

Congestion Charging, Transport Improvements and Manchester

Dr. Leif Jerram
University of Manchester

About the Author

Dr Leif Jerram is Lecturer in Urban History at the University of Manchester, and previously held posts at Keele University and was Fellow of Selwyn College, and Lecturer at the Faculty of History, at Cambridge University. His research specialism is the design, construction and everyday life of cities in Europe over the last one hundred years. He is currently working on a major research project which examines how cities have shaped the main features of European history in the last century, which will be published with Oxford University Press.

Introduction

This research outlines the key issues surrounding the transport debate. These include the importance of public transport to a city region like Greater Manchester, the effect road congestion has on public and business communities, and the economic and social impact of congestion charging on cities across the globe.

The conclusions are clear. Congestion places a significant cost – both financially and socially – on a region like Greater Manchester, and these costs are set to escalate substantially over the next decade. A lack of transport investment and a continued dependence on the car is something that has to be addressed. Congestion charging is a controversial solution, but when it pays for investment in public transport there are substantial benefits for the local community, economy, businesses and large organisations.

Although people are often sceptical to start with, congestion charging schemes become increasingly popular with effective communication and a charismatic spokesperson. Once the schemes are in place and the benefits are realised, support is overwhelmingly positive.

Contents

| | |
|---|---|
| 1. Key Findings:..... | 2 |
| 2. Exploring Current Problems | 2 |
| 3. Carrot and Stick Are Necessary: PT Investment Alone does not Improve Congestion..... | 4 |
| 4. Road Pricing Comparisons: Schemes Around the World | 5 |
| 4.1 Oslo..... | 5 |
| 4.2 The Edinburgh Example: Reasons for Failure..... | 5 |
| 4.3 The London Example: Key Results | 6 |
| 4.4 Stockholm | 7 |
| 4.5 The USA: Car Capitals introduce Congestion Charging..... | 7 |
| 4.6 Singapore: World Pioneer in Congestion Charging..... | 7 |
| 4.7 Other Examples of Charging to Fund Infrastructure..... | 7 |
| 4.8 Key Features of Successful Plans: | 8 |
| 5. Cars, Policy and Emotions | 8 |

1. Key Findings

- Britain's public transport is of poor quality, high cost and cannot be improved in the current legal framework. New legal powers – such as the ones enjoyed by TfL and proposed for GMPTC – are essential to change.
- The research shows that every sector of society benefits when schemes like this are introduced. There is also a net benefit to the economy – the economy has never shrunk due to a scheme like this. There is no peer-reviewed research that I have been able to find that shows that overall, congestion charging and public transport investment leads to economic or quality of life losses.
- There is a massive mismatch between the rational aspirations of policymakers and pressure groups and the emotional self-image of transport users (private and public). Policymakers have not addressed the emotional life of either the car driver or public transport user through emotional engagement, good communication or effective policy.
- Congestion charging generally attracts majority opposition before its introduction, but majority support after it's introduced and people can see the benefits – such as in Stockholm, London and Oslo.
- Improvements to public transport without disincentives to drive do not have significant benefits on congestion or quality of life on their own.
- Traffic charging to subsidise public transport improvements is a widespread policy across the developed world. It is already used in Norway, Sweden, Switzerland, Austria, Britain, Singapore and France. Sometimes local roads are charged, sometimes trunk roads.
- High quality, high quantity public presentation of plans and a nameable associated person are central to the success or failure of proposals to introduce schemes like this.
- People misunderstand the costs of congestion to themselves and to others. They perceive there to be 'no cost' to congestion because the costs are 'externalised' (that means, the costs are encountered outside the moment at which the problems are caused). People are mistaken. There are extensive costs to congestion as it stands, borne **both** by people in cars and the rest of society. Congestion charging 'internalises' (builds in) the costs of congestion and makes them visible. The primary 'invisible' costs in the 'do nothing' models are:
 - Social costs – unemployment, higher crime or difficulty in accessing healthcare or education.
 - Economic costs – pockets of depressed house prices, higher public transport costs, goods stuck in lorries, difficulty attracting businesses, declining leisure in both town centres and suburbs.
 - Environmental costs – noise pollution, poor air quality, traffic accidents, global warming.
 - Personal costs – family meals missed, missing small children's bedtimes because of long commutes, difficulties in seeing loved ones when public transport is not reliable – like on Sundays, or evenings. This last sort of cost is almost invariably overlooked in research to date.

