

## **Journal of Research in transportation business and management**

### **Editorial for themed issue on 'Managing the business of cycling'**

#### **Introduction**

Cycling is receiving increased attention as a means of addressing urban transport problems. The fruits of the consistent work on developing cycling may be seen in a number of cities in developed and developing countries, such as Portland (USA), London (UK), Bogotá (Colombia), and Hangzhou (China). There is still a need to tackle the many challenges of providing and managing more efficient and effective transport systems that provide adequately for bicycle users.

The integration of cycling as a more frequently used mode for all types of trip purpose requires skills in a range of disciplines, including engineering for infrastructure design, as well as planning, ethics, the law, psychology, sociology and health. This themed Volume draws together current research and sets it in the context of the business and management of cycling. Three papers are concerned with public cycle hire schemes (Jennings, 2015; Ó Tuama, 2015 and Ricci, 2015). Van der Spek and Scheltema (2015) outline issues in relation to the design and management of parking and Schliwa et al. (2015) consider the nascent field of cycle logistics and its future potential.

This editorial sets these papers in the broader context of the subject matter concerned with managing cycling. Four themes are identified as follows: governance strategy and policy; management and operations; marketing; and integration of cycling with other modes.

#### **Governance, strategy and policy**

National government sets policy direction at the most aggregate level and directs a whole range of inputs and outcomes including, most importantly, funding. The standing of cycling has recently, for example changed quite dramatically in the UK with the announcement that the government supported an amendment to the Infrastructure Bill which allows the Secretary of State to set a Cycling and Walking Investment Strategy. The amendment now places cycling in the same bracket as larger scale investment in strategic roads and railways. While such legislation paves the way for funding streams, it remains clear that fiscal exigencies may still militate against appropriate funding levels.

This section reviews four areas of great significance in terms of management, at the national level, of the policy and legal environment in which cycling exists. It firstly discusses planning and its relationship with the environment and health. It then goes on to discuss the issues of liability in law and how the law is administered. Finally, it considers important issues in relation to the regulation of motor vehicles.

#### *Planning, the environment and health*

The fifth assessment report of the International Panel on Climate Change (IPCC, 2013) suggests that substantial and sustained reductions of greenhouse gas emissions are required to limit further climate change. It emphasises the need for immediate action because the evidence suggests it is extremely likely that the main cause of observed warming since the mid-20th century is human activity, and further greenhouse gas emissions will cause further changes in the climate system and

further warming. Managing a way forward for transport, which is heavily fossil fuel dependent, will require action in a whole range of related areas of international, national, regional and local policy and strategy. A significant and long term influence on travel comes from the way that cities and other areas are planned. Their form, and the nature of the infrastructure that is provided, will either assist in promoting, or help prevent, increased use of means of travel that are less carbon intensive.

Decision making in relation to infrastructure has generally been firmly guided by the outcomes of analyses of benefits versus cost. Davis (2014) summarises studies which estimate the benefits of investment in infrastructure for cycling in the UK and elsewhere and finds that the benefit to cost ratio is high, and these high benefits are created by savings resulting from positive health outcomes resulting from physical activity. Woodcock et al. (2009) use the term co-benefits for strategies that not only reduce carbon emissions but at the same time increase human exertion, which hence have a positive impact on health.

Davis and Parkin (2015) note the importance of land use planning as a mechanism that influences travel and suggest that the historical approach of engineering and adapting urban space for maximum flexibility of the motor car needs to be re-considered. The future requires that we manage urban form in a way that maximises the shorter term benefits to human health as well as the longer term benefits of the earth's climate 'health'.

### *The law*

Davies (1999, p 800) suggests that 'Law provides one of the great normative forces of social conduct.' In this sense the law acts as a controlling influence in the way that people manage themselves in relation to each other. Roads are a contested space, particularly in urban areas where there are competing demands amongst different types of user of the space.

