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Briefing: Road congestion: how modal shift and planning could reduce it

Institution of Civil Engineers' Transport Board

This Briefing examines the potential effects of changes in mode of travel and land-use planning policies on road congestion in the UK—both now and in the future.

1. INTRODUCTION

Modal shift is generally assumed to mean changing from car-based travel to public transport, walking or cycling, unless otherwise stated.

Congestion has been defined in various ways. The UK government's ten-year transport plan for the period 2000 to 2010 defines it as

> the difference between the travel times road users would achieve in free-flowing traffic conditions and the travel times they . . . encounter.

This does not, however, address whether delays are acceptable in terms of the economy or quality of life.

2. HISTORY

Up to the 1980s, the general attitude to road congestion in Britain was to increase road capacity—either by building new roads or through developing better traffic control. The possibility of increasing use of public transport and reducing travel demand was debated, but there was generally little acknowledgement of this at central government level.

The idea of improving the road system to cope with all traffic growth was pursued until the mid-1990s, when the Conservative government finally acknowledged that it was simply not sustainable. Having seen the light, the government immediately cancelled most of the road programme and significantly cut transport spending—which is still less than two-thirds of mid-1980s levels, even allowing for inflation.

The Conservatives then started to debate policies geared towards creating a balance between public and private transport. The Labour government significantly enhanced this in 2000 with its ten-year transport plan based on a sustainable multi-modal approach.

However, though it is still relatively early days for the transport plan, the deterrents of higher car taxes, increased fuel prices and fuel shortages due to industrial action in recent years have all had little impact on car use—emphasising how difficult it is to change people's travel habits. The only really perceptible change is a move towards buying more economical vehicles.

3. CURRENT STATUS

The Labour government's ten-year transport plan aims to reduce road congestion on the inter-urban network and in large urban areas in England between 2000 and 2010. It is firmly committed to a sustainable multi-modal approach—and this is now central to all current transport policy.

Nevertheless there has been precious little evidence of a change in travel behaviour since then, and road congestion is worsening. Ironically, rail congestion is also a major problem, and has harmed rail's previous reputation for reliability.

The existing, seemingly immutable, UK travel patterns are shown in Table 1.[1] This clearly illustrates the dominance of car travel, but also shows how important walking is for shorter journeys—perhaps not surprising given that 25% of all trips are under one mile (1·6 km).[2] Furthermore, the importance of local transport is underlined by the fact that only 4·7% of journeys are over 40 km.[3]

4. ISSUES

Key issues and questions that need to be addressed could include the following.

(*a*) Is modal shift the primary factor in inter-urban transport if it cannot solve traffic congestion?
(*b*) Should inter-urban congestion be solved by devices such as congestion charging plus some new roads, and public transport to support lifestyle changes?
(*c*) Should urban congestion be positively tackled in more towns with a combination of better public transport and deterrents such as tolls and parking charges?
(*d*) Should government take the lead where local authorities cannot, for fear of losing business/jobs (e.g. parking charges)?
(*e*) If railways cannot cope with all the conflicting targets that they have been set, should they be given more realistic targets, as are now being formulated by the Strategic Rail Authority?

Mode	Proportion of all journeys: %	Average number of journeys per person per year	No. of journeys by car for each journey by other means	Proportion of all distance travelled: %
Car	62	636	–	78
Walking	26	271	2·5	3
Local bus	6	58	11	4
Rail (including Underground)	2	19	34	6
Cycle	2	16	40	1
Other (including taxi, motorcycle, coach and air)	2	27	24	8
Total	100	1030	–	100

Table 1. UK travel patterns (Source reference 1)

(*f*) Should buses have higher priority for government funding?
(*g*) If land-use planning is going to take time to deliver, can it be accelerated in some way using more aggressive approaches (e.g. the new towns of the 1960s)?
(*h*) If freight cannot really be helped by rail, should it have priority on roads after introducing policies such as distance charging?

These issues are explored in more detail below.

4.1. Scope for modal shift is greatest in urban areas

In major cities there are currently significant numbers of people already using public transport, and a modest increase could make a big difference to reducing car use. The most extreme example is central London, where 85% of commuters use non-car modes, and a 2% increase to 87% would cut car traffic by 13%. Less central parts of London or more typical large cities have around 20% of non-car trips: this still offers good potential, since an increase to 30% would give a 12·5% reduction in car use—which can be very significant in congestion terms.

In all busy cities, congestion is a deterrent to car use, and relief of congestion may need to be compensated for by other deterrents (see below).

Recent government studies have concluded that public transport cannot really reduce inter-urban car use by a significant amount (e.g. 3–4% on the M1 motorway). Modal shift away from cars is also unlikely in rural areas, as it is unrealistic to provide sufficient public transport services with low population densities, except perhaps for school travel. The requirement here is social inclusion for people without access to cars: this is crucial in both urban and rural areas.

4.2. Buses need a coordinated approach to be effective

Buses are currently the commonest form of public transport, accounting for three times as many journeys as trains—though covering less distance. In most towns (as opposed to large cities) buses are really the only cost-effective way of providing a significant improvement in public transport. However, success is limited unless there is a coordinated approach to providing a quality service over a whole corridor. This has been recognised in London, where the mayor's transport strategy makes extensive use of buses.

Recent studies have shown that poorer sections of society are far more dependent on buses than on rail. Investment in this area should do more for social inclusion than would be achieved by rail.

4.3. High-capacity trains can be effective in urban areas

The basic problem with UK railways is that they are currently over-congested and cannot cope with more traffic, more freight and more high-speed trains. However, this is now being positively addressed by the Strategic Rail Authority. Railways are highly effective in the urban context because they have the high capacity to cope with dense populations. Light-rail schemes have generally been successful, but usually where they use old rail corridors, thus reducing the cost and disruption of construction, and with street running in key areas to raise profile and ease access.

