



UCL

Transport and Poverty

A review of the evidence

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Contents

1. INTRODUCTION	1
1.1. AIMS AND OBJECTIVES	2
2. THE CONCEPTUAL LINKS BETWEEN TRANSPORT AND POVERTY	2
2.1. SPATIAL MISMATCH AND ENTRAPMENT THEORY	2
2.2. SOCIAL EXCLUSION THEORY	3
2.3. SOCIAL JUSTICE APPROACH	5
2.4. THE DYNAMICS OF TRANSPORT AND POVERTY	6
3. POVERTY AND TRAVEL BEHAVIOUR	8
3.1. INCOME AND TRAVEL BEHAVIOUR	8
3.2. RURAL AREAS	11
3.3. URBAN AREAS OF DEPRIVATION	14
3.4. ETHNIC GROUPS.	14
3.5. STUDENTS	15
3.6. UNEMPLOYED PEOPLE	15
3.7. ELDERLY PEOPLE	16
3.8. WOMEN	16
3.9. DISTRIBUTIONAL IMPACTS OF TRANSPORT	17
ROAD CASUALTIES	17
LACK OF SAFETY AND PERSONAL SECURITY	18
POLLUTION	18
POOR QUALITY URBAN ENVIRONMENTS	19
PLANNING OF TRANSPORT INFRASTRUCTURE AND SERVICES	19
4. TRANSPORT POVERTY	19
5. THE TRANSPORT SYSTEM	22
6. USING TRANSPORT TO ADDRESS POVERTY	24
6.1. SCHEMES TO ADDRESS UNEMPLOYMENT	24
6.2. SCHEMES TO REACH EDUCATION	26
6.3. CONCESSIONARY FARES FOR OLDER AND DISABLED PEOPLE	27
6.4. PUBLIC TRANSPORT SCHEMES	27
6.5. COMMUNITY BASED TRANSPORT SCHEMES	28
6.6. TAXI SCHEMES	29
6.7. HOW APPROPRIATE ARE TRANSPORT SCHEMES FOR ADDRESSING POVERTY?	29
7. CONCLUSIONS	32

8. RECOMMENDATIONS	34
REFERENCES	37
APPENDIX: METHODOLOGY	I
DEFINITION OF SCOPE	II
SEARCH FOR EVIDENCE	II
APPRAISE OF STUDIES AND DATA EXTRACTION	III
ANALYSIS	III
DEVELOPMENT OF RESEARCH OUTPUTS	IV

1. INTRODUCTION

Travel offers the means to reach essential opportunities such as jobs, education, shops, and friends, which affect the quality of life. Lack of mobility is inextricably linked to social disadvantage and exclusion (Ohnmacht et al. 2009, Lucas, 2012).

Those lacking the resources and transport options required for being able to move become deprived from interacting with the (whole extent of) opportunities offered by society (Bauman, 2000). Travel by modes other than walking generally requires money. Faster modes such as the car and train tend to be more expensive than slower modes such as the bus and cycling; those who can afford these faster modes can reach a wider range of opportunities in a given time. Resources required for travel also include assets beyond purchasing power, like physical and mental capabilities, and time.

Providing transport facilities or reducing financial (and other) barriers to travel can offer ways to address poverty, through for example widening the range of opportunities for employment and education that can be reached. Transport should be seen as a service, which can reduce poverty by increasing economic efficiency and enhancing opportunities (Gannon and Liu, 1997).

The role of transport in helping to address poverty has been recognised by governments. The Transport White Paper issued by the Labour Government in 1998 (Department for Transport, 1998) said:

“Being unable to afford transport can limit everyday life. Job, training and education opportunities are more limited and there is less choice in shopping, adding to the family budgets of those least able to bear the cost”.

The guidance to the 2010 Child Poverty Act (Department of Education, 2010) says:

“Transport infrastructure, and accessibility to local services for children and parents, and employment opportunities for parents, are important in all local areas and are likely to be particularly so for those living in more remote or rural areas where the effects of growing up in poverty may be compounded by poorer access to services”.

Transport externalities (such as vehicle emissions and traffic collisions) are not evenly distributed. Hence, the relationship between road safety and disadvantage is an indicator in the government’s Strategic Framework for Road Safety (DfT, 2011). The government’s public health policy ‘Healthy lives, healthy people’ (DoH, 2010) acknowledges that

“Unsafe or hostile urban areas that lack green spaces and are dominated by traffic can discourage activity. Lower socioeconomic groups and those living in deprived areas experience the greatest environmental burdens”.

1.1. Aims and objectives

This report aims to review the evidence on the complex relationships between transport and poverty; to understand the range of policy and practice interventions, within transport and related arenas, which can be used to reduce or alleviate poverty and the potential effectiveness of these interventions within different contexts. In particular our specific objectives are:

- To determine how the relationships between transport and poverty differ across modes, between different parts of the UK and different population groups;
- To understand how transport poverty is being defined, measured and applied in practice, and the relative merits of the different approaches;
- To understand the role of the transport market in contributing to and alleviating or reducing poverty;
- To understand the range of interventions and measures that have been proposed and implemented within the UK and internationally to alleviate or reduce transport-related poverty;
- To synthesize the evidence on the effectiveness of these interventions and measures and understand how the evidence relates to different groups within different parts of the UK.

The report focuses on the situation in the four UK countries. Evidence has been drawn from the international literature to supplement the UK literature. The review process is described in the Appendix at the end of this report.

2. THE CONCEPTUAL LINKS BETWEEN TRANSPORT AND POVERTY

This section summarises the main bodies of theory that address relationships between transport and poverty. Three groups of literature dominate research on this subject: social exclusion theory, spatial mismatch and entrapment, and social justice; each concerned with different stages of what can be interpreted as the *cycle of transport and poverty*, presented at the end of this section.

2.1. Spatial Mismatch and Entrapment theory

A longstanding theory exploring relationships between transport and poverty from a geographical perspective is the notion of spatial mismatch. Developed primarily in North America in the late 1970s, this theory is mostly concerned with spatial barriers poorer people face to access jobs in a context of suburbanization and high car-dependency (Jocoy and Del Casino, 2010). Those who can afford to pay more for their transport move to suburban areas; retail and other services follow, taking jobs with them. Cheaper, more affordable housing tends to be located in areas with poor transport connectivity and poor service provision, so it becomes increasingly difficult for those on lower incomes and without a car to access jobs. Spatial Mismatch explains

this process of generation of barriers for access to income resulting from the three-way dynamic relationship between jobs, housing and the transport network (Sanchez, 2008). In this context, employment provides disposable income for mobility, which allows job retention.

Spatial mismatch mainly addresses location patterns of the poor in relation to main concentrations of activities, access to transport alternatives, and affordability of travel (Jocoy and Del Casino, 2010). More recent studies deriving from spatial mismatch theory also address the effects of skills mismatch resulting from low-level of education and production of spatial entrapment (Levy, 2013). According to Jocoy and Del Casino (2010), the latter applies to mothers with young children who have household responsibilities and constrained schedules and often occupy jobs that do not justify long commutes (i.e. part-time, low wages often in retail, education and healthcare). These dynamics generate additional vulnerabilities and inequalities within poor households.

A great deal of research in this area has focused on exploring travel to work as it can be a central driver of both individual and household patterns of mobility (Cervero, 1999). Limited physical mobility (transport) can be more relevant in determining successful transition to work than education or training (Blumenberg and Ong, 2001). In this context, assessments from the spatial mismatch perspective often lead to supply-targeted solutions to transport deprivation in poor populations, focusing more on the environment than the individual.

2.2. Social Exclusion Theory

A second area of research that examines relationships between transport and poverty is that of social exclusion (Church et al, 2000; Lucas et al, 2007). Contrary to the spatial mismatch theory, social exclusion literature focuses more on the consequences of transport deprivation than on the processes leading to it. Mainly a theory from the social sciences, it is based on a term first developed by the French in the early 1970s, which refers to the loss of the ability to connect with the services and facilities needed to fully participate in society (Church et al, 2000). Research on transport builds up on this general conceptualization to define transport-related social exclusion as the “process by which people are prevented from participating in the economic, political and social life of the community because of reduced accessibility to opportunities, services and social networks, due to whole or in part to insufficient mobility in a society and an environment built around the assumption of high mobility” (Kenyon et al. 2006, 210). Cognitive, technical, societal and economic capacities also determine individual mobility, constituting different types of ‘mobility capital’ that limit accessible opportunities to address every day and long-term needs. (Kaufmann et al, 2004; Urry, 2008; Ohnmacht et al, 2009). Figure 1 illustrates the relationships between transport, social disadvantage and social exclusion.

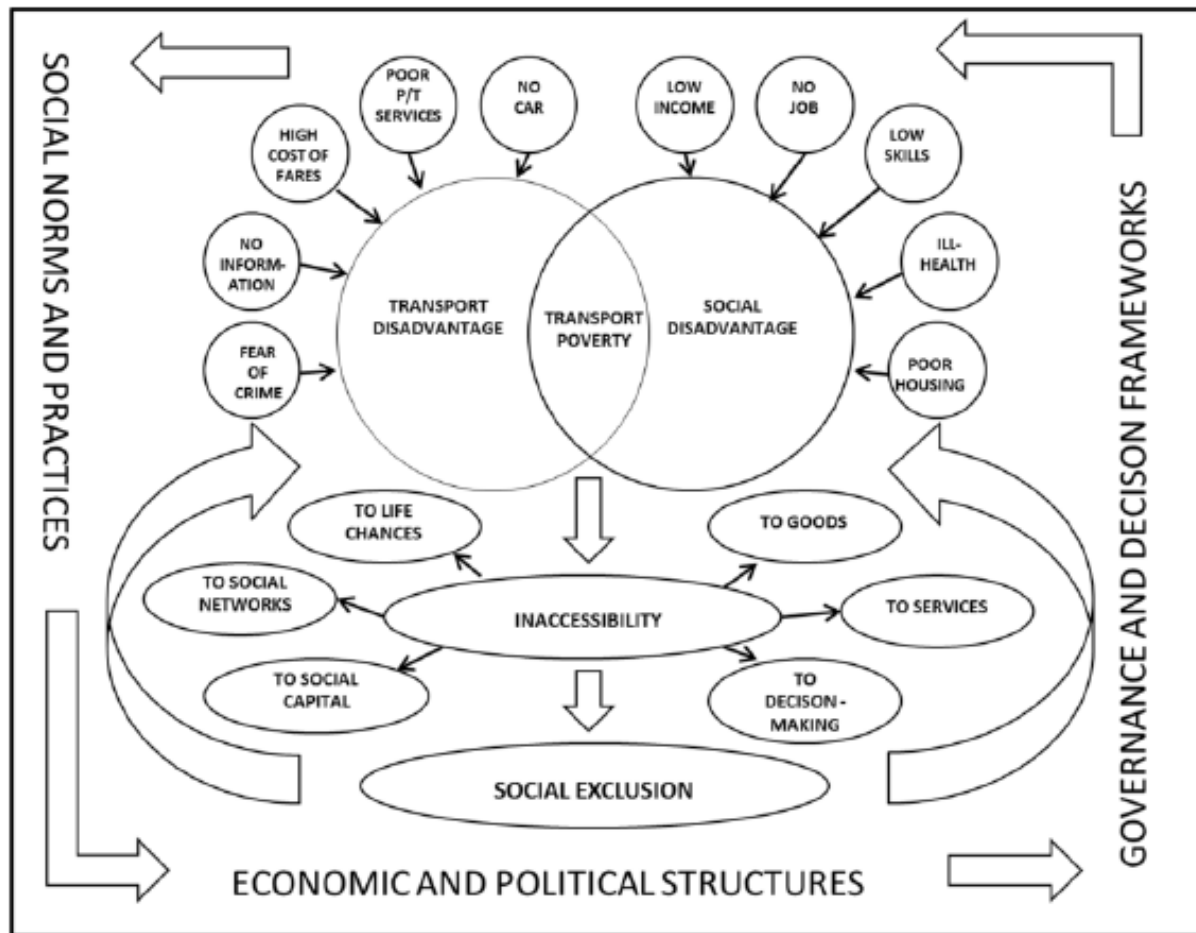


Figure 1: The relationship between transport disadvantage, social disadvantage and social exclusion (Source: Lucas, 2012)

Social exclusion is therefore concerned primarily with the outcomes of barriers to access, which can be in terms of distance as suggested by spatial mismatch theory, but can also consider other types of disadvantages. Church et al. (2000) identified six categories beside geographies that can produce social exclusion: physical impairments, barriers for accessing a given service, affordability, time limitations, fear of crime, and regulatory restrictions. The choice of category or spatial approach to examine the problem of social exclusion influences how resources are allocated (Church et al, 2000). Poor transport contributes to social exclusion by restricting access to activities that enhance people’s life chances, such as work, learning, health care, food shopping, and other key activities. Delbosc and Currie (2010) found that a lack of transport can lead to harmful isolation that negatively influences well-being of vulnerable populations.

