OPEN ACCESS

University of BRISTOL

Williams, D., Chatterton, T., Parkhurst, G., & Spotswood, F. (2019). An assessment of Voluntary Travel Behaviour Change delivery in England as an alternative to highway construction. *Case Studies on Transport Policy*, *7*(2), 318-329. https://doi.org/10.1016/j.cstp.2019.02.009

Publisher's PDF, also known as Version of record

License (if available):
CC BY

Link to published version (if available):
10.1016/j.cstp.2019.02.009

Link to publication record in Explore Bristol Research
PDF-document

This is the final published version of the article (version of record). It first appeared online via Elsevier at https://www.sciencedirect.com/science/article/pii/S2213624X1730264X?via%3Dihub. Please refer to any applicable terms of use of the publisher.

University of Bristol - Explore Bristol Research

General rights

This document is made available in accordance with publisher policies. Please cite only the published version using the reference above. Full terms of use are available:
http://www.bristol.ac.uk/red/research-policy/pure/user-guides/ebr-terms/

Case Studies on Transport Policy xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Case Studies on Transport Policy

journal homepage: www.elsevier.com/locate/cstp

An assessment of Voluntary Travel Behaviour Change delivery in England as an alternative to highway construction

David G. Williams[a,*,1], Tim Chatterton[a], Graham Parkhurst[a], Fiona Spotswood[b]

[a] University of the West of England, UK
[b] University of Bristol, UK

ARTICLE INFO

Keywords:
Behaviour Change
VTBC
LSTF
Choice
Induced traffic

ABSTRACT

There is a growing body of international evidence available that shows highway construction fails to solve issues of congestion and improvements to the local economy. There is also evidence that due to changes of land use and expectations of being able to travel from the land opened for development that traffic is induced to the highway network. Alternative methods of managing travel demand; such has Voluntary Travel Behaviour Change (VTBC) initiatives have been delivered internationally. A significant VTBC scheme, called the Local Sustainable Transport Fund (LSTF), was delivered in the United Kingdom between 2011 and 2015. This paper focuses on the people who delivered these initiatives, rather than the individuals required to change their behaviour. This is to understand how transport planners' views influence the type of VTBC initiatives that were delivered. The study included a survey of 69 bid managers for LSTF projects and interviews with 17 council officers. The survey found that 80% transport planning officers understood the concept of induced traffic compared to just 10% of the wider population. It was also evident that the sample group was a homogenous group, where their views on issues such as climate change, congestion and the factors that influence how we travel were remarkably similar. The findings show that despite the evidence that highway construction does not provide a solution to travel demand, the decisions about which schemes are funded remain with non-transport experts, such as government ministers and local politicians, and this invariably leads to highway 'solutions' being chosen which limit the potential success of any VTBC initiative to create long-term change to travel behaviour.

1. Introduction

Traffic congestion remains a contributory factor in the rise in sedentary lifestyles (Frank et al., 2004), illnesses associated with poor air quality (Defra, 2010) and reduces employment growth within cities (Hymel, 2009). Mitigating and removing these issues is a worldwide challenge. Internationally constructing new highway infrastructure remains a popular means of attempting to solve traffic congestion. This is despite the problematic issues associated with this approach having been known for decades. For example, in the UK, the influential 1963 report *Traffic in Towns* made reference to observations from the USA that: *"Freeways 'never solve the problem' because they become congested as fast as they are built"* (Buchanan et al., 1963).

Furthermore, the issue of urban sprawl and low-density auto-oriented development has remained an issue in the USA that has yet to be resolved, as this type of development induces traffic to the highway network mitigating any benefits provided by the highway construction (Litman and Colman, 2001; Handy, 2005). The problem of induced traffic has also been identified in the UK (Goodwin, 1996), Australia (Litman, 2017), Denmark (Næss et al., 2012) and in Germany (Gorham, 2009) as well as the USA, and in all cases the recommendations relate to a focus on investing in alternative modes of travel as effective long-term solutions.

In order to tackle city traffic congestion, Voluntary Travel Behaviour Change (VTBC) schemes have been delivered in Europe, Australia and North America since the 1990s, with varying degrees of success (Brög et al., 2009). VTBC schemes are designed to provide a range of alternative, or 'soft' measures (compared to 'hard' infrastructure measures), such as personalised travel planning and cycle training, to enable people travel by alternative means than by car.

The objective of this paper is to focus on the views of transport officers responsible for the delivery of VTBC in the England, with specific reference to the Local Sustainable Transport Fund (LSTF), which is discussed in more detail in Section 2.5. The LSTF was a large-scale

* Corresponding author.
E-mail address: seagulldave@hotmail.com (D.G. Williams).
[1] University of the West of England, Frenchay Campus, Coldharbour Lane, Bristol BS16 1QY, United Kingdom.

https://doi.org/10.1016/j.cstp.2019.02.009
Received 7 September 2017; Received in revised form 13 August 2018; Accepted 17 February 2019
2213-624X/ © 2019 World Conference on Transport Research Society. Published by Elsevier Ltd. This is an open access article under the CC BY license (http://creativecommons.org/licenses/BY/4.0/).

ARTICLE IN PRESS

VTBC scheme that ran in England (excluding London) between 2011 and 2015. The LSTF provided £560 m of central government funding, to be matched by local contributions, with a 50:50 split of capital and revenue funding. This level of revenue funding was unprecedented within English transport planning. As such, the LSTF, in terms of the type and level of funding, is an international exemplar of VTBC schemes.

The aim of the research is to understand what impact the opinions of local authority officers, responsible for designing and delivering the LSTF, on transport and climate change issues had on the types of schemes delivered. The officers' understanding of these issues is important their views have a direct impact on the types of interventions designed provided influence and enable people to travel by alternative modes to the car. If council officers do not understand the challenges or the potential solutions to mitigate sedentary lifestyles and pollution then it is likely we will return to the same, highway infrastructure solutions of the past. The LSTF has provided these officers the opportunity to test alternative solutions and provide evidence that VTBC schemes should be part of the solution.

Following this section, Section 2 provide a literature review including an overview of the issues of highway construction from both a social and economic perspective, and an overview of VTBC delivery in England from the 1990s up to the delivery of the LSTF in 2011. Section 3 includes the methodology applied to this research. The findings are presented in Section 4, with these discussed in Section 5. Section 6 provides a conclusion of the findings and how these can be applied to the delivery of future VTBC schemes internationally.

2. Literature review

Despite the issues of providing additional highway capacity being understood within academic circles there has been a continued emphasis by governments worldwide to construct highways, this approach has been actively fought for many reasons over the past 60 years on social and economic grounds. VTBC provides a potential low-cost solution to the issues that new highway infrastructure can create.

2.1. Societal impacts of highway construction

In New York in the 1960s activist Jane Jacobs resisted plans for urban highways that would have led to the destruction of several districts and their associated communities within the city by successfully arguing that planning for automobiles was in: *"sheer disrespect for other city needs, uses and functions"* (Jacobs, 1961). During the same period, other protests occurred in San Francisco, Baltimore and Miami to challenge the development of new highways (Mohl, 2004).

In the UK, highway construction was challenged in the 1970s on environmental grounds by campaigners such as John Tyme and academic Dr John Adams, who was the founder of Friends of the Earth (Dudley and Richardson, 2000). Objections were made by Members of Parliament in the 1990s, whose constituencies would have been impacted by the new highway infrastructure (Walton 1996). Following the successful protests in the 1990s the UK entered a state of *"pragmatic multi-modalism"* (Shaw and Walton, 2001), with a relatively low level of spending on new highway infrastructure and the inclusion of sustainable transport infrastructure measures within local authority's Local Transport Plans.

Whilst the protests in the 1990s led to the reduction in quantity and scale of highways being constructed at that time, although in the UK there has since been a return to highway construction as a 'solution', this time to boosting the economy, with the UK Government committing £15bn to highway construction between 2015/16 and 2020/21 (DfT, 2014). This research is therefore designed to understand whether this high level of funding for highway schemes is supported by the transport experts at the local government level.

2.2. Economic impacts of highway construction

The recent findings of the Campaign for the Protection of Rural England's (CPRE) 2017 Report showed that highway construction fails to deliver the benefits that are expected by society (Sloman, Hopkinson and Taylor, 2017). The report concluded that from the 80 road building case studies in England reviewed in the study, in the majority of cases, the schemes had little or no impact on any of the key objectives predicted by the proposers of the schemes: *reducing congestion*, *improving journey times* and *improving the local economy*. Laird and Venables (2017) found that investment in transport infrastructure has both positive and negative impacts, but at present there is no suitable means to account for this within the existing planning system.

