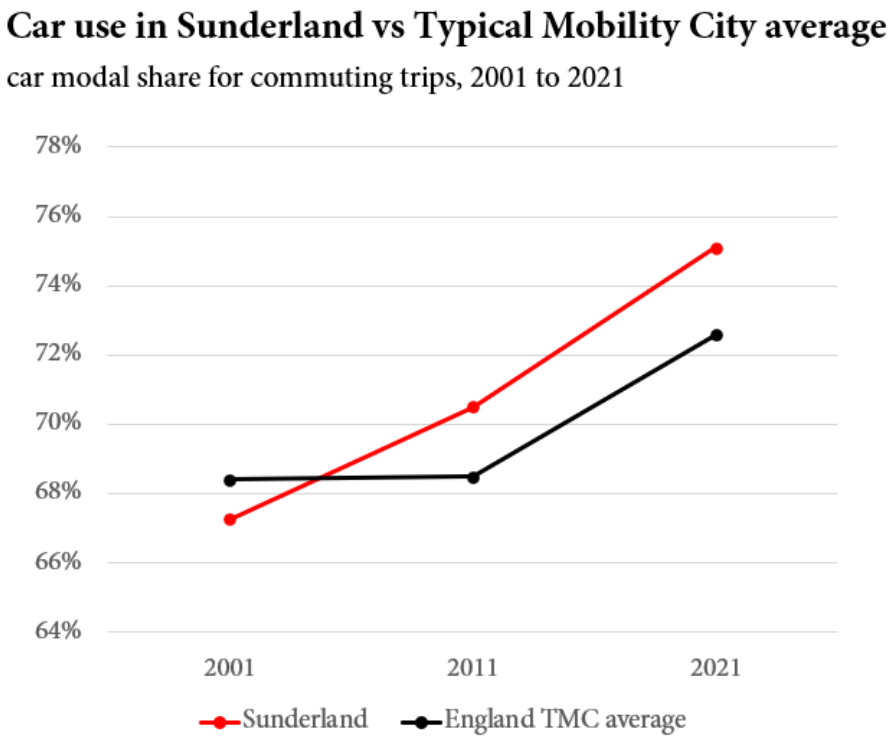

Figure 8. Share of commuting trips made by car in Sunderland vs. the average for English typical mobility cities in 2001, 2011 and 2021.

Source: Authors' analysis of UK census data.

The road networks play a key role, too – particularly if they create barriers to non-car travel. In Sunderland, for example, the A19 runs north–south between the city centre and the Nissan car factory, and the light rail line stops before crossing the A19. There is also no fully off-road cycle route connecting the city to the factory. In contrast, the ZDF head office on the outskirts of Mainz is directly accessible by light rail and by a separated cycle route as well as by road.

Transport infrastructure and services

While the spatial structure and urban form determine the trips that people need to make, we hypothesised that the supply of transport infrastructure and services – and, crucially, the *prioritised* supply of infrastructure – would determine which transport modes people chose to use.

A comparison of Stevenage and Mainz highlights the importance of the prioritised supply. Both are monocentric cities with similar proximity to POIs (Stevenage has shorter distances) and highly developed cycling infrastructure. Yet while cycling has boomed in Mainz, in Stevenage it has stayed stubbornly low. One explanation is that Stevenage's road and cycling networks were designed to prioritise enabling unimpeded car journeys, sending cyclists into underpasses to avoid roads. This makes cycling less convenient and has affected the perceived safety of the cycleway, a problem exacerbated by low usage and poor upkeep.

In contrast, Mainz has prioritised cycling and added frictions and costs to car journeys, such as cycle priority traffic signals, a low-emissions zone and traffic calming in the city centre. Stevenage has not delivered any equivalent disincentives to car use. This suggests that cycling infrastructure is not enough; if it is not prioritised over cars, people will choose cars, as – all else being equal – the car is perceived as the most convenient form of transport.

The supply and prioritisation of transport infrastructure and services is shaped by institutions, governance structures, policies and decision-making processes. Key factors include the dominant professional planning approach (car-oriented or integrated), the extent of devolution, the state capacity at the local level, the permanence of local state institutions, and the value judgements represented in transport appraisals and business cases.