2. Exploring Current Problems

The problems focussed upon here are either surprising or 'headline grabbing' costs – ones that engage people beyond just their rational basis.

2.1 There are hidden costs to people of the 'do nothing' approach, which have been poorly publicised.

The Centre for Environmental Change at Lancaster University found that most studies of mobility have massively underestimated the social *dis*advantages prevalent with Britain's method of moving around, even for wealthy people. By focussing so much on the disadvantages associated with access to activities and goods, supporters of public transport investment have missed out the huge disadvantages people in Britain have when it comes to other things. The centre points out

how difficulties getting around promote other sorts of social decay – like the difficulty that commuters have in seeing their kids before they go to bed, or the difficulties in having family sit-down meals in the evenings, all because people can't get about easily. As families spread out, it's harder and harder for them to keep in touch and see each other. This affects rich families more than poor, as they spread out more (Cass, 2005).

People spend more time each day travelling than anything else except watching TV, working and sleeping.

The Office of National Statistics studied thousands of people to understand how they spent their time. People spend about 90 minutes each day travelling on average – more time than they spend on childcare, sports, outdoor activities, shopping, social life and eating. (ONS, 2003) If this time could be cut, we could hugely improve our social lives, families and leisure opportunities.

There are huge costs to congestion.

If you compare comparative costs for businesses using car and van drivers, they're about €12.10 per hour in urban France, but about €31.20 in urban Britain (at 2002 prices). This puts our businesses at a massive disadvantage. Savings in time would easily outweigh costs of paying a charge and help Britain's economic competitiveness. (Mackie 2005; Leape 2006; Santos *et al* 2005) The 'wins' to business users are rarely presented by supporters of public transport or road pricing.

Almost all independent reviews since the 1950s have advocated road pricing.

There have been hundreds of these and they all end up saying that the 'externalised' costs of congestion need to be 'internalised' as a matter of urgency (Santos 2004a).

2.2 Health impacts of the current system

Susan Kenyon is an expert at the University of Kent's Centre for Health Service Studies. Her work highlights the huge costs of low quality and expensive transport to Britain's social, economic and cultural wellbeing. She concludes that '...people are prevented from participating in the economic, political and social life of the community because of reduced accessibility to opportunities, services and social networks, due in whole or in part to insufficient mobility in a society built around the assumption of high mobility.' The negative health outcomes from having a poor, expensive public transport system like ours are pervasive (Kenyon *et al.* 2002)

Children's health is worsened.

Researchers in child health have found that poor public transport isolates children inside and outside school and has massive negative impacts on their general wellbeing and mental health (Davies *et al.* 2008). In a period of increasing worry about 'youth crime', gangs and delinquency, the negative impact on children's mental health in particular is striking.

Obesity is exacerbated.

Researchers have found that poor and/or expensive public transport is 'obesogenic' – it makes people obese, with all the associated consequences: shortened lives, joint pain, diabetes, bullying, etc. With low-quality and expensive public transport systems, poorer people have to use cars to get to work. This takes up a much higher proportion of their income than an integrated public transport would. These disproportionately high costs of owning a car leads to food poverty (Harrington *et al* 2008). This situation is bound to worsen at the moment as all families are hit by higher food and fuel costs.

Cancer outcomes are worse.

