Employer Perceptions of the Business Benefits of Sustainable Transport: A Case Study of Peri-urban Employment Areas in South West England

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Abstract

There is considerable interest in the contribution that workplace-based mobility management inter-ventions can make to achieving more sustainable mobility patterns. A number of studies have evalu-ated the impacts of workplace-based interventions on the commuting behaviour of staff, but the broader potential of such initiatives depends on the willingness of employers to support them. Little research has been carried out examining the perspectives of senior managers. The research which has been conducted has focused on employers located in urban or rural areas. This paper reports on in-depth interviews with senior managers of employers located in two peri-urban areas on the edge of the city of Bristol, south-west England. The research was carried out during a period when public funding was available to support the introduction of sustainable transport measures. The interviews aimed to find out whether senior managers perceived the promotion of sustainable transport as rel-evant to their business concerns, and how this varied between different types of organisation. The results showed that all managers believed that measures to increase the use of alternative modes for commuting and local business travel could be beneficial for their business, even if these benefits were indirect and difficult to quantify. The perceived benefits of sustainable transport included: helping to ease traffic congestion on the road network, thereby reducing associated delays and stress; helping employers manage excessive demand for car parking; improving staff wellbeing; and widening the recruitment opportunities among workers lacking access to a private car. Employers who perceived the greatest benefits were also the most willing to engage with public authorities in introducing new workplace-based mobility measures. The findings on employer support for mobility management are relevant not only to peri-urban areas but also to employment sites within other areas (in particular suburban areas and the rural hinterland) where the same challenges may apply of encouraging alternatives to single occupancy car use without the means to invest in comprehen-sive public transport.

1   Introduction

Public authorities in many countries seek to involve employers in the task of encouraging more sustainable transport[i]. For commuting trips, employers are seen as effective mediating organisations which can help reduce single-occupancy car-use among their staff, with consequent benefits for individuals and society (DeHart-Davis and Guensler, 2005; Vanoutrive et al., 2012). Regulation compels employers in some regions/countries to implement workplace-based mobility management plans[ii]; in the UK, for example, this is usually when employers seek planning permission for new premises (Enoch, 2012; Roby, 2010). However, voluntary action by employers is seen as a desirable, and potentially more effective, long term approach (DeHart-Davis and Guensler, 2005; Enoch, 2012). DeHart-Davis and Guensler (2005) state that: *"Given dwindling government resources and waning political will to impose direct control over individual behaviour, policy-makers may increasingly attempt to persuade employers to mediate society's most pressing and intractable problems, such as individual driving behaviour"* (p694). As well as targeting commuter travel, employer engagement is seen as a means of supporting employers in increasing the use of sustainable transport options within their operational business activities, such as travel in the course of work (Sloman et al., 2010, p64).

But how willing are employers to involve themselves in this endeavour? To what extent do they see public policy goals on sustainable transport as coinciding with their business interests? Understanding the attitudes and motivations of senior business managers is important if an effective, collaborative approach is to be nurtured between public authorities and employers. There has been little research examining managers' perspectives on workplace-based mobility management measures. This paper presents findings from in-depth interviews with managers of 25 organisations located in two large employment areas located on the edge of the city of Bristol in south-west England.

Unlike previous research on business attitudes to transport, the interviews were conducted with members of senior management teams, who exercised broad oversight of transport issues, but were not involved in the day-to-day implementation of transport-related activities. The aim was to obtain a 'Board level' perspective on the degree of importance attached to sustainable transport within strategic business considerations. This perspective is important because it is the opinions of senior management that determine key decisions such as site location, business expansion and transport provision for employees. 'Board level' has different meanings depending on the governance structure of a company and on its country or countries of operation. In this study we conceptualise it in broad terms as the group of people with the authority to form the policy and steer the overall direction of an organisation, whether it be a for-profit business or a non-profit organisation.

Peri-urban areas, situated between urban settlements and their rural hinterlands, are growing rapidly across Europe such that they now occupy the same amount of built-up land as urban areas

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[i] There is no single definition of sustainable transport, but it is broadly understood as modes of transport, and transport planning, which minimise negative environmental impacts within the broader context of economic sustainability and social justice (e.g. Greene and Wegener, 1997). For the purposes of this paper, it refers to alternatives to commuting and business travel by (single-occupied) motorised vehicles.

[ii] Mobility management is "a concept to promote sustainable transport and reduce single occupancy car use by changing travellers' attitudes and behaviour. At the core of mobility management are "soft" measures such as marketing, information, communication, education, organisation of services and coordination activities of different partners" (CIVITAS, 2013, n.p.).

(Piorr et al., 2011, p10). Economic activities have relocated to peri-urban areas to take advantage of the availability of large plots of land and good access to strategic road networks (Piorr et al., 2011, p12). An analysis of the geography of jobs in the UK by the Centre of Cities (Tochtermann and Clayton, 2011) found that higher skilled jobs are increasingly concentrating along the main transport corridors in cities and in city centres, whilst lower skilled jobs are dispersing out of city centres. This trend is *"supported in many cities by the development of car-based out-of-town retail, business and industrial parks"* (p4).

Peri-urban employment sites often have good access to the strategic road network but poor public transport, walking and cycling access (Dickinson et al., 2003). This makes them difficult to access for workers without private transport. Even for workers with private transport, they are often difficult to reach in peak periods due to large amounts of traffic and the congestion that accompanies this (e.g. Atkins, 2017, p18). Furthermore, the longer distance, car-based commuting patterns that typify these locations are a significant contributor to environmental impacts, including carbon emissions.

It is highly challenging to provide public transport systems to serve peri-urban employment sites. A monocentric urban form is more amenable to developing a public transport system than the polycentric low density development that is characteristic of peri-urban areas (Piorr et al., 2011, p62). The provision of new public transport services to link people to jobs in peri-urban areas has been attempted in the UK and elsewhere (Lucas et al., 2006), but the level of subsidy required by local authorities to maintain these has proved prohibitive to their long-term continuation. This is also complicated by peri-urban areas often lying on the boundaries of different local authorities and not having an established public transport operator.

Given the challenges of developing comprehensive public transport systems to serve commuting needs in peri-urban areas, mobility management is an alternative approach. Mobility management can only be effective in a peri-urban area if there is support from employers themselves in taking forward the constituent elements. Employers may be reluctant to invest their time and resources into mobility management, believing it to be the responsibility of local authorities, transport service providers and individual employees (Rye 1999a). This paper looks at the case of two peri-urban employment areas on the edge of the city of Bristol and examines employers' perceptions of and support for mobility management in the context of an on-going sustainable transport initiative supported financially by the national government. The findings on employer support for mobility management from this study are relevant to peri-urban areas more generally and also to employment sites within other areas (in particular suburban areas and the rural hinterland) where the same challenges may apply of encouraging alternatives to single occupancy car use without the means to invest in comprehensive public transport.

The interviews were carried out as part of a wider evaluation of the impact of sustainable transport measures at employment sites located in peri-urban areas in different parts of England (Chatterjee et al., 2017). The programme of measures was funded by the UK Department for Transport through its Local Sustainable Transport Fund (LSTF), and implemented jointly by local public authorities and employers. The evaluation sought evidence on changes in commuting travel behaviour and employer attitudes over a two-year period between March 2014 and March 2016. The majority of senior managers in the Bristol sample were interviewed at both the start and end of this period, leading to a total of 45 interviews.

This paper reports on whether senior managers perceived the promotion of sustainable transport as relevant to their business concerns, and how this evolved during the study period. It explores factors which explain differences among senior representatives of different employers in their attitudes to sustainable transport and mobility management, and whether they are willing to engage with public authorities in introducing new workplace-based measures. The paper starts by reviewing existing literature relevant to the topic (in section 2). Sections 3 and 4 provide, respectively, study context and details of the research method. Findings from the interviews with senior managers are presented in section 5 and discussed in section 6. The paper concludes by suggesting how the findings can be used by public authorities and other relevant agencies to seek effective employer engagement in pursuit of travel behaviour change goals.

2   Literature review

We review the existing literature to identify what is known about the impacts of sustainable transport measures on employers and their business activities, and what is known about employers' willingness to invest in workplace-based mobility management. We also consider how previous studies have attempted to capture the 'voice of the employer'.

Public transport investment can attract business activity to areas where it improves access. For example, public investment in transport improvements in East London's Docklands (UK), such as the Docklands Light Rail and the Jubilee Line underground rail extension, led to large-scale private sector investment which in turn contributed to the economic growth and urban regeneration of the area (Steer Davies Gleave, 2005). A survey of employers in the Jubilee Line extension corridor, conducted two years after its opening in 1999, found a general perception that it had enabled businesses to recruit from a wider geographical labour market.