Social exclusion is mainly operationalised in terms of access (Lucas, 2012), being addressed both quantitative and qualitatively. As a wider body of literature, it has been incorporated into policy in several countries, mainly in Europe (Preston and Raje, 2007). Since, research on social exclusion has increasingly focused on the assessment of transport-related disadvantages. Social exclusion analyses tend to suggest more holistic responses than purely spatial analyses, influencing approaches to planning, particularly in the urban realm (Jones and Lucas, 2012).

2.3. Social Justice Approach

Social justice theories examine transport-related disadvantages and their relation to poverty from a perspective of inequality. This approach relates mostly to the underlying idea of equality of access, and thus suggests policies should focus on offering the greatest benefit to the least advantaged members of society (Fraser, 1998; Harvey, 2010). Stepping away from the analysis of current processes and some of the consequences of transport disadvantages, social justice relates more closely to governance of transport policy and the political ideals driving it. As a consequence, analyses of social justice tend to be more discursive and lead to solutions related to the objectives and priorities of public policies.

In addition, there can be different approaches to the concept of equality, allowing for the generation of different solutions for a same condition of transport-related disadvantage (Deka, 2004). For example, within the Libertarian doctrine there are those who adhere to the idea that people should be able to keep what they have earned and have a right to inherit. There are also those that advocate some minimal intervention to reduce social welfare. Liberals can be divided into two groups – Utilitarians and Rawlsians. The Utilitarians seek to maximise total utility for society, whilst the Rawlsians seek the greatest benefit to the least disadvantaged, aiming for equal basic liberties and equal opportunities for all. Collectivist approaches are based on principles on equality, fraternity and freedom, which translate into a search for equity of outcomes.

It is not easy to translate these doctrines into policy and objective measures of the deserving or needy. The dominant mode of decision making within transport planning (based on rational man, quantitative, and utility maximising approaches) may act as a hindrance to social justice within transport. In this context, current modelling and appraisal systems tend to reinforce the status quo.

Social justice approaches, however, can also be used to analyse some of the outcomes of transport. Ideas of social justice applied to the analysis of transport externalities allows identification of distributional effects of transport services and infrastructure, as well as an informed critique of transport policies in vulnerable areas (Harvey, 1998; Social Exclusion Unit, 2003; Currie and Delbosc, 2011). Deprived communities suffer disproportionately from pedestrian deaths, pollution and isolation which can result from living near busy roads. The production of these conditions in vulnerable populations can be interpreted as social injustice (Lucas, 2006; Preston and Raje, 2007).

Although mainly qualitative, this approach can be applied to quantitative indicators for the analysis of transport-related inequalities (Jones and Lucas, 2012). This contrasts to standard approaches to transport and infrastructure provision appraisal relying mostly on conservative measures like cost-benefit analysis. Cost-benefit analysis relies on summing the costs and the benefits of a project and so cannot fully capture the social aspects of transport infrastructure investments (Bocarejo and Oviedo, 2012).

2.4. The dynamics of transport and poverty

A combination of concepts, relations and theories we reviewed can be used to modify Lucas' (2012) dynamic cycle between transport and poverty framing different issues on the theories examined in this section.

Lucas (2012) identifies the main elements related to conditions of transport and social disadvantages, which include on the transport side limited access to travel (limited access to public transport or a car), prohibitive fare costs, and limited or non-existent information. Similarly, on the social side, she identifies elements that influence conditions of disadvantage: Lack of jobs and qualifications, poor housing and low income, which can adversely affect the ability of poorer people to access opportunities. The relationships between these types of disadvantage are straightforward and show that a lack of assets can be worsened by poor transport provision, increasing barriers to access activities and leading to processes of social exclusion. Conditions of social vulnerability force people in poverty to live in less attractive areas, with no access to jobs and poor transport provision. In this context, spatial mismatch theory can help to explain more in detail the processes creating poor accessibility. The transport environment in many deprived areas, and the high dependence on walking for people living in these areas, means that they are often exposed to the negative impacts of transport such as pedestrian fatalities and injuries, pollution and isolation resulting from living near busy roads that are difficult to cross. These distributional effects increase the vulnerability of poor families to transport externalities

An important contribution of the cycle of transport and poverty to Lucas' (2012) work is the interpretation of different processes as social justice and injustice. On the one hand, this perspective can help analyse the unequal distribution of externalities that affect the most disadvantaged. On the other hand, social and spatial distribution of transport supply and externalities is framed by a set of rules and ideals underlying public policies and interventions. The analysis of distributional effects of transport from a social justice perspective can feed into the governance framework providing insights that strengthen transport policy approaches to poverty and vulnerability. Such changes can positively influence the relations between transport and poverty, thus reducing social exclusion, spatial mismatches and the effect of externalities. These relationships are shown in the diagram below (Figure 2).

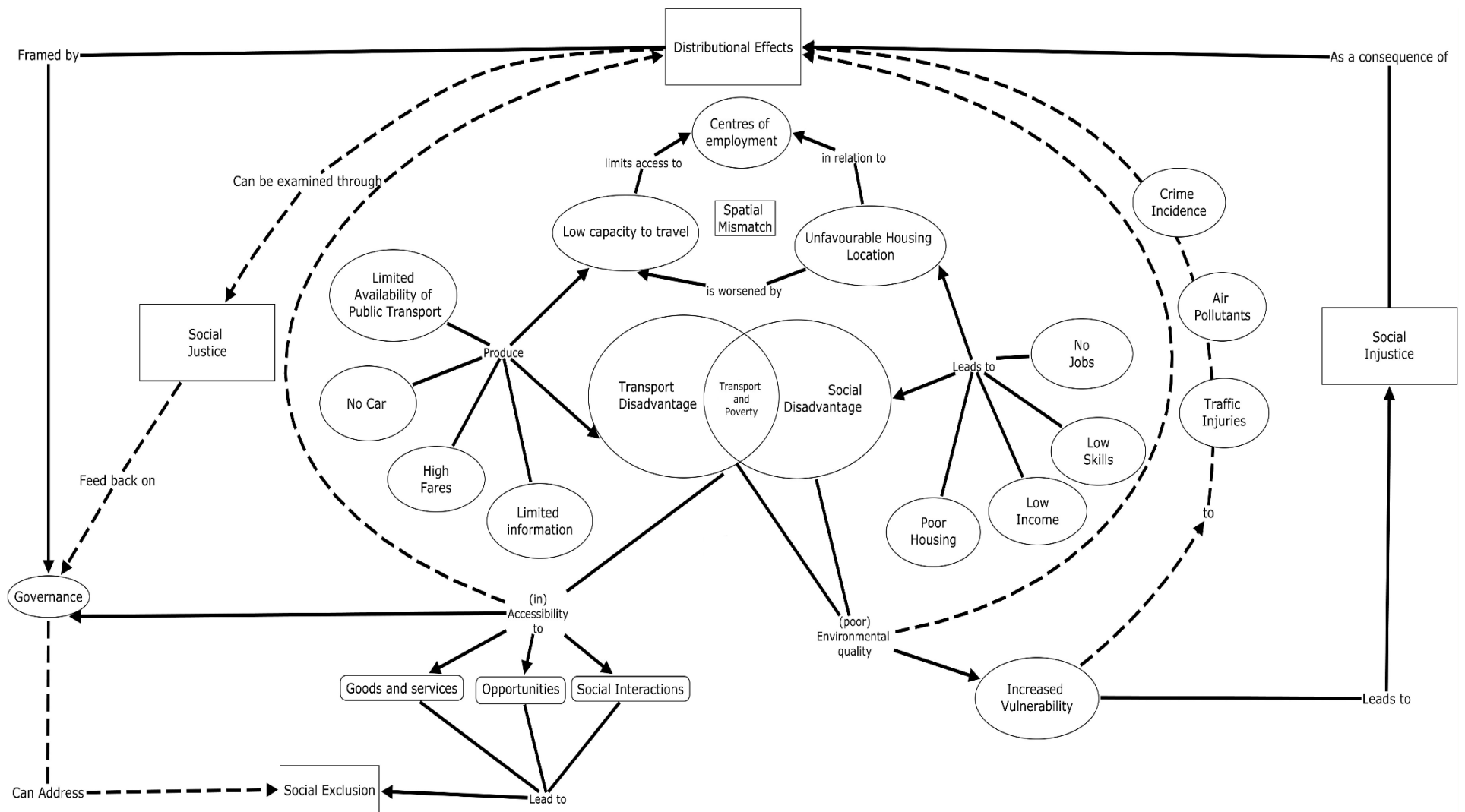


Figure 2: The dynamics of poverty and transport (adapted from Lucas, 2012)

3. POVERTY AND TRAVEL BEHAVIOUR

This section describes travel behaviour and mobility levels amongst a number of different groups identified in the literature as vulnerable to transport-related social exclusion, poverty or can be socially disadvantaged.

3.1. Income and travel behaviour

Income is strongly related to travel behaviour. People with low incomes travel much less than those with high incomes: the National Travel Survey (NTS) (Department for Transport, 2013a) which considers income in terms of quintiles (dividing the population into five groups according to the income of their household), shows that in 2012, those in the lowest group made 819 trips a year, travelling 6,382 km a year compared with 1,052 trips and 16,622 km by the highest group (see Table 1). This implies that the highest income group make trips which are 15.8 km long, on average, over twice that of the lowest income group at 7.8 km. Table 1 shows that these inequalities have reduced over time with decreases in the distance travelled by the higher income and increases for those in the lower groups. All income quintile groups are reducing the number of trips that they make but the decrease is larger for those with high incomes.

