Common Misconceptions of Active Travel Investment

A Review of the Evidence

LCWIP Strategic Support

July 2019

Table of contents

1 Introduction

This research was carried out by the Sustrans Research & Monitoring unit between July and December 2018, on behalf of the Department for Transport (DfT) as part of strategic support provided under the Local Cycling and Walking Infrastructure Plan (LCWIP) programme.

A set of nine common myths about cycling and car infrastructure were agreed between the DfT and Sustrans for examination through this piece of research. Sustrans reviewed available evidence that is both in opposition to and in each myth. The purpose of this report is to enable a communications campaign to publicise evidence dispelling these nine commonly believed myths, and to support local authorities to make the case for increased investment in active travel infrastructure by providing robust information that can be used to influence stakeholders.

Sustrans carried out a desk-based review of appropriate government and academic sources to identify evidence relevant to each myth. Potential sources of evidence were quality assessed and only the strongest sources were included in this study.

Table 1: Quality assessment criteria

Quality assessment	Source	Location	Evidence type	Timeline
Best quality	National			

Myth 1: There is no public support for investment in cycling infrastructure

Myth	Busted
There is no public support for investment in cycling infrastructure.	75% of people would like to see more money spent on cycling in their city. The types of infrastructure people would find most useful are segregated on-road tracks (64%) and traffic-free cycling routes (60%). No study showing that the public do not support investment in cycling infrastructure has been found.

Evidence

There is good quality evidence provided by the Bike Life survey that there is public support for investment in cycling, particularly for infrastructure that separates bicycles from other traffic and pedestrians. These results are supported by a 2017/18 government statistic in Northern Ireland, the Continuous Household Survey, showing that people are more dissatisfied with the provision for cycling than any other form of transport. High quality evidence from a survey of 400 cycling stakeholders in England shows that lack of funding and lack of political leadership are far greater perceived barriers to investment than public opposition.

Bike Life is an assessment of city cycling development including infrastructure, travel behaviour, satisfaction, the impact of cycling, and new initiatives with data collected from seven UK cities between May to July 2017. The seven cities include Belfast, Birmingham, Bristol, Cardiff, Edinburgh, Greater Manchester and Newcastle. A telephone survey[1] interviewed a representative sample[2] of 1,100 respondents aged 16 and above in each of the seven cities, with interview quotas set within each city in terms of age, gender, ethnicity, work status and population spread[3]. This was to ensure the representativeness of the core sample. The dataset provides a representative understanding of attitudes f7it62erms of a-12e6-12( )-25BT1l2Tm[(i)5(nt,)-14( )-254(a)9.56 695. im sion poentollected f379.61 6(

Table 2 Bike Life 2017: How useful, if at all, would any of the following be to help you start cycling/cycle more? (Source: Sustrans, 2017)

Usefulness	More bus lanes that you can also cycle in (%)	More cycle lanes, painted on the road with a white line (%)	More cycle tracks along roadsides but physically separated from traffic and from pedestrians by kerbs or something similar (%)	More pavements shared with pedestrians you can legally cycle on (%)	More traffic free cycle routes away from roads through parks or along canals and former

Table 3 CHS 2017/18 result: Why are you not satisfied with the current situation for cycling and cyclists in your local area at present? (Source: NISRA, 2018)

Response	All respondents (%)
No cycle lanes	69
Too much traffic	42
Traffic goes too fast	41
Personal safety - I don't feel safe cycling	34
Roads are too narrow	

interactions and potential contribution to traffic conditions and congestion highlights a general lack of understanding in this area, and one which in the absence of strong numeric evidence will also be poorly represented in traffic models' (Bradley, 2017).

In support of this latter statement, recent research into planning frameworks for urban space shows that it is possible to maximise space for bikes while maintaining the same level of service for cars but that it is not necessarily general practice (Burke & Scott, 2016).