There is some evidence of the economic impacts on retail businesses of restricting car use in city centres. For example, the EU 'Push and Pull' project found that effective parking management could increase the attractiveness of city centres, leading to more visitors, and hence higher revenues for retailers (Push & Pull, 2017). Similarly, high car parking capacity and the presence of higher parking tariffs have been found *not* to influence the commercial success of shopping areas. A study of the relationship between parking and turnover in 80 shopping areas in the Netherlands found that commercial success depended on other factors - mainly the atmosphere of the shopping area and the quality of the retail mix (Mingardo and Meerkerk, 2012). One important exception was found: car parking capacity did influence the turnover of shopping areas with a large regional catchment area.

The previous examples considered the business impacts of transport measures at an area-wide level. At the level of individual employers, most of the relevant literature frames the discussion within the context of workplace-based mobility management plans, known in the UK as Workplace Travel Plans. Employers are encouraged and assisted by central and local government to implement a package of mobility management measures which encourage their staff to use alternatives to the car for commuting and business travel (UK Department for Transport, 2002; Rye, 2002). The main objectives of such plans have typically been: to reduce traffic congestion and improve access to workplace sites; to reduce the demand for car parking where capacity is limited; and to meet environmental targets.

Reviews have shown that workplace-based mobility management plans are successful in achieving reductions in single-occupancy car commute mode share (Rye, 2002; Bamberg and Möser, 2007; Cairns et al, 2010). Factors which contribute to the success of these plans in reducing car travel include: a site-specific problem with congestion, parking, and/or transport-related staff recruitment; a supportive organisational culture; and joint working between organisations (Rye, 2002). Cairns et al. (2010) reported an average reduction of 18% in the number of commuter cars per 100 staff at 20 UK employers, noting that workplaces where parking management measures were in place achieved higher reductions in car driving. Similar findings are reported by Petrunoff et al. (2015), who compared the impacts of mobility management plans at two different hospitals in Perth (Australia). The study found that the hospital which had a car parking management strategy, as well as a mobility management plan, experienced a much greater reduction in driving alone.

Parking was also found to be important in a study of the effectiveness of measures used by employers in Belgium to encourage ride-sharing, an important alternative to single-occupancy car use in peri-urban areas (Vanoutrive at al., 2012). They found 'hard' measures such as parking charges to be more effective than 'soft' promotional measures. Incentives offered by employers, such as guaranteed ride home programmes and the pre-tax deduction of carpool and public transport expenses, have been found to encourage employees to switch from drive-alone commuting (DeHart-Davis and Guensler, 2005; Bueno et al., 2017). Less promising results were obtained from recent experimental trials which tested the impacts of specific measures to encourage travel behaviour change at individual workplaces. Field experiments were carried out among six employers in Norway (Tørnblad et al., 2014) and at Heathrow Airport, UK (Behavioural Insights Ltd, 2017). Both found that low-cost measures such as improved travel information and discounted bus tickets had no discernible impact on employees' commute mode choices.

Existing evidence on the impacts of workplace-based mobility management plans focusses on the impacts on commuting, but not on their broader impacts on business activity. One aspect of business activity is business travel. Broadly, this is travel 'in the course of work' (Holley et al., 2008), a term which covers a wide range of trip purposes, including meetings, visits to client sites, visits to clients' homes (e.g. health workers and service engineers), or deliveries of goods. Focussing on travel to business meetings, Roby (2014) interviewed business travel managers at a sample of organisations in London, and found that their policies were influenced by a drive to both cut costs and carbon emissions, and to increase productivity. This was being attempted largely by reducing the need to travel, principally by substituting face-to-face meetings with 'virtual meetings' where possible. Changing the mode of business travel from car or air to rail was considered desirable as a way of cutting carbon emissions, but likely to increase direct costs.

Employers' attitudes to mobility management are likely to be influenced by the institutional context in which they are operating. We now consider how the national and/or regional context plays a strong part in the way in which workplace mobility management measures are implemented. For example, in some local jurisdictions in the USA, 'Employer Transport Plans' became mandatory for all employers above a certain size in the 1980s and 1990s (Rye, 1999b). Although many such mandatory regulations have since disappeared in response to lobbying from business, the USA remains more highly regulated with regard to travel planning than Europe, where the approach is more voluntary (Enoch, 2012). Labour legislation is stronger in continental Europe than in the USA and the UK, which can mean that employee transport issues form part of the 'social dialogue'. In Belgium, for example, transport allowances form part of collective bargaining agreements between

employees and employer, and these can differ between employment sectors (Vanoutrive et al., 2010). Many Dutch employers contribute to their employees' commuting costs, and this is also enshrined in collective bargaining agreements (Rye, 1999a). In Belgium, as well as countries such as Denmark, Finland, France, Germany and the Netherlands, commuting costs are considered a tax-deductible expense, whereas in the USA, UK and some southern European countries it is a personal expense (Potter et al., 2006). Moreover, Rye (1999a) found in a survey of UK employers that only 6.2% of respondents ranked employers as having a high responsibility for dealing with transport problems. This provides important context for the findings presented in this paper as it means that UK employers might be less likely than those in other European countries to regard employee commuting as their direct responsibility. They are also less likely to be compelled by regulation to take on this responsibility than in some parts of the USA.

Having discussed the institutional context, we now consider employers' willingness to engage in workplace-based mobility management plans. There has been little research which has specifically investigated the attitudes and motivations of employers in this regard. There are a few notable exceptions. A questionnaire study of employer attitudes to mobility management plans in the UK conducted by Rye (1999a) found that most employers thought that major improvements needed to be made to the quality of alternative modes before they could offer an adequate alternative to the car. Only a small minority of employers had attempted to influence employee mode share, and these employers fell into two categories: those motivated by wanting to lead by example (these respondents were governmental bodies); and those expanding or relocating, particularly where this was putting pressure on existing staff parking. Focus group research revealed that the majority of organisations were only willing to promote sustainable commuting for altruistic reasons *"if it did not threaten the 'bottom line"* (Rye, 1999a, p193). Self-interest appears to be a more important motive than altruism; DeHart-Davis and Guensler (2005) found in their study of employers in Atlanta (USA), that employers were more likely to encourage alternatives to single occupancy car commuting among their staff if they perceived this to be in the corporation's own self-interest.

An analysis of how workplace and location characteristics affect the likelihood of employers participating in mobility management has been carried out for Seoul (South Korea) where employers are incentivised to implement mobility management measures by the availability of a discount on the annual traffic impact fee that they are required to pay if they implement measures and reduce car trips. Ko and Kim (2017) found employer type, facility size and accessibility to transit influenced likelihood of participation. In contrast, Soder and Peer (2017) obtained in-depth insights on willingness of employers to implement mobility management measures from a case study in rural Eastern Austria. They found from semi-structured interviews with managers and work council members at five employers that employers had little incentive to implement measures as costs of doing so exceed likely benefits. Furthermore, surveys and focus groups with staff showed little interest in using alternatives to single-occupancy car travel. The authors concluded that *'it is not efficient to promote sustainable mobility in rural areas via employers'* (Soder and Peer, 2017, p1).

Rye (2002) argues that employers are more willing to implement mobility management measures if they face a 'transport problem' such as limited car parking capacity, contending that local and central government may need to 'create' such problems through increased planning control on new development, parking taxes or traffic restraints. However, some authors (Roby, 2010; Enoch and Ison, 2010; Enoch, 2012) have argued that there is a need to move workplace-based mobility management from a process which is externally driven to a practice which supports internal business

management processes. Roby (2010) argues that if workplace-based mobility management plans are to contribute to business growth, sustainable transport initiatives need to be reframed as staff benefits to support recruitment, retention and productivity. This concurs with the conclusion of DeHart-Davis and Guensler (2005) that governments are right to enlist the help of employers in meeting policy objectives by emphasising the direct benefits in the forms of employee recruitment, retention and productivity. Sustainable transport initiatives can also potentially offer a range of further benefits to employers, such as: public relations gains; the opportunity to contribute to environmental management standards; health and welfare gains for staff; and better conditions for freight distribution (Cairns et al., 2004; Sloman et al. 2010).

With regard to health and wellbeing impacts, evidence suggests the relationship between use of sustainable modes and work productivity differs by the mode in question. Richbell and Minchin (2011) found in a small exploratory study that individuals who used either bus or rail to get to work were significantly more likely to have higher sickness absence levels than individuals who used private transport (p=0.006). In contrast, Brockman and Fox (2011) make a strong case for the potential health benefits of promoting walking and cycling through workplace-based mobility management plans. They conclude from a study of commuter travel to the University of Bristol, UK, that approximately 70% of commuters who walked or cycled in 2007 were meeting, through their commute alone, at least 80% of the UK weekly recommended guidelines of physical activity.