We hypothesised that greater local control might facilitate a shift towards active and public transport, and the different evolution of light rail systems in Dortmund and Sunderland bears this out. While Dortmund has built a large light rail network since the 1980s, with eight lines now, Sunderland has just one line (as part of the wider Tyne & Wear Metro, which mostly serves communities around the River Tyne), opened in 2002.

Dortmund's success has been aided by multiple factors, including a shift towards integrated transport planning since the 1990s, higher levels of devolution to state and city governments, including greater freedom over spend and delivery of light rail projects, and institutional support from the regional integrated public transport body, the Rhein-Ruhr Verkehrsverbund.[18] This body enables routes, timetables and fares to be joined up and seamless, making public transport a more attractive option. In the UK, meanwhile, there has yet not been as significant a shift to integrated transport planning or governance. While Sunderland has a Passenger Transport Executive, Nexus, which runs the Tyne & Wear Metro, it does not have the same powers or levels of horizontal integration as a Verkehrsverbund. With lower levels of devolution, English city governments also have less control over projects and typically lack the state capacity to build light rail systems.

Culture, governance and leadership

The agency and capacities of local governments can affect not just transport infrastructure, but land-use, economic planning, housing development and the extent to which these issues are addressed in an integrated matter. Since the 1970s, responsibility over key policy areas that affect mobility patterns have been frequently chopped up and reassigned in English cities. For example, in Sunderland, land-use, spatial and local economic planning have been overseen by a short-lived County Council, a Development Corporation, a Regional Development Agency, a central government regional office, the Unitary City Council, a Local Economic Partnership and, most recently, the North East Mayoral Combined Authority. In Dortmund, the same city government structures have existed since the 1970s, and the regional integrated transport body, since the 1980s.

In Sunderland, the central government and the private sector have significantly influenced major decisions, such as the creation of three out-of-town enterprise zones in the 1990s that determined where jobs growth was concentrated in the early 2000s. Overall, far less power has been devolved to local authorities in England than in Germany.[19,20] As a result, local institutions have less ability to influence their city's spatial structure and urban form. A lack of coordination on spatial planning, land-use and rail infrastructure has further increased car dependency.

To the extent that local government can shape development paths, it matters who is in charge. For example, the rise in cycling in Mainz since the 2010s coincided with local leadership that promoted active transport and deprioritised cars. Local election results, in turn, are affected by demographics, and it makes a difference whether voters are mainly urban residents or predominantly suburban or rural. If most voters rely on their cars, the politicians they elect are likely to prioritise car-oriented transport policies. In Stevenage, the Local Transport Authority, Hertfordshire County Council, which oversees a majority-rural area, is formally responsible for transport delivery, but it is the more urban-oriented Stevenage Borough Council that has taking the lead on walking and cycling plans.[21]

The case studies also illustrate the role of culture and demographics, including class, jobs market, education and political leanings. The post-industrial places still favour car use, perhaps with cars being seen as symbols of success. In Germany, there is evidence that the rise in cycling has been largely driven by highly educated people living and working in cities.[22] Mainz appears to fit that profile.

Wider cultural factors also matter, such as whether a cycling culture has been created, local norms around housing typologies and family sizes, and civic engagement levels. As noted earlier, in 2003, Mainz's tram system was nearly decommissioned, but after public protests, it was improved instead.

Implications for UK policy-makers

The findings from this research offer several insights that could be useful in the delivery of the National Integrated Transport Strategy for England, especially when developing integrated approaches for typical cities aimed at enhancing mobility and reducing car dependency. We present these under the same three dimensions used above. A table at the end of the brief provides an overview of entry points for policy interventions, which was also informed by an expert seminar with 20 UK transport policy specialists.

Spatial structure and urban form

When designing policies for increasing sustainable transport modal shares, policy-makers should take account of the macro-level structure of a city, as well as its degree of compactness, to understand the spatial factors that determine the average trip distance, existing modal share and potential for modal shift. For example, Sunderland and Dortmund are both polycentric, with relatively long distances to points of interest. They likely have less potential for modal shift towards active travel than Mainz and Stevenage, which are monocentric and have lower average trip distances.

