

## Transport: a public health issue

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Most people will never own a car. But throughout the world cars continue to dictate transport policy. The growth in the world's car fleet—it now stands at 400 million—is whittling away the benefits of car ownership as machines built for speed are forced to idle in gridlocked cities. The problems caused by over-dependence on private cars are now being recognised. The motor industry may be persuaded to tackle air pollution, but greener cars hold no answers for the other by blows of the motor car—traffic congestion, noise, road accidents, and social inequality.

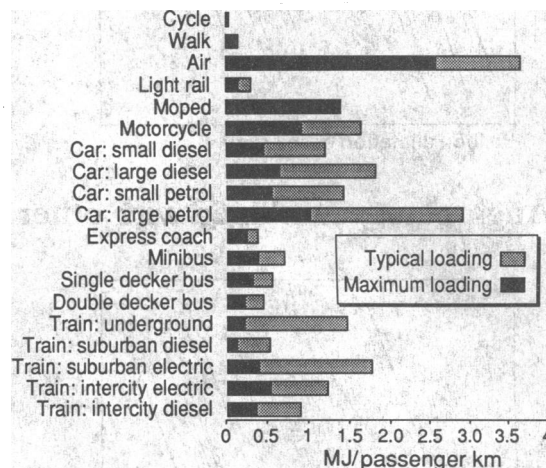
### Death on the roads

Road accidents are the most direct means by which transport affects health. In 1988 they caused more than 250 000 deaths worldwide. The dangers are greatest in the Third World, where roads carry a mixture of motorised and non-motorised vehicles—rickshaws, bicycles, carts—often unregulated and travelling at high speeds. Deaths from accidents are 20 times higher there than in the industrialised world.<sup>1</sup>

More than four fifths of all road accidents in Britain involve cars. But improvements in design have meant that travelling in a car is getting safer all the time. Since 1972 deaths among car occupants have halved. Meanwhile life for pedestrians and cyclists is becoming more hazardous. Britain has the highest child pedestrian mortality of any country in Europe. 1988 saw over 400 deaths in children aged 14 years or less. In terms of years of life lost below the age of 70 road accidents, with their high proportion of young victims, are on a par with carcinoma of the lung, trachea, and bronchus. Between 1952 and 1987 deaths among cyclists fell by two thirds, but taking into account the fall in cycling the number of deaths per billion kilometres travelled almost doubled.<sup>2</sup>

Safety on the roads, or lack of it, is not necessarily reflected in accident statistics as people change their behaviour in response to perceived dangers. This so called risk compensation reduces the accident toll but has its own effects on people's lives. Warning children not to play on the streets, penning people in with guard rails, and redirecting them down pedestrian subways are all examples of risk compensation. They concentrate on removing pedestrians, especially children, from the danger instead of reducing the danger itself. No change in behaviour is asked of the motorist.<sup>3</sup> Risk compensation may take the form of avoiding certain types of transport. London has about 400 000 regular cyclists. The London Cycling Campaign estimates that another million people would cycle but are put off by the thought of accidents and air pollution.

Cycling helmets provide another form of risk compensation. Whether or not they are effective protection remains debatable. Those who wear them have reduced incidence and severity of head injury,<sup>4</sup> but this may be because they are generally more cautious. Liz Marriot of the London Cycling Campaign thinks that helmets do help, if only because they make the cyclist more visible to motorists, but they are of little benefit in high speed crashes. "They are made out to be the answer to cycling injuries. That's nonsense. It's not the cyclists that cause the problem."



Energy consumption of various modes of transport according to maximum and normal loading<sup>1</sup>

### Too many cars

The problem for cyclists, pedestrians, and, ironically, car owners is that there are too many cars. Four fifths of the world's motor vehicles are in the developed world. Saturation of markets in the West has caused a drop in the average annual rate of growth in car ownership from 5% in the 1970s to 3% in the 1980s. This still means 19 million additional cars each year, or a doubling in the number of cars every 20 years.<sup>1</sup> In Britain in the past 10 years the distances travelled by car and motorcycle mileage have increased by about 40%.<sup>5</sup>

Many cities are now at full stretch. Average speeds are down to as low as 8 km/hour. Travelling to and from work in Mexico City can take up to four hours. According to Capital Radio's flying eye, which reports on London's traffic, the city is congested for 24 hours a day. "London is running at full capacity," said a spokesman. "It only takes a broken down lorry to cause a major snarl up." Cars also take up a lot of space. Two thirds of the land area of Los Angeles is devoted to transport in the form of roads and parking facilities.

