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Learning from Cities with Typical Mobility

Insights from cities with typical transport profiles in England and Germany

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Transport research often focuses on case studies of cities that are in some way exceptional in terms of their commitment to and investment in sustainable transport (public transport, walking and cycling) and the patterns of travel of their residents. This project instead compares cities in England and Germany with travel patterns that are typical for their country ("typical mobility cities"), to learn how different factors may affect mobility.

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 an increase in cycling in the past two decades**, except during Covid. In contrast, **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 modal share, with relevant policy levers both within the transport sector 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 land uses, proximity to services and amenities, transport infrastructure, economic geography, and the integration of land use planning and transport policies impact on how many trips can be taken by sustainable modes by determining how far people must travel and whether public transport, cycling and walking are viable options.

  - **The supply and design of transport infrastructure and services** in typical mobility cities determine which modes of transport are available to and convenient for people. 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 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 different transport modes.

- **While in Germany, city-level data on modal share and car ownership are readily available, this is generally not the case in England.** City-level modal share data are available for all trips in Germany, but typically only for travel to work (commuting) trips in England. Car ownership data in England come mainly from census household data, while in Germany it is possible to obtain data on the number and types of vehicles registered at the city level.

Typical Mobility Cities research project

The purpose of the Typical Mobility Cities project is to explore whether there are any significant differences in transport modal share in typical mobility cities in England and Germany, what factors appear to shape the mobility patterns and observed trends in these cities, and what policies and investments the UK Government could consider to achieve its transport goals.

The research was conducted by LSE Cities and funded by the RAC Foundation.

Find more information at:

https://www.lse.ac.uk/Cities/research/cities-environment-and-climate-change/typical-mobility-cities

Implications for UK Policymakers

Spatial structure and urban form

- Take account of each city's macro-level structure and micro-level urban form when designing integrated transport policy.
- Integrate policymaking at all levels of government across transport, spatial planning, land use and local industrial strategies, with the aim of reducing average trip distances and enhancing car-free accessibility.
- Promote growth in urban cores, instead of the urban periphery, by prioritising and financially incentivising high-quality and higher-density redevelopment of brownfield land and repurposing existing building stock.
- Connect new edge-of-town developments with sustainable transport infrastructure and services.

Transport infrastructure and services

- Shift more strongly within the transport planning profession towards integrated transport planning with a focus on creating priority for sustainable modes.
- Use revisions to the Treasury Green Book to update the transport appraisal and business case process to prioritise improving accessibility to points of interest via sustainable transport modes.
- Learn from the German model of the *Verkehrsverbund* for regional integrated public transport bodies.

Culture, governance and leadership

- Continue to devolve more powers and funding to Mayoral Strategic Authorities over planning and delivery of large-scale integrated transport infrastructure projects.
- Support Mayoral Strategic Authorities to build capacity for coordinated policymaking across local growth plans, spatial planning, land use and transport.
- Support ambitious local leaders by promoting greater public participation in the policy design and delivery of travel demand management ("sticks").

Data and evidence

- Start collecting all-trip modal share data at the city level (e.g. by increasing National Travel Survey sampling) to build a fuller picture of transport patterns in UK cities.
- Set up a UK What Works Centre for Integrated Transport as a leader in evidence-based transport policy-making.

A suburb in Leeds, one of the Typical Mobility Cities in England.

Introduction

A top priority for transport policymakers 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 has published the first integrated national transport strategy (for England) in more than 25 years, called "Better Connected".[1]

The Government's stated vision is "for transport to work well for people, for it to be safe, reliable, affordable and accessible so they can get on in life and make the journeys they need to easily", applying three guiding principles of "people, place and partnership" to enable "more seamless journeys across the network". In urban settings, "people should be able to walk, wheel and cycle entire journeys, such as local trips to school or work", while "frequent and well-integrated public transport services ... should provide people with good options to get around cities quickly and easily" and help to "reduce the amount of congestion on the roads".

Achieving this vision will require action at both the national and local levels, spanning multiple policy realms. This brief summarises research aimed at supporting this effort by learning from experience in England and Germany. 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?

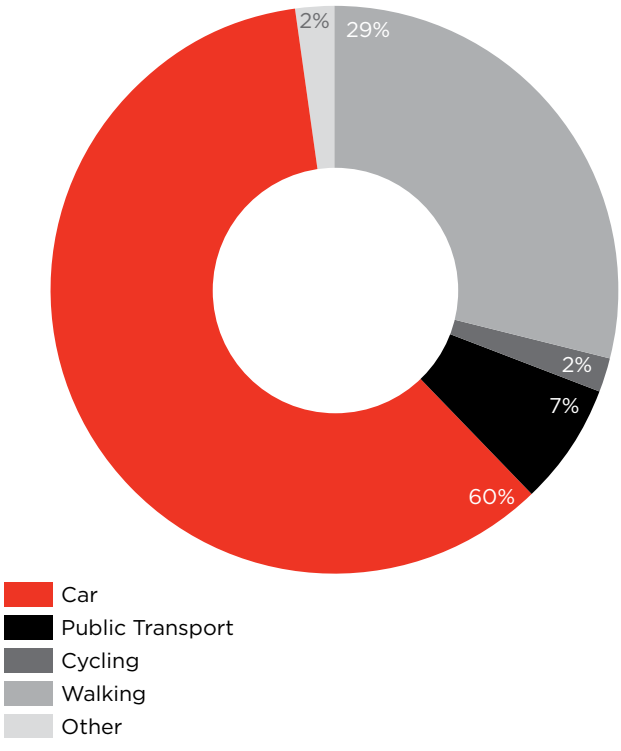
How people travel in England vs. Germany

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).

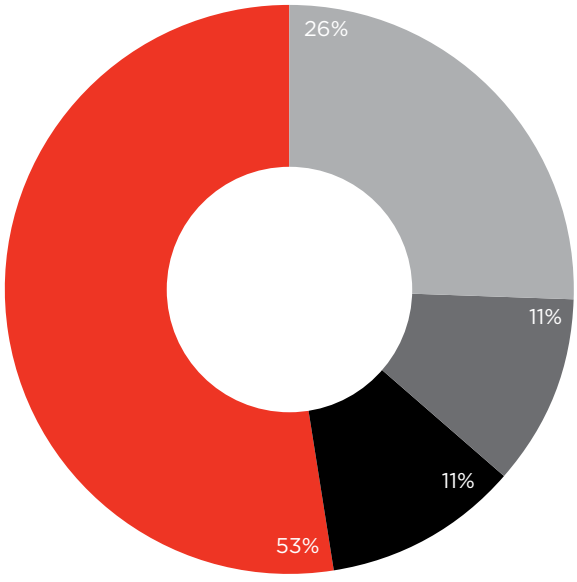
Looking at trends in each country, the data show that in Germany, the share of trips made by car decreased by 5 percentage points from 2002 to 2023, from 58% to 53%, while walking, cycling and public transport (including taxis) each increased their mode share by 2 percentage points.[2] In England, meanwhile,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

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

England: Modal share for all trips, 2023



Germany: Modal share for all trips, 2023



Data sources: Data for Germany are from Mobilität in Deutschland (MiD) in 2023;[2] data for England are from the National Travel Survey in 2023.[2] Note: Taxis are classified as "other" in England, but as "public transport" in Germany.

