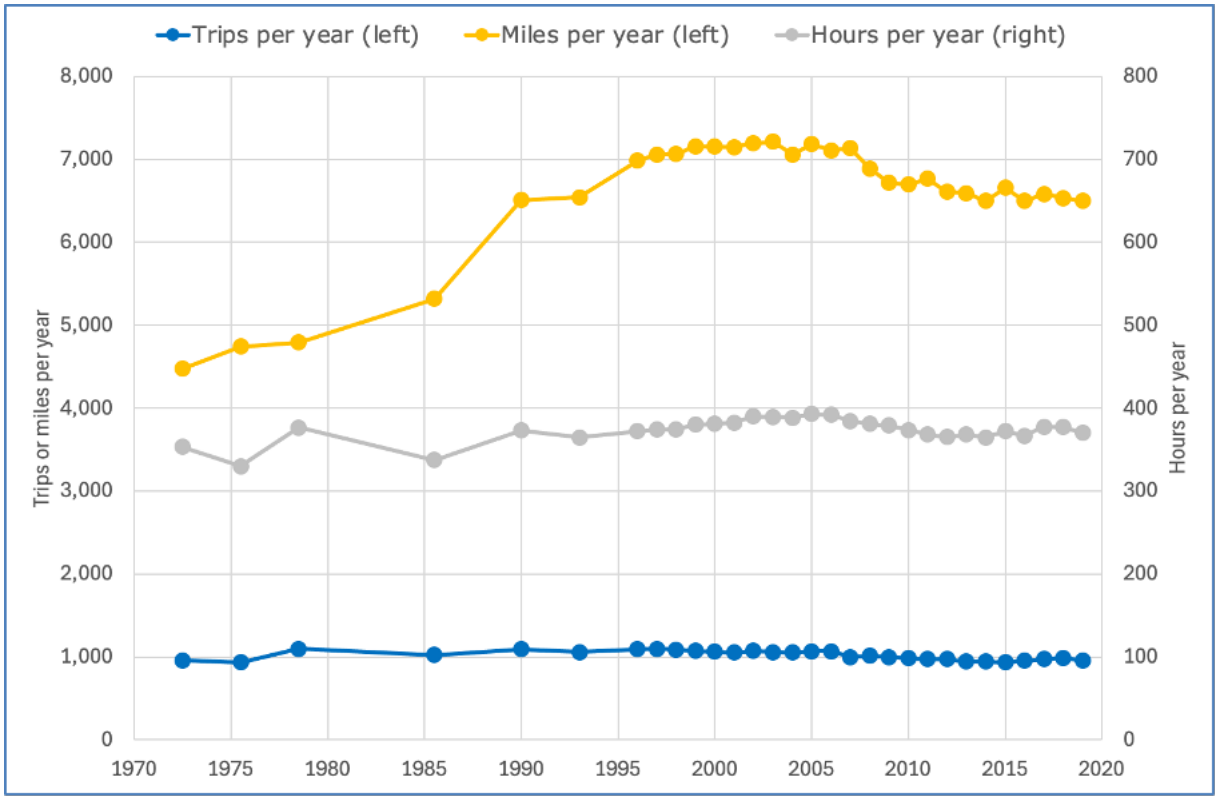
TEG TRANSPORT ECONOMISTS' GROUP

The Transport Economist

The Journal of the Transport Economists' Group



Editor Peter Gordon

Volume 51 Number 3
Autumn 2024

The Transport Economist

Volume 51, Number 3
Autumn 2024

Contents **Pages**

Details of meetings are provided on our website at
http://www.transecongroup.org/meetings/

Travel behaviour reconsidered in an era of decarbonisation

David Metz
(University College London Centre for Transport Studies)

Online

25 September 2024

Introduction

David Metz explained that the talk related to his new book, published by the UCL Press[1]. The UCL Press is an academic publisher so, unlike in his previous books aimed at a wider audience, detailed evidence is referenced for the benefit of academics and professionals, in particular transport economists. The publisher is open access and the book can be downloaded free as a PDF. His talk would be a "trailer" for the book, with an emphasis on the ideas rather than the detailed evidence.

Table 1 summarises the contents of the book.

Table 1: The contents of the book

Chapter	Title
1	Travel behaviour today
2	Travel trends over time
3	Shock of the pandemic
4	Transport economics reconsidered
5	Transport models reconsidered
6	Demands of decarbonisation
7	Fresh approaches to travel analysis and policy

The core of the book is a critique of orthodox transport economics and transport modelling in Chapters 4 and 5, which comprise around half the book.

[1] https://uclpress.co.uk/book/travel-behaviour-reconsidered-in-an-era-of-decarbonisation

The need to reconsider travel behaviour

David cited two reasons to reconsider behaviour.

First is the practical issue of understanding the scope for reducing travel, particularly by car and aviation, to help meet the Net Zero objective.

Second is because, in his view, there is a mismatch between what is assumed in orthodox transport modelling and appraisal and the behaviour observed in reality.

Car dependence

In 2019, car was responsible for 61% of trips and 77% of distance travelled, and 76% of households own at least one car.

This has led to the concept of car dependence, first identified by Phil Goodwin about 25 years ago, and much academic literature and debate about the problems arising from high levels of car use, to which carbon emissions are a recent and important addition.

Despite the analysis, it would be hard to say that car dependence has been reduced. He argued that in practice it has two thrusts:

- First, locations accessible only by car, including new housing on greenfield sites.
- Second, where individuals choose car when other modes, including active travel, are available. This aspect of car dependence has some resonance with alcohol or drug dependence as being inherently undesirable.

In his view, the attractions of car are underestimated by the critics of car dependence:

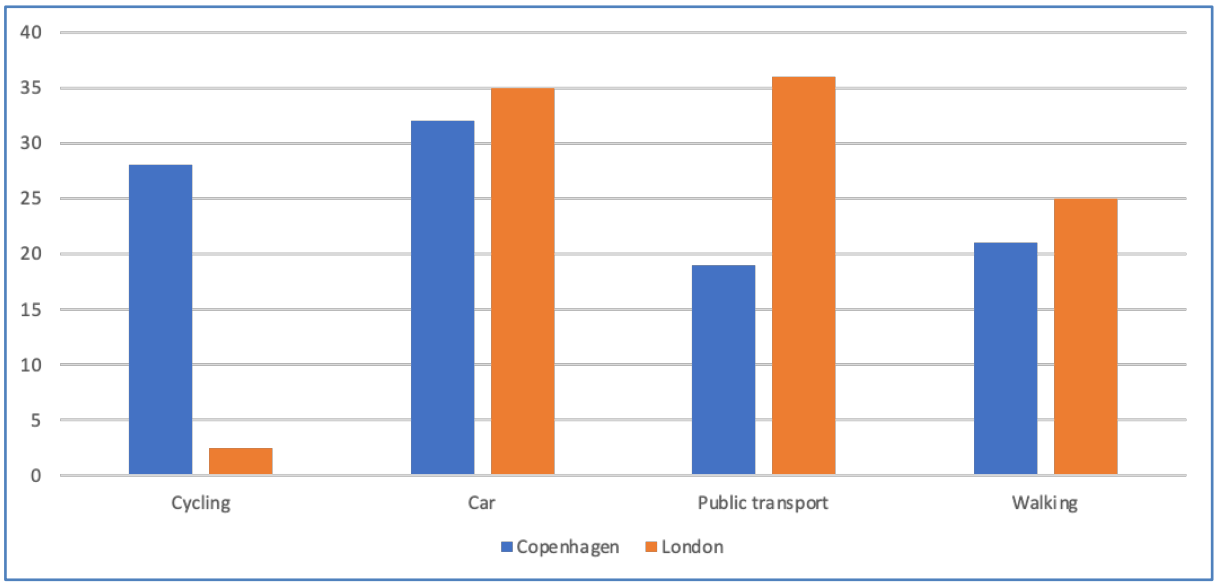
- There is the relative utility of a car, even where alternatives exist, when congestion is not too severe and parking is available and affordable at both ends of the journey.
- There are "feel good" factors: for instance, people choose to own cars which are parked 95% of the time, and choose large vehicles such as sports utility vehicles (SUVs), the capabilities of which they never need or use.

This suggests that merely providing alternatives to the car will not be sufficient unless the "feel good" factors are addressed.

Car is always important, even if other mode shares vary

He had visited Copenhagen with a group of urbanists and spent a weekend cycling around the city, which regularly reports on cycling[2]. The reports allow comparison between Copenhagen and London, shown in Figure 1.

Figure 1: mode share in Copenhagen and London



Copenhagen's cycle mode share is around ten times that of London, but car mode share is only slightly less, and public transport model share is only half that in London. This suggests that people can be moved between bus and bike, which is cheaper, healthier, environmentally better, but often no slower. It is, however, hard to move people from car to bike even in a small flat city with excellent cycling infrastructure and a strong cycling culture. It also seems likely that many car users also have bikes which they choose not to use for some journeys.

In other European cities for which data is available:

- Amsterdam is similar to Copenhagen; but
- Vienna and Zurich, which have historic tram networks, have high levels of public transport use and little cycling.

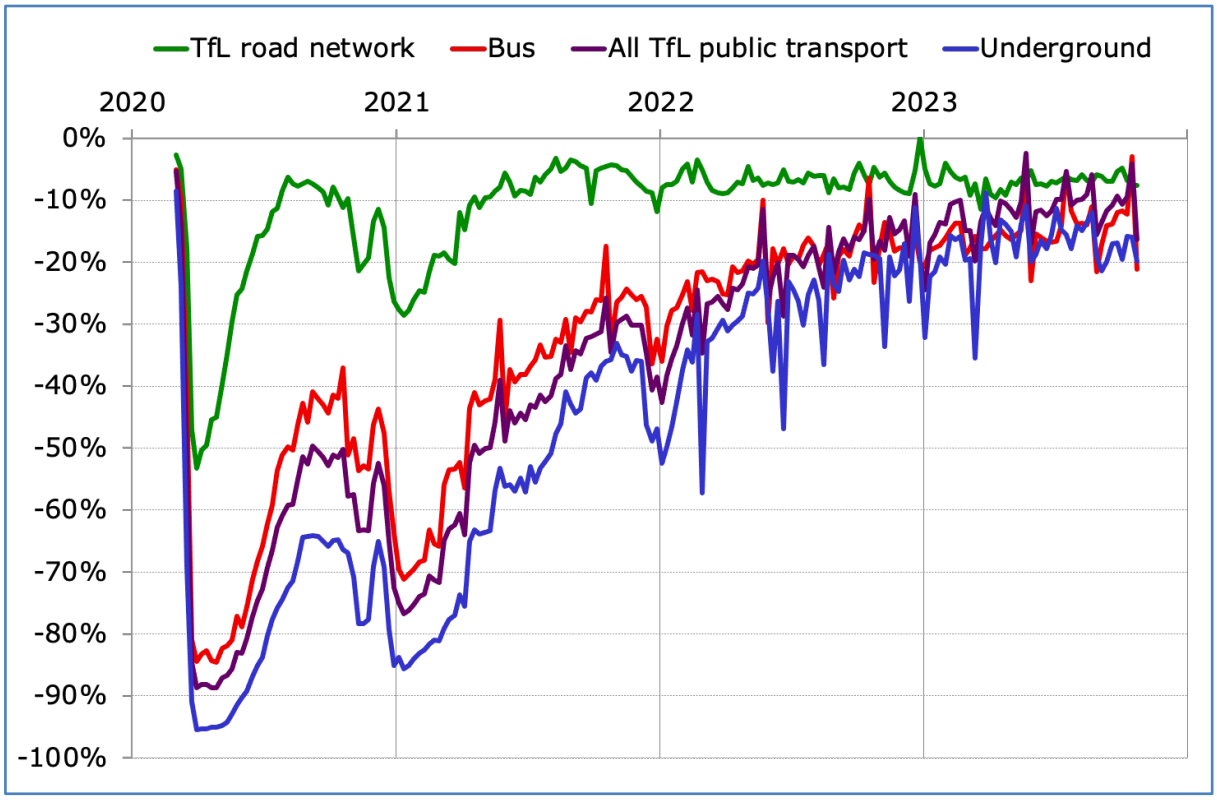
He found no cities with high levels of both cycling and public transport use but little car use.

[2] "The bicycle account" published at https://urbandevelopmentcph.kk.dk/mobility-cycling/copenhagen-the-best-cycling-city-in-the-world

Car travel recovered fastest after COVID

Figure 2 shows how London's road traffic and public transport recovered after the COVID pandemic.

Figure 2: the natural experiment of the pandemic



Source: Transport for London, Travel in London Report 2023.

Car use, which does not involve sharing space with strangers, recovered more rapidly than all the public transport modes. One issue was whether new technologies had reduced the need for travel or instead increased the range of contacts whom people wished to meet face-to-face. The pandemic suggests that people could substitute for travel if constrained not to travel, but once freedom was restored, car use remained very attractive.

