Faculty of Public Health Transport Special Interest Group: Congestion Policy Brief

The UK Faculty of Public Health (FPH) sets out a vision, which includes as a priority: 'Promote policies and programmes that improve the health and wellbeing of people and communities and tackle health inequalities.' Transport policies have wide impacts on health and health inequalities. This policy brief is one of a series developed by the FPH Transport Special Interest Group (SIG) that describes actions needed to ensure that transport policies and practice promote positive health and reduced health inequalities in the UK. The series of policy briefs is available here.

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Congestion

Executive Summary

Congestion describes the impediment of movement within an area, due to the demand for road space exceeding capacity. Congestion is often seen as the norm, particularly within towns and cities. However, idling engines seen during congestion burn fuel less efficiently and produce up to twice as many emissions compared to when moving. Congestion has a significant impact upon our physical and mental health; producing air pollution, and increasing the pollutants that contribute to climate change, decreasing road safety, and contributing to noise pollution. Furthermore, congested roads reduce the appeal and safety of active travel, contributing to inactivity and sedentary lifestyles, whilst costing the economy by reducing productivity through longer journey times.

With 84% of the UK population living within an urban area, congestion impacts the majority of the UK population. Congestion has a negative impact upon physical and mental health and widens health inequalities with many people within lower economic groups having the greatest exposure to congestions and its pollutants, despite being the lowest contributors.

The Department for Transport (DfT) updated their modelling in 2022 projecting that traffic levels will increase, with total distances driven increasing between 8% and 54% (1). Congestion itself (measured in delay per mile) is forecast to increase by 27% between 2025 and 2027 (1). The DfT modelled a Behaviour Change Scenario, which featured increased flexible working, increased online shopping, and a reduction in driving within younger generations. This scenario predicts the lowest projection of traffic growth at 8% between 2025-2060. Changing behaviour at a population and policy level is therefore key to limiting congestion. Whilst these predictions are not definitive, any increase in traffic and congestion is not desirable for the reasons outlined above.

The simple solution of building new roads will not reduce congestion. Increasing road capacity with new road infrastructure and road widening does not solve congestion as a long-term solution (2). Furthermore, increasing road capacity negatively impacts air quality and the quality of life for those in surrounding neighbourhoods, whilst also having negative consequences for climate change. We must therefore seek alternative ways to reduce congestion.

FPH Policy Recommendations

This document provides evidence and guidance to support the reduction of congestion within urban areas. Solutions include:

- Parking charges and restrictions
- Car sharing incentives
- Road charging
- Spatial planning policy
- 20mph speed limits
- Guidance for business and industry

FPH also recognises the need for evidence and guidance regarding increasing road capacity through the building of new roads, the impact of bike lanes on road space, and the role of electric vehicles on congestion. This document therefore also outlines the evidence surrounding these topics.

Whilst no single policy is sufficient in addressing the issues of congestion and traffic, policy makers should seek to use a combination of interventions to support communities to thrive free from congestion. Policy should seek to move away from car-centric modes of transport to support healthier alternatives. Initiatives must not increase inequality and solutions should not negatively impact those within lower socioeconomic groups. Therefore, public transport and active travel must be prioritised to make them both the most appealing, and convenient modes of transport, allowing for healthy people, places, and spaces.

Supporting Evidence

What is congestion?

Congestion describes the way in which vehicles impede each other's movement within an area. Congestion increases the time journeys take as demand for available road space reaches capacity (3). In towns and cities congestion has become the norm, although the level changes by time and day.

In the UK traffic has increased by 8.8% between 2021-2022, with 322.8 billion miles being driven yearly (4). Vehicle miles completed annually have grown year on year from 1993. Since 1971 there has been an increase in the proportion of households with access to more than one car; with 33% of households owning two or more cars in 2021 (5). Private car travel is replacing public transport, especially outside London, were only 8% of journeys are taken by public transport (6).

The Covid-19 pandemic drastically change travel behaviours in regard to frequency, trip length, purpose and mode of choice. There remains considerable uncertainty of the impact of COVID-19 to travel behaviours (1). The DfT report identifies that at present there is insufficient evidence to evaluate the long-term impact of COVID-19 on traffic and congestion, but their modelling suggests that demand for road space has not, and will not reduce (1).

Why is congestion a problem?

Idling engines, seen regularly in congested roads, burn fuel less efficiently and produce up to twice as many emissions than when moving. Congestion therefore has a profound impact upon our air quality and our contribution to greenhouse gases.

Air Pollution: Within Europe, 569,000 deaths can be attributed to ambient air pollution, with transport producing a significant proportion of the pollution (7). Poor air quality is the largest public health risk in the UK; with long-term exposure causing chronic cardiovascular and respiratory conditions, such as asthma and lung cancer, as well as reducing life expectancy (8).

Climate change: Air pollution not only directly impacts our health but is also detrimental to our health through its contribution to climate change. The UKHSA identifies that as a result of climate change 'we expect major impact on physical and mental health, while our changing climate will also exacerbate existing health inequality' (9). In order to reach our European and national climate goals we must reduce congestion and our reliance upon cars.

Road safety: Greater time outside is associated with higher levels of physical activity in children. However high traffic density and concerns regarding safety are often barriers for children playing outside their houses. Outdoor play is linked to greater neighbourhood social cohesion (10). Congestion is limiting communities' ability to utilise space within their neighbourhoods.

Limits active travel: A dependency on cars and car-centric planning restricts use of public space and can result in a lack of perceived safety for cyclists and pedestrians. Active travel (especially walking) is a major contributor to people meeting physical activity targets. Physical inactivity increases the risk of non-communicable diseases and obesity, of which result in 1million deaths annually in Europe (7). Active travel provides win-win situations for a reduction in road congestion, improving individual and population health, improving air quality and increased footfall in town centres. However active travel must be safe and accessible. Reducing congestion allows for existing space to be reclaimed for active travel (11).

Noise pollution: Road traffic and congestion contribute to the excessive noise levels in modern cities. The European Environmental Agency estimates that long term exposure to high levels of noise such as traffic contributes to 48,000 cases of ischemic disease, and 12,000 premature deaths a year. Additionally, 6.5 million people suffer chronic sleep disturbance (12).

Cost to the economy: Congestion has been estimated to cost the economy £8 billion in 2021 with 73 hours per person, being lost to congestion each year (13). Whereas moving away from car dominated urban areas can allow for increased active transport with economic benefit. Transport for London has concluded that pedestrianisation of town centres generates increased value for retail schemes, seeing an increase in footfall and town centre viability. Additionally Hunter et al (14) demonstrated a cost ratio benefit of £2.88-£5.81 per every £1 invested in Belfast's urban greenway; a walking and cycling route connecting suburbs to the city.

Who does congestion affect?

Within the UK over 84% of the population live in an urban area. Congestion therefore affects the majority of the population. However some people are at greater risk; older people, children, individuals with existing chronic cardiovascular or respiratory conditions, people who are pregnant, communities in areas of higher pollution such as main roads and low-income communities (8). Congestion therefore contributes to the widening of health inequalities.

The COVID-19 pandemic drastically changed travel behaviours in regard to frequency, trip length, purpose, and mode of choice. There remains considerable uncertainty of the impact of COVID-19 to travel behaviours (1). The DfT report (1) identifies that at present there is insufficient evidence to evaluate the long-term impact of COVID-19 on traffic and congestion, but their own modelling (1) suggests that demand for road space will not be reduced.

Why building more roads won't help

Increasing road capacity with new road infrastructure and road widening does not solve congestion as a long-term solution (2). Furthermore, increasing road capacity negatively impacts air quality and the quality of life for those in surrounding neighbourhoods, whilst also having negative consequences for climate change. We must therefore seek alternative ways to reduce congestion.

Do bike lanes and increased pedestrianisation increase congestion, as there is less space for cars?

Congestion results from too great a demand on limited street space, i.e. too many journeys being completed by single occupancy cars. Protected cycle lanes, such as those in London, move 5 times as many people as the main carriage way, whilst taking up just 30% of the road (15). Increasing cycle lanes and pedestrianisation, increases the appeal of active travel, in turn reducing congestion, as less people need private cars to move around cities safely and quickly. Ensuring the efficient use of road space means prioritising walking, cycling and public transport.

Increasing infrastructure to priorities these won't result in changes to congestion overnight. But with time, when protected safe routes are available, people will start to use them. In 2006 Seville had just 12km of protected cycle lanes; cycling contributed to just 0.5% of journeys. By 2014 there was 164km, linking key destinations to residential areas. This resulted in 6% of all trips and 9% of non-commuter journeys being completed on bikes in 2014 (16).

Are electric vehicles the solution?

Electric vehicles (EVs) reduce emissions compared to fossil fuel-based vehicles. However, they do not hold the solution. Brake, tyre wear and road wear as well as the resuspension of road dust from EVs contribute toward particulate matter (PM) emissions. These non-exhaust emissions are a critical contributor to the PM emissions, contributing to the total PM emissions from motor traffic. Furthermore, they do not mitigate the issue of congestion within urban areas, as they do not release any road space. Additionally local authorities must be cautious to not allow EV infrastructure, such as charging points, to increase the number of stationary cars within urban areas. While EVs may be a step in the right direction, we cannot rely on them as the solution.

What are the solutions?

We should seek solutions that move away from a car-centric culture, through making private car ownership and usage the least attractive option. However, to be successful policy must address improving public transport, supporting pedestrian, and cycling infrastructure and aiming to reduce hyper-mobile travel. Hyper-mobile travel is whereby the urban planning and design of our spaces requires us to travel large distances to access necessary daily services.

Parking: It is well evidenced that providing space for cars increases the number of miles driven (17). Excessive parking spaces, increases the appeal of driving. Reducing the availability of parking and / or increasing its cost within inner cities can aid in decreasing the attraction of driving into the area. Park and ride, as well as public transport must continue to support access into inner cities. Reducing parking availability allows the re-allocation of roadside parking into cycle lanes, pedestrian areas and space for other activities that improve the quality of our streets. Road space should be prioritised for circulating traffic (including bikes and buses) rather than stationary vehicles.

- Nottingham Workplace Parking Levy (WPL), charges employers who provide car parking at work £522 (as of April 2023) per parking bay. Exemptions include blue badge holders, front line NHS, occasional business visitors, motorbikes, and fleet/delivery vehicles. The WPL has been credited with a 47% decrease in congestion, with funding from the WPL doubling existing tram systems, supporting rail station redevelopment and the creation of the UK first all-electric park and ride. Since 2005 there has been a 33% fall in carbon emissions in Nottingham (18).

- Street-space reallocation in Oslo, resulted in the city removing 760 on-street parking spaces and reusing the space for bike lanes, plants, parks, and benches. This has result in a 28% decrease in traffic within the inner city whilst supporting active travel.

Residential parking: Research has identified an association between guaranteed parking at home and increased car use for journeys that are well served by public transport (19). Parking restrictions should seek to review access to private residential parking, such as driveways. Parking charges or reducing parking exclusively in relation to roadside parking would likely create inequality of those unable to afford off road parking within cities. Having a driveway or private parking space currently adds to a house's attractiveness and sale price, leading to front gardens being turned into parking spaces, creating loss of green space, and risking reducing biodiversity and increasing flood risk.

Car sharing incentives: Car sharing schemes include sharing journeys with people that would otherwise be driving individually, or by communities having access to shared cars. An increase in lift sharing of just 1% saves 2.5 billion car miles and 0.75MtCo2. Additionally, car share schemes (with a fleet of available cars) encourage a shift to multi-modal transport. Car sharing schemes have been shown to reduce car ownership by 5-15 cars for every 1 car within the fleet (20).

- Carshare Devon already encompasses 10 schemes operated by councils, NHS, businesses, communities, and the university to help increase their car sharing. The scheme is operated by 'mobilityways', which has estimated 27 million saved car miles since 2003 and 6MtCo2.

- Eastleigh Borough Council offers a personalised travel plan to the office which demonstrated a 32% decrease in single occupant vehicle use, and an increase in cycling and train use following their sustainable transport and commuting plan.

- Lancaster City Council has increased their fleet of electric vehicles to reduce business mileage and emissions whilst allowing the vehicles to be available to the public in off-peak hours.

Road Charging: targets congestion through charging for busy stretches of road, either permanently or during specific times of day. Road charging opts for a 'polluter pays' principle, incentivising other means of transport. Revenue from road charging may be used to support the expansion and development of public transport, ensuring public transport is a viable and convenient option.

Although 'polluter pays' policies aim to target those who are most affluent, as they typically contribute the greatest proportion of private car travel, charges may not always be confined to this group. Due to limited public transport many of those less affluent are reliant upon private cars, especially people undertaking shift work or working unsocial hours. Therefore, without the appropriate development of public transport and infrastructure to support public transport and active travel there is a risk of worsening inequality and increasing transport related poverty. However, road charging, when coupled with additional policies can effectively reduce private car travel.

- London ULEZ/Congestion zones, reduced private car trips by 14.7% below 2000 levels, increasing public transport, walking, and cycling. Additionally, since 2019 levels of nitrogen oxides within Greater London has dropped by 23%; improving the air quality (21).

- Singapore uses an electronic road pricing scheme on specific routes, whereby the road charge is variable depending on the time of day in response to congestion. Singapore have coupled this policy with increase parking fees within restricted zone whilst increasing the frequency of public transport and park and ride options.

- Paris has opted for a polluter pays policy in regard to on-street parking within the centre of Paris. With SUV and 4x4 cars paying threefold for parking compared to smaller cars. Parking an SUV in central Paris for 6 hours costs £192 (225 euros), making this mode of transport financially unappealing. Paris has allowed for exemption, including trades people, health workers and people with disabilities who may require larger cars.

Spatial planning policy should promote hyper-proximity by providing communities access to key public services (post offices, banks, schools) as well as recreational amenities such as coffee shops and parks within a short walk or cycle of their home. A move away from hypermobility; whereby our space, by design requires us to travel large distances to access services. Access to amenities reduces the demand of private cars use within urban areas, allowing increased cycle paths, pavements, and recreational space within communities. Hyper-proximity allows for more cohesive communities whilst supporting local business. Urban areas can ensure all redevelopment and new construction ensure a range of amenities are within walking and cycling distance.

- Barcelona has implemented the 'superblock' and has seen a 31% increase of ground-level commercial establishments.

- Bristol city council is developing Bristol's 2050 One City Plan to ensure all amenities including sporting ones are withing 15 minutes of everyone's homes.

20mph speed limits reduce the number of traffic collisions and deaths, promote active travel, and improve air quality. This makes road spaces safer for people to partake in active transport (22).

There is currently no evidence to indicate that congestion increases within 20mph speed zones, nor to suggest it increases air pollution. The Welsh Government indicate that lower road speeds encourage active transport due to safer road, resulting in fewer cars on the road (23). Several studies indicate that 20mph zones reduce traffic volumes (24-26), therefore 20mph zones can be an effective way of encouraging active transport, reducing collision all whilst reducing congestion.

Businesses can also play a role in reducing congestion. There are several ways companies can reduce congestion:

- Flexible working patterns and hybrid working, when possible, to reduce the need for travel.
- Encourage and support car-pooling, and the use of fleet cars for necessary work journeys to reduce reliance on private single occupancy car journeys.
- Provide workers with subsidies and incentives to use active travel and public transports. For example, cycle to work schemes.

Summary:

Whilst no single policy is sufficient to address the issues of congestion and traffic facing urban areas within the UK, policy makers should seek to use a combination of interventions to allow for the development of urban areas to support communities to thrive, without congestion and traffic. We must seek to move away from car-centric modes of transport to support healthier alternatives. Initiatives must not increase inequality. Solutions should not negatively impact those within lower socioeconomic groups. Therefore, public transport and active travel must be prioritised within our transport policies to make these the most appealing, and convenient modes of transport, allowing for healthy people, places, and spaces.

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Further evidence to support this policy:

Transport Research Institute, Essential Evidence 4 Scotland 2024, Smarter Choices, Smarter Places: Supporting Sustainable Travel, available at; https://blogs.napier.ac.uk/tri/essential-evidence-scotland/?utm_source=localtransporttoday&utm_medium=email&utm_campaign=essentialevidence24&utm_content=essential_evidence_mailshot_jan_24.