Table 1. Average annual number of trips made and distance travelled, by household income quintile in Great Britain, 1995/97 and 2012

	Trips per person per year		Km per person per year		Mean trip length in km	
	1995/97	2012	1995/97	2012	1995/97	2012
Lowest real income quintile	875	819	5,002	6,382	5.7	7.8
Second quintile	959	884	7,509	7,768	7.8	8.8
Third quintile	1,110	967	10,182	10,349	9.2	10.7
Fourth quintile	1,211	1,047	13,792	12,526	11.4	12.0
Highest real income quintile	1,246	1,052	18,923	16,622	15.2	15.8
All incomes	1,086	954	11,170	10,706	10.3	11.2

Source: Department for Transport (2013a)

More bus trips and walk trips are made by the lowest income group than any other group whereas more rail and bicycle trips are made by those from high income group than others (but there is not a large difference in the bicycle use across the income groups) (Table 2). People in lowest income quintile make 23% more journeys on foot than others. According to the Office for National Statistics (2012), expenditure on travel as a percentage of expenditure increases with income as it does with expenditure on the purchase and operation of cars and rail and Tube fares whereas expenditure of bus and coach fares decreases with income (Table 3). Those in the bottom two income deciles spend on average considerably less on purchasing and operating a vehicle, and on travel in general, than those in higher income deciles. National travel data has shown that the use of taxis and minicabs is highest amongst those in the lowest income groups (DfT, 2010).

Table 2. Number of trips per head per year by mode, by household income quintile in Great Britain, 2012

	Walk	Bicycle	Car	Bus and coach	Rail	Other	All modes
Lowest real income	260	15	400	101	15	28	819
Second lowest level	236	14	520	73	15	26	884
Third level	195	14	658	60	19	20	967
Second highest level	189	18	748	41	32	18	1047
Highest real income	182	19	739	31	56	25	1052
All income levels	212	16	614	61	27	24	954

Source: Department for Transport (2013a)

Table 3 Spending on travel as a percentage of total expenditure by income group in the United Kingdom, 2011

	Purchase of vehicles	Operation of personal transport	Rail and Tube fares	Bus and coach fares	Other travel	Total travel
Lowest 10%	1.6	4.1	0.3	0.7	0.7	7.3
2 nd decile group	1.7	4.8	0.3	0.4	1.3	8.4
3 rd decile group	3.3	6.1	0.1	0.4	1.2	11.1
4 th decile group	3.1	6.8	0.4	0.5	0.8	11.6
5 th decile group	2.9	7.3	0.3	0.4	0.8	11.7
6 th decile group	3.1	7.6	0.4	0.4	1.3	12.8
7 th decile group	4.3	8.1	0.6	0.4	1.2	14.7
8 th decile group	4.7	8.8	0.6	0.4	1.1	15.5
9 th decile group	4.4	8.5	0.7	0.3	1.0	15.0
Highest 10%	5.1	7.6	1.0	0.1	1.5	15.5
All	3.9	7.5	0.6	0.3	1.2	13.6

Source: Office for National Statistics (2012)

Cars offer families the opportunity to travel together at low marginal cost for each trip, but require significant expenditure to purchase, tax and insure, which may be beyond the means of some low income households. Others may own a car through necessity but struggle to afford it. Similarly, those on low incomes may be unable to obtain the biggest discounts on public transport fares as it is often necessary to pay large amounts in advance to purchase season tickets.

Table 4 shows that 89% of households in the highest income group own one or more cars compared with the 52% in the lowest group. Over 70% of the trips made by the highest income group are by car compared with fewer than 50% by the lowest income group. A quarter of all households and almost half of those from the poorest quintile do not have access to a car. 'No access to a car' is not only an indicator of low socio-economic status but is also associated with an increased likelihood of walking as a mode of transport (Bostock, 2001). Those in the lowest income quintile have increased their car ownership over time while it has declined for those in the higher income groups. These differential changes in car availability largely underpin the changes in the numbers of trips made and the distances travelled shown in Table 1.

Table 4. Household car availability by real household income in Great Britain, 1995/97 and 2012

	Percentage of households					
	1995/97			2012		
	No car (%)	One or more car (%)	Two or more cars (%)	No car (%)	One or more car (%)	Two or more cars (%)
Lowest real income	66	34	4	48	52	11
Second lowest level	47	53	8	35	65	19
Third quintile	20	80	26	20	80	32
Second highest level	12	88	39	13	87	43
Highest real income	7	93	49	11	89	50
All households	30	70	25	25	75	31

Source: Department for Transport (2013a)

By comparison with the situation in Great Britain, a study of low income households in the United States found that those on low incomes spent a greater share of income on transport than the non-poor, and only the very poor were unlikely to own at least one car (Giuliano 2005). Most poor households in the United States are car dependent rather than public transport dependent.

The internet provides information about travel opportunities, including the cheapest fares in some cases, but internet access costs money, so those in greatest need of cheap travel and with the lowest likelihood of owning a car, may lack the opportunity to purchase the best deals. Table 5 shows that there is a large difference between those with low and those with high incomes with only 41% of those in each of the two lowest income groups with internet access compared with 99% of those in the top group, which is higher than the figure for telephone access.

Table 5. Ownership of an internet connection by income group in the United Kingdom, 2011

	Internet connection
Lowest 10%	41
2nd decile group	41
3rd decile group	56
4th decile group	73
5th decile group	81
6th decile group	91
7th decile group	92
8th decile group	95
9th decile group	98
Highest 10%	99
All	77

Source: Office for National Statistics (2012)

3.2. Rural areas

In the UK the standard definition of a rural area is a settlement of size less than 10,000 resident population. Within this there are sub divisions for both urban and rural areas:

- Urban: Major Conurbation;
- Urban: Minor Conurbation;
- Urban: City and Town;
- Urban: City and Town in a sparse setting;
- Rural: Town and Fringe;
- Rural: Town and Fringe in a sparse setting;
- Rural: Village;
- Rural: Village in a sparse setting;
- Rural: Hamlets and Isolated Dwellings;
- Rural: Hamlets and Isolated Dwellings in a sparse setting.

Those described as 'in a sparse setting' reflect where the wider area is remotely populated. According to DEFRA (2013) 9.8 million people, or 18.9% of the population, live in rural areas with most living live in Less Sparse Rural areas and only 1.2% living in Sparse Rural areas.

Whilst people who live in rural areas have on average higher incomes than those in urban areas, there is still a significant proportion who are in the lowest income quintile (Table 6).

Table 6. Proportion of household incomes in the lowest and highest income quintiles by area type

Type of district	In the UK's poorest fifth	In the UK's richest fifth
'Very rural' districts	16%	21%
'Mostly rural' districts	17%	23%
'Part rural' districts	16%	23%
Urban districts	23%	20%

Source: based on DWP data, averaged for the years 2006/07 to 2008/09 for England (<http://www.poverty.org.uk/r09/b.pdf>)

Low income households in rural areas tend to have more access problems than those living in urban areas. Research on transport and poverty in rural areas is an area where current understanding is weak as most research has been focused on urban environments (Velaga et al, 2012). Rural communities face a range of challenges associated with accessibility and connectivity. This situation is recognised in the Transport White Paper issued in 2011 (Department for Transport, 2011) stating

“20% of our population lives in rural areas where there are higher levels of car dependence (including for lower income households) coupled with a lower availability of public transport.”

People in rural areas without a car have much poorer access to key services compared with both rural car owners and those living in urban areas, without a car (Table 7). They have much poorer bus availability (frequency and coverage) especially those living in rural villages and hamlets (Table 8). Households living in rural areas spend £77.40 each week on transport compared with £58.80 by those in urban areas (Table 9), which is over one third of the extra weekly expenditure by those in rural areas compared with urban residents.

Table 7. Average minimum travel time to reach the nearest key services by mode of travel in rural and urban areas in England, 2011

		Employ- ment	Primary school	Secondary school	Further Education	GP	Hospital	Food store	Town Centres
Public transport and walking	Urban	9	8	12	14	9	26	7	14
	Rural	16	12	25	28	15	46	14	29
Car	Urban	5	5	5	6	5	8	5	6
	Rural	6	5	7	9	6	13	6	10

Source: Department for Transport (2013b)

Table 8. Bus availability¹, 2002 to 2009 (%)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Urban	96	97	96	96	97	97	97	97	97	97	96
Rural town and fringe	75	79	82	79	80	82	85	82	84	89	86
Rural village and hamlet	38	36	42	46	42	45	46	41	40	41	49
England	90	91	91	90	91	92	91	91	92	91	91

Source: Department for Environment, Food & Rural Affairs (2014)

¹ expressed as the percentage of households where the nearest bus stop is within 13 minutes' walk and has a service at least once an hour.

Table 9. Household expenditure in £ per week by type of area, 2009-2011

	Urban	Rural
Food and non-alcoholic drinks	52.00	57.60
Alcoholic drinks, tobacco & narcotics	11.10	13.00
Clothing and footwear	21.50	21.30
Housing, fuel and power	61.30	58.30
Household goods and services	27.80	32.90
Health	5.30	6.80
Transport	58.80	77.40
Communication	12.70	12.80
Recreation and culture	57.20	68.80
Education	7.90	8.30
Restaurants and hotels	38.80	39.00
Miscellaneous goods and services	35.50	39.60
Other expenditure items	68.50	74.60
Total	458.30	510.50

Source: Office for National Statistics (2012)

Lower incomes and unemployment benefits mean that the cost of owning and running a car are prohibitive for many young people (Commission for Rural Communities, 2012). Large distances and the higher cost of fuel in rural areas may exacerbate these barriers to travel (Table 10).

Table 10. Average annual prices (pence per litre) of diesel and unleaded petrol (July 2011 to June 2012), by settlement type in England

	Diesel	Unleaded petrol
Urban	141.1	135.2
Rural	143.0	137.1
England	141.7	135.7

Source: Department for Environment, Food & Rural Affairs (2012)

In their study in Northern Ireland, Kamruzzaman and Hine (2012) found that non-car owning and low income individuals were limited to participating in activities within their local area to a greater extent than their car owning and high income counterparts. This suggests that participation by non-car owning and low income groups could be enhanced by increasing the provision of local opportunities. Low income individuals reliant on public transport lack the ability to deviate far from the main public transport route due to financial constraints and the poor connectivity of transport services. This makes it more difficult to reach opportunities like education and jobs, and so these groups are at higher risk of being excluded from society. Smith et al,(2012) looked at minimum income standards in rural areas related to travel focusing on people's capability needs for avoiding transport disadvantage, They argued that low income households in rural areas are highly dependent on cars to access services and are not only affected by rising fuel costs but by the overall cost of running a car. They argued that even if the planning of services reduced the distances people needed to travel (i.e reduced fuel costs) it would only make a small difference to the minimum income requirement in order to be able to afford a car. Nutley (1996) compared transport problems experienced in rural areas by disadvantaged population groups in the UK and

USA. He suggested that the supply of cars to low-income families at public expense may be a feasible solution for rural areas, particularly in affluent, spatially extensive countries such as the USA, Canada and Australia. Currie et al,(2010) found that poorer households with high car ownership value their mobility and take advantage of cheaper housing on the urban fringe. However, in order to reduce the significant burden of high car costs, they adopt numerous strategies to reduce car costs (Currie et al, 2010).

Those in rural areas make more trips, travel further and spend more time travelling than those in urban areas (Table 11). Coupled with the higher cost of vehicle fuel (DEFRA, 2012) and the poorer availability of buses in rural areas, there are clear inequalities in transport provision between rural and urban areas, which are likely to impact those on low incomes and those without access to a car.