Low quality/high cost public transport, such as is common in Britain, is associated with worse outcomes for breast cancer, colorectal cancer and prostate cancer. Research around Leeds on 117,097 cases of cancer over ten years showed poor public transport and longer travel times to GPs led to worse access to GPs, later diagnosis, more drastic interventions required, and a greater risk of death (Jones *et al.* 2008).

2.3 Poverty, Crime and Conflict impacts of poor public transport.

Research from the University of Paris and Nottingham Trent University shows that when communities or areas become isolated due to low quality/expensive public transport, it heightens poverty, conflict, racism, alienation and crime. This leads to unhappiness and huge 'knock on' costs in terms of prisons, mental health, unemployment benefit, lost income, etc (Villette *et al.* 2007). It should therefore not come as a surprise that 'difficult to get to' and 'difficult to get around' areas of Greater Manchester are amongst the most ethnically divided and experience the most extremism (both white far-right extremism, and religious fundamentalism).

2.4 The Rowntree Foundation's 'Big Picture' of Transport and Poverty in Britain.

The Joseph Rowntree Foundation, one of the leading social research charities in the world, conducted a huge study on transport and social exclusion in British cities. They found that our chaotic and expensive public transport system made life worse for most people, rich and poor alike. They made several key findings on mobility and poverty:

- public transport in poor areas is much worse than in richer ones (in Manchester, two of the three tram lines serve predominately wealthy areas; and contrast bus services to Didsbury with bus services to Weaste, Wythenshawe or Abbey Hey).
- Many poorer people have 'low mobility aspirations' – they weren't prepared to travel to access things like healthcare or work.
- The cost of public transport fares is a major problem.
- Services are poor, inadequate and unreliable and don't accommodate either lifestyle issues (like late night socialising or shift work) or travel priorities (like getting to hospitals or shopping centres).
- Public transport vehicles in this country are of a poor quality and poor staffing led to perceptions of personal safety problems.
- Policy ignorance of the car as a need for some poorer people.
- There was a huge 'knock-on' cost of poor public transport (like gang culture because people can't get away from their area and socialise elsewhere, or missed hospital appointments).

Most of these problems are well understood, but because of the current system of funding and legal framework for directing public transport, they can't be fixed (Lucas *et al.* 2001).

3. Carrot and Stick Are Necessary: public transport investment alone does not improve congestion

If you subsidise public transport fares *alone*, user numbers do not rise substantially. However, if you increase public transport fares, usage rapidly drops – this has happened in Manchester. Also, short-term reductions in congestion due to improved public transport infrastructure *alone* do not reduce congestion in the medium to long term, because car traffic that times its journeys to avoid congestion moves into slots left by traffic shifted onto public transport. This approach merely releases 'latent demand', and does not solve any congestion problems.

Car usage *at peak times only* is under priced relative to other forms of transport. The London and Oslo systems are weak because they do not distinguish between 'congestion' and 'traffic' (Bonnell *et al* 2000; Small 2004; Bekken *et al* 2007). Traffic circulation when not congested offers many benefits and should be encouraged. The Greater Manchester proposals fulfil this requirement, because they allow unrestricted movement of traffic through most of the day,

Twenty-eight leading professors of transport and planning in Britain came to the same conclusion – 'a combination of selective road building and improvements to alternative means of transport to the car will not improve travel conditions *unless* accompanied by traffic restraint' (Lyons 2004).

Benefits of charging linked to public transport improvements

All research that has been done shows that when you improve both public transport and make people pay the real costs of congestion, it has the following benefits:

- Raising the financial price of car travel induces some shifting to public transport.
- Reduced congestion makes on-street public transport faster and cheaper to operate, irrespective of whether more people use it or not.
- Increased public transport route coverage and/or frequency to handle demand further enhances the service quality as perceived by the user.
- Higher costs of car commuting cause land near major business centres to become more valuable and therefore likely to be developed at higher residential and commercial densities. This increases *yet further* the market potential of public transport by increasing its density of demand in just those areas where it is already most efficient.