One particular area of continuing contention is in relation to presumptions of liability after a collision has occurred. In the UK and the USA for example, after a collision, an adversely affected road user has to prove the liability of another road user in order to claim compensation. This is not the case in much of Western Europe where there is an assumption of liability placed on the user of the more damaging vehicle. The legal system which has developed generally across most of Western Europe is based on Roman jurisprudence and this developed the concept of 'no fault liability'. Such liability results because a person was in control of a potential source of danger to other people or their property, and not from a failure in diligence.

No fault liability, also called stricter or presumed liability, would not overturn the basic tenet of law that someone is innocent until proven guilty of negligence. Nor would it adversely affect a motor vehicle driver were a vulnerable road user proven negligent: but it does place the onus of responsibility for proof onto the driver of a motor vehicle rather than on the vulnerable user. It should also be noted that cyclists would be presumed liable in collisions with pedestrians.

Presumed liability overcomes the following problems: a vulnerable road user not being able to give evidence, particularly when there is a fatality; witnesses not being available, or, when they are available, being unreliable; limited investigation being undertaken by the police; and children being legally unaccountable. Some (CTC, 2015) argue that presumed liability helps to develop a culture of

mutual respect between road users is built up. Others (Hembrow, 2012) suggest that clauses in the law are far less important than appropriate infrastructure provision.

### *Application of the law*

The management of alleged offences within the public highway, particularly where they involve vulnerable road users, has long been a contentious issue in sentencing policy. Advocacy organisations often point to deficiencies in the legal framework, for example its lack of recognition that it is unacceptable to endanger or intimidate other road users, lack of rigour and accurate advice on descriptions of greater culpability (for example 'dangerous' driving) as opposed to lesser culpability (for example 'careless' driving, which carries lesser penalty). Suggestions include ending an assumption of lesser culpability where the outcome is a maiming or death, and that offending drivers should not be treated more leniently than those who kill or injure through non-traffic crime (CTC, 2015).

Even within an existing legal framework that may or may not be flawed, there is evidence that legal authorities charged with bringing road traffic related cases to court may not treat their management of the processes of prosecution with the same diligence as other types of crime. An inspection by the justice inspectorate in the UK found variation in equipment and training amongst the first police responders at a fatal road traffic incident, lack of up to date training, lack of a coherence in specialist services provided to prosecutors, lack uniformity in pre-charge decisions and the fact that in 58.3% of cases there was no continuity of prosecutor. The inspection recommends the prescription of minimum standards and a common model organisational structure for handling fatal road traffic incident cases (CJI, 2015).

### *Construction and use regulations and vehicle management*

The nature of heavy goods vehicles has been brought into question in recent times particularly in locations, such as London, where there is currently a high degree of mixed traffic in heavy volume and relatively high speed conditions. In 2013 there were 489 cyclists either killed or seriously injured in London (TfL, 2010). Heavy Goods Vehicles (HGVs) were disproportionately involved in fatal collisions with cyclists in the period 2010 to 2012, with 45% per cent of fatal collisions involving an HGV, despite such vehicles making up only 3.5% of motorised vehicle kilometres travelled in London. The collisions are typically associated with heavy goods vehicles turning left at junctions or moving to the left lane.

There have been moves, therefore, to manage the risk at source by improving the direct vision of lorry design to protect cyclists, pedestrians and other vulnerable road users. This was proposed in the revision to EU directive 96/53 on the Weights and Dimensions of trucks. Problems with the current lorry design include the following: inefficient aerodynamics; lack of direct vision at the front and side of the cab because of the poor shape; the high position of the cab; the current shape tending to knock cyclists and pedestrians over and into the path of the wheels; lack of impact absorption at the front.

The will of the European Union Parliament and the Commission is for new designs to be allowed by 2017/2018, which allows time for transposition into national laws. However, the European Council, has suggested new designs should be banned until at least 2023, which means they probably could

not enter the market until 2025-2028. There is, however, no logic in delaying implementation, because this prevents voluntary adoption of new cab designs by those manufacturers willing to act more quickly.