4.4. Car use can be deterred by road charging and parking restraint

The most talked about deterrent to car travel is road charging. The Commission for Integrated Transport's congestion-charging proposal involves imposing high fees for using critical roads in peak hours and low fees at quiet times. It is claimed this will reduce congestion by over one third on motorways and in major urban areas. Congestion reduction on inter-urban travel will come primarily from re-timing of journeys to avoid peak charges, but there is likely to be an overall reduction of traffic in urban areas. This is one of the few proposals that could make a rapid change in national travel conditions—though it would have to be combined with public transport measures.

The only imminent example is in London, where there has been a £5 fee to enter the central London area between 7·00 am and 6·30 pm on weekdays since 17 February 2003. The benefit may be as much in improvements to public transport, which are funded by the revenue, as in reduction of travel demand. Nevertheless, traffic flows within the charging area are expected to drop by 10–15%. A further benefit may be a reduction in untaxed and uninsured cars if enforcement is sufficiently strict.

The deterrent of parking restraint, though currently out of fashion, has been shown to be one of the most effective ways of reducing urban traffic. The emphasis at the moment is on restricting parking in new developments rather than in town centres, possibly a reflection of local authority concern about diverting trade to other towns. This concern also probably led to failure of the government's workplace parking-charging proposal, which was left to local authorities to implement.

4.5. Travel demand can be reduced through improved planning

Land use is a major factor in influencing the need for travel and the ability to provide good public transport.

The continuing exodus of people from cities to rural areas has increased travel distances (to work, schools, shops and so on) at the same time as making public transport provision more difficult because of low population density. The situation is exacerbated by out-of-town shopping centres, business parks and even hospitals, which are often difficult to serve by public transport. Indeed, government policies such as centralised health care and open enrolment in schools can be said to encourage extra travel.

There have nevertheless been significant changes in the government's land-use planning guidance, such as PPG13,[4] and there is now emphasis on building new housing on pre-used rather than greenfield sites. Unfortunately the policy shift will take many years to have a significant effect, as today's greenfield housing estates and out-of-town shopping centres will be around for a long time.

The quickest way to reduce road congestion through land-use planning is in the location of future 'magnets'—places of employment, shops, schools and so on. Strategically placed in existing urban areas these can greatly improve public transport options and hence social inclusion. It is evident from research across Europe that greater urban density really does deliver greater use of public transport over cars.

4.6. Congestion can be reduced by improved management of road freight

Transferring freight from road to rail will reduce road congestion by only a minor amount. The government target of an 80% increase in rail freight would not even counter one year's growth in freight demand. The issue is how to cope with freight on the roads in order to support the economy. One helpful initiative that is being considered at present is distance charging for goods vehicles, which may reduce unnecessary movements as well as encourage rail use.

4.7. Is there a need for more deliverable government objectives?

Given the apparent limited success of present government policies—which are in danger of promising too much—it could be argued that the government should set some clearer, more deliverable objectives. These objectives should perhaps recognise that:

(*a*) Modal shift is not in itself the answer to road congestion, except in larger urban areas.
(*b*) Good public transport is often the best way to help social inclusion and lifestyle improvement.
(*c*) Walking and cycling are crucial to success.
(*d*) Road congestion must be accepted as part of life unless people are willing to pay high enough tolls to balance demand.

5. FURTHER INFORMATION

5.1. References

1. DEPARTMENT FOR TRANSPORT. National Travel Survey, 1998/2000.
2. DEPARTMENT FOR TRANSPORT. National Travel Survey, 1999/2001.
3. DEPARTMENT FOR TRANSPORT. National Travel Survey, 1995/1997.
4. DEPARTMENT FOR THE ENVIRONMENT, TRANSPORT AND THE REGIONS. Transport, Planning Policy Guidance Note 13. HMSO, March 2001.

5.2. ICE briefings

Breaking the logjam: DETR consultation on congestion and workplace charging.
From workhorse to thoroughbred: a better role for bus travel.
ICE Local Transport and Public Realm Survey 2002.
Planning Green Paper 2001.
PPG13: Transportation.
Transport 2010: The 10 Year Plan.

5.3. ICE papers

AHERN A. A. Promoting new public transport systems. Municipal Engineer, 2002, **151**, No. 1, 57–62.
BENTLEY R. and LYNCH J. Using bus service subsidy to develop the network. *Proceedings of the Institution of Civil Engineers, Municipal Engineer*, 2001, **145**, No. 1, 29–35.
CAIRNS S., ATKINS S. and GOODWIN P. Disappearing traffic? The story so far. *Proceedings of the Institution of Civil Engineers, Municipal Engineer*, 2002, **151**, No. 1, 13–22.
ELLIFF C. Rails around London: in search of the railway M25. *Proceedings of the Institution of Civil Engineers, Transport*, 2001, **147**, No. 2, 133–146.
ENOCH M. and POTTER S. Marketing and the British bus industry. *Proceedings of the Institutins of Civil Engineers, Municipal Engineer*, 2002, **151**, No. 1, 49–55.
GOODWIN P. The nine-year plan for transport: what next? *Proceedings of the Institution of Civil Engineers Transport*, 2001, **147**, No. 4, 239–244.
SIMPSON B. Should we install road pricing? *Proceedings of the Institution of Civil Engineers Municipal Engineer*, 2001, **145**, No. 1, 15–22.
STRADLING S. G. Transport user needs and marketing public transport. *Proceedings of the Institutions of Civil Engineers, Municipal Engineer*, 2002, **151**, No. 1, 23–28.

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