Table 11. Trips, distance and travelling time per person per year, 2006/09

	Trips per person	Travelling time per person in hours	Km per person	Average trip distance in km
Urban	990	376	10210	10.3
Rural town and fringe	1,025	389	14243	13.9
Rural village and hamlet	1,027	403	16107	15.7
England	997	380	11131	11.2

Source: Department for Environment, Food & Rural Affairs (2013)

3.3. Urban areas of deprivation

Urban areas can be poorly served by public transport and can lack sufficient services within walking distance to meet people's needs. People living in deprived urban neighbourhoods can pay more for food, and are more vulnerable to health-related issues (Chung and Myers, 1999; Firke, Chern and Fox, 1997; Lucas et al, 2009). There is a strong positive relationship between the level of deprivation² in an area and the proportion of the population that has a limiting long-term illness (Lovett et al, 2002). Lack of access to transport by personal car, public or community transport reduces the ability of urban populations to access healthcare (Lucas et al, 2009; Power, 2012).

3.4. Ethnic groups.

Car availability tends to be lower amongst BAME groups (Table 12) and there are differences in travel patterns between ethnic groups (Table 13) with white people making the largest number of trips at 998 each year whereas those in the 'Other ethnic group' group only make 773 which is over 20% fewer and lower than the number made by the lowest income quintile, as indicated in Table 1. Poverty is higher among BAME

² Measured using the Townsend deprivation index (Townsend et al, 1988), which incorporates four variables: unemployment rate, percentage of non-car owning households, percentage of non-home owning households, and household overcrowding.

groups compared to the majority White population (Barnard and Turner, 2011) Whilst income is, almost certainly, a factor, there may also be cultural issues, with members of some BAME groups staying at home more of the time than those in other groups. For example, Lucas et al,(2001) found that Muslim women were reluctant to use public transport and tended to rely on male relatives to drive them to places. Other barriers to travel amongst BAME groups include: lack of cultural awareness amongst transport providers and language barriers, (DfT, 2003) and personal safety concerns relating to fear of local gangs and racial abuse (Lucas et al, 2001).

Table 12. Adult personal car access by ethnic group (%): Great Britain, 2012

Ethnic group	Adults in households without a car or van	Adults in a household with a car or van	All adults
White	19	81	100
Mixed / Multiple ethnic groups	33	67	100
Asian / Asian British	29	71	100
Black / African / Caribbean / Black British	41	59	100
Other ethnic group	41	59	100
All ethnic groups	20	80	100

Source: Department for Transport (2013a)

Table 13. Adult trip rates by ethnic group (individuals aged 17+) in Great Britain, 2012

Ethnic group	Trip rate
White	998
Mixed / Multiple ethnic groups	965
Asian / Asian British	815
Black / African / Caribbean / Black British	839
Other ethnic group	773
All ethnic groups	979

Source: Department for Transport (2013a)

3.5. Students

For students from low income households attending higher education many of the journeys they needed to make to participate fully in academic, social activities were not made because they were not affordable (Kenyon, 2011). The opportunity to obtain a discounted travel card was not taken up because a one-off payment was required. Higher Education institutions need to provide information and guidance about travelling to and from campus and to support travel with subsidies and to consider how best to facilitate a high quality walking environment in, and between, campuses (Kenyon, 2011).

3.6. Unemployed people

Attending job interviews for jobseekers from deprived backgrounds has been described as difficult if they do not have access to a car and are reliant on public transport (Davies et al, 2012). Among job seekers two-thirds are without access to a car in their

household (CfBT, 2011). Bourn (2013) found that the car provides a real advantage in terms of seeking work for low-income people and immigrants and can make the difference between taking up education/training opportunities and 'becoming a NEET statistic' (Not in Employment, Education or Training). A third of young people who were NEET or in jobs without training think they would have done something else after Year 11 at school if they had received more assistance with travel costs. This importance of access to cars was directly linked to the low availability and high cost of bus services. Evidence from the United States shows that improved public transport significantly augments both the probability of being employed and the probability of working 30 hours or more per week (Kawabata, 2003).

3.7. Elderly people

Shergold and Parkhurst (2012) found 5-10% of older (60+) people living in rural areas felt some degree of exclusion. The percentage reporting difficulties accessing facilities was substantially higher in the 80+ age group. Low-income elderly people with no access to a car face financial limitations and physical difficulties that limit their ability to access public transport and travel longer distances. Age UK (undated) found a high proportion of pensioner households in rural areas without access to a car. In addition, while older people have free access to public transport, reductions in funding to public transport authorities often make frequent and reliable transport unavailable for elderly rural populations (Age UK, 2012a). Instead they tend to use resources to travel relatively short distances relying on support networks to obtain goods and supply their needs (Rajé, 2007). There is some evidence that in these remote rural areas informal and formal lift giving is a 'transport asset' for people on low incomes or without access to a car.

Age UK recommends that where private travel is not possible and the public transport system does not fully serve the needs of older people in the area, then local authorities should be expected to provide financial support towards community transport or taxis

3.8. Women

Qualitative research among women from very deprived areas in the USA identified a number of barriers for engaging with social support services. Public transport was not considered a feasible option, for various reasons including the perception that buses do not stop for people with pushchairs or buggies. Walking was seen as a difficult option when having young children 'in tow', or when they needed to carry heavy or bulky items, such as food from food banks, and when trips were frequent. Moreover, the proximity of services was important for frequent trips such as accompanying children youth services, nursery or school. Women were also concerned about security on their journey, and if services were deemed to be in a 'no go' area, then they would regard the service as inaccessible, though they would walk through riskier areas if the quality of support they were likely to receive on arrival was considered high (Kissane, 2010). In the USA, for women on benefits access to a car was a stronger correlate with successful transition from welfare to work than education or training (Wachs, 2010).

3.9. Distributional impacts of transport

Road casualties

There is international evidence (Braver, 2003; Hasselberg et al, 2005, Factor et al, 2010) of a statistically strong relationship between deprivation and road casualties. In the UK, the analysis of routinely collected national data that people from the most deprived neighbourhoods are much more likely to be killed or injured as road users:

- Children from the lowest social class are five more likely to die as a pedestrian compared to those from the most affluent (OPCS 1988) – a socioeconomic gradient that persists (Edwards et al, 2006);
- Children in the 10% most deprived wards in England are three times as likely to be pedestrian casualties than children in the 10% least deprived wards (Grayling et al, 2002);
- There is a link between deprivation and car occupant fatalities (Ward et al, 2007);
- Older people from the poorest areas are twice as likely to be hospitalised as pedestrians compared to those most affluent (Lyons et al, 2003).

Moreover, the relationship between deprivation and risk of road traffic injury is particularly strong for children. In terms of numbers this means that in 2012 of nearly 7000 child pedestrians injured on the roads (Department for Transport, 2013c) approximately 40% will come from the most deprived 20% of society (PACTS, 2013).

Research in Sweden has shown that young people from low socioeconomic classes gain their driving licence at a younger age compared to their counterparts in higher social classes (Hasselberg et al, 2005). This could reflect the situation where young people who do not go on to tertiary education need their cars to access work or even to drive as part of work. For young people driving as part of work, their risk of being injured in a collision was found to be more than for any other age group (RoSPA, 2009).

The consequences of death and injury as a result of traffic collisions are likely to exacerbate poverty through the need to take time off work to recover, through additional costs of accessing health appointments (if they can access them) and potential creation of long term physical and psychological consequences (Kendrick et al, 2012; Sleney et al, 2013).

A number of studies have explored in some detail the reasons why transport has such a negative impact on deprived communities such as Christie et al,(2010) in their evaluation of the Neighbourhood Road Safety Initiative in 15 of the most deprived areas in England, and Lowe et al,(2011), who carried out five case studies in highly deprived wards in Wigan, Bradford, Newham, Sunderland and Wolverhampton. Both studies provide very similar explanations of why the risk is increased:

- people in deprived areas live in more hazardous environments, such as older style developments, with dense housing and proximity to high volumes of fast moving traffic and high levels of on street parking;
- they have higher levels of exposure to road traffic risk because they are more likely to walk and less likely to be able to afford access to a car; and
- they are less likely to have access to safe spaces and supervised facilities for children and young people, meaning there are fewer alternatives to streets and roads as places to socialise and play outside the home.

Lack of safety and personal security

People in deprived areas feel that there are exposed to high levels of traffic risk such as hazardous and illegal driving behaviour. This includes dangerous parking (including on pavements near schools, for example) and speeding and aggressive driving (Christie et al, 2007; Christie et al, 2010). There is evidence that the perceived lack of safety by people living in deprived areas is well founded. In-depth analyses of a sample of 893 fatal collisions involving car occupants shows that people from the most deprived quintile compared to the least deprived (based on the Index of Multiple Deprivation) were over represented in crashes where the driver was uninsured (by a factor of 3), unlicensed (by a factor of 6), drove recklessly (by a factor of 6) or did not wear a seat belt (by a factor of just under 2) (Clarke et al, 2008). However, it has to be questioned why these people chose to drive 'outside of the system' and this may be related to the cost of licencing, tax and insurance which in combination are often much greater than the cost of the actual vehicle – very little research has addressed this area. Furthermore this lack of access to a car is likely to contribute to vehicle theft which is one of the 'debut' crimes associated with a 'chronic' criminal career (Owen and Cooper, 2013).

The anti-social and illegal behaviour of drivers and riders was perceived by the community to be exacerbated by a lack of consistent visible enforcement, i.e. there were seen to be no consequences for drivers who parked their cars on pavements or near junctions, who did not stop at crossings or who drove while using mobile phones; there was a sense among local people that little was being done to improve safety in the area (Christie et al, 2010).

Concerns about personal security are also evident in people's experience of public transport. Transport for London (2012) found that 66% of low income Londoners said concerns about crime and anti-social behaviour affect the frequency of public transport use compared with 61% of all Londoners. 56% of low income Londoners said they felt safe walking after dark compared with 63% of all Londoners.

Pollution

Neighbourhoods with high proportions of low-income and ethnic minority households presented higher exposure rates to ozone and particulate matter, with people 65 and older in low-income neighbourhoods being more vulnerable than people of similar age

in higher income areas (Schweitzer and Zhou, 2010). Income deprived communities in Leeds were found to experience considerably higher concentrations of nitrogen dioxide than communities of more affluence (Mitchell, 2005).

Poor quality urban environments

Research in the UK has identified that people without cars, the disabled, elderly and school children are the most adversely affected by severance which occurs when road traffic (speed or volume) inhibits access to goods, services, or people. Severance has been characterised as having a number of dimensions such as physical (reduced access), psychological (higher exposure to environmental affectations) and social (fragmentation and barriers for social interaction) (Geurs et al, 2009; James et al, 2005). Vehicle traffic is also seen as a major barrier to active travel.

Poor quality urban environments have been described as 'obesogenic' in that they are a barrier to active travel and potentially cause sedentary behaviours which compound the health of people living in deprived areas where obesity levels are the highest (Law et al, 2007).

Planning of transport infrastructure and services

It has been argued that planners choose routes through poorer neighbourhoods as the cost of compulsory purchase tends to be lower (based on the market value of property) (Deka, 2004). Dis-benefits to those neighbourhoods include: isolation, severance, segregation (including creation of no go areas under elevated sections); noise, pollution, vibrations, collisions; and poor conditions increase dispersal of middle-income households away from these roads and reduce property prices still further.

The concentration of bus operating companies on high-demand corridors, which usually serve large numbers of commuters, has meant neglect of peripheral and rural routes. The prioritization of economic efficiency over poverty reduction in public transport service provision has been described as 'urban splintering' (Graham and Marvin, 2001). The implications of this are that the high income people will enjoy a good choice of high quality public transport whereas:

"the travel poor and time-dependent, may have almost no such choices as they wait in unsafe bus stops or unstaffed stations or find it too expensive to get their cars on the road or lack the smart cards necessary to enter premium places" (Cass et al, 2005).