Finally in this section we review how employer perceptions and views have been identified in previous research. This is important because an organisation *per se* cannot hold opinions; researchers can only access a collective corporate standpoint (if one exists) through the lens of the individuals interviewed or surveyed. This issue was highlighted by Lyons et al. (2009), who prefaced their literature review of business attitudes to transport with the caveat that: "*There was difficulty in judging how and to what extent the individual responding to a survey on behalf of a business could reflect the corporate view*" (p2). Most previous research has drawn on the insights of staff fulfilling a mobility manager role - known more commonly as 'travel planner' in the UK (e.g. Roby, 2010). For example, Van Malderen et al. (2013) interviewed 60 professional mobility managers in Belgium. One of the authors' conclusions was that mobility managers overestimated the effectiveness of mobility management measures in reducing car mode share. Only 25% of the mobility managers considered their function to be a decision-making one and 69% said they had played only an advisory role in the development of their mobility management plan. The endorsement of 'executive officers' (senior managers) is also important for the successful implementation of a workplace management plan (Van Malderen et al., 2013; Cairns et al., 2010; Rye 1999b). To our knowledge, our research is the first in-depth qualitative study which has explored the perspectives of senior managers. The current study extends the existing literature by focussing attention for the first time on the extent to which the potential business benefits of mobility management in peri-urban areas are reaching the agendas of senior levels of management in the UK.

3   Study context

3.1   The case study employment areas

The research was conducted in two large employments areas on the edge of the city of Bristol in south-west England: the Bristol 'North Fringe' and the Bristol 'Ports Area'. The North Fringe is

located approximately 9km to the north of the city centre. It includes housing, industry, offices and retail development which has taken place since the 1970s. The Ports area is a more traditional industrial area, stretching 8km alongside the estuary of the river Severn, and located approximately 16 km from the centre of Bristol (Figure 1).
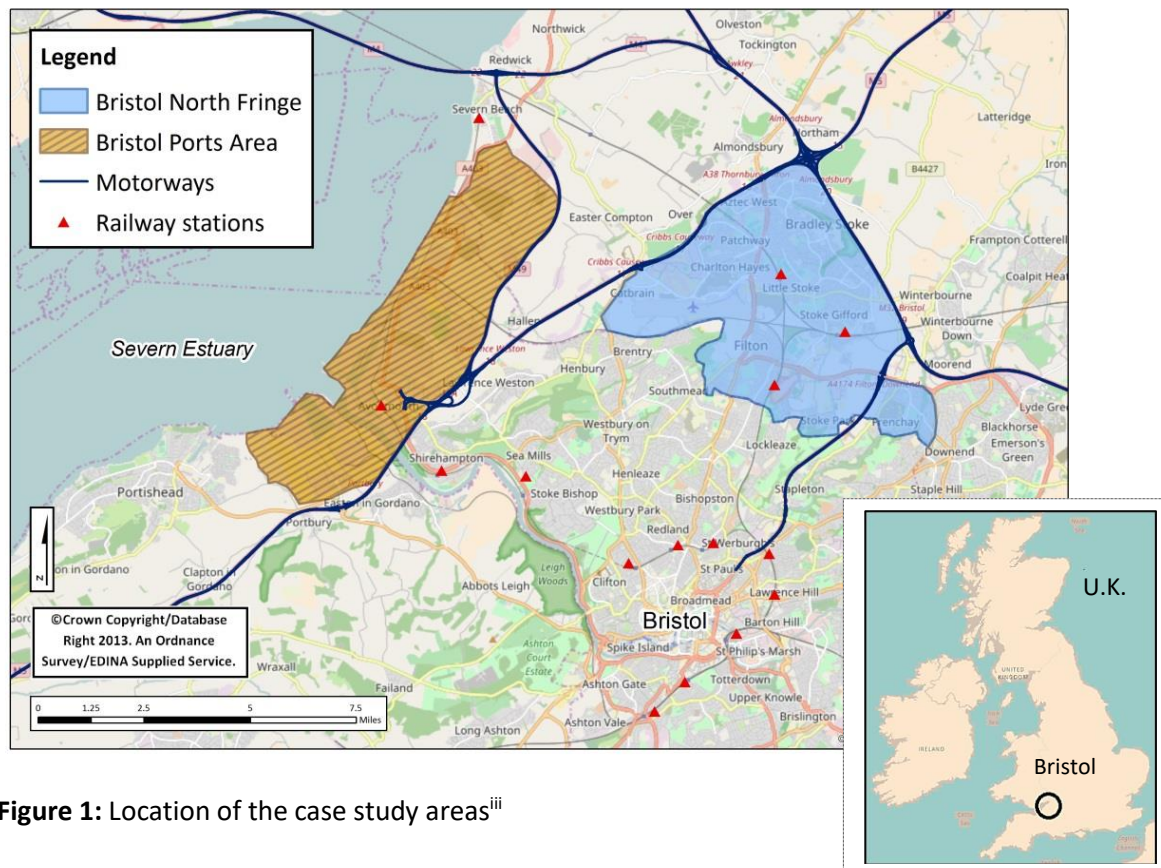

Figure 1: Location of the case study areas[iii]

In 2017 over 80,000 people were working in the North Fringe. The area has a preponderance of large companies in the engineering, aerospace, ICT and financial services sector, as well as a science park and business park consisting of smaller hi-tech companies, a university, a large hospital and a large government institution. Around 30,000 people were employed in the Ports area in 2017. It is characterised by storage and distribution centres for retail operations, other businesses connected with shipping and logistics, chemical and other manufacturers, energy, waste and recycling. The area between central/west Bristol and the Ports area is semi-rural, whilst the North Fringe merges with more densely populated suburban areas. During the period of the study, the North Fringe was subject to greater pressure on car parking than the Ports area. Large-scale house-building also took place in the North Fringe area. Both areas were well connected to motorways, but the North Fringe was better served than the Ports area by public transport, cycling and walking routes. Heavy road traffic congestion at peak commute times was observed in both areas.

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3.2 Sustainable transport and mobility management measures

The North Fringe and Ports areas are located within the West of England administrative area, which benefitted from funding of almost £34 million from the Local Sustainable Transport Fund (LSTF)[iv] between April 2011 and March 2016. Examples of workplace-based mobility management measures funded by the programme included: grants awarded directly to employers to co-fund items such as on-site cycle parking; information and advice on sustainable travel offered to employees by travel advisors visiting employer sites; loans of cycles and electric vehicles for both staff commuting and local business travel; and ride-share partnering services for staff. Business Engagement officers from the local authorities sought to build relationships with employers by encouraging them to take up the services. Two local business networks also were also active in engaging with employers on sustainable transport issues: North Bristol SusCom (North Fringe) and SevernNet (Ports area). In addition, both the areas benefitted from improvements to bus services and cycle paths, funded by the LSTF and other sources, although most of the improvements in the Bristol Ports area did not start until the second year of the evaluation.

3.3 Commute mode share in the case study areas

The differences in transport infrastructure and services in the North Fringe and Ports area were reflected in commute mode shares. Employee travel surveys, undertaken in March 2014 and March 2016 as part of the wider evaluation (Bartle and Chatterjee, 2017), showed that the proportion of North Fringe employees who reported driving alone to work fell from 51.3% in 2014 to 49.0% in 2016 (see Table 1:). Those reporting cycling rose from 12.3% in 2014 to 14.3% in 2016 - well above the England and Wales average of 3% (ONS , 2011), whilst the proportion who travelled by bus increased from 6.1% to 8.7%.

In the Ports area, the driving alone share was higher than in the North Fringe (66.5% in 2014, rising to 69.0% in 2016). Cycling rates were lower (5.6% in 2014, falling to 3.5% in 2016); bus mode share was negligible in 2014, rising to 2.2% in 2016 when bus services into the employment area had just been introduced. Ride-sharing represented the main alternative to single-occupancy car use in the Ports area (21.0% in 2014; 17.8% in 2016).

