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# Disabled people's travel behaviour and attitudes to travel

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# Contents

|   |    |
|---|----|
| Foreword  | 4  |
| Executive summary   | 5  |
| Aims of report  | 5  |
| Cross-cutting themes  | 5  |
| Travel behaviour  | 6  |
| Factors affecting travel behaviour  | 6  |
| Change by area and life-stage   | 7  |
| 1. Travel behaviour of people with disabilities                                     | 9  |
| Key findings  | 9  |
| Chapter overview  | 9  |
| Variation by nature and type of disability  | 9  |
| Variation by disability and age   | 11 |
| Variation by type of disability   | 14 |
| 2. Factors that affect travel behaviour   | 17 |
| Key findings  | 17 |
| Chapter overview  | 17 |
| Factors that affect travel behaviour  | 17 |
| Experiences of travel   | 22 |
| Attitudes relating to alternative means of transport and the decision not to travel | 24 |
| Wider impacts of attitudes to and experiences of travel                             | 28 |
| 3. Change by location and life-stage  | 30 |
| Key findings  | 30 |
| Chapter overview  | 30 |
| Location  | 30 |
| Life-stage  | 36 |
| 4. Main findings and next steps   | 43 |
| Annex    Background, aims and methodology   | 44 |

# Foreword

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# Executive summary

## Aims of report

- 1.1 This report aims to begin to address gaps in the evidence base on the travel behaviour of people with disabilities, drawing on recent secondary analysis of five key surveys<sup>1</sup>.
- 1.2 There are a number of limitations to the existing evidence base on the travel behaviour of people with disabilities. While there is a substantial body of knowledge regarding how their travel behaviour differs from that of people without disabilities, there is limited evidence on how this varies **within** the population of people with disabilities - by level and type of disability, by age, and by the interaction of these characteristics. Less is known about the factors that affect the travel behaviour of people with disabilities – particularly in terms of their attitudes, perceptions and the broader impacts of their travel behaviour on their daily lives. Meanwhile, little work has been undertaken to examine how the travel behaviours and experiences of people with disabilities vary by location and across the life-course – and whether patterns of change are similar or different to those for people without disabilities. This report seeks to address these three discrete gaps in the evidence.

## Cross-cutting themes

Three key themes emerged from the findings:

- Disability is a key characteristic for explaining individual travel behaviour, how this changes over time, and the factors, attitudes and perceptions that affect it. It is not simply the case that people with disabilities exhibit different travel behaviours because of their distinctive socio-demographic profile (e.g. the fact they tend to be older).
- People with disabilities should not be viewed as a homogenous group in regard to travel. In many areas, the behaviour and attitudes of those with different levels and types of disability are markedly different; this is also the case for people with disabilities who are younger and older.
- There are substantial differences in the behaviour and experiences of people with disabilities in relation to different modes of transport, and in the role of disability in explaining these. Being disabled is associated with (and contributes to) more frequent use of certain modes of transport and less frequent use of others.

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<sup>1</sup> These surveys were the National Travel Survey (NTS), Understanding Society, the English Longitudinal Study of Ageing (ELSA), the British Social Attitudes (BSA) survey and the Life Opportunities Survey.

## Travel behaviour

- 1.3 People with disabilities travel less and undertake travel for different purposes compared with people without disabilities. However, the population of people with disabilities is far from homogenous in its behaviour. The grade and type of disability, age (and its interaction with disability) are key in explaining differences in behaviour:
- 13% of people without disabilities undertake fewer than 400 trips per year. This is the case for 19% of those with a disability that does not cause a transport difficulty and 26%, 41% and 50% of those who have disabilities that cause difficulties with one, two or three modes of transport.
  - In terms of the **amount** of travel undertaken, older people with and without disabilities are less alike than their younger counterparts. 72% of people with disabilities aged 70+ undertake fewer than 800 trips annually, compared with 51% of people without disabilities; the equivalent proportions in the population aged under 50 are 52% and 39%. However, people with and without disabilities aged 70+ are more alike than younger age groups in the **purpose** of their travel – largely a function of the fact that commuting (which younger people without disabilities are much more likely to undertake) declines with age.
  - As well as there being differences between the travel behaviour of people with and without disabilities, the behaviour of people with specific **types** of disabilities is often markedly different to each other. While people with disabilities are less likely to ever walk or cycle or ever use public transport, compared with those without disabilities, those who experience difficulties with personal care or balance are particularly likely never to undertake these activities. 64% of those with difficulties with personal care and 59% of those with difficulties with balance never take public transport rather than driving; the equivalent proportions for people with communication difficulties, sight difficulties and without any disability are 53%, 52% and 42%.

## Factors affecting travel behaviour

- 1.4 Disability is a key characteristic that determines travel **behaviour**, even when its links with other characteristics such as age have been controlled for. Being disabled is also associated with more negative or problematic **experiences** of travel, along with more limited perceptions of viable alternatives:
- Having a disability explains variation in the use of different modes of transport – in particular the more frequent use of buses and taxis and less frequent use of other modes by people with disabilities. In many cases the grade or type of disability, rather than simply the presence of a disability, has the key role in determining behaviour. Having a disability significantly increases the probability of travelling by bus; however, this does not hold for people who are unable to lift or carry objects, who are less likely to travel by bus. Meanwhile there is some evidence that psychological factors have a role to play in determining public transport use – but this role diverges for people with and without disabilities. While feelings of frustration when commuting lead to an increase in public transport use for people with disabilities over time, the opposite pattern occurs for people without disabilities.
  - People with disabilities are more likely to report a greater number of difficulties with trips undertaken for different purposes, especially as the grade of disability increases. 25% of people with disabilities report difficulties with any type of trip, compared with 10% of people without disabilities. This was the case for 39% of

those whose disability caused them difficulties with three modes of transport. Difficulties with trip types vary more markedly by grade of disability than by age. Although experiences of safety-related incidents on and around transport are rare, in general they are more common among people with disabilities – and among people with memory and physical co-ordination difficulties in particular. 6% of people without disabilities had felt unsafe on public transport, compared with 10% of those with memory problems.

- People who are older (aged 50 and over) and / or who have a disability are less likely to regard walking or cycling as viable alternatives to short car journeys; when an individual has both of these characteristics, this perception is much more marked. 60% of people aged 50 and over with a limiting disability felt it would be difficult to replace short car journeys with walking – more than double the proportion who expressed this view in younger age groups, both with and without disabilities. Views about the feasibility of replacing short car journeys with bus journeys are rather different, with less evidence of a clear relationship with disability and age. People with disabilities are much more likely than those without disabilities **not** to use specific modes of transport as much as they would like – most markedly in relation to private motor vehicles (29% compared with 12%).
- 1.5 Despite these differences, people with disabilities are no more likely to have turned down or not applied for a job because of transport problems, Nevertheless, people with disabilities who drive to work are more likely to report difficulties and less likely to think public transport would be an easy alternative. 61% of people without disabilities who use a private vehicle to travel to work reported no difficulties with this, compared with 48% of those with the highest grade of disability.

## Change by area and life-stage

- 1.6 The travel behaviours of people in different areas (in terms of geographic location and type of area) and at different stages of life vary substantially, both for people with and without disabilities. However, the relationships between location or life-stage and travel behaviour are sometimes rather different for these two groups:
- People in rural areas are more likely to never use public transport, to never walk and to drive a greater number of miles; these behaviours are also more common among people with disabilities. For instance, 38% of people without disabilities in urban areas never use public transport, compared with 44% of people with disabilities; the equivalent proportions for rural areas are 54% of people without disabilities and 59% of people with disabilities. People in rural areas are less likely to perceive viable alternatives to short journeys undertaken by car – again, this perception is particularly prevalent among people with disabilities.
  - Ageing in general is associated with greater levels of public transport use, although people with disabilities grow more likely to never use public transport as they age. People with disabilities aged 65+ are more likely to use lifts from friends and family, and to use taxis; 36% of people without disabilities in this age group use lifts from friends or family, compared with 54% of people with disabilities.
  - When links with other characteristics are controlled for, the type of area a person with a disability lives in tends not to affect the impact their disability has on their travel behaviour (for people without disabilities, type of area does tend to have an impact). Similarly, ageing impacts differently on the public transport use of people

with and without disabilities – leading to an increase for the former group and a decrease for the latter.

# 1. Travel behaviour of people with disabilities

## Key findings

- It is well-established that people with disabilities travel less and for different purposes compared with people without disabilities. However, the population of people with disabilities is far from homogenous in its behaviour.
- The nature and type of an individual's disability links with their travel behaviour, often in ways which make logical sense. Having sight difficulties makes the possession of a driving licence less likely, while increasing the use of public transport, rather than driving. Similarly, those with disabilities which cause them difficulties with a greater number of transport modes tend to travel less (as would be expected – given they would have fewer travel options available).
- It is important to understand the relationship between disability and travel behaviour in the context of the distinct age profile of people with disabilities. The amount and purposes of travel undertaken change for all groups as they age – but the particular patterns of change mean that people with and without disabilities are most alike when aged under 50 (in terms of the amount of travel) but most alike when aged 70+ (in its purposes). It simply isn't the case that the behaviour of people with and without disabilities converge or diverge with age.

## Chapter overview

- 1.1 This chapter deepens the current understanding of how the travel behaviour of people with disabilities varies **within** that population – specifically by the nature and type of disability, by age and by the interaction of these two characteristics.

## Variation by nature and type of disability

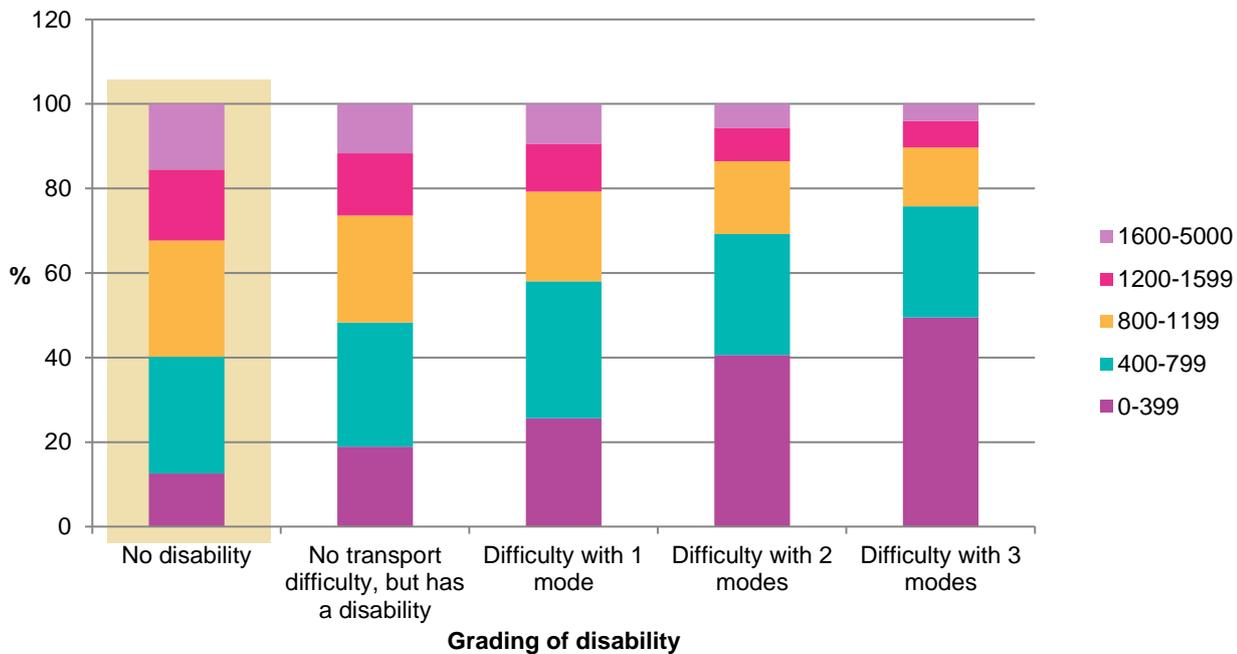
- 1.2 Recent analysis using NTS data collected in 2007-2014 demonstrates that people with disabilities make fewer trips than those without, spend fewer hours travelling and travel a smaller number of miles, on average per year<sup>2</sup>.

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<sup>2</sup> National Travel Survey: Disability and travel 2007-2014, available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/533345/disability-and-travel-factsheet.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/533345/disability-and-travel-factsheet.pdf)

1.3 When analysing travel behaviour using the ‘grading’ of disability developed for this project (detailed in Section 4.8), it emerged that travel behaviour relates not just to the presence of a disability or health problem, but to the extent of its impact. As shown in Figure 1, people who reported disabilities or health problems but had no difficulties with the modes of transport asked about, were rather similar to the population without disabilities in the number of trips undertaken annually. However, those whose disabilities that caused them difficulties with one, two, or three modes of transport were increasingly likely to report low numbers of trips. While 13% of those without a disability and 19% of those with a disability (but one which did not cause transport difficulties) had undertaken fewer than 400 trips, this was the case for 26% of those whose disability caused difficulties with one mode of transport, 41% who experienced this in relation to two modes and 50% for whom this was the case for all three modes. As might be expected, similar patterns were identified when analysing estimates of miles travelled and hours spent travelling per year, by the grading of disability.

**Figure 1 Number of trips per year, by grading of disability, 2007-2014 combined**



Source: National Travel Survey 2007-2014 combined individual data-set  
 Base: all respondents aged 16+ who had completed travel diary (132,153)

1.4 The experience of not undertaking any travel<sup>3</sup> annually was also strongly linked to the grading of disability. 3% of people without disabilities and 9% of people with disabilities had not undertaken any travel in the past year. The latter proportion rose sharply as the impact on travel of the disability increased; just 4% of those with a disability but no transport difficulties had not undertaken any travel, compared with 6%, 11% and 18% of those whose disability caused difficulties with one, two and three modes respectively.

1.5 Within the parameters of the numbers of trips undertaken, recent analysis of NTS data<sup>4</sup> has highlighted substantial differences in the profiles or types of trips

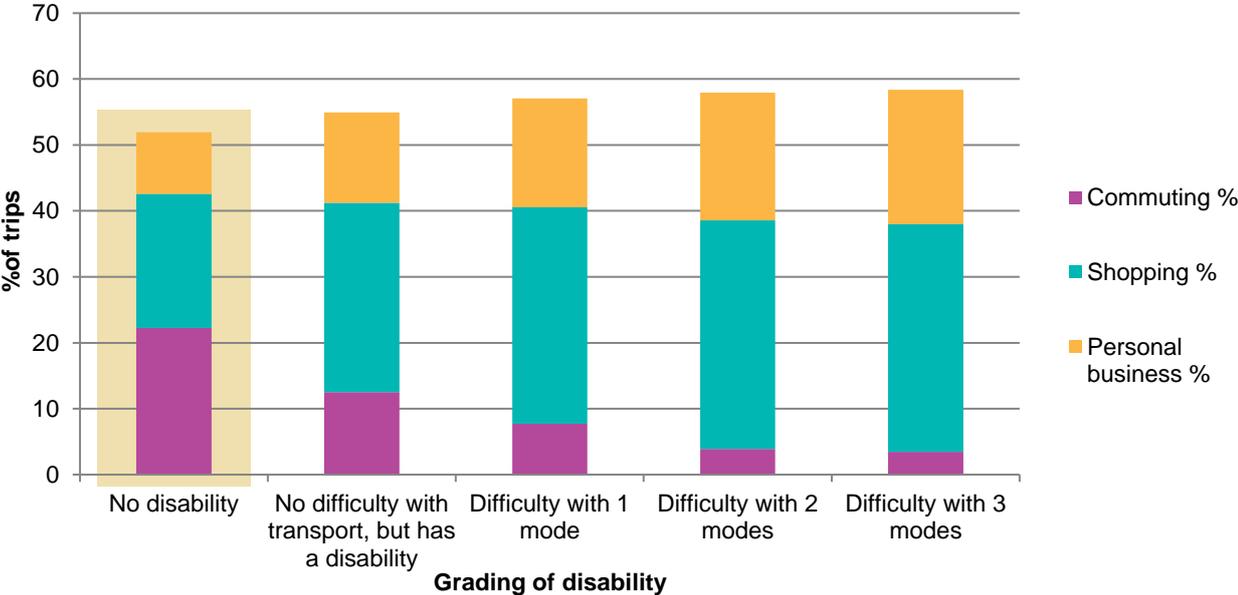
<sup>3</sup> This was based on the assumption that this would be the case for those who did not report any trips in the travel diary.

<sup>4</sup> National Travel Survey: Disability and travel 2007-2014, available at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/533345/disability-and-travel-factsheet.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/533345/disability-and-travel-factsheet.pdf)

undertaken by people with and without disabilities. People with disabilities have been found to undertake a larger proportion of shopping trips (32%, compared with 20% for those without disabilities) and a smaller proportion of commuting trips (8%, compared with 22%) and personal business trips (16%, compared with 9%).

- 1.6 Analysis of trip profiles by the grading of disability illustrates that all four groups of people with disabilities are markedly different from those without disabilities – though these differences also become more marked as the travel impact of the disability increases. While commuting accounts for 22% of the trips made by those without a disability, it accounts for 13% of the trips made by those with a disability (but no transport difficulty) – and 8%, 4% and 3% of the trips made by those with a disability that causes difficulties with one, two or three modes of transport respectively. Inevitably, commuting is an activity strongly linked to age; Section 1.11 considers whether these differences simply reflect the greater incidence of disability among older age groups.
- 1.7 While the proportions of shopping and personal business trips also rise across the grading of disability, these differences are less pronounced and, to some degree, are a consequence of reductions in the proportion of commuting trips. Interestingly, there are only slight, albeit significant, variations in the proportions of trips undertaken for the other five purposes across the groups defined by the severity of disability – including, notably, leisure and education.