CPRE's 2017 Report supports the findings previously published in the UK from the 1994 The Standing Advisory Committee on Trunk Road Assessment's (SACTRA) report, which concluded that the construction of new highway infrastructure induces additional traffic to the network, mitigating any benefits provided by the new capacity (SACTRA, 1994). This effect is already being seen on the first stage of the Road Investment Strategy (RIS) spending. The capacity improvements to the M25 motorway around London have seen increases in traffic of between 10% and 26%, which the transport consultants said were *"unexpected"* (Foster, 2017), despite the existing international evidence pointing to the likelihood of induced demand occurring.

One of the main issues with highways schemes is that they often go significantly over budget, on average by around 20 per cent (Flyvbjerg, 2009). The UK's National Audit Office (NEO) highlights that the £11.4bn RIS is currently predicted to go seven percent over budget, costing an estimated £841 m more than initially proposed in 2015 (NAO, 2017). This is a problem internationally, where issues such as inaccurate travel and cost data at the ex-ante stage of development lead to cost overruns. Flyvbjerg (2009) found this to be the case in nine out of ten cases across five continents. There are several reasons why overspending occurs: risks are downplayed or ignored, there is a political need for the development to take place, or perhaps there is 'assumption drag', where assumptions in travel patterns continue to be applied after their validity is contradicted by the existing data (Flyvbjerg et al., 2014).

The lack of ex post evaluation for highway, or any transport scheme, was highlighted by Skamris and Flyvbjerg (1997), and remains an issue across the world, as this makes it difficult to ascertain whether transport infrastructure investments are meeting their desired outcomes. Everett et al. (2013) highlights the difficulty of observing the impacts of transport infrastructure on the economy, relying on estimated impacts. They conclude that: *"Transportation is a necessary but not sufficient input for long-term impacts contributing to overall economic growth"*, (*Ibid*, 2013). It is therefore difficult to know the true cost or impact of any highway scheme, as the accuracy of the forecasts has not improved over the past 30 years (Flyvbjerg et al., 2014), despite advancements in modelling and data availability.

The construction of highway infrastructure remains the prevailing 'solution' to traffic congestion worldwide despite evidence continuing to show that: new infrastructure induces demand to the network, the new infrastructure fails to reduce congestion or have a positive impact on the economy, as predicted by scheme promoters, and the majority of schemes coming in significantly over budget. In the past 60 years highway construction schemes have met with public resistance due to the, social, environmental and health impacts associated with both the construction and use of the highway network. So what alternative 'solutions' exist in tackling traffic congestion?

2.3. Alternative transport interventions (VTBC)

VTBC schemes provide an alternative means of tackling congestion and improving public health. However, the success of VTBC initiatives in changing behaviour has been difficult to assess due to the varying

nature of data capture for each of the schemes (Bonsall, 2009). This has made it difficult to prove the long-term benefits of such schemes to policy makers, as the outcomes do not fit with the economic modelling approach used by many governments to approve funding (Williams, 2014). In the UK, the Department for Transport uses *Cost Benefit Analyses* (CBAs) to assess the benefits that are likely to be achieved through investment in all types transport intervention. Shergold and Parkhurst (2016) highlight the main issue with CBAs is that they favour mobility solutions such as faster travel times and increases to the network capacity, rather than focusing on holistic sustainability and the benefits reduced levels of traffic provide to a city. Walking and cycling provide other benefits to a city, such as reduced pollution and wider health benefits that are not always effectively captured through the use of CBAs. These benefits and the creation of places for people rather than motorised vehicles link back to Jane Jacobs' argument in the 1960s, where the needs of mobility were given a greater weighting than all other requirements, as this still persists today.

In 2009 the European Commission established Sustainable Urban Mobility Plans (SUMPs) to establish a mechanism for demonstrating the effectiveness of VTBC schemes (Rudolph et al., 2015). SUMPs included a package of VTBC measures that could show their value for money and how they provided wider economic benefits. These benefits might be long-term, such as reduced costs to the health service due to increased active travel (Shergold and Parkhurst, 2016). An independent review of SUMPs across the European Union concluded that there was strong evidence of economic benefits for places that implemented: cycling infrastructure, new public transport systems, enhancements to existing public transport systems, parking management, cleaner vehicles, site-based travel plans and personalised travel plans (*Ibid*, 2016).

2.4. VTBC interventions in the UK

In the UK there is an extensive background of research into the benefits of delivering VTBC solutions that has been conducted since the early 1990s, as shown in Table 1. VTBC schemes are designed to reduce the number of car trips, particularly single-occupancy journeys. VTBC schemes were first discussed by (Goodwin et al. (1991) as they concluded that it was not possible to provide enough highway capacity to meet the levels of demand predicted in the 1989 White Paper for highway growth. Therefore, an alternative approach would be required to reduce this predicted level of demand. Goodwin et al. (1991) specifically queried whether people would change their behaviour and begin to travel by alternative means to the car, something that in the intervening years a suite of worldwide VTBC initiatives have sought to make happen. The aim of such interventions is to guide people away from single occupancy car use and towards the use of sustainable travel options, such as car sharing, public transport, walking and cycling.

In the early 2000s, the Department for Transport commissioned a report (Cairns et al., 2004) to investigate the benefits of delivering VTBC options that could be incorporated into Local Transport Plans. Cairns et al.'s (2004) report, concluded that funding VTBC schemes helped to influence people to travel by alternative means to their own car. The report also found that VTBC schemes both reduced the number of trips made and provided good value for money, (*Ibid*, 2004; see also Eddington (2006) for supporting evidence of CBR).

The UK Government commissioned the Sustainable Travel Towns programme (Sloman et al., 2010), which funded and then studied the impacts of behaviour change interventions delivered in three towns in England. The study concluded that the interventions reduced the number and distance of trips by car to trip rates in comparable towns in England during the period of study (*Ibid*, 2010). These findings provided evidence that VTBC schemes could provide a low-cost alternative to highway infrastructure schemes in terms of managing travel demand and therefore reducing congestion.

2.5. Local Sustainable Transport Fund

The findings of the Sustainable Travel Towns programme led to the UK government announcing a new transport funding stream in 2010 called the Local Sustainable Transport Fund (LSTF) for delivery of VTBC initiatives to be delivered between 2011 and 2015 across England (excluding London, which is subject to a separate regulatory and funding framework) in an attempt to reduce carbon emissions, whilst also boosting the UK economy (DfT, 2011a). The funds were allocated on a local authority competition basis, with the local authorities including match-funding commitments in their bids, leading overall to over £1bn of investment in VTBC schemes being committed over a four-year period. One of the unique things about this funding was that the government set aside equal amounts of capital funding, for investment in new sustainable transport infrastructure, and revenue funding to provide funding for staff, services and resources to help people travel by alternative means.

Local authorities were invited to bid for the LSTF funding in two tranches in 2011 and 2012. The funding applications were to propose a package of measures designed to enable people to travel by modes other than by alone by car. The DfT did not limit the number of measures that could be included, but did state that major rail, passenger transport, or road infrastructure enhancements would not be considered (DfT, 2011a). Local authorities were given a clear steer about intended package contents through a 2011 White Paper which identified four types of measure that the DfT foresaw being included (Table 2). The title of the document *"Cutting Carbon, Creating Growth: Making Sustainable Local Transportation Happen"* itself emphasised the central role within the policy discourse that the LSTF had been given to explicitly tackle the issues created by traffic congestion in terms of air quality and the economy. Moreover, it was notable that the white paper was not accompanied by an equivalent document for 'non-local' infrastructure, reflecting a lack of policy consensus within the government, a two-party coalition with some areas of sharp policy difference, about large-scale national projects such as airport expansion, high-speed rail major road network developments. Rather, local transport policy emerged as one of the cross-sectoral policy arenas on which the parties could demonstrate

Table 1
VTBC Schemes in England 1989–2015.