[iv] The LSTF was a £600m programme which had the joint aims of reducing carbon emissions from transport and contributing to economic growth at the local level. See https://www.gov.uk/government/collections/local-sustainable-transport-fund

Table 1: Mode share by area from employee surveys 2014 (Phase 1) and 2016 (Phase 2)

How did you travel to work today?	North Fringe			Ports area		
	Phase 1	Phase 2	% point change	Phase 1	Phase 2	% point change
Car alone	51.3%	49.0%	-2.3%**	66.5%	69.0%	2.5%
Car share	14.7%	12.2%	-2.4%***	21.0%	17.8%	-3.2%
Cycle	12.3%	14.3%	+2.0%***	5.6%	3.5%	-2.1%
Walk	6.5%	7.5%	+1.1%*	2.0%	2.2%	0.3%
Bus	6.1%	8.7%	+2.6%***	0.7%	2.2%	+1.5%*
Rail	5.1%	4.4%	-0.7%	1.8%	3.9%	+2.1%*
Other	4.1%	3.9%	-0.2%	2.3%	1.3%	-1.0%
Car combined	66.0%	61.2%	-4.8%***	87.5%	86.8%	-0.7%
No. of responses	8865	5304		819	539	

Note: Statistical significance assessed with z-tests (two tailed) assuming random population samples in 2014 and 2016 and equal variances in 2014 and 2016 (p=<0.05*, p=<0.01**, p=<0.001***)

4 Method

4.1 Case study research approach

A case study research approach was adopted for the overall evaluation of the effectiveness of the LSTF programme in influencing commute mode share and employer attitudes towards sustainable transport in the two employment areas. A case study approach is *"a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence"* (Robson, 2002, p178). Mode share was measured quantitatively in March 2014 and March 2016 through employee travel surveys (as summarised above). Employer attitudes – the focus of this paper - were researched via in-depth interviews of senior managers (also in 2014 and 2016). A qualitative approach was deemed appropriate to explore employer attitudes towards sustainable transport and mobility management measures, as little is currently known on this topic and our interest was in understanding how employer attitudes are shaped rather than simply measuring them.

Consistent with the case study approach, transferability of findings from the interviews was sought through theoretical rather than statistical generalisation. With theoretical generalisation (also known as analytic generalisation), individual cases are used to obtain understanding of a phenomenon in its context and this can be judged to be applicable to other situations where the context is similar. The overall study employed a 'multiple, embedded case study design' (Yin, 2009). Firstly, *multiple* because two cases were studied - the North Fringe and Ports area; these two cases formed the main units of analysis from which theoretical generalisations might be made to other locations with similar characteristics and conditions. Secondly, *embedded* because the study of each employment area involved study of a number of individual employers located within each area; these comprised the sub-units of analysis embedded within each of the two cases. Further details of the evaluation design are described in Bartle and Chatterjee (2017, pp24-25).

Employers were selected to achieve variation on factors that may potentially affect the business benefits of sustainable transport and willingness to implement mobility management measures. Choosing a variety of different sub-cases facilitates the development of theoretical understanding, which, in turn, can broaden the relevance of the findings. While the primary aim was to generate findings applicable to employers in peri-urban areas more generally, there was reason to believe that findings could also be relevant to employers in urban and rural areas as they would share many of the contextual characteristics of the case study employers.

4.2   The employer sample

Twenty-five private and public sector employers across the North Fringe and Ports area were recruited using purposive sampling. Employers were selected according to a number of criteria: size, industry sector, level of engagement with sustainable transport issues, and location within the North Fringe or Ports area. The two employment areas were selected because they contrasted with one another with regard to business sectors represented, labour force characteristics, proximity to residential areas, and transport infrastructure. These criteria were chosen because they are factors indicated in the literature to influence take-up and effectiveness of mobility management plans (e.g. Rye, 2002).

Employers representing these different characteristics were identified in consultation with the local business networks, North Bristol SusCom and SevernNet, and local government Business Engagement officers. The networks and local authority officers assisted researchers in the recruitment of employers by suggesting contacts and making introductions. Three of the 16 employers recruited in the North Fringe were large public sector organisations (health, education and government), and the remainder private companies representing the aerospace, engineering, IT, construction, financial services and retail sectors. In the Ports area, all nine were private companies in the distribution, manufacturing, energy and waste recycling sectors. Employers ranged in size from approximately 50 to nearly 10,000 employees based on the employment sites in the study areas. Five were businesses with fewer than 100 employees; nine were businesses with between 101 and 500 employees on site; two were major companies of 501 - 1000 and three of 1001 - 2500; and four employers (one major company and three public sector organisations) had between 2501 and 10,000 employees. A Business Park and a Science Park also participated, each as a single entity for the study, although they comprised a large number of small businesses. Table 2 and Table 3 list the participating employers by size category in each of the two study areas.

As the evaluation sought evidence of change in commute mode share and in employer attitudes over a two-year period, each employer was requested to take part in senior manager interviews and encourage their staff to participate in employee surveys in both Phase 1 (2014) and Phase 2 (2016) of the evaluation. Twenty of the employers took part in both phases of the research, whilst five were able to contribute at only one of the time points. The findings in this paper are presented as common themes emerging from the interviews across both time periods, but also noting any changes between the two Phases where relevant.

4.3   Interviews with senior managers

In total, 44 face-to-face interviews and one telephone interview were conducted (24 in Phase 1; 21 in Phase 2), each lasting 45 minutes to one hour. The interview in Phase 2 was held with the same individual as in Phase 1 if he or she was still in post (11 cases), or alternatively with a manager in the

same or a similar role. Interviewees included managing directors at several of the large- and medium-sized aerospace, engineering and technology companies (see Table 2 and Table 3). The roles of other interviewees included production managers, facilities managers, sustainability managers, a human resources director and a finance director. All were asked at the beginning of the interview to try to present a 'Board level' perspective in response to the questions asked, either as members of a governing body themselves, or through their proximity to it. However, it was accepted that interviewees would also present personal views, and that these would inevitably be influenced by their roles within their organisations. Careful thought was given to this in the analysis of the interviews to ensure that findings were nuanced and not necessarily assumed to be a generic 'employer perspective'.

The interviews were semi-structured. The Phase 1 interview content was designed to explore senior managers' perceptions of the relevance of sustainable transport to the performance of their business, and if, or how, this was thought to affect them financially. An interview guide was developed, comprising questions in the following categories:

- The importance of transport issues overall, relative to other business concerns;
- Identification of specific transport issues affecting the business;
- Perceived relevance of *sustainable* transport to the business; and
- Awareness of, and views about, the LSTF and related interventions.

The Phase 2 interviews involved the same areas of questioning as Phase 1, but interviewees were also invited to reflect on any changes perceived to have occurred over the two years, and were probed more deeply on their views about recent sustainable transport interventions in their area.

Ethics procedures were followed, with interviewees consenting to be referred to in publications by the job role and business/organisation pseudonym shown in Table 2 or Table 3.

Table 2: Employers interviewed in the North Fringe

Employer	Interviewee/s Phase 1	Interviewee/s Phase 2
2,501-10,000 employees		
Aerospace Manufacturer 1	Vice President, Engineering	UK Head of Engineering
Financial Services Company	Global Manager for Health, Safety and Environment	1. Facilities Manager; 2. Travel Manager
Large Public Sector Employer*	1. Ass. Head of Infrastructure; 2. Facilities Manager	Assistant Head of Infrastructure
National Health Service (NHS) Trust*	1. Director of Estates; 2. Travel and Parking Manager	Director of Estates, Facilities and Capital Planning
University	Deputy Vice Chancellor	Deputy Vice Chancellor
1,001-2,500 employees		
Business Park*	Facilities Manager	Facilities Manager
Engineering Consultancy 1	Managing Director, Communications	Growth and Strategy Director
Retail Company*	Department Manager	Department Manager
501-1,000 employees		
Technology Company 1*	Vice President and Director	Vice President and Director
101-500 employees		
Construction Services Company	Sustainability Manager	Environmental Specialist
Engineering Consultancy 2	Managing Director, Infrastructure	Engineering Director
Science Park*	Chief Executive	Chief Executive
Technology Consultancy	Global Director for Corporate Responsibility and Sustainability	1.UK Environment Manager; 2.Facilities Manager
Technology Company 2	1. Senior Manager EMEAI Real Estate; 2. Office Manager	Did not participate
< 100 employees		
Energy Technology Company	Finance Director	Did not participate
Environmental Compliance Company	Did not participate	1. Marketing communication specialist; 2. Commercial Director

* Same individual interviewed in both Phase 1 and Phase 2

Table 3: Employers interviewed in the Ports area

Employer	Interviewee/s Phase 1	Interviewee/s Phase 2
501-1,000 employees		
Catering Products Company*	1. Managing Director; 2. Engagement Manager	1. Managing Director; 2. Engagement Manager
101-500 employees		
Aerospace Manufacturer 2*	1. Head of Procurement and Logistics; 2. Engineering Group Leader	Head of Procurement and Logistics
Candle Products Company	Human Resources Director	Did not participate
Mail Distribution Company	Head of Operations	Did not participate
Skincare Products Company	PA to the Operations Director	Office Coordinator
Power Station*	Production Coordinator	Production Coordinator
<100 employees		
Bioscience Manufacturer	1. Operations Director; 2. Health, Safety and Facilities Manager	Human Resources Director
Waste Recycling Company 1*	Production Manager	Production Manager
Waste Recycling Company 2*	Sustainability Resources Manager	Sustainability Resources Manager

* Same individual interviewed in both Phase 1 and Phase 2

4.4   Analysis

In Phase 1, all but one of the interviews were recorded and transcribed (in the remaining case, the interviewees did not wish to be recorded), and a thematic analysis carried out. Firstly, common themes running through the interviews were identified – for example 'how transport affects recruitment' and 'how transport affects operational costs'. Themes were then grouped into higher level categories such as 'impact of commuter transport issues on business performance' and 'impact of operational transport on business performance'. Secondly, the themes and higher level categories were used to develop a preliminary coding hierarchy using NVivo qualitative analysis software. The interview transcripts were then coded in detail. For example, text was coded within the 'staffing' theme into 16 sub-themes, including: productivity, wellbeing and recruitment.