**Figure 2 Proportion of trips undertaken for commuting, shopping and personal business, by grading of disability, 2007-2014 combined**



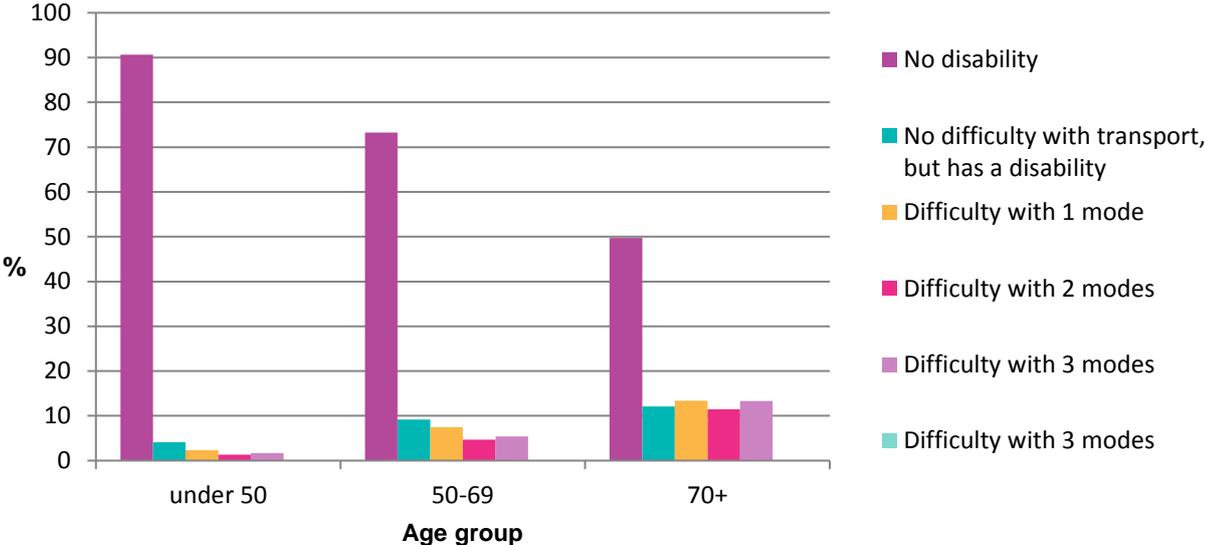
Source: National Travel Survey 2007-2004 combined trip data-set  
 Base: all trips reported by respondents aged 16+ (2,003,735)

**Variation by disability and age**

- 1.8 Given the known link between age and the onset of disability, the relationships between disability and travel behaviour, reported above, may simply reflect the interaction between age and disability – and the fact that people with disabilities tend, on average, to be much older than people without disabilities. As depicted in Figure

3, reported disabilities and travel difficulties increase with age, most markedly between the 50-69 and 70+ age groups. While 91% of those aged under 50 do not report a disability, this is the case for 73% of those aged 50-69 and half of those aged 70+. Similarly, the proportions reporting greatest impact of their disabilities on travel increase markedly with age; 2% of those aged under 50 report difficulties with all three modes of transport, compared with 5% of those aged 50-69 and 13% of those aged 70+.

**Figure 3 Grading of disability, by age group, 2007-2014 combined**



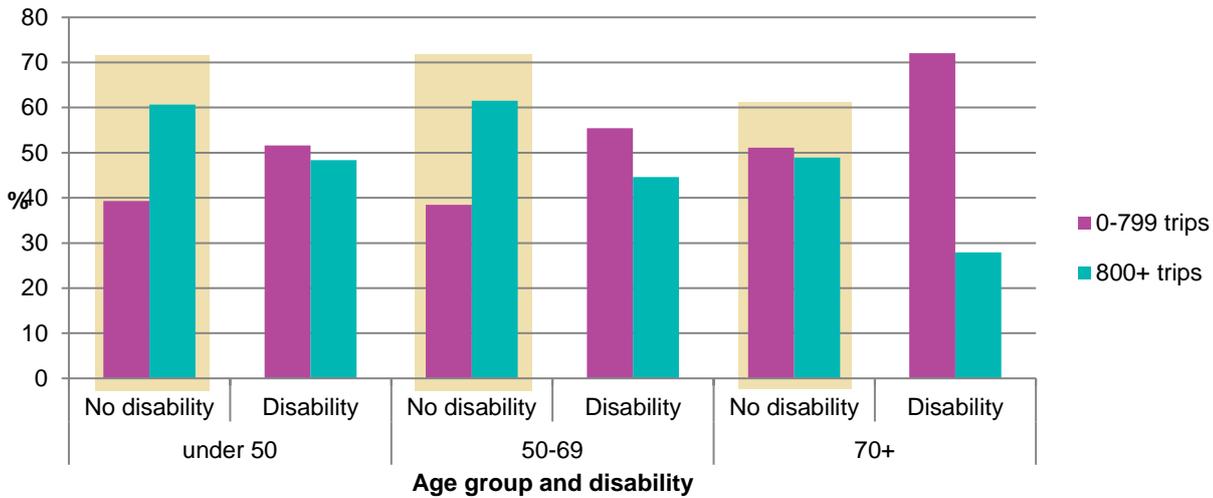
Source: National Travel Survey 2007-2014 combined individual data-set  
 Base: all respondents aged 16+ (105,342)

1.9 Figure 4 presents data on the proportions of groups defined by different combinations of age and disability who have undertaken fewer than or at least 800 trips annually (a categorisation that is helpful for depicting differences in behaviour as it divides the general population roughly in half – 45% and 55%). Three key trends are evident:

- the number of trips undertaken by both those with and without disabilities declines by age – and this decline primarily occurs between the 50-69 and 70+ age groups;
- in each age group, those with a disability are more likely to undertake fewer trips than those without;
- people with and without disabilities are most ‘alike’ in the younger age groups and most distinct when aged 70+. This may be because disabilities that occur among younger age groups tend to have less extensive impacts on travel behaviour (Figure 3 illustrates that this is the case, in relation to the grading of disability derived from NTS data).

1.10 Similar patterns are evident in the numbers of miles travelled and the time spent travelling annually, for groups defined by age and disability.

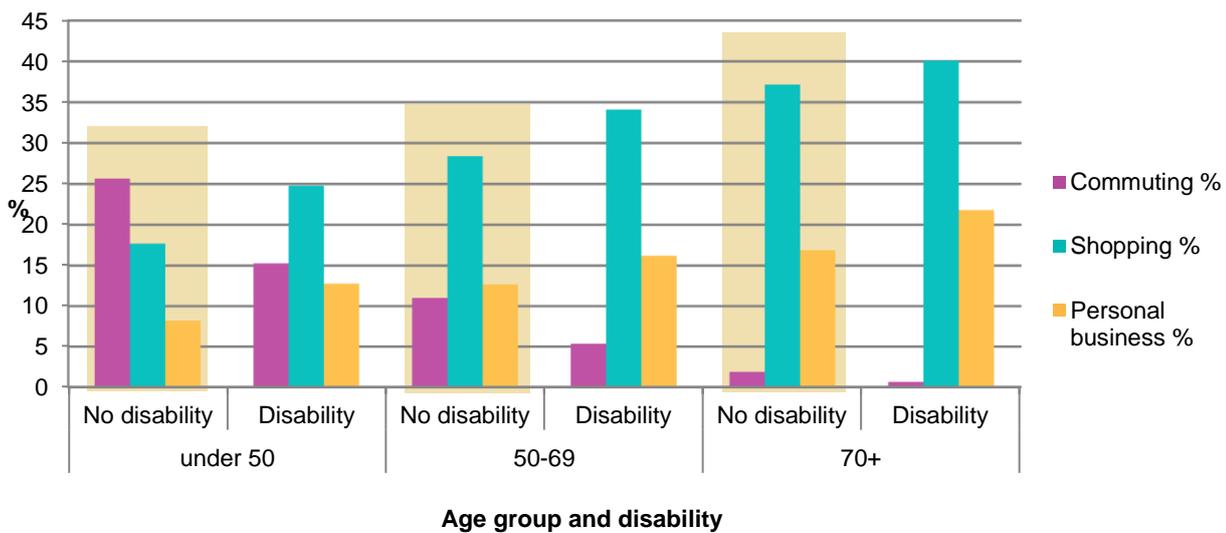
**Figure 4 Number of trips per year, by age group and disability, 2007-2014 combined**



Source: National Travel Survey 2007-2014 combined individual data-set  
 Base: all respondents aged 16+ who had completed travel diary (132,153)

1.11 Section 1.6 indicated that the ‘profile’ of trips undertaken by people with and without disabilities varies substantially – especially in relation to trips undertaken for commuting, shopping and personal business. Figure 5 shows that this is also the case for groups defined by disability and age – but that, in this instance, people with and without disabilities become **more alike** as they age. This appears to primarily result from the decline in the proportion of trips undertaken for commuting among both groups with age but, more markedly, among those without a disability.

**Figure 5 Proportion of trips undertaken for different purposes, by age group and disability, 2007-2014 combined**

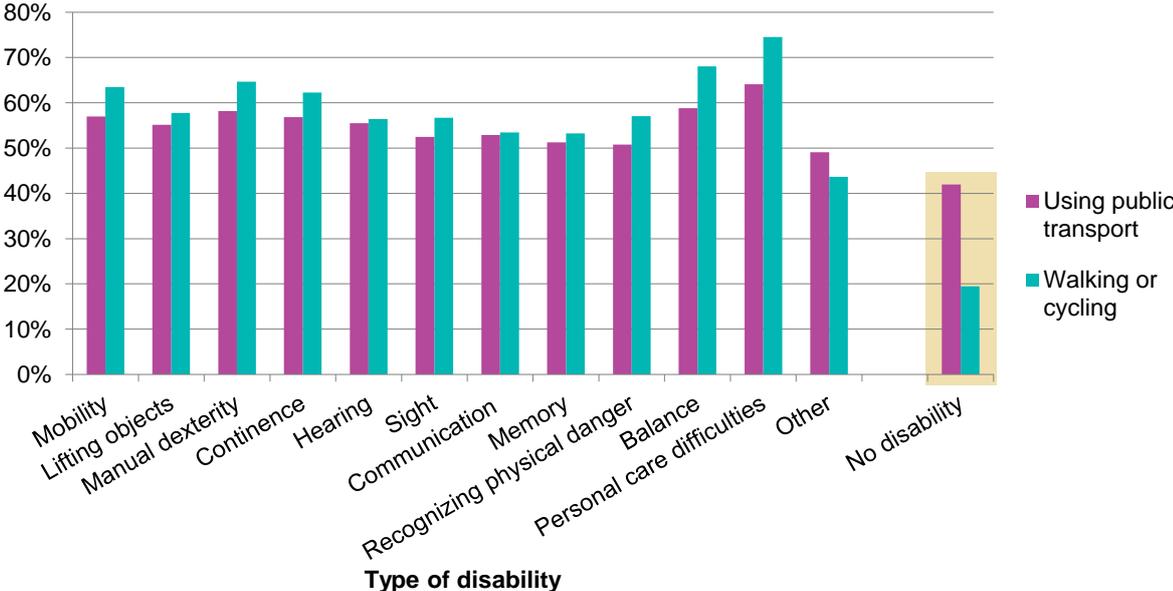


Source: National Travel Survey 2007-2014 combined trip data-set  
 Base: all trips reported by respondents aged 16+ (2,003,735)

## Variation by type of disability

- 1.12 Analysis of data from Understanding Society enables an examination of differences in travel behaviour between people with different **types** of disabilities and those who do not have disabilities (this was not possible for the analysis of NTS data reported above, as disability is primarily defined in NTS in relation to its impacts upon travel). Specifically, analysis was undertaken to compare use of public transport or walking or cycling instead of driving, the number of miles driven per year, use of various means of transport and having a driving licence for people with different types of disabilities and people without disabilities.
- 1.13 Having any type of disability makes people significantly more likely not to use public transport instead of taking the car and it makes them even less likely to walk. As shown in Figure 6, people experiencing difficulties with personal care (e.g. getting dressed; taking a bath or shower) and those with physical coordination problems (e.g. balance) appear to be most likely never to use public transport or to walk or cycle for short journeys. They are followed by people with mobility issues, loss of manual dexterity and incontinence.

**Figure 6 The frequency of never using various means of transport instead of driving, by disability, 2012-2013**



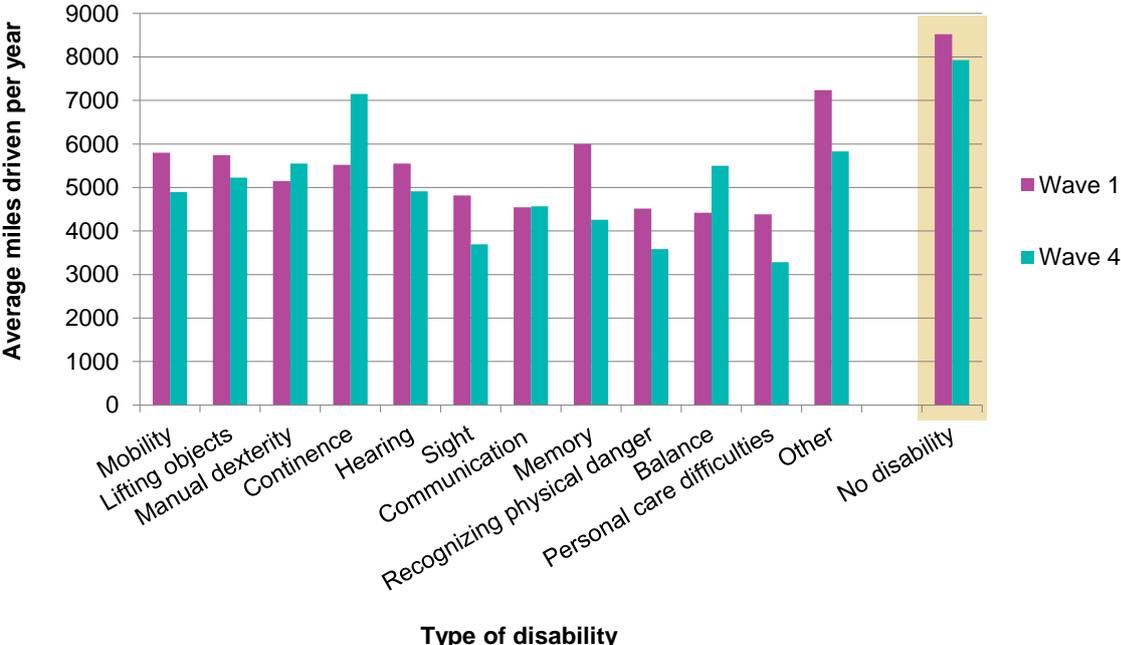
Source: Understanding Society Wave 4, 2012-2013  
 Base: all respondents aged 16+ (43,079 for public transport, 43,086 for walking or cycling)

- 1.14 Similar patterns of responses were observed for Wave 1<sup>5</sup> (as compared with those for Wave 4, presented above). However, the prevalence of never using public transport or never walking seems to have increased across the board in Wave 4, compared with Wave 1. This could be linked to the effect of the people surveyed ageing across the waves.
- 1.15 In terms of the average number of miles driven in the past 12 months, Figure 7 shows that people with any types of disability drive less compared with those who are not disabled. The categories of disability (in terms of its impact on daily life) that minimise the number of miles driven are: difficulty with personal care; physical

<sup>5</sup> Understanding Society is a longitudinal survey, with the same households being re-visited and interviewed every one or two years (described as Waves).

coordination (e.g. balance); recognising being in physical danger, having problems with communication and sight. Consistent with the previous analyses, data collected in Wave 4 (2012-2013) appears to suggest that a lower number of miles are driven per year, across the board. Once again the explanation could lie in the effect of the people surveyed ageing.