It is heartening, however, to realise that there are initiatives by those who currently own and operate trucks to manage their use of these vehicles more tightly in order to reduce risks to third parties. Delmonte et al. (2013) found in the UK and London in particular that, inter alia, road safety was not considered in the same way as health and safety on construction sites, and there was little understanding of the impact of construction activity on road safety. A resulting industry wide initiative (CLOCS, 2015) is being undertaken to improve safety through vehicle design, ensure road safety is recognised as being equal to health and safety on construction sites, and encourage wide adoption of best practice.

CLOCS Manager is the system developed to enable collisions and near misses to be logged and to capture road incident information in order to ascertain contributory factors, incident hotspots and trends. The CLOCS Manager system also allows construction clients to manage their contractors' compliance.

### **Management and operations**

Perhaps most obvious example of provision for cycling that requires direct management and operation is public bicycle hire schemes. After a discussion of cycle hire schemes, attention is turned to road space management and then bicycle parking management.

#### *Cycle hire schemes*

The growth in number and scale of public cycle hire schemes is a feature of the first decade of the twenty-first century. Their history can be traced to the 'White Bikes' of Copenhagen in 1965 (Beroud and Anaya, 2012) and through three generations of development they now typically encourage short period hire (through the pricing mechanism) and return to different self-service docking stations from where they were hired. Their characteristics therefore lend themselves to a multiplicity of urban journeys and can act as a replacement for car, bus or other public transport trips, or walking.

Ricci (2015) is concerned, however, that, despite their popularity, no bicycle sharing scheme has been fully and independently evaluated to understand its impacts, or the processes by which they have been introduced and by which users make their decisions to use the scheme. She asserts that there is a lack of clearly stated objectives about what schemes are meant to achieve, and evaluation that has taken place focusses on a limited range of outputs and outcomes. What is known though is that schemes appear to attract the same type of user: younger, more affluent and educated white employed males. The reason for use is often stated at its most bold (and also bland, but perhaps obvious) as being for 'convenience'. Exploring more deeply, attributes are widened to include time and cost savings and enjoyment. The barriers to wider uptake relate to such matters as lack of cycle infrastructure and road safety concerns. Depending on the country and the operating regime, other factors include the mandatory requirement to wear a helmet and overnight scheme closure.

Ricci found that schemes struggle with financial and socio-economic viability. Operators have to work hard to develop a core membership that regularly uses the scheme and they need to ensure a good volume of occasional or casual users. An assessment of the London scheme suggests a benefit

to cost ratio of 0.7. She concludes that the future of such schemes will rely on clear political, policy and public support for sustainable travel and cycling in particular.

Ó Tuama (2015) interestingly reveals that the Dublin public bicycle share scheme instigated a series of policy level processes and cascading effects, some of which were unforeseen and some of which fed back into other initiatives in the manner of an inter-connected system. He uses Multi-Level Perspective (MLP) theory (Geels, 2002) to examine societal transition resulting from a change in technology. As well as direct effects, Ó Tuama reports strong evidence that the scheme has re-shaped statutory plans concerned with reconfiguring public space away from private car use, and moderate evidence that engineering guidance has been refashioned. He also suggests that bicycle hire users are becoming conscious of the implications of car centred road layouts and the inconvenience they create for other road users. He suggests a broad convergence of interests between users, the bicycle industry and public bicycle providers.

Taking a similarly holistic view of bicycle sharing schemes, Jennings (2015) notes the aspirations of Cape Town to host such a scheme but notes that the business model depends on advertising revenue, automation, and credit card possession which are likely to exclude the poor. Many of the people who would most usefully benefit from the inclusion of bicycles in the transport mix on offer live a good distance from the city centre and may benefit from schemes not based in the centre of the urban area. The evidence suggests that lower technology systems fail, and it would be a difficult task in any event to introduce such a scheme in the inequitably distributed land use system inherited from the apartheid era, and this is set in a context where transport interventions from a policy point of view do need to assist in overcoming previous segregation policies. In the context of Cape Town, rather than a last-mile service, a public bike share scheme might be most effective as a first mile service to allow access to trunk public transport routes. It would need to be a publicly financed and staffed service based on long term rental and located in low income areas.