In Phase 2, all interviews were recorded and transcribed. The analysis of the Phase 2 interview data was less 'grounded' than the baseline analysis, as it was necessary to apply the thematic structure which had arisen from the Phase 1 analysis, in order to be able to identify any changes in perceptions over time. Following the case study research approach, each employer was regarded as an individual sub-case. Therefore, the first step in the follow-up analysis was to identify key perceptions articulated by the interviewee, and compare them with those expressed by each person or his/her predecessor in Phase 1. This was formulated into a 'sub-case summary' for each employer to identify any changes at the level of each employer from Phase 1 to Phase 2. A thematic analysis was then conducted of all the Phase 2 interview summaries, using the same overall coding structure as Phase 1. Findings in the next section are organised into the main themes which emerged from both phases of the analysis process.

5   Findings

Findings are presented in response, firstly, to the research question: *How do senior managers perceive the relevance and business implications of sustainable transport in relation to commuting and operational transport issues?* Figure 2 outlines the main themes raised by interviewees, as they are presented in sections 5.1 and 5.2.
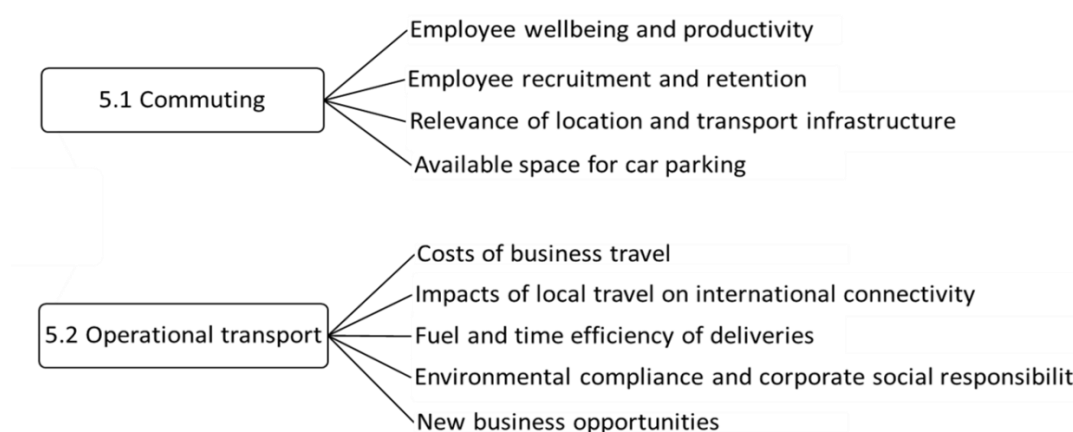

Figure 2: Perceived impacts of commuting and operational transport on business performance

Secondly, we discuss findings in response to the question: *What influences senior managers' attitudes to engaging with local government on sustainable transport and mobility management?* This is presented in 5.3.

5.1. Impacts of commuting on business performance

The ease (or difficulty) of commuting was thought to affect business performance principally through its impact on staffing issues in two main areas: employee wellbeing and productivity; and recruitment and retention. Differing attitudes among the employers were linked in particular to differences in location and transport infrastructure, and their different capacities to meet staff demand for car parking.

Employee wellbeing and productivity

Impacts on productivity were thought to be indirect: difficult commuting lowered staff morale, which could lead to falling staff productivity and reduced business efficiency. This was generally expressed in terms of the negative effects of unpredictable and time-consuming car journeys.

> *"And whilst that may not be a productivity issue directly, it is indirectly a productivity issue because of people's tiredness, connectivity, morale, etc." (UK Head of Engineering, Aerospace Manufacturer 1, North Fringe)*

Some employers believed that taking active measures to improve aspects of the commute was a way of showing that they were taking care of their workforce, which in turn improved staff motivation. The indirect nature of these effects meant, however, that employers had not quantified them in financial terms.

> *"I think it's a cultural benefit; it's a benefit for employees. It's not direct. You know, we don't make more revenue because we do these things, or as far as I'm aware, I haven't seen any correlation there. We do have happier employees and happier employees is a good thing to have". (Vice President, Technology Company, North Fringe)*

In particular, many interviewees believed that the use of active travel modes (cycling and walking) by employees could result in productivity benefits to their organisation, not only by way of improved morale, but also by contributing to physical fitness. For example, the managing director of a large company in the Ports area was considering offering bicycles to employees at the company's expense for this very reason.

> *"We're doing it because it's a good thing to do but, you know, as an aside, there's nearly always a commercial benefit…You get fitter; you feel more committed to (the company) because we literally bought you a bike. It's just a win-win-win". (Managing Director, Catering Products Company, Ports area)*

However, this was tempered by a view that local traffic conditions made cycling or walking to work unsafe, with potentially negative consequences for individual wellbeing. This view was prevalent in the Ports area, which had fewer cycle and pedestrian paths than the North Fringe. These interviewees felt that whilst some improvements had been implemented by local authorities to make cycling safer (e.g. more segregated cycle paths), greater investment in infrastructure was required if businesses were to reap wellbeing and productivity benefits from active commuter travel.

Overall, employers' main strategies for mitigating the stress of car travel in peak hours was offering flexi-time and mobile working. Among the North Fringe employers, most staff were reported to be working broadly within 'standard office hours' although they had flexibility with arrival and departure times and the ability to work remotely. Time flexibility allowed those who wished or needed to commute by car to continue to do so. It was noted that more employees were choosing

to arrive at work earlier to beat the morning peak. This practice might be interpreted as one which was helping to sustain car travel. Flexible working to fit around travel was not afforded to those working shifts; all but one of the Ports areas businesses in the study, as well as the NHS Trust and a retail company, employed a large proportion of staff on shift patterns. One effect of shift working was that employees commuting by car were unlikely to be travelling at peak times and were therefore not usually affected by traffic congestion; equally, this also militated against the use of public transport where there were less frequent services outside peak hours. Ride-sharing was popular amongst shift workers in the Ports area. This was generally organised among individuals within a business, rather than being part of a managed process. Some managers were happy to facilitate ride-sharing by allocating the same shift patterns to potential sharers.

Working at home was seen by some senior managers as a practice which could ease pressure on parking and improve employee productivity by reducing time wasted and stress arising from the commute. However, the ability to work at home depended very much on job type. Manual staff were required to be on site, and some of the high-tech businesses in the North Fringe discouraged home working because it was thought to hinder team-working. It was also acknowledged that some staff had commitments outside of work which limited their time flexibility. Overall however, remote working become a more common practice in many businesses between the two phases of the study. This change had been facilitated by improvements in ICT and a rising cultural acceptance of home/remote working.

Recruitment and retention

Many senior managers saw the provision of safe, convenient alternatives to single occupancy car-use as an important factor in the recruitment and retention of appropriately skilled staff. Difficulties with commuter travel which could affect recruitment took the form of: peak-period traffic congestion around the site; limited supply of on-site car parking; and/or limited access to employer sites by means other than the car. This was affecting, firstly, companies seeking to attract staff with specialist skills who could afford to be selective in their choice of employer (certain high-tech jobs for example) and, secondly, businesses seeking large numbers of lower-paid staff who were less likely to own a car (e.g. warehouse and call-centre jobs).

Examples of the first category included two engineering companies located in a business park which was experiencing heavy local traffic congestion, insufficient car parking to meet demand, and perceived problems with access by other modes (see also Box 1).

> *"We often interview here and people will (….) pass through the interview but they'll decline to come and work for us because of the issues of transport, so it has an immediate effect on our ability to recruit into this area". (Engineering Director, Engineering Consultancy 2, North Fringe)*

Senior managers in this situation thought that offering a range of commuter travel alternatives, including good cycling and public transport options, was important to their business because it helped to attract and retain certain types of employee, for example, younger workers because they were more likely to live near the city centre, to have fewer family commitments and to choose not to own a car.