Year	White Paper/Report/Study	Overview
1989	White Paper *Roads to Prosperity* (UK Government)	Set out the UK's *"biggest road-building programme since the Romans"* (Sadler, 2006)
1991	*Transport the New Realism* (Goodwin et al., 1991)	Identified it was not possible to meet demand in 1989 White Paper and proposed alternative measures to meet/suppress demand
1996	White Paper *Roads to Prosperity*	Roads to Prosperity dropped as government policy
1997	*White Paper A New Deal for Transport: Better for Everyone* (DfT, 1997)	Focused on integration and efficient use of existing transport. Section 2 of the White Paper was titled: *Sustainable Transport* and included many of the objectives included in the LSTF
2004	*Smarter Choices: Changing the Way We Travel* (Cairns et al., 2004)	DfT funded report that concluded a CBR of 10:1 in terms of congestion relief for VTBC schemes compared to highway construction
2008–2010	*Sustainable Travel Towns* Programme (Sloman et al., 2010)	Behaviour change interventions delivered in three English towns. Study found interventions reduced the number and distance of car trips to comparable towns in England
2011–2015	*Local Sustainable Transport Fund* (LSTF)	£560 m Government funding pot to deliver VTBC schemes in England between 2011 and 2015

Table 2
Example of Package Measures that could be included in LSTF funding applications (DfT, 2011b: 9).

Encouraging Modal Shift By considering holistically the end-to-end journey experience and initiatives to improve integration between travel modes, for example better travel information, smart and integrated ticketing or personalised travel planning. Improving public transport and cycling and walking initiatives	**Managing Demands on the Network** Including the provision of park and ride facilities, car clubs and car sharing schemes and the development of freight consolidation centres
Better Traffic Management Incorporating more efficient signal times, junction improvements designating red routes, 20 mph zones, cycle lanes or quality bus corridors, pedestrian zones and better management of street works and incidents	**Improving Access and Mobility** Through work based and school travel plans, replacing short car journeys, cycling and walking, improvements in street design or the provision of facilities, community transport, demand responsive services and bringing services to communities

public agreement and policy delivery, thereby raising the profile of the LSTF above the mundane status with which local transport can often be viewed.

The approach of encouraging modal shift is based on individual choice, with the provision of alternatives to the single-occupancy car trips becoming available, such as the use of park and ride facilities for the 'last mile' of trips to and from the city centre. The DfT also encouraged local authorities to provide guidance to people on mode shift away from the private car through workplace and school travel plans. Finally, enhanced traffic management, including bus priority and cycling and walking infrastructure were possible options that could be implemented by local authorities to provide the practical means for behaviour change to occur.

One of the main criticisms of the modal shift approach in transport planning is that it is often based on assumptions of individual agency and choice (Marsden et al. 2014; Spotswood et al., 2015), whereas in a car-dependent context, where provision for the car is emphasised and social norms that favour private car use are extensively promoted, individual choice is at best heavily shaped. As such, car use will likely be 'chosen' despite the environmental and health benefits of alternative modes of travel. Shove (2010), leading the criticism of the possibilities for individual level behaviour change suggests that policy makers need to: *"shift the focus away from individual choice and to be explicit about the extent to which the state and other actors configure the fabric and texture of daily life"*. In the light of this growing critique, this paper contends that the role of national governments and local authorities in the design and delivery of transport infrastructure is central to an understanding of the system in which transport 'choices' are made.

The LSTF is of interest because the provision of both revenue and capital funding required a step change in the way local authorities provide sustainable transport initiatives. Most VTBC research focuses on the types of schemes delivered (Möser and Bamberg, 2008; Graham-Rowe et al., 2011) effectiveness of schemes to change the travel patterns of individual travellers (Sloman et al., 2010), whereas this paper reports research which focuses instead on the policy processes lying behind the VTBC initiative.

The LSTF funding was made available to local authorities within the context of wider cuts to their funding grant from central government between 2011 and 2015 (HM Treasury, 2015). This provision of funding, which in some cases was at significant levels, meant that the local authorities changed the existing transport planning officers' roles, or employed specialists, such as cycling experts, to deliver the schemes for the term of the funding agreement. These transport planning officers were responsible for the design of infrastructure, information provision and training programmes, and for delivering LSTF interventions. It is therefore important that their influence on the process is understood, as their decisions played an important role in whether a VTBC scheme was successfully funded. Although LSTF funds could not be spent on new highway capacity schemes for general traffic, the success (or not) of the LSTF, as the first national test-case for significant investment, provides a significant basis of evidence for the future debate into the effectiveness of VTBC schemes.

2.6. Contribution to knowledge

Transport planning officers within local authorities in the UK: *"play a vital link-making role between council members and central government fund holders"* (Vigar, 2002). Their role requires a special set of skills in terms of dealing with both local politics, national politics and the public, through ensuring that they are able to maximise the level of funding available and receive the support of elected members and the local community. Transport planning officers come from a number of academic backgrounds and this has varied over time. Initially the role was dominated by civil engineers, before there was an increase in economists in the industry in the late 1990s (Dudley and Richardson, 2000). In the 2000s there has been an increase in transport planning specialists drawn from a wider range of disciplinary backgrounds, 60 percent of which held master's degree (Clark and Lyons, 2012). The changing balance of training and experience in the profession was hypothesised to have increased the receptiveness of transport planning officers to the discourse of sustainable mobility and their capabilities to deliver effectively the LSTF.

This paper makes a significant contribution to the understanding of how policy priorities for transport behaviour change are shaped, particularly through the processes of local government. This analysis is concerned with the actors who designed and implemented the schemes; the key influencers on what was delivered in each local authority area. Thus, assuming the interventions were effective, these actors directly influenced the nature of citizens' travel behaviour changes and the ongoing socio-cultural framing of future transport decisions. (An ex post evaluation of the LSTF is available elsewhere (DfT, 2016). As such the paper bridges the existing gap in knowledge with regards to how council officers' views influence what VTBC schemes are delivered.

3. Methodology

The research was designed to gather data on transport planning officers' views relating to the transport planning system in which they work, as they play a significant role in the provision of infrastructure and services that influence how people travel. The Methodology Map, Fig. 1, provides an overview of the methods used to gather data for this research.

The sample group only included transport officers who were involved in delivering the LSTF. Although interviewing a wider range of professionals involved in the LSTF process may be considered desirable, and including analysis of every LSTF bid, it was decided rather to focus in considerable depth on a few case studies to gain appropriate, detailed insights within the project's scope.

Each of the local authorities involved in bidding for LSTF funding submitted an application to the UK Department for Transport in 2011, which was subsequently made publically available on each local authority's website. The sample of transport planning officers was therefore derived from the 'bid manager' detailed on each of the funding applications. Bid managers were usually senior members of the transport planning team, with many overseeing a wide range of transport interventions across the authority, from new infrastructure, maintenance of existing assets through to the management of local authority

ARTICLE IN PRESS

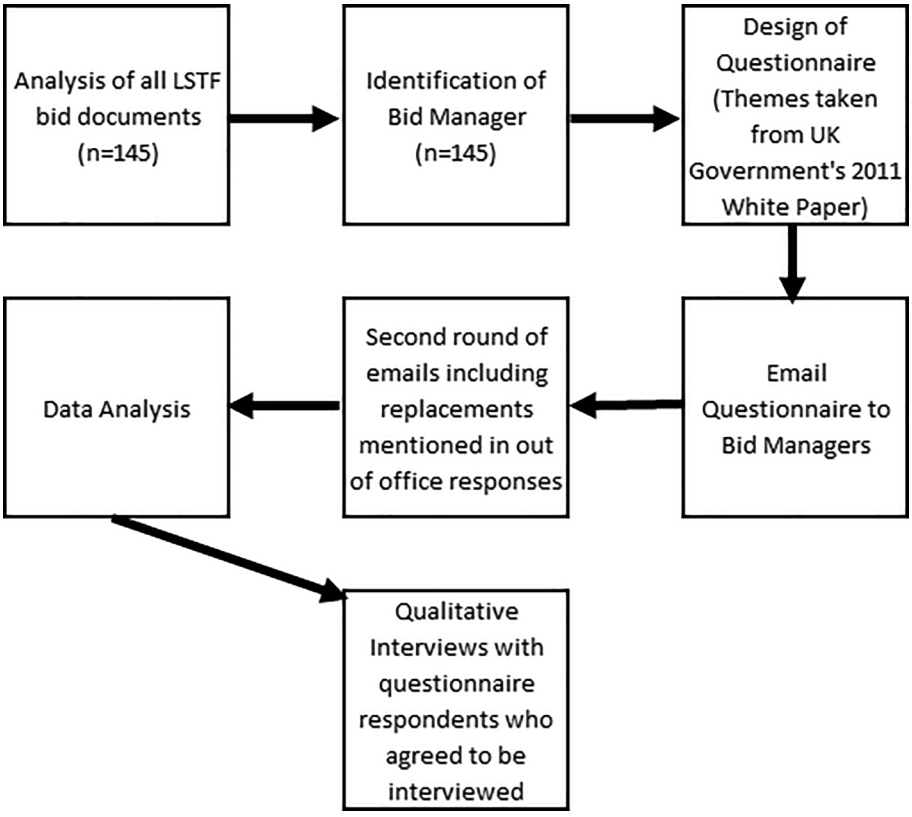

Fig. 1. Methodology Map.

funded bus services. This meant that they were experts in the industry.