Anything that encourages people to drive or discourages them from using alternative transport, such as bus, train, or bicycle, adds to the congestion. The high capital cost of buying, taxing, insuring, and maintaining a private car combined with the relatively low cost per kilometre encourages car owners to use their cars whenever possible. Congestion is not helped by the tendency for people to travel to work alone. Cars used for commuting contain on average 1.2-1.3 people.<sup>6</sup> Drivers of company cars, which tend to have bigger engines than private cars, are often relieved of all running costs. As a result company cars travel further per week than private cars.<sup>7</sup> These and other motoring benefits amount to a tax saving to employees of about £1.5bn a year, almost equivalent to the total government subsidy to public transport.

Motorways spawn out of town shopping and recreation facilities. Large supermarkets offer a wide selection of cheap and healthy food but are often accessible only to people with cars. Local shops cannot compete and are forced to close. Those without cars—

two fifths of households in London—must either put up with a limited choice of more expensive food or invest in a car. Once bought, a car tends to be used for other journeys.

### Mind the gap

Out of town shopping centres are just one example of how private cars can widen the gap between rich and poor. The benefits of travel—access to good cheap food, health and recreation facilities, and social support—are enjoyed by those doing the travelling. These tend to be people who are already socially advantaged. The health damaging effects of transport—air pollution, congestion, stress—are experienced by everyone but mostly by those in disadvantaged groups, who are more likely to live in areas of high traffic density.

Busy roads cut communities in half and block access to friends and shops, especially for young, elderly, and disabled people. Where traffic is heavy in residential streets social interactions are reduced. The health divide is deepened not because cars protect or promote health in those who have them but because of their negative effect on those who don't.

### No more roads

The growth in private car ownership also has a negative effect on other forms of transport. It makes cycling unpleasant and dangerous and reduces the use and availability of public transport. Between 1952 and 1987 the number of passenger kilometres travelled per year by car increased nearly sevenfold. Over the same period the number of passenger kilometres per year travelled by bus fell by half and that by cycle by four fifths.<sup>7</sup>

For this reason, the answer to traffic congestion and its attendant miseries is not simply to build more roads. This has been found to be counterproductive, most recently and dramatically with the M25 motorway round London. The initial easing of traffic flow tempts people away from public transport and into their cars. Public transport services are then used less and so go into decline forcing more people to take to their cars. Congestion builds up again, this time on a larger scale and at even slower average speeds (M J H Mogridge, lecture at University College London, October 1985). The real answer, as several European countries have discovered, is to discourage people as much as possible from driving cars and encourage them to use other forms of transport.

### Two wheels better than four

Compared with cars, public transport is more efficient, takes up less space, uses less fuel, and produces fewer emissions. A car carrying one person needs more than seven times more energy than a bus carrying 45 people.<sup>1</sup> Public transport is also safer. Of all forms of road transport, buses and coaches cause fewest deaths from accidents per journey, both among the travellers and among pedestrians.<sup>2</sup> The quality of public transport varies widely, and this decides whether or not people use it. In Hong Kong, where public transport is cheap, reliable, and well integrated, it accounts for 9 million of the 10 million daily passenger trips.<sup>3</sup> In Britain between 1982 and 1988 government subsidy for road and rail transport fell by a quarter.<sup>2</sup>

Over two fifths of all car journeys in Britain are less than 5 km,<sup>9</sup> and nearly three-quarters of all trips to work are less than 8 km.<sup>10</sup> Short trips are the most polluting as a cold engine fires inefficiently and catalytic converters only start working after about 2 km. Making these trips by bicycle or on foot would decrease air pollution and greatly reduce local traffic congestion. Journeys of 5 km are considered potentially cycleable, giving a 25 minute trip at 14 km/h—the overall speed for all cycle journeys.

In contrast with cars, bicycles do not pollute the air or create noise, they take up less space, and need no fuel other than a good breakfast. Cycling is the most energy efficient mode of transport (figure).<sup>11</sup> To travel 16 km a cyclist needs 1.46 MJ (350 kcal)—the amount of energy in a bowl of rice. To cover the same distance an average car needs 77.8 MJ—more than half a gallon of petrol.<sup>12</sup> A cyclist can ride 5.6 km on the energy found in an ear of corn. Cycling also keeps you fit. Civil servants who cycled regularly experienced half the expected number of coronary events.<sup>13</sup>

Cycling on a large scale already happens by necessity in the Third World. Only one in 500 Indians owns a car compared with one in two Americans. More people use bicycles in Asia than use cars in the whole world.<sup>1</sup> Bicycles are the perfect tool for intermediate technologists. They are cheap to produce—100 bicycles can be manufactured for the cost of one medium sized car—and can be adapted into rickshaws to carry goods or to power paddy threshers and water pumps. China, which accounts for 300 million of the world's 800 million bicycles, has recognised the value of a self propelled workforce. People who cycle to work receive an allowance from the government. But some countries in the developing world, especially in Africa, see the bicycle as a symbol of poverty and continue to hold up the car as the ultimate form of private transport.