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.

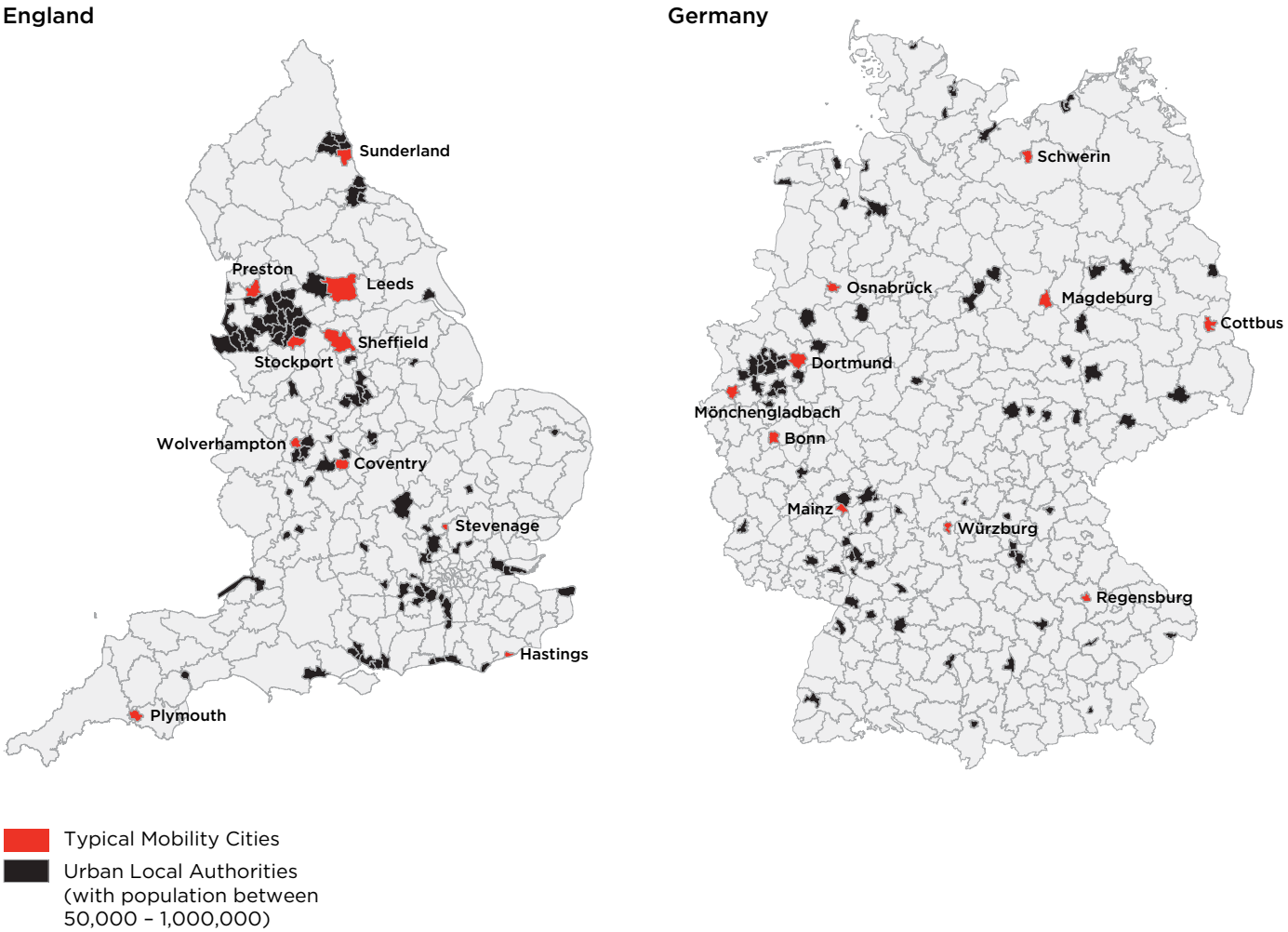
To determine what is "typical" within each country, we analysed six transport variables for which data were available for all cities in national datasets: walking frequency, cycling frequency, public transport use, car use, car ownership and distance travelled.[2] Due to limitations in city-level data in England, the transport variables data used are not directly comparable *between* countries, but as they are consistent *within* countries, they still enable us to determine typical mobility cities for each country.

In England, the averages for the 98 local authorities, based on data for 2021–2022, were 30.1% for adults who walk at least five times a week, 9.6% adults who cycle at least once a week, 9.1% commute trips by public transport, 72.4% commute trips by car, 76.0% 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 "typical mobility cities" identified 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 about 15% of all trips.[3]

Figure 3 shows the modal share for commuting trips in the 10 typical cities in England, per the 2021 census, and the modal share for all trips 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.

All-trip mode share data are available for one typical city in England, Stevenage, enabling a more direct comparison with typical cities in Germany. 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.[4] This is just one city, but in comparing this with Figure 3, 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.[5] 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 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).