Closing streets can lead to traffic evaporation, which is defined as a decrease in car traffic due to change in travel mode or reduced travel demand overall. A study looking at nearly sixty locations where road space had been reallocated from cars to other uses found these resulted in significant reductions in the total amount of traffic on the networks (Cairns *et al*, 1998). In these case studies, a behavioural response to the road space reallocation caused traffic evaporation as individuals make adjustments to their travel behaviour, causing large changes in traffic flows. The impact varies according to the scheme, with 14-25% of traffic not observed to be displaced onto neighbouring streets, as is commonly assumed.

There are multiple case studies from industrialised cities showing that changing car space to bicycle space does not adversely affect car travel times, and can improve them. There are only isolated examples of increased journey times for motorised traffic, and these were on specific routes that are

Myth 3: Removing car parking spaces will harm the local economy

Myth	Busted
Removing car parking spaces will harm the local economy.	Retailers overestimate how many of their customers travel by car by a factor of 100%. Per square metre, cycle parking delivers five-times higher retail spend than the same area of car parking. Converting car parking spaces to seating and planting to improve 'place' impact can contribute to regeneration and improvement in retail performance. Removal of car parking spaces from a shopping street in Seattle was followed by a 400% increase in retail sales.

Evidence

There is some evidence from peer-reviewed papers, reviews, and meta-analysis with studies that review multiple locations. Studies in Toronto, Graz and Bristol found that retailers overestimate how many of their customers travel by car by around double. One study found only a weak relationship between parking and retail vitality. In combination with appropriate case studies, there is a consistent message of either no negative impact (or positive impact) on retail from removing car parking spaces.

Many of the subject areas were outside of the UK, and have been limited to cities in developed countries for this report. A limitation of the evidence is that it is largely focused on the high street context.

Retailers over-estimate the contribution of drivers to footfall. In Toronto they thought 25% of customers arrived by car whereas in fact it was only 10%. (Smith Lea *et al*, 2017).The differences were 58% to compared to 32% in Graz, and 41% compared to 22% in Bristol (Sustrans, 2006). Many studies find those arriving to shop using sustainable modes of transport spend more per month than those who travelled by car (Clifton *et al*, 2013).

A review of the value of cycling for the Department for Transport found that per square metre, cycle parking delivers five-times higher retail spend than the same area of car parking (Rajé & Saffrey, 2016). The review drew on evidence from a study of a shopping strip within a suburb of Melbourne that combined evidence from a visitor intercept survey with mapping of uses of public space. Although people who drove a car spent more on average than those who rode a bike, the space efficiency of bicycles resulted in each square metre of space allocated to cars reaping AU$6 an hour in expenditure, compared to AU$31 per hour for space dedicated to cycle parking (Lee & March, 2010). A study of the City of Copenhagen (2013) found similar results. It estimated that eight bikes could be parked in one car parking space. One bicycle parking space potentially generated 4.5 times more retail revenue than one car parking space.

Parking doesn't have a clear impact on retail vitality (Marsden, 2006), seemingly holding low importance in determining a shopper's choice of place to shop. Drivers seem most likely to trade off price, convenience and duration of parking and express a willingness to change mode where this is available, before seeking an alternate shopping location. However, in situations where several other more important factors are similar between a town/city centre retail offering and an out of town/city

retail offering, removing parking in the town/city centre could lead shoppers to using out of town/city option, dis-benefiting local businesses.

A meta-analysis of over twenty research studies of the impact of pedestrianisation and traffic calming on retailing in the UK and Germany concludes that such measures generally have a positive impact (Hass-Klau, 2014). Car parking availability and price do not seem to impact on shop vacancy rates,

Myth 4: Closing streets to cars will harm the local economy

Myth	Busted

A Berlin Research Institute of Trade survey of 1,800 business that had introduced pedestrianized areas in 11 German towns between 1967 and 1970 showed that eight years after pedestrianisation business turnover had outperformed non-pedestrianised areas. Retail and restaurants saw the greatest benefit, and hotels less so. The methodology was robust including a counterfactual comparison of performance (Lane, 2001). The same study showed that business costs increased faster in pedestrianised than non-pedestrianised areas, which could also indicate a healthier economy in the latter. Businesses in pedestrianised areas had a greater percentage of businesses reporting an increase in profits than non-pedestrianised areas, and slightly fewer reporting a decrease in profits.