4. TRANSPORT POVERTY

The term 'transport poverty' has been used by some transport campaign organisations, media and regional government to raise awareness that some households and individuals are struggling or unable to make the journeys they need but the term is often ill-defined. The use of the term transport poverty is often accompanied by headlines about the affordability of car ownership and rising public transport costs,

although many (see, for example, Sustrans, 2012a) acknowledge that it is a more complex issue than simply the affordability of motoring. Lack of access to a car, poor public transport provision and rising public transport fares are also seen as major concerns within the transport poverty literature.

Despite the lack of a clear definition, there have been several attempts to develop transport poverty metrics. The RAC Foundation (2012) drew parallels with the then official definition of fuel poverty to develop an indicator of transport poverty. The definition of fuel poverty in use in 2012 was that households spending more than 10% of their income on heating their home to maintain an adequate standard of warmth were said to be in fuel poverty (DECC, 2013). The RAC Foundation (2012) suggested that households spending more than 10% of their income on average on transport could be considered to be in transport poverty. This measure has been criticised (see, for example, CfBT, 2012), as the average expenditure on transport is 14% of income, and because those in the highest income quintile spend more on transport than those in the lowest income quintile. There is a luxury element to transport, with first class travel, ownership of private jets or an expensive car being seen as status symbols (Urry, 2007), so expenditure on transport is not just about meeting a need for travel. It should be noted that the Government has since adopted a new definition of fuel poverty based on a Low Income High Costs (LIHC) framework (DECC, 2013) following a review of the definition by Professor John Hills (2012). The Hills review found that there were significant flaws with the existing definition of fuel poverty, including that the definition could encompass households who are 'clearly not poor'.

Sustrans (2012b) have produced a measure of transport poverty for England based on three indicators that are "proxy measures for each of the issues faced":

- time taken to access essential services;
- distance to the nearest bus stop or train station;
- family income.

The measure is area-based; each Lower Super Output Area (LSOA) is classified as low, medium or high risk of transport poverty, based on the percentage of households in the area that meet each of the three criteria. The income indicator is based on the proportion households that would need to spend more than 10% of their income on running a car, irrespective of whether or not they actually owned a car. Precise details of how this was calculated are not given, so it is not clear what assumptions have been made, for example, in terms of the type of car or petrol costs. The distance to public transport indicator uses the proportion of households that would need to travel more than 1 mile to access their nearest bus stop or train station. The access to essential services measure is the proportion of households who would need to travel more than one hour to reach a list of eight 'essential' services.

A key weakness of this measure is that it is an aggregate measure. It does not identify households in transport poverty instead identifying areas where there are potentially a

high proportion of households in transport poverty. It is acknowledged that this limitation is imposed by the use of national data sets on access to essential services.

Several alternatives to the term 'transport poverty' have been proposed in the literature. These include 'poverty of access' (Farrington and Farrington, 2005), 'transport wealth' (Stokes and Lucas, 2011) and 'transport hardship' (Cain and Jones, 2008). Accessibility indicators are widely used, although these tend to focus on travel time or distance to access essential services and opportunities, and rarely include a journey cost element – although this may be partly due to the difficulties of determining reliably public transport costs.

Stokes and Lucas's (2011) proposed measure of transport wealth considers three dimensions: car availability, access to public transport and access to key services and facilities. This measure of transport wealth allows for comparison between individuals and households but does not identify those with insufficient transport to meet their needs.

Cain and Jones (2008) suggest that travel-related hardship would occur if "some form of travel limitation resulted in an individual or household being unable to gain access to basic needs". In determining whether the implementation of a road pricing scheme proposed for Edinburgh would result in hardship, they formulated three criteria:

- the scheme would make accessing an activity unaffordable;
- the activity is required to meet basic needs;
- there are no reasonable travel alternatives available.

Cains and Jones (2008) defined an affordability threshold as the average proportion of income spent (before implementation) on motoring by households in the lowest three income deciles. (In this particular case, households who did not spend anything on motoring were excluded from the analysis as they were considered to be largely unaffected by the road pricing scheme, and other transport costs were neglected as these were found to be negligible amongst motoring households). Basic needs activities were defined based on those listed in the SEU (2003) report as work, education, health, food shopping and social activities. This approach could be useful for evaluating new initiatives but seems to work from the assumption that accessing an activity was affordable prior to the scheme being implemented.

Solomon and Titheridge (2009) attempt establish basic benchmarks or minimum standards for access to activities using a focus group approach. The approach was tested for older people and lone parents (see also Titheridge and Solomon, 2008) However, as reported in Titheridge et al (2009) difficulties were experienced in trying to assess whether the transport system could meet these needs, as every person has different constraints and requirements with respect to transport provision.

The Minimum Income Standards for households (Davies et al, 2012) uses a similar approach to Solomon and Titheridge (2009) to assess the minimum household budget required to meet a families transport needs for a minimum acceptable standard of living

(see Smith et al, 2012). Consideration was given to the minimum types and numbers of trips, and the distances involved. As well as whether or not households needed a car or could manage with a combination of bus and taxi.

Turner and Grieco (1998) emphasise the importance of considering time poverty when determining transport policy. Journeys by public transport often take considerably longer than the same journey by car, and can generate scheduling difficulties because of the low frequency of services or their limited hours of operation. This can be a particular problem for working lone parents who need to coordinate work with child care arrangements, escorting children to their activities and other domestic responsibilities.

From the above studies, it is clear that the complexity determining the transport needs of individuals and matching those to suitable supply options make it difficult to create a sensible measure of transport poverty that can easily be generated from national data - assuming a definition of transport poverty is desirable and can be agreed. However, there does seem to be general agreement that finding a way to identify those experiencing difficulties accessing key activities and to evaluate the impact of transport actions on vulnerable groups is desirable.

5. THE TRANSPORT SYSTEM

There are considerable regional variations in how the transport system is governed and regulated within the UK (White, 2009). Legislation and policies on many aspects of transport are determined separately by the devolved governments. The Department for Transport has overall responsibility for transport policy within England, but some aspects of the transport system fall under the responsibility of other departments. For example, the Department for Communities and Local Government covers some related to local government and town planning. The Treasury is responsible for fiscal policies such as determining levels of fuel duty and taxation of company car benefits (White, 2009). In Northern Ireland the Department of Environment (NI) is responsible for road safety and vehicle licensing. Management of assets still in the public transport is mainly done through agencies such as the Highways Agency. Some regulatory functions are also managed through agencies such as the Driver and Vehicle Licensing Agency. Within Scotland the agency Transport Scotland is responsible for much of the Scottish Government's transport functions.

Within England, Unitary Authorities and County Councils are highway and transport authorities and are responsible for the maintenance and construction of the local road network. Local transport authorities also provide support for non-commercial bus services. Motorways and trunk roads are the responsibility of the Highways Agency. Parking provision is generally managed at the District level. Districts are also responsible for licensing taxis and private hire cars (White, 2009). In London, the Greater London Authority, in conjunction with the Mayor, has a strategic transport planning function. Transport for London (TfL) has responsibility for managing and maintaining the strategic London Road Network, which covers roads which would fall under the remit of the Highways Agency elsewhere. TfL also controls most aspects of

public transport, including the buses, Underground, Overground, taxi and river services. Within six metropolitan regions of England, Passenger Transport Authorities (PTAs) undertake public transport planning functions for their whole area. Within each PTA area, a Passenger Transport Executive (PTE) are responsible for the day to day management and coordination of public transport. Strathclyde Partnership for Transport performs a similar set of functions for the Strathclyde conurbation.

Within Great Britain public transport is supplied by both public and private sectors. In most of England, Scotland and Wales, private bus operators provide services in two ways: either commercially or under contract to local government or the PTEs following competitive tendering processes. In London bus services were not deregulated and services are operated under contract with TfL. The greater level of control over bus services that this affords TfL allows for a more comprehensive service, greater stability in provision, standardised fares and integrated ticketing across the network, which means that bus services can be provided to address social issues. Where services have been deregulated, bus operators determine which routes they will operate on, the timetable for that route, and fare levels. In England and Wales, rail services are provided under franchises let by the Department for Transport, although East Coast Trains is currently owned by the state. The Scottish Parliament is responsible for the rail franchising process within Scotland (White, 2009). This means that social issues can only be address via rail if they are incorporated into the franchise agreements by the state. In Northern Ireland a state-owned operation is responsible for all rail services in the province and almost all bus services.

Financing for local government initiatives must be raised locally or through application to specific schemes such as the Local Sustainable Transport Fund. There is no longer any national funding linked to Local Transport Plans (LTPs). LTPs are strategic documents produced by local transport authorities outlining their policies for transport in their area. Prior to 2009 LTPs were used as the basis for the allocation to local authorities of the capital resources required to carry out their transport plans.

The requirement to undertake Accessibility Planning as part of the process of producing LTPs was also removed in 2009. Accessibility Planning (DfT, 2004) was first introduced in 2004 in response to the recommendations set out in the Social Exclusion Unit (2003) report – Making the connections. Equality Impact Assessments (EQIAs) are instead required for Local Transport Plans (LTPs).

Government decisions on major transport actions are made on the basis of the ratio of benefits to costs. Economic benefits appraised include aggregate travel time savings, reductions in travel costs and accessibility improvements. Social and distributional impacts are considered as part of a subsidiary appraisal and are not incorporated into the benefit-cost ratio calculations. This may limit the extent to which these issues influence the decision outcome.

6. USING TRANSPORT TO ADDRESS POVERTY

Because transport is the main means to reach employment and educational opportunities, reducing the barriers to travel can help to address poverty. This can also allow people from low income households to enjoy similar opportunities as other members of society. In this section, examples of transport schemes that can provide access for people from low income households will be discussed.

Whilst the focus of this report is transport, it should not be forgotten that, in some cases, it may be better to take services to people, particularly in rural areas, rather than people travelling to urban areas. The role of access in fulfilling different needs has been highlighted in this report, which may suggest that in some scenarios 'mobile' opportunities can be also beneficial. Some examples are travelling pharmacists, mobile libraries and GP surgeries held in village halls. However, evidence on the costs and effectiveness of these schemes is scarce and calls for further exploration beyond the scope of this review.

6.1. Schemes to address unemployment

One way to help unemployed people into jobs is to offer them cheaper travel to find work. Transport for London (2013) offers a travelcard for use on buses and the Underground which allows travel at half the adult rate to people on Jobseekers Allowance and to those on Incapacity Benefit, Employment and Support Allowance or Income Support if they are actively engaged with an adviser in returning to employment. It is valid for up to three months.

West Yorkshire PTE carried out a Travel to Work project which involved 4250 jobseekers being assisted into employment by providing a free countywide ticket for the first month of employment and personalised travel information pre and post the take up of employment (Greener Journeys, 2012). Feedback from questionnaires sent 13 weeks after receipt of a ticket revealed 23% would not have been able to accept the job without the ticket, 66% were still working for the same or other employer and 76% of those still working were continuing to travel by bus. At the end of project a 33% discount on tickets was agreed with bus and train operators in the area with the discounted tickets being purchased by Job Centre Plus. While this suggests a positive effect of the scheme, the scale of the project is not robust enough to draw general conclusions.

Greener Journeys (2013) which is a consortium of the large bus operators has proposed the introduction of more discounted bus travel schemes for young people. As a first step, they are advocating the development of a concessionary bus travel scheme for apprentices. The proposal is that the funding reforms for apprenticeships should include discounts on bus travel for apprentices. This would help young people with low incomes enter apprenticeships that they might otherwise have to forego because they cannot afford to travel to the workplace. The report claims that there would be a net economic benefit to society and that the discount level could be set at 30% or 50%.