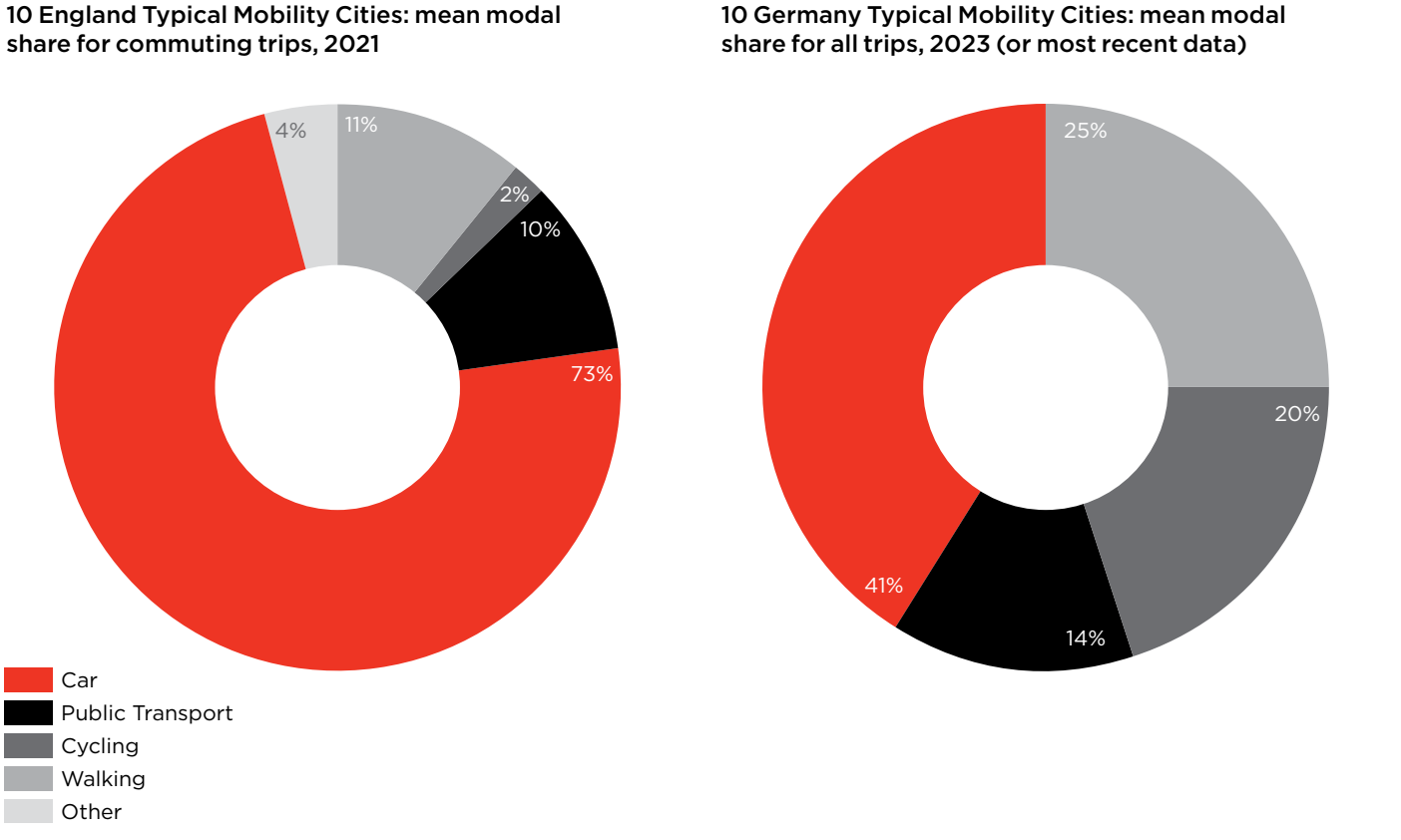
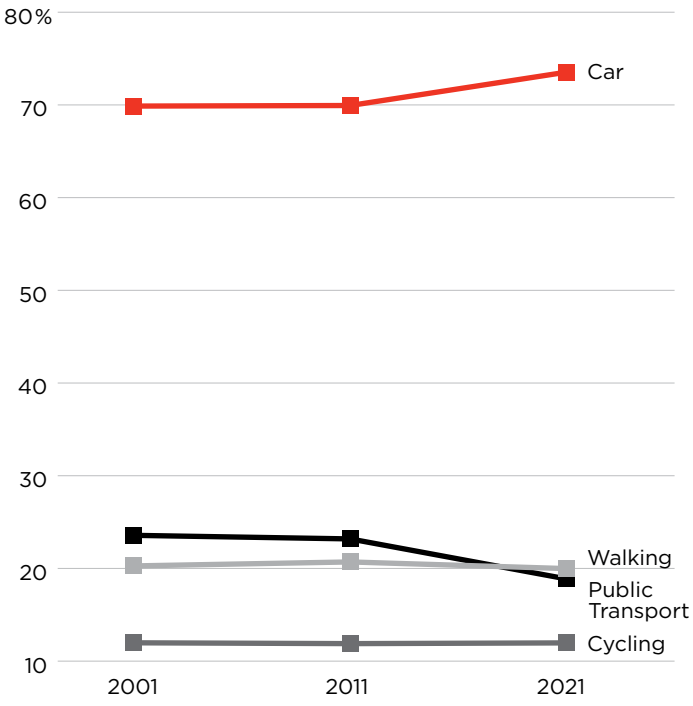


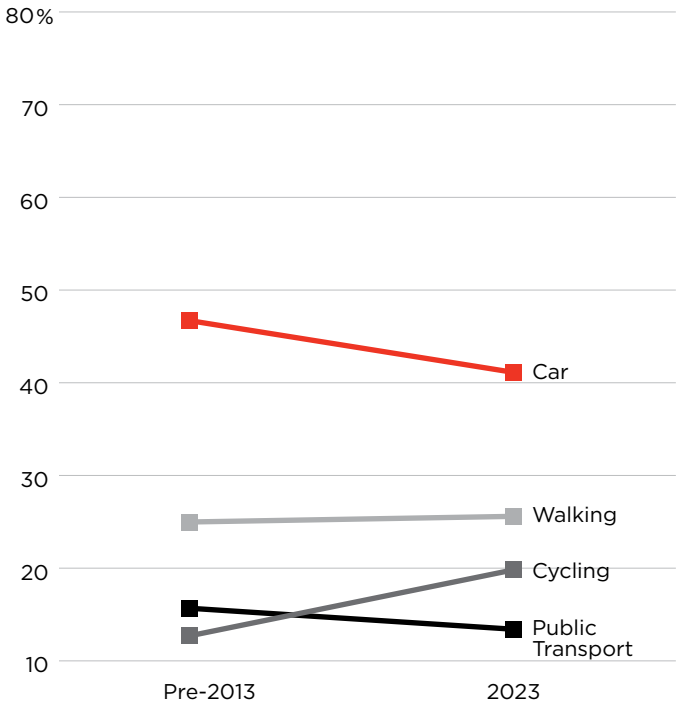
Figure 4: Trend in average share of different travel modes for commuting trips only (not including working from home) in the 10 typical mobility cities in England (left) and for all trips in the 10 typical mobility cities in Germany (right).

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

10 England Typical Mobility Cities: mean modal share for commuting trips, 2001 to 2021



10 Germany Typical Mobility Cities: mean modal share for all trips, pre-2013 to 2023



A man cycling in a German city. Cycling in typical cities in Germany has risen sharply over the last two decades, while staying flat in the equivalent cities in England.

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 (the share of cycling nearly tripled), there has been a large drop in car use, and public transport use has declined slightly.

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 transport 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 funding and development, and related 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.

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: UK census, 2001 and 2021.