Retailers in towns and cities in England in 1989 indicated that on the whole their trade had increased as a result of pedestrianisation measures that created more space for the pedestrian and a more attractive streetscape (described in Lane, 2001). Pedestrianisation of shopping areas in the UK and Germany have had similar outcomes on retailing. There is generally a positive effect for those shops inside the pedestrianised area, and for landlords who are able to increase rent. The more ambitious schemes tend to have the most positive benefits. However, there can be a transition period of 1-2 years (Hass-Klau, 1993).

The Hague

In 2009 the Hague in the Netherlands closed part of the city centre to motorised traffic and reallocated space to walking and cycling. Following implementation the areas saw a lower increase in retail property vacancies and lower fall in the number of passers-by than in comparator cities during a period of recession. Rent prices rose faster than elsewhere. (Tiemens and Molenaar, 2014).

Myth 5: Our streets are too narrow to accommodate cycle lanes

Myth	Busted
Our streets are too narrow to accommodate separated cycle infrastructure.	Design decisions should reflect the characteristics of particular streets. Many streets can accommodate high quality cycling infrastructure by removing car parking, or making streets one-way to motorised traffic. On narrow streets, reducing traffic volume and speed can mean no special infrastructure is required.

Evidence

The evidence here is from Transport for London's cycling infrastructure design standards and guidance, and focuses on solutions for when streets are too narrow to accommodate separated cycle infrastructure. In these cases,

space from the footway to accommodate cycling infrastructure. A user hierarchy is commonly applied when designing streets with pedestrians at the top, to be considered first in any road design, followed by cyclists (Department for Transport, 2007).

Similarly, providing shared use space for walking and cycling will rarely provide high quality infrastructure for either cyclists or pedestrians. Shared space does not involve a specific set of features or street layout, but typically involves reduced separation between people and vehicles in a way that seeks to reduce vehicle dominance and promote equality between motorised transport and people walking and cycling (Scottish Government, 2010; Department for Transport, 2007). Combined use of a space by people and vehicles is not suitable for all spaces. Shared space schemes without appropriate traffic restraint and speed-reducing measures can increase danger and exclude vulnerable groups (Scottish Government, 2010), making a space less accessible and less supportive of people walking and cycling.

Myth 6: Cycling is not safe

Myth	Busted
Cycling is not safe.	The safety of cycling is determined by the conditions in which people have to cycle. Most cyclist casualties (77%) occur on 30 mph roads, which is a strong argument for reducing traffic speeds where people want to cycle. Cycling is not inherently unsafe. This is demonstrated by the difference in fatality and injury rates between Denmark where 17% of all trips are made by bicycle, and 9 out of 10 Danes own a bicycle and the UK. Denmark's cyclist fatality rate is half that of Great Britain. High quality cycling infrastructure is vital to reduce road dangers for people cycling, and improve the perception of safety to attract more people (and types of people) to cycle.

Evidence

Cycling is not an inherently unsafe activity. Casualty rates from Great Britain data under Stats 19 provide an objective measure of actual cyclist safety; per mile travelled pedestrians are more likely to suffer a fatality than cyclists, although cyclists' risk of injury is three times higher. The risk for both fatalities and casualties is higher for motorcyclists. The safety of cycling in the UK is determined by road conditions. Both actual and perceived safety levels are improved by investment in high quality infrastructure, shown by Canadian studies in Toronto and Vancouver and the UK Bike Life survey.