The bid manager sample (n = 145) was emailed an invitation to complete an on-line self-completion survey in April/May 2013. Where these emails rebounded, or offered an alternative contact, a new email was sent to another relevant person within the transport planning department. In total, 165 unique emails were sent with 69 surveys completed, providing a response rate of 42 percent.

The online self-completion survey method was chosen to reduce the interviewer effect on the respondent (Bryman, 2008), and to make the survey quick and easy for each respondent to complete. The survey explored the respondents' views on general issues facing transport planning departments in local authorities. The themes within the survey included congestion, enabling travel and travel choices, traffic inducement, factors influencing choice of transport mode, and climate change. These themes were chosen for the survey as they were the objectives outlined in the 2011 White Paper (DfT, 2011a) as being the key issues within transport that the LSTF was designed to address (DfT, 2011a). A free text box at the end of the survey allowed the respondents to leave their details if they were willing to be contacted to complete an in depth, face to face qualitative interview. In total, 23 respondents left their contact details and of these 14 were interviewed. Three of these interviews involved interviewing two people at the same time, meaning that 17 local government planning officers were interviewed within this second stage of data collection. In total, 13 of the interviews were conducted face-to-face, with one taking place by telephone, due to significant travel disruption on the day of the interview preventing the meeting taking place.

Ethical approval for the study was obtained from the relevant University of the West of England, Bristol research ethics committee and standard good ethical practices of gaining participant consent were employed. Each respondent was provided full anonymity, despite the small pool of respondents. (All information in the responses that would link to their local area was removed from the final dataset).

4. Findings

Analyses from both the survey and follow up interviews have been included together within a findings summary to help clarify the key insights from the study. The transport officers interviewed within this research were responsible for managing the LSTF funding application and where therefore responsible for determining the VTBC initiatives included within the application. Their views of the transport system are therefore important as the LSTF schemes influence what travel options are available and therefore have direct influence on how people choose to travel. The respondents have other responsibilities when delivering transport schemes for their authorities and as such are experts within this sector.

4.1. Views on climate change

In order to gain a broader understanding of the context in which transport planning officers are developing interventions, the survey asked whether respondents believed that they had any influence on limiting climate change, both as individuals and through their roles as transport officers. These findings were then compared to the results of the Office for National Statistics' Opinions Survey 2011 (n = 827) to examine whether the respondents' views differed from those of the wider public in terms of agency in respect of climate change. Fig. 2 shows that the officers surveyed believed that they have more influence on reducing climate change in a professional capacity than they do as an individual. However, the perceived extent of their influence is limited, with the results, in Fig. 2, showing that whilst 20% of the public respondents believe that they have a 'large influence' on climate change, only 5% of council officers think this is the case. Moreover, when responding 'as a citizen', the officers were less optimistic than the general public, with citizens much more likely to perceive 'some influence' and officers much more likely to perceive 'little influence'. This suggests that officers view citizens as disempowered and climate

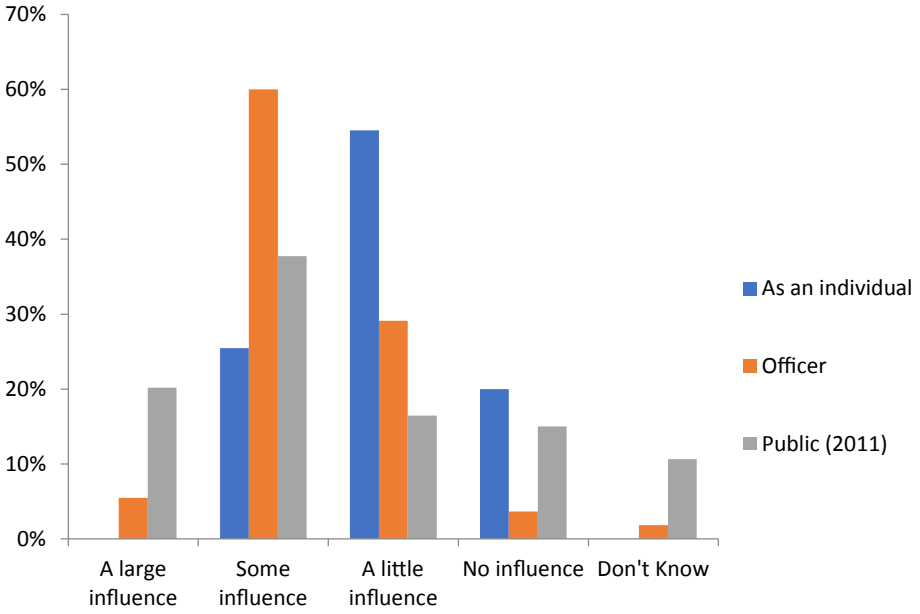

Fig. 2. Transport Officer and Public Perceptions of 'Influence on Climate Change'.

change mainly subject to 'greater forces' that citizens cannot influence.

The results in Fig. 2 also showed that all except three of the 54 respondents (2%) believed that they had at a least a little influence on climate change through their formal roles as transport officers. This is important, as Fig. 3 shows almost three quarters of the transport officers believed the effects of climate change to be real and present. When these findings are compared to the results of Spence et al.'s (2010) survey of public perceptions of climate change (N = 899), it is clear that a much higher proportion of officers believed that climate change is underway than the general public did in 2010 (officers 72%: public 41%). This is particularly pertinent, as Fig. 3 shows 41 out of the 55 respondents to a question about how climate change would influence travel choices believed that it would have either some impact (n = 31, 56%) or a major impact (n = 10, 19%), through disruption to existing travel patterns. This means that, for most local transport officers surveyed, the issue of combating climate change is a challenge that they will face during their careers as shown in Fig. 4.

In relation to the types of measures that should be considered to reduce the impacts of transport on the environment, Fig. 5 shows that transport planning officers strongly agreed that everyone should reduce their car use for the sake of the environment, compared to public respondents. In total, 88% of local authority officers either strongly agreed or tended to agree with this statement, compared to just 58% of the public. This shows that there is a difference between the views of people delivering sustainable transport initiatives and those expected to change their behaviour due to the VTBC schemes being delivered.

4.2. Opinions on transport issues

In addition to their opinions on climate change, local transport officers were asked about their views on a range of other transport issues that affected the performance of their roles. In relation to traffic congestion, Fig. 6 shows that over two thirds of officers (65%) saw congestion as a serious problem, whilst less than a third of citizens did (29.5%), with more than half of citizens dismissing congestion as a serious problem.

The respondents were also asked whether they believed that local government has a responsibility to enable people to travel. All bar one of the 56 respondents agreed with this statement. This is not a surprise: there is a statutory duty under the UK's Traffic Management Act 2004 to ensure the "expeditious movement of traffic on the authority's road network" (UK Government, 2004), where traffic includes all modes of

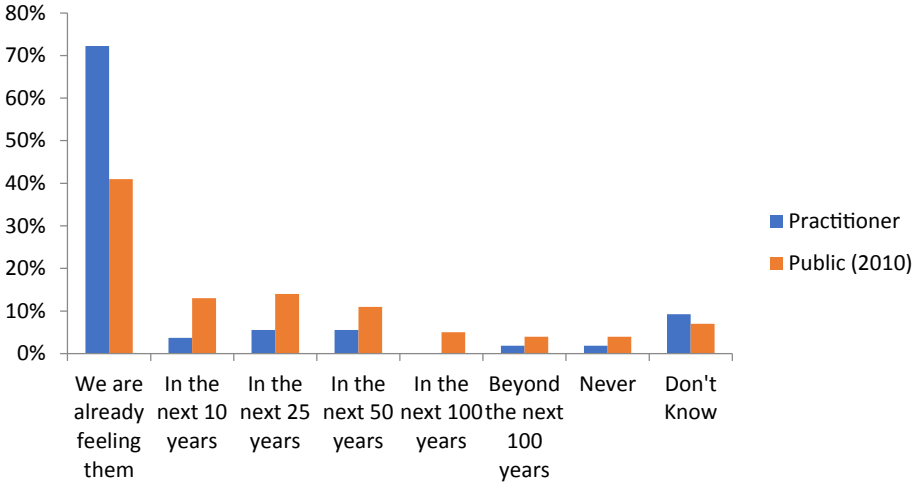

Fig. 3. Transport Officer and Public Perceptions of 'when we will feel the effects of Climate Change'.

