

THE *Trafficflow* PROJECT

PRACTICAL SOLUTIONS FOR ROAD PRICING

No end to the jam?

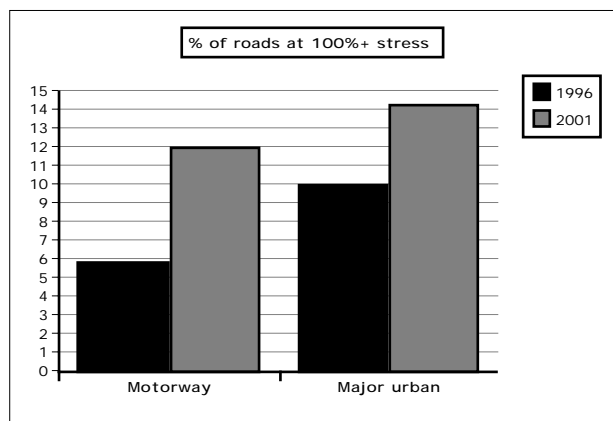
The growing problem of road congestion

Growing traffic. Ever since the 1950s, the growth in car ownership has substantially outstripped growth in GNP. There are now more than 21 million private cars in the UK — thirty years ago there were fewer than half that number.

Over the last two decades, traffic has grown by an average of 6% each year. But there is still no end in sight: over the next 20 years, traffic is forecast to grow at 4.5% annually.

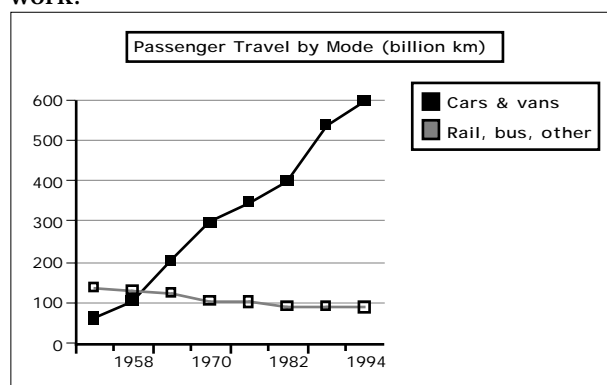
Not enough space. New roadbuilding cannot keep pace with this demand. In 1970 there were only 46 vehicles to each kilometre of road space. Today there are over 115.

Many of the worst jams are at the heart of our towns and cities, as the accident statistics show. Fourteen percent of major urban roads are now at or over 100% “stress” — where peak demand exceeds the road capacity and leads to jams. In built-up areas there is nearly one injury per kilometre of road each year — ten times the accident rate on our motorways.



Cost to business. Only an eighth of the businesses surveyed by the Chambers of Commerce this year said that road congestion caused them no problem. By

contrast, over a half thought it raised their costs and a quarter said discouraged people from taking jobs which involved travel to work.



Peak-hour traffic jams mean that buses cannot run to timetable and — according to an Adam Smith Institute survey of bus operators — are 25% more expensive than they need be. So people give up and go by car instead, adding still further to the congestion.

Congestion causes pollution. All this stopping and starting in traffic queues is bad for air pollution too. Traffic causes about 60% of our nitrogen emissions, while transport's share of CO₂ emissions is over 25% — more than twice the 1970 figure.

Traffic pollution is worst in towns, where it has been blamed for the large rise in asthma and other diseases, particularly in children of school age

In some Asian cities, the traffic fumes are so noxious that pedestrians have been forced to retreat into their cars, creating a downward spiral of congestion.

The UK may not yet have reached that sorry state; but without some more rational way of allocating road use, we surely will.

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Taxing to no effect

Today's road finance system is not working

The high tax on motoring. The total amount raised annually from road taxes — fuel duty and vehicle excise — stands at over £22 billion today, and is forecast to reach nearly £25 billion next year.

Road users are now paying £14 billion more in taxes than it costs to provide and maintain the roads — a hidden charge of over 2p for every kilometre travelled. Direct road-user taxation is four times what is spent on roads.