These benefits do *not* accrue if you just improve public transport alone or subsidise fares on it. Road charging 'completes the virtuous circle'. It creates a win-win-win-win-win scenario (Small 2004; ESG 2008; Langer *et al* 2006; Parry 2007).

4. Road Pricing Comparisons: Schemes Around the World

4.1 Oslo: An Overview

- A toll system was introduced in Oslo and surrounding counties in 1990 to fund road improvements. Only 20% of the revenue was spent on public transport and there was widespread opposition.
- A second scheme was introduced in 1998, with more money for public transport and ultimately more public support.
- A new system is being introduced which is more focused on improving the welfare of the population, by decreasing congestion and increasing public transport, rather than raising revenue to build things.
- The previous Oslo system was a *toll* (a flat rate at all times, designed to raise revenue), not a *road pricing scheme* (which is designed to put a price on something which does damage, like congestion, but whose price is hidden; congestion seems to cost nobody anything, but costs everybody a lot). This distinguishes the original Oslo scheme from the Manchester scheme. The new Oslo scheme is more like the Manchester proposal.

Public Acceptance:

- The public was initially hostile to all schemes involving charging, but as each scheme has been introduced and the public have seen the benefit of them, their popularity has risen.
- Public approval rises to as much as 66% when people understand fully how the money is spent.
- When Stockholm has a trial congestion charging scheme, public support was low before, but high after introduction (Bekken *et al.* 2007).

4.2 Edinburgh: Reasons for Failure

There has been substantial research into understanding why the Edinburgh scheme failed so spectacularly. Laird *et al.* 2007, The Institute of Transport Studies at Leeds University found that:

- There was substantial public opposition, even though all available neutral evidence from the public enquiry was positive.
- The charge was set low to produce the most benefits to the people of the region, yet was still rejected.
- Computer modelling demonstrates the scheme offered substantial benefits to the city and its surroundings; benefits that far outweighed the costs to them in the congestion charge.
- Every single sector of society would have benefited; no sector of society would have lost out.
- The proposed system would have benefited all the 1.07m people of the Lothian region. In fact, surrounding areas would have benefited more than city residents.
- Such schemes must be developed on a regional basis, not an authority-by-authority basis.

- The major reasons for the opposition were:
 - the charge would have been introduced *before* improvements in public transport people did not understand it – there was too little resource allocated to promoting public understanding and there was no single personality associated with the proposal, like Ken Livingstone.
 - there was unconditional media negativity.
 - there were no headline-grabbing schemes explicitly linked to the toll – residents felt that the guaranteed funding would have got them much of what was being offered and two of the three major tram lines were paid for anyway.

Gaunt *et al* 2007 found that:

- Car owners strongly opposed the scheme and non-car owners only weakly supported it.
- It was poorly presented and the limited understanding of the plan was a major factor in rejecting it, or not voting at all.
- The public was unconvinced that it would both reduce congestion and improve public transport.
- More attention should have been paid to designing a simpler scheme.
- More attention should have been paid to the communication of the benefits. Successful schemes, like London, Singapore and Stockholm, invested far more in communication than Edinburgh did.

4.3 London: Key Results

Dr Georgina Santos of the Transport Studies Unit at Oxford University conducted a study of the impact of the London scheme after one year. She found that:

- Traffic speeds in London increased by 21%. It is worth noting that traffic speeds in Manchester have *decreased* by 20% over the last 10 years.
- Traffic in the Congestion Zone dropped by about 16%. This had huge benefits for people using buses and taxis and for people who needed to drive.
- The £5 charge was more than offset by the 21% decrease in the time it took to drive everywhere.
- Congestion did not increase on the Inner Ring Road.
- The following amounts were calculated to be saved in the year after the introduction of the congestion charge in central London:
 - Time savings to business users of cars and taxis were £75m; to private users of cars and taxis, £40m; to commercial vehicle occupants, £20m; and to bus passengers, £20m.
 - Reliability benefits to car, taxi and commercial vehicle occupants (such as not being late due to unexpected congestion) were £10m; and to bus passengers, £10m.
 - Vehicle fuel savings: £10m (based on 2004 prices).
 - Accident savings: £15m.
 - Costs to car users of switching to public transport: £20m. This is the only negative cost.