In terms of actual risk, per mile travelled pedestrians are more likely to suffer a fatality than pedal cyclists. However, pedal cyclists' risk of injury is three times higher than pedestrians'. The casualty and fatality rate for motorcyclists is higher than that of both pedestrians and pedal cyclists. Pedal cyclist fatalities have fallen by 30% since 2006 (although in the same time frame, car occupant fatalities have fallen by 49%, and pedestrian by 34%) (DfT, 2018). Most cyclist casualties (77%) occur on 30 mph roads (ibid.), which is a strong argument for reducing traffic speeds where people want to cycle. There is a clear reduction in cycling injury rates on 20 mph roads compared to 30 mph roads, and there is a relationship between motor traffic volumes and cycling injury risk, suggesting that reducing motor traffic volumes would reduce pedal cyclist injury risk (Aldred *et al,* 2018) as well as benefitting other vulnerable road users.

Table 5 Casualty and fatality rates per billion passenger miles by road user type: GB, 2017 (Reproduced from ñReported road casualties in Great Britain: 2016 annual reportòDepartment for Transport, 2018)

Road User Group		Fatality rate (per billion passenger miles)	Casualty rate (per billion passenger miles)
Vulnerable road users	Pedestrians	35.6	1,801
	Cyclists	30.9	5,604
	Motorcyclists	116.9	6,043
Car occupants		1.9	238

High quality cycle provision, like protected or segregated cycle lanes, help to make cycling safe. In Toronto and Vancouver, protected bike lanes with physical barriers separating cyclists from other traffic had one ninth the risk of cyclist injury compared to streets with parked cars and no specific cycle infrastructure. Bike lanes on major streets with no parked cars, and off-street bike paths had near

Table 6 CHS 2017/18 result: Which of the following options, discourage you from cycling short journeys of up to 3 miles/5kms? (Source: NISRA, 2018). Top 10 reasons only, full table available from NISRA.

Response	All respondents (%)
Don't own / have access to a bicycle	54
Too much traffic / too dangerous	27
Motorists driving without consideration of cyclists	21
Bad weather	19
Lack of cycle lanes / poor cycling infrastru.22 o.rrle	

Myth 7: Investing in road building always makes the most economic sense

Myth	Busted
Investing in road building always makes the most economic sense.	There are published ex post evaluations of active travel schemes that show better value for money than road schemes. Road projects produce returns of £3 to £5 for every £1 spent. Walking and cycling schemes produce returns of £4 to £19 for every £1 spent.

Evidence

Ex post evaluations[7] of road schemes claim to demonstrate that schemes have met their economic aims, but a review by Sloman (2017) investigates these studies further and refutes this. There are published ex post evaluations of active travel schemes that show better value for money than road schemes.

Impact evaluation of transport schemes is often poor quality. However, a meta-analysis of good quality evaluations concluded that in general, transport can have a positive impact on the local economy, although the role of transport in stimulating growth is not as clear-cut as assumed by many decision makers as the impact depends on the size of the local population and whether the project is urban, suburban or rural (WWCLEG, 2015). There is some evidence that road schemes can positively impact local employment (but the effects are not always positive and a majority of evaluations show no (or mixed) effects on employment) (WWCLEG, 2015). Road projects may increase new business entry, but this does not necessarily increase the overall number of businesses since new arrivals may displace existing firms (WWCLEG, 2015). Road projects tend to have a positive effect on property prices, but the effects depend on distance to the road and can vary over time (WWCLEG, 2015). There is some evidence that road projects have positive effects on wages/income (one study) and productivity (two studies) (WWCLEG, 2015).

The economic growth (local and national) argument

the evidence in this section only applies to Highways England roads on the Strategic Road Network, not local roads that local authorities directly invest in.

Post Opening Project Evaluation (POPE) studies are undertaken by Highways England for all major schemes at one and five years after o

Myth 8: 3HRSOHGRQ¶WVXSSRUWURDGVSDFHUHDOORFDWLRQWRELFFOHV

Myth	Busted
People don't support road space reallocation to bicycles.	78% of residents in UK cities support building more protected roadside cycle lanes, even when this could mean less space for other road traffic.