If we add the VAT paid on fuel and vehicles, things look even grimmer — bringing the total tax bill up to more than £28 billion, over five times what is spent on the road system.

Road user taxes and road spending (£m)

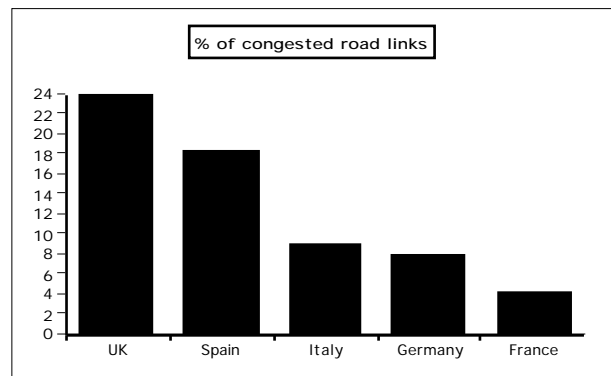
Fuel duty	17,400	
Vehicle excise	4,300	
Total direct taxes		21,700
VAT on vehicles	3,600	
VAT on fuel	3,000	
Total road user taxes		28,300
Total road spending		5,450
Ratio of tax/spending		5.2

Awful congestion. Though UK motorists are among the highest taxed in Europe, the congestion they suffer is still some of Europe's worst. A quarter of UK road links suffer congestion delays of an hour or more each day — 3 times worse than Germany and 6 times worse than France.

In 1994 the Confederation of British Industry estimated that congestion cost the economy some £15 billion a year. Estimates last year from University College London **added** £19 bn as the health cost of traffic pollution.

Unfairly taxed. People who live in rural areas get a much worse deal from the road tax system than people in towns and cities. They tend to drive for longer distances —

some 59% of the total distance travelled in the UK is in rural areas. Yet rural travel accounts for only 3% of the total congestion costs, because the roads in rural areas are emptier.



By contrast, urban areas are estimated to have 41% of the traffic, causing a massive 97% of the total congestion costs. So taxing motorists through fuel duty seriously overcharges the long-trip low-congestion rural dweller and undercharges the short-trip high-congestion urban road user.

“...the current system of ‘flat rate’ taxes...patently gives no incentives to reducing congestion, pollution or accidents. The present levies just collect money — money, indeed, which mainly disappears into the great black hole of general taxation.”
— Neil Kinnock, EU Transport Commissioner, November 1997

A fairer system. Road pricing would end this double unfairness — where those who cause least congestion pay more, and only a fraction of the revenue goes into transport. By linking the payments directly to cost, it

would prompt motorists to avoid busy roads at peak times, so making urban roads flow more smoothly and with less pollution. **Trafficflow**, an initiative of the Adam Smith Institute and The Smith Group, is developing the definitive implementation blueprint for practical, publicly acceptable, urban road pricing schemes in the UK.

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Must pay, should pay

How fair user charges can cut congestion

We pay four times as much in fuel and vehicle taxes as it costs to provide and maintain the road network — five times as much if VAT is included. But we pay nothing towards the £15bn-worth of congestion and delays which our use of the roads imposes on others.

Fuel duty may prompt us to watch the total number of miles we drive. But it makes little difference to us whether those miles are on busy roads or empty ones.

The aim of urban road pricing is to produce a more rational pattern of road use, so as to reduce congestion and air pollution in towns.

How it works. Road pricing makes drivers more aware of the costs that they impose on others when they use crowded roads at busy times. So it prompts them to use roads less wastefully — by planning their journeys to avoid the busiest roads and times if they can.

As a result, the essential and time-sensitive traffic which cannot avoid the busy times and places flows more smoothly. The morning and afternoon jams disappear, and there is less pressure on busy junctions.

Virtuous circle. Smoother traffic flow means buses run to timetable, making them more attractive to all those people who now choose to leave the car at home. Bus operators' costs fall by about 25%, allowing them to make bus travel more attractive still — a virtuous circle favouring the use of public transport.