Therefore the benefits *massively* outweigh the costs, even to people paying the charge (Santos 2004b).

Others have agreed. Prof. Peter Mackie at the Institute for Transport Studies at the University of Leeds highlighted that, 'There is a degree of public and professional consensus in Britain that the London congestion charging scheme has been a rare transport policy success in an otherwise rather bleak picture.' He highlights the fact that there are between 2 and 5% less accidents a year and that the total costs of £182m p.a. are outweighed by the total benefits of £252m p.a - alongside the 'invisible' benefits of being able to socialise more easily, saving on car parking charges and being able to see children before they go to bed (Mackie 2005).

Impact on Business

Several studies have confirmed that there was no overall negative impact on London's retail industry. Only one shop seems to have suffered: John Lewis (Quddus *et al* 2007a; Quddus *et al* 2007b). After implementation, about 75% of London businesses recognised the congestion charge was a benefit (Clark 2004).

4.4 Stockholm

Stockholm introduced a package of transport improvements, alongside congestion charges. These were approved by a referendum after seven months of operation. A group of experts from business, planning and universities met in Sweden in 2006 to review what the overall outcomes were. These included:

- The scheme reduced traffic in the city centre by 20-25% and traffic jam waiting times were cut by 30-50%.
- There was a cut in emissions of 14% in the city centre, and 2.5% across the whole of Stockholm County.
- There was a remarkably small increase in traffic on the inner ring road (this contrasts slightly to London, where there was no increase).
- Businesses benefited from quicker delivery times and easier movement around the city.
- More people cycled.
- Public transport was improved and used more widely.
- Support for the scheme rapidly grew.
- The estimated reduction in injuries/deaths was 5-10%.
- Only 7% of trips in Stockholm County were affected by the charge.
- The estimated benefits over costs each year is 760m Swedish Krone p.a. (£63,149,022 approx.).

4.5 The USA: Car Capitals introduce Congestion Charging

In 2007, the US Department of Transport recognised the devastating damage done by congestion in terms of quality of life, economic costs and environmental damage. It has now given funding of over \$800m to pilot congestion charging schemes in five major cities: New York, Miami, San Francisco, Minneapolis and Seattle (Albalante *et al* 2008).

4.6 Singapore: World Pioneer in Congestion Charging.

Singapore introduced a flat rate area licence for the city centre in 1975. It moved to a 'smart' system (like the one proposed for Manchester) in 1998. Congestion cuts were achieved right after the introduction of the Area Licensing Scheme. Under the new, 'smart' scheme, "The traffic was reduced by more than 40% in the restricted area and thanks to the electronic system it was additionally reduced another 15% during the peak time. However, increases of 10% were found during the rest of time slots. Therefore, time shifts are found in traffic congestion due to road pricing. In addition, authorities realized that after the introduction of electronic road pricing, drivers were using alternative roads and other periods of time. In fact, after urban charging introduction the share of private cars over total commuters declined from 48% to 29%. Also, public transportation received the benefits from the measure by increasing its average speed making of buses a good choice and consequently increasing trip profitability with the additional demand. Indeed, its use increased about 20%." (Albalante *et al* 2008).

4.7 Other Examples of Charging to Fund Infrastructure

- New railways in **Switzerland** are funded through taxes on heavy vehicles. While it would seem that this is not a charge to motorists, it in fact charges everyone who profits from the HGV delivery network, such as people buying food or other goods. (Cretegnny *et al.* 2007)
- **Stockholm** had a trial period of a congestion charge, with a referendum at the end of it. While opposition was widespread beforehand, after six months the 'yes' campaign won by 53:47%.
- **France** charges a toll on all its motorways. Half of this money goes towards building new rail links (Palma *et al.* 2007).