Greener Journeys (2013) has also proposed a 'Bus Bonus', to encourage people to commute by bus. This would be a new tax incentive, designed to promote a modal shift. The idea is that employees at workplaces with more than 10 employees would be able to buy a season ticket for bus travel before the deduction of income tax and national insurance. The scheme would be administered by employers. This would be a tax benefit to those in work and be equivalent to a 34% reduction in the cost of travel to and from work for those paying the standard rate of income tax. The benefit would be less for those with lower marginal tax rates. It might lead to more bus services which would benefit low income people.

An alternative approach to enabling people to reach jobs is to provide vehicles, usually mopeds or motor cycles, but could be cars. It is also necessary to provide training where the person concerned needs to learn to ride or drive the vehicle. Wheels 2 Work (W2W, 2014) schemes provide mopeds or scooters to individuals, particularly young people in rural areas who have received a firm offer of a job or training placement but who find that they do not have any way of travelling to their place of work due to a lack of suitable public or private transport, at a cost of about £20 per week. The schemes were mentioned in 2011 Transport White Paper (Department for Transport, 2011) as a scheme that was seen as making a useful contribution to help people get into the work force.

The majority of existing schemes specifically target young, unemployed people, with the age limit for eligibility typically between 16 and 25 years. Some schemes have extended eligibility further to include people who are currently employed but require transport assistance in order to sustain their existing employment and people wishing to access post-16 education opportunities. Schemes exist in many places including North Yorkshire (<http://www.wheels2work.co.uk/>) and Leicestershire (http://www.leics.gov.uk/index/highways/passenger_transport/choosehowyoumove/local_sustainable_transport_fund/w2w.htm).

The Motor Cycle Industry Association (2010) has calculated the costs and benefits of providing a motor cycle to a young person, and estimated that, over a six month period, a young person in work earning £15,000 per annum would pay £1957 in income tax and National Insurance and would have received £3510.94 in benefits (Job Seeker's Allowance, Council Tax Benefit and Housing Benefit) had they not started work, and that providing a motor cycle under the W2W scheme would cost £2600. Hence, assuming that they would not have taken up the job otherwise, enabling the young person to work would produce a saving to the Exchequer of £2,867.94, as well as providing him or her with greater income and the various intangible benefits of employment such as companionship and pride in being in work. This is a hypothetical calculation by the Motor Cycle Industry Association (2010) and there are no data available on the numbers who would not have taken up jobs if the option were not available.

6.2. Schemes to reach education

Education offers the opportunity to acquire knowledge and skills that can widen the range of job opportunities available, so schemes that help those with low incomes to reach educational facilities can help address poverty in the longer run.

All children between 5 and 16 qualify for free school transport if they go to their nearest suitable school and live at least 2 miles from the school if they are under 8 and 3 miles from the school if they are 8 or older. The rules are less restrictive for children from households that receive the maximum Working Tax Credit or their children are entitled to free school meals. According to the GOV.UK (2013) website children from families with low incomes can have free transport to school on the following conditions:

- aged 8 to 11 and the school's at least 2 miles away;
- aged 11 to 16 and the school's 2 to 6 miles away - as long as there are not 3 or more suitable schools nearer to home;
- aged 11 to 16 and the school's 2 to 15 miles away - if it is their nearest school preferred on the grounds of religion or belief.

Some local authorities offer extended schemes. For example, Surrey County Council (2013) offers financial help to children travel to school and college above the age of 16 under some circumstances:

- ordinarily resident in the administrative county of Surrey;
- 16-18 years of age (or aged 19, if they are continuing a course that they started before their 19th birthday) and in Year 12 or 13 at school, or attending a course of further education at college; and
- be attending a publicly maintained school/college within the United Kingdom; and
- attending a full time, non-advanced course of at least one academic year duration. A full time course is classified as a course with a minimum attendance of 12 hours a week; and
- attending a course that is not available at a school/college closer to the student's home address (unless the student is continuing into the sixth form of a school that they received transport assistance to in Year 11); and
- not in receipt of help towards their travel costs from any other source; and
- the shortest reasonable walking distance between the home and the school/college must be more than three miles.

6.3. Concessionary fares for older and disabled people

Concessionary travel passes for all older people and those with disabilities offering half-price off-peak bus travel were introduced under the 2000 Transport Act, with the specific objective of encouraging older people on low incomes to use public transport more (Department for Transport, 1998) replacing the large number of local schemes. The scheme was extended to free local off-peak bus travel in 2006 and then to free off-peak travel across the country in 2008. There is a higher take-up rate of the passes by those with low incomes, mainly because they tend to have lower car ownership (Humphrey and Scott, 2012). Humphrey and Scott (2012) also used multivariate analysis to estimate the influence of various factors on Concessionary travel pass use. They found that socio-economic classification and income were not statistically significant when other variables were controlled for, suggesting that access to a car is the critical factor rather than income per se.

In some rural areas there are few buses, so having a concessionary travel pass is of little value. Some local authorities offer taxi vouchers as an alternative to concessionary travel passes. For example, Cheshire West and Chester Council (2014) offers taxi vouchers to the value of £72 to permanent residents of the area who live in specified rural areas, do not hold a current UK driving licence or do not have access to a vehicle, and are eligible for a concessionary bus pass on the grounds of age or disability who wish to exchange their bus pass for taxi vouchers. Vouchers can be used in full or part payment of a taxi journey licensed by Cheshire West and Chester Council who have agreed to participate in the taxi voucher scheme or approved Cheshire West and Chester community transport services.

6.4. Public transport schemes

Since the deregulation of local bus services in 1986, bus services in Britain have been provided by the private sector. In London, Transport for London decides the pattern of routes and services that it wishes to see operated and then invites bus companies to tender to operate the routes under contracts for a set period of years. Outside London, bus operators decide where they wish to operate based on where they perceive they are able to make a profit and so they determine the route and service pattern of bus services. If a local authority thinks that there is a need for further bus services it can invite bus operators to tender to operate these 'socially-necessary' services and subsidise them to do so. The socially-necessary services may be to serve places that the local authority believes need to be served or may be at particular times such as in the evening or on Sundays when demand is insufficient to provide enough revenue to attract a commercial operator. A local authority might choose to fund a service from an area where there large numbers of unemployed people live to a place of employment.

Since people with low incomes tend to use buses more than others, there is a case for improving local bus services. Abrams (2013) discusses the Campaign for Better Transport's study in St Albans looking ways of improving public transport by bringing together relevant organisations. Four key points identified as necessary for success: information (i.e. better real-time information, with information on timetabled and real-time public transport made freely available), interchange (focused on passenger needs

rather than the transport modes), connections (more focus on punctuality and reliability) and ticketing (such as the smart ticketing programme being developed by the Department for Transport to ensure the introduction of simple, zoned integrated fare structures.

6.5. Community based transport schemes

Whilst buses are used more by people with low incomes than others, and therefore there is a strong case for ensuring that there are suitable bus services everywhere, in some places the population density is too low to make conventional bus services viable. In these areas, community transport often has a useful role to play. This is transport, often using minibuses, with volunteer drivers which provide a service to meet a community need. Funding comes from the fares paid and sometimes from local authorities. As the Transport White Paper issued in 2011 (Department for Transport, 2011) says in Paragraph 8.9 on page 82:

“For example, 20% of our population lives in rural areas where there are higher levels of car dependence (including for lower income households) coupled with a lower availability of public transport... With lower levels of patronage, high frequency bus services are rarely commercially viable and often very costly for local authorities to subsidise, resulting in a poorer quality service. In those areas, community (voluntary) transport operators can often provide valuable and well-tailored services, including to geographically isolated areas, and can often work with local authorities to offer ‘demand responsive’ services, such as bookable minibuses”.

The White Paper then goes on to say in Paragraph 8.13:

“A welcome development is the growing number of community transport organisations which operate social enterprise models, for example using contract income to subsidise social transport, and thus removing the need for direct grant funding.”

This would involve community transport organisations bidding for and being awarded contracts by the local authorities to carry passengers on socially-necessary routes and then using the surplus to fund other schemes identified as useful by the community. Community transport has an important role to play particularly in rural areas. The Rural Social Enterprise Programme (RSEP) has funded eight rural community transport organisations (CTOs) to employ development managers with the express aim of significantly increasing the percentage of their income derived from securing public service contracts (Community Transport Association, 2011b).

Another form of community transport scheme mentioned in the 2011 Transport White Paper in Paragraph 8.15 is the Community Rail Partnerships which might assist in maintaining railways in rural areas so that low income people can reach jobs.

Volunteer drivers using their own cars are another type of community scheme. For example, the Volunteer Driving Service operated by the Retired Senior Volunteer

Programme (RSVP) North East, which uses older drivers to offer transport to people who need to attend health appointments and collect repeat prescriptions (Centre for Social Justice, 2010). There are similar schemes all over the country (Community Service Volunteers, 2007).

6.6. Taxi schemes

Taxis can meet very specific travel needs, but are expensive, typically taking one or two people door to door, but they could be operated in a more flexible way. The Local Services (Operation by Licensed Hire Cars) Regulations allow owners of private hire vehicles to use their vehicles to provide local bus services providing more flexible services than the conventional 'exclusive hiring' by a single passenger (Department for Transport, 2011) and the 2011 White Paper on Transport (Department for Transport, 2011) stated that this was being encouraged by the Government, but this is only happening on a limited basis. The Campaign for Better Transport (2012) recommends that taxis should be integrated into public transport networks and that the Government should use the Law Commission review of laws governing taxis to promote this, with taxi licensing powers based with local authorities that have other transport powers and duties (in some parts of the country such as Hertfordshire, taxi licensing powers lie with the district council while planning of socially-necessary bus services lies with the county council).

6.7. How appropriate are transport schemes for addressing poverty?

There has been very little work to evaluate transport schemes to see how effective they are in addressing issues of poverty, partly because schemes are rarely set up specifically for this purpose. It would be possible to set up a concessionary pass scheme offering reduced or free public transport fares, but it would need to be means tested which can be expensive and bureaucratic. On a bus system using smartcard technology, it would not be possible for other passengers to identify who was using the pass.

Another approach that has weaknesses in terms of reducing poverty is one based on providing tax relief on travel such as the 'Bus Bonus' scheme being proposed by Greener Journeys (2013) because those on higher tax rates would receive greater benefits and anyone paying no tax because of their low wages would receive no benefit. (It should be noted that the Bus Bonus scheme was being proposed to encourage bus use not to relieve poverty).

Types of scheme that should help some people with low incomes are ones that provide access to jobs for unemployed people such as the travelcard offered by TfL. However, the emphasis seems to be on finding a job rather than travelling to work after the job has been obtained, with the schemes only being offered for a short period. Presumably, the idea is that once a person is in employment, he or she will be able to afford to travel to and from work, but in many areas bus fares are expensive, typically £5 a day, and some people may not be able to afford this. One way to obtain cheaper fares is to buy a season ticket, but this requires large expenditure in advance and many people on low incomes simply may not be able to afford to take advantage of the reduced fares that such a ticket would offer. Similarly, motor cycle loan schemes such as W2W offer the

opportunity for some people to find and undertake employment, but there will be people who do not have facilities to store a motor cycle safely.