Car is suited to trips too long for active modes

Around 80% of car carbon emissions arise from trips of over five miles, beyond which few people will cycle, and around 95% arise from trips of more than two miles, beyond which few people will walk. This partly reflects the low density of the inherited built environment: British cities are more dense than most North American ones but less dense than European ones such as Paris or Barcelona. The British are used to houses with gardens, not

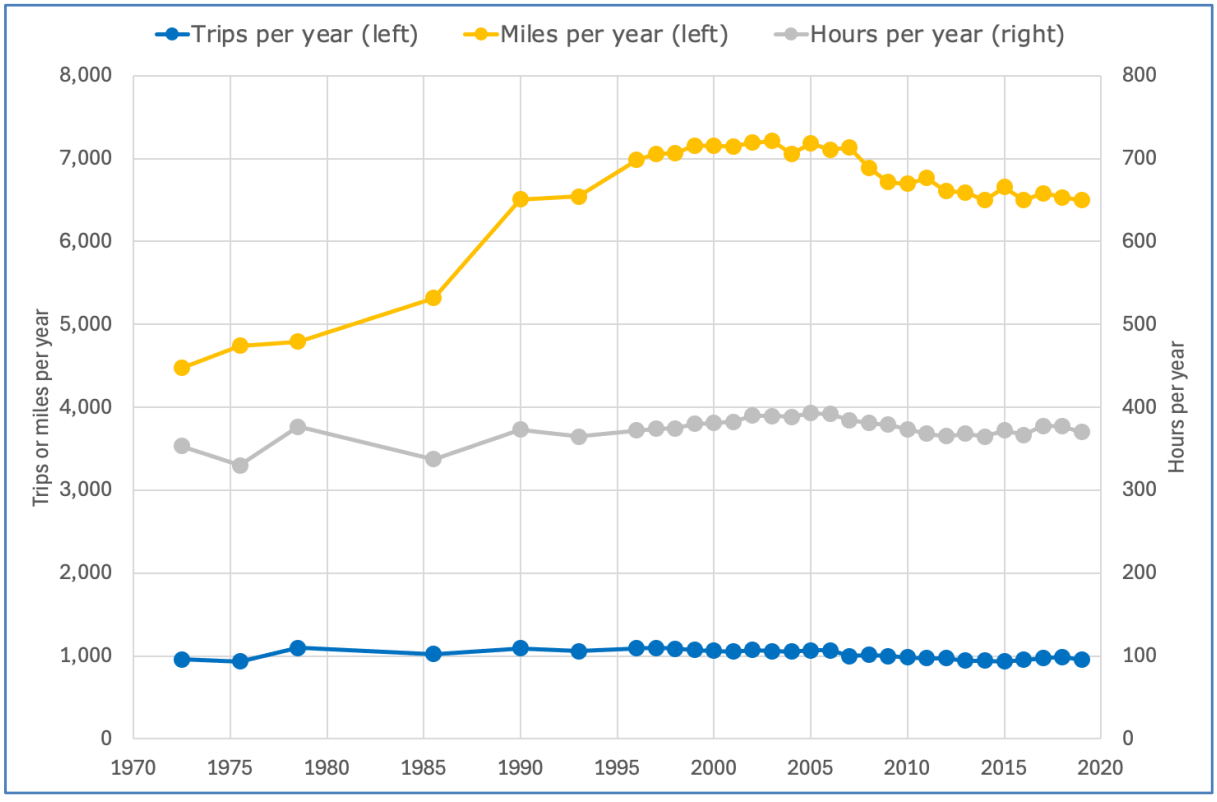
apartments or flats. New housing adds only around 1% to the housing stock each year, but is still needed because of both net immigration and declining household size. On greenfield sites it means more car use, but on urban brownfield sites, infill and densification, public transport would be more important, yet there is no national policy on this. The revised National Planning Policy Framework does not reconcile the aspiration to build 1.5 million homes with a sensible policy on transport.

David concluded that there is limited scope for behavioural change which would reduce car use and car-related carbon emissions, but the best opportunities are in city centres and particularly by investing in urban rail.

Travel trends

Figure 3 shows National Survey Trends for the period leading up to the COVID pandemic.

Figure 3: travel trends per capita



Source: National Travel Survey (NTS), Table NTS0101.

The bottom trend line is a consistent average of around 1,000 trips per year, and the middle trend line, also broadly consistent, shows average travel time of around one hour per day. This hour

per day is found generally in settled human populations, and may date from when humans ceased to be nomads, and appears to reflect the balance between the activities to be fitted into the day and the need to leave the home for some of them.

The top trend line shows how average distance travelled (excluding international air travel) increased from around 4,500 miles per year in the early 1970s to over 7,000 miles per year in the late 1990s, after which it stabilised and subsequently slightly declined.

New technologies

If travel time has not risen, but distance travelled has, then average speeds must have risen. This has been made possible by the fossil fuel energy sources adopted during the nineteenth and twentieth centuries, shown in Table 2.

Table 2: 19th and 20th century transport technologies

Technology (introduced in …)	**Fuel source**	**Faster?**
Railway (1830s)	Coal > oil > electricity	✓
Safety bicycle (late 19th century)	Human	✓
Motor scooter (early 20th century)	Oil	✓
Motor car (early 20th century)	Oil	✓
Aircraft (early 20th century)	Oil	✓

Note: "Faster?" relative to foot, horseback, or horse-drawn vehicle.

However, the trend is not fixed distance travelled in lower time, but fixed time spent travelling a longer distance. The benefits of higher speed have not been taken as time savings but rather as greater access to people and places.

Table 3 shows four emerging road transport technologies of the early 21st century.

Table 3: 21st century transport technologies

Technology	Principal benefit(s)	Faster?
Electric vehicles	No tailpipe emissions Progressive fuel carbonisation	✗
Autonomous vehicle	Less reliance on human driver	✗
Ride-hailing apps	Improved convenience and cost relative to taxi	✗
Satellite navigation	Improved routing, including in real time to avoid congestion	✗

Note: "Faster?" relative to existing cars and taxis.

None offers a step change in the speed of travel, or new access benefits: the benefits are in quality and convenience and, in the case of electric vehicles, regulation-driven reduction in carbon use and other pollution. David concluded that new technologies are not going to lead to any increase in per capita car use.

The need for access

The second aspect of the plateau in distance travelled relates to access. For example, the Competition Commission used census data to study access to supermarkets, and concluded that, for the urban population, within a 15-minute drive:

- 80% had a choice of three or more large supermarkets; and
- 60% had a choice of four or more supermarkets.

Would anyone needing to do a family shop want to drive further to reach a fourth or fifth supermarket?

He concluded that demand for car travel to reach supermarkets had saturated, and noted that many people also had access to local food shops, whether big chains or independents, within 10 minutes' walk.

He also noted that to buy a fixed price commodity such as a newspaper, there was no need to go beyond the nearest shop, but for heterogenous products such as clothing, it might be necessary to assess the choice in a town centre. Thus, the degree of saturation of demand will depend on journey purpose.

Summary

Access is subject to diminishing returns (extra supermarkets are valued less and less) and it increases roughly with the square of the speed of travel. This combination means that travel demand saturates. Combined with lack of faster new technologies, this is why average distance travelled has ceased to increase.

Accordingly, travel time savings are not a good proxy for access benefits, because they have different properties. Appraisal should consider access, not time savings, with and without investment cases.

Moreover, increased access implies more vehicle miles travelled, and associated negative externalities, than if the benefits were taken as time savings.

Problems with transport modelling

David continued with the problems of transport modelling as he saw them. Transport models are complex and opaque, with many parameters which require expert judgement, and are only understood by experts. Among other consequences:

- decision-makers are unlikely to challenge models which confirm their expectations; but
- objectors cannot critically examine the models, in some cases because of commercial sensitivity.

As a non-expert, he identified two problems.

First, there is a lack of predictive validation. Typically, a transport model is "calibrated" with half the base year data and "validated" with the other half of the base year data, effectively showing that a model using half the data can predict the other half, rather than predict anything about the future. This contrasts with the scientific method of making a falsifiable prediction and testing it on new or future data. In his experience, comparison of forecast and outturn was rare and, when possible, could show the forecast to be badly wrong.

Second, the typical modelling process is for a traffic or multimodal model such as SATURN to drive the TUBA economic model. The outputs of SATURN are traffic speeds and volumes, comparing the with- and without-investment cases, which are

suited as inputs to TUBA. But the evidence is that investment increases access, the benefits of which cannot be valued by TUBA or other economic models. This means that SATURN is constrained to model a counterfactual case. David concluded that transport models cannot be relied on to estimate either economic benefits or carbon emissions.

System maturity

Infrastructure such as electricity and water supply, flood defences and broadband, is experiencing growing demand, and requires investment. However, if travel demand has saturated there should be a presumption that the transport system is mature.

This has been accepted for urban roads since the end of the urban motorway programme, where demand is now being managed through tools such as road pricing and workplace parking levies, plus investment in rail-based public transport. Acceptance that the network is mature should now be extended to interurban roads (and airports), possibly excepting where land is being brought into new use, and where the associated transport links should be appraised as part of the whole scheme.

The book also included an examination of recent rail investment decisions. It concluded that many decisions were based on political and social considerations rather than economic appraisal, but that urban rail seemed more attractive than interurban rail.

The aim should therefore be to maintain and make best use of existing infrastructure consistent with Net Zero. Investment in digital technologies to make best use of the infrastructure was likely to be much more cost-effective than civil engineering.

If networks are mature, then economic analysis and modelling needs to focus not on civil engineering to add new capacity but on operational research to manage the existing assets to achieve most cost-effectively whatever objectives are set. Better use should be made of the extensive models built by the providers of digital navigation tools to improve operational management and modelling of road networks.

Postscript: the new Labour government

David ended by noting that his book was completed before the change of government on 5 July 2024. The new Labour government had announced some initial decisions:

- Road schemes had been cancelled, including the A303 Stonehenge tunnel (in his view, the economic case depended on a "a ridiculously large cultural value of getting the traffic out of sight"), and the A27 Arundel bypass.
- There is a review of the Department for Transport's £800 million unfunded commitments, which he suggested were often where schemes had entered the programme on the basis of underestimated costs.
- There is a proposed Office for Value for Money (OVfM) which may bring thinking to bear on appraisal and evaluation.
- There is a proposed National Infrastructure and Service Transformation Authority (NISTA), merging the National Infrastructure Commission (NIC) and Infrastructure and Projects Authority (IPA), which may progress a 10-year infrastructure investment programme.
- There is a new Minister for the Future of Roads, Lilian Greenwood.
- There is a renewed focus on Net Zero, under a Secretary of State for Energy Security and Net Zero, Ed Miliband. David expected this to add impetus to transport decarbonisation.

Perhaps the new transport strategy would include some or all of:

- relying on zero emission vehicles, rather than behavioural change, for surface transport;
- using digital technologies to optimise network operations (to sweat the assets); and
- financial support for all forms of public transport, the issue being what we can afford.

Discussion

Simon Temple noted that the talk had challenged many historical assumptions. National Highways uses SATURN, which is not a true multimodal model but instead is a highway routing model with an adjustment for induced demand, amalgamating the effects of modal shift, redistribution and truly induced generation. In a classic 4-step (generation, distribution, mode choice, assignment) model, distribution was always the weakest element, and addressing this seemed to him to be the greatest priority for transport modellers to address the issues David had raised. That said, he did not think it was as hard as had been suggested to get people to shift from car. **David** reminded the meeting that he was not an advocate of the car industry but an analyst, and his conclusions were based on his analysis. He would be interested to be shown evidence that led to different conclusions. He was happy to receive comments on modelling, described in Chapter 5, on which he was not an expert, but was struck by how opaque it is. SATURN dates from over 40 years ago[3], and he had not seen any more recent published papers. Additionally, there were journals of transport economics but not of modelling. Coupled with the lack of predictive validation, there is great uncertainty about the benefits of all the expensive and time-consuming modelling, but he was happy to debate this.

John Preston (University of Southampton) had many questions, but focused on Figure 3. If travel time is constant and travel distance has been declining since around 2005, does this mean that that the network has been getting more congested? **David** agreed with the observation, although published data suggested that congestion on the strategic road network was broadly stable, and that one explanation for the relatively small decline may include lower, or better enforcement of, speed limits. In his book he discussed mitigating congestion, including through road user charging, but concluded that the levels of charges which are likely to be politically feasible would have little impact on congestion, so we would probably have to live with this on the interurban network, as we do in urban areas. We

[3] See, for example, SATURN – a simulation-assignment model for the evaluation of traffic management schemes, by M. D. Hall, D. Van Vliet and L. G. Willumsen, Institute for Transport Studies, University of Leeds, 1979.

accept, for example, that urban travel is slower by day than at night, but do not consider this a problem to be addressed. The priorities must be decarbonisation and reducing air pollution, rather than decongestion per se.

Jeremy Drew was worried that electric vehicles were not yet carbon-free and created pollution from tyres and brakes. In addition, they may lead to a reduction in the marginal cost of driving, which may result in congestion where it is not yet an issue. Politicians must not let cheap electric travel saturate not only urban but also interurban and rural roads. Should the cost of motoring be increased or at least not allowed to fall? **David** pointed out that Net Zero by 2050 will mean carbon-free car fuel and car construction. The focus on air pollution will move from tail pipe emissions to particles from tyres and brakes, and we will need to find better technologies, particularly to reduce particles which penetrate the lungs, but he was hopeful that there will be technological solutions. The capital costs of electric vehicles are expected to fall, and government will need to choose whether to tax them, but it is wrong to suppose that lower running costs will result in larger distances travelled, which will depend mainly on level of household car ownership, time available for travel, and speed of travel, none of which is affected by fuel costs. The suppression of the fuel duty escalator in recent years seems to have led to wider ownership of less fuel-efficient vehicles, notably SUVs, rather than greater distance travelled.

Tom Worsley challenged the view that improvement in accessibility should be the criterion when making investment decisions. Accessibility to what? With supermarkets, for example, might people be willing to travel further for more or better choice? Conversely, is there value in giving people access to goods and services which people may never want? **David** said that the issue was not "giving people access" but observing what they did, which in general was not making longer trips to niche supermarkets. The Department of Transport had collected and published data on choice of common destinations such as primary and secondary schools, further education, GP surgeries, hospitals, food stores and so on[4]. His analysis of this data

[4] National Travel Survey (NTS), Table JTS0101

showed that those with either a car in the household or good public transport generally have high levels of choice of such destinations, which had led him to the conclusion that travel demand can saturate – "we can have enough travel to meet our needs" – which is consistent with the National Travel Survey timings of the cessation of growth of distance travelled. Demand saturation is recognised in economics, with the classic S-shaped curve for the adoption of new goods and services, after which the market becomes saturated and focuses on replacement of time-expired products or to accommodate population growth. Demand saturation has not been adequately studied in the context of travel behaviour, partly because the presumed utility of time savings does not correspond to what we observe in practice.

Peter Gordon (Editor, The Transport Economist) asked whether land use planning could mitigate some of the observed problems, particularly if better integrated with transport planning. **David** replied that we inherit an existing built environment, except in rare cases such as the post-war new towns, planned on various models. The most recent, Milton Keynes, designed for high motorisation in a time of rising car ownership, would be planned differently if we were starting now, with more scope for active travel, more compact designs, and public transport such as trams. However, the vast majority of trips nationally have origins and destinations within the inherited built environment which we can't afford, and don't want, to knock down. Changes in land use, whether greenfield or brownfield, at the margin will not significantly change land use or transport patterns. The debate about new housing on greenfield sites is part of the debate about rural living, where the car is very important, and those without, or unable to use, a car are markedly worse off than those in a high-density urban environment.

Report by Dick Dunmore

Low Traffic Neighbourhoods

Rachel Aldred and Ersilia Verlinghieri
(University of Westminster)

Online

22 October 2024

Introduction

The speakers presented on a range of related projects:

- Rachel Aldred on earlier research; and
- Ersilia Verlinghieri on current projects.

Impacts of Low Traffic Neighbourhoods in London

Rachel Aldred introduced herself as Director of the Active Travel Academy, a research centre at the University of Westminster. It does research on a range of topics, including on LTNs.