People in the West have bicycles but don't use them. There are seven times more bicycles in America than India but only one in 40 is used for commuting, the others are used for sport and recreation.<sup>14</sup> One in four people in Britain has a bicycle but only one in 33 transport trips is made by cycle.<sup>10</sup> There has been a fall since the 1950s, when 10% of all travel by mechanical means was by bicycle, mostly commuting to work. Now the figure is 1%, mostly for leisure.<sup>9</sup>

### Positive action

A comparison between societies that encourage cycling and those that don't suggests that the decisions people make about transport are not related to income, technology, or degree of urban development but to enlightened public policy and strong government support.<sup>14</sup> Cycling is popular in the Netherlands and Denmark not just because of the weather or the flat terrain but because of positive action. Between 1975 and 1985 the Netherlands government spent \$230m building cycle routes, parking, and facilities at railways. In Dutch cities and towns 20-50% of all trips are made



Heavy traffic reduces social interactions

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Rickshaws and cars—a dangerous mix

TOM LEARMONT/PANOS PICTURES

by bicycle. The Chinese administration provides spacious cycle lanes and easily accessible, supervised bicycle parking.

There are small signs of progress, too, from that bastion of motorists, the United States. All road repairs in the university town of Palo Alto must now comply with strict standards of smoothness, and since 1983 all new buildings over a certain size have to incorporate secure bicycle sheds and showers.

The aim should be to encourage people to make short trips by bicycle and longer trips by mass transport, with bicycles as the means of getting to and from the station. The British government has accepted proposals for 1600 km of cycle routes in London but is leaving it up to individual boroughs to implement. Meanwhile, according to Liz Marriot of the London Cycling Campaign, it is getting more not less difficult to take bicycles on trains in Britain. A flat rate of £3 per journey by Intercity is a disincentive on short journeys.

### Incentives and disincentives

While most governments in the West recognise the problems of air pollution and traffic congestion, few are willing to tackle them directly by imposing restraints on private motoring. But without resorting to head on tactics there is still a wide range of measures that would act as potent disincentives to driving. The Transport and Health Study Group, a British group that campaigns for healthier transport policies, describes some of them in its policy statement.<sup>2</sup> Shifting the cost of motoring from capital outlay to running costs would make cars cheaper to buy but more expensive to use. More people would be able to afford cars but to use them only when absolutely necessary. This could be achieved by imposing a petrol tax instead of a licence fee, by insurance schemes related to distance travelled, or by charging for the use of roads. A carbon tax would transfer the environmental cost of motoring back on to the motorist. Withdrawing the provision of free parking at work would discourage people from commuting by car. Subsidies for company cars should also be withdrawn and companies should be encouraged to sponsor the use of public transport.

A great deal has been achieved in Germany with Verkehrsberuhigung or traffic calming measures to reduce speeds in residential areas. Sleeping policemen and pedestrian rights of way help to enforce the impression that cars are admitted only on sufferance and that streets are for people. In Sweden, traffic is directed away from pedestrian and cycling areas.<sup>15</sup> The Dutch government has recently increased the cost of buying and driving a car by about half and plans to introduce an electronic system to log the number of kilometres each car travels. Excessive drivers will pay extra tax. In the longer term town planners have a central role. Building self contained social units with houses, jobs, shopping, and recreational and health facilities within easy reach would minimise the need for travel.

The message is simple. Make it easier and more pleasant to cycle to work or use public transport and more difficult and expensive to drive. Liz Marriot does not see this approach as anti-car. Improving public transport and cycling facilities will, she thinks, benefit all road users. "At the moment if you want a car you can go out and buy one. But ultimately you can't move so it's self defeating." She acknowledges that cycling is not the answer to everyone's transport needs. "We would like to see it as part of an overall transport strategy which must include a cheap and efficient public transport system."

"Transport is a public health issue," says Judith Hanna of the Transport and Health Study Group, "just as much as clean water and clean air." We need to develop imaginative and well financed transport policies that will put the car firmly in its place as one among many options rather than the only one. Otherwise we will miss a vital opportunity to create a more equitable, humane, and healthy society.

For this article I have drawn heavily on the work of the Transport and Health Study Group in Britain and of Marcia Lowe in the United States. I also thank Dr Simon Wolff. The London Cycling Campaign can be contacted on 071 928 7220.

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### Correction

#### Science and medicine down under

The caption for the photograph of the parent held booklet in this conference report (7 December, p 1469) should have acknowledged the Victorian Aboriginal Health Service. The art work was by Lynn Briggs.