**Figure 7 Average miles driven per year, by type of disability and wave**

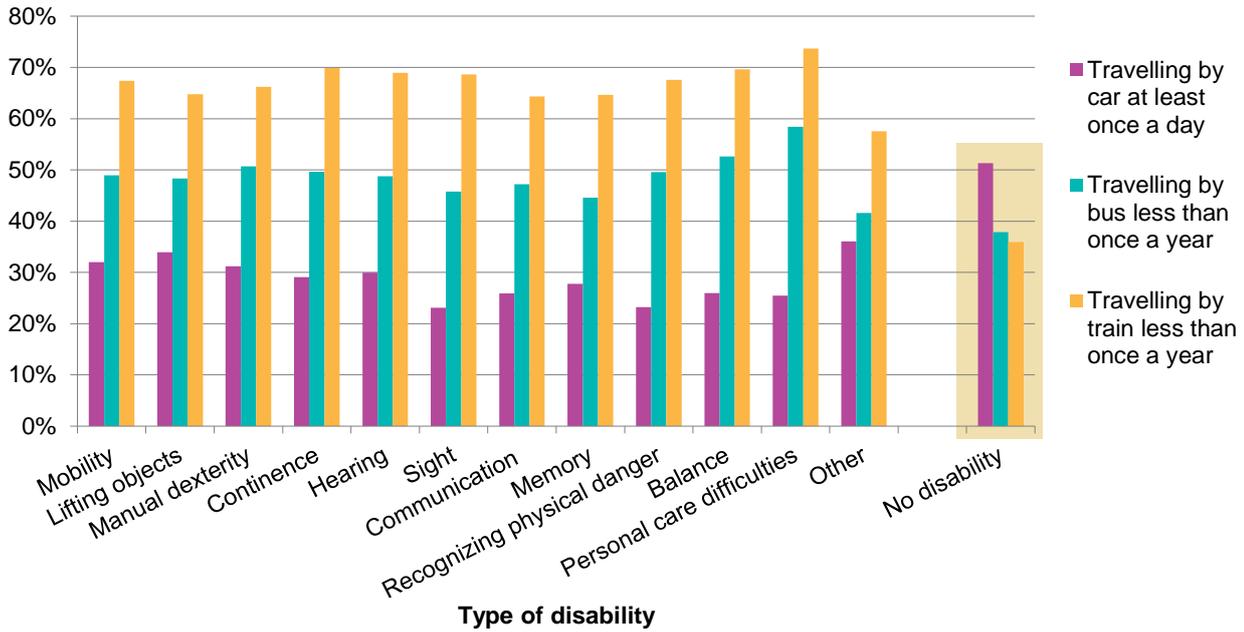


Source: Understanding Society, Wave 1 (2009-2010) and Wave 4 (2012-2013)  
 Base: all respondents aged 16+ (28,621)

1.16 Figure 8 presents data for the most common behaviours, across the population as a whole, in relation to travelling by car, by bus and by train. 51% of adults aged 16+ travel by car at least once a day, while 39% travel by bus less than once a year and 42% travel by train with this frequency.

1.17 As shown in Figure 8, having any type disability lowers the likelihood of using public transport such as buses and trains (this is also the case for bikes and planes although data for these modes are not presented). However, it also decreases the likelihood of using a car regularly. The largest differences appear to be in the usage of trains and planes (not presented here), suggesting that disability is likely to restrict longer journeys. The pattern is relatively stable by type of disability.

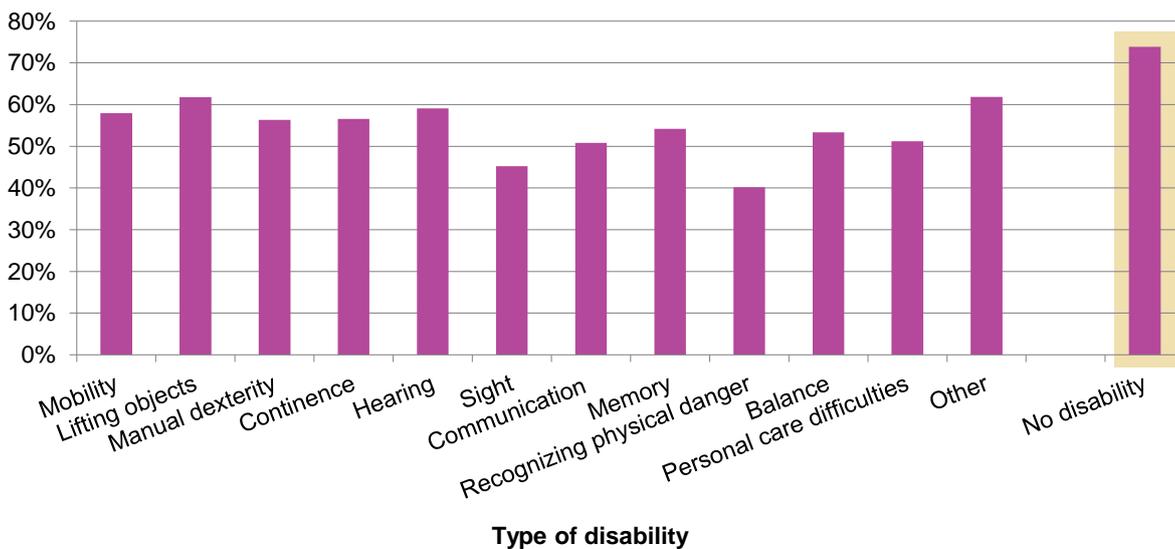
**Figure 8 Frequency of using various means of transport, by type of disability, 2012-2013**



Source: Understanding Society Wave 4, 2012-2013  
 Base: all respondents aged 16+ (43,127 for car and bus, 43,130 for train)

1.18 Finally, as shown in Figure 9, those who have sight-related issues and people who find it difficult to know if they are in physical danger are less likely to have a driving licence – although this is also the case for all groups defined by disability type.

**Figure 9 Frequency of having a driving licence, by type of disability (Wave 1)**



Source: Understanding Society Wave 1, 2009-2010  
 Base: all respondents aged 16+ (50,802)

## 2. Factors that affect travel behaviour

### Key findings

- Disability is a key characteristic that links to and determines travel behaviour, even when its relationships with other characteristics have been controlled for. Being disabled links with more negative or problematic **experiences** of travel, along with more limited perceptions of viable alternatives.
- Within this broad picture, it is important not to view people with disabilities and their experiences with different modes and aspects of transport, as homogenous.
- Specific types or grades of disability are associated with very different travel behaviour and experiences. Being disabled does not always lead to less frequent use (and more problems using) particular modes of transport; bus use stands out in this regard, with people with disabilities being more likely to travel by bus and more prone to view this as a viable alternative to car journeys (compared to other transport modes). Nevertheless, even with buses, the experience of having a disability limits or prohibits use of this mode for a significant minority.
- There is some evidence that people with disabilities' experiences of travel impact on their wider daily lives, although further research in this area would be valuable.

### Chapter overview

- 2.1 This chapter examines the extent to which the characteristic of having a disability can explain travel behaviour; the attitudes, perceptions and experiences of people with disabilities in relation to travel; and the wider impacts of travel on the daily lives of people with disabilities.

### Factors that affect travel behaviour

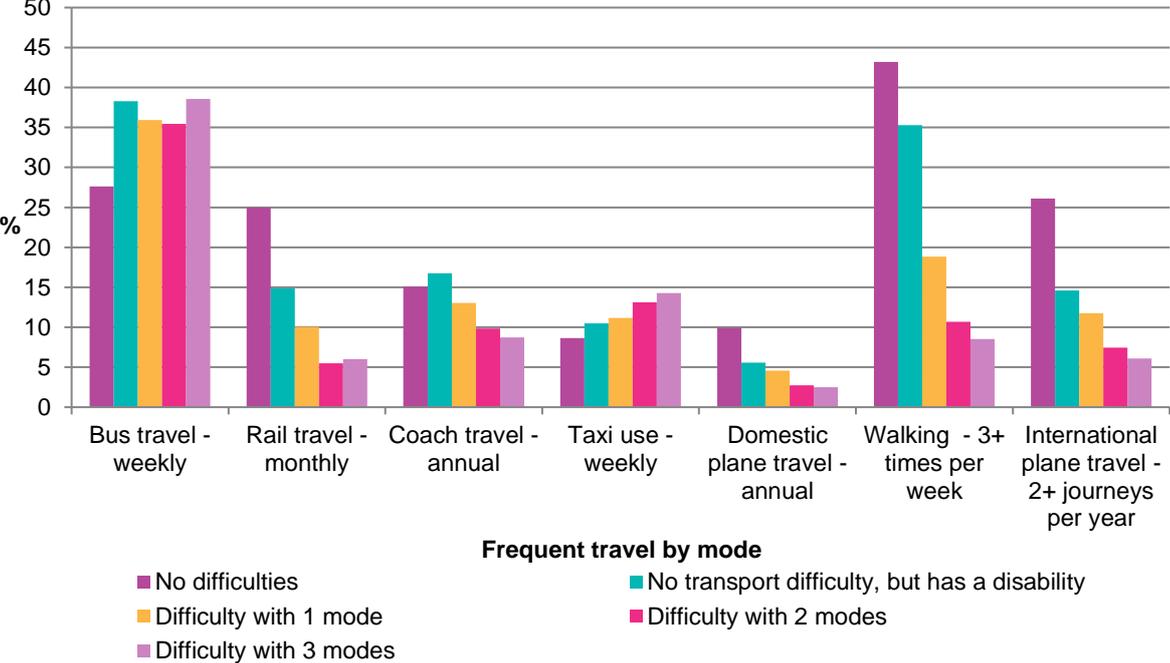
#### Role of disability in explaining frequency of mode use

- 2.2 Figure 10 shows the proportions of people with different grades of disability that use different modes of transport on a frequent basis<sup>6</sup>. While having a grade of disability that causes difficulties with more modes of transport is associated with more frequent use of buses and taxis, for all other transport modes this is associated with lower levels of frequent mode use.

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<sup>6</sup> <sup>6</sup> 'Frequent' use of different modes of transport is defined in relation to each specific mode as shown in figure 10.

**Figure 10 Frequency of travelling using different modes, by grading of disability, 2007-2014 combined**



Source: National Travel Survey 2007-2014 combined individual data-set  
 Base: all respondents aged 16+ (128,196 -146,432 for different modes)

- 2.3 These findings are consistent with those reported in Section 1.17, where analysis of Understanding Society data showed that having any of type disability lowers the likelihood of travelling by bus less than once a year (the two surveys’ findings are also broadly consistent in relation to trains and plane travel).
- 2.4 To explore the characteristics associated with the use of different modes, analysis was undertaken of how the frequent use of each transport mode varies by a range of other characteristics – namely household income, working status, age, region, highest educational qualification and sex. Multivariate analysis (analysis which allows us to explore the relationships between two or more variables) was then undertaken to identify the characteristics that determine frequent use of each mode of transport, once any relationships between them have been controlled for<sup>7</sup>. This type of analysis allows us to assess the individual impact of each characteristic on a particular behaviour or attitude, taking account of the fact that many characteristics (such as age and disability) are related to each other.
- 2.5 In most instances, use of each transport mode varied significantly by all of the characteristics examined, even when the relationships between them had been controlled for. Figure 11 identifies the categories of the grading of disability that determine frequent use of different transport modes. Interestingly, the patterns identified are not consistent; while having a disability that causes difficulties with one, two and three modes of transport determines less frequent use of rail travel, for domestic plane travel this is only the case for having difficulties with three modes of transport.

<sup>7</sup> The characteristics controlled for were household income, working status, age, region, highest educational qualification and sex.

**Figure 11 Role of disability in independently explaining regular use of different transport modes**

| Mode (frequency)                         | Role of disability in determining travel behaviour, compared with not having a disability   |  |
|--|---|--|
|  | Categories which increase probability of frequent use   | Categories which decrease probability of frequent use  |
| Bus travel (weekly)                      | Having disability that doesn't cause difficulties with cars, buses and walking<br>Having disability which causes difficulties with 3 modes of transport |  |
| Rail travel (monthly)                    |   | Having disability that causes difficulties with 1, 2 or 3 modes of transport   |
| Coach travel (annual)                    |   | Having disability that doesn't cause difficulties with cars, buses and walking<br>Having disability which causes difficulties with 2 or 3 modes of transport |
| Taxi use (weekly)                        | Having a disability which causes difficulties with 1, 2 or 3 modes of transport   |  |
| Domestic plane travel (annual)           |   | Having disability that causes difficulties with 3 modes of transport   |
| Walking (3+ times per week)              |   | Having disability that doesn't cause difficulties with cars, buses and walking<br>Having disability that causes difficulties with 3 modes of transport       |
| International plane travel (2+ per year) |   | Having disability that doesn't cause difficulties with cars, buses and walking<br>Having disability that causes difficulties with 3 modes of transport       |

Source: National Travel Survey 2007-2014 combined individual data-set

Base: all respondents aged 16+

2.6 As noted (in Section 1.2), annual trip numbers varied significantly by the grading of disability and age. Multivariate analysis indicated that this remains the case for these characteristics, along with working status, highest education qualification, region, household income and sex, even after the relationships between them had been controlled for. All four grades of disability remained significant predictors of undertaking a lower number of trips annually; however, compared with being aged under 50 years, only the category of being aged 50-69 independently explained variation in trip numbers. This was not the case for being aged 70+ - suggesting that differences between the amounts of travel undertaken by people with and without disabilities in the oldest age group can primarily be explained by other characteristics. Of all the characteristics examined, not being in work was the most important predictor of annual trip numbers, followed by having no educational qualifications. This is unsurprising, as being in work necessarily generates very frequent travel for the purpose of commuting. Having a disability which caused difficulties with two or three transport modes were the third and fourth most important predictors of annual trip numbers.

## The role of disability type in determining travel behaviour

- 2.7 Using data from Wave 4 of Understanding Society, analysis was undertaken to examine whether the characteristic of being disabled explains differences in the various types of travel behaviour presented in Section 1.12 to 1.18, namely using public transport instead of driving, the frequency of travelling by car, bus and train, the frequency of using a bike and the experience of not having flown in the past 12 months. For each behaviour, both the general effect of having a disability and the specific effects of different types of disabilities were tested.
- 2.8 Multivariate analysis was undertaken to assess the impact of each type of disability on the above travel behaviours, while controlling for other types of disability and other characteristics relating to these behaviours<sup>8</sup>. Once the effects of other personal characteristics (age, sex and so on) had been controlled for, only two types of disability have a significant effect on not using public transport: not being able to lift, move or carry objects and sight (apart from wearing standard glasses). The first of these decreases the likelihood of using public transport instead of driving. Conversely, having issues with sight increases the probability of using public transport instead of driving. There may be a number of reasons why specific disabilities do not determine public transport use in this instance (which is at odds with findings in Section 2.2 for example). First, the question asked about public transport use in general; we see elsewhere that disability determines greater use of certain modes e.g. buses and less use of others e.g. trains, while the data reported here may be averaging out these relationships. Secondly, the NTS-derived measure of disability is grounded in the experience of mobility difficulties, so logically would be more likely to have a closer relationship with travel behaviour in relation to different modes, than the general measure of disability analysed here.
- 2.9 Being disabled does not affect the probability of travelling by car on an irregular basis (defined as less than once or twice a year or never). From the different types of disability, only not being able to lift, move or carry objects appears to have an impact. People in this category are more likely to travel more regularly by car.
- 2.10 Having a disability significantly increases the probability of travelling by bus, reflecting our findings from the analysis of NTS data reported in Section 2.2. This does not hold for people who are unable to lift or carry objects, who are less likely to travel by bus – presumably because of physical or mobility difficulties.
- 2.11 Having a disability does not significantly affect the likelihood of travelling by train. However, there are a set of disabled people who are less likely to travel by train than other people - namely: people with mobility problems, people who cannot move or carry objects, persons who are incontinent, who have hearing problems, problems with physical coordination or difficulties with personal care.
- 2.12 People with disabilities are significantly less likely to travel by bike and plane, particularly those who have mobility issues.
- 2.13 Taken with the analysis of NTS data presented in Section 2.5, these findings clearly indicate that the nature of an individual's disability and its impacts on their travel or everyday life are the key driver of their behaviour in relation to different transport modes – rather than the presence (or not) of a disability. Clearly too, it is important to understand travel behaviour (and how disability impacts on it) on a mode-by-mode basis.

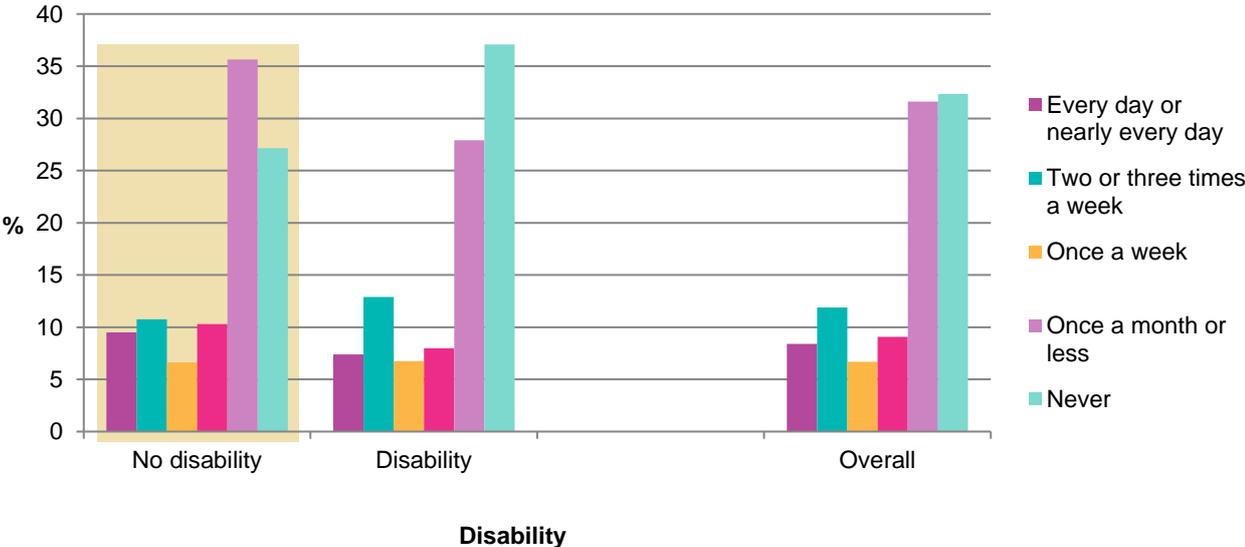
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<sup>8</sup> The characteristics controlled for were type of disability, ethnicity, marital status, BMI score, type of area, region, level of education and working pattern (full-time or part-time).