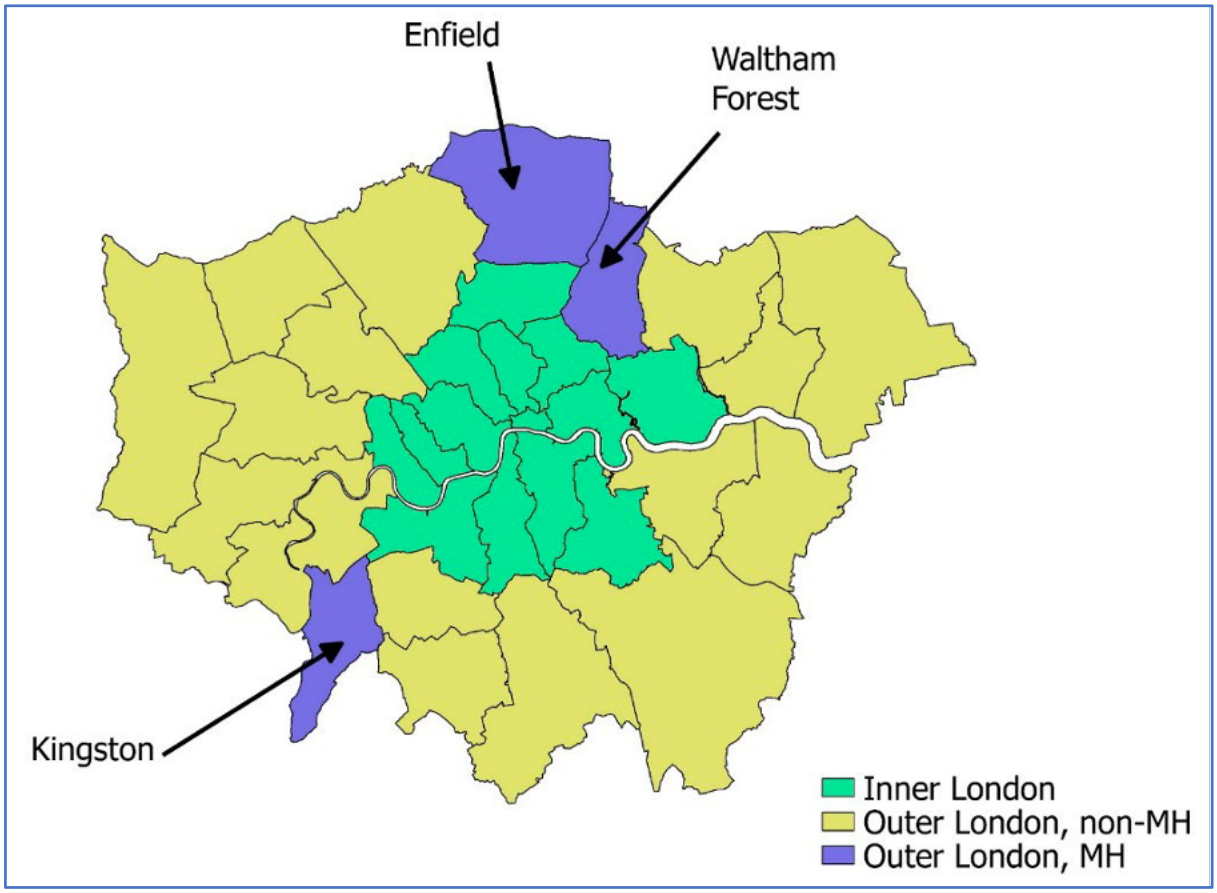
In March 2013, the Mayor's vision for cycling in London laid out an ambition for increased cycling and walking infrastructure. Part of this was the Mini-Holland programme, around £100 million allocated competitively and invested in active travel infrastructure in three Outer London boroughs over the period 2015-21. It included many major cycle track schemes and also, particularly in Waltham Forest, what became known as LTNs. From 2020, as a COVID intervention, further LTNs were built across two-third of London boroughs.

The study originated in an interest in the Mini-Holland programme. It was funded by Transport for London (TfL) to look at the impact of the Mini-Hollands. It ran an annual "People and Places" survey of around 1500 outer Londoners, for which six waves exist over the period 2016-2021. Each year this resurveyed a sample of Londoners in boroughs with and without Mini-Hollands, giving both time-series and cross-sectional data.

It was also possible to include some of the "emergency" LTNs introduced during the pandemic.

Figure 1 shows the Outer London boroughs with LTNs.

Figure 1: Low Traffic Neighbourhoods in London



Schemes in Waltham Forest were initially called "village schemes". They were schemes for areas, rather than for a single road, and extended beyond town centres into residential streets:

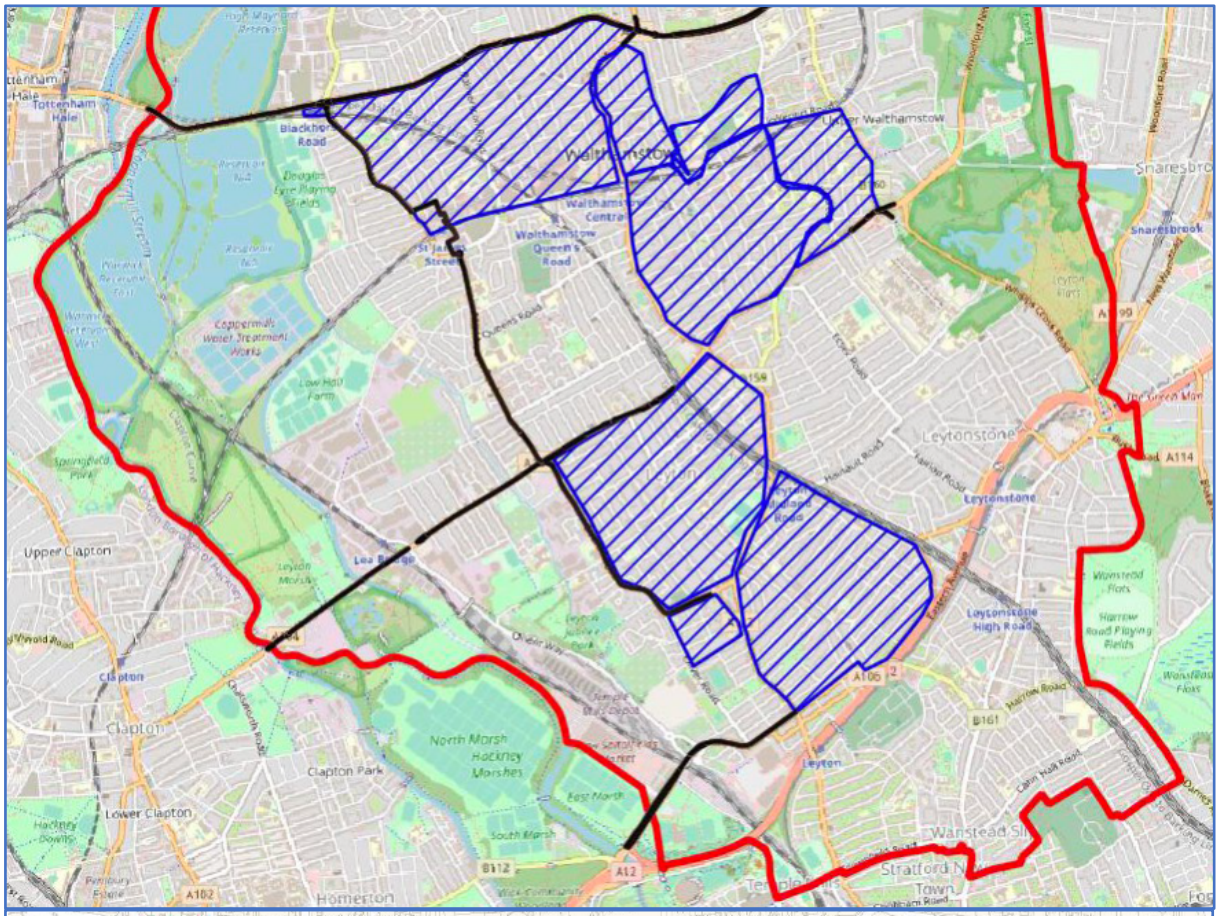
- "Modal filters" blocked motor traffic, but not walking and cycling, or permitted users such as Blue Badge holders.
- They could use either physical measures, such as bollards, posts or planters, or camera gates, including bus gates.
- Sometimes new one- or two-way working were introduced.
- High streets could be included.

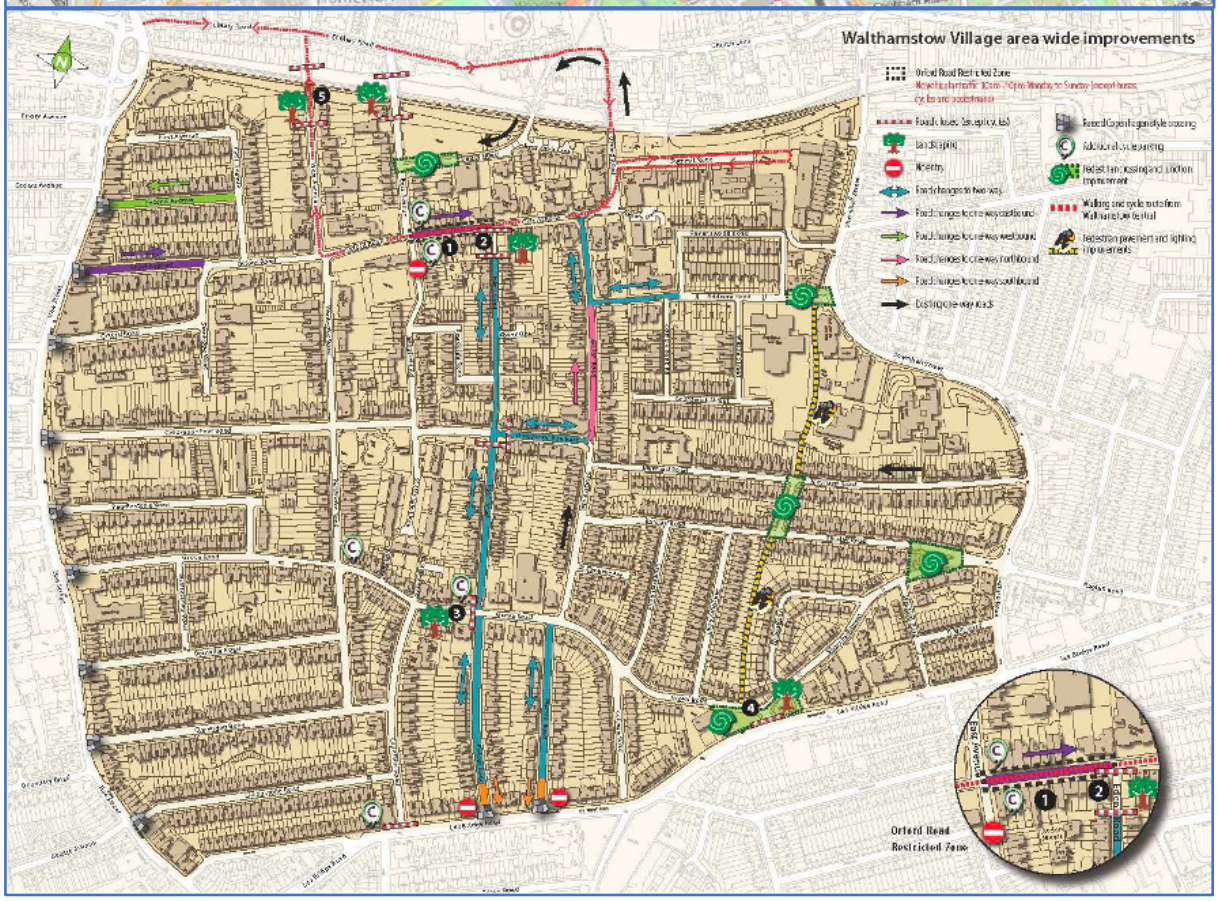
LTNs are a recognised design principle in urban planning, used for many towns in the Netherlands, but retrofitted an LTN to existing urban infrastructure was relatively novel at the time.

The speaker noted that it takes time to relocate underground utilities and street furniture to make a new cycle route, but LTNs could be implemented relatively quickly, starting with bollards.

Figure 2 shows further details of some of the LTNs introduced in one of the three Outer London boroughs, Waltham Forest.

Figure 2: LTNs in Waltham Forest and Walthamstow Village



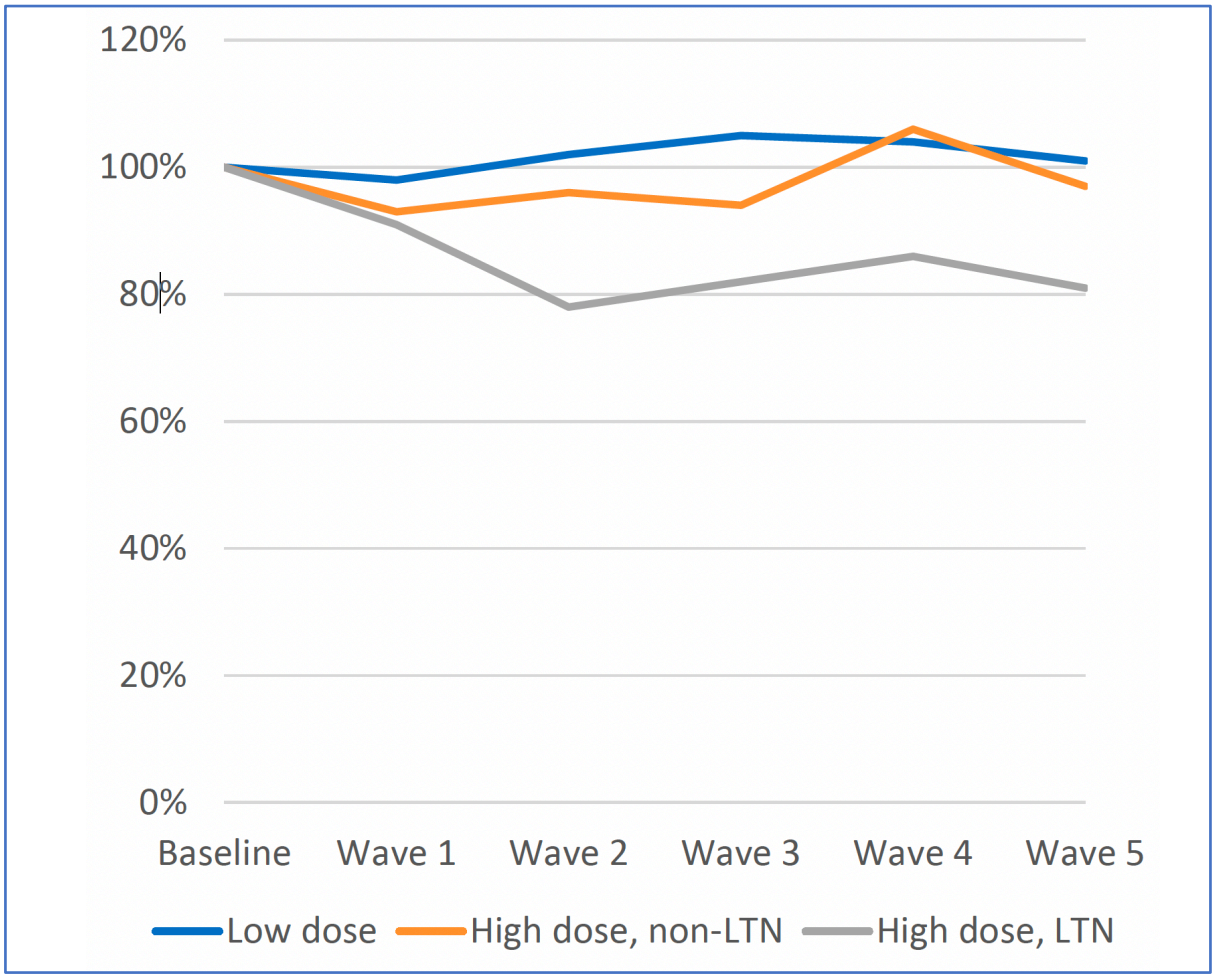


The top part of Figure 2 shows the LTNs introduced in the south of the borough from 2015 (shaded in blue) and new cycle track (in black) by partway through the study. The lower part of the figure is a detailed map of the Walthamstow Village scheme.