Recognising the large influence of spatial structure and urban form, transport policy-makers at all levels of government should collaborate with their counterparts who influence spatial structure, urban form and land-use, including industrial and local growth strategies, to create integrated policies. The shared goal should be to reduce average trip distances and make points of interest more accessible by walking, cycling and public transport.

Micro-level urban form (e.g. local road networks and the urban quality of city centres) also affect how safe and attractive walking and cycling are perceived to be. Road layouts, street designs and design codes should thus be designed to maximise walkability and the quality of the urban form and experience.

To avoid patterns of decentralising growth in cities, which is increasing the levels of car dependency, policy should be adapted towards stimulating growth and renewed life in urban cores. This could include the following approaches:

- Promote new job creation in city centres rather than on the outskirts of cities. If new jobs are located on the outskirts, ensure they are connected to public transport (preferably light or heavy rail) and to separated cycle infrastructure.
- Adopt policies that limit or stop the decentralisation of retail (e.g. adapt the NPPF to more strongly restrict new out-of-town retail, as Scotland and Germany have done).
- Introduce policies that limit or stop housing sprawl and promote higher housing density (e.g. change local land-use codes to increase density for new developments, replace parking minimums with parking maximums).
- Invest in place-making and quality design of high streets to revive low land-value city centres.
- Promote increasing proximity, such as by adopting accessibility measures (by walking, cycling and public transport) in transport planning appraisal and business cases (e.g. using the DfT connectivity tool, Transport Related Social Exclusion), and valuing proposals that increase accessibility by these modes.
- Integrate the departments and staff working on local growth plans, spatial planning, land-use and integrated transport planning to create joined-up strategies and plans, coordinated at the regional level by Mayoral Strategic Authorities.

Transport infrastructure and services

Following the publication of the National Integrated Transport Strategy, there should be a greater shift towards integrated transport planning as the dominant approach across the English transport planning profession, akin to the shift seen in Germany in the 1990s.

The UK transport appraisal process should be updated to prioritise accessibility to key points of interest by sustainable modes of transport (e.g. using accessibility tools such as the DfT connectivity tool or Transport for the North's Transport Related Social Exclusion) and take more account of the societal costs of car use.

In typical cities with higher levels of proximity, the shift to increasing levels of active travel can happen over a short space of time (as seen in the case of Mainz from 2010 onwards) if political will and investment is focused on shifting which transport modes get prioritised (above the car) through infrastructure, economic and regulatory instruments. Shifting travel away from cars will require "sticks" that make car use less convenient and/or cheap, alongside "carrots" to make other modes more available and attractive. "Sticks" can take many forms, such as reducing car parking spaces, increasing car parking charges, and introducing congestion charges. Political will is required to deliver "sticks", while further policy design work is needed to make these policies more politically palatable for typical cities.

There are higher levels devolution in Germany, which means that cities have greater levels of agency to design and deliver the transport infrastructure and services that work for them. The UK government should work with newly established Strategic Mayoral Authorities to shift power to them and help increase their capacities. This could include:

- Shift key decision-making mechanisms for transport projects from the DfT to Strategic Mayoral Authorities, including in the granting of Transport Works and Order Acts, transport business case sign off for projects above £200m, and sign-off of Workplace Parking Levies. Accountability mechanisms should also be updated so regional and local authorities are held primarily responsible for the delivery of large transport infrastructure projects. This, in turn, would lead to increased local state capacity for delivering new integrated transport infrastructure, e.g. light rail.
- To build capacity in the delivery of integrated transport in the UK, Mayoral Strategic Authorities and existing Passenger Transport Executives should learn from the Verkehrsverbund model[23] for integrated regional public transport and adopt their practices where possible, including the integrated operation of public transport services.
- Integrate public transport ticketing systems so fares are simpler to understand and, where possible, cheaper, making the sustainable transport option the most cost efficient and seamless mode available.