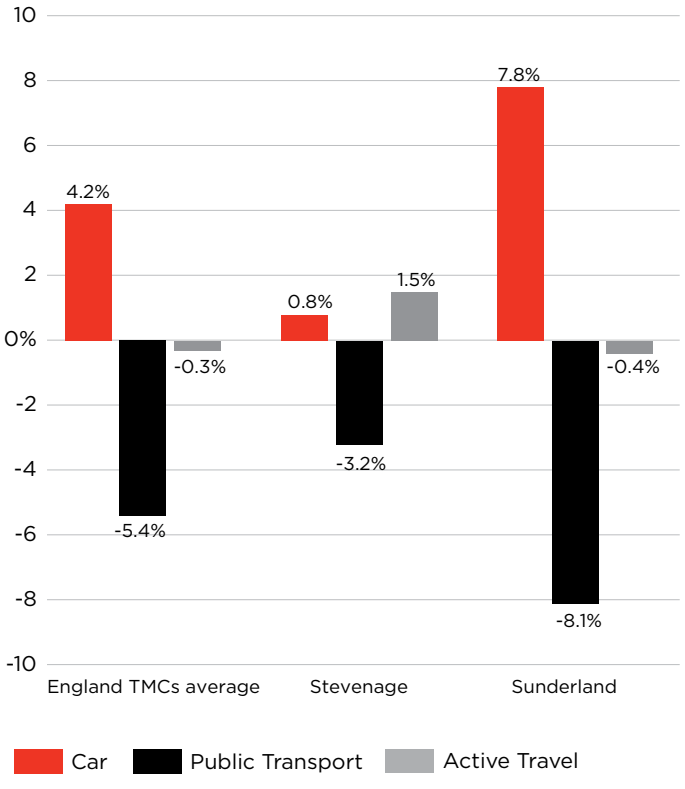
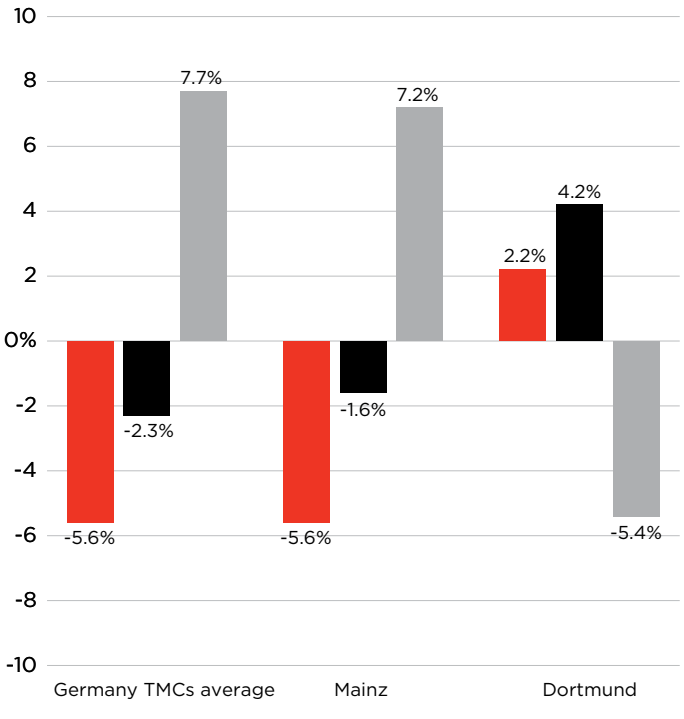


Figure 6: Percentage point change in mode shares of car, public transport and active travel for Dortmund (2005–2019) and Mainz (2008–2023), for all trips, compared with the average across the 10 Germany typical mobility cities (TMC) from pre-2013 to 2023.

Source: Germany city travel surveys (see Annex).



The brief profiles below summarise what we learned:

Sunderland: Driving out to where the jobs are

Major employment sites in Sunderland, including Nissan car factory (left), are located on the outskirts of the city (top right), connected by major road infrastructure.

Sunderland, a port city in the North East, with 274,200 residents as of 2021, grew around now-closed shipyards and collieries. The city centre declined through the second half of the 20th century, 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 was built with a fully segregated cycle network to accommodate a projected modal share of cycling of 40%. Today cycling only makes up 3% of trips.

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, but also roads built for free-flowing traffic.

Over the decades, car ownership and use rose sharply, 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, while the cycle network, which was originally expected to be used daily by 40% of residents, 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 has built extensive light rail (the Stadtbahn) and road transport infrastructure, connecting it with the wider Ruhr area.

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 has an attractive and dense city centre with high levels of pedestrianisation and investment in cycle priority infrastructure.

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, which 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, their key economic areas, and 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.

Sunderland illustrates how changes in economic geography can affect how people travel to work. From 1998 to 2008, jobs in Sunderland increased by 10.5%, with most new employment located on the outskirts in enterprise zones set up in the 1990s. Over the same period, the city centre lost jobs and by 2008 accounted for just 13.3% of private sector employment.[6] Commuting patterns in Sunderland reflect this. During the period of rapid out-of-town employment growth (2001 to 2011), the share of commuting trips made by car in Sunderland grew by four percentage points more than average amongst typical mobility cities across England over the same period. In contrast, between 2010 to 2022 job growth in Sunderland was almost flat (0.1%).[7] During the same period (2011 to 2021), commuting by car continued to increase in Sunderland, but no faster than in other typical mobility cities. This comparison suggests that the faster rise in car commuting in Sunderland between 2001 and 2011 was due to local factors rather than national trends, with the growth of out-of-town employment likely to have played an important role.

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), traffic forecasting, 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 in increasing public transport usage 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, greater freedom over spend and delivery of light rail projects, and institutional support from the regional integrated public transport body, the Rhein-Ruhr Verkehrsverbund.[8] This body enables routes, timetables and fares to be joined up and seamless, making public transport a more attractive option.

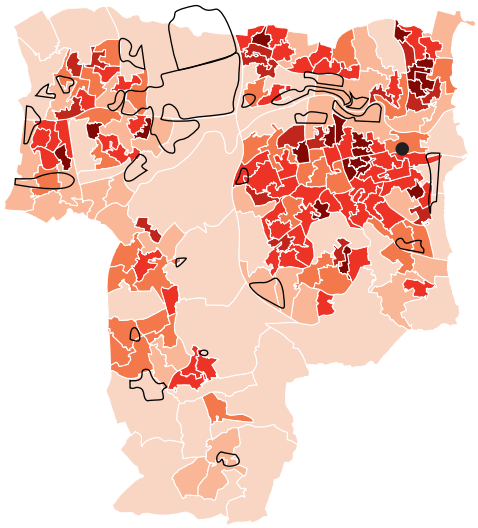
Figure 7: Population densities, a measure of proximity – the weighted average theoretical distance between points of interest (POIs) – and economic areas (outlined in black) – for the four deep-dive cities.

Source: Authors' own work, based on data from City of Mainz, Open Data Dortmund, OpenStreetMap, Office for National Statistics.[9-13]

Sunderland

3,013 per/km²
Average density (built-up area)

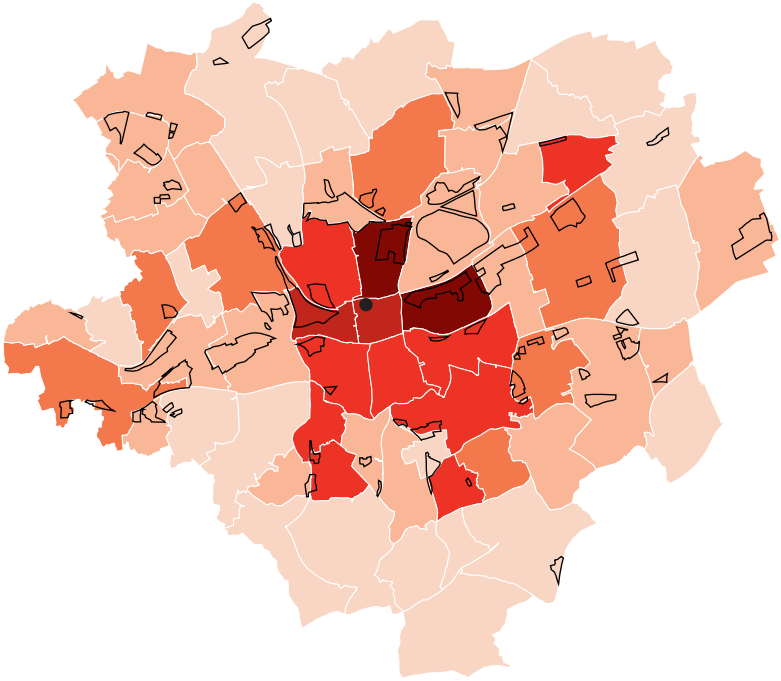
6.0 km
Average theoretical distance between POIs and population