- In Bologna, **Italy**, cars are banned from the city centre entirely and public transport usage is very high. It was a charismatic mayor that introduced this policy (Bonnel *et al.* 2000).

4.8 Key Features of Successful Plans

“On balance, it appears that transport charging can be both efficient and politically feasible only if accompanied by a revenue-use plan and an information/marketing campaign that meet five conditions closely related to the conditions [just] identified:

- a) Goals that are worth pursuing.
- b) A design that can achieve the goals.
- c) Advantages over other measures.
- d) A clear and credible explanation of how the scheme impacts major stakeholder groups.
- e) A clear and credible explanation of why these impacts are beneficial.”

(Palma *et al.* 2007)

5. Cars, Policy and Emotions

A team of psychologists at Sussex University found that most people promoting public transport ignore emotional considerations in the ways they target their message, largely because these considerations are not well understood. However, a lot of research concludes that this emotional dimension is central to people’s transport attitudes and choices, even when other factors, like costs, are taken into consideration. They interviewed 18 middle-class car commuters. There were four main reasons beyond simple financial/time and cost/benefit analyses which dominated people’s thinking:

- **Journey-Based Affect (JBA).** This is how you feel during the journey. If public transport is crowded, noisy, smelly, hot, has uncomfortable seating, or perceived as unsafe, people will not take it. Cars, on the other hand, can be perceived as entertaining places, even though you can’t read, gaze out of the window, etc.
- **Personal Space.** This was a dominating aspect of JBA. People liked being alone to some extent, but a greater priority was not being pushed up against others. It would make sense to highlight the improvements of public transport if it is to be appealing.
- **Autonomy.** Public transport was seen as unreliable and inflexible. Bus timetables were unpredictable and have complex timetables. The investigators concluded that ‘removing the unknown may help to address these issues’. However, lack of autonomy could also produce negative affect around car use – having to arrive at a certain time to get a parking space or having to leave at a certain time to avoid rush hour. Thus, very often car use can constrain our freedom, but good public transport can enhance it. Policymakers have not addressed these issues. Public transport can be liberating, but is not presented as such in Britain.
- **Identity.** Many car owners considered their car ownership to be an essential element of themselves. Most car owners remember car acquisition as a moment of liberation, coming of age, or achieving social status. With company car owners, the car ownership and usage were essential badges of status in the company hierarchy. Car ownership ‘careers’ were mapped out as life plans, and strongly associated with them. Policymakers and people promoting public transport alternatives have not addressed these issues, yet they are the central ones for car commuters (Mann *et al.* 2006).

References

- Albalante, D; Bel, G. *Shaping Urban Traffic through Congestion Charging: What Factors Shape Success or Failure?*, Research Institute of Applied Economics, University of Barcelona, Working Papers 2008/1.
- Bekken, J-T; Norheim, B. ‘Use of Toll Revenues and Investment in Oslo’, *Research in Transportation Economics* 19 (2007), 143-60.
- Bonnel, P; Chausse, A. ‘Urban Travel: Competition and Pricing’, *Transport Reviews* 4 (2000), 385-401.
- Cass, N; Shove, E; Urry, J, ‘Social Exclusion, Mobility and Access’, *Sociological Review* (2005).