Culture, governance and leadership

There are many elements that affect mode share that are less amenable to policy intervention, such as demographics, culture, and the role of class-based transport norms. However, many of these processes outlined above are determined by and mediated through the systems of government that exist in countries, which are amenable to policy. The UK has a prime opportunity now – amid a new wave of English Devolution, setting up of Mayoral Strategic Authorities and Local Government Reorganisation – to affect these systems. This opportunity should be made the most of to support the delivery of improved integrated transport systems across English cities. This could include:

- Support Mayoral Strategic Authorities to use an integrated transport approach in their spatial planning and local growth plans, helping to build local state capacity for spatial planning and public transport integration.
- Move to a system of outcomes-based accountability frameworks overall and for specific projects whereby DfT audits local and regional governments rather than a detailed appraisal and approval role. This would put more accountability for delivery on regional and local governments.
- To ensure that urban residents have an opportunity to elect local governments that will promote sustainable transport modes, draw new Local Authorities boundaries in the Local Government Review for cities to ensure that urban voters are in the majority, not vastly outnumbered by rural and suburban voters.
- The longevity and stability of local institutions matters for capacity building. Therefore, after this round of Local Government Reorganisation, leave structures in place for as long as possible and make it more difficult for future central governments to remove local and regional government powers.
- In addition to delivering priority infrastructure for sustainable transport modes, city governments should also focus on creating cultures of sustainable transport use (e.g. cycling cultures) for promotion of those modes.
- City governments should invest in public participatory processes to build trust and public buy-in for changes to the transport system and encourage civil society involvement through the change process.

Data and evidence

In closing, it is important to remember that "what gets measured gets managed". At the city level, England only reliably measures travel to work trip data, and so this is overemphasised in policy relative to other types of trips. The UK should follow Germany in its collection of all-trip data which could be achieved through increasing the sampling of the National Travel Survey, following the approach of the Mobilität in Deutschland, system of representative travel surveys (SrV), and city government travel surveys.

The UK has an extensive network of What Works Centres to support evidence-based policy-making in multiple policy areas. However, this does not yet exist for integrated transport. Therefore, to support successful delivery of integrated transport systems a What Works Centre for Integrated Transport should be set up to bring together evidence-based policies on integrated transport and modal shift.

Summary table: Entry points for policy interventions to influence transport in typical English cities

Category	Factor	Rationale	City examples	Policy-amenable?
01: Spatial Structure and Urban Form				
Urban structure	Density (absolute and distributions)	More sustainable travel with higher densities. More sustainable travel in monocentric than polycentric cities	All. Average density and top hat vs pyramid	Yes - Medium to long-term
	Proximity and diversity	More sustainable travel with higher proximity and diversity of functions	All. Distance between residences and points of interest	Yes - Medium-term
	Land-use and transport integration	More sustainable travel with transit-oriented development. Lower with developments linked by roads	Mainz vs Sunderland out-of-town employment	Yes – Medium-term
	Economic geography	More sustainable commuting with (a) higher job density in city centres, (b), more high-skilled jobs (and high-skilled people living in city centres), (c) fewer people commuting to other parts of the metropolitan region, (d) out-of-town employment sites built around rail rather than road	All	Partially
Urban quality and experience	Aesthetic quality of cities	More sustainable travel with more attractive city centres	All	Yes – Medium to long-term
	Housing typologies	More sustainable travel with more dense housing types (e.g. flats)	All	Yes
	Perceived safety (e.g. crime, ASB)	More sustainable travel with lower perceived (and real) crime and antisocial behaviour	Sunderland (city centre), Stevenage (cycle network)	Partially
Street networks	Street permeability	More sustainable travel with fine-grained street grids and small blocks (increased accessibility)	All	Partially – Long-term
	Road severance	Less sustainable travel with large arterial roads and cul-de-sacs (reduced permeability)	All	Yes – Medium to long-term