Reduction in driving

Figure 3 compares the likelihood of driving in the past week, for three groups relative to the control group.

Figure 3: Driving in past week, relative to control



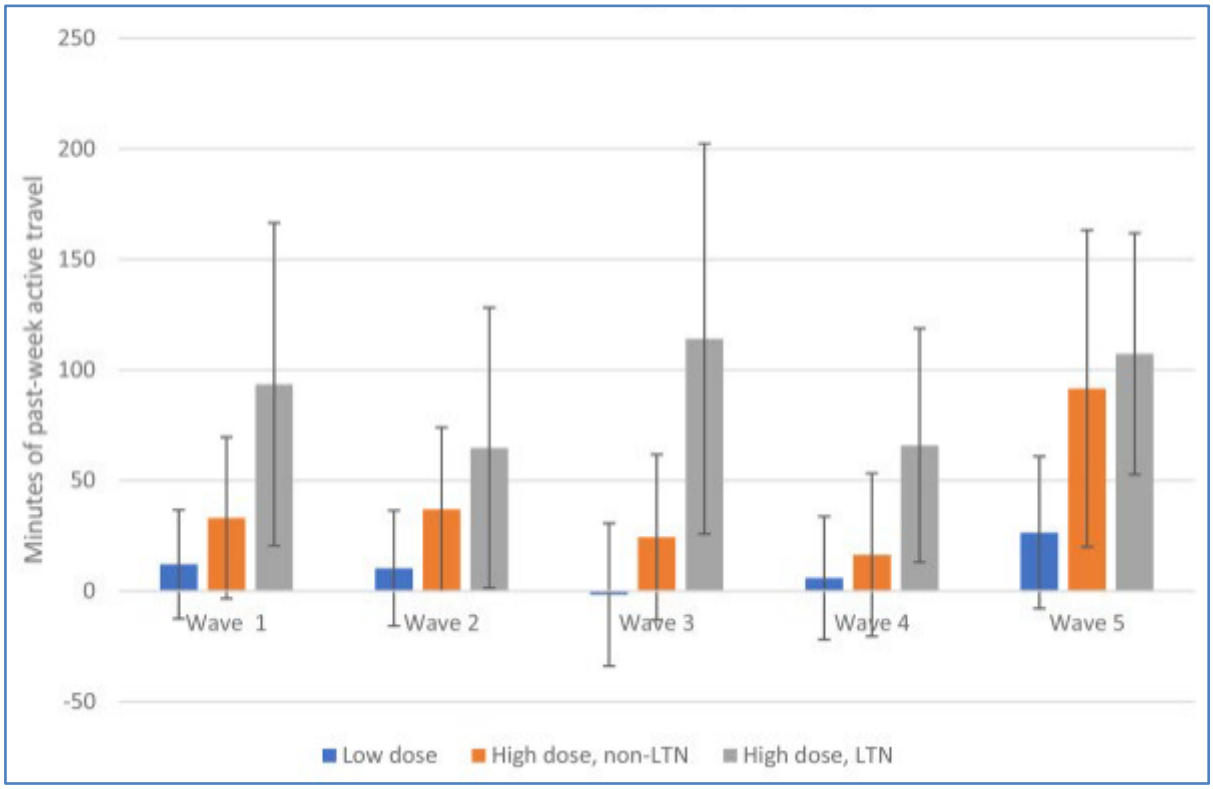
Low dose: in a Mini-Holland borough but not near any schemes.
High dose, non-LTN: near an active travel scheme but not in an LTN.
High dose, LTN: in an LTN, usually near other active travel schemes.

The principal change was around a 20% decline in past week car use for those with a high dose and in an LTN.

Growth in active travel

Figure 4 shows how, while the sample size was small, and the confidence interval large, the high dose, LTN group showed substantial growth in active travel, much of it in walking.

Figure 4: Additional minutes of active travel, relative to control



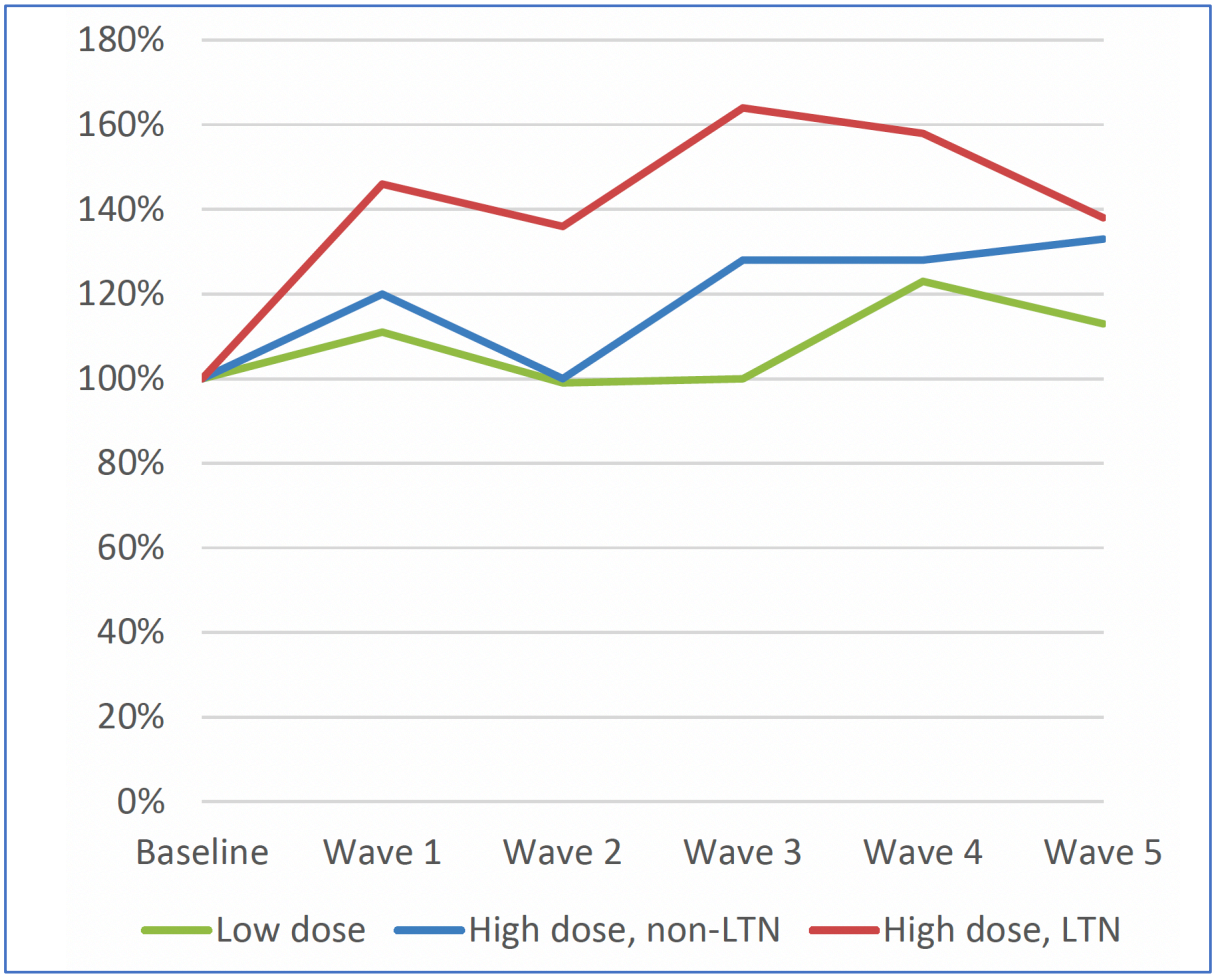
Note: additional minutes of active travel, relative to the change from baseline in the control group. Error bars show 95% confidence interval.
Low dose: in a Mini-Holland borough but not near any schemes.
High dose, non-LTN: near an active travel scheme but not in an LTN.
High dose, LTN: in an LTN, usually near other active travel schemes.

There was some evidence of an increase in active travel, particularly at Wave 5, in the high dose, non-LTN group, but not in the Low dose group.

Change in cycling

Cycling levels in Outer London boroughs remain low in absolute terms, but Figure 5 shows how there was evidence of an around 50% increased participation in cycling in the (red) High dose, LTN group, indicatively from 4% to 6% reporting having cycled in the past week.

Figure 5: Cycling in past week, relative to control



Note: likelihood of cycling in past week, relative to the change in the control group.
Low dose: in a Mini-Holland borough but not near any schemes.
High dose, non-LTN: near an active travel scheme but not in an LTN.
High dose, LTN: in an LTN, usually near other active travel schemes.

Health and economic benefits

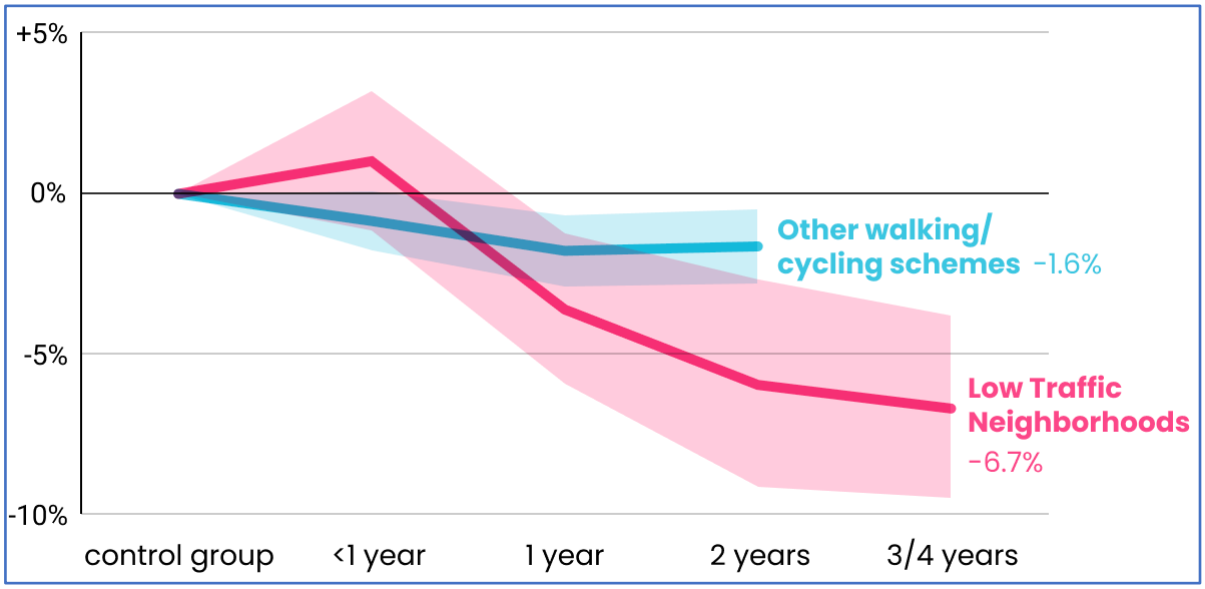
Another research paper, published recently, showed that the Mini-Holland programme generated large economic benefits:

- The high dose Mini-Holland area generated a health economic benefit of £1,056 million over 20 years, £821 million of it, or around 80%, from reduced mortality due to increased physical activity.
- This equates to 37 deaths avoided and 753 years of life lost (YLL), and 535,421 sick days avoided.
- Around 40% of the whole economic benefit, or £443 million, is for the LTN areas within the Mini-Holland boroughs.

Waltham Forest: reduced car ownership

Figure 6 shows how the number of cars and vans registered in LTNs in Waltham Forest (pink) fell 6% after two years, consistent with surveys suggesting a decline in car use or ownership.

Figure 6: Change in cars/vans per 1000 adults



Source: DVLA data. Coloured bands show 95% confidence interval.

The reduction in registrations in other high dose, non-LTN walking/cycling schemes (blue) was also statistically significant[5].

Waltham Forest: reduced road injuries

STATS19 road injury data showed approximately 70% reduction in road traffic injury risk per trip on roads within Waltham Forest LTNs, for pedestrians, cyclists and car occupants alike. No negative impact was found on LTN boundary roads[6].

Pan-London "emergency" LTNs

The annual "People and Places" survey also enabled some analysis of the LTNs introduced across Outer London in 2020-21.