### *Road space management*

As already mentioned, urban space is contested. The public realm has always been used for movement as well as carrying out other functions, such as trading in markets. The technologies of the motor age have allowed for solutions that accommodate large volumes of motor traffic into the public realm. In the last fifty years of so new roads and routes have typically been constructed to attempt to provide for and at the same time ameliorate the effects of large volumes of motor traffic. These have taken the form of inner ring roads and relief roads, and, in addition, traffic regulation orders have been used to manage the pattern of movement around the network.

In London, the Roads Task Force (TfL, 2013) has been handling what may be thought of more as the 'emergent' issue of changes in the patterns of behaviour of people and an increasing recognition of the need to use streets and public places for the full range of purposes for which they might be used. To help guide design and management, they have developed nine categories of street which lie at different points on the axes of 'movement' and 'place' as defined in Manual for Streets (DfT, 2007).

Of importance in design for both cycling and walking networks is the ability for the users of these networks to be able to establish eye contact with others using the system. Such eye contact leads to human interaction and hence to human behaviour dominating the interaction. Such interactions, rather than rule based control mechanisms, will then pre-dominate. This approach contrasts with

the ever greater levels of control, for example by traffic signals, which has been the predominant trend in urban traffic management.

It is very important that the quality of provision for walkers and cyclists is not compromised and case studies are commonly used to provide guidance to designers (e.g. Danish Road Directorate, 2000). These bring the benefit of experience in the use of different solutions to the attention of a wide range of designers. The alternative is to ensure that users of guidance documents understand their purpose and recognise that they need at all times to exercise their professional skill and judgement, particularly on matters such as risk management.

Overall, it can be seen that the design approach for integration within the highway and public realm of walking networks and, separately, of networks for cycle traffic requires the designer to apply appropriately both engineering based design rules as well as a wider range of good design practice.

Arguably, most people in societies such as the UK and USA do not choose to drive a car simply because they like to drive. They drive because they live, and participate, in a society where car use is logical because of the predominance of the system of movement designed for cars. The predominance of this car-based system also explains why so few people cycle in the UK and USA. Many more people cycle in The Netherlands because the Dutch have installed better bicycle systems, which embed cycling as a routine, everyday practice. To embed other forms of travel such as public transport, or walking, or cycling more comprehensively across the globe, would require area wide systems as comprehensive and well-constructed as car-based systems.

### *Parking management*

Van der Spek and Scheltema (2015) recognise the considerable management issues in relation to the parking of bicycles when it is a mass mode, as in The Netherlands. With some other cities increasing their use of the bicycle, in some cases quite rapidly, the problem can become acute very quickly. Bicycle parking has some rather different and more specific requirements than parking cars. Firstly, and most importantly, it is necessary to locate parking as close to the destination as possible. This is because the bicycle is a vehicle which can penetrate very easily right into the heart of a city, and has advantages in terms of speed over walking. The other factor is longevity of stay and quality and security of provision: longer term parking requires more secure facilities which are also better protected from the elements. Van der Spek and Scheltema investigate the interesting issue of re-using existing buildings to design new space for cycle parking.

### **Marketing**

Transport management might traditionally be thought of as the actions in marshalling people and resources to provide public transport services such as buses and trains. The business of such provision is high pressure and time dependent. A train arriving late may mean a missed connection and unhappy customers. Smooth operational management is therefore key.

A further important function of any management is the marketing of products and services. This has historically not been a high priority for public transport operators (perhaps with the very artistic and noble exception of London Underground). The assumption might have been that their market is captive, or that there is effectively a monopoly in terms of choice. With the seeming unassailable growth of motor traffic, the view might have been one of resignation.

The management of transport, however, can and should be seen at the higher level of a conurbation rather than just at the level of the management of individual operations or fleets. The question then becomes a question of understanding, what customers would like from transport provision. The task would then be to offer services that meet that need. At the population level, and when it is primarily focussed on attempting to positively influence choice towards socially and environmentally beneficial means of transport, such marketing is termed 'social marketing' (Andreasen 2006).