Evidence

There is good quality evidence provided by the Bike Life survey that there is public support for reallocation of road space for cycle infrastructure. The Bike Life results are supported by a 2018 survey of urban Canadians, carried out by an independent research institute, in a representative randomised sample who said that separated bike lanes are a good thing, and that there are too few where they live.

Bike Life is an assessment of city cycling development including infrastructure, travel behaviour, satisfaction, the impact of cycling, and new initiatives with data collected from seven UK cities between May to July 2017. The seven cities include Belfast, Birmingham, Bristol, Cardiff, Edinburgh, Greater Manchester and Newcastle. A telephone survey[21] interviewed a representative sample[22] of 1,100 respondents aged 16 and above in each of the seven cities, with interview quotas set within each city in terms of age, gender, ethnicity, work status and population spread[23]. This was to ensure the representativeness of the core sample. The dataset provides a representative understanding of attitudes towards cycling across the seven cities, with all analysis weighted[24] using mid-year population estimates from the 2011 Census.

When asked about the creation of more roadside cycle lanes, the unweighted[25] result across the cities showed 78% in support (tend to support and strongly support). Some 15% opposed (tend to oppose and strongly oppose). Of those people in the seven cities who do not ride a bike, 74% of people were in support which shows that it is not only people who ride bikes that would like the segregated infrastructure.

Table 9 Bike Life 2017: To what extent do you support or oppose the creation of more roadside cycle lanes? These are physically separated from traffic and pedestrians by kerbs or something similar, and can mean less room for other road traffic? (Source: Sustrans, 2017)

	Support (%)	Strongly support (%)	Tend to support (%)	Neither support or oppose (%)	Tend to oppose (%)	Strongly oppose (%)	Oppose (%)	RQ¶W know (%)
All 7 Bike Life cities	78	42	36	5	8	7	15	2

A 2018 survey of urban Canadians conducted by the Angus Reid Institute showed that 65% of those surveyed thought separated bike lanes were a good thing. 64% of car drivers and 85% of cyclists

[21] All interviews were conducted by telephone using random digit dialling combined with quotas (see footnote 2). The sample included an 85% landline / 15% mobile split. Average interview length was 15 minutes.
[22] Interview quotas were set within each city in terms of age, gender, ethnicity, work status and population spread (by local authority in Manchester, District Electoral Area in Belfast and ward in the other 5 cities).
[23] Population spread was set by local authority in Manchester, District Electoral Area in Belfast and ward in the other five cities.
[24] Four different weighting schemes were utilised in this project. All of the below weights were calculated using ONS statistics from the 2011 Census on age, gender, ethnicity, work status, and population spread by ward or local authority within each city.
[25] Each city's data was weighted to be representative of the city. The unweighted average of these was used to refer to all cities.

Myth 9: Cycling infrastructure is expensive

Myth	Busted
Cycling infrastructure is expensive.	High specification cycling schemes cost £1.3 million per kilometre on average. Road schemes cost around £50 million per kilometre. The HS2 rail scheme is predicted to cost £77 million per kilometre. As well as relatively low capital outlay compared to other types of transport investment, cycling and walking schemes have high benefit to cost ratios making them better value for money.

Evidence

There is evidence from construction schemes that high specification cycling schemes cost considerably less per kilometre than road schemes.
Improvements to cycling and walking infrastructure involve low capital outlay compared to other types of transport scheme improvement

Table 12 Costs per kilometre and cost of a scheme for transport infrastructure projects (Sources are foot noted)

Scheme[26]	Cost (£ million) per scheme	km	Cost per kilometre (£ million)
Cycling / Cycling and Walking			
Cycle Superhighway (CCAG)[27]			average 1.30
Mixed strategic cycle route (CCAG)[27]			average 0.67
Resurfacing (CCAG)[27]			average 0.17
Community Links / Linking Communities[28655]			

2 References

References are listed in the order they appear in the text.