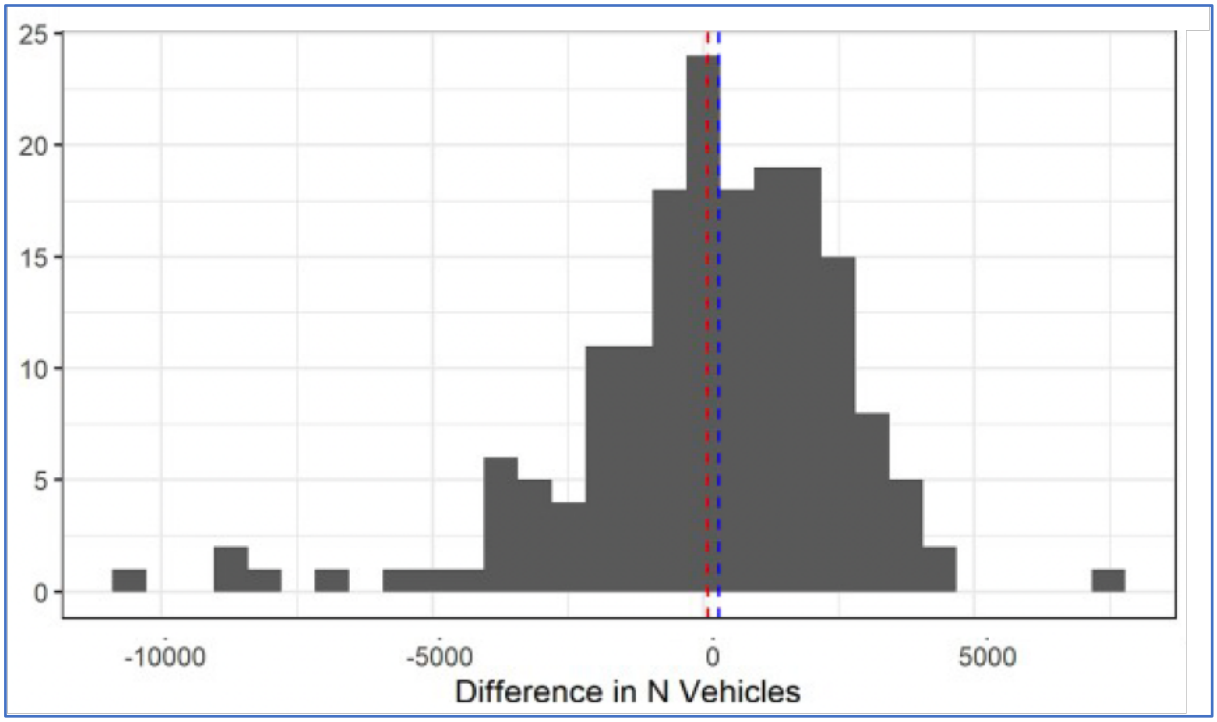
Injuries in LTNs introduced in 2020 halved relative to the background trend, with the principal change being in pedestrian injuries. No negative impact was found on LTN boundary roads.

[5] https://doi.org/10.32866/001c.18200
[6] https://doi.org/10.32866/001c.18330

A recently-submitted paper had analysed 113 London LTNs introduced from 2015 to 2023, 26 of which were later removed. Overall, LTN implementation was associated with a 33% decrease in total injuries and 36% decrease in killed or seriously injured (KSI). No negative impact was found on LTN boundary roads, and the pooled effect on LTNs and boundary roads was 7% fewer injuries. The study also found that, where LTNs were removed, injuries reverted to pre-LTN levels.

Figure 7 shows a systematic review of local authority monitoring data on flows on boundary roads covering 600 locations on 46 schemes[7]. The distribution is broadly normally distributed around zero, with no evidence of systematic change.

Figure 7: Difference from expected daily traffic flow



Lambeth: reduced driving

There was also evidence that residents drive less after an area becomes an LTN. Lambeth is nearly all covered by controlled parking zones, in which it was possible to match registered postcode and number plate data with odometer readings from annual MOT records. From 2018-2020 (pre-LTN) to 2021-2023 (post-LTN), mean average past year driving fell by

[7] https://www.sciencedirect.com/science/article/pii/S2213624X23001785

0.7 kilometres/day among residents living inside the new LTNs and increased by 0.6 kilometres/day among residents in controlled parking zones elsewhere in Lambeth, a relative decrease of 1.3 kilometres/day or 6.3%[8].

Summary

The speaker concluded that motor traffic levels generally fall inside LTNs in London, with no systematic pattern on boundary roads.

The LTNs have led to more walking and cycling and reduced injury risk, with evidence of reduced driving and car ownership.

Although not covered in the talk, there was also evidence of reduced street crime.

Discussion

Ola Faleti asked if there had been any research on the extent to which COVID may have been a major factor in the success of LTNs? Have things reverted to previous conditions since the pandemic? **Rachel** said that all the studies compared against the background trends of the control group, so the key issue was the difference in the LTNs. The imminent paper on injuries would examine LTNs installed between 2015 and 2023, but it was important to keep looking. One issue is that the research to date focuses on London, because this is where most interventions have been made.

John Cartledge found the presentation extremely interesting. LTNs had excited passionate arguments to the extent that many were removed as local authorities "took fright". What drove the opposition, and did it still persist? **Rachel** said that Ersilia would focus on these issues, but noted that measures such as removing car parking space were also controversial. In Ealing, it was possible to observe that road injury rates went back up again when the LTNs were removed. In other boroughs, the LTNs were only in place for a few weeks, making it impossible to observe their effects. There are also issues of local authority capacity and

[8] https://findingspress.org/article/75470-the-impact-of-2020-low-traffic-neighbourhoods-on-levels-of-car-van-driving-among-residents-findings-from-lambeth-london-uk

resources, and the challenges they face, which would be discussed by Ersilia.

Tim Yates asked if modal switch had been examined. Was the increased cycling by former drivers or by existing cyclists cycling more? **Rachel** said that it was not possible to ask too many questions, and people did not necessarily switch direct from a trip by one mode to a trip by another. The focus had been the minutes people spent using different modes. There was both reduced car use and also at least some new people cycling and walking, which should also have brought health benefits. **Tim** suggested that it was necessary to know whether healthy existing cyclists were doing more or new cyclists were becoming healthier. **Rachel** said that Department of Health's Active Mode Appraisal Toolkit (AMAT) did not need details, as it made assumptions based on evidence from other studies.

Gregory Marchant thanked Rachel for a very good overview of LTNs. Had there been a chance to look at public transport usage and bus travel times? **Rachel** said that Transport for London had been particularly interested in car use. The study limitations on asking too many questions meant that the study did not capture minutes spent on public transport in the same was as for walking, cycling and driving. There had been a big change in public transport use in the COVID years. Buses might have been affected in different ways: in Waltham Forest the buses continued down the High Street through bus gates. Findings on changes in car journey times are currently emerging using the Google API.

Dick Dunmore was aware that there had been many self-identified users from LTNs among motorists claiming longer journeys. It would not be practicable to model details of all trips to, from and within an area before and after creating an LTN, but he noted that Google API would provide some data on road speeds and travel times. What information was available from self-reported users and wider distribution effects? **Rachel** said that Google API was part of the project and there would in future be results looking at car journey times. So far, the biggest changes in journey times seemed to have been to those living in LTNs rather than those passing them. Most London schemes have Blue Badge exemptions, a benefit for those disabled car

users who can bypass some of the modal filters. The materiality of delays relative to other benefits, such as reductions in injuries, may be difficult to assess.

Gregory Marchant asked whether pollution and air quality had been measured? **Rachel** said that this was a specialist topic. The current project would model changes in air pollution, with a focus on boundary roads, and work was in hand by air pollution specialists. Audrey de Nazelle and her colleagues at Imperial College had already published a paper looking at changes in air pollution around Islington schemes using local authority air pollution data. A study had also been published on noise pollution in Birmingham by Suzanne Bartington and her colleagues.

Low Traffic Neighbourhoods in London: a mixed-methods study of benefits, harms and experiences

Ersilia Verlinghieri of the Active Travel Academy of the University of Westminster presented on this current large study[9].

Research questions

The study had five research questions:

- Do new LTNs lead to greater levels of, and more diverse, walking and cycling, compared to areas without them?
- What are the health benefits from these schemes, such as reduced road injury risk?
- Do the schemes cause harms, including congestion on boundary roads or longer journeys for those disabled people who are reliant on cars?
- How do local people experience and respond to LTNs?
- How can policymakers navigate controversy surrounding these schemes, and make them more inclusive?

[9] https://www.westminster.ac.uk/research/groups-and-centres/transport-and-mobilities-research-group/projects/low-traffic-neighbourhoods-in-london-research-study

The project was ongoing and it will be possible to be share more when it ends in around eight months. Until then, she would focus on the last two research questions, on locals and policymakers.

Navigating controversy: residents' perspectives

The speaker showed some headlines illustrating the controversy about LTNs, and Figure 8 below showing a response to one.

Figure 8: A response to a Low Traffic Neighbourhood in Sheffield

She then focused on a paper being prepared by the project team looking at discourses of climate delay in LTNs and based on the first of two waves of interviews, including 80 participants living in or near two implemented and two planned LTNs in London.

The participants represented a diversity of demographics and views on LTNs: 33 of them were "opposed" or "strongly opposed" to the local scheme.

Situating the backlash in "automobilities"

Much of the opposition to LTNs was consistent with a known global pattern of contesting interventions that disrupt car-centrism, and transport interventions need to be understood in this context.

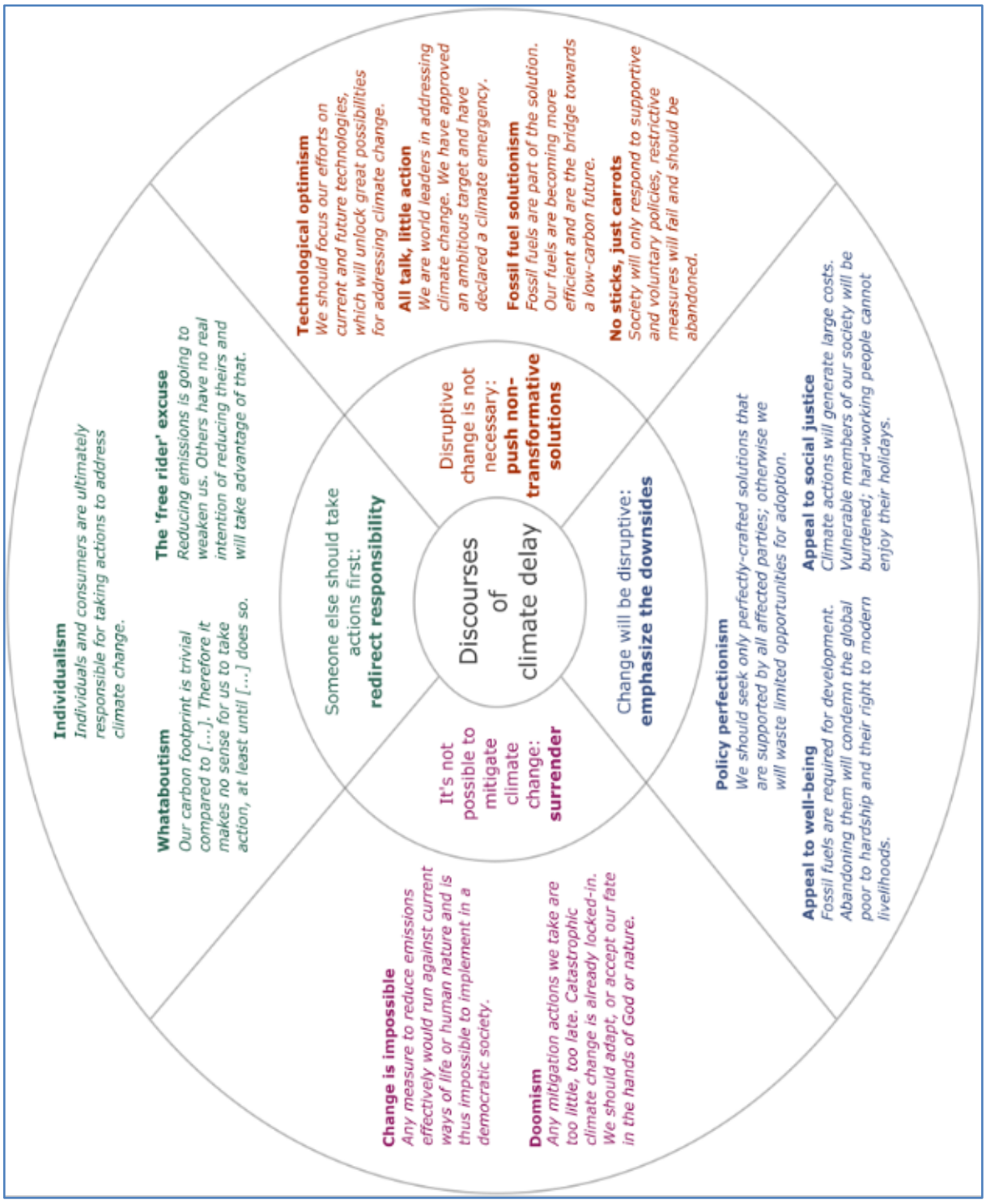
Infrastructure, forms of governance, and policy narratives have all been constructed over decades favouring the private car. These systems of "automobility" have transformed cultural assumptions about travel and limit imagination of non-car alternatives. "Motonormativity", a similar concept, is "shared, largely conscious assumptions about how travel is, and must continue to be, primarily a car-based activity".

Discourse, transport and delay

Field et al, in "Encountering bikelash: Experiences and lessons from New Zealand communities (2018)" had noted that transport schemes represent "*A social challenge as much as a technical puzzle*"[10]. It was pertinent to pay attention to how discourse is used to sustain car-based "automobility". Lamb et al, in "Discourses of climate delay" had noted a tactic of downplaying the need for transformative action, and devised the diagram shown as Figure 9, which the speaker used as a framework for analysing the LTNs residents' views on schemes[11].

[10] https://www.sciencedirect.com/science/article/pii/S2214140518302032?via%3Dihub
[11] https://www.cambridge.org/core/journals/global-sustainability/article/discourses-of-climate-delay/7B11B722E3E3454BB6212378E32985A7

Figure 9: A typology of climate delay discourses



Source: Lamb et al

Top of diagram: redirect responsibility

Individualism: this is not an issue for cycling, an individual practice that does not require structural change. Cyclists need training, not infrastructure.

"a cyclist with or without the LTN, it doesn't affect them at all, their journey, or safety, or whatever reason is still roughly the same."

Whataboutism: drivers identify other emissions sources or environmental issues as more pressing than the LTN.

Free-rider excuses: cyclists are presented as undeserving beneficiaries.

Cyclists are accused of "abusing their freedom", "not stopping at red lights", and having "no road sense" and "no common sense".

Right of diagram: push non-transformative solutions

One narrative is technological optimism: electric vehicles (EVs) are presented as an alternative solution, while the evidence shows that they are at best a partial solution.

A second is that there should be no sticks, only carrots. The only interventions proposed are those that do not impact car use, such as subsidies to EVs, incentives to cycle, on-street cycle lockers, and reduced public transport fares. These are worthwhile, but are unlikely alone to achieve transformative change.

Bottom of diagram: emphasise (possible) downsides

One narrative is appeal to social justice and to wellbeing, such as the displacement of traffic onto boundary roads (and low-income groups), the impact on disabled people, businesses and on gendered crime.