- Clark, A. 'London companies learn to love congestion charge', *The Guardian*. London, February 16, 2004.
- Cretegnny, L; Springer, U; Suter, S. 'The Swiss Railway Investment Fund', *Research in Transportation Economics* 19 (2007), 189-215.
- Davies, B; Davis, E; Cook, K; Waters, E. 'Getting the Complete Picture: Combining Parental and Child Data to Identify the Barriers to Social Inclusion for Children Living in Low Socio-Economic Areas', *Child Care Health Development* 2 (2008), 214-222.
- Dobbs, L. 'Stuck in the Slow Lane: Reconceptualising the Links between Gender, Transport and Employment', *Gender, Work and Organisation* 2 (2007).
- Expert Group Summary, *The Stockholm Congestion Trial: What Happened?* At www.stockholmsforsoket.se/upload/Rapporter/Expert_group_summary_060621.pdf, accessed 10 7 08.
- Gaunt, M; Rye, T; Allen, S. 'Public Acceptability of Road User Charging: The Case of Edinburgh and the 2005 Referendum,' *Transport Reviews* 27 (2007), 85-102.
- Harrington, J; Friel, S; Thunhurst, C; Kirby, A; McElroy, B. 'Obesogenic Island: The Financial Burden of Private Transport on Low-Income Households', *Journal of Public Health* 1 (2008).
- Jones, A; Haynes, R; Sauerzapf, V; Crawford, S; Zhao, H; Forman, D. 'Travel Times to Health Care and Survival From Cancers in Northern England', *European Journal of Cancer* 44 (2008), 269-274.
- Kenyon, S; Lyons, G; Rafferty, J. 'Transport and Social Exclusion: Investigating the Possibility of Promoting Inclusion through Virtual Mobility', *Journal of Transport Geography* 10 (2002), 207-19.
- Laird, J; Nash, C; Shepherd, S. 'Cordon Charges and the Use of Revenue: A Case Study of Edinburgh', *Research in Transportation Economics* 19 (2007), 161-187.
- Langer, A; Winston, C. 'The effect of government highway spending on road users' congestion costs', *Journal of Urban Economics* 3 (2006).
- Leape, J. 'The London Congestion Charge', *Journal of Economic Perspectives* 4 (2006).
- Lucas, K; Grosvenor, T; Simpson, R. *Transport, The Environment and Social Exclusion* (Joseph Rowntree Foundation, York: 2001).
- Lyons, G. 'Transport and Society', *Transport Reviews* 4 (2004), 485-509.
- Mackie, P. 'The London congestion charge: A tentative economic appraisal. A comment on the paper by Prud'homme and Bocajero', *Transport Policy* 3 (2005).
- Mann, E; Abraham, C. 'The Role of Affect in UK Commuters' Travel Mode Choices: An Interpretative Phenomenological Analysis,' *British Journal of Psychology* 2 (2006), 155-176.
- Office of National Statistics. *Social Trends* 33 (2003).
- Palma, A. de; Lindsey, R; Proost; S. 'Synthesis of Case Study Results and Future Prospects', *Research in Transportation Economics* 19 (2007), 269-297.
- Parry, I. 'Comparing the efficiency of alternative policies for reducing traffic congestion', *Journal of Public Economics* 3 (2002).
- Quddus, M; Bell, M; Schmoeker, J-D; Fonzone, A. 'The impact of the congestion charge on the retail business in London: An econometric analysis', *Transport Policy* 5 (2007).
- Quddus, M; Carmel, B. 'The impact of the congestion charge on retail: the London Experience', *Journal of Transport Economics and Policy* (2007)
- Santos, G. 'Urban Congestion Charging: A Second-Best Alternative', *Journal of Transport Economics and Policy* 3 (2004a).
- 'Urban Road Pricing in the UK', *Research in Transportation Economics* 9 (2004b), 251-282.
- Santos, G; Bhakar, J. 'The impact of the London congestion charging scheme on the generalised cost of car commuters to the city of London from a value of travel time savings perspective', *Transport Policy* 1 (2006).
- Small, K. 'Road Pricing and Public Transport', *Research in Transportation Economics* 9 (2004), 133-158.
- Villele, S; Hardill, I. 'Spatial Peripheries, Social Peripheries: Reflections on the "Suburbs" of Paris', *International Journal of Sociology and Social Policy* 1-2 (2007), 51-64.

Wickham, J. 'Public Transport Systems: The Sinews of Urban Citizenship?', *European Societies* 1 (2006), 3-26.