Myth 1

Sustrans (2017) “Bike Life 2017 Summary Report”

https://www.sustrans.org.uk/bikelife [accessed 31 July 2018]

In addition, a full breakdown of results was supplied by Sustrans.

Myth 4 (continued)

Sinnett, D., Williams, K., Chatterjee, K. and Cavill, N. (2011) “Making the case for investment in the walking environment: A review of the evidence. Technical Report” Living Streets, London.

https://www.livingstreets.org.uk/media/1394/2011-making-the-case-full-report.pdf [accessed 20 August 2018]

Social Research Associates (SRA) (2012) “Railton Road, Herne Hill: Step Out in London After Project Survey Report”, prepared for Living Streets

http://www.hernehill.org.uk/sites/default/files/u41/Herne%20Hill%20After%20Report%20Oct%202012%20compressed.pdf [accessed 1 October 2018]

Tiemens, H. and Molenaar, I. (2014) “Impact assessment of the Hague traffic circulation plan 2011” Dutch Cycling Embassy.

http://modellingonthemove.org/wp-content/uploads/2014/01/Herbert_The_Hague.pdf [accessed 20 August 2018]

Myth 5

Department for Transport

Myth 6 (continued)

Aldred, R., Goodman, A., Gulliver, J., Woodcock, J. (2018) “Cycling injury risk in London: A case-control study exploring the impact of cycle volumes, motor vehicle volumes, and road characteristics including speed limits” Accident Analysis and Prevention, 117: pp.75-84.

http://researchonline.lshtm.ac.uk/4647399/1/Cycling-injury-risk-in-London.pdf [accessed 11 September 2018]

Teschke, K., Harris, M. A., Reynolds, C. C., Winters, M., Babul, S., Chipman, M., Cusimano, M. D., Brubacher, J. R., Hunte, G., Friedman, S. M., Monro, M., Shen, H., Vernich, L., Cripton, P. A. (2012) “Route infrastructure and the risk of injuries to bicyclists: a case-crossover study” American Journal of Public Health, December 2012, Vol 102, No. 12.

https://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2012.300762 [accessed 22 August 2018]

Cripton, P. A., Shen, H., Brubacher J.R, et al. (2015) “Severity of urban cycling injuries and the relationship with personal, trip, route and crash characteristics: analyses using four severity metrics” BMJ Open 2015; 5:e006654.

https://bmjopen.bmj.com/content/5/1/e006654 [accessed 22 August 2018]

New York City Department of Transport (NYCDOT) (2013) “Making streets safer”.

http://www.nyc.gov/html/dot/downloads/pdf/dot-making-safer-streets.pdf [accessed 11 September 2018]

Sustrans (2017) “Bike Life 2017 Summary Report”

https://www.sustrans.org.uk/sites/default/files/file_content_type/bike-life-2017-summary-report.pdf [accessed 22 August 2018]

Monsere, C., Dill, J., McNeil, N., Clifton, K., Foster, N., Goddard, T., Berkow, M., Gilpin, J., Voros, K., van Hengel, D., Parks, J. (2014) “Lessons form the Green Lanes: Evaluating Protected Bike Lanes in the U.S.” Produced for the National Institute for Transportation & Communities

https://ppms.trec.pdx.edu/media/project_files/NITC-RR-583_ProtectedLanes_FinalReport.pdf [accessed 31 July 2018]

Sustrans (2017) “Bike Life - Women: Reducing the gender gap”

https://www.sustrans.org.uk/bikelifewomen [accessed 11 September 2018]

Transport for London (TfL) (2018) “Cycling Action Plan”

http://content.tfl.gov.uk/cycling-action-plan.pdf [accessed 31 May 2019]

Greater London Assembly (GLA) (2019) “Mayor of London confirms doubling of protected cycle routes”

https://www.london.gov.uk/press-releases/mayoral/mayor-confirms-doubling-of-protected-cycle-routes

Department of Transport and Main Roads (2011) “Benefits of inclusion of active transport in infrastructure projects