Dortmund

3,303 per/km²
Average density (built-up area)

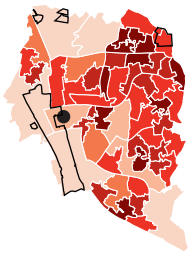
7.3 km
Average theoretical distance between POIs and population



Stevenage

4,068 per/km²
Average density (built-up area)

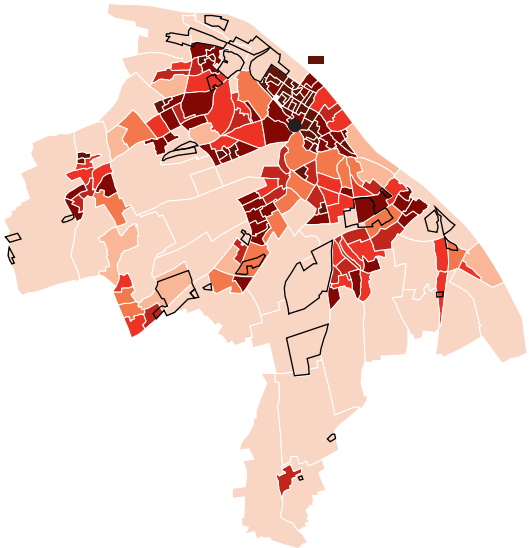
2.3 km
Average theoretical distance between POIs and population



Mainz

4,461 per/km²
Average density (built-up area)

3.9 km
Average theoretical distance between POIs and population



Population/km²

- 140 – 1,500
- 1,501 – 2,500
- 2,501 – 3,500
- 3,501 – 5,500
- 5,501 – 6,500
- 6,501 – 12,500
- 12,500 – 33,500
- Economic Areas
- Railway

0 2km

In the UK, meanwhile, there has not yet 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 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 manner. 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, 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.[14,15] 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 taken the lead on walking and cycling plans.[16]

The case studies also illustrate the role of culture and demographics, including class, the jobs market, education and political leanings, which in turn interact with economic geography. The post-industrial places still appear to favour car use, perhaps with cars more likely to be seen as symbols of success because locally, high-status jobs are more likely to be located out-of-town where commuting by car is most convenient. In Germany, there is evidence that the rise in cycling has been largely driven by highly educated people living and working in cities.[17] 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.

The aesthetic quality of the urban core varies between cities: Stevenage *(top left)*, Sunderland *(top right)*, Dortmund *(bottom left)*, Mainz *(bottom right)*.

Implications for UK policymakers

The findings from this research offer several insights that could be useful in the delivery of the Integrated National 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, adding a brief final section on data and evidence. A table at the end of this section provides an overview of entry points for policy interventions, which was also informed by a seminar with 20 UK transport policy experts.

Spatial structure and urban form

Take account of each city's macro-level structure and micro-level urban form when designing integrated transport policy.

When designing policies for increasing sustainable transport modal shares, policymakers should take account of the macro-level structure of a city (including the metropolitan area of which it is a part), 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 both have relatively long distances to points of interest, owing to a dispersed urban form. They likely have less potential for modal shift towards active travel than Mainz and Stevenage, which are more compact, with lower average internal trip distances.

Micro-level urban form (e.g. local road networks and the urban quality of city centres) and associated regulations (e.g. speed limits) 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.

Integrate policymaking at all levels of government across transport, spatial planning, land use and local industrial strategies, with the aim of reducing average trip distances and enhancing car-free accessibility.

Recognising the large influence of spatial structure and urban form, transport policymakers at all levels of government should collaborate horizontally 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. At a place-based regional level, these joined-up strategies and plans should be coordinated by Mayoral Strategic Authorities.

Outdoor tables and chairs in Regensburg, a typical mobility city in Germany.

Promote growth in urban cores, instead of the urban periphery, by prioritising and financially incentivising high-quality and higher-density redevelopment of brownfield land and repurposing existing building stock.

To avoid urban sprawl, which increases car dependency and consumes valuable green space, 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 National Planning Policy Framework to more strongly restrict new out-of-town retail, as Scotland and Germany have done).
- Introduce policies that limit housing development in the urban periphery and facilitate it within existing urban settlements (e.g. change local land-use codes to increase density for new development; 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 car-free accessibility measures in transport planning appraisal and business cases, and valuing proposals that increase accessibility by walking, cycling and public transport.

Connect new edge-of-town developments with sustainable transport infrastructure and services.

While development in urban cores is optimal for increasing car-free accessibility, to the extent that new housing is on greenfield land, it should be located as close to the edge–of–town as possible, integrated with the existing urban fabric, and built around new sustainable transport infrastructure, ideally light or heavy rail. Where walking and cycling paths already exist nearby, new developments should include extensions of those paths to connect with the new housing.

Transport infrastructure and services

Shift more strongly within the transport planning profession towards integrated transport planning with a focus on creating priority for sustainable modes.

Following the publication of the Integrated National 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, with an associated focus on training and capacity. This should include focusing transport planning away from letting forecasts of future car-based travel demand shape infrastructure priorities, and towards integrated transport planning that deliberately prioritises car-free mobility that enhances accessibility in an efficient and socially inclusive manner.

Use revisions to the Treasury Green Book to update the transport appraisal and business case process to prioritise improving accessibility to points of interest via sustainable transport modes.

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

Learn from the German model of the *Verkehrsverbund* for regional integrated public transport bodies.

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[8] for integrated regional public transport and adopt their practices where possible, including the integrated operation of public transport services and integration of public transport ticketing systems so fares are simpler to understand. Where possible, fares should be set so that public transport, combined with walking and/or cycling, is the most cost-efficient and seamless option available.

A Stadtbahn commuter rail train in Rhein-Main, Germany.
Services are coordinated by the regional Verkehrsverbund, RMV.

Culture, governance and leadership

Continue to devolve more powers and funding to Mayoral Strategic Authorities over planning and delivery of large-scale integrated transport infrastructure projects.

There are higher levels of devolution in Germany, which means that cities have more agency to design and deliver the transport infrastructure and services that work for them. The UK government should work with newly established Mayoral Strategic Authorities to shift powers and responsibilities over spending and delivery. This should include transferring key decision-making mechanisms for large transport infrastructure projects from the DfT to Strategic Mayoral Authorities, so that regional and local authorities are held primarily responsible for decisions on these projects. Accountability mechanisms should also be updated so regional and local authorities are held primarily responsible for spending and delivery. This, in turn, would lead to increased local state capacity for delivering new integrated transport infrastructure such as light rail.

Support Mayoral Strategic Authorities to build capacity for coordinated policymaking across local growth plans, spatial planning, land use and transport.

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.
- The longevity and stability of local institutions matter for capacity-building. Therefore, after the current round of Local Government Reorganisation, the UK should keep the new structures in place for as long as possible and introduce commitment devices to make it more difficult for future UK governments to remove local and regional government powers.

Support ambitious local leaders by promoting greater public participation in the policy design and delivery of travel demand management ("sticks").