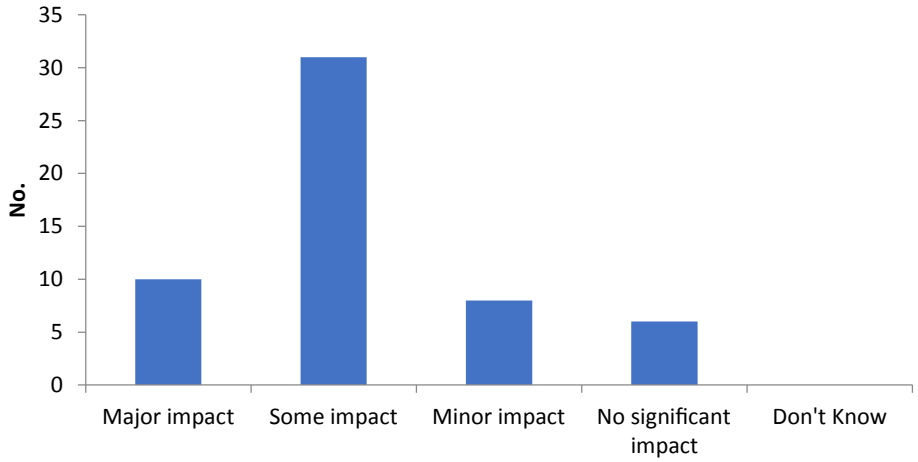

Fig. 4. Transport Officers response to the question: 'What impact Climate Change will have on the way people travel?'

travel. The respondents were asked whether this related to ensuring the travellers' existing mode of travel was protected, with just 11 out of 56 disagreeing with this statement. This suggests that the clear majority of respondents, although delivering VTBC schemes through the LSTF, still believed that local government had a responsibility to allow people to continue to travel by car if they still wished to so do. This despite, Fig. 6 showing that the majority believed that traffic congestion was a serious problem.

In relation to the long-understood issue of induced traffic, discussed in Section 1, Fig. 7 shows that 40% of transport planning officers strongly agreed (and 80% agreed to some extent) with the statement that building roads generates more traffic. In contrast, just 7% of the public respondents strongly agreed with this. This suggests that the research into building roads is accepted and understood at the transport planning officer level, although the significance of the message is not as widely understood or accepted by the wider public. This indicates a gap between public and practitioner perceptions about the best ways to reduce traffic congestion.

4.3. Factors that influence transport policy delivery

The respondents were asked to highlight the factors that had the most influence on their local authority's transport planning department. Respondents were asked to select their top three answers and then the most important factor. Table 3 shows the top six responses, indicating that local party politics was perceived as having the greatest influence on the transport system in each of the respondents' local authority areas. Local politics was closely followed by national government policy and the local transport authority itself, which is logical given that the local transport authority makes the key decisions throughout designing, constructing and maintaining transport provision. The role of public opinion on shaping transport policy was recognised by a moderate number of respondents. This suggests that the respondents believed that local authorities have a reasonable level of autonomy when it comes to interpreting government policies and delivering transport schemes.

At the time of study, England was undergoing a replacement of Regional Development Agencies (RDA) with Local Economic Partnerships (LEPs), the latter covering smaller groupings of local authorities than the RDAs working in partnership with commercial organisations. Significant public spending responsibilities, not least of which for transport investment, were subsequently extended to these LEPs, which include Local Transport Boards. At the time of the survey in 2013 the role of LEPs in practice was still emerging and being defined, but given their local significance it was important to consider the perceived impacts officers thought LEPs would have. Table 4 indicates that the respondents believed that although they would become an important fourth force influencing the funding of transport schemes, local politics, government policy and the local authorities themselves would continue to play a greater role in delivering transport initiatives.

Although the respondents to the survey highlighted the importance of local party politics and the local transport authority in influencing transport in the area, local authorities still needed to bid for funding from the government through funding streams such as the LSTF in order

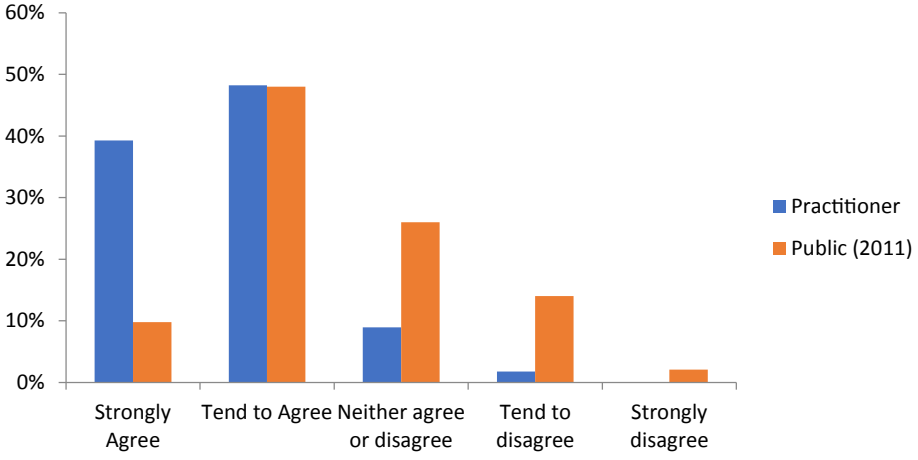

Fig. 5. Transport Officer and Public responses to the statement: 'everyone should reduce their car use for the sake of the environment'.

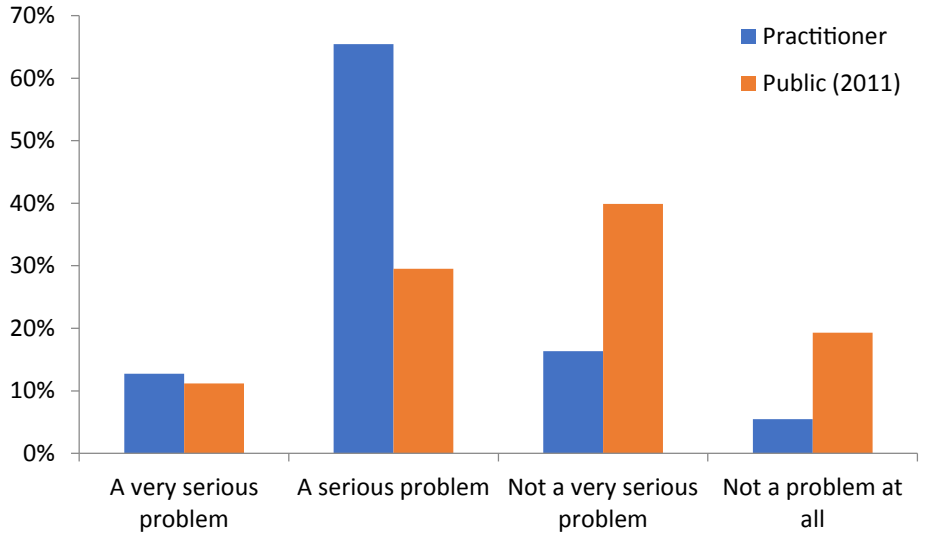

Fig. 6. Transport Officer and Public responses to the statement: 'congestion is a problem in the towns and cities of England'.

to allow them to deliver new transport initiatives. Several of the interviewees described this process as *'playing a game'* in terms of winning funding. Interviewee 1 described the support he received from local councillors to sustainable transport funding: *"In their hearts they might not be that in to it and more about roads, but they play the game"*. This was not the case in all authorities, with an interviewee describing that they had cross-party support for their LSTF bid and councillors were seeing the benefits to their voters of the schemes that were being delivered. Similarly, another interviewee highlighted the fact that councillors were actively asking for VTBC schemes to be delivered within their wards, having seen what had been successfully been delivered elsewhere in the authority area and being asked for something similar by their constituents.

These results show that respondents believe that local politics and the transport authority have a lot of power when it comes to delivering transport schemes, but this power is swayed by the level of funding they receive from the national government.