**The role of psychological factors**

- 2.14 There has been little exploration to date of the role of psychological and emotional factors, as opposed to socio-demographic characteristics, in explaining the travel behaviour of people with disabilities. Data from ELSA Waves 6 and 7 (2012–2015) were used to examine how feelings experienced during commuting link with the effect of disability on the frequency with which people aged 50 and over use public transport. The specific feelings measured, in relation to commuting on the previous day, were happiness, interest, frustration and sadness.
- 2.15 As shown in Figure 12, public transport use differs for people with and without disabilities. Those who have a disability are more likely to never use public transport; this is the case for 37%, compared with 27% of people without a disability – although it should be noted that, if we combine the two less frequent categories (“once a month or less” and “never”), the difference is far less pronounced. Multivariate analysis demonstrates that, out of happiness, interest, frustration and sadness with commuting, only frustration links with the frequency of public transport use, once other characteristics have been controlled for<sup>9</sup>. As people feel increasingly frustrated, they are more likely to never use public transport or to use it very rarely (once per month or less).

**Figure 12 The frequency of using public transport, by disability, 2014-2015**



Source: English Longitudinal Study of Ageing Wave 7 (2014-2015)  
 Base: all respondents aged 50+ (8,217)

- 2.16 Further analysis was undertaken to explore how change over time at the individual level in frustration levels (and disability) influences the frequency of using public transport. The findings, once again, support the conclusion that only frustration has a significant impact on the relationship between disability and public transport use. However, the results diverge from the static (‘at a single one point in time’) analysis discussed above. Specifically, increasing the level of frustration has different effects depending on whether an individual has a disability or not. For people who do not have a disability, increasing frustration over time decreases the frequency of using public transport. However, for people who had a disability, increasing levels of

<sup>9</sup> The characteristics controlled for were having a disability, the feelings experienced during commuting, age, sex, whether the respondent was in employment, relationship status and region.

frustration are linked with increasing levels of public transport use. This may be because people with disabilities have fewer alternative transport options available to them than those without – and so are less likely to be able to respond to their increasing frustration by changing their mode of travel.

## Experiences of travel

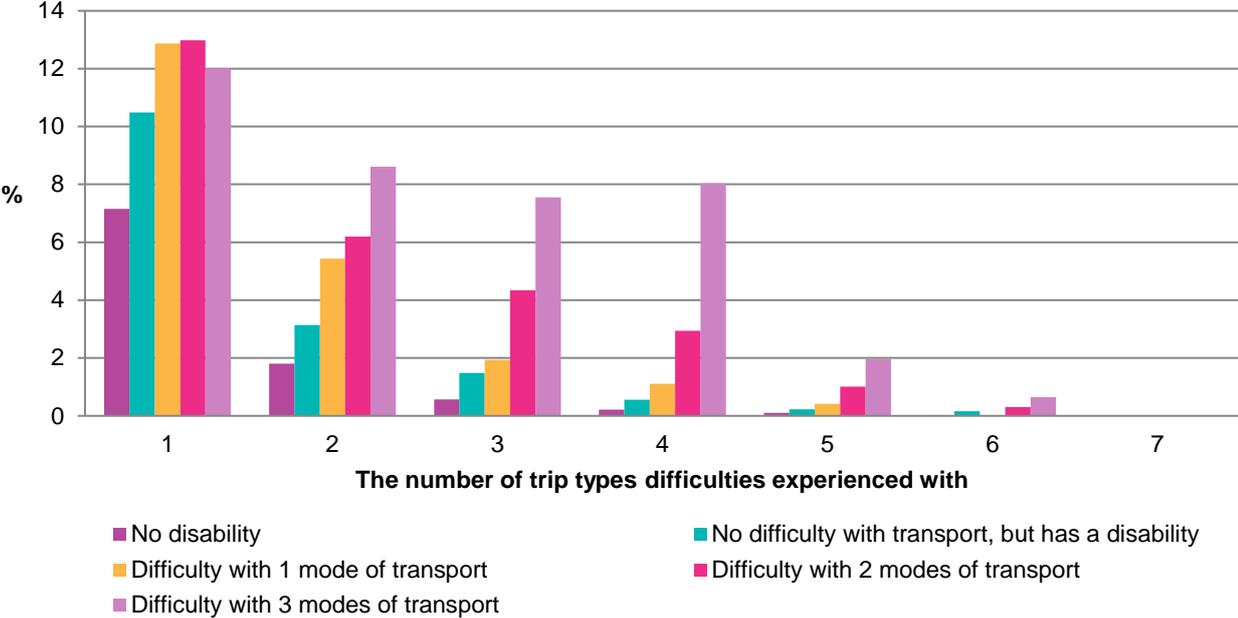
### Travel difficulties

- 2.17 NTS data from 2010, 2012 and 2014 was combined to explore the number, range and types of travel difficulties encountered by people with and without disabilities. NTS asks respondents whether they experience difficulties (and the nature of these difficulties<sup>10</sup>) with seven types of trips (travelling to the doctors surgery; hospital; visiting friends/relatives at their home; travelling to other social activities; taking children to school; travelling to school/college/university; and travelling for any other reason). It should be noted, at the outset, that the non-identification of difficulties with a particular trip type could reflect the absence of a need to undertake such trips, as well as or instead of the lack of experience of any difficulties.
- 2.18 People with disabilities were more likely to report experiencing travel difficulties with any types of trips (25%, compared with 10% of people without disabilities). The experience of difficulties is more common among those with a higher grade of disability; 22% of those who reported a difficulty with one mode of transport indicated a travel difficulty in relation to at least one trip type, compared with 39% of those who experienced difficulties with three modes. Disability was more strongly associated with the experience of difficulties with at least one trip type than was age. The proportions of people with disabilities aged under 50, 50-69 and 70+ who reported difficulties with at least one trip type were 24%, 23% and 27% respectively – although these figures may also reflect the fact that older people are less likely to undertake a number of trip types.
- 2.19 As shown in Figure 13, people with disabilities experience difficulty with a greater number of trip types than people without disabilities. While 3% of people without disabilities reported difficulties with two or more trip types, this was the case for 12% of people with disabilities. Similarly, the number of trip types people experienced difficulties with becomes more marked as the grade of disability becomes more severe. 9% of those with difficulties with one transport mode reported difficulties with two or more of the trip types asked about; this was the case for 15% and 27% of those who reported difficulties with two or three modes respectively.

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<sup>10</sup> The specific difficulties asked about were: too far / long journey; journey not possible by public transport; unreliable public transport; cost of using public transport / taxis; poor information about public transport; poor connections; public transport unpleasant; don't have a current driving licence; cost of petrol; lack of parking facilities; cost of parking; personal disability; concerns about personal safety; traffic congestion / roadworks; other.

**Figure 13 Number of trip types with which difficulties experienced, by grading of disability (2010, 2012 and 2014 combined)**



Source: National Travel Survey 2010, 2012 and 2014 combined individual data-set  
 Base: all respondents aged 16+ (43,315)

2.20 The specific difficulties experienced by people with and without disabilities varied substantially. While “personal disability” was the main difficulty identified by people with disabilities for all trip types; people without disabilities were most likely to identify “lack of parking facilities” when travelling to the doctors and hospital; and “traffic congestion/roadworks” as a difficulty for all other types of trips.

**Levels of safety**

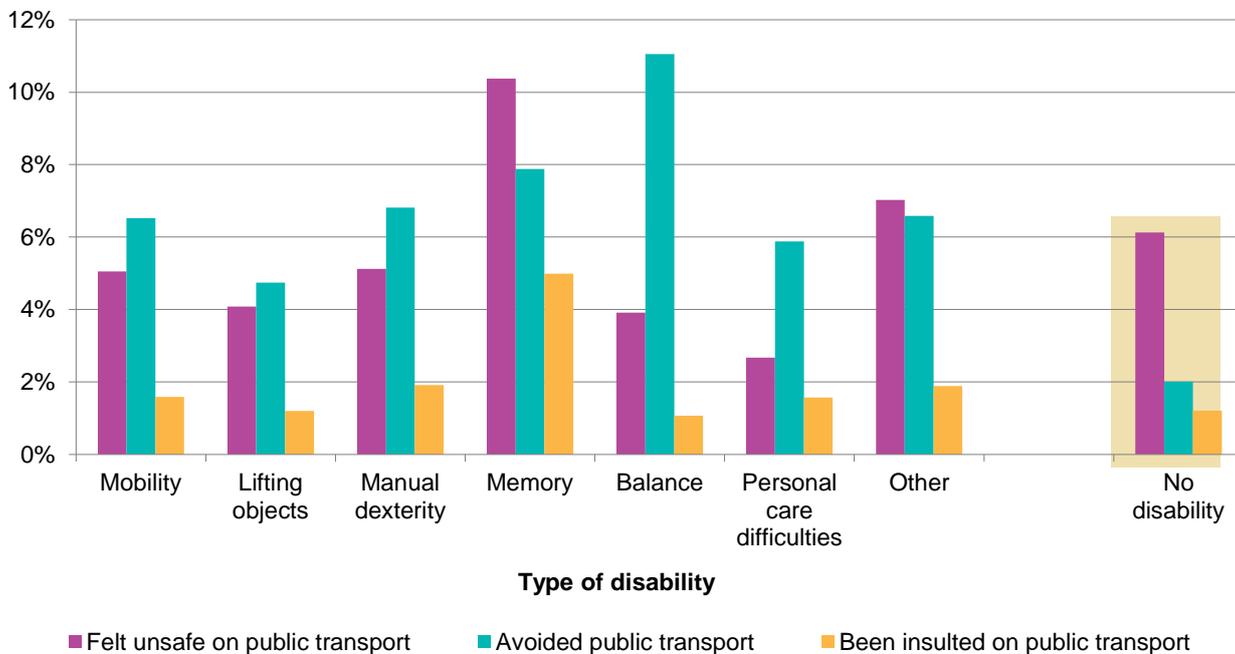
2.21 Analysis of data collected on Wave 5 of Understanding Society (2014-15) was undertaken to establish whether there are differences between people with and without disabilities in the experience of safety-related issues on or around transport facilities. The analysis focused on eight variables measuring safety-related events in two different contexts - on public transport and in or around train or bus stations. The safety-related events asked about were feeling unsafe, avoidance (in terms of avoiding that particular location), being insulted or threatened, and being physically attacked.

2.22 Figure 14 presents data on the proportions with different types of disabilities who had felt unsafe, had avoided, or had been insulted or attacked on public transport in the previous year. Type of disability is clearly important for understanding different experiences in this area. There are particularly large differences for people who have two specific types of disability<sup>11</sup>. People who experience issues with memory are more likely to have felt unsafe on public transport, while people who experience difficulties with physical coordination are more likely to have avoided taking public transport. Overall, five of the seven groups defined by disability type are less likely to have felt unsafe on public transport – perhaps because they had fewer opportunities to do so (all seven of these groups were more likely to have avoided public transport use compared with people without disabilities). Data are not presented for being physically attacked, as there are no significant differences between people with and without disabilities and between people with different types of

<sup>11</sup> Several types of disability are not displayed in Figure 14 as the sample sizes are too low (unweighted sample size below 100 respondents). These are: continence, hearing, sight, communication and recognising physical danger.

disabilities. In practice being attacked is a very rare occurrence (reported by 0.1% of respondents). Similar conclusions can be drawn from this set of variables measured with reference to being at or around train or bus stations.

**Figure 14 The frequency of experiencing safety issues on public transport, by type of disability, 2014-15<sup>12</sup>**



Source: Understanding Society Wave 5 (2014-2015)  
 Base: all respondents aged 16+ (4,884-4,887)

2.23 A combined variable measuring the number of the four types of safety incidents each respondent had experienced across the two domains asked about (varying from 0 to 8) was created for the purpose of multivariate analysis – to determine whether being disabled or having a particular type of disability affects the level of experience of safety-related incidents<sup>13</sup>. Two types of disability were found to have a significant impact on the number of safety instances an individual experiences. Having a disability related to hearing decreases the safety-related instances that are experienced – perhaps because the individual is less likely to be aware of them. Conversely, as discussed above, difficulties with memory and the ability to concentrate, learn or understand are associated with a greater number of safety issues; this may reflect the cognitive abilities of this group, in addition to their objective experiences. Nonetheless, in general, experiencing safety-related issues is uncommon and the differences we identify are very small.

## Attitudes relating to alternative means of transport and the decision not to travel

2.24 Clearly, having a disability (and particular types of disabilities) link with and determine travel behaviour in terms of the use and experience of different transport modes. This

<sup>12</sup> The frequencies for some types of disabilities were removed due to small sample sizes.

<sup>13</sup> The characteristics controlled for were type of disability, ethnicity, marital status, sex, region and education.

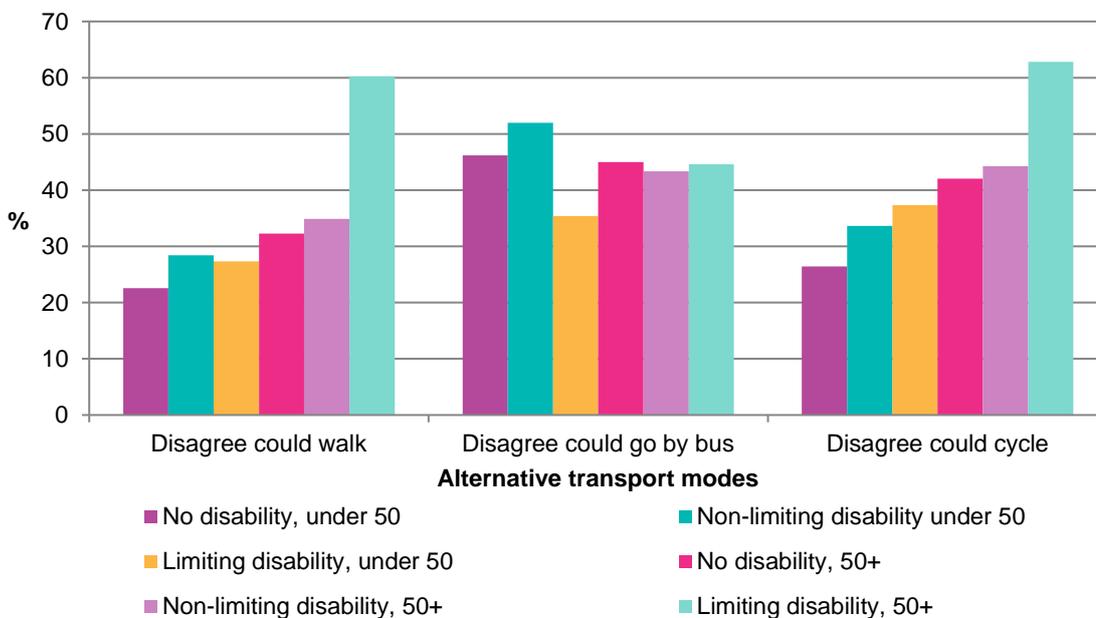
section presents a range of analyses which explore how being disabled affects the decision to use alternative modes of transport, or not to travel at all.

### Ease of travelling by modes of transport other than car

2.25 BSA survey data collected in 2013-2015 was used to explore attitudes to using alternative means of transport and how these vary by disability (using the standard 2-part DDA measure described in Section 4.8) and age. As shown in Figure 15, both age and disability link with perceptions of the ease of undertaking short car journeys using alternative modes of transport – with those with limiting disabilities aged 50 and over being the least likely to think it would be easy to do this when walking and cycling are the alternatives specified.

2.26 Among people with a limiting disability, those aged 50 and over (60%) are more than twice as likely than those aged under 50 (27%) to say they could not replace short car journeys with walking. This is a much larger gap than that seen between the age groups and categories of disability. A similar pattern can be seen for cycling.

**Figure 15 Disagreement that short car journeys could be undertaken by alternative modes, by disability and age. 2013-2015 combined**



Source: British Social Attitudes, 2013-2015 data combined

Base: all respondents aged 18+, except for those who rarely/never travel by car for short journeys (2,106-2,252)

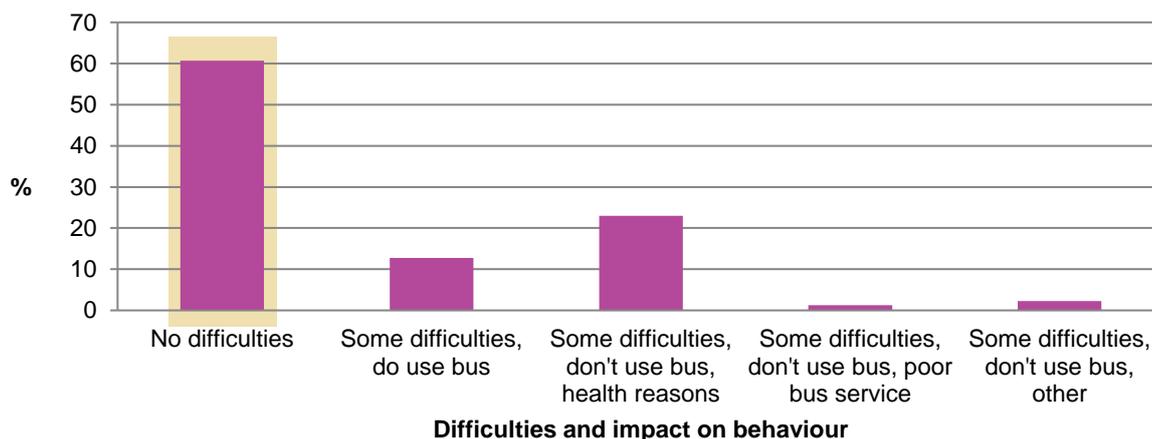
2.27 A comparable pattern is evident when we compare those aged 50-69 with those aged 70+ (not presented in Figure 15). Among those with a limiting disability, those aged 70+ would find it harder to replace car travel with alternative transport modes than those aged 50-69 (and cycling is seen as the least viable option). The same is true for people without disabilities, where differences of a similar magnitude exist when comparing by age.