Tapp and Parkin (2015) note that social marketing approaches are likely to use a stages of change model (for example the Trans-Theoretical Model of behaviour change, Prochaska and DiClemente 1983) and report the approach taken in Bristol to attract more people to cycling. Initial research of the target audience is required, followed by target setting and the development of strategies. These strategies will require a range of actions including additional infrastructure provision and also other activities including training, awareness raising and actions to enhance a positive shift in perceptions towards the mode. It is important not to lose sight of the fact that different people will be motivated in different ways and hence any marketing needs to be carefully targeted. As well as communications such as advertising and leaflets, there may be activities that could include cycling 'buddy' systems, low-cost maintenance schemes and motivational incentive schemes. The overall aim is to build a positively framed brand around the use of the bicycle.

### **Integration of cycling with other modes**

Perhaps the first integration linkage that is considered when integration is discussed is integration between bicycle and rail, with rail typically being the longer leg and the bicycle being used for the home to station access journey. A further type of integration though exists in the logistics sector, and this is discussed after bike-rail integration.

#### *Bike-rail integration*

Evidence provided by Sherwin et al. (2011) suggests that integration of bicycle and rail trips can help reduce carbon emissions and car dependence, but more needs to be done to maximise opportunities for travellers. While 40% cycle to the station in The Netherlands, only 2% do so in the UK. In a survey in the South West of England, existing users were found to be predominantly male (71%) and in their thirties, and this is despite 44% suggesting they had a car available for these journeys. It was evident that a lot of forward planning was need to successfully complete a journey involving both modes and Sherwin et al. (2011) noted that this activity was happening despite a lack of appropriate facilities.

Rietveld (2000a) noted from Dutch data that while overall bicycle mode share was 28% in 1994, 35% used the bicycle to access the train at the home end of the journey and only 10% used a bicycle at the destination end of the journey. Speaking as a practical Dutchman, he suggested the situation could be rectified by providing more secure cycle parking at the destination end of a journey for a second bicycle, or providing a hire scheme, or better facilities for carrying bicycles on trains.

He also notes that an adjustment needs to be made to national mode share data to account for multi-modal trips and suggests that, based on Dutch data from 1997 this represents an increase from 1.05 to 1.09 trips by bicycle per person per day (Rietveld, 2000b).

#### *Cycle logistics*

The logistics industry is beginning to find value in the use of the bicycle for last mile delivery. Schliwa et al. (2015) present a review of cycle logistics and primary data on the state of cycle logistics in the United Kingdom. They recognise the potential for further expansion of cycle logistics, but there is a need for cycle logistics operators to work with global logistics companies, otherwise such logistics will remain a niche market for delivery the supplies of local producers to local consumers. Last mile delivery is the most expensive part of logistics and the costs of van delivery can be more than offset by cycle delivery, even with the need for urban consolidation centres. Schliwa et al. (2015) note that, to be successful, a better understanding of the nature of cycle logistics services is required and they suggest this can be gleaned from a specific language and typologies that they develop. In addition they note the need for physical infrastructure, infrastructure relating to matters such as telecommunications and routing, and finally bicycle equipment. A final remaining structural barrier may be the difficulty seen by some of the large logistics companies in sharing a local cycle logistics supplier.

### **Concluding remarks and future research**

Cycling is often 'sold' as a mode of transport which is unfettered by the constraints of a timetable, and has the ability to make the user 'free' and 'stress free', feel part of a better world. The reality may often be different to that for many, but it is clear that if these are the aspirations they are potentially averse to being 'managed'. This themed issue of the journal has, however, identified a number of important areas where the either the public realm, or the provision of the bicycle itself, needs to be carefully managed in order to create an environment in which it is feasible and indeed enjoyable to cycle.

There remain however, areas where further understanding is required. Handy et al. (2014) provide a very helpful review of future research needs in relation to cycling. Their list of research topics includes issues relating to: cycling use to journey distance; access to infrastructure, including shops and repair facilities; the effect of bicycle availability on use; the effect of the nature of the bicycle and its equipment; costs of cycling; socio-demographic factors; influences of the social environment.