An example of a scheme that provides assistance to a sector of the population which contains many people on low incomes is the concessionary travel pass scheme for older people which was introduced specifically to help address poverty: the 1998 Transport White Paper said in Paragraph 4.81

“This will enable elderly people, especially those on low incomes, to continue to use public transport and to use it more often, improving their access to a range of basic necessities such as health care and shops and reducing social isolation”.

However, one criticism of the scheme is that, because it is a universal benefit, many of those holding passes could afford to pay for their bus travel and so their travel is being unnecessarily subsidised by the taxpayer and that that money should be spent on those in greater need. Older people on high incomes could be prevented from having the passes by issuing them only to those in receipt of pension credit. The concessionary travel pass scheme has produced various benefits for older people in terms of health, social inclusion and quality of life (Mackett, 2013, 2014a) but it is expensive, costing the taxpayer over £1 billion a year in compensation to bus operators to recompense them for the revenue lost from fares for trips that would have been made even if the pass did not exist. There is evidence that it has achieved the objectives of reducing social isolation and improving access to local services for older people (Mackett, 2014b), but there are criticisms of the scheme in terms of its redistributive impacts. PTEG (2013) argues that the concession provides a reduction in the cost of travel for those bus trips that would have been made even if the concession were not in place. Because bus use was highest amongst lower income older people prior to the concession being introduced, PTEG (2013) argues that the policy is an effective redistributive mechanism because the lower income people would be making more free bus trips that previously would have been paid for than those with higher incomes who use the bus less often. In contrast, Oxera (2009) points out that, while the evidence suggests that providing concessionary travel has helped to reduce social exclusion, the benefits it provides to those on higher incomes and with access to cars, means that the scheme is targeted too widely and therefore may not provide value for money. Last (2010) in his analysis of smartcard data in Lancashire, found that about half the passholders made no trips with their passes in the five-week period being studied and that 2.4% of passholders accounted for 25% of local concessionary bus trips. He argues that a large amount of public money is associated with travel by a very small proportion of the targeted population and that this is probably partly due to the variability in the availability of high quality bus services. He argues that this raises questions about the effectiveness of the policy of offering CTPs as a tool for reducing social inclusion and the equity implications of the distribution of subsidy.

It could be argued that the £1 billion that the scheme costs the taxpayer could be used to subsidise the use of buses by older people or it could be used to subsidise new or more frequent bus services benefitting the whole population, which would assist those on low incomes who tend to use buses more than the rest of the population. However, if

the scheme was abolished there is no reason to believe that the money saved would be used to fund bus services or to alleviate poverty.

Investing in public transport does not necessarily help those on low incomes. Wachs (1993) describes how a light rail line has been built in Los Angeles which requires much more subsidy per trip than the buses which it replaces. It serves high income areas and serves a small part of the area. Fare revenue covers 11% of its costs compared with 40% for bus services. The subsidy it takes could have been used to help fund many bus services for low income households living in the inner city. Anecdotal evidence suggests a similar situation occurred in London when the present travelcard system with zonal fares was introduced in the 1980s, replacing the previous fare system which meant that the fare paid was a function of the distance travelled. The new system made long fares within London much cheaper than they had been previously, so it became much cheaper to travel into central London from the outer suburbs where those on higher incomes typically live. This was an era when the economy in London was booming following deregulation of the financial markets so that many people on high incomes were able to take advantage of a buoyant housing market and the new, cheaper fares to travel to their jobs in the City of London.

Many of the schemes outlined above to enable people to obtain jobs and education and the community transport schemes have the potential to assist people with low incomes, but they are very unlikely to be self-funding and so will need subsidy. In many cases this will be from local authorities, but they have many other calls on their budgets and are under considerable pressure at present.

The Campaign for Better Transport (2013) has carried out a survey of local authorities in England and Wales and found a net reduction in funding for subsidised local bus services outside London of £10 million in 2013-14, with 147 bus services cut or withdrawn completely. Earlier the Campaign for Better Transport (2011) had found that there has been a 28% cut in local authority transport revenue funding, part of which funds bus services deemed as socially necessary, plus a 20% cut in fuel tax rebate (known as BSOG) from 2012 and a cut of between £54 and £100 million in public expenditure on concessionary journeys from 2011 which will cause reductions in commercially operated bus services which are likely to lead to higher fares and reduced services. The Community Transport Association (2011a) argues that cuts in the Bus Service Operators' Grants (BSOG) would have a disproportionate effect on the community transport sector because, in many cases, the fares have been agreed with the local authority, so many operators may go out of business.

The Campaign for Better Transport commissioned studies of the impacts of reductions in bus services on the lives of local residents. In one of the studies (Ecorys, undated a) examined the impact of the suspension of the 516 bus service on the Burbank Estate in Hartlepool in 2011. The study used desk research, face-to-face survey of 52 residents and 12 in-depth interviews. The main financial impact was that 43 out of the 52 respondents said they have to take more taxis, and so they could not get out as much as they wanted. This impacted particularly on those with concessionary travel passes who used the bus for free. In another study (Ecorys, undated b) examined the effects of a reduced bus service in Marchwood in Hampshire. The methods used included a face-to-

face survey with 54 residents and 12 in-depth interviews. The service reduction did not have a financial impact on most respondents, but a few said that it made them more reliant on local convenience shops which are more expensive than supermarkets. Other effects reported, by small numbers of respondents, were increased expenditure on petrol and taxis and difficulties in travelling to work for shift work.

Age UK (2012b) says that 600,000 older people do not leave their homes more than once a week, partly as a result of cuts in bus services and local opportunities that limit their connections to 'vital lifelines' as corner shops, post offices and local medical services.

It has been shown in this section that there are transport schemes that can contribute to the alleviation of poverty by facilitating access to employment and training. However, it is difficult to target the neediest without risking the stigmatisation that would arise from transport systems branded with the label 'poverty'. This risk can be mitigated through strategies of promotion and dissemination of information that encourages access and inclusion to interventions. It is obvious that investing in transport systems alone will not be sufficient to address poverty in this country, but it does have a vital role to play: for example, a programme to provide jobs that does not consider how unemployed people could reach them is bound to fail.

7. CONCLUSIONS

Most evidence on the impact of poverty on mobility and the relationship between transport and poverty relates to disadvantaged groups and those vulnerable to social exclusion rather than individuals or households living in poverty per se. Access (or lack thereof) to employment and education opportunities and to essential services and facilities required to fulfil basic needs is a dominant theme in all the theories which link poverty and social disadvantage with transport.

It is clear from the literature that the problem is more complex than just being on a low income and carless. Many on low incomes have access to a car whilst some on higher incomes who do not have access to a car, for various reasons, could be said to be transport poor due to the poor quality of public transport in many areas. In some cases, such as use of concessionary travel passes by older people, access to a car is the critical factor rather than income per se.

Affordability of transport is important but other aspects such as time and the physical and mental capabilities required to make use of different transport options also need to be considered. The limited frequency and timetable constraints of public transport can make it difficult for people to coordinate work, childcare and other activities.

There is evidence that those on low incomes, living in deprived neighbourhoods, are more adversely affected by the impacts of transport than those living in more affluent neighbourhoods. These differences include an increased risk of road traffic injury, increased concerns about personal security, and higher exposure rates to ozone and particulate matter. People without cars, those with disabilities, the elderly and school children are the most severely affected by severance (where transport schemes or high

volumes of traffic act as a barrier to movement and social interaction). This combination of problems can exacerbate poverty by reducing access to key services such as employment, education and healthcare, lead to social isolation and reduce physical and mental well-being.

There is no universally accepted definition of transport poverty but the term generally is used to refer to the situation where households or individuals are struggling or unable to make the journeys they need. Simple measures of transport poverty are seen as inadequate and misleading. Adequate measures are difficult to generate due to the complexity of identifying transport needs and suitable supply options, as these vary considerably from person to person and place to place. However, a measure of transport need is necessary for monitoring progress towards alleviating poverty and to ensure people can reach (or be reached by) the services required to fulfil their basic needs.

Current methods used to assess where intervention is needed and/or the impact of proposed interventions seem inadequate, as they do not sufficiently take into account the different constraints and requirements of individuals with respect to travel. There is a strong focus on accessibility within current transport scheme appraisal methods, as measured by journey time. Other issues such as social and distribution impacts tend to be treated qualitatively, as secondary issues and not fully accounted for in the Benefit-Cost ratios used to assess whether or not a proposed transport action should be implemented.

There are a wide variety of transport schemes at both the national and local level that aim to either make transport more affordable or to improve transport options for those who do not own a car. There has, however, been very little work to evaluate these transport schemes to see how effective they are in addressing issues of poverty, partly because schemes are rarely set up specifically for this purpose. More effective monitoring and evaluation of such schemes is needed.

Cutbacks in public expenditure and falling revenues which are causing reductions in bus services, are likely to have an impact particularly in rural areas. More flexible ways of providing local public transport are required. This could be a combination of buses, community transport, taxis and volunteer drivers. As discussed above, the owners of private hire vehicles can use their vehicles to provide local bus services and taxi vouchers are offered to people eligible to hold a concessionary travel pass who have no means of making local trips in some areas. Another way of extending local transport provision is through volunteer drivers. The various schemes could be extended, with suitable funding, to provide a range of transport services, particularly in rural areas. The difficulty with this proposal is that bus and taxi drivers may not be willing to work in co-operation with volunteer minibus and car drivers. The system would need to be organised by local authorities, who need more powers to plan transport services. The system of bus organisation in London with the service operated as franchise contracts allows much more scope for management in the public interest than the system outside London. There is probably scope for local transport brokers to provide information and advice about travel opportunities, either on-line or by telephone. It should be recognised that there may be people with low incomes who do not have

access to either the internet or a telephone, but they may be able to set up travel arrangements in other ways, particularly for regular journeys such as to work.

8. RECOMMENDATIONS

If our aspiration is for a transport system which does not contribute to poverty and can help alleviate and reduce poverty, then we need one that allows everyone to access the places they need to go to maintain a reasonable standard of living. Use of the transport system to meet basic needs should not place undue burden on people in terms of their monetary and time budgets, their physical and mental capabilities, and anxiety levels. Any negative environmental or societal impacts of such a system should be minimal, and should not be unfairly distributed to worst off.

1. Minimum standards of access should be set. These will help monitor progress towards achieving our aspirations for the transport system, and help identify locations, populations groups and individuals in need of intervention. Care needs to be taken when developing these standards to reflect those activities which are important for maintaining well-being, as well as taking into account the complexity of people's lives. These could be along similar lines to the benchmarks suggested by Solomon and Titheridge (2009), and discussed in section 4), where the expectation is that everyone could access with reasonable ease a list of key activities a recommended number of times per week.
2. In the planning of infrastructure and services, equity criteria need to be developed and implemented to ensure that the poor are not marginalised and their needs are met. This could lead to a more inclusive provision of means of connectivity to currently marginal areas and populations, affecting particularly local infrastructure and complementary transport services.
3. There needs to be sustained travel assistance for job seekers as this is likely to make a significant difference to obtaining work and reducing benefit dependence. This could include a combination of concessionary fare schemes, wheels to work schemes, bicycle loan schemes and season ticket loans. The funding for such schemes should not be reliant on project funding that may come to an end after a few years.
4. There needs to be sustained travel assistance for low income students to ensure that they can participate fully in education. Again, this assistance could be provided through a combination of concessionary fare schemes, wheels to work schemes, bicycle loan schemes and season ticket loans.
5. Greater coordination is needed between transport providers, employers and service providers, such as those providing child care, to ensure help for those with considerable time constraints.