However, lower paid individuals were thought to be even more most seriously affected by commuter travel issues, because they were more sensitive to the costs of travelling to work, and less

likely to have the financial resources to own a car. This in turn created recruitment difficulties for businesses who were struggling to hire staff with lower-level skills. Some of the distribution businesses in the Ports area believed this was having direct economic consequences for them:

> *"And an absolute fact: it is affecting our recruitment (…). Our success as a business will stand and fall on our ability to recruit people. (…) We're a good business and we've made lots of money, and that's really great. But if I carry on growing, we need more people. (….) And we've got to attract them and somehow get them here. (….) The thing that will kill us more than anything is recruitment." (Managing Director, Catering Products Company, Ports area)*

> *"Effectively we are deliberately discriminating against anybody that hasn't got their own transport to get to work and when we instruct an agency to find people for us we would state that the person will have to have their own transport." (Human Resources Director, Candle Products Company, Ports area).*

A small number of employers considered bus access to be absolutely essential for recruitment and retention for one or other of the reasons discussed above, and were therefore providing bus services for staff at their own expense, in the absence of other suitable public bus services.

We now discuss key characteristics of the different employers which were found to influence their perceptions of commuting and its impact on their business performance.

Location and transport infrastructure

Both the North Fringe and Ports area are well served by motorways, but there was variation at the time of the study in the ease of access to different parts of the two areas by public transport, cycle or on foot. On the whole, employers in locations with greater traffic congestion were more likely to consider sustainable transport as relevant to their business performance. Those employers with relatively good public transport, cycle and walking access (parts of the North Fringe) were likely to be more positive about actual or potential benefits from sustainable transport, compared with those where connections were poor. For example, although some improvements were made to cycle routes in the Ports area between Phase 1 and Phase 2 of the study, there continued to be concern that cycling and walking could involve significant safety risks due to high traffic speeds and the volume of heavy good vehicles. This meant that many managers were reluctant to encourage their staff to commute by cycle or on foot. To be willing to engage with local sustainable transport measures, employers needed to see that appropriate sustainable transport infrastructure and services were either in place, in preparation, or at least considered achievable.

The importance of location and infrastructure in helping to explain employer perceptions of the value of sustainable transport is exemplified in Box 1 and Box 2. In the first example, greater investment in sustainable modes was thought to be essential for the economic survival of a business park (Box 1), and in the second example previous investment in sustainable modes (particularly cycling) meant that sustainable commuting was seen as starting to generate benefits (Box 2). Both examples highlight the availability of on-site car parking as a key factor influencing employers' attitudes to sustainable transport. The links between parking issues and employer attitudes are now discussed in more detail.

Box 1: Transport access to the periphery of the North Fringe

The Aztec West business park on the outer edge of the North Fringe was described as having good road links, especially to motorways, but poor access by any other form of transport. Some employers located here were vocal about the need for further improvements to bus services, safer cycle paths and pedestrian crossings, and new Park and Ride facilities. There was a serious need for alternative travel modes, as the park did not physically have enough space to meet demand for car parking, and lengthy bottlenecks were created at peak times to enter and leave the park via its single access road.

Two engineering consultancies located within this business park had invested in a range of measures to help staff travel by alternative modes, including, in one case, the provision of an employer bus service. Both also managed car parking tightly. Such measures proved costly to their business. Whilst appreciating the support they had received from the LSTF and related measures, both interviewees felt that infrastructure investment on a much larger scale was required, and could in fact be essential to the survival of the business park.

> *"But you can't develop a park like this without putting in the proper infrastructure. This park is based around driving (…). But then you restrict the ability of people to drive by not giving them parking spaces or not putting the right infrastructure in that allows people to get in and out at the peak times, to kind of throttle it (…). Why would you choose to be somewhere that is only really linked by car travel when you can't bring a car to work?"* (Director, Engineering Consultancy 1, North Fringe)

Box 2: Transport access to the heart of the North Fringe

Senior managers at some employers located in the vicinity of the main rail station in North Bristol (Parkway) considered public transport links and cycle routes into and around the area to be reasonably good, although with room for further improvement. Whilst senior managers at all five of these employers were still, in Phase 2 of the study, expressing concerns for the safety of staff who cycled to work, four out of five thought that their organisation had developed, or was developing, a cycling culture. These employers had been actively engaged in the LSTF programme, and had benefitted in particular from cycle-related improvements and new bus services. All took the view that the availability of sustainable transport options had a positive effect on their business performance, albeit an indirect one. However, this was all within a broader context of acceptance that the majority of employees would continue to wish to commute by car.

> *"we are very aware that car parking is at a premium, that's what people like to do to travel to work, they like to get in their car and although…..we've got a very big cycling community and they are quite vocal…. on the whole, people like to get in their car".* *(Travel Manager, Financial Services Company, North Fringe)*

Car parking

Managers in organisations with the lowest ratio of on-site car parking spaces to number of staff were the most likely to perceive sustainable transport provision as contributing to their performance as a business. Some of these organisations had recently moved to new buildings and were therefore bound by planning rules restricting the number of parking spaces. The five employers with the lowest ratio of parking spaces to staff in Phase 2 were all located in the North Fringe, and had all engaged actively with the LSTF over the evaluation period; all were running car park management schemes and investing in sustainable transport measures. Car parking was described as an emotive issue at all the organisations where car parking was in short supply.

> *"(It's) the biggest headache we have in this building – certainly in my area. And it's the one that you can guarantee, if there's an open forum for discussion, it comes up absolutely every time." (Engineering Director, Engineering Consultancy 2, North Fringe)*

> *"We're due the next battle on that one. Yes. It does cause us grief because everyone's got a story of why they need a parking space." (Director, Engineering Consultancy 1, North Fringe)*

The National Health Service (NHS) Trust and the University were among the employers with the lowest ratio of car parking spaces. Parking availability at their sites reduced between Phase 1 and Phase 2, creating dissatisfaction among staff. It is notable, however, that senior managers at both the NHS Trust and University felt, by Phase 2, that the situation had 'calmed down' as staff acclimatised to changes in parking policy. Whilst car parking was still *"possibly the most controversial issue that you have to deal with across the university"* (Deputy Vice Chancellor, University), it was no longer regarded as a serious cause of staff dissatisfaction. This suggests that maintaining a firm stance on car parking management had, over time, brought rewards in the form of growing acceptability among staff, despite the sensitivity of the issue. These employers had taken full advantage of the resources offered by the LSTF programme (e.g. personalised travel planning, loan bikes, electrical vehicle charging points, pool bikes and cars), and had used these to support their own investments in alternative travel options for staff, which they regarded as an essential accompaniment to restraints on car parking.

By contrast, the demand for each parking space had fallen slightly at five employer sites by Phase 2 of the study, due to either a reduction in staff numbers on site or an increase in available parking spaces. Interviewees at three of these five employers expressed less concern about commuter transport issues than they or their predecessors had done in Phase 1. The remaining two retained a position of strong support for sustainable transport improvements in the interests of staff satisfaction. At some of the businesses where the ratio of parking spaces to staff was sufficient to meet demand and had not changed over the two years, sustainable commuter transport options were attributed less importance.

> *"I would say that most of our businesses probably don't think about transport much. The parking here is free because people aren't in every day, and people can usually find the parking space unless there's a big event on." (Director, Science Park, North Fringe)*

Just one of the businesses in the study, a technology company, was notable in having both sufficient car parking with no demand management measures in place, and a high level of cycling mode share for the commute (22% in 2016). A staff cycling group had been instrumental in promoting cycling to

work prior to the LSTF funding period, and managers had also been sympathetic to requests for high quality cycling facilities in the interests of staff wellbeing (i.e. not motivated by over-demand for car parking). The interviewee believed that as a consequence a strong cycling culture had developed.

> *"we have available parking and we have a fairly enthusiastic group of cyclists, and others are often persuaded to start cycling because there is a big cycle group.(….). I think it's because it's been there for a while, so probably in its early days it was a little bit evangelical and might have put people off. Now it's relaxed and people just do it. (….) I don't think people think of cyclists here as the exceptions". (Vice President, Technology Company 1, North Fringe)*

This assessment suggests cycling to work had become 'normalised' in this company. It also suggests that restraints on car-driving may become less important once the use of alternative modes has become more embedded within a workplace culture. However, it should also be noted that another 'push-factor' remained for cycling to this company's site: heavy road congestion in the area meant that some staff living nearby could get to work more quickly by bicycle.

5.2. Impacts of operational transport on business performance

Operational transport issues were thought to affect business performance in a number of ways: costs of business travel; impacts of local travel on international connectivity; fuel and time efficiency of deliveries; environmental compliance and corporate social responsibility; and new business opportunities. Each is discussed below, beginning with business travel.