4.4. Respondent hierarchy effects

As part of the online survey, the respondents were asked for their job title, length of time working at their local authority and the length of time they had worked in the transport planning industry. This allowed for a comparison to be made of whether these factors were statistically significant in relation to their responses. A chi-square analysis was undertaken to how these factors influenced responses to the topics of climate change, transport officers' role, induced demand and congestion. For each chi-square test the hypothesis was that seniority, length of service and length of time in the industry all influence officer opinions on transport.

In total, 24 separate chi-square tests were completed to identify whether responses to each of the eight topic areas were influenced by the three criteria. In all except two cases, the null hypothesis was

Table 3
Factors that Influence Transport Planning in 2013.

Selection of top 3 factors (n:56)			Most Important Factor (n:56)		
Rank	Factor (Top 6)	Count	Rank	Factor (Top 6)	Count
1	Government Policy	42	1	Local Party Politics	16
2	Local Party Politics	35	=2	Government Policy	13
3	Local Transport Authority	31	=2	Local Transport Authority	13
4	Public Opinion	24	4	National Politics	3
=5	National Politics	13	=5	Local Media	2
=5	Local Media	13	=5	Public Opinion	2

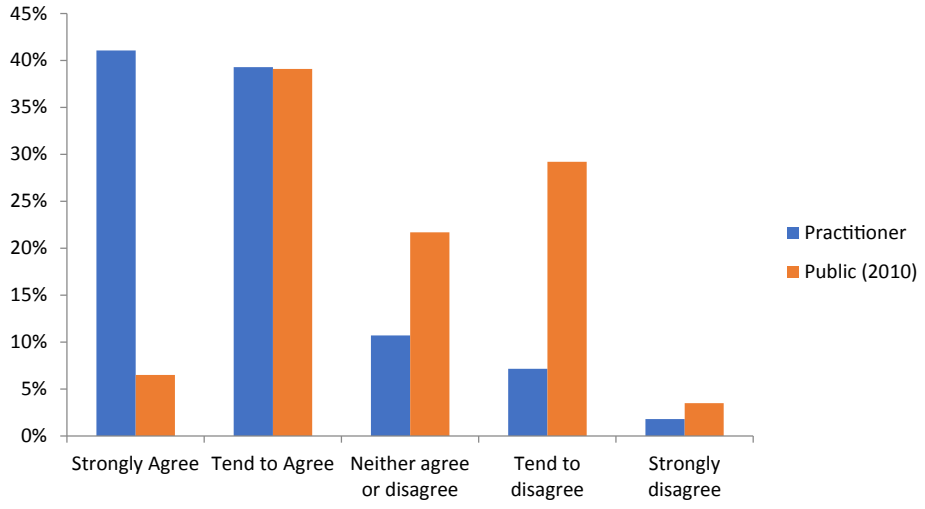

Fig. 7. Transport Officer and Public responses to the statement: 'building more roads encourages more traffic'.

ARTICLE IN PRESS

Table 4
Which factors have the biggest influence on transport in your area once Local Enterprise Partnerships are responsible for funding Transport schemes.

Selection of top 3 factors (n:56)			Most Important Factor (n:56)		
Rank	Factor (Top 6)	Count	Rank	Factor (Top 6)	Count
1	Local Transport Authority	30	1	Local Party Politics	17
=2	Government Policy	26	2	Government Policy	10
=2	Local Party Politics	26	3	Local Transport Authority	9
4	Local Enterprise Partnerships	23	4	Local Enterprise Partnerships	8
5	Public Opinion	11	5	Local Media	3
=6	Local Media	6	6	Funding/Economic Pressures	2
=6	Pressure Groups	6			
=6	National Politics	6			

accepted; that there was no respondent hierarchy effect. However, responses to the question of whether it was possible the UK could achieve an 80% reduction in Green House Gas (GHG) emissions by 2050 differed depending on the seniority of the respondent ($p = 0.023$), with officers who had been in the industry longer believing the target was possible. Respondents were also asked whether meeting the 2050 target was likely, with officers in senior roles being the most confident that this could be achieved ($p = 0.009$). The minimal variance indicates that the respondents were a relatively homogenous group in terms of their opinions on the issues facing the transport sector.

4.5. External Influences on the transport system

The respondents were asked "which factors prevented people from travelling sustainably", and were given a list of 13 specific options along with an open response box to nominate other factors. Within the "other" box, respondents provided another 10 factors which they believed might prevent people from travelling sustainably: *convenience, cost of public transport, lack of training, flexible working, habit, rurality, laziness, perception, public transport reliability and the weather*. The respondents were asked what they felt were the top three factors and the most important factor and these are shown in Figs. 8 and 9.

These results show that there is a wide range of factors that are perceived to prevent the uptake of sustainable travel (Fig. 8). Indeed, no one issue dominates and over half do not relate directly to the transport system. Family commitments, multi-trip journeys, the provision of public transport and highway network design were the only four to score over 10 percent and family commitments and multi-trip journeys sit outside the remit of local authorities.

5. Discussion

The findings show that transport officers engaged in the LSTF process understand the societal challenges related to transportation and their role in solving these issues. When the results of the survey are compared to the public responses to issues of climate change, driving less and induced traffic demand from the construction of new highways it is evident that a disconnect between what the academic literature says and what the transport officers believe, and how the general public view these issues. The message about the need to change how we travel is therefore getting lost between the experts and transport users.

VTBC schemes are based on helping to alter individual travel choices and it was interesting to note that transport officers felt that they had more influence on climate change in their professional capacity rather than the individual choices they made. Whilst this may be due to psychological process such as self-serving bias (Park and Crocker, 2013), it does call into question whether individual behaviour change initiatives are the best solution for changing how people travel. This is because the individual has little influence on the infrastructure available to travel. When this infrastructure is designed to promote travel by car, then this will remain the default for many people.

One-off funding streams such as the LSTF provide the opportunity to deliver alternatives to highway construction-based solutions. Delivering VTBC solutions can prove difficult without the financial support of national government, where other local priorities may take precedence. Local politicians will *'play the game'* in terms of supporting their authority's application for sustainable transport funding, but it is unlikely that they would consider moving money earmarked for highway improvements towards sustainable travel options. This is due to perceived voter pressure for highway solutions and the fact that funding is generally earmarked for capital expenditure on new infrastructure, rather than revenue expenditure on services or staff. Therefore, an important context is the views and priorities of powerful actors within the transport sector whose decisions shape the funding landscape that transport officers operate due to their control over policy and funding. The rise of bodies such as the LEPs were also identified as an additional level of bureaucracy that will have an influence on how highway funding is spent.

Each individual's decision of how to travel is made up of many different factors, and many of these sit outside the control of local authorities. Fig. 8 shows many of these factors are outside the control of

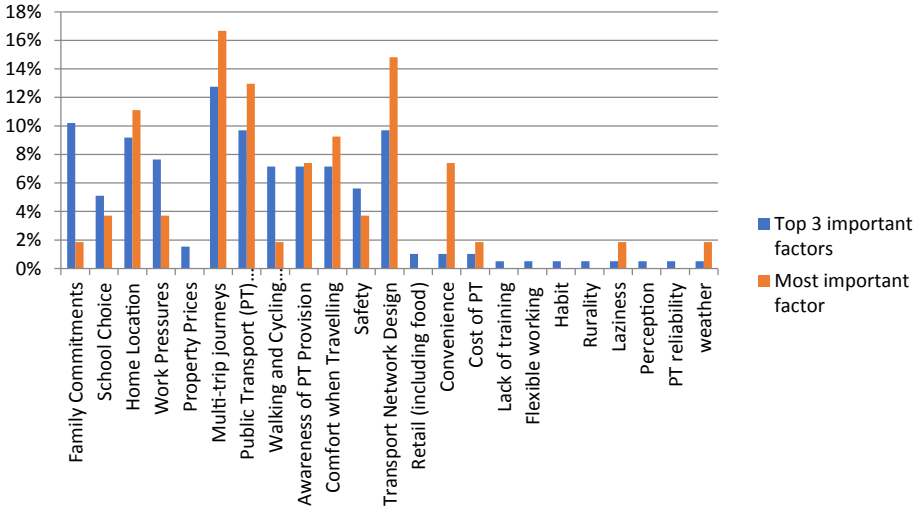

Fig. 8. Transport Officers' Views on the Factors that Reduce Sustainable Travel Uptake.