2.28 Travel by bus is different, and is seen as a more viable alternative to car travel than walking or cycling for people with a limiting disability. There is little variation by age or disability, implying that while barriers exist around bus travel, these do not primarily relate to disability or age.

## Non-use of local buses

- 2.29 In the light of the above conclusion, analysis was undertaken for the 39% of NTS respondents with a disability who specifically had difficulties using local buses (one of the measures which contributed to our grading of disability). The purpose of this analysis was to understand the nature of the difficulties encountered and the impact of these difficulties on their bus use.
- 2.30 As shown in Figure 16, 13% of people with disabilities continued using buses despite encountering some difficulties (in other words, around one-third of those who experienced difficulties with bus use). 23% didn't use buses for disability or health reasons, while very small proportions didn't use buses due to poor service or other reasons. Clearly, for more than half of those who experienced difficulties with buses, the impact of these difficulties was that they no longer used this transport mode. The proportion not using buses for disability or health reasons increased with the grade of disability; this was the case for 6%, 47% and 60% of those who experienced difficulties with one, two and three modes of transport respectively.

**Figure 16 Difficulties with using buses and their impact on bus use, for people with disabilities, 2007-2014 combined**



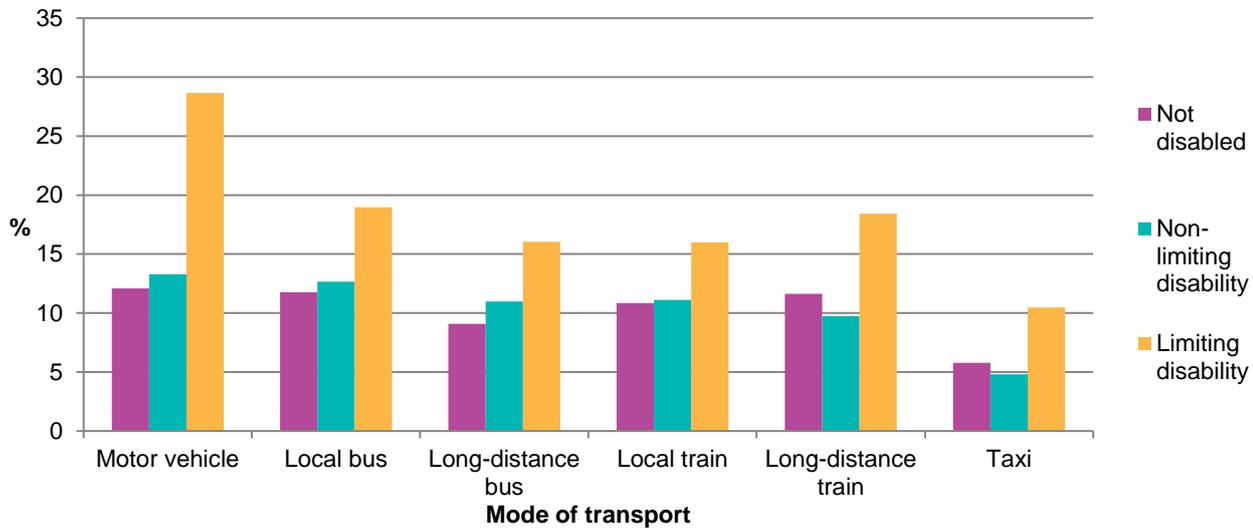
Source: National Travel Survey 2007-2014 combined individual data-set  
 Base: all respondents aged 16+ with a disability (116.723)

- 2.31 Specific difficulties with bus use were more common among those with a higher grade of disability. Getting to the bus stop was seen as the main barrier – identified by 25%, 74% and 81% of those with difficulties with one, two and three modes of transport, who identified difficulties with using buses. Getting on and off buses and standing waiting at the bus stop were also common difficulties experienced.

## Not being able to travel as much as would like

- 2.32 Data from the first wave of the Life Opportunities Survey (LOS), collected in 2009-2010, were used to examine whether the proportions of people who used different modes of transport less than they would like varied for those with and without disabilities and across different age groups. Across all modes, people with a limiting disability were much more likely to report that they used different modes less often than they would like, compared with those without a disability or with a non-limiting disability. As shown in Figure 17, the greatest difference was in the proportions that used a private motor vehicle less often than they would like; 29% of those with a limiting disability indicated this, more than double the proportion of those who had no disability (12%).

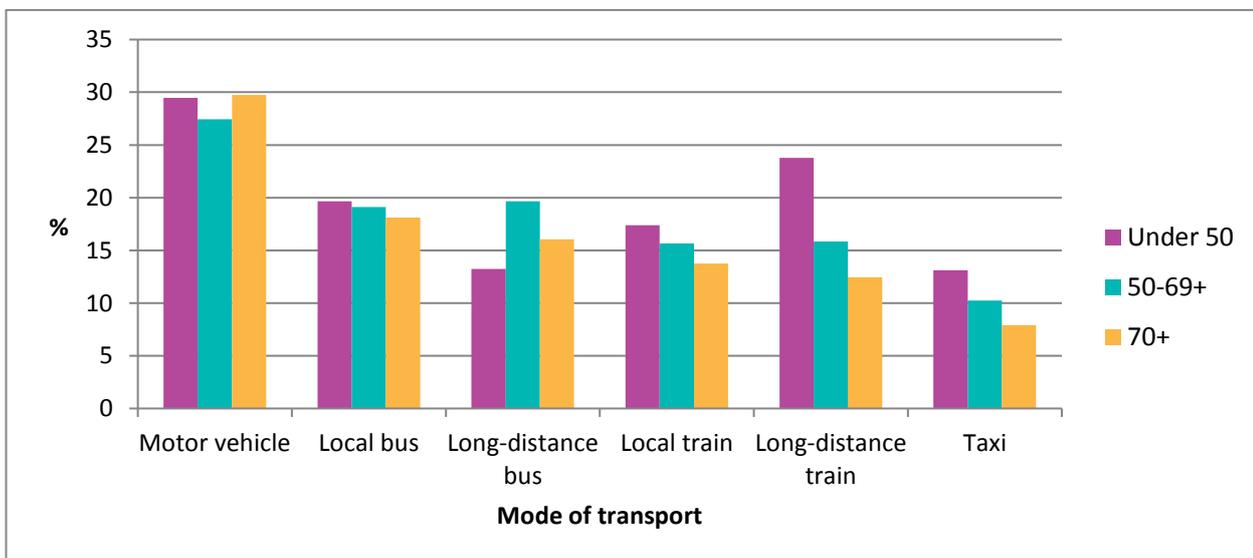
**Figure 17 Proportions using various transport modes less than they would like, by disability, 2009-2010**



Source: Life Opportunities Survey, Wave 1 (2009-2010)  
 Base: all respondents aged 16+ who had used each transport mode in the past year (5,066- 24.681)

2.33 Figure 18 shows, for people with a limiting disability, the proportions that used various modes of transport less than they would like. In conjunction with the data presented above, it can be taken to suggest that, in general, the presence of a limiting disability, rather than age, is more strongly linked to the perception of using different modes of transport less than one would like. There is no consistent pattern by age group for those with a limiting disability; while the proportion that use a long-distance train less than they like declines as age increases, as is also the case for taxis and local trains, behaviour in relation to local buses remains fairly constant. Undoubtedly, these data reflect people’s preferences for using various modes of transport at all – along with the perceived ease of doing so.

**Figure 18 Proportion of people with a limiting disability using modes of transport less than they would like, by age group, 2009-2010**



Source: Life Opportunities Survey, Wave 1 (2009-2010)  
 Base: respondents aged 16+ with a limiting disability who had used each transport mode in the past year (5,066- 24.681)

2.34 The LOS also asked participants why they used particular transport modes less often than they would like. Anxiety / lack of confidence and accessibility issues (such as difficulty getting to the station, from the station to the destination and getting in or out of transport), as well as disability-related issues, were, in general, all mentioned more frequently by people with limiting disabilities than by others – although the most popular explanations among people without disabilities, such as cost, were also the reasons most frequently selected by those with disabilities. For instance, the most popular explanation among people with limiting disabilities for using a motor vehicle less often than they would like was cost (identified by 50%); this reason was identified by 56% of those without disabilities. However, a health condition, illness or impairment and disability-related reasons were the next two most popular reasons provided by people with limiting disabilities, selected by 36% and 23% respectively – whereas the next most popular explanations among people without disabilities were being too busy (20%) and parking problems (15%).

## Wider impacts of attitudes to and experiences of travel

2.35 The final section of this chapter considers how the attitudes and experiences of travel of people with disabilities, discussed in this chapter, might more widely impact on their daily lives. The available data on this topic tends to focus on the domain of employment.

### Transport and employment opportunities

2.36 In terms of the potential of transport difficulties to limit employment options among NTS respondents, the vast majority (96%) did not report not applying for or turning down a job due to difficulties with transport in the previous 12 months (overall, 2% reported that they had done each of these things). People without disabilities or with a disability but who did not experience difficulties with the three modes of transport asked about, were slightly but significantly more likely to report these behaviours. However, separate analysis comparing the experiences of those who were or out of work, and by age group, revealed proportions that were virtually identical for people with and without disabilities with comparable age and work profiles – suggesting that these differences might reflect the greater propensity of people without disabilities to be in employment.

### Travel to work by private vehicle

2.37 NTS respondents who used a private vehicle (typically a car or motorbike) to travel to work were asked about the difficulties they experienced doing this<sup>14</sup>. People with disabilities who used a car to travel to work were more likely to report difficulties, especially as the grade of disability increased; 61% of people without disabilities reported no difficulties, compared with 58% of those with a disability that did not cause transport difficulties and 48% of those with difficulties with all three transport modes. The main difficulty encountered was traffic congestion and roadworks – and the proportion experiencing this as their main difficulty rose slightly and significantly as the grade of disability increased.

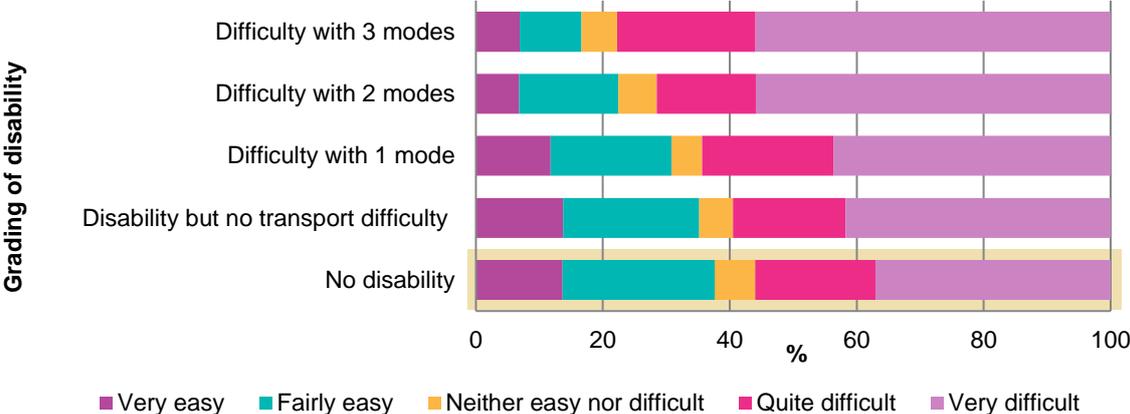
2.38 As shown in Figure 19, people without disabilities were more likely to think that travelling to work by public transport, if they could not use a private mode such as a

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<sup>14</sup> The difficulties specified were: too far; car not available; don't have a current driver licence / can't drive; cost of petrol; lack of parking facilities; cost of parking; traffic congestion / roadworks; inadequate public transport; cost of using public transport; personal physical difficulty / disability; personal safety concerns; other.

car or a motorbike, would be easy, compared with those with disabilities. This reflects the findings reported in Section 2.26 which show that people with disabilities are, in general, less likely to perceive alternative viable transport alternatives to car use.

**Figure 19 Ease of travelling to work by public transport, if couldn't use private mode, 2007-2014 combined**



Source: National Travel Survey 2007-2004 combined individual data-set  
 Base: all respondents aged 16+ who travelled to work by private transport mode (26,850)

# 3. Change by location and life-stage

## Key findings

- Travel behaviour varies substantially by area and, to a lesser extent region, for people with and without disabilities. In most regards, travel behaviours also appear to change across the life-course.
- For people with disabilities, location tends not to affect the impact their disability has on their travel behaviour (for people without disabilities, the type of area in particular does tend to have an impact).
- The process of ageing appears to impact differently on the travel behaviour of people with and without disabilities. The process of ageing affects the public transport use of people with and without disabilities – leading to an increase for the latter group and a decrease for the former, while ageing leads to a reduction in miles driven annually for people with disabilities (but no significant change for people without disabilities).
- To ascertain whether these themes are applicable to all travel behaviour and attitudes, modes and contexts, further research, in relation to a broader range of travel behaviours, is recommended.

## Chapter overview

- 3.1 This chapter explores how the travel behaviour of people with disabilities changes across different locations and life-stages and whether the ways in which location and life-stage interact with travel behaviour differ for people with and without disabilities. Very little analysis has been undertaken to date to seek to understand the direction and nature of these relationships.

## Location

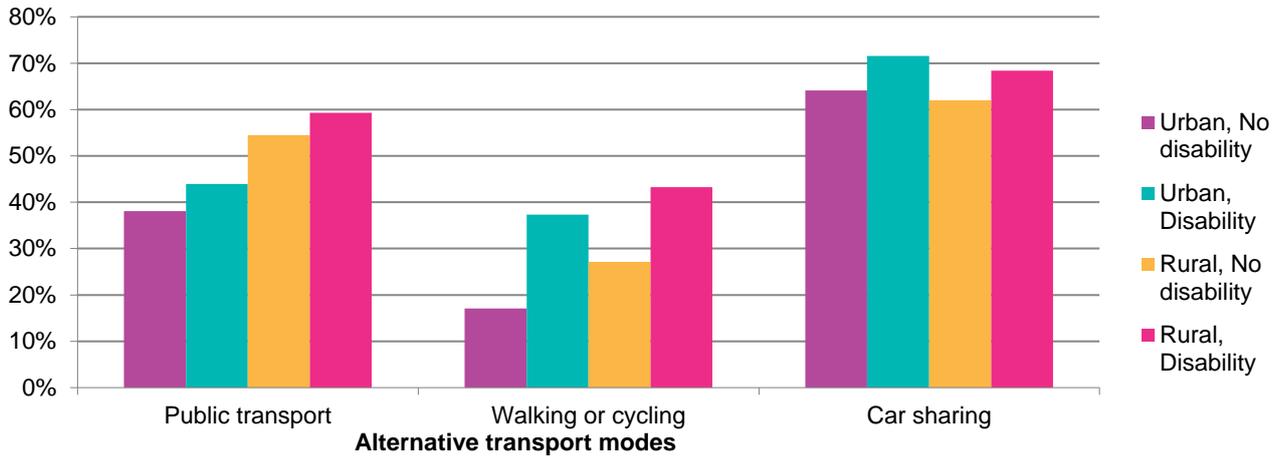
This section examines how certain travel behaviours vary for people with and without disabilities by the type of area in which they occur – albeit geographic location (such as region) or type of area.

### Effect of type of area on travel behaviour

- 3.2 Analysis of Understanding Society data collected in 2009-2013 was undertaken to examine if the differences in travel behaviour between people with and without disabilities are affected by the area in which they live. These analyses specifically considered: using other transport modes instead of driving; the number of miles driven per year; the frequency of travelling by car, bus and train; the frequency of using a bike; and the experience of not having flown in the past year.

3.3 As shown in Figure 20, people with disabilities are more likely to never use public transport, to never walk (even short distances) or to never car share, rather than driving. The most striking difference between urban and rural areas is in the likelihood of not using public transport; unsurprisingly, the behaviour of never using public transport is less common in urban areas. The pattern of differences, based on disability, are fairly similar across the three transport modes.