"The biggest effect of all these stupid traffic calming measures is that it has forced more traffic onto the [boundary] road because there's nowhere else for them to go".

A second is policy perfectionism, accusations of inadequate or flawed consultation and/or engagement.

"There's a tendency to think things have been predetermined and some consultation has gone on which has given them the green light to do that."

Left of diagram: surrender

One narrative is that change is impossible, and people will not change their driving practices.

> *"The traffic ain't going to disappear, vehicles are not going to disappear."*

A second is that everyone is making essential journeys.

> *"People are not going to give up their cars, that's the long and short of it, they will not."*

Takeaway points

Ersilia summarised the discourses with five takeaway points:

- Opposition to LTNs is more complex than individual positions and lived experience of schemes.
- Opposition is part of a wider process of opposition to climate mitigation.
- Opposition is vulnerable to weaponisation: unfair impacts are deployed to foreclose changes rather than as a means of giving voice to concerns.
- Discoursive strategies are used to delegitimise interventions which challenge automobilities and motonormativity.
- This is important for councillors and officers who are negotiating the backlash from LTNs: threats, protest, vandalism and harassment.

Navigating controversy: policymaker perspectives

In this second part of her talk, Ersilia discussed policymakers' views on schemes, investigated through interviews with policymakers implementing schemes across England. She presented a table of study participants in London, other major conurbations and smaller cities and towns. In practice, only schemes in London had been successful.

International experience suggested that lack of resources is a key barrier for street reallocation schemes. LTNs were initially funded through the Active Travel Fund (ATF) tranches 1, 2 and 3 as COVID emergency schemes under the Johnson government,

but not through ATF 4 under the Sunak government. Schemes were implemented in very tight timeframes, using Emergency Traffic Orders (ETOs) and 18-month trials.

From 2020, London implemented around 100 schemes, most of which remain, but outside London, around 90% of schemes were removed because of controversy.

Findings

Ersilia summarised a few key findings from the study.

Findings 1: funding, competition and projectification

Lack of resources had been a barrier for all, especially for the processes of engagement, acceptability and success, and austerity had been mentioned as a key. This had led to reliance on consultants, with potential further issues of lack of contextual knowledge and slower delivery, and interviews mentioned a desire to increase in-house staffing.

> *"We have very few staff because **we've had a massive cut to our overall budget.** Sixty pence in every pound that we had in 2010 has been cut, and so **we've got down to 40% of our budget and we've got far fewer staff**. So **these processes where you need to go out and actually do face to face engagement with residents** where officers are dealing with vast amounts of correspondence, huge amounts of emails, contacts via social media or people getting in contact with their views on all through all of those channels. And **that's where we've lacked the capacity**. So **we've had to bring in lots of consultancy and support, and that's been the pattern of how we've been delivering transport and highways and interventions across the piece since austerity started.**"*

The lack of staff was aggravated by the need to plan in the context of unpredictable and short-term competitive funds or "tombola funds". In some cases, ideas which had already been part-developed had to be rushed through with COVID emergency funds. This further aggravated projectification (dealing with a scheme as a series of smaller projects) led to fragmentation, with long days followed by periods of intense action.

*"**One of the major issues** that we have to deal with as a local highways authority **is the way that central Government funds these things**. So almost **everything that we do on the highways is funded by a particular discrete grant or pot of money**. So the Active Travel Fund for example, you have to bid for tranche 1, you have to make a list which has to fit their criteria, then they tell you you've got it or you haven't got it, and then you go with tranche 2 and tranche 3, and it's the same with bus service money and growth deal money and the Electric Vehicle Infrastructure Fund money. […] **Sensible multi-year funding settlements would just be such a gamechanger**."*

Interviewees desired long-term funding, ideally without a competitive element.

Findings 2: understanding the cost of LTN

LTNs are cheap in capital costs, but the resources needed are underestimated. In the context of austerity and projectification:

- Capital costs allocated included only basic materials (posts and planters) and not greening or wider improvements, so schemes had limited transformational potential.
- Revenue spending is not proportional to capital costs, especially within hollowed-out government, leading to limited resources for adequate engagement and monitoring and evaluation (M&E).
- There was a high emotional and labour cost for officers.

*"Like literally there's probably been six or seven of us working on it all hours, late at night trying to get reports done and everything. **It's just been all encompassing**, like I said, when I first started two years ago that's all I've been working on […] unfortunately **we don't have the staff resource and we also don't have much money as well**."*

Findings 3: uneven geographies

In London, local authorities are advantaged by having low car ownership and by better planning structures, with Transport for London's (TfL's) multi-year Local Implementation Plan (LIP) ensuring continuity. They also have capital programmes and the

ability to use them to supplement TfL funds. This boosts local teams, enabling them to learn from past projects, and proactively plan, thanks to skilled officers, a virtuous circle.

"We're very good at bidding for money in [] if there's little pots of money going available in central government to bid for. Yeah, or officers are really good at bidding for that money."

Outside London, local authorities' lack of resources is affecting implementation much more.

"Officers are really, really stretched and engineers really, really stretched and to put this burden on them as well, although it's something we've actually prioritised, it has actually caused major issues with other parts of the Council."

There is a vicious circle where inability to fund and implement schemes means no positive experience of them and lower political support[12]. This has been further affected by shifts in national government policy in ATF4.

Takeaway points

The speaker summarised with three takeaway points:

- Costing LTNs only in limited capital terms had consequences for past and future scheme success.
- This was particularly an issue in the context of limited existing resources within councils.
- The availability of stable funds and skilled in-house staff would be crucial for further schemes.

[12] Particularly if the scheme is perceived as nothing more than a series of road blocks.

Discussion

Tom Worsley said that the talk was absolutely fascinating, mainly in respect of how local authorities are struggling. He asked whether they could do more to share information and provide a base of knowledge to draw on, and whether the whole bidding process acts as a disincentive, because only a relatively small proportion of bids are successful, and hence whether new Ministers ought to be more aware of this. **Ersilia** said that there were good examples of local authorities trying to exchange information informally, but a competitive environment does not encourage this. Staff retention also limits the extent to which information is built up and retained within an authority. Success tends to breed success, with experienced authorities continuing to win funding at the expense of others.

John Cartledge noted the choice between sticks, which are unpopular, and sticks which are unpopular, expensive and largely ineffective. Sticks are cheaper and much more likely to deliver the required outcome, but at high political risk. **Ersilia** agreed that it can be frustrating to see the same problems recur, but noted that there are many more silent but supportive people than noisy objectors, particularly if there are the resources and time to explain objectives and benefits. **John** agreed that public consultation attracts mainly those with the strongest objections, no matter how few and unrepresentative they may be. **Ersilia** pointed out that more extensive consultation and engagement could be carried out, if time and funding were available. **John** gave an example of where there had been a petition opposed to introduction of a new bus route, followed years later by a petition opposed to its withdrawal, signed largely by the same people.

Gregory Marchant wondered whether bribery might be a useful approach, such as free bus passes for an introductory period. **Ersilia** agreed that this sounded promising, but there had not been much research on the links between LTN schemes and public transport. This came up on some interviews, and more could be done, but LTNs mostly target very local journeys, such as journeys to school, which could be walked or cycled. **Gregory** also suggested that Council Tax could be reduced for those affected by an LTN. **Ersilia** commented that the Blue Badge

exemption had been found to be important for those who could have been disproportionately affected.

Peter Gordon asked whether attitudes change over time. **Ersilia** said that the two rounds of interviews revealed that interviewees tended to tell the same anecdotes and stories each time. First impressions stuck with them for a long time. Perhaps attitudes will change after three or four years: historic LTNS are accepted as the natural state of things.

Dick Dunmore said that the effect on land value change would often be discussed, and wondered whether there had been any insights from estate agents' perceptions. **Ersilia** agreed, and funding had been sought to look at property values, but had heard concerns that schemes would lead to gentrification, but also expectations of people moving to the area that it would be quiet and have few cars. In this context, LTNs seem to be a marketing point. These were, however, only anecdotes rather than a detailed study.

Report by Dick Dunmore

Rail infrastructure management: where next?

Richard Davies, Independent Consultant

(Former Chief Economist, Strategic Rail Authority)
(Former Director of Strategic Policy,
Association of Train Operating Companies)

Online

27 November 2024

Introduction

Richard Davies began by noting that he had been involved with rail privatisation and its associated organisations for a long time. His talk would review the experience of privatisation as a means of identifying the challenges that will be faced by Great British Railways (GBR), the new organisation that will reunite "track" and "train". Much of his talk was based on a paper for a special issue of the Journal of Transport Economic and Policy (JTEP) in 2023, dedicated to the late Sir Christopher Foster, Special Advisor on rail privatisation and in the 1960s Chief Economist for the Ministry of Transport. Richard contributed the chapter on rail privatisation. He reminded the audience that the views expressed were his alone, and did not reflect those of organisations he had worked for, either recently or in the past.

Table 1: The financial performance of British Rail (BR)

	£ billion		**Ratio**
	1993/94	**2019/20**	
Passenger and freight revenue	6.0	16.2	270%
Operating cost	6.3	20.1	320%
Subsidy (from Department for Transport, Transport for London, Transport Scotland, Passenger Transport Executives)	2.0	16.9	850%
Infrastructure Investment (excluding High Speed 2)	1.7	4.3	250%

Source: Terry Gourvish, British Rail 1974-97 (2002),
ORR's Review of Rail Industry Finance for 2019/20,
all in 2019/20 prices indexed using Consumer Price Index (CPI)

Setting the scene

Table 1 shows the financial performance of British Rail (BR) in its last year before privatisation with equivalents, in real terms, for the pre-pandemic year 2019/20. It indicates the profound changes that followed privatisation.

By 2019/20, real passenger and freight revenue was 270% larger, but real operating costs were 320% larger. Over the period, support from government was 850% larger, largely because of the significant increase in infrastructure investment, but also to support interest on Network Rail's debt. Infrastructure investment, funded directly by Government[13], was 250% larger.

The economics of the industry have fundamentally altered. Revenue growth seen since privatisation has been completely outside the experience of the nationalised period (1948 to 1994).

The economic basis of separation

Privatisation meant very strict separation between track and train. Why was this?

In essence, the answer was that this was the standard approach that Government took to utility privatisation. What to economists is known as "Vertical Separation" was applied to many of the former nationalised industries, with the creation of sectoral regulators[14] to police them. Infrastructure was regarded as a natural monopoly that had to be tightly regulated, with the rest of the value chain, in principle, being competitive and therefore not needing regulation.

This approach addressed the "Self-Supply Problem" created when a network owner in effect competes with its customers by being its own supplier in the same product market. This creates the risk that might give itself preferential treatment for capacity and access charges. Complete separation solves this problem, since the network owner has no economic interest in any customer.

[13] Railtrack and Network Rail could only use debt funding 1995/96 to 2013/14.
[14] in gas and electricity, water, airports and communications.

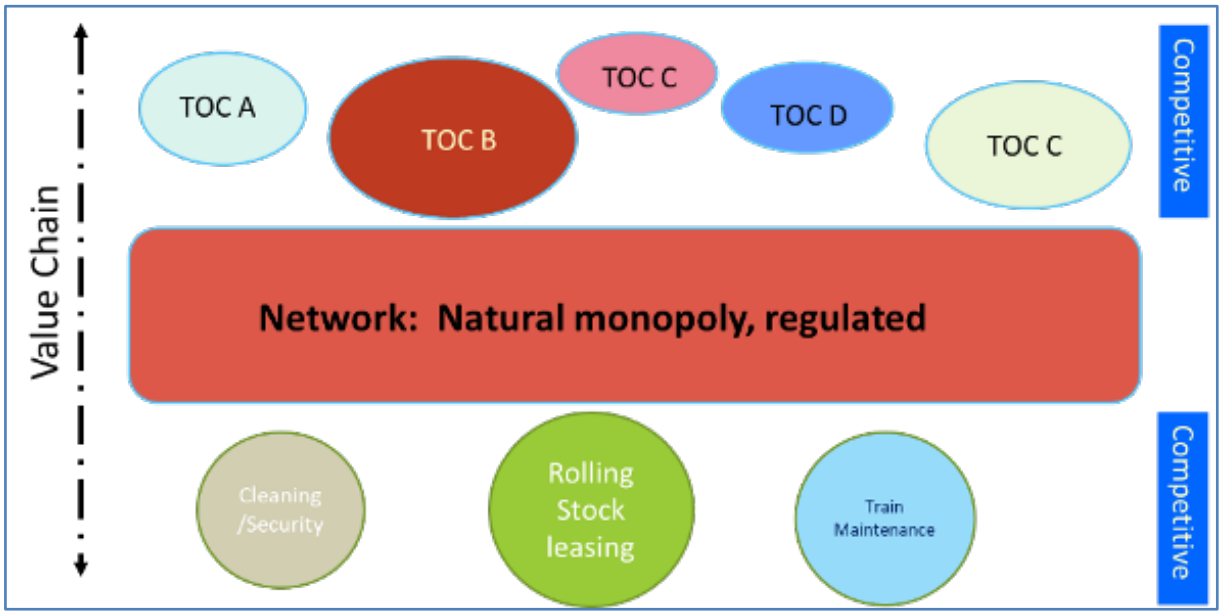
Such considerations may seem theoretical, but many self-supply problems have arisen elsewhere in Europe. In Germany, where Deutsche Bahn AG is both the network owner and the provider of around 70% of passenger rail services and most freight services, it competes directly with its own customers.

Separation also facilitated the "asset-light" model of franchising passenger services. This was designed with Management Buy Outs (MBOs) in mind, and meant that franchisees could proceed without having to finance major capital expenditure, such as on stations and depots, thereby reducing barriers to entry.

Also, at the time, the received wisdom of the 1980s and 1990s was scepticism about conglomerates: the principle that businesses should "stick to the knitting" was widely espoused by the business gurus of the day.

Privatisation structure

Figure 1: The chosen privatisation structure



Note: TOC is a Train Operating Company

On one side of the natural monopoly are the (passenger) train operating companies (TOCs) and freight operating companies (FOCs). These operated in a competitive market either directly for passengers or freight customers or for franchise contracts, initially from the Office of Passenger Rail Franchising (OPRAF), but later from the Strategic Rail Authority (SRA) and then the

national Department for Transport (DfT) and regional bodies. On the other side are companies competing to supply the industry, such as for train and infrastructure maintenance and project management services.

Hence, at least in theory, the initial focus during privatisation was on defining the natural monopoly and leaving the rest of the industry to develop according to market forces.

A problem with this approach was clearly set out at the outset by John Palmer, a senior official from the then Department of Transport who had been seconded to BR to assist with privatisation:

To what extent was a natural monopoly an effective monopoly given the need for the industry to be subsidised?