02: Transport infrastructure and services				
Transport governance and prioritisation	Dominant transport planning policy approach: cars vs prioritised integrated transport	More sustainable travel with a transport planning policy environment where integrated transport is prioritised over car use	Germany (integrated transport planning) vs UK (car priority)	Yes – Short-term
	Transport business case appraisal process and budget allocations	More sustainable travel where appraisals place higher weight on benefits to sustainable travel users, on societal costs of car use, and on improving access	Germany vs UK	Yes – Short-term
	Infrastructure legacies and path dependencies	More sustainable travel where 20th century rail infrastructure maintained	Germany (higher rail) vs UK	No
	Local transport institutions	More sustainable travel where local transport institutions have stronger powers and better at horizontal policy integration	Verkhersverbund vs Passenger Transport Executives	Yes – Short to medium-term
	Public transport operating model	More sustainable travel where public sector has higher involvement in running public transport services	Germany vs UK	Yes – Short-term
Transport infrastructure and services supply	Provision of prioritised integrated transport infrastructure and services	More sustainable travel where there's higher supply of prioritised integrated transport infrastructure and services (rail, bus, walking and cycling)	Mainz, Dortmund (Stevenage as negative example – prioritisation key)	Yes – Short, medium and long-term
	Provision of car-based infrastructure	Less sustainable travel where more car-based infrastructure (roads, parking) is supplied	Sunderland, Dortmund	Yes – Short, medium and long-term
	Design quality and attractiveness	More sustainable travel where integrated transport infrastructure is high quality and attractive	Stevenage (negative example), Mainz for cycle infra	Yes – Short, medium and long-term
	Land values and viabilities	More sustainable travel where cost of delivering integrated transport infrastructure is commercially viable	All	Partially
	Spending power of the city	More transport supply overall (of any kind) with higher spending power	All	Yes – Short-term
Mode choice mediating factors	Real, perceived, and sunk monetary cost of trips	More sustainable travel where real per-trip cost are lower for sustainable travel, where ticketing is simple, and where sunk costs for car use are low	All (simplicity / complexity of public transport tariff structures)	Partially
	Average wealth/disposable income of the city population	Higher car ownership with higher average wealth/disposable income	All	Partially
	Congestion	More sustainable travel with higher congestion	All	Yes – Short-term
	Sticks (discouraging car use)	More sustainable travel as car use is made less attractive	Mainz	Yes – Short-term
	Weather and hilliness	Less cycling where weather is cold/wet and terrain is hilly	Sunderland	No

03: Culture, governance, and leadership				
System of government	Devolution	More sustainable travel (and integrated transport infrastructure) in areas of higher devolution (on RAI and LAI indices)	All (use indices)	Yes – Short to medium-term
	Permanence of regional and local government units	More sustainable travel (more integrated transport infrastructure) where local government boundaries are unchanging	UK vs Germany	Yes – Medium to long-term
	Capacity and competency of local and regional governments	More/higher quality transport infrastructure and services where local transport institutions are strong and horizontally integrated	UK vs Germany	Yes – Short to medium-term
Cultural norms and politics	Urban progressive politics	More sustainable transport with higher urban progressive vote share, influenced by demographics and shape of Local Authority boundary (urban vs rural)	Mainz, Dortmund, Stevenage	No
	Civic cycling culture	More cycling with intentional policy to support cycle culture	Mainz	Yes – Short-term
	Class-based transport norms	Less sustainable travel with higher % working class (stronger effect in UK where class norms are stronger), influenced by most convenient mode for commuting and what symbolises aspiration	All	No
	Housing cultural norms	Higher density living in countries with renting and living in flats as more normal and policy-protected	UK vs Germany	Partially
	Demographic composition	More cycling with more highly educated workforce living centrally, more students, younger populations	All (Mainz)	Partially
	Individualism vs collectivism	More driving in more individualistic countries	UK vs Germany	No
Public involvement	Public trust in government	More sustainable transport in cities with higher public trust in government	All	Partially
	Participatory vs reactive engagement with citizens	More sustainable transport in cities with participatory governance	Mainz	Yes – Short to medium-term
	Civic activism	More sustainable transport in cities with higher civic activism	Mainz	No

Appendix: Data sources

Data for England national level modal share trends

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