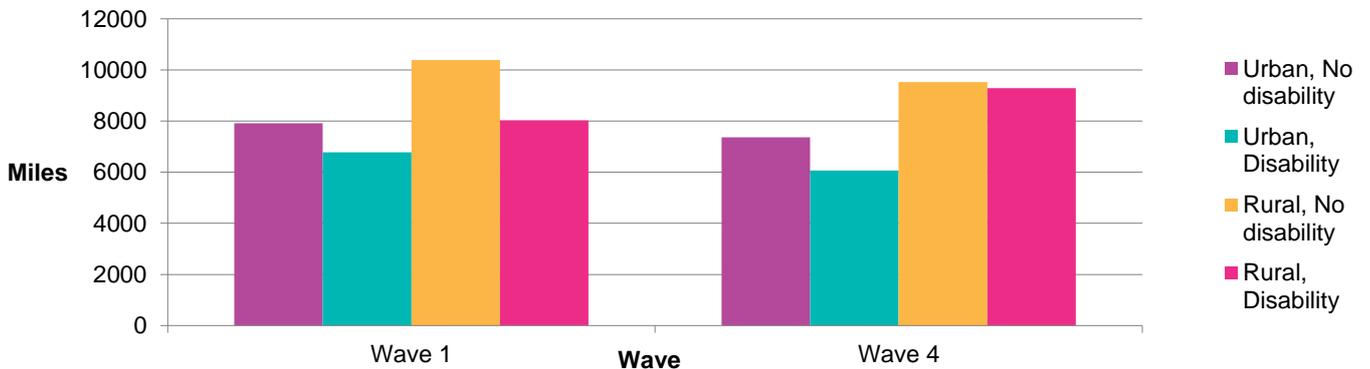
**Figure 20 The frequency of never using various modes of transport instead of driving, by disability and area, 2012-2013**



Source: Understanding Society, Wave 4 (2012-2013)  
 Base: all respondents aged 16+ (10,725-10,727)

3.4 Figure 21 shows that people with disabilities drive fewer miles per year compared with people without disabilities. Living in a rural area means that (irrespective of disability) people drive more. There are also some differences across time, with all groups apart from people with disabilities in rural areas appearing to drive less over time. This may be because, as people get older, they tend to use public transport more – but this option may be least accessible to people with disabilities in rural areas.

**Figure 21 Average miles driven per year, by disability, area and wave**

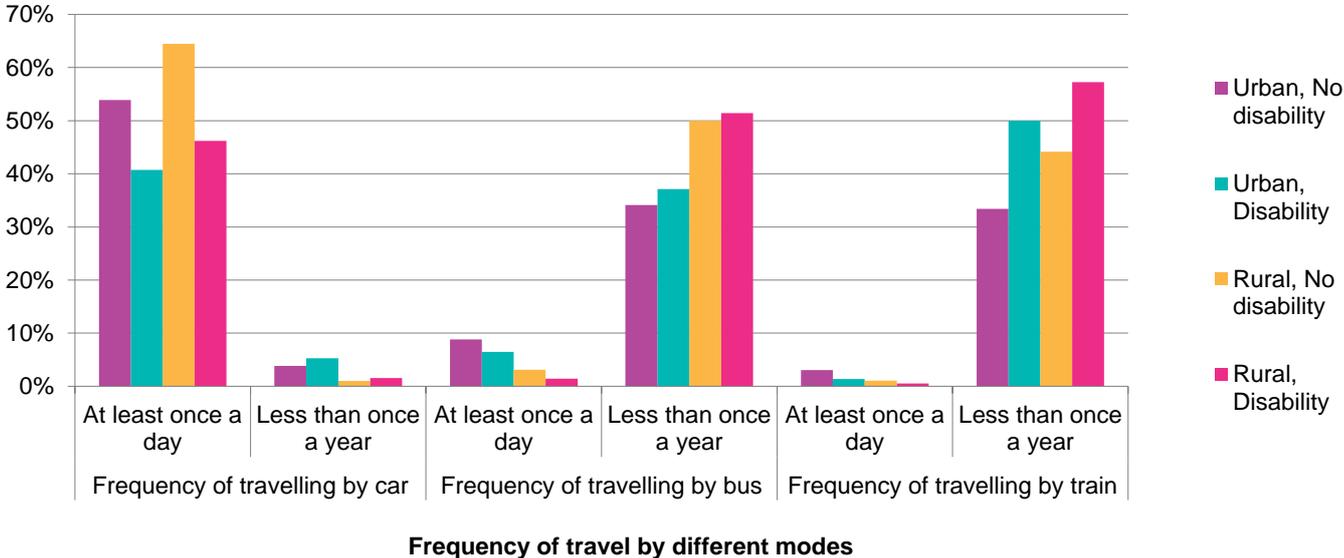


Source: Understanding Society, Wave 1 (2009-2010) and Wave 4 (2012-2013)  
 Base: all respondents aged 16+ (3345)

3.5 Figure 22 presents the frequency of using various transport modes, by area and disability. In general, people with disabilities who live in rural areas are least likely to use buses and trains. However, people with disabilities who live in urban areas are the least likely to drive frequently. The results obtained for using bikes and flying (not

presented below) indicate that there is little difference in the use of these modes between rural and urban areas.

**Figure 22 Frequency of using various means of transport, by disability and area, 2012-2013**



Source: Understanding Society, Wave 4 (2012-2013)  
 Base: all respondents aged 16+ (10,727-10,733)

3.6 Figure 23 illustrates the prevalence of having a driving licence by disability and area. Those living in rural areas are slightly more likely to have a licence, while people with disabilities are generally less likely to have a licence, compared with those without disabilities.

**Figure 23 Frequency of having a driving licence, by disability and area, 2009-2010**



Source: Understanding Society, Wave 1 (2009-2010)  
 Base: all respondents aged 16+ (10,513)

3.7 After controlling for various personal characteristics<sup>15</sup> (through multivariate analysis), the type of area a person lives in does not, in general, affect the impact disability has on their travel behaviour. There are a number of notable exceptions. Having a disability and living in an urban area (versus not having a disability and living in an

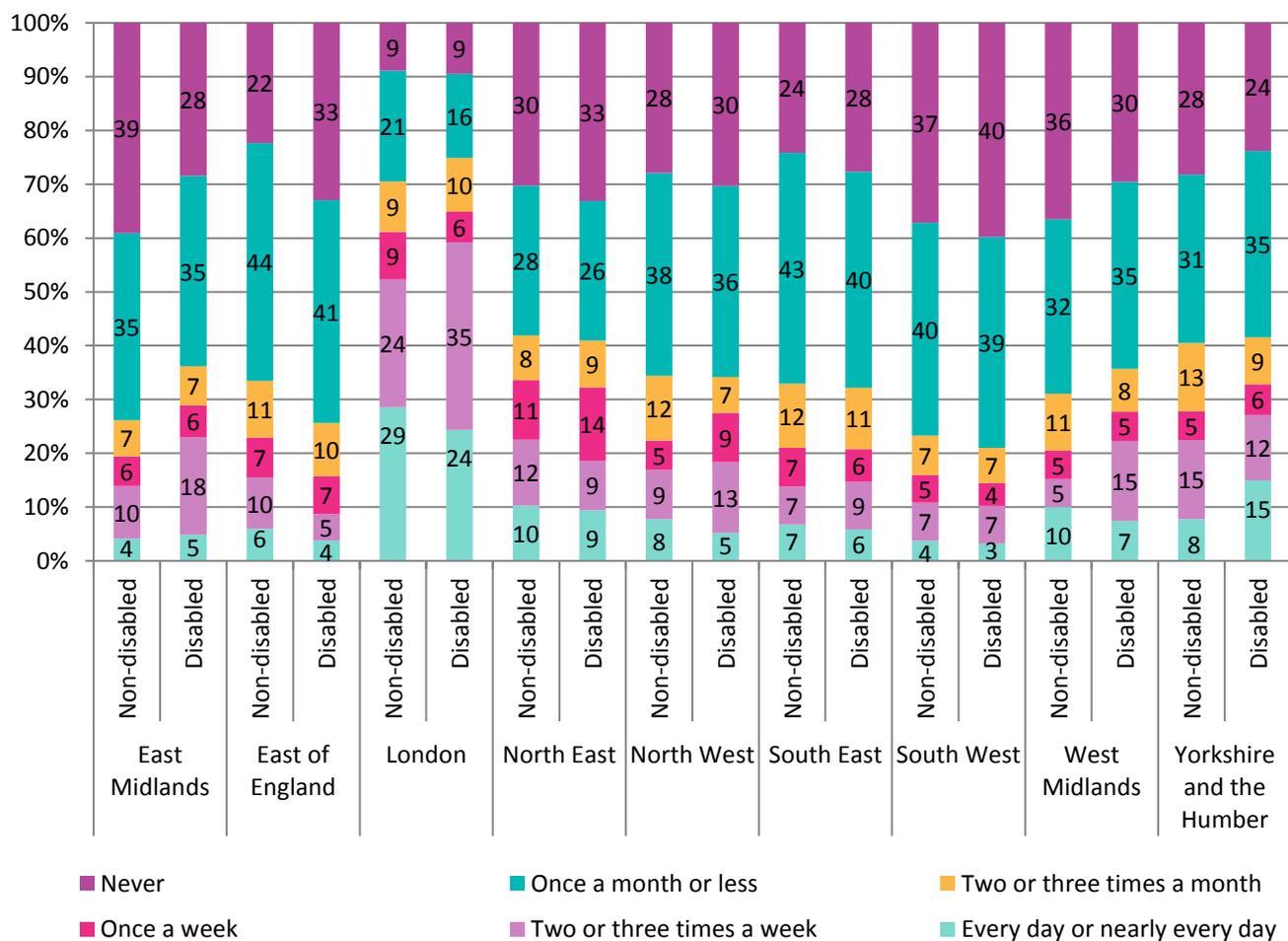
<sup>15</sup> The characteristics controlled for were area, disability, ethnicity, marital status, BMI score, region and working pattern (full-time compared with part-time), education level, sex, subjective well-being and satisfaction with income.

urban area) slightly increases the likelihood of travelling by bus. Having a disability and living in an urban area (versus not having a disability and living in an urban area) increases the likelihood of not using a bike. For people living in an urban area, having a disability (versus not having one) increases the likelihood of not flying at all. Generally speaking, for people without disabilities, the type of area lived in has more widespread impacts on their travel behaviours. This may be because, for people with disabilities, the experience of being disabled over-rides any effects which their area of residence might have on their behaviour; being disabled might inhibit the use of particular transport modes, making area-based issues of mode availability less relevant).

### Regional differences in travel behaviour

3.8 Analysis was undertaken of ELSA data collected in 2014-2015 to examine differences between regions in the frequency of public transport use and how this links with having a disability. As shown in Figure 24, while there are small differences between people with and without disabilities across regions in their public transport use, no clear pattern emerges. What stands out is that, unsurprisingly, London has the highest frequency of public transport use for both groups of people.

**Figure 24 Frequency of using public transport, by disability and region, 2014-2015**



Source: English Longitudinal Study of Ageing, Wave 7 (2014-2015)  
 Base: all respondents aged 50+ (504-1,362 per region)

- 3.9 A set of four multivariate analyses were implemented to investigate the differences between regions<sup>16</sup>. The results obtained indicate there are differences between regions in the frequency of public transport use, even when a range of personal characteristics have been controlled for. At the population level, London has the highest average frequency of public transport use, while the South West has the lowest. Overall, about 7% of the variation in the frequency of using public transport across regions is due to the differences between the regions (in other words, 93% of this variation can be explained by individual factors, such as disability). Furthermore, 84% of this 7% is explained by two region-level characteristics<sup>17</sup>: the level of public spending and the level of spending on transportation per region<sup>18</sup>.
- 3.10 Overall, having a disability decreases the frequency of using public transport. However, this effect does not differ between regions.

#### **How experience of safety issues varies by region**

- 3.11 Further analysis of data collected in Wave 5 of Understanding Society in 2014-15, described in Section 2.21 and 3.11, was undertaken to examine whether there are any regional differences in the experience of safety-related issues for people with and without disabilities.
- 3.12 As shown in Figure 25, the average numbers of safety-related incidents experienced varied by region. In Scotland, a substantially higher average of safety issues were experienced by people with disabilities compared with people without disabilities – although there is no obvious reason for this discrepancy. Similarly, in London, the South East and the East Midlands people with disabilities experienced a higher average number of such events. In all other regions, people with disabilities experienced a lower number of safety-related incidents.

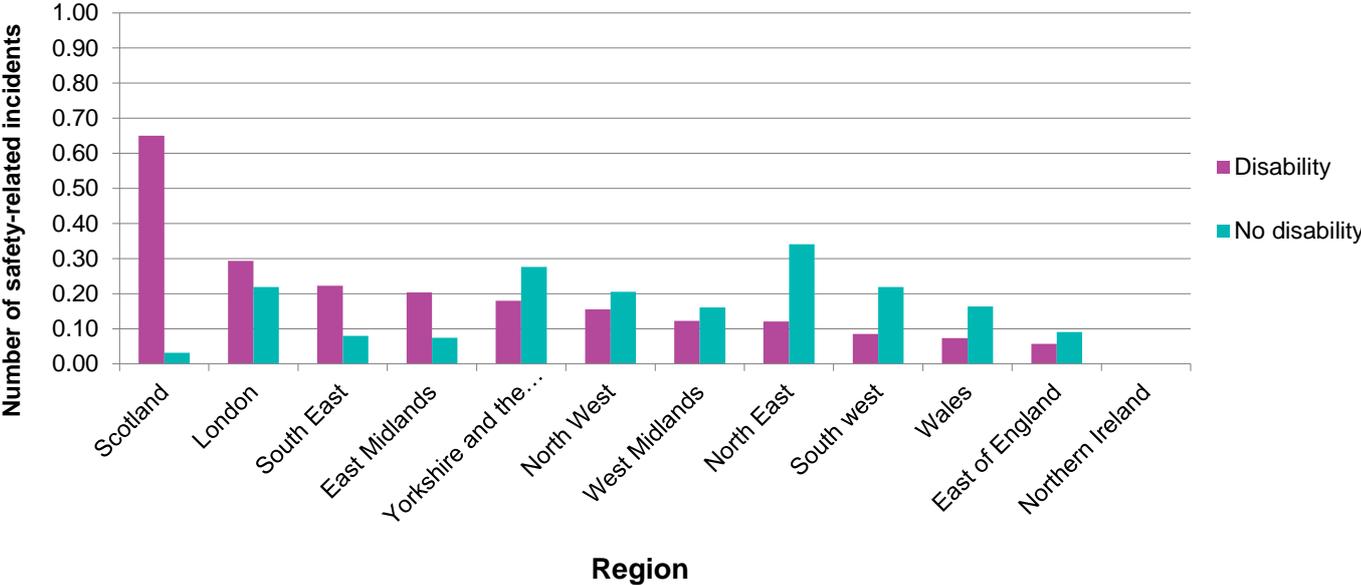
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<sup>16</sup> The characteristics controlled for were disability, age, sex, ethnicity, employment status, relationship status, household size, level of government spending per head by region and level of government spending on transport by region.

<sup>17</sup> The correlation co-efficient for these two variables is 0.63.

<sup>18</sup> These data included the level of government spending per head per region (as included in a House of Commons report on expenditure, 2015) and the level of spending on transportation per head per region (as estimated by The Independent based on data from HM Treasury (2016), National Infrastructure Pipeline Spreadsheet, Spring 2016 update; ONS (2016) Subnational Population Projections for Local Authorities in England; and ONS (2016) Census: WU01UK - Location of usual residence and place of work by sex (IPPR)).

**Figure 25 The average number of safety related incidents on and around public transport, by disability (Wave 5)**



Source: Understanding Society, Wave 5 (2014-2015)  
 Base: all respondents aged 16+ (365-3,243 per region)

3.13 Multivariate analysis demonstrates that there is very little variation between regions in the average number of safety-related incidents experienced, once individual-level characteristics have been controlled for<sup>19</sup>. Only 0.5% of the variation in average safety levels is explained by the differences between regions. When we account for disability and personal characteristics as well, the region-level variation decreases to 0. This means that there is no significant variation between regions in the average number of safety-related incidents people experience. A comparable analysis in relation to feeling unsafe on public transport achieved very similar results.

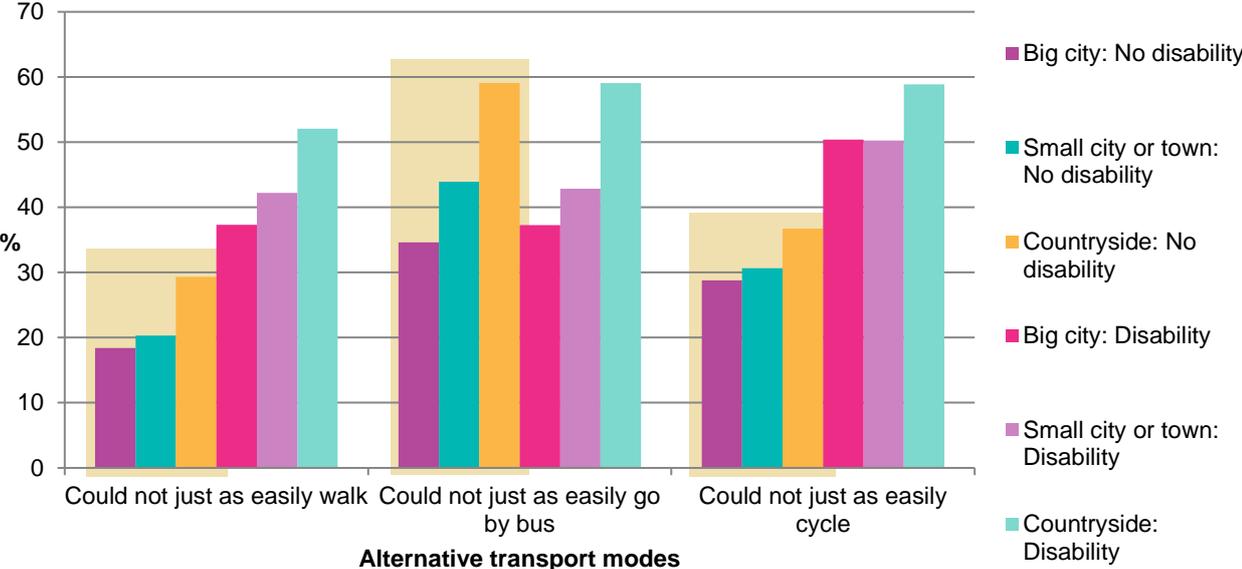
**How attitudes to alternative modes of transport vary by area**

3.14 Data from the 2010-2015 BSA surveys was analysed to examine how perceptions of the ease of making short car journeys by alternative modes of transport (discussed in Section 2.25), vary by disability and area.