They also point to three methodological difficulties as follows: interaction effects (where the effect size is mediated by other independent variables); understanding the direction of an effect (for example, whether people pre-disposed to cycling move to live in an area which is good for cycling, or whether an area designed to be good for cycling encourages cycle use more generally); and the effects of households, neighbourhoods and cities on choices.

More specifically in relation to the management of cycling, and based on the review presented in this editorial, the following appear to remain fruitful areas for further research:

- The law. To what extent does the letter of the law and the degree of its application affect behaviour in relation to cycling?
- Fleet management. To what extent does more active management of fleets of large and heavy goods vehicles positively influence conditions on the public highway in relation to safety?
- Cycle hire. How might cycle hire schemes become more attractive to a wider clientele and what part do they play within an overall 'bicycle system'?



- Road space management. What is the appropriate balance between tightly defined management and control on the one hand, and on the other hand less control which requires appropriate human interaction and behaviour?
- Marketing. To what extent can even the most sophisticated social marketing help create a larger proportion of the population that may be minded to use the bicycle as a journey option?
- Logistics. What infrastructure and management approaches are required to help cycle logistics develop further?

While cycling is, as noted, receiving increased attention, its latent potential to provide solutions to urban traffic management problems will not be fully realised without greater knowledge and understanding.

## References

Andreasen, R.A. (2006). Social marketing in the 21st century. London: Sage Publications

Beroud, B. and Anaya, E. (2012) Private interventions in a public service: an analysis of public bicycle schemes. In: Parkin, J. (Ed.) *Cycling and Sustainability*. Bingley: Emerald. Chapter 12.

CLOCS (2015) Construction logistics and cyclists safety. <http://www.clocs.org.uk/> [Accessed 7<sup>th</sup> May 2015]

Criminal Justice Joint Inspectorate (2015) *Joint inspection of the investigation and prosecution of fatal road traffic incidents*. Her Majesty's Crown Prosecution Service Inspectorate and Her Majesty's Inspectorate of Constabulary. Available at <http://www.justiceinspectors.gov.uk/cjji/inspections/investigation-prosecution-fatal-road-traffic-incidents/> [Accessed 6<sup>th</sup> February 2015]

CTC (2014) *Bad driving and the justice system. The legal framework and sentencing policy*. Cyclists' Touring Club. Available at [http://www.ctc.org.uk/sites/default/files/file\\_public/legal-framework-sentencing4drv.pdf](http://www.ctc.org.uk/sites/default/files/file_public/legal-framework-sentencing4drv.pdf) [Accessed 6th February 2015]

CTC (2015) *Compensation for injured cyclists*. Cyclists' Touring Club. Available at <http://www.ctc.org.uk/campaigning/views-and-briefings/compensation-for-injured-cyclists-0> [Accessed 6th February 2015]

Danish Road Directorate (2000) Collection of cycle concepts. Danish Road Directorate, Copenhagen. ISBN 87-7923-034-2

Davies, N. (1999) *The Isles: a history*. Macmillan: London

Davis, A. (2014) *Claiming the Health Dividend: A summary and discussion of value for money estimates from studies of investment in walking and cycling*. Department for Transport: London. Available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/371096/claiming\\_the\\_health\\_dividend.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/371096/claiming_the_health_dividend.pdf) [Accessed 16th February 2015]

Davis, A. and Parkin, J. (2015) Active travel: its fall and rise. In: Barton, H., Thompson, S., Burgess, S. and Grant, M. (Eds.) *The Routledge Handbook of Planning for Health and Well-Being: shaping a sustainable and healthy future*. Abingdon: Taylor & Francis/Routledge. Chapter 18

Delmonte, E., Manning, J., Helman, S., Basacik, D., Scoons, J., Chappell, J., Stannard, J., Jones, M., Knight, I. (2013) Construction logistics and cyclist safety Technical report. Transport Research Laboratory PPR639. Transport Research Laboratory: Crowthorne. Available at <http://www.trl.co.uk/reports-publications/trl-reports/report/?reportid=6793> [Accessed 7<sup>th</sup> May 2015]

DfT (2007) Manual for Streets. Department for Transport: London Available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/341513/pdfmanforstreets.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/341513/pdfmanforstreets.pdf) [Accessed 18th February 2015]

Geels, F. W. (2002) Technological transitions as evolutionary reconfiguration processes: a multilevel perspective and a case-study. *Research Policy*, **31**, 1257-1274.