Many of the senior managers spoke of a growing preference that longer-distance business travel within the UK be undertaken by rail rather than by car, in recognition of the high cost to the employer of working time lost to car travel - although none had quantified these cost savings. Concern for employees' safety if they spent long periods driving a car for business was a further reason for preferring them to travel by rail. These advantages needed to be balanced against the relatively high ticket costs of rail travel. Some employers compromised by using chauffeur services to transport staff by car on longer distance business trips.

> *"Rail costs are an issue for us, just for the record. The cost of rail travel is exorbitant. Single biggest thing you could do to reduce car miles for here? Because I don't think you can affect the commute so much. But it's actual cost of rail travel (for business travel)." (Vice President, Technology Company 1, North Fringe)*

The greatest reported change to business travel practices during the two-year evaluation period was the increase in the use of ICT to replace face-to-face business meetings. This was attributed to technological improvements, falling costs, and a greater acceptance of 'virtual' meetings as a normal way of working. However, physical travel for business purposes remained an essential requirement for many of the employers.

With regard to local business travel, proximity and easy transport access to other employers in the surrounding area were of vital importance to many of the technology companies in the North Fringe. This might be collaborating businesses in the same sector, supply chain relationships, or relationships between local businesses and the university and hospital. The majority of local business trips were reported to be made by private car or taxi, incurring direct costs for the employers. Alternative options, such as shuttle bus services connecting with railway stations and

other employers, were seen as a desirable means of reducing expenditure. For example, a number of the case study employers had contributed to a local shuttle bus scheme, which linked up local businesses and connected with the main rail station in North Bristol.

Pool vehicles (owned/leased by the employer for shared use by staff) were considered an attractive option by organisations that were struggling to offer sufficient on-site car parking for staff who needed to travel to and from their work base during the working day. Pool vehicles reduced the need for mobile staff to use their own cars to get to work, thereby reducing pressure on on-site parking.

In addition to local and UK business travel, international connectivity was also extremely important to some of the employers, especially those which were part of an international business or supply chain, or were attracting international investors. Local transport congestion was seen as adding indirectly to the costs of maintaining international connectivity, particularly by one of the aerospace companies. Firstly, costs and inconvenience were incurred by the frequent trips on congested roads to the airport by senior managers travelling to the company's European headquarters; the company had not tried to quantify this financially, *"but we know it's a critical loss of our people's energy into the business"*. Secondly, stress was caused for employees who could not guarantee arriving punctually at their workplaces in the morning for 'virtual meetings' with colleagues in continental Europe, due to the unpredictability of local traffic conditions.

> *"So, the less we contribute, the less we participate, the more eroded our position in the overall scheme of things…..It's not easily quantifiable. If you're not there, the meeting will still take place and a decision will still be made, but you've not had your tuppence worth in". (UK Head of Engineering, Aerospace Manufacturer, North Fringe)*

This was an important reason underlying this senior manager's view that further improvements in local sustainable travel options were needed in order to reduce traffic congestion.

Deliveries and logistics were raised as an important transport issue affecting business performance by several senior managers in the Ports area, in particular two distribution businesses, an aerospace manufacturer, and the two waste recycling businesses. The Ports area had seen growth in heavy goods vehicle traffic over the two years of the study as distribution businesses in the area expanded. The direct financial benefits of efficient fuel consumption of goods vehicles was a reason for these companies to seek both logistical efficiency, and the use of more fuel-efficient vehicles. Financial losses could be incurred indirectly when local traffic congestion led to delays in receiving or sending out deliveries, particularly for those operating a 'just in time' delivery model.

A significant motivation for improving sustainable business travel practices among some employers was the desire to reduce carbon emissions in order to comply with energy and environmental standards (ESOS[v] and ISO 14001[vi] respectively). For a technology consultancy, this was part of a long-standing process which represented the core sustainability values of the business. One perceived benefit was that it facilitated the recruitment of employees in skills shortage areas, who were attracted by the company's environmental ethos. A construction company was improving logistical efficiency through its efforts to match projects with local personnel, suppliers and materials. Other

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[v] UK Energy Savings Opportunities Scheme – mandatory for large undertakings (250+ employees)
[vi] International Standards Organisation – Environmental Management System standards

senior managers whose companies did not have formal targets, nevertheless, saw business benefits from such measures by contributing to their image as environmentally responsible businesses. Some of the larger employers offered staff the use of electric or hydrogen-powered pool cars or electric pool bicycles for work use, which they saw as a further contribution to corporate social responsibility goals.

For some employers, the accessibility of their site for clients and other visitors was important for maintaining and attracting new business. Sustainable transport options could contribute to ease of access for clients. This was particularly pertinent to the Business Park and Science Park, which were both seeking to attract new business tenants at the time of the study. The manager of the Business Park was particularly clear that bus links and cycle facilities were, or had the potential to be, a major 'selling point' to tenants. He believed that good links from central Bristol were helping to attract some types of business – notably those with many urban-dwelling employees. For example, a team had come to work there temporarily:

> "…and they love the fact that they could cycle into Bristol, and there's a team of about 20 people coming down here and they don't have to have a car…. so I know that's been a real selling point to them.(….) So I know they're very much into their cycling and they were quite excited by the fact that they got nice cycle showers and stuff and they can lock their bikes up". (Facilities Manager, Business Park, North Fringe, 2016)

Having presented findings on senior managers' perceptions of the business implications of sustainable transport, we discuss their willingness to work with local government to increase the use of sustainable modes.

5.3 Employers' attitudes to engaging with local government on mobility management

It was found that the employers most willing to engage with local government were those which faced a particular need for improved sustainable travel options, and who also felt that improvements had already occurred or could be achieved with joint action. By Phase 2, many interviewees in the North Fringe believed that business benefits (albeit indirect and unquantifiable) were starting to accrue from sustainable transport improvements. However, it was also felt that more time and greater investment in transport infrastructure and services were needed to make a substantial difference. In the Ports area, some employers thought that a new bus service was starting to make a positive difference by widening access to jobs, but it was too soon to be able to detect any direct impact. In turn, they showed less willingness to engage with local government than most of the North Fringe employers in the study.

Several interviewees, particularly from the larger employers, expressed a view that transport improvements were the responsibility of both 'them' – the public authorities and 'us' – the employers themselves, working together.

> "In their defence, you know, it's not their issue – their sole issue – it's all of our issue"
> (Managing Director, Catering Products Company, Ports area)

The smaller businesses in the study were less likely to think they could or should play a lead role, but most were collaborating with larger employers on transport issues through local business networks. In fact, the study found that the business networks in existence in each area - North Bristol SusCom in the Bristol North Fringe, and SevernNet in the Bristol Ports area – effectively facilitated collaboration between the employers and local government. Delivery of LSTF measures, for example,

was most effective when the business networks and officers within the local authorities worked closely together. Joint action through the networks allowed employers not only to receive information, but also to make suggestions on local transport policies and measures.

Some senior managers regarded public subsidies such as LSTF employer grants (50% co-funding for facilities such as cycle parking) as serving an important function in providing leverage, assisting them with initiatives that they believed they should be undertaking themselves. At the NHS Trust, for example, the availability of LSTF co-funding had made it easier for the Estates Director to make a case within the organisation for continued expenditure on sustainable transport over the previous two years.

> *"It's very difficult when you're overspent and in deficit to be spending things on those right things. …..I think anything that can help an organisation to persuade itself to invest is a brilliant thing , because it is really difficult (…) and all companies – you know, there are huge economic pressures at the moment; doing the right thing as well as surviving – it's quite difficult. (…)*
>
> *I think pump priming funding is incredibly valuable, and I hope it continues and for a long time". (Director of Estates, NHS Trust, North Fringe)*

This section has provided examples of ways in which collaboration between government and employers on sustainable transport can work if there is a perceived alignment between the interests of both. This is one of the issues we consider further in the Discussion.

6   Discussion

The analysis of the interviews has identified a number of ways in which senior managers located in the two peri-urban employment areas perceived sustainable transport as beneficial for their business performance. The employers were not chosen to be a representative sample of peri-urban employers. However, the 'theoretical generalisation' at the heart of the case study research methodology means that principles emerging from the findings are transferable to other employment areas with similar characteristics and conditions – both within the UK and in other countries where voluntary action is favoured and public funding scarce.

Figure 3 summaries the ways in transport issues were found to contribute to positive attitudes among senior managers to sustainable transport investment. Key concerns relating to commuting are shown on the left and concerns relating to operational transport on the right.

The most important factors explaining positive attitudes to sustainable commuter transport investment were: on-site parking insufficient to meet staff demand; local traffic congestion causing delays and stress to employees; and recruitment difficulties linked to poor public transport, cycling and walking access. Traffic congestion and parking restrictions were perceived by managers to cause dissatisfaction among staff, which needed to be mitigated by improving alternative travel options. Access by alternatives to the car was required by those businesses which needed to recruit staff who could not necessarily afford to own a car, or did not wish to do so. Even those employers who were not experiencing such difficulties saw staff satisfaction benefits in offering a good choice of travel options. Environmental and corporate social responsibility also served as a driver for some employers to engage with sustainable transport initiatives and to perceive them as beneficial to their business.