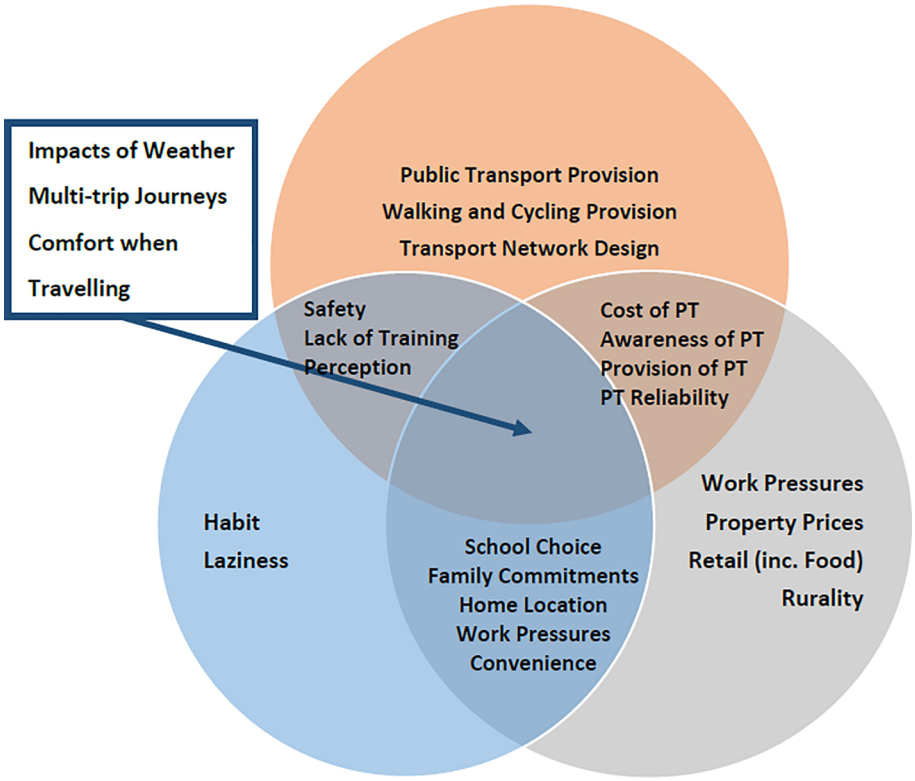

Fig. 9. Influences on the Factors Identified by Transport Officers that Reduce Sustainable Travel Uptake.

local authority transport officers but are seen as important in terms of how and why people travel in a certain way. Individual factors and societal expectations have a significant impact on how and why people choose to travel the way that they do.

Some factors sit between the spheres of influence. For example, in cases of ice formation or snow fall, local authorities can treat the roads and pavements to enable people to travel, but individual perceptions of safety and wider societal expectations of whether someone should travel in those conditions sit outside the control of the local authority. Similarly, local authorities can, when funding is available, subsidise bus services, but individual perceptions of cost, comfort, safety and reliability of public transport may be more difficult to change. Non-transport choices also influence how and why people travel, such as school choice, home location, who undertakes family commitments and work pressures and all of these factors sit outside local authority control but are important in influencing travel behaviour.

Initiatives, such as Personalised Travel Planning, delivered through the LSTF provide people with the skills to travel by alternative means, but do not force any change to occur. The whole concept of VTBC is that the change is voluntary, but this can be difficult when the majority of existing infrastructure is designed in favour of car use. The construction of new cycle paths, bus stop facilities and footpaths have all been shown to work through their construction in the LSTF programme (DfT, 2016), but there has been no continuation of national government support for their delivery following the cessation of LSTF funding in 2015. So, whilst travel alternatives and the skills to use them now exist in the areas that received funding, time pressures from family life and work will ultimately influence how someone is likely to travel. If the majority of funding available continues to be invested into highway infrastructure schemes this sends the message to wider society from the national government that this is the best way to travel, continuing the cycle of trying to build our way out of congestion.

The results of this study therefore concur with the findings of the European Commission's research into SUMPs (Shergold and Parkhurst, 2016) that demonstrated that future sustainable mobility strategies need to be multi-faceted focusing on the different aspects that influence how and why people travel. The results show that these types of solutions are understood by the transportation teams at local authorities, but these messages need to be distributed through the whole of the organisation's structure, including elected members, so that the implications of delivering highway infrastructure are understood, and that there are alternative measures that could address the problems travelling by car create.

6. Conclusion

The transport officers delivering the LSTF have demonstrated that they understand the benefits of alternative forms of transport and that future transport decisions may require people to drive less, rather than attempt to provide additional highway capacity to meet demand. It is also clear that transport officers understand that these issues cannot be solved by transport solutions alone.

The UK however, like the US, Australia, Denmark and Germany has seen the impacts of induced demand on congestion due to the continued focus on highway construction solutions being delivered. It is possible to infer that there is a breakdown in the system, where this knowledge does not appear to be transferred to non-experts. This breakdown is significant as non-experts hold political positions that influence how transportation funding is spent. These range from finance officers and local councillors at the local level through to civil servants and ministers at the national level. This breakdown has led to the continuation of auto-oriented developments and new highway or increased highway capacity schemes to be delivered despite the evidence that they do not provide the benefits promised.

The findings show that issues associate with transport, such as sedentary lifestyles and pollution require non-transport solutions as well as VTBC interventions. Whole system approaches to planning, transport and health are required to tackle issues associated with transport in England and these can also be applied internationally.

The results from European Commission and the UK's Department for

ARTICLE IN PRESS

Transport's 2016 report *LSTF: What works* have started to build an evidence base to demonstrate that providing alternative transport solutions but the results of these need to be understood by the public so that they influence their local politicians to make the change.

The contribution of this paper is therefore to highlight this breakdown in understanding induced demand in the UK and for future research to explore whether this breakdown in understanding occurs in other countries. By identifying this issue, it is possible to develop strategies to bring the concept of induced demand to the public's attention. Providing evidence of the success of VTBC alternatives at the same time as introducing the concept of induced demand to aid the transition to low carbon travel modes.

It is recommended that alternative measures to engage with the public and non-technical transport experts within the planning system are undertaken to demonstrate the economic, social and environmental benefits that VTBC schemes provide as an alternative to highway construction. This is a challenging but is essential measure if VTBC schemes are to be considered as part of the solution to deal with the impacts of transportation.

6.1. Limitations of the work

The limitations of this research are that the research only focuses on the views of council officers involved in the LSTF, rather than those involved in other areas of delivery, such as other areas of transport, finance, legal and the views of elected members. All these people are likely to influence the type of scheme delivered, although they will rely on the transport expertise of their own officers. It is also acknowledged that this is not an ex ante paper, reviewing the impact of the LSTF schemes on reducing car use.

Acknowledgements

The research reported here is based on Dr David Williams' PhD research delivered through the Disruption: the raw material for low carbon change project, funded under the RCUK Energy Programme, ESPRC Award No. EP/J00460X/1. We are grateful for the support from our project partners Jillian Anable, Iain Docherty, James Faulconbridge, Greg Marsden, Lesley Murray and Helen Roby, and to the reviewers for their comments.

References

Brög, W., Erl, E., Ker, I., Ryle, J., Wall, R., 2009. Evaluation of Voluntary Travel Behaviour Change: experience from three continents. Transp. Policy 16, 281–292.

Bonsall, P., 2009. Do we know whether personal travel planning really works? Transp. Policy 16, 306–314.

Bryman, A., 2008. Social Research Methods, third ed. Oxford University Press, Oxford.

Buchanan, C., Cooper, G., MacEwen, A., Crompton, D., Crow, G., Michell, G., Dallimore, D., Hills, P., Burton, D., 1963. Traffic in Towns: A study of the long term problems of traffic in urban areas, third ed. HMSO, London.

Cairns, S., Sloman, L., Newson, C., Anable, J., Kirkbride, A., Goodwin, P., 2004. Smarter Choices: Changing the Way We Travel. Department for Transport, London.

Clark, B., Lyons, G., 2012. Understanding Perceptions of the Transport Planning Professional Qualification. University of the West of England, Bristol.

Department for Environment, Food and Rural Affairs [Defra], 2010. Air Pollution: Action in a Changing Climate. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69340/pb13378-air-pollution.pdf. (Accessed 24 August 2017).

Department for Transport [DfT], 1997. A New Deal for Transport: Better for Everyone. Available from: http://webarchive.nationalarchives.gov.uk/+/http://www.dft.gov.uk/about/strategy/whitepapers/previous/anewdealfortransportbetterfo5695. (Accessed 06 April 2018).

Department for Transport [DfT], 2011a. Creating growth, cutting carbon: making sustainable local transport happen. Available from: https://www.gov.uk/government/publications/creatinggrowth-cutting-carbon-making-sustainable-local-transport-happen. (Accessed 11 October 2012).