Time-sensitive commercial vehicles, such as mail vans and supermarket delivery trucks, also gain — producing significant savings to industry and so to consumers. And if people can predict when a bus or car can get them to the rail station, they are more likely to take the train for their longer journeys.

Car-sharing is encouraged: the charge is for the use of the car, not the number of people in it. And people are more likely to compress all their errands into one journey rather than making several trips. Both effects are a gain for other road users and the environment.

- **Commuting trips have a low occupancy rate of around one person per car.**
- **Bus patronage has fallen by half since 1970, particularly so outside London.**
- **Even for journeys of less than a mile, we are twice as likely to take the car out than to walk.**

Road pricing is fairer for rural dwellers, who pay more in fuel duties because they have to drive longer distances — although much of their travel is on relatively empty roads.

People who are paying directly for roads are also likely to be less tolerant of delays caused by road repairs — so increasing the incentive on contractors to work quickly and efficiently.

A charge for service. Road pricing is just one part of an integrated policy. If drivers must pay to come in to city centres at busy times, they will expect a fair deal in return. They must see it as a charge for a better travel service. As well as the benefit of smoother-flowing traffic, they might well demand:

- **lower taxes on fuel or vehicle licences;**
- **better local road infrastructure,** such as park and ride facilities;

- **better-quality public transport** running more frequently and to more areas;
- **useful add-ons** such as driver traffic information systems.

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Moving again

World examples of road pricing in practice

An opportunity for the UK. The world's drivers are well used to tolls on motorways, bridges and tunnels, though urban travel is priced in only a few places. However, the rising concern about city congestion, and the success of the schemes that have been set up so far, suggest that this could be a major trend in which the UK could take the lead.

Urban road pricing in practice

Singapore. The crowded city-state limits car ownership by a permit system — with permits costing about the price of a new car. And for the past 22 years it has been charging drivers to enter the central business district. The charge is about £1.30 at peak hours, and 85p at off-peak times.

Until this year, drivers had to display a paper licence, but now things have gone electronic. In-car smartcards — which can store up to £100 of credit and can also be used for other purchases — are debited automatically as vehicles pass under microwave gantries.

Norway. Closer to home, Oslo, Bergen and Trondheim have all created road-pricing cordons round their cities in order to finance ring-roads and environmental improvements.

In Oslo there are 19 toll stations, a few km from the city centre, covering every access road. Drivers pay about £1 to enter the cordon ring. Traffic has eased by 2-5%, and the scheme is popular because the toll revenues — about £45 million — are spent directly on roadbuilding, public transport, cycle paths and city-centre underpasses.

Sweden. Stockholm is testing its own electronic toll collection system as a way of financing ring-road improvements which involve expensive tunnels. The aim is to create a system which can collect tolls from

vehicles passing at speed on major roads, with a one-in-a-million accuracy rate.

Germany. Four hundred drivers in Stuttgart helped test a road-pricing scheme which suggested that charges of £6 per day would cause a major reduction in city traffic.

The UK. Leicester and Bristol have run trials to assess the value of road pricing in reducing pollution, improving safety and boosting the use of public transport. These tests looked at the impact of different charge levels (including higher charges on high-pollution days), bus priority systems, add-on driver information, and integrating charges with park-and-ride.

Councillors in Edinburgh have practical plans to introduce road pricing, and several other towns and cities in the UK are looking at it.

Charging in non-urban areas

Countries all over the world — including the **UK** — charge for the use of bridges, tunnels, and motorways. A number are now starting to develop automatic schemes, for example:

Austria, along with **Switzerland** and the **Czech Republic**, now runs a 'vignette' or window-sticker scheme to charge for the use of its major roads. This is seen as the first step towards an automatic system based on smartcards or satellite technology.

Denmark is testing an electronic toll scheme for an 18km strait crossing scheme.

In America, Cars on the express lanes of Route 91 near San Diego pay rush-hour charges of about £1.80, collected by means of in-car electronic tags passing roadside transponders. A similar automatic system works on the Dallas expressway in Texas.