Efficiency and cost reduction were the main factors influencing whether senior managers were positive about sustainable transport for business operations. More sustainable business travel was also motivated by other factors such as voluntary carbon reduction targets, staff health and safety and effective use of travel time (e.g. working on the train). Some businesses made a connection between sustainable travel practices and new businesses opportunities, in the form of sustainable products (e.g. biofuel for buses), or by contributing to their image as environmentally responsible businesses.
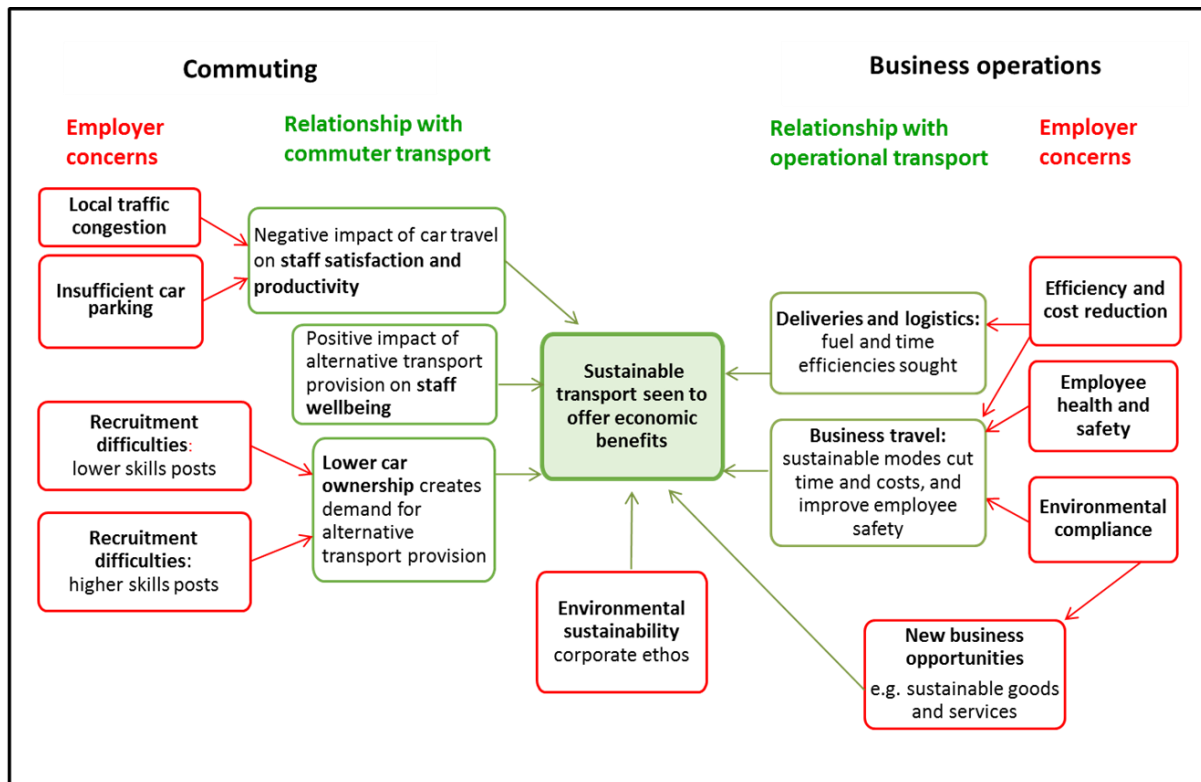
Figure 3: Factors contributing to positive attitudes of senior managers to sustainable transport investment

Conversely, where most of these factors were absent, senior managers did not see sustainable transport as important to their business. For example, one senior manager in the Ports area expressed the view that measures funded by the LSTF programme would be *'nice but not essential'*. This company was untypical of the employer sample as a whole, as it faced few problems with road access, had ample car parking provision, a small highly-skilled workforce, and no recruitment or retention difficulties.

A limitation of the study was that it did not set out to quantify the economic impacts of sustainable transport measures on the employers. Robust quantitative research on the economic impacts of such measures would further contribute to knowledge in this area. However, the research did provide evidence of some convergence between public policy goals and employers' business interests. Staff wellbeing, recruitment, productivity, costs of business travel and corporate social responsibility are all fruitful areas in which public authorities can 'engage' employers in pursuit of travel behaviour change goals. Finding common ground is particularly important to engage employers in peri-urban areas, where increasing the use of alternatives to the car presents particular challenges because such areas were often chosen as employment sites for ease of access by car. At the same time, peri-urban areas appear to offer greater potential for employer-based sustainable

transport interventions than rural areas, where economic, political and geographical pressures on employers to provide sustainable transport solutions are less likely to be present (see Soder and Peer, 2017).

The interviews showed that transport issues were reaching the Board-level agenda in several of the businesses which participated in the research, and were particularly prominent at senior levels of the three public sector employers in the North Fringe area. However, as previously noted, sustainable transport remained a marginal concern for some employers. This was most noticeable among businesses experiencing neither a 'transport problem' (i.e. traffic congestion or limits on parking) nor associated recruitment difficulties. This is what was found by Rye in 1999 (Rye 1999a) and suggests that there has been limited progress towards the integration of mobility management into broader business management processes, as called for in more recent literature (Roby, 2010; Enoch and Ison, 2010; Enoch, 2012).

Among the employers who were experiencing a 'transport problem', the one causing the greatest concern was the need to restrain car parking. Reducing on-site parking had reportedly been a painful process in terms of employee relations within the organisations affected, but senior managers in this position said that commuting by alternatives to single-occupancy car travel was becoming more normalised over time, with car parking restraints now better accepted by staff. The process of travel behaviour change had been smoothed by making it easier for staff to use alternative transport modes and LSTF measures had contributed to this.

One area where employers were not motivated by problem-solving alone was that of staff wellbeing and productivity. Here, active forms of sustainable transport (especially cycling and walking) were seen as bringing indirect benefits to the organisation in the form of fitter and more productive staff. However, it was also notable that some senior managers were not inclined to encourage cycling and walking if they believed that local infrastructure did not provide safe routes for cyclists and pedestrians. The current state of transport infrastructure and services influenced, in turn, employers' willingness to engage with public authorities on sustainable transport issues more generally. They were more willing to encourage sustainable mobility practices if appropriate infrastructure and services were either in place or being planned. This suggests the importance of a common vision among businesses and the public agencies involved. It also suggests that poor public transport, cycling and walking accessibility - often experienced in peri-urban areas - is not an issue that can be ignored. Our study demonstrates that public authorities need to grasp the challenge of developing multimodal accessibility to peri-urban employment areas at the same time as they seek to encourage employers to implement their own site-based mobility management measures.

We consider, finally, employers' views about where responsibility for workplace-related sustainable transport related should lie: (local) government, employer, or individual. The larger employers tended to see this as a shared responsibility between themselves and public authorities, and indeed most were already investing themselves, whereas smaller businesses were more inclined to believe that sustainable transport options needed to be provided by local authorities, leaving individual employees to decide whether to take them up. This was allied to perceptions among some that sustainable transport was of greater benefit to the individual employee than the business, or that commuter travel was an area of individual choice in which employers should not interfere.

7   Conclusion

This research has shown that senior managers in peri-urban areas see indirect economic value in the use of sustainable alternatives to single-occupancy car travel among staff, and that these benefits contribute to wider business objectives beyond the immediate sphere of transport – especially staff recruitment, productivity, and meeting environmental objectives. However, the benefits are seen as marginal unless an organisation is facing a particular 'transport problem', such as traffic congestion or constraints on car parking, which can be alleviated by reducing staff car use. In this regard, our research shows that employers in peri-urban areas have similar motivations to those reported in more urban areas, and moreover, that little has changed in the last two decades.

More positively, the research provides evidence of employers' willingness to engage with public authorities on mobility management measures in peri-urban areas – areas where reducing car commuting is both important and challenging. This is a concern which has reached the highest levels of management in some businesses. The study also showed that networks of businesses focussing on local transport issues can help foster effective working relationships with public authorities, and can be especially helpful in engaging smaller businesses.

We conclude that there is potential for more employers to act as mediating organisations in the delivery of public policies to encourage more efficient and environmentally sustainable forms of travel. However, public authorities should not ignore the continued importance of 'harder' measures such as public transport provision and parking restraints, to underpin calls for voluntary action based on the business benefits of sustainable transport.

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