Department for Transport [DfT], 2011b. Local Sustainable Transport Fund - Guidance on the Application Process. Available from: https://www.gov.uk/government/collections/localsustainable-transport-fund. (Accessed 18 October 2012).

Department for Transport [DfT], (2014e), Roads Investment Strategy – Overview. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/382808/dft-risoverview.pdf. (Accessed 10 August 2017).

Department for Transport, 2016. What Works? Learning from the Local Sustainable Transport Fund 2011-2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/584463/lstf-what-works-report.pdf. (Accessed 24 March 2017).

Dudley, G., Richardson, J., 2000. Why does Policy Change? Lessons from British Transport Policy 1945–99. Routledge, London.

Eddington, R., 2006. The Eddington Transport Study. The case for action: Sir Rod Eddington's advice to Government. HMSO, Norwich.

Everett, S., Xiong, Y., Sinha, K., Fricker, J., 2013. Ex post facto evaluation of indiana's highway investment program: lessons learnt. J. Transp. Res. Board 2345, 24–30. https://doi.org/10.3141/2345-04.

Flyvbjerg, B., 2009. Survival of the unfittest: why the worst infrastructure gets built – and what we can do about it. Oxford Rev. of Econ. Policy 25 (3), 344–367.

Flyvbjerg, B., Skamris Holm, M., Buhl, S., 2014. Show (In)accurate are Demand Forecasts in Public Works Projects? The case of transportation. J. Am. Plann. Assoc. https://doi.org/10.1080/01944360508976688.

Foster, A., 2017. Extra traffic prompts longer journey times on widened M25, Local Transport Today LTT719, 31 March – 12 April, p. 9.

Frank, L., Andresen, M., Schmid, T., 2004. Obesity relationships with community design, physical activity, and time spent in cars. Am. J. Preventative Med. 27 (2), 87–96.

Goodwin, P., Hallett, S., Kenny, F., Stokes, G., 1991. Transport: The New Realism. Transport Studies Unit, University of Oxford, Oxford.

Goodwin, P., 1996. Empirical evidence on induced traffic. Transportation 23, 35–54.

Gorham, R., 2009. Demystifying Induced Travel Demand. Bundesministerium für wirtschaftliche Zusammenabeit und Endwicklung (BMZ) [Federal Ministry for Economic Cooperation and Development]: Eschborn, Germany. Available from: http://www.cleanairinstitute.org/cops/bd/file/gdt/49-GTZ-SUT-TD-ITD10.pdf. (Accessed 20 March 2017).

Graham-Rowe, E., Skippon, S., Gardner, B., Abraham, C., 2011. Can we reduce car use and if so, how? A review of available evidence. Transp. Res. Part A 45, 401–418.

Handy, S., 2005. Smart growth and the transportation land use connection: what does the research tell us? Int. Reg. Sci. Rev. 28 (2), 146–167.

HM Treasury, 2015. Local government funding at the Spending Review 2015. Available from: https://www.gov.uk/government/news/local-government-funding-at-the-spending-review-2015. (Accessed 03 August 2017).

Hymel, K., 2009. Does traffic congestion reduce employment growth? J. Urban Econ. 65, 127–135.

Jacobs, J., 1961. The Death and Life of Great American Cities. Random House, New York.

Laird, J., Venables, A., 2017. Transport investment and economic performance: a framework for project appraisal. Transp. Policy 56, 1–11.

Litman, T., 2017. Generated Traffic and Induced Travel: Implications for Transport Planning. Victoria Transport Policy Institute, Australia. Available from: http://www.vtpi.org/gentraf.pdf. (Accessed 20 March 2017).

Litman, T., Colman, S., 2001. Generated traffic: implications for transport planning. Inst. Transp. Eng. J. 71 (4), 38–47.

Marsden, G., Mullen, C., Bache, I., Bartle, I., Flinders, M., 2014. Carbon reduction and travel behaviour: discourses, disputes and contradictions in governance. Transp. Policy 35, 71–78.

Mohl, R., 2004. Stop the road: freeway revolts in american cities. J. Urban History 30 (5), 674–706.

Möser, G., Bamberg, S., 2008. The effectiveness of soft transport policy measures: a critical assessment and meta-analysis of empirical evidence. J. Environ. Psychol. 28, 10–26.

Næss, P., Nicolaisen, M., Strand, A., 2012. Traffic Forecasts ignoring induced demand: a shaky fundament for cost-benefit analysis. Eur. J. Transp. Infrastruct. Res. 12 (3), 291–309.

National Audit office [NAO], 2017. Progress with the Road Investment Strategy. Available from: https://www.nao.org.uk/wp-content/uploads/2017/03/Progress-with-the-Road-Investment-Strategy.pdf. (Accessed 24 March 2017).

Park, K., Crocker, J., 2013. Pursuing self-esteem: implications of self-regulation and relationships. In: Zeigler-Hill, V. (Ed.), Self Esteem. Psychology Press, Hove, pp. 43–59.

Rudolph, F., Black, C., Glensor, K., Hüging, H., Lah, O., McGeever, J., Mingardo, G., Parkhurst, G., Plevnik, A., Shergold, I., Streng, M., 2015. Decision-Making in Sustainable Urban Mobility Planning: common practice and future directions. World Transp. Policy Pract. 21 (3), 54–64.

Sadler, R., 2006. Roads to Ruin. Available from: http://www.theguardian.com/society/2006/dec/13/guardiansocietysupplement3. (Accessed 11 February 2015).

Shaw, J., Walton, W., 2001. Labour's new trunk-roads policy for England: an emerging pragmatic multimodalism? Environ. Plann. A 33, 1031–1056.

Shergold, I., Parkhurst, G., 2016. The Economic Benefits of Sustainable Urban Mobility Measures: Independent Review of Evidence Report. European Commission, Brussels, Belgium.

Shove, E., 2010. Beyond the ABC: climate change policy and theories of social change. Environ. Plann. A 42, 1273–1285.

Skamris, M., Flyvbjerg, B., 1997. Inaccuracy of traffic forecasts and cost estimates on large transport projects. Transp. Policy 4 (3), 141–146.

Sloman, L., Cairns, S., Newson, C., Anable, J., Pridmore, A., Goodwin, P., 2010. The Effects of Smarter Choice Programmes in the Sustainable Travel Towns – Summary Report. Available from: http://webarchive.nationalarchives.gov.uk/20111005180138/http://assets.dft.gov.uk/publications/the-effects-of-smarter-choice-programmes-in-the-sustainable-travel-towns-summary-report/summaryreport.pdf. (Accessed 13 March 2014).

Sloman, L., Hopkinson, L., Taylor, I., 2017. The Impact of Road Projects in England – Report for CPRE. Available from: http://www.cpre.org.uk/resources/transport/roads/item/4542-the-impact-of-road-projects-in-england. (Accessed 20 March 2017).

ARTICLE IN PRESS

Spence, A., Venables, D., Pidgeon, N., Poortinga, W., Demski, C., 2010. Public Perceptions of Climate Change and Energy Futures in Britain: Summary Findings of a Survey Conducted from January to March 2010. Understanding Risk Working Paper 10-01. Available from: http://psych.cf.ac.uk/understandingrisk/docs/final_report.pdf. (Accessed 05 April 2018).

Spotswood, F., Chatterton, T., Tapp, A., Williams, D., 2015. Analysing cycling as a social practice: an empirical grounding for behaviour change. Transp. Res. Part F 29, 22–33.

The Standing Advisory Committee on Trunk Road Assessment [SACTRA], 1994. Trunk Roads and the Generation of Traffic. Available from: http://webarchive.nationalarchives.gov.uk/20120830120423/http://assets.dft.gov.uk/publications/trunk-roads-and-the-generation-of-traffic/trunk-roads-traffic-report.pdf. (Accessed 13 July 2013).

Vigar, G., 2002. The Politics of Mobility: Transport, the environment and public policy. Spon Press, London.

UK Government (2004) Traffic Management Act 2004. Available from: http://www.legislation.gov.uk/ukpga/2004/18/contents. (Accessed 24 May 2013).

Williams, D., 2014. Social practice theory and sustainable mobility: An analysis of the English local transport planning as a system of provision. PhD, University of the West of England. Available from: http://eprints.uwe.ac.uk/24486. (Accessed 09 February 2017).

Walton, W., 1996. Policy changes in the Government's road building programme. A U-turn or just an application of the brakes? Town Plann. Rev 67 (4), 437–455.