3.15 As shown in Figure 26, where the alternative specified was walking or cycling, people with disabilities were much less likely to think that it would be easy to undertake short car journeys using these modes, across all types of areas. However, location also makes a difference – with people living in more rural locations being much more likely to disagree, whether they were disabled or not. There was little difference between the groups defined by disability in their views on the feasibility of taking a bus instead of using their car for short journeys – although those who lived in more rural locations in all groups were much more likely to disagree that it would be easy to do this.

<sup>19</sup> The characteristics controlled for were disability, type of area, working pattern, satisfaction with income, subjective well-being and age.

**Figure 26 Disagreement that short car journeys could be undertaken by alternative modes, by disability and type of area. 2010-2015 combined**



Source: British Social Attitudes survey, 2010-2015 data combined  
 Base: all respondents aged 18+, except for those who rarely/never travel by car for short journeys (7,196-8,212)

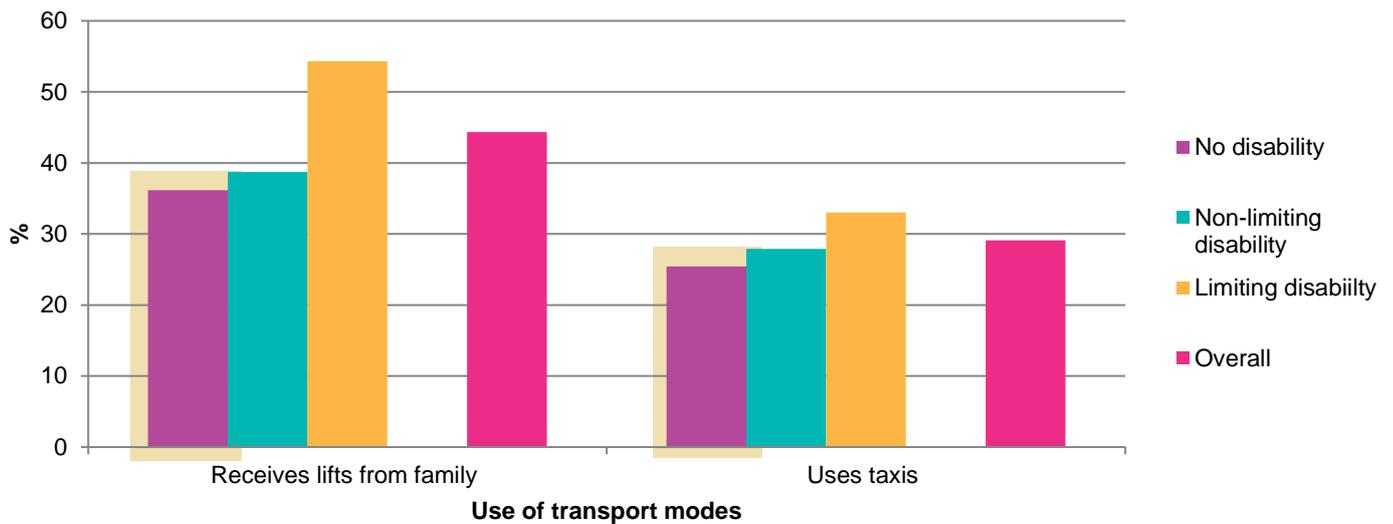
**Life-stage**

The next section explores how the travel behaviour of people with and without disabilities changes across the life-course and through the process of ageing.

**Using different modes of transport**

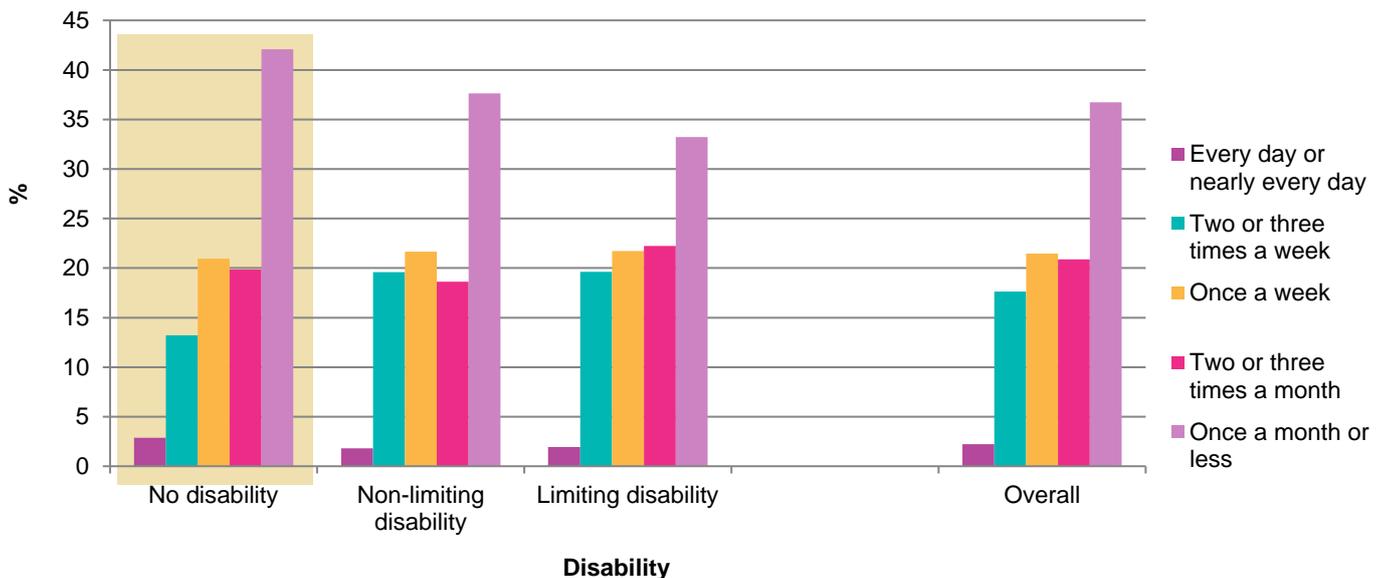
- 3.16 ELSA data measuring the use of different means of transport for people over the age of 65 was analysed to explore the use of transport types primarily designed for, or utilised by, those at a later life-stage. The specific means of transport asked about were lifts from family or friends (the respondent doesn't live with), taxis, door-to-door community transport, transport provided by the hospital or day centre and transport provided by a care home.
- 3.17 Of these five means of transport, only two (lifts from family and friends and taxis) had sufficient sample sizes to enable robust analysis. Community transport was used by 2% of those aged 65+, while transport provided by a hospital was used by 4%. Transport provided by care homes was very rarely used (while 15 respondents chose this option, after weighting the data the proportion equalled 0%).
- 3.18 The results, presented in Figures 27 and 28, show that people with disabilities (and those with limiting disabilities in particular) are more prone to using lifts from friends or family and taxis. However, they are less likely to do so on a frequent basis (a similar pattern to that depicted in Figure 28 was found for taxi use). This supports the conclusion from the analysis of NTS data, presented in Section 3.2, that people with disabilities are more likely to use taxis – although, in relation to the whole population of people with disabilities, being disabled was associated with more frequent taxi use.

**Figure 27 Use of lifts from friends and family and taxis, by disability, 2014-2015**



Source: English Longitudinal Survey of Ageing, Wave 7 (2014-2015)  
 Base: all respondents aged 65+ (5,240)

**Figure 28 Frequency of receiving lifts from family or friends, by disability, 2014-2015**

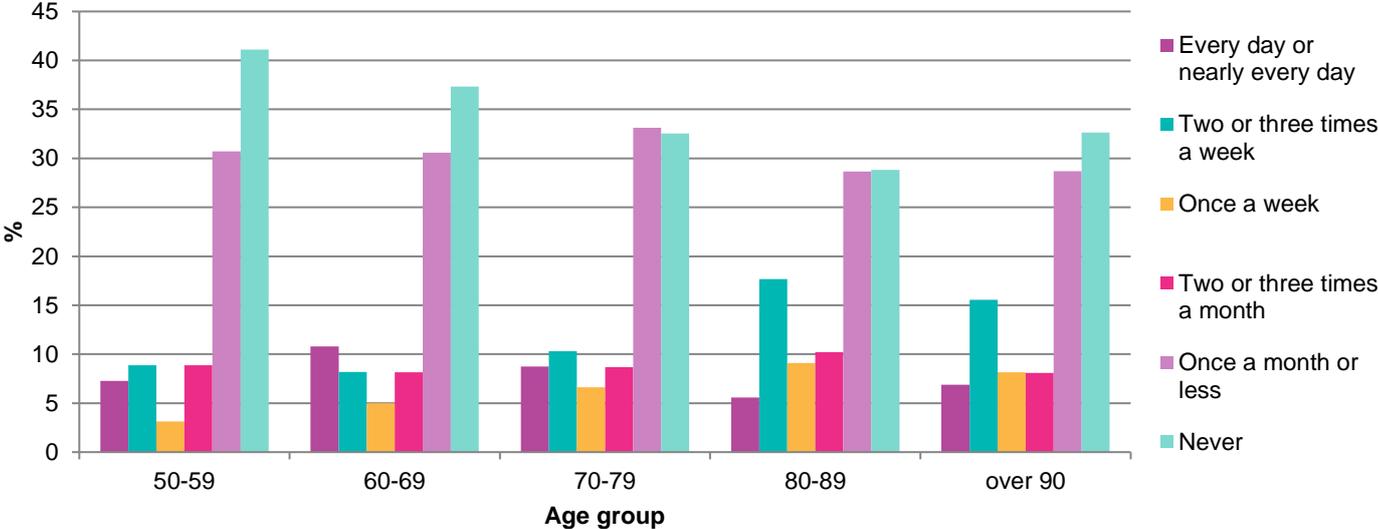


Source: English Longitudinal Survey of Ageing, Wave 7 (2014-2015)  
 Base: all respondents aged 65+ (1,550-2,310)

### Public transport use and ageing

3.19 ELSA data from Waves 3-7 (2012–2015) was analysed to examine how the process of ageing and having a disability interact to impact on the frequency of public transport use. Figure 29 depicts the relationship between age, disability and the frequency of using public transport (this is a more detailed version of the data presented in Section 2.14). As people get older they are more likely to use public transport. However, there are some differences between those with disabilities (presented here) and those without: across all age groups, people with disabilities are more likely to never use public transport.

**Figure 29 Frequency of public transport use for people with disabilities, by age group, 2014-2015**



Source: English Longitudinal Survey of Ageing, Wave 7 (2014-2015)  
 Base: all respondents aged 50+ with a disability (563-1,640 per age group)

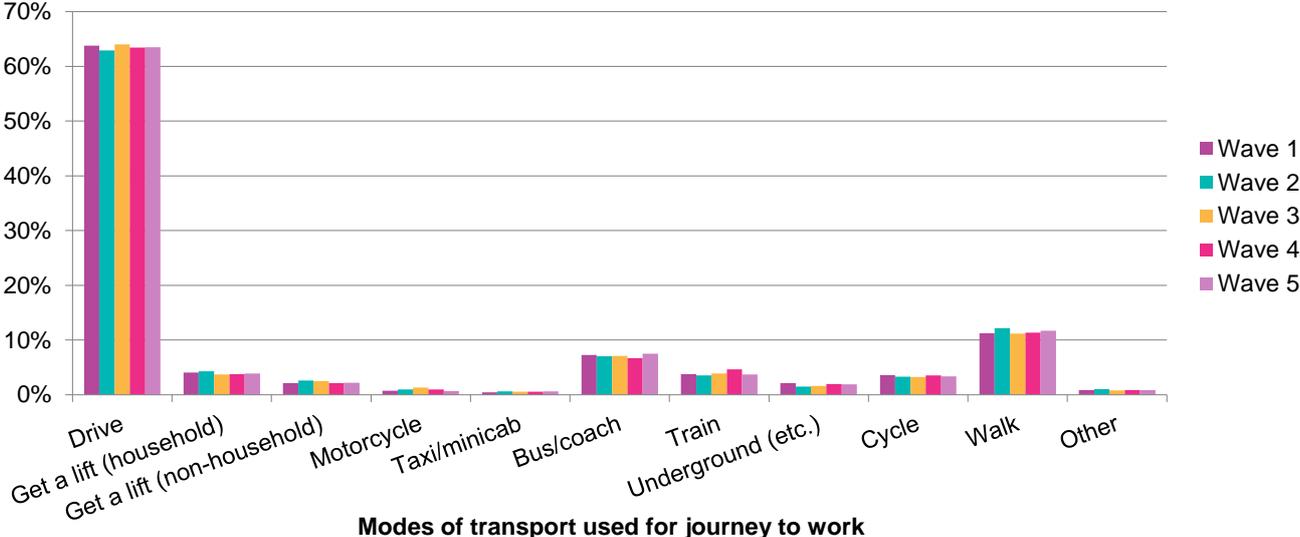
3.20 Two multivariate analyses were carried out: the first to explore how age affects the relationships between having a disability and public transport use; the second to understand how the process of an individual growing older affects this relationship<sup>20</sup>. For a 65 year old, having a disability increases the odds of not using public transport. For people with disabilities, being older significantly increases the likelihood of not using public transport, even after the relationships with other characteristics have been controlled for. Conversely, for people without disabilities, being older increases the use of public transport. Analysis at the individual level confirms these findings by showing that ageing has opposite effects depending on whether a person has a disability or not. Growing older and having a disability decreases the use of public transport, while ageing and not having a disability increases it.

**Transport mode and average time to get to work**

3.21 Data from all five waves of Understanding Society (2009-2014) was analysed to examine differences over time in commuting times between people with and without disabilities. There were no significant differences over time in the mode of transport used by people with disabilities for their journeys to work (shown in Figure 30), in the proportions of people with and without disabilities who drive to work and in the average time to get to work. In 2013-14, the proportions of people with and without disabilities who drove to work were 63% and 62% respectively, while the average commuting times were 25 and 26 minutes respectively. Neither of these differences is statistically significant.

<sup>20</sup> The characteristics controlled for were disability, age, ethnicity, sex, employment status, relationship status, region, size of household and social status.

**Figure 30 The frequency of using different modes of transport for the journey to work, for people with disability, by wave**

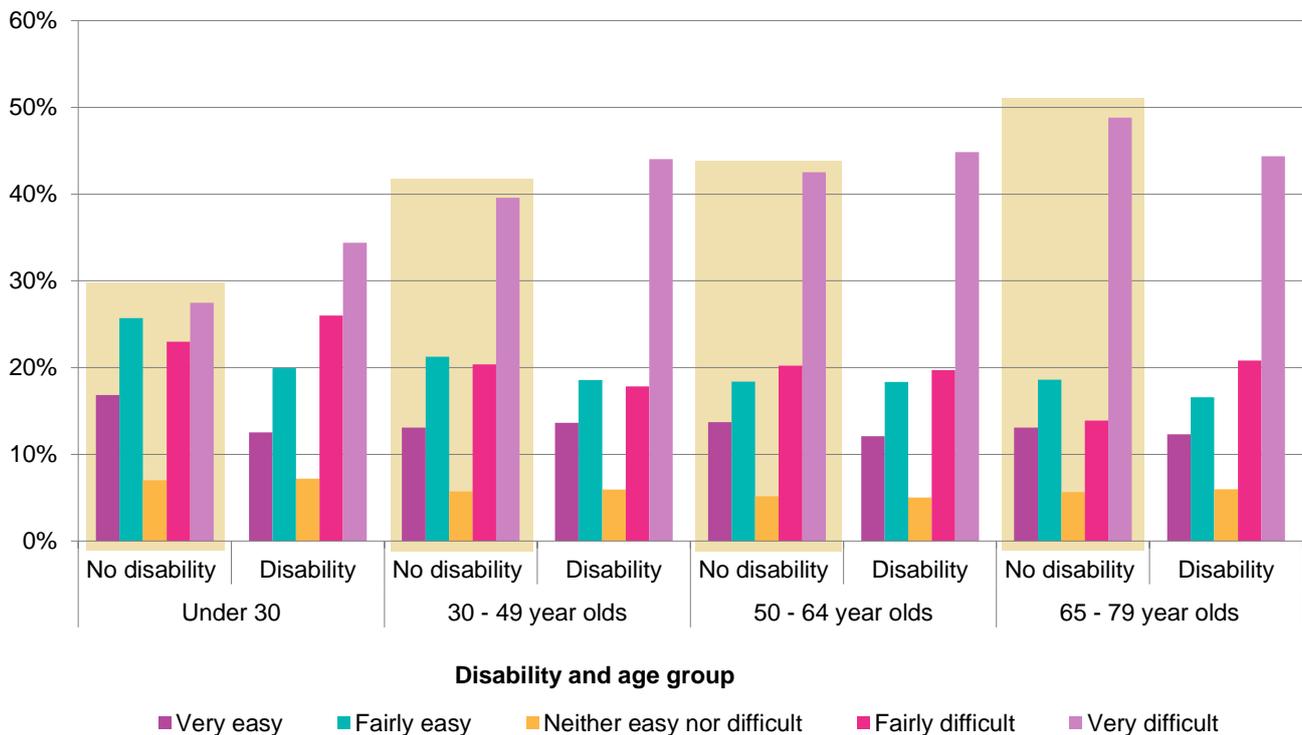


Source: Understanding Society, Waves 1-5 (2009-2014)  
 Base: all respondents aged 16+ (24,265 got Wave 1; 21,582 for Wave 5)

**Car use**

3.22 Data on car use from Understanding Society were analysed to explore whether any differences exist by disability and age. As shown in Figure 31, both disability and increasing age influence people’s assessments of the difficulty of travelling to work by means other than a car – with people with disabilities and in the older age groups being more likely to view this as difficult. However, for people over the age of 65, disability makes very little difference to how difficult travelling to work without a car is perceived to be – perhaps because those who have chosen to work beyond age 65 are in comparatively good health.