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See your way clear

The technology and politics of road pricing

Equipment. There are four essentials:

- User payment card — a smartcard, pre-payment ticket, *or* post-event billing if privacy is not an issue.
- In-vehicle equipment — an electronic tag in the windscreen, or, for real-time charging, a larger unit and payment card.
- Roadside vehicle detection equipment — microwave beacons to obtain details or payment from vehicles which pass.
- Operations centres — setting/collecting tolls and enforcing payments.

Choices in each of these categories will depend on the scheme size and objectives. Infrastructure needs to be low-cost, reliable, unobtrusive, flexible and interoperable with other schemes in the UK or elsewhere in Europe. It is likely that most schemes will need hybrid solutions.

Ways to charge for road use. One method is to set up a simple cordon, like the Oslo ring, and charge each vehicle for entering. Or one could charge according to the route, zone, or area the driver uses, in order to encourage cars onto main roads and away from rat runs.

Charges. A variable charge, which is high

when city-centre congestion or pollution is high, can reduce both. An amount per minute or an amount per km can discourage drivers from entering town when traffic is moving slowly, or discourage people driving further than they have to through busy areas.

When to collect fees. As a driver, you might want to carry a smartcard with your vehicle tag, to be debited as you travel. Or your car unit might provide only ID information so that you can be billed later.

Public acceptance. Road pricing is just one of a number of traffic-management tools that can be used to achieve local objectives for the benefit of the local population.

The scheme should be simple for visitors to town and must be capable of exempting some users, such as emergency vehicles.

Charges in a scheme to combat pollution or congestion should be transparently linked to solving those problems. It should not merely be a new way of raising money to pad out local or national government budgets. The trust and integrity of the scheme operator is therefore key to its success.

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Who thinks we need it?

What people say about road pricing

— ***The Economist:***

If roads continue to be operated as one of the last relics of a Soviet-style command economy, then the consequence will be worsening traffic jams and eventual Bangkok-style gridlock. If, on the other hand, roads were priced like any other scarce commodity, better use would be made of existing space and the revenues raised could be used to improve public transport. The mere fact of making motorists pay their way would free capacity to such an extent that bus travel would become easier and faster, and subsidies could be reduced.

Jam Today, Road Pricing Tomorrow
6 Dec 1997

— ***Neil Kinnock, EU Transport Commissioner:***

To get transport right, it is going to be essential to get prices right because in transport, as in all sectors of the economy, price signals guide the allocation of scarce economic and environmental resources.... If [the principle of transport charging] it is to work properly and fairly, it must wholly or partly replace the current system of 'flat rate' taxes which patently gives no incentives to improving transport behaviour and makes no contribution to reducing congestion, pollution or accidents.

Moving into the Future, Lloyds TSB Forum
November 1997

— ***The Chartered Institute of Transport:***

Until better charging and funding regimes are introduced it will be difficult to tackle urban transport problems effectively and fairly. Even if it is difficult to devise economically perfect charging regimes...a move in this direction would be a great improvement.

Better Public Transport for Cities
June 1996

— ***The British Chambers of Commerce:***

The problem is that roads are not part of the market economy. Like waterways, but unlike other scarce resources, they are not priced. The user has no incentive to economise ... queues are not just a by-product, they are inevitable. The answer can only lie in some form of pricing, at times and places in which severe congestion arises.

Transport that Works
June 1998

— ***The Automobile Association:***

In principle, the AA shares the near universal view of professional analysts and commentators that it would be fairer, more efficient and better for the environment if the charges we paid on all the journeys we make on our transport system could more precisely reflect the cost of making them ... but *in practice*, there are significant political and practical problems to be overcome. The current piecemeal approach to charging and taxation is so distrusted that it cannot lead to a publicly acceptable solution.

John Dawson,
AA Policy Director

— ***The Government Office for London:***

[C]harging could have a significant effect on congestion.... Reductions in vehicular emissions could have a significant local effect.... There would be significant economic savings to London as a whole, principally from reduced journey times and increased travel time reliability.... Bus users would benefit considerably from better traffic conditions. Those improvements would increase the efficiency of bus operations, and enable much of the increased bus use to be accommodated within the existing fleet.

London Congestion Charging Research Programme, 1995

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