Given that, at the time, about a quarter of BR's net costs were covered by subsidy, this was a valid question, and no clear answer to his question ever emerged.

The problems caused by separation were compounded by the decision to sell off track and train through completely different routes.

- "Track" became a regulated utility, much like the National Grid, British Airports Authority and water companies, able to plan and finance its activities on a long-term basis.
- "Train" was privatised through competitive tenders for limited-term franchise contracts (typically for 7-10 years).

This arrangement required very hard commercial boundaries to be set between the two. In effect the business logic of the structure was that the efficiency gains would be best assured by each part of the value chain acting separately. Each would focus on improving the financial performance of its activity without worrying too much about the interfaces. The result was that the boundaries between track and train operators are much harder than in any other European countries.

Richard noted the recent commitment in the King's Speech that the government will end the franchising system by renationalising the remaining franchise operators at the end of their remaining contracts.

Financial indemnities

It is often overlooked that, to permit this approach to sale, a system of indemnities was devised to reduce the risk that either side of the divide between track and train could affect the cashflows to the other. This is summarised in Table 2.

Table 2: Indemnities to franchise passenger operators

Topic	**Indemnity**
Train Operating Company capital at risk	TOCs could hand contracts back early, with a cap (sometimes quite high) on liability
Track access charges, (passenger and freight)	All changes from those that applied when bid, except electric current for traction (EC4T) energy costs
Infrastructure-related delay	Value of consequential revenue loss (Schedule 8)
Regulated passenger fares	Department for Transport gets the benefit, or pays the cost, of change.
Inflation (RPI) and economic growth (GDP)	Various approaches used, but partial indemnities on many TOCs
Department for Transport procured fleets, such as Classes 700 and 80x.	"Free issued"
Department for Transport proposed train service changes	Net benefit/cost paid by Department for Transport
Track possessions above a "free" allowance	Revenue
Major risks such as COVID	"Greenspan Put": it is difficult to change franchisees in such circumstances, and easier to renegotiate terms with incumbents, although there was no contractual obligation to do so

The franchises were designed to facilitate Management Buy Outs (MBOs), so most indemnities tended to limit their risks, most famously through performance "Schedule 8", discussed below.

Richard acknowledged that this might seem a slightly abstract matter but, to an economist, financial indemnities are a major potential problem. When one party says in effect "don't worry about this, I'll cover your costs", this opens up potential perverse incentives. The risk is that parties down the value chain can, in effect, spend another party's money, without the latter having much influence on the efficiency of the former.

Two specific examples were track access charges and infrastructure-related delays.

For track access charges, the charging framework is set every five years in the Office of Rail and Road's (ORR's) quinquennial review, but the major indemnity created meant that passenger TOCs only paid a very minor proportion (electric current for traction (EC4T)) of the changes in infrastructure prices. This made franchisees indifferent to the outcome of the periodic reviews, but meant that the risks that reviews created did not have to be "priced in" during bids. Freight operating companies (FOCs), on the other hand, were directly affected by periodic reviews.

For infrastructure-related delay, Schedule 8 of TOCs' track access agreements meant that they are compensated by the infrastructure manager for the effects on their passenger revenue of delays caused by infrastructure. Franchisees thus, at least in economic terms, did not have to worry too much about the performance of the infrastructure, although the reputational risk from unreliable services remained considerable.

Indemnities were put in place to kick start privatisation, but the structure should have changed more substantially as experience with franchising increased and the scale of the businesses which had been created became larger. A major issue has been the limited amount of capital that a bidder had to commit to win a franchise. TOCs were, famously, thinly capitalised, but this also meant that they could not play much of a role in large capital projects, the risks of which were borne, with differing degrees of success, by Network Rail, train manufacturers and rolling stock companies (ROSCOs).

Growing dissatisfaction

Scepticism about the value of separation of track and train has not simply been a commercial point, but since the early 1990s has also grown in other functions in the rail ecosystem, notably projects, operations and engineering.

For example, demand growth brought the need for significant investment in route modernisation, new stations and new fleets. However, with each part being, in effect, regulated through different routes, there have been inevitable tensions.

Best practice in project management has moved to have all elements of a project jointly controlled, although not necessarily in common ownership. Electrification is a prime example: electrification of the tracks is pointless without electric trains, and the many stages to building and commissioning electrified track and electric trains need to be coordinated and integrated. Under the initial franchise model, coordination on projects such as the Southern Region Power Supply Upgrade (SRPSU) and the West Coast Route Modernisation (WCRM) fell to the Strategic Rail Authority (SRA). After the SRA's abolition in 2005, coordination (on projects such as the East Coast Main Line (ECML) upgrade and Thameslink) fell to the Department for Transport, which in effect meant that key choices had to be made directly by Ministers.

The operations function has also become increasingly sceptical about separation, even more than at the outset. Successful day-to-day operations require a great deal of coordination between train operators and infrastructure managers at a local level. Railways never work to plan all the time; recovery from disruption must be coordinated between parties in real time. In practice managers have had to find ad hoc solutions within the contractual constraints arising from separation, but the problems are illustrated by tussles in various parts of the country at different times about how control rooms should work, where they should be located, and even who should be allowed into them[15].

[15] See, for example, Michael Holden's 2018 report on South West Trains performance and the issues that arose when moving control from Waterloo to Basingstoke.

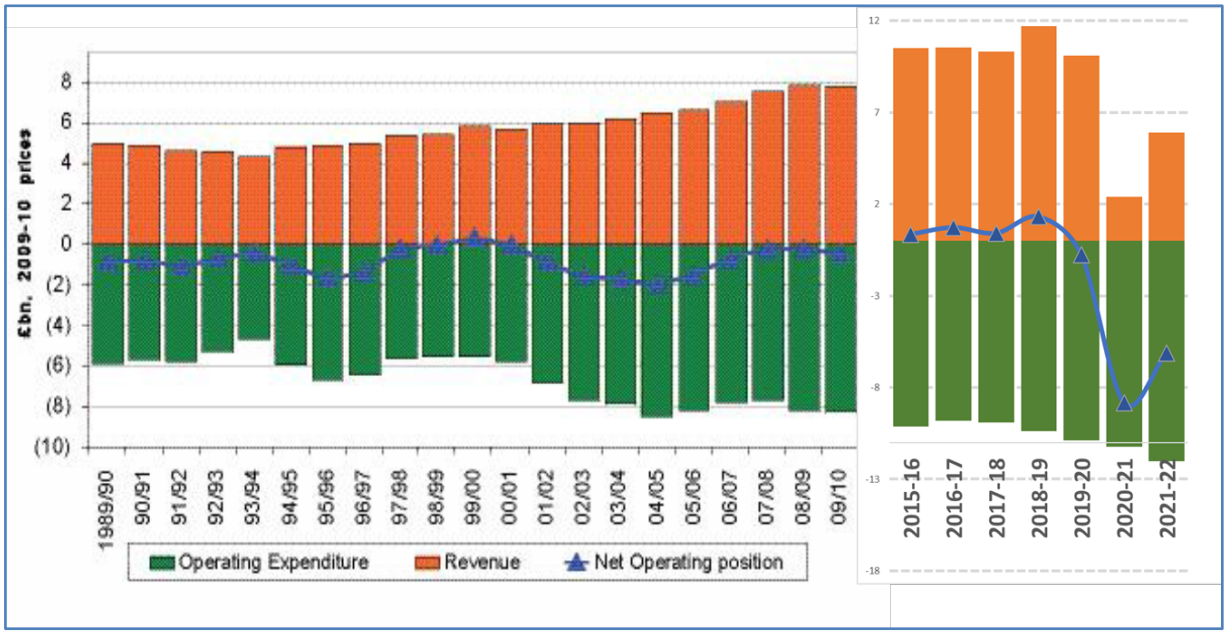
Similarly with the engineering function, where issues such as ride quality and track wear are best addressed by both sides having much greater coordination and joint control. Railway engineers, just as their colleagues in other industries, have become increasingly aware of the value of considering whole system cost and adopting a systems engineering approach. Approaching the railway as a complete system is the default starting point today, since its interconnectedness is so considerable. The advent of the European Train Control System (ETCS) – "Digital Rail" – over the past decade has brought this to the fore. ETCS was initially largely viewed by many in the industry as "just another signalling system" and hence related to track. However, in reality it is a much more sophisticated means of operating railways, allowing real-time speed control, enabled by substantial technical input to install and test the electronic systems involved. Train is as much a part of it as track, as the two interact continuously.

Essential railway functions such as operations, engineering and project planning require a much greater degree of integration than is possible within the original concept of strict separation of the infrastructure.

More recently, the finance function has also become less enamoured of the current structure, because the promise that privatisation held out of "making rail more efficient" has been difficult to realise.

Figure 2 was first published in the 2011 "Rail value for money study" (the "McNulty review") and has been extended by the author using data from ORR's regular annual finance update. It examines the underlying cash generated by the industry, stripping out access charges, depreciation, interest and corporation tax. In effect, it provides a high-level view on how the operational finances of BR would have evolved, had it been retained.

Figure 2: Key railway financial parameters, 1989/90 to 2021/22



Source: Rail value for money study (2011), speaker's analysis

The figure shows what to many still seems surprising: that, in total, the well-known growth in revenue before 2019/20 has been largely absorbed by growth in operating expenses, leaving little available to fund capital investment. It has therefore been necessary to fund infrastructure capital expenditure either by Government directly or by taking on debt.

Richard admitted that, like others, he struggled to explain why this has happened. Was the lack of net cash generation due to real cost inflation, more train-kilometres (greater output), higher quality (in terms of safety or performance), or what? Economists since the late nineteenth century have asserted that railways have high fixed costs, and hence that additional revenue should feed straight through to the bottom line, but the track record of the past 30 years suggests otherwise.

This was an area worthy of more research.

International comparisons

There are a wide variety of different models of privatisation and separation of track and train in place elsewhere in Europe, as summarised below. The high degree of separation and the policy of privatising both track and train at the same time is unique to this country.

Table 3: Separation models in Europe

Country	Model
Separation and some privatisation of train operations	• Sweden (franchising and open access) • Norway (franchising of all routes) • Netherlands (franchising some regional services)
Separation only	• Finland • Portugal
Holding company	• France • Germany (franchising some local routes) • Italy • Switzerland (roughly, with unique solutions)

In Japan, the former state-owned Japanese Government Railways underwent major reform in the early 1980s to form several large, regional companies, four of which have been privatised. However, vertical integration remains in place, and is often cited as one of the reasons for that country's high levels of performance.

In the EU, the most common model is the holding company model, in which the infrastructure manager and train operator are quasi-separate parts of the same larger organisation. Contrary to a belief common in the UK, this arrangement is permitted under the EU's Fourth Railway Package, with safeguards in place regarding issues such as information flows, common management and separation of accounts.

Where next?

Richard was not able to say where next for Great British Railways (GBR) because a lot remains open, but this provides an opportunity to influence thinking. The government's intention to return to a world of vertical integration (in England) is well known. In theory this should be fairly easy: there are still managers about with experience of vertical integration and, of course, next year's 200th anniversary of the railway reminds us

that Great Britain's system has been vertically integrated for much longer than it has been separated.

The potential advantages of vertical integration are that it gives a single specifier, marketer and operator, so providing operational flexibility and better optimisation of resources. For example, it allows for more precise decisions on questions such as whether, on crowded routes, it is better to provide capacity through longer trains or more trains. Vertical integration should also speed up implementation of "all-industry" projects such as electrification and ETCS; indeed, he felt that this was one of its main justifications.

There are several issues to consider. Should the organisation be market-based (as with British Rail's Sector Management) or regionally based? Network Rail has already worked hard at devolving its management across five Regions, and it may be advisable to stick to this approach for the moment, bearing in mind that organisational change takes a long time to put into effect. Sector Management took some ten years to evolve before the move in the early 1990s to create market-oriented, vertically integrated operating units, which have ever since provided an informal counterfactual against which to assess privatisation[16]. However, others urge GBR to move straight to a market-based organisation, on the basis this had ultimately worked well under BR. Richard felt that the dislocation of moving directly to a market-based organisation needed to be recognised, given the experience of doing so over a decade or so.

Special arrangements would, of course, be required for freight, since these operators are truly national, and something analogous might also be needed for long-distance passenger services which span two or more regions. It is also important to recognise that, as a result of devolution, there are more funders and specifiers than before privatisation, and any further devolution may move rail further in this direction.

[16] Strictly speak, this structure, Organising for Quality, only operated for only two years.

Challenges

Planning and finance

Richard emphasised the importance of focusing on planning and finance when considering the future arrangements for GBR. Politicians, managers and other interested parties love to focus on structure "Who does what to whom?". The railway has had a period when it has been particularly strongly backed with government support. No doubt some of that will continue, but many issues of how the industry is planned and financed are arguably more important than the structure, particularly as public spending is under great pressure.

There are other strategic questions to be addressed:

- Should GBR be regulated, by a regulator separate from Government, when GBR itself will be in the public sector?
- Will there continue to be a periodic settlement on the level of infrastructure spend, or will there be less certainty with merely annual settlements?
- What role should GBR play in devolved areas, where it provides the infrastructure but not train operations?

Freight

Richard felt that the creation of GBR offered opportunities for a broader approach to expanding rail freight[17]. Currently overall volumes are flat, with most of the traffic since the demise of coal being intermodal and construction. Earnings have been low in recent years, with (according to ORR) an estimated aggregate total loss of all the companies of around 7% of annual revenue or around £1 billion[18].

ORR's data indicates that one operator, GB Railfreight (GBRf), remained profitable. Richard wondered whether freight is fulfilling its full potential, considering government aspirations for Net Zero and modal shift. Greater priority needs to be given to

[17] The Secretary of State's 2017 "Guidance to the Office of Rail and Road" says "The Secretary of State wishes ORR to have particular regard to the objectives set out in the Government's Rail Freight Strategy (2016)."
[18] Including an annual government grant of around £20 million for intermodal traffic.

freight development in timetabling and train pathing. Analysis generally shows very good benefit-cost ratios from using capacity for freight, because its mode shift benefits are so high.

Open access

Richard stated his view that open access was always a touchstone of privatisation policy, reflecting the ultimate goal of any kind of deregulation that the network should be opened to all comers. However, open access today accounts for only about 2% of passenger-kilometres, half of which is from Heathrow Express, whose access rights predate the 1993 Railways Act, with the rest concentrated on the East Coast Main Line (ECML).

One of the main reasons for this has been ORR's policy that trains can only run where they do not extract too much revenue from franchised operators, and that capacity used by established operators should be retained by those operators; that is, there is no reallocation of paths. This, on a crowded network, means open access only runs in gaps in the timetable, which are now few and far between.