Handy, S., Van Wee, B., Kroesen, M. (2014) Promoting Cycling for Transport: Research Needs and Challenges. *Transport Reviews*, 34 (1) pp 4–24

Hembrow, D. (2012) *Campaign for Sustainable Safety, not Strict Liability*. Available at: <http://www.aviewfromthecyclepath.com/2012/01/campaign-for-sustainable-safety-not.html> [accessed 6th February 2015]

IPCC (2013) Working Group 1 contribution to the fifth assessment report of the Intergovernmental Panel on Climate Change. Available at [http://www.climatechange2013.org/images/report/WG1AR5\\_ALL\\_FINAL.pdf](http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf) [Accessed 18th February 2015]

Jennings, G. (2015) Finding our balance: considering the opportunities for public bicycle systems in Cape Town, South Africa. *Research in Transportation Business and Management* xx(xx) ppxx-xx.

Ó Tuama, D. (2015) Ripples through the city: understanding the processes set in motion through embedding a bike sharing scheme in a city. *Research in Transportation Business and Management* xx(xx) ppxx-xx.

Prochaska, J.O., DiClemente, C.C. (1983) Stages and processes of self-change of smoking: toward an integrative model of change. *Journal of Consulting Clinical Psychology* **51** (3) pp390–5.

Ricci, M. (2015) Bike Sharing: a review of evidence on impacts and processes of implementation and operation. *Research in Transportation Business and Management* xx(xx) ppxx-xx.

Rietveld, P. (2000a) The accessibility of railway stations: the role of the bicycle in The Netherlands. *Transportation Research*, Part D 5 pp71-75.

Rietveld, P. (2000b) Non-motorised modes in transport systems: a multi-modal chain perspective for The Netherlands. *Transportation Research*, Part D, 5 pp31-36.

Schliwa, G., Armitage, R., Aziz, S., Evans, J. Rhoades, J. (2015) Sustainable city logistics – Making cargo cycles viable for urban freight transport. *Research in Transportation Business and Management* xx(xx) ppxx-xx.

Sherwin, H., Parkhurst, G., Robbins, D., Walker, I. (2011) Practices and motivations of travellers making rail-cycle trips. *Proceedings of the Institution of Civil Engineers: Transport* 164 (TR3) pp 189-197

Tapp, A. and Parkin, J. and (forthcoming) Cycling and behaviour change. In: Gericke, R. and Parkin, J. (Eds.) *Cycling futures: from research into practice*. Ashgate, Farnham.

Transport for London (2014) Cycle Safety Action Plan. Available at <http://www.tfl.gov.uk/cdn/static/cms/documents/cycle-safety-action-plan.pdf> [Accessed 6<sup>th</sup> February 2015]

Transport for London (2013) *The vision and direction for London's streets and roads*. Transport for London: London. Available at <https://www.tfl.gov.uk/corporate/about-tfl/how-we-work/planning-for-the-future/roads-task-force> [Accessed on 18th February 2015]

Van der Spek, S. and Scheltema, N. (2015) Management of Bike parking: Where can I leave my bike? *Research in Transportation Business and Management* xx(xx) ppxx-xx.

Woodcock, J., Edwards, P., Tonne, C., Armstrong, B.G., Ashiru, O., Banister, D., Beevers, S., Chalabi, Z., Chowdhury, Z., Cohen, A., Franco, O.H., Haines, A., Hickman, R., Lindsay, G., Mittal, I., Mohan, D., Tiwari, G., Woodward, A., Roberts, I. (2009) Public health benefits of strategies to reduce greenhouse-gas emissions: urban land transport. *The Lancet* **374** (9705) 1930 – 1943.