6. Those on low incomes are more likely to depend on walking as a mode and measures need to be targeted to ensure that their environments feel safe, secure and of high quality. This will need multiagency partnerships focused on environmental change to reduce the speed and volume of traffic, enforce poor parking and address anti-social driving behaviour.

Given the variety of transport needs and capabilities of individuals, any transport system designed to help alleviate or reduce poverty, and not contribute to it, needs to incorporate a variety of different types of service and the regulation of that system needs to be sufficiently flexible to allow for innovation in supply as needs change. A balance needs to be achieved between state formal and informal services, voluntary, private and regulated services. These different types of services need to be integrated to create an anxiety-free, truly flexible system.

7. The system of bus service provision that exists in London should be extended to the rest of the country, replacing the present mix of commercially operated bus services and socially-necessary bus services with services provided under franchises to the local transport authority (the county council, city council or unitary authority).
8. The licensing of taxis should be transferred to local transport authorities so that they can be planned better.
9. Transport systems need to be set up integrating buses provided by commercial operators and community transport operators and taxis operating under contracts to the local transport authority should be set up.
10. Volunteer driver schemes should be extended to provide travel for a greater range of people and needs.
11. Networks of local travel brokers should be established in rural areas to provide information and advice about the local travel services offered by the combination of volunteers and commercial services in the area with these be made as widely known as possible.
12. If the above recommendations were instituted then travel training should be offered to help people to navigate what could be a more complex transport system.

Careful consideration needs to be given to how such a transport system is financed and how subsidies are best allocated to target the neediest:

13. Consideration should be given to restricting the concessionary fare scheme for older people to those on low incomes, for example by limiting the concessionary fare scheme to those who receive pension credit, in order to use the money saved to subsidise bus services, particularly in areas where they are very sparse.

14. In remote rural areas local authorities need to provide financial support to community transport and taxis.

In undertaking this review a number of areas were found which merit further investigation:

15. A review needs to be undertaken to establish the barriers that seem to be preventing the provision of local bus services by taxis and action needs to be taken to remove them.
16. There needs to be more research to unpick the relationship between illegal driving, collision risk and area based deprivation before this issue can be addressed.

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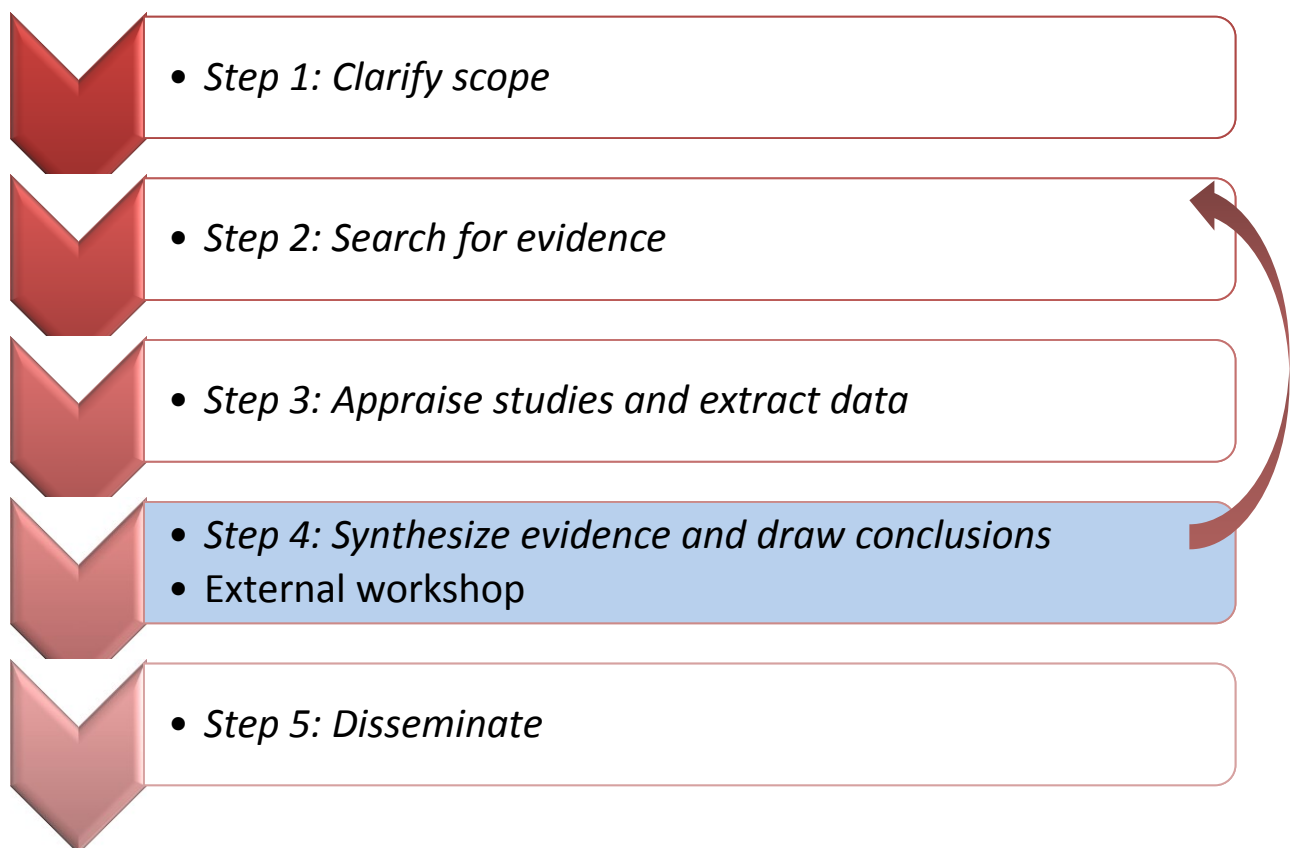
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APPENDIX: METHODOLOGY

Our literature review on the relationships between transport and poverty required a fairly rapid appraisal of existing concept bodies and pertinent documentation related to interventions and local policy. In order to produce an evidence assessment as close as possible to a systematic review within the timeframe for the project, we adopted several elements of a realist approach as described by Pawson et al,(2005). This is a relatively recent method seeking to provide rich and practical understanding of complex interventions targeted to policy making. This dynamic process allows a structured approach to the evidence, building up on each phase in order to produce a comprehensive analysis.

In this context, our review process included five stages (see Figure 3), covering from the definition of the review structure to appraisal of evidence and analysis of information. These stages are: definition of scope; thematic search for evidence; appraisal of literature and extraction of data; analysis of information; and development of research outputs.

Figure 3. The review process



Definition of Scope

In order to define the scope of the review, the research team defined a thematic outline to structure the evidence search strategy. Using the initial insights from the research proposal we defined the review questions and contextual elements to be considered in the analysis of information. Building up on exploratory searches made by each team member in line with their own expertise, we defined the general topics to be covered in the review in relation to the main objectives of the research. An analysis and refinement of the purpose of the review allowed us to define a strategy targeted to seek evidence in four areas:

- the state of the art in the conceptualization of relationships between transport and poverty;
- evidence on the bi-directional relationship between poverty and travel behavior in different vulnerable groups;
- the role of the transport market on alleviating or exacerbating poverty; and
- the range of interventions in the United Kingdom related to transport and targeted to people in poverty.

The following themes for the search were identified:

Transport	Poverty	Vulnerable groups
Travel	Disadvantage	Low income
Mobility	Deprivation	Unemployed
Access	Hardship	Shift-workers
Journeys, commuting	Exclusion	Women
Walking	Social justice	Children, young people
Cycling	Disparities	Lone parents
Public transport	Inequalities, inequities	Older people
Car	Wealth, resources	People with disabilities
	Welfare	Urban, rural
	Needs	Ethnic minorities
		Homeless people

Search for evidence

From the thematic outline defined on the first stage of the project the team did a search for evidence on academic databases, professional bodies and government archives. We set out to identify relevant evidence in conventional peer-reviewed and grey literature, spanning the humanities, social sciences, engineering and health domains. Academic searches were supported on conventional citation databases (i.e. Web of Knowledge,

PubMed, Scopus, Google Scholar, Compendex, Zetoc, British Library Catalogue, GEOBASE, JSTOR, among others), and academic grey literature was searched through conference proceedings, university websites, and research depositories. In addition, we identified several governmental and private organizations involved in tackling poverty, improving transport provision and/or representing target groups, and relevant Professional Institutions. Government and other data sets were identified through the UK data service and international non-academic evidence was sought through sites such as CORDIS, the European Community Research Development Information Service, and TRD which combines the US TRB's TRIS database and OECD's IRTD database.

We developed an evidence database classifying the sources by type (i.e. academic, non-academic). The database included bibliographic details, sources, the overall theme of interest for the review, geographical focus, target groups, general objectives and findings, and type of study. In addition, the database allowed the team to identify related references from reviewed documents, using a snowballing approach to obtain further evidence.

Appraise of studies and data extraction

Using the evidence database we screened available documentation and decided upon the studies to be included the review. The initial screening allowed appraisal of evidence based on relevance, study design, nature of evidence, indicators measured, outcomes measured, timing, and whether a study was relevant for a quality appraisal under the themes defined on the initial phase of the project. From the initial screening we obtained 227 academic papers and 78 non-academic references.

The quality appraisal allowed us to determine the weight to be placed on each document's findings based on the quality of the evaluation and quality of the reporting of the study. We considered types of evaluation (either qualitative or quantitative), data collection method and rigour, and theoretical relevance or support. The stages of screening of evidence allowed the team to collect detailed information on each area identified to be relevant for the scope of the review, obtaining an initial set of findings for discussion and refinement.

In the latter stage of the review process we held a workshop with key researchers, policy makers, practitioners to identify any additional relevant literature, outstanding perspectives that may not have been covered by the current state of the review, and potential gaps in theory or practice not yet fully identified. Invitees included representatives from national and local government and groups campaigning for improved transport services and representing the interests of transport users. Key researchers from UCL and other research centres also attended the workshop.

Analysis

Building up on the initial database, we refined the list of references for the detailed screening, including key descriptives of each study and a summary findings by theme.

After the second appraisal of available literature we reduced the number of relevant references to almost half of the initial database. The detailed screening was applied to 132 references including both academic and non-academic.

The workshop enabled us to explore specific areas and intervention under each theme and enrich discussions on policy implications of the findings with a wider range of experts. Discussions held during the workshop were useful in order to identify perspectives from both academics and practitioners related to the current state of the interventions considered for analysis in the review and several issues related to their implementation. In addition, group discussions during the event allowed the researchers to confirm that the large bodies of literature reviewed were appropriate for the purpose of the research and helped identifying perspectives on the conceptualization of transport and poverty relationships. The workshop provided useful insights confirming most of the standpoints of the research group and provided additional references for complementing analyses to that point.

This information was analysed in detail by each team member and incorporated in a working document structured under a refined thematic outline resulting from the screening process and the workshop. The working document was the subject to a detailed analysis that allowed the team to identify overarching bodies of literature, patterns of interaction between transport and poverty, and approaches to poverty-targeted policies related to transport locally and internationally.

Development of Research Outputs

The information consolidated in the evidence database and in a working document allowed the relevant insights in each area to be extracted and themes and sub-topics to be clearly identified. Both the database and working document will inform additional written outcomes targeted to different stakeholders.

A policy briefing will be written and published on the new transport@ucl web portal to be launched in September 2014 as part of the new UCL Transport Institute. The results will be presented at selected academic and practitioner conferences. Parts of the material will be used to contribute to academic peer review journal articles in the area of transport.