**Figure 31 Perceptions of the ease of traveling to work by means other than car, by disability and age group, 2012-2013**

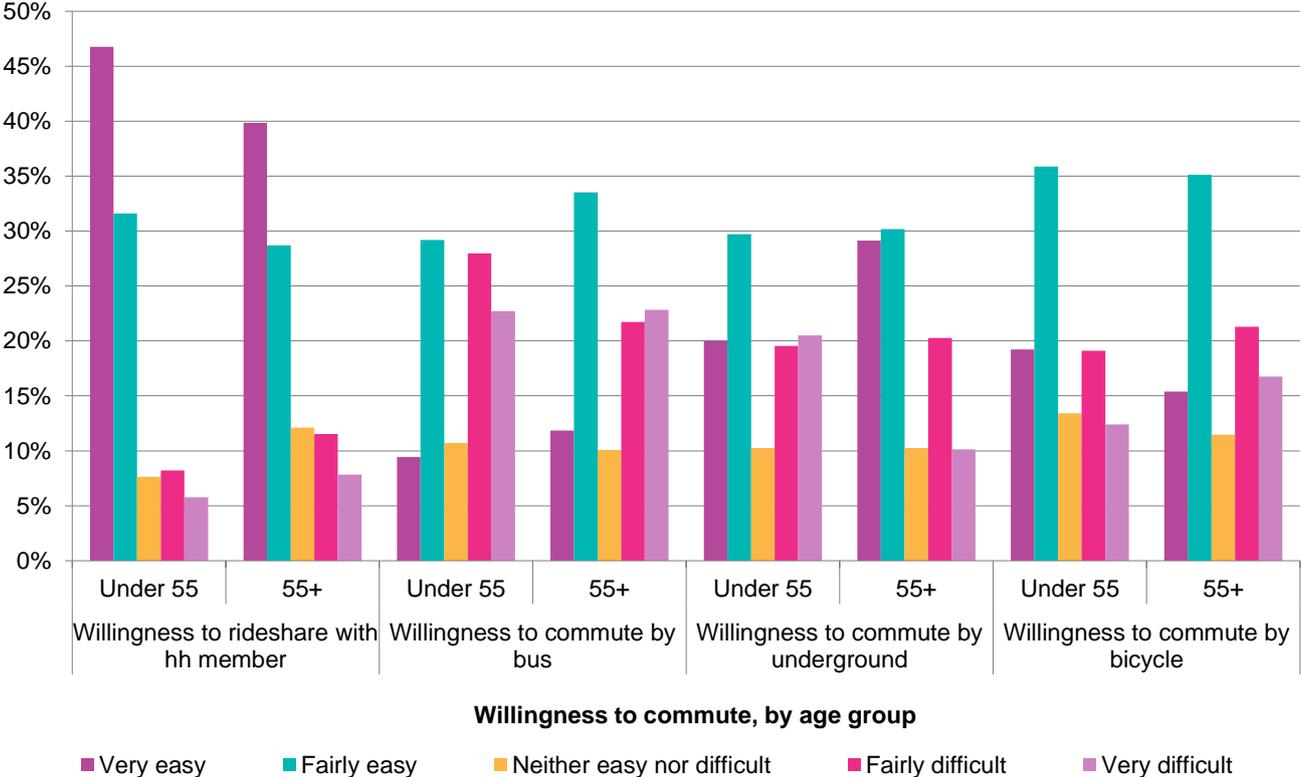


Source: Understanding Society, Wave 4 (2012-2013)  
 Base: all respondents aged 16+ in work (415-7,426 per age group)

3.23 There were generally no differences, based on disability, in the reported willingness of people to commute by means other than a car - for most specific types of transport asked about. The exceptions are commuting by bus or bicycle; people without disabilities would find commuting by bus or bike slightly easier compared to people with disabilities. These findings do not fully replicate those based on the analysis of BSA data reported in section 2.25; however, it should be noted that the earlier analysis was based on the whole population, whereas the one reported above focuses on commuters.

3.24 Figure 32 shows the results of a comparison of people with disabilities aged under 55 and over 55, undertaken to ascertain if there are age-related differences in willingness to commute by specific means other than a car; results are presented where significant differences based on age were identified. They show that people aged 55 and over with disabilities perceive car-sharing with household members, taking the bus or using a bike to be more difficult alternatives to commuting by car. People with disabilities view commuting by underground, metro or tram as comparatively easier.

**Figure 32 Willingness to commute by various means of transport for people with disabilities, by age group, 2010-2011**



Source: Understanding Society, Wave 2 (2010-2011)  
 Base: all respondents with a disability aged 16+ (7702 aged under 55; 1832 aged 55 and over)

- 3.25 Very minimal differences were found based on age for disabled people and there were no real differences based on disability, within age groups, in the reasons why a non-car commute was perceived to be difficult.
- 3.26 Cross-sectional multivariate analysis of data collected in Wave 4 showed that, for people with disabilities, being older was associated with driving fewer miles, such that being a year older than someone else was typically associated with driving 90 fewer miles per year. This analysis found that for people with a disability there was no association between age and miles driven.<sup>21</sup>
- 3.27 Data for Waves 2 and 4 were combined to assess how changes within individuals (such as ageing and developing a disability) are associated with changes in the number of miles driven over time. The results are similar to the cross-sectional ('at one point in time') analysis reported above, indicating that for people who developed a disability between the two waves, every additional year of age was associated with driving 96 fewer miles per year. However, this relationship is nuanced, such that both younger and older people drive less than people in middle age, with people between the ages of approximately 40 and 65 driving over 9000 miles per year.

**Explaining safety events by disability over time**

- 3.28 Understanding Society data on safety-related events described in Sections 2.21 and 3.11 was further analysed to examine whether changes at the individual level over time (e.g. ageing and/or developing a disability) can explain increases in the average

<sup>21</sup> The characteristics controlled for were disability, age, ethnicity, marital status, sex, BMI score, region and working pattern (full-time compared with part-time).

number of safety-related events; Two multivariate analyses were undertaken<sup>22</sup>: the first to assess the general impact of having a disability, the second to assess the impact of specific types of disabilities. The results show that developing a disability increases the number of perceived safety-related events. Manual dexterity and memory-related disabilities were found to have the largest effects in increasing the number of safety related events. Nonetheless, estimates (by age) of the average number of safety-related events, indicate that the likelihood of such events decreases with age.

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<sup>22</sup> The characteristics controlled for were disability, age, type of area, working pattern, satisfaction with income and subjective well-being.

## 4. Main findings and next steps

- 4.1 Disability is a key characteristic that links with and impacts on travel behaviour in its own right – not just as a result of the distinctive socio-demographic profile of people with disabilities. However, the travel behaviour, attitudes and experiences of people with disabilities are far from homogenous and variations need to be understood in the context of a range of other individual characteristics including age, location and life-stage – both at a given point in time and as part of the process of ageing.
- 4.2 The type or extent of an individual's disability is often important (and frequently of greater importance than the general characteristic of being disabled) in explaining travel behaviour. So, while people with disabilities tend to travel less than people without disabilities and their experiences of and attitudes towards travel tend to be more problematic, this trend cannot be applied to all groups of people with disabilities or to all travel contexts. On the other hand, rather different patterns exist in relation to particular modes of transport and aspects of travel, such as commuting – indicating the importance of context, in addition to characteristics, for understanding behaviour.
- 4.3 Clearly, the scope of the analyses presented in this report has been influenced by the availability of recent social survey data in relation to travel behaviour, attitudes and experiences within Great Britain. The scope of future analysis could be maximised by the inclusion of further substantive questions of interest in social surveys within Britain – particularly those with a sufficient sample size to yield detailed analysis for people with disabilities or with a time series or longitudinal element (to enhance understanding of change over time and across the life-course). Similarly, the inclusion of more consistent and detailed measures of disability could maximise the future ability of researchers to synthesize findings from different survey instruments.

# Annex Background, aims and methodology

## Background and aims

- 4.4 The Department for Transport commissioned this research to gain a detailed understanding of the travel behaviour of people with disabilities and the attitudes and experiences facilitating, impacting on and resulting from this behaviour. The Disabled Persons Transport Advisory Committee (DPTAC) had identified gaps in and limitations to the existing evidence base in this area; the aims of this project were to address these limitations and gaps in order to generate a solid understanding on which further research and policy development can be based.

## Methods

- 4.5 This project involved secondary analysis of five surveys – the National Travel Survey (NTS), Understanding Society, the English Longitudinal Study of Ageing (ELSA), the British Social Attitudes (BSA) survey and the Life Opportunities Survey. Further information on the purpose and methods of these surveys is presented below.

| Survey                    | Purpose and methodology  |
|---------------------------|--|
| BSA                       | Annual cross-sectional survey of adults aged 18+ living in private households in Great Britain. Focuses on measuring political, social and moral attitudes and values and how these change over time. Further details available at: <a href="http://natcen.ac.uk/our-research/research/british-social-attitudes/">http://natcen.ac.uk/our-research/research/british-social-attitudes/</a>                                    |
| ELSA                      | Longitudinal survey of the health, social, wellbeing and economic circumstances of the English population aged 50+. Further details available at: <a href="https://www.elsa-project.ac.uk/">https://www.elsa-project.ac.uk/</a>  |
| Life Opportunities Survey | Longitudinal survey exploring how disabled and non-disabled people participate in society including in work, education, social participation, transport and use of public services. Carried out between 2009 and 2014. Further details available at: <a href="https://www.gov.uk/government/collections/life-opportunities-survey#history">https://www.gov.uk/government/collections/life-opportunities-survey#history</a>   |
| NTS                       | Annual cross-sectional survey of households and individuals in England, to monitor long-term trends in travel behaviour. Comprises household interview and completion of weekly travel diary by other household members. Further details available at: <a href="https://www.gov.uk/government/collections/national-travel-survey-statistics">https://www.gov.uk/government/collections/national-travel-survey-statistics</a> |
| Understanding Society     | Longitudinal survey about 21 <sup>st</sup> century UK life and how it is changing including people's social and economic circumstances, attitudes, behaviours and health. Builds on 25 years of data collected as part of British Household Panel Survey and covers Great Britain. Further details available at: <a href="https://www.understandingsociety.ac.uk/">https://www.understandingsociety.ac.uk/</a>               |

4.6 In a number of cases, data from multiple survey years or waves were combined to achieve sufficient sample sizes of people with disabilities or to facilitate more detailed analyses than had previously been undertaken. Results are only presented for sub groups with a minimum of 100 respondents, to ensure the reader can be reasonably confident about the findings reported; in most cases sub groups sizes far exceed this number. A range of analytical techniques were used as appropriate – including cross-tabulations and a range of multivariate analyses including regression and multi-level modelling; the types of analyses used for each section of the report are summarised in the table below.. All results were formally tested and the report only presents and discusses differences or relationships which were found to be statistically significant (at the 95% level). Further details for each analysis, in terms of its methodological approach, the data analysed and results obtained, are presented in an accompanying set of spreadsheets that can be obtained on request from DfT.

| <b>Analysis</b> | <b>Report section</b>  | <b>Survey</b>         | <b>Analysis approaches</b>  |
|-----------------|--|-----------------------|---|
| 1.1             | Variation by nature and type of disability                   | NTS                   | Cross-tabulations and significance testing  |
| 1.2             | Variation by disability and age                              | NTS                   | Cross-tabulations and significance testing  |
| 1.3             | Variation by type of disability                              | Understanding Society | Cross-tabulations, comparisons of means and significance testing                      |
| 2.1             | Role of disability in explaining frequency of mode use       | NTS                   | Cross-tabulations and significance testing; logistic and linear regression analyses   |
| 2.2             | The role of disability type in determining travel behaviour  | Understanding Society | Regression analyses   |
| 2.3             | The role of psychological factors                            | ELSA                  | Regression analyses (ordered logistic regression and conditional logistic regression) |
| 2.4             | Travel difficulties  | NTS                   | Cross-tabulations and significance testing  |
| 2.5             | Levels of safety   | Understanding Society | Regression analyses   |
| 2.6             | Ease of travelling by modes of transport other than car      | BSA                   | Cross-tabulations and significance testing  |
| 2.7             | Non-use of local buses                                       | NTS                   | Frequencies, cross-tabulations and significance testing                               |
| 2.8             | Not being able to travel as much as would like               | LOS                   | Cross-tabulations and significance testing  |
| 2.9             | Transport and employment opportunities                       | NTS                   | Cross-tabulations and significance testing  |
| 2.1             | Travel to work by private vehicle                            | NTS                   | Cross-tabulations and significance testing  |
| 3.1             | Effect on type of area on travel behaviour                   | Understanding Society | Cross-tabulations, significance testing and regression analysis                       |
| 3.2             | Regional differences in travel behaviour                     | ELSA                  | Multi-level modelling   |
| 3.3             | How experience of safety issues varies by region             | Understanding Society | Multi-level modelling   |
| 3.4             | How attitudes to alternative modes of transport vary by area | BSA                   | Cross-tabulations and significance testing  |
| 3.5             | Using different modes of transport                           | ELSA                  | Cross-tabulations and time series analysis  |
| 3.6             | Public transport use and ageing                              | ELSA                  | Regression analysis   |
| 3.7             | Transport mode and average time to get to work               | Understanding Society | Cross-tabulations and significance testing  |

|     |  |                       |  |
|-----|--|-----------------------|--|
| 3.8 | Car use  | Understanding Society | Regression analysis                        |
| 3.9 | Explaining safety events by disability over time | Understanding Society | Regression analyses - time demeaned models |

## Defining disability

- 4.7 An inevitable constraint to the analysis and synthesis of survey data on the travel behaviour, attitudes and experience of people with disabilities is the lack of consistency in different surveys' approaches to defining and measuring disability. In conjunction with this, surveys' sample sizes and designs and the lack of availability of more detailed questions about disability type mean that the extent to which more detailed analysis by the **extent** or **nature** of people's disabilities can be undertaken varies substantially.
- 4.8 The UK Disability Discrimination Act (DDA) (1995) defines a disabled person as someone who has a physical or mental impairment that has a substantial and long-term adverse effect on his or her ability to carry out normal day to day activities.<sup>23</sup> Many social surveys employ a measure of disability based on the two-part DDA definition. However, a number of surveys which focus primarily on transport, including the NTS, have devised measures of disability relevant to that domain specifically. An alternative approach has been to base the measurement of disability on a 'social' model of disability – where, rather than being inherent, disability is seen to result from the practices and attitudes of society; this is the approach adopted in the Life Opportunities Survey for example. The shaded box below summarises the basic and more detailed measures of disability available on the five surveys analysed in this report.

| Survey                    | Basic measure of disability  | More detailed measure of disability   |
|---------------------------|--|---|
| BSA                       | Based on two-part Disability Discrimination Act (DDA) definition   | On some years, more detailed questions about specific types of disability are available; however, these have not been utilised for this project, given the need to combine data across years.                     |
| ELSA                      | Based on two-part DDA definition   | No more detailed measures available across all waves.   |
| Life Opportunities Survey | Based on two-part DDA definition   | Additionally measures substantial difficulties which disabilities or illnesses cause with different with areas of life  |
| NTS                       | Traditionally based on mobility difficulty e.g. the presence of disability / health problem that makes it difficult to go out on food, use local buses or get in and out of a car. For this project, we also classify as disabled those who have any other long-standing disability or health problem that limits their activities | To facilitate more detailed analysis, we developed a 'grading' of disability – based on the number of transport modes for which the respondent's disability or health problem causes difficulties <sup>24</sup> . |

<sup>23</sup> Section 1(2) of the Disability Discrimination Act 1995 (DDA) defined someone as disabled if 'he or she has a physical or mental impairment which has a substantial and long-term adverse effect on her or his ability to carry out normal day-to-day activities'. The Equalities Act 2010 has subsequently replaced the DDA, although the definition of disability in the Act is similar to that which applied for the purposes of the DDA.

<sup>24</sup> While 83% did not report any disability or health problem, 5%, 3% and 4% reported disabilities or health problems that caused difficulties travelling by one, two or three modes of transport respectively; a further 6% did not report any transport difficulties but nevertheless reported a long-standing disability or health problem. Those who had difficulties with one mode of transport were most likely to report this in relation to travelling by foot (75%); for those who had difficulties with two modes, the most common combination was foot and bus (76%).

|                       |