In typical cities with higher levels of proximity, the shift to increasing levels of active travel can happen relatively fast (as seen in Mainz from 2010 onwards) if political will and investment are focused on prioritising sustainable transport modes above the car through infrastructure, economic and regulatory instruments. Shifting travel away from cars will require travel demand management ("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. A key tool government can use to achieve this is to invest in public participatory processes that build trust and public buy-in for changes to the transport system and engage civil society. In addition to delivering priority infrastructure for sustainable transport modes, city governments should also work with civil society on creating cultures of sustainable transport use (e.g. cycling cultures) for promotion of those modes.

Data and evidence

Start collecting all-trip modal share data at the city-level (e.g. by increasing National Travel Survey sampling) to build a fuller picture of transport patterns in UK cities.

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 by 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.

Set up a UK What Works Centre for Integrated Transport as a leader in evidence-based transport policy-making.

The UK has an extensive network of What Works Centres to support evidence-based policymaking 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.

A residential neighbourhood in Dortmund, one of the Typical Mobility Cities in Germany.

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

Within Level of Government column: UK = UK Government, MSAs = Mayoral Strategic Authorities, LAs = Local Authorities

Category	Factor	Rationale	City examples	Policy-amenable?	Level of Government
01: Spatial Structure and Urban Form					
Urban structure	Density (absolute and distributions)	More sustainable travel with higher densities and greater levels of compactness, reducing average trip distances	All	Yes – medium- to long-term	UK, MSAs, LAs
	Proximity and diversity	Ability to do more with less travel and lower average trip distances	All	Yes – medium-term	MSAs, LAs
	Integrated land-use and transport planning	Improved urban accessibility through transit-oriented development, less pressure to expand road networks to reach new developments	Mainz vs. Sunderland regarding transport links to out-of-town employment	Yes – medium-term	UK, MSAs, LAs
	Economic geography	More sustainable commuting with (a) higher job density in city centres, (b) more knowledge-sector jobs (and knowledge-sector workers 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	UK, MSAs
Urban quality and experience	Aesthetic quality of urban cores	More attractive city centres bring in and keep more economic activity in areas amenable to car-free travel	All	Yes – medium- to long-term	LAs
	Housing typologies	High-density, multi-family housing development enables more people to live in well-connected areas where they can drive less or be car-free	All	Yes	LAs
	Perceived safety (e.g. crime, antisocial behaviour)	People are likelier to walk, cycle and use public transport if they feel safe doing so	Sunderland (city centre), Stevenage (cycle network)	Partially	UK, MSAs, LAs
Street networks	Street permeability	Greater ability to walk and cycle, and shorter travel distances, in areas with fine-grained street grids and small blocks	All	Partially – long-term	LAs
	Road severance	Large arterial roads and cul-de-sacs reduce street permeability and increase travel distances	All	Yes – medium- to long-term	MSAs, LAs
	Road speeds and traffic calming	Lower speed limits and traffic calming measures make it safer to walk and cycle	All	Yes – short-term	MSAs, LAs

Category	Factor	Rationale	City examples	Policy-amenable?	Level of Government
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, including within multimodal traffic forecasts	Germany (integrated transport planning) vs. UK (car-focused transport planning)	Yes – short-term	UK, MSAs, LAs
	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 via car-free modes	Germany vs. UK	Yes – short-term	UK
	Infrastructure legacies and path dependencies	Greater public transport use where 20th century rail infrastructure is well maintained	Germany (higher rail) vs. UK	No	n/a
	Local transport institutions	More sustainable travel where local transport institutions have stronger powers and are better at horizontal policy integration	Germany (Verkehrsverbunds) vs. UK (Passenger Transport Executives)	Yes – short- to medium-term	UK, MSAs
	Public transport operating model	More sustainable travel where public sector has higher involvement in regulating and/or running public transport services	Germany vs. UK	Yes – short-term	UK, MSAs
Transport infrastructure and services supply	Prioritisation of integrated active and public transport infrastructure and services	When integrated transport infrastructure and services (rail, bus, walking and cycling) are prioritised, they become attractive travel modes	Mainz, Dortmund (Stevenage as negative example – suggesting prioritisation is key)	Yes – short-, medium- and long-term	UK, MSAs, LAs
	Provision of car-based infrastructure	Investments in infrastructure for cars (roads, parking) encourage increased car use and dependency	Sunderland, Dortmund	Yes – short-, medium- and long-term	UK, MSAs, LAs
	Design quality and attractiveness	When integrated transport infrastructure is high-quality, attractive and safe, people use it more	Mainz vs. Stevenage for cycle infrastructure design	Yes – short-, medium- and long-term	UK, MSAs, LAs
	Land values and commercial viabilities	Where third-party contributions to delivering sustainable transport are commercially viable, infrastructure and services improve	All	Partially	UK, MSAs
	Spending power of the city	More transport supply overall (of any kind) with higher spending power	All	Yes – short-term	UK, MSAs
Mode choice mediating factors	Real, perceived, and sunk monetary cost of trips	More car-free travel when real per-trip costs are lower for sustainable travel, ticketing is simple, and sunk costs for car use are low	All (simplicity vs complexity of public transport tariff structures)	Partially	UK, MSAs, LAs
	Average wealth/disposable income of the city population	Higher car ownership with higher average wealth/disposable income	All	Partially	MSAs, LAs
	Road congestion	Road congestion makes active and public transport (when separated from car traffic) more appealing by comparison	All	Yes – short-term	MSAs, LAs
	Sticks (discouraging car use)	More sustainable travel as car use is made less attractive	Mainz	Yes – short-term	MSAs, LAs
	Weather and hilliness	Less cycling where weather is cold/wet and terrain is hilly	Sunderland	No	n/a

Category	Factor	Rationale	City examples	Policy-amenable?	Level of Government
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	UK
	Permanence and stability of regional and local government boundaries and institutions	More sustainable travel (more integrated transport infrastructure) where local government boundaries and institutions are unchanging	UK vs. Germany	Yes – medium- to long-term	UK, MSAs
	Capacity and competency of local and regional governments	Higher-quality transport infrastructure and services where local transport and other institutions are strong and horizontally integrated	UK vs. Germany	Yes – short- to medium-term	MSAs, LAs
Cultural norms and politics	Urban political culture	More sustainable transport with higher urban "progressive" vote share, influenced by demographics and relative proportions of urban vs. rural voters	Mainz, Dortmund, Stevenage	No	n/a
	Civic cycling culture	More cycling with intentional policy to support cycle culture	Mainz	Yes – short-term	MSAs, LAs
	Class-based transport norms	More car use where car ownership is strongly associated with aspiration and success; this may be associated with class through the structure of the local economy (e.g. % knowledge-sector vs. manufacturing jobs), which links to the economic geography and most convenient mode of transport for commuting	All	No	n/a
	Housing cultural norms	Higher-density living in countries where renting and multi-family housing are more normal and policy-protected	UK vs. Germany	Partially	UK, MSAs, LAs
	Demographic composition	More cycling with more highly educated workforce living centrally, more students, younger populations	All (Mainz)	No	n/a
	Individualism vs. collectivism	More driving in more individualistic countries	UK vs. Germany	No	n/a
Public involvement	Public trust in government	More sustainable transport in cities with higher public trust in government	All	Partially	UK, MSAs, LAs
	Participatory vs. reactive engagement with citizens	More sustainable transport in cities with participatory governance	Mainz	Yes – short- to medium-term	MSAs, LAs
	Civic activism	More sustainable transport in cities with higher civic activism	Mainz	No	n/a

Endnotes

1. UK Department for Transport. (2026). 'Better Connected: A Strategy for Integrated Transport'. London: DfT. Available at: https://www.gov.uk/government/publications/better-connected-a-strategy-for-integrated-transport

2. See Annex for a list of data sources by country.

3. UK Department for Transport. (2011). 'Personal Travel Factsheet: Commuting and Business Travel'. https://assets.publishing.service.gov.uk/media/5a7b98c0e5274a7202e18326/Commuting_and_business_travel_factsheet__April_2011.pdf

4. AECOM Ltd. (2022). 'Hertfordshire County Travel Survey 2022'. Hertfordshire County Council. https://www.hertfordshire.gov.uk/media-library/documents/highways/transport-planning/transport-and-accident-data/county-travel-survey/aecom-report-to-hcts.pdf

5. Coleman, A. et al. (2024). 'Public Transport in the UK: Considerations for Continued Rehabilitation and Future Planning for a Sector Impacted by COVID-19'. *Transportation Research Interdisciplinary Perspectives* 24 (March): 101044. DOI: 10.1016/j.trip.2024.101044.

6. Swinney, P. (2011). 'Hidden Potential: Supporting Growth in Sunderland & Other "Mid-Sized" Cities'. London: Centre for Cities. https://www.centreforcities.org/publication/hidden-potential-supporting-growth-in-sunderland-other-mid-sized-cities/

7. Centre for Cities. (2024). 'Cities Outlook 2024'. London. https://www.centreforcities.org/publication/cities-outlook-2024/

8. Buehler, R., J. Pucher, and O. Dümmler. (2019). 'Verkehrsverbund: The Evolution and Spread of Fully Integrated Regional Public Transport in Germany, Austria, and Switzerland'. *International Journal of Sustainable Transportation* 13 (1): 36–50. DOI: 10.1080/15568318.2018.1431821.

9. Open Data Dortmund. (n.d.). Statistische Bezirke (Dataset fb62-statistischebezirke) [Data set]. Dortmund: Open Data Dortmund. https://open-data.dortmund.de/explore/dataset/fb62-statistischebezirke/information/

10. Office for National Statistics. (2023). Census 2021 Bulk – Nomis [Dataset]. Nomis. https://www.nomisweb.co.uk/sources/census_2021_bulk

11. Office for National Statistics. (2024). Lower layer Super Output Areas (December 2021) Boundaries EW BFE (V10) and Rural Urban Classification [Dataset]. Open Geography Portal. https://geoportal.statistics.gov.uk/datasets/ons::lower-layer-super-output-areas-december-2021-boundaries-ew-bfe-v10-and-rural-urban-classification/about

12. UK Data Service. (n.d.). Easy Download – Borders Service [Data download service]. UK Data Service. https://borders.ukdataservice.ac.uk/easy_download.html

13. Federal Agency for Cartography and Geodesy (BKG). (2020). Deutschland: 2020 Kreise [Dataset]. govdata. https://www.govdata.de/suche/daten/deutschland-2020-kreise

14. Ladner, A., Keuffer, N., and Bastianen, A. (2021). Local Autonomy Index (LAI) in the EU, Council of Europe and OECD countries (1990-2020) – Release 2.0 [Data set]. University of Lausanne / Swiss Graduate School of Public Administration. http://local-autonomy.andreasladner.ch/

15. Hooghe, L., Marks, G., Schakel, A. H., Niedzwiecki, S., Chapman-Osterkatz, S., and Shair-Rosenfield, S. (2021). Regional Authority Index (RAI) v.3 [Data set]. Robert Schuman Centre for Advanced Studies, European University Institute. https://hdl.handle.net/1814/70298

16. Stevenage Borough Council. (2019). 'Local Cycling and Walking Infrastructure Plan 2019'. https://www.stevenage.gov.uk/documents/planning-policy/evidential-studies/transport-infrastructure/local-cycling-and-walking-infrastructure-plan-2019.pdf

17. Hudde, A. (2022). 'The Unequal Cycling Boom in Germany'. *Journal of Transport Geography* 98 (January): 103244. DOI: 10.1016/j.jtrangeo.2021.103244.

Appendix: Data sources

Data for England national level modal share trends

Department for Transport. (2002–2023). *National Travel Survey – Table NTS0303: Average number of trips, stages, miles and time spent travelling by mode (England)* [Data set]. GOV.UK. https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons

Data for Germany national level modal share trends

Bundesministerium für Digitales und Verkehr. (2003). *MiD 2002 – Mobilität in Deutschland* [Data set]. https://www.mobilitaet-in-deutschland.de/archive/mid2002-publikationen.html

Bundesministerium für Digitales und Verkehr. (2009). *MiD 2008 – Mobilität in Deutschland* [Data set]. https://www.mobilitaet-in-deutschland.de/archive/mid2008-publikationen.html

Bundesministerium für Digitales und Verkehr (BMDV). (2018). *MiD 2017 – Regionalisierung von MiD-Ergebnissen* [Data set]. Government of Germany. https://bmdv.bund.de/SharedDocs/DE/Anlage/G/mid-2017-regionalisierung-von-mid-ergebnisse.html

Bundesministerium für Digitales und Verkehr. (2024). *MiD 2023 – Mobilität in Deutschland* [Data set]. https://www.mobilitaet-in-deutschland.de/publikationen2023.html

Data for England 6 transport variables to determine 10 typical mobility cities (Census travel to work data was also used to analyse the 10 England typical mobility cities modal share changes)

Department for Transport. (2024). *Active Lives Survey 2022: CW0302 – Proportion of adults that cycle, by frequency, purpose and local authority: England* [Data set]. GOV.UK. https://www.gov.uk/government/statistical-data-sets/walking-and-cycling-statistics-cw

Department for Transport. (2024). *Active Lives Survey 2022: CW0303 – Proportion of adults who walk, by frequency, purpose and local authority: England* [Data set]. GOV.UK. https://www.gov.uk/government/statistical-data-sets/walking-and-cycling-statistics-cw

Office for National Statistics. (2023). *Census 2021 – TS061: Method used to travel to work* [Data set]. NOMIS. https://www.nomisweb.co.uk/datasets/c2021ts061

Office for National Statistics. (2023). *Census 2021 – TS045: Car or van availability* [Data set]. NOMIS. https://www.nomisweb.co.uk/datasets/c2021ts045

Department for Energy Security and Net Zero. (2022). *UK road transport energy consumption at regional and local authority level, 2005 to 2022* [Data set]. GOV.UK. https://www.gov.uk/government/statistics/uk-road-transport-energy-consumption-at-regional-and-local-authority-level-2005-to-2022

Office for National Statistics. (2022). *Census 2021 – TS001: Number of usual residents in households and communal establishments* [Data set]. GOV.UK.

Office for National Statistics. (2017). *Rural-Urban Classification (2011) of Local Authority Districts in England* [Data set]. GOV.UK. https://geoportal.statistics.gov.uk/datasets/f9fdc3adbc234f8eacee7c2b62274632/about

Office for National Statistics. (2013). *Census 2011 – KS101EW: Usual resident population* [Data set]. NOMIS. https://www.nomisweb.co.uk/census/2011/ks101ew

Office for National Statistics. (2003). *Census 2001 – KS001: Usual resident population* [Data set]. NOMIS. https://www.nomisweb.co.uk/census/2001/ks001

Office for National Statistics. (2003). *Census 2001 – KS015: Travel to work* [Data set]. NOMIS. https://www.nomisweb.co.uk/census/2001/ks015

Data for Germany 6 transport variables to determine 10 typical mobility cities

Bundesministerium für Digitales und Verkehr (BMDV). (2018). *MiD 2017 – Regionalisierung von MiD-Ergebnissen* [Data set]. Government of Germany. https://bmdv.bund.de/SharedDocs/DE/Anlage/G/mid-2017-regionalisierung-von-mid-ergebnisse.html

Kraftfahrt-Bundesamt. (2022). *Bestand an Kraftfahrzeugen und Kraftfahrzeuganhängern nach Gemeinden (FZ 3), 1. Januar 2022* [Data set]. https://www.kba.de/DE/Statistik/Produktkatalog/produkte/Fahrzeuge/fz3_b_uebersicht.html

Statistisches Bundesamt. (2024). *Independent cities and districts by area, population and population density as of December 31, 2024* [Data set]. https://www.destatis.de/DE/Themen/Laender-Regionen/Regionales/Gemeindeverzeichnis/Administrativ/04-kreise.html

Statistisches Bundesamt. (2023). *Population of German districts 2000–2023 (Table 12411-0015)* [Data set]. GENESIS-Online. https://www-genesis.destatis.de/datenbank/online/statistic/12411/table/12411-0015/

Independent city travel surveys for analysis of modal shares in 10 Germany typical mobility cities

Technische Universität Dresden. (2009). *Mobilität in Städten – SrV 2008: Städtevergleich und Methodenbericht*. https://tu-dresden.de/bu/verkehr/ivs/srv

Technische Universität Dresden. (2014). *Mobilität in Städten – SrV 2013: Stadtübergreifende Ergebnisse und Methodenbericht*. https://tu-dresden.de/bu/verkehr/ivs/srv/srv-2013

Technische Universität Dresden. (2016). *Sonderauswertung zum Forschungsprojekt „Mobilität in Städten – SrV 2013": Städtevergleich* (aktualisierte Version vom 03.03.2016). https://tu-dresden.de/bu/verkehr/ivs/srv/ressourcen/dateien/SrV2013_Staedtevergleich.pdf?lang=en

Technische Universität Dresden. (2019). *Mobilität in Städten – SrV 2018: Stadtübergreifende Ergebnisse und Methodenbericht*. https://tu-dresden.de/bu/verkehr/ivs/srv/srv-2018

Technische Universität Dresden. (2019). *Mobilitätssteckbrief für Mönchengladbach*. https://fragdenstaat.de/dokumente/237821-moenchengladbach-2019-2-steckbrief/?page=1

Technische Universität Dresden. (2020, March). *Sonderauswertung zum Forschungsprojekt „Mobilität in Städten – SrV 2018": Städtevergleich*. https://tu-dresden.de/bu/verkehr/ivs/srv/ressourcen/dateien/SrV2018_Staedtevergleich.pdf?lang=en

Technische Universität Dresden. (2024). *Mobilität in Städten – SrV 2023: Ergebnisse und Methodenbericht*. https://tu-dresden.de/bu/verkehr/ivs/srv/srv-2023

Technische Universität Dresden. (2024). *Sonderauswertung zum Forschungsprojekt „Mobilität in Städten – SrV 2023": Städtevergleich* [Research report]. https://tu-dresden.de/bu/verkehr/ivs/srv/ressourcen/dateien/SrV2023_Staedtevergleich_v2.pdf?lang=en

Universität Würzburg. (2023). *Verkehrsverhalten der Würzburger Bewohnerinnen und Bewohner – Mobilitätsbefragung Würzburg 2023* [Research report]. Lehrstuhl für Soziologie – Empirische Sozialforschung, Universität Würzburg. https://www.politikwissenschaft.uni-wuerzburg.de/lehrbereiche/empirische/forschung/mobilitaetsbefragung-wuerzburg-2023/

Stadt Cottbus / Chóśebuz. (2020). *Integrierter Verkehrsentwicklungsplan 2020 (InVEPl): Integrierter Verkehrsentwicklungsplan mit Maßnahmenplan* [Planning document] https://www.cottbus.de/verwaltung/gb-2/fb-61-stadtentwicklung/verkehrsplanung/integrierter-verkehrsentwicklungsplan-cottbus-2020/

Stadt Dortmund. (2006). *Dortmunderinnen und Dortmunder unterwegs: Ergebnisse einer Befragung von Dortmunder Haushalten zu Mobilität und Mobilitätsverhalten (Ergebnisbericht)* [Research report]. Dortmunder Umfragen. https://rathaus.dortmund.de/dosys/gremrech2.nsf/0/81825B3AE23422A6C-1257443006D51A5/$FILE/Anlagen_06275-06.pdf

Stadt Dortmund. (2014). *Haushaltsbefragung 2013 zum Mobilitätsverhalten der Dortmunder Bevölkerung: Ergebnisbericht* [Data set]. Open Data Dortmund. https://open-data.dortmund.de/explore/dataset/fb61-mobilitaetsbefragung-2013/information/

Stadt Dortmund. (2019). *Dortmunder Mobilitätsbefragung 2019* [Research report]. Ingenieurbüro Helmert, Aachen. https://www.dortmund.de/dortmund/projekte/rathaus/verwaltung/stadtplanungs-und-bauordnungsamt/downloads/fb61-mobilitaetsbefragung_finalbericht_dortmund_2019-1.pdf

Stadt Mainz. (2019). *Mobilitätsbefragung 2019 zum werktäglichen Verkehrsverhalten der Bevölkerung in Mainz* [Research report]. https://www.mainz.de/medien/internet/downloads/Bericht-Mobilitaetsbefragung-Mainz-2019.pdf

Landeshauptstadt Mainz. (2023). *Mobilitätsbefragung in der Landeshauptstadt Mainz 2023 – Kurzbericht* [Research report]. https://www.mainz.de/medien/internet/downloads/Mobilitaetsbefragung-2023-Kurzbericht.pdf

Hagemeister, D. (2018). *Auswertung SrV 2018*. Stadt Schwerin. https://www.schwerin.de/export/sites/default/.galleries/Dokumente/Ordnung-Sicherheit-Verkehr/Verkehr/Zeitreihe-Verkehrsmittelwahl-SN.pdf

Stadt Regensburg. (2018, June). *Studie zur Einführung eines „höherwertigen ÖPNV-Systems" in Regensburg: Endbericht*. https://stadtbahnregensburg.wordpress.com/wp-content/uploads/2018/06/anlage1_endberichtstudieinklplananlagen.pdf

Credits

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