The policy reflects a slightly schizophrenic approach to open access operators, which (at least under the previous government) combined interest in opening new markets with significant anxiety about the risk to the public sector budget through abstraction[19]. Spain and Italy have taken a different approach, and have much more open access, a considerable amount of which is presumably abstractive, but it is not coincidental that these countries have much more spare capacity on their networks due to extensive building of high-speed lines.

In a situation in which GBR provides both the infrastructure and the bulk of the passenger service, stronger safeguards for open access operators will almost certainly be needed, given the risk of predation. Consideration might be given, for example, to the need for assurances on fares of in-house operators and on the performance of its infrastructure. One could rely on pure competition law, as is the case in Germany, but experience is

[19] The tension it set out in the Secretary of State's guidance: "The Secretary of State considers that passengers benefit from competition through the franchising process. He is also supportive of open access in particular circumstances where these do not significantly impact on affordability or the value for money from public investment."

that this is slow and produces uncertain outcomes. A clear access allocation policy, providing indications about which stations and markets should be provided, would also help focus resources.

Open access operators are also important politically, because the limitations on abstraction had forced them to focus on revenue generation, through direct services between London and "off-network" locations[20], at lower fares to broaden the market.

Devolution

The UK government aspires to devolve powers further to mayors, regional bodies and local authorities. The long-running debate on UK regionalisation, which goes back to the early 1970s, shows that better arrangements on funding and political accountability are needed alongside these powers. The UK has a highly centralised system of government funding, which means that, apart from London and Scotland, devolved transport bodies have very limited discretionary funding of their own, and must rely almost entirely on central government. If this approach is continued, simply devolving powers without providing resources may not lead to change.

A further element that needs to be recognised with devolution is that many longstanding capacity constraints around the system, such as the Castlefield Corridor in Manchester and the Coventry to Wolverhampton in the West Midlands) remain full, so capacity allocation could not be fully devolved. infrastructure in many regional centres is used by different markets and is often highly congested. A better option might be to pursue enhanced partnerships between the national, regional and local public bodies involved, acknowledging that all have a role: regional cities benefit from intercity and interregional services as well as stopping trains. The plan-based approach to capacity, adopted in the SRA's Route Utilisation Studies, has many advantages, including detailed consultation with all concerned. This may not turn out be either an easy or a pleasant process, but is more likely to lead to real change.

---

[20] To Hull (Hull Trains, owned by FirstGroup) and to Bradford and Sunderland (Grand Central, a subsidiary of Arriva UK Trains). These services were discussed here https://transecongroup.org/wp-content/uploads/2023/07/Transport_Economist_49-1.pdf

Conclusions

The deep split between track and train in this country is unique in Europe. It enabled privatisation, and particularly franchising, to happen quickly, but has led to frustration among many of those involved, and pressure to reintegrate track and train in the form of GBR, which will soon become both the specifier and the marketer of much of the passenger operation in Britain.

The political support for this is strong, so we can be sure there is going to be major change: the franchise system has run its course. Beyond that, defining how the system is financed, and what outputs GBR should provide for the money is, in Richard's view, arguably more important than the detailed structure of the new organisation. Rail has been comparatively well-funded for many years now but, given cost inflation and pressure across the public sector, there can be no guarantees that this will continue.

A policy on devolution is required that reflects the need for stable funding for devolved services just as much as for national ones.

There are very long-running local/national capacity challenges on parts of the system, but the situation is not quite as complex as sometimes portrayed, as something akin to a "national timetable" already exists, even if not advertised as such. It is structured to provide paths for longer-distance passenger and freight operators, but leaves considerable scope to arrange other services within it.

Discussion

Gregory Marchant (TEG Treasurer and ex-BR/SRA) wondered whether the pressure on capacity reflected the common UK problem of lack of investment in infrastructure. **Richard** felt that, in comparison with other public services, the rail industry had over many years done rather well for both renewal and enhancement investment funding. The real challenge for rail has been developing sufficient managerial capacity to deliver projects to enhance capacity efficiently and cost-effectively.

Chris Nash (University of Leeds) asked how the role of DfT might change in the future. He felt that it could do a lot more to integrate track and train, even within the current structure. Also,

in what form would it set the objectives for GBR; might it still wish to specify services? **Richard** observed that Ministers today are arguably far too involved in specifying the detail of railway services. That seems unlikely to change quickly, because Ministers are accountable to Parliament for what has become a very substantial amount of public expenditure. But there is clearly scope for GBR to take some of the weight itself by building its capability to engage with politicians and public stakeholders in a way that has not really happened since Railtrack was nationalised in 2002. Network Rail has often ended up as a delivery agent, rather than as the main interlocutor with devolved, regional and local interests. A change of this kind is quite fundamental and, consequently, could take a decade to reach full fructification.

Peter White (University of Westminster) referred to his recent paper on the impacts of COVID on both rail and local bus. In rail there was a fall in staff productivity because of the inability to cut services, whereas in the bus industry the productivity level remained remarkably stable. Productivity in the rail industry had been falling for some years before COVID, which appears to be due to rising staff numbers and seems to be one of the factors in rising rail costs. He wondered what the exact increase in rail staff numbers by function was. **Richard** confirmed the dip in contribution in 2019/20: there was already a slowing of revenue growth in that year and earlier. He thought that there were some broader forces at work, such as increasing patterns of working from home well before 2020. During COVID and the recovery period, operators had worked with the funders to reduce costs, such as by ending leases on surplus rolling stock. In his view, there had been greater balancing of supply with demand that might have been expected.

Dick Dunmore (TEG Secretary) raised several points. First, he noted that every increase in revenue seemed to have been accompanied by an increase in costs. As Richard had said, economic wisdom is that railways have high fixed costs and very low variable costs, but this does not seem to be the case. Second, he suggested that, as the network becomes more constrained, the most logical option is to timetable a standard hour and run that all day. Third, since rolling stock fleets tend now to be specific to types of service, who in a regional structure

would be responsible for the longer-distance fleets? **Richard** confirmed that the boundaries of the 25 TOCs privatised out of BR were all based on the rolling stock fleet deployment of the time, because that was simply the easiest option: with a handful of exceptions, each depot served only one TOC. He saw no intrinsic difficulty in future with regions running both local and long-distance services. The fact that many long-distance trains are used to make local journeys was important, the West Midlands being the classic example. The sector model sometimes made it difficult to recognise this.

John Dodgson (Retired) suggested that a covert reason for privatisation was to curb the power of the unions, alongside the stated aim of improving overall efficiency. He wondered if efficiency on Britain's railways had improved following privatisation. Christopher Foster had believed that by separating infrastructure from operations there could be a set of price signals which would influence decisions by each party to improve productivity overall. This does not seem to have been achieved in practice. Specifically, did the speaker think that separation of track and train was a "good idea"? **Richard** pointed out that, as noted, the effectiveness of the access charging system was negated by the indemnities which led it to being largely a bilateral process between funders and Network Rail. This was a missed opportunity. The graph on contribution suggested that privatisation did not improve efficiency. To some extent this might have been the result of franchisees restructuring the product away from the BR minimum cost approach towards a higher quality output, through features such as higher frequency and trains offering air conditioning. The major driving force for privatisation had been to permit additional investment, as the Government of the day in the early 1990s had squeezed rail spending. In the final years of BR, the recession of the early 1990s, virtually all track renewals had had to be stopped. On whether separation was a "good idea", he previously would have answered "Yes", assuming that franchising would make more of a difference, but now said "No": the experience has suggested that track and train operations are too mutually interconnected.

Mark Sullivan (Independent Transport & Planning Consultant) thanked Richard for raising some very important points for consideration, and sought confirmation that the large increase in

support payments to rail from £2.0 billion in 1993 to £8.5 billion in 2019 was in real terms and included payments from the PTEs. **Richard** confirmed that both figures were at 2019/20 price levels and included PTE payments. Under BR these were only charged on an incremental basis, and never exceeded £100 million per annum but, over time, DfT has taken over full responsibility for this in the English combined authorities, and similar arrangements apply for Scotland.

John Preston (University of Southampton) quoted a previous TEG speaker claiming that "he who controls the timetable controls the railway"[21]. Was this adage neglected at the time of privatisation, and is it still being neglected today? **Richard** recalled that in the 1990s there was thought to be extensive spare capacity on the network, so the saying had perhaps had less merit. Experience showed there was sufficient for frequencies on the core long-distance network to double since 1997, which presumably stimulated demand and generated additional revenue. Now, with the network often full (or even, arguably, more than full) not enough attention is being given to optimising the timetable to balance capacity and reliability.

Chris Castles (TEG Member) pointed out that the major customers of the railways are almost always governments. Railways can be very complicated in many ways and hence it is difficult to plan long term investment. He was a fan of "Systems Thinking" and commended to the audience a book, "Stand and Deliver: a design for successful government", by Ed Straw. **Richard** drew attention to a recurring theme in the recent history of British public administration that Sir Roy McNulty had pointed out in his review. There was a tendency to make changes which took a long time to bed in but to expect results much more quickly. When the anticipated results did not appear, often the previous change was scrapped and a different change introduced. There was sometimes an impatience among politicians to see reforms through.

Peter Gordon (Editor, The Transport Economist) wondered how choices on allocation of limited track capacity might be made in future. How might the demand for capacity for long-distance and

[21] William Barter, May 2024, quoting Gerard Fiennes, author of "I tried to run a railway".

local services be rationalised? Would ministers still have to become involved in some way? **Richard** strongly felt that clarity (on what and when decisions are put to Ministers, identification of the actual options, and the specific advantages and disadvantages of each) normally works quite well, but it sometimes comes too late to help much. The benefit of Route Utilisation Studies was that they started further back and developed a broader range of options.

Michael Schabas (Independent Consultant) highlighted the experience in Germany, where until recently rail infrastructure was over-provided and over-maintained. Could the British privatisation model have worked well in Germany in getting costs under control? **Richard** considered that the post-reform arrangements in Germany were generally working well, other than for open access operators. Germany and Sweden had taken a form of franchising, mostly based on "gross cost" contracts, further than most other countries and, as a result, it has been perhaps less contentious politically.

Michael observed that every country's railway is different. Separation became a liability in Britain, as every part of the infrastructure is being squeezed hard. **Richard** agreed. The decision to privatise the track and trains in completely different ways meant that each only focused on their own part of the value chain. Indemnities took away stimuli for any form of joint approach to efficiency. The reforms now being considered should put much of this right.

David Walker (Visitor) found that the presentation had demonstrated well how complex railways are. He asked whether anyone had estimated the transaction costs inherent in the fragmented privatised system. Fragmentation should increase competition, and probably had in some respects, but also introduced a whole additional level of interactions involving consultants, lawyers and others, with each actor protecting their own interests. **Richard** was aware of extensive debate about transaction costs, such as in administering the performance regime, but to him the estimates suggested that these costs were low in the context of total annual rail spending of some £20 billion. The real issue was the opportunity costs that came with it, creating decision processes which are not only complex

but also slow. One example was the recently approved access application to improve services in Wiltshire and Somerset, which had been first proposed some 20 years ago. The real transaction cost was the speed with which issues can be resolved.

Dick Dunmore recalled work by Steer for the European Commission on the collective cost of all the franchise bids, leading to an estimated cost of £100 million per annum for the bidding process. This sounds large but, to be cost-effective, the competitive challenge and associated fresh ideas would need to lead to only a 0.5% reduction in costs or a 1% increase in the £10 billion annual. Did Richard think that without a competitive bidding process the benefit of new thinking would be lost? **Richard** doubted whether the genuine effects of marketing efforts, included additional services and improved frequency, were always as large as assumed in bids. Bid optimism was clearly a real phenomenon but, to explain it, one needed to consider questions such as whether bidders assumed that incumbency had some intrinsic advantages.

Joe Quill (Office of Rail and Road) asked how the access charges regime should have been designed to send better price signals to operators? **Richard** did not think the problem was with the access charges system itself. The problem arose from the indemnities, particularly the one which negated all changes in access charges. This, probably inadvertently, had created the impression that different bits of government were pulling in different directions: one part wanting to enable clear market signals, and another wanting to get rid of the signals so it could attempt to plan the system en bloc.

TEG Committee 2024-2025	
Chair	
Tali Diamant	AtkinsRéalis
+44 (0)7976 931192	
Tali.Diamant@atkinsrealis.com	
Treasurer and Membership Secretary	
Gregory Marchant	4 Seymour Square Brighton BN2 1DP
+44 (0)1273 621522	
gregorymarchant.teg@outlook.com	
Secretary, Webmaster and Programme Coordinator	
Dick Dunmore	15 Imperial Mansions 13 Victoria Parade London SE10 9FR
+44 (0)7715 771321	
dick_dunmore@hotmail.com	
Journal Editor	
Peter Gordon	39 Haslam Close Uxbridge Middlesex UB10 8TJ
+44 (0)1895 678803	
petersgordon@blueyonder.co.uk	
Committee members without portfolio	
John Collins	Arup
John-R.Collins@Arup.com	
Adriana Moreno Pelayo	Arup
+44 (0)20 7755 6261	
Adriana.MorenoPelayo@arup.com	
Iven Stead	Department for Transport
Iven.Stead@dft.gov.uk	

The Transport Economists' Group, formed in 1973, provides a forum for people involved in transport economics to meet regularly and discuss matters of mutual interest. Membership is open to economists working in transport and others whose work is connected with transport economics.

The aim of the Group is to improve the quality of transport management, planning and decision-making by promoting lectures, discussions and publications related to the economics of transport and of the environment within which the industry functions.

Meetings, online or at Arup's Central London HQ, from September to June (except December), consist of short papers presented by speakers, drawn from both within the Group's membership and elsewhere, followed by discussion.

The Group's Journal, "The Transport Economist", is published three times a year reporting on meetings and other activities of the Group. It reviews recent publications of interest and contains papers or short articles from members. The Editor welcomes contributions for inclusion in the journal, and can be contacted at petersgordon@blueyonder.co.uk.

The current membership of over 150 covers a wide range of transport modes and types of organisation. Members are drawn from transport operators, consultants, universities, local and central government and manufacturing industry. All members are provided with a full membership list, updated annually, which serves as a useful source of contacts within the profession. Applications from people in all sectors are welcome.

Applications for membership should be made on a form which can be downloaded from the Group's website at www.transecongroup.org.

The Transport Economist

Volume 51, Number 3
Autumn 2024

Contents **Pages**

Details of meetings are provided on our website at
http://www.transecongroup.org/meetings/

TEG TRANSPORT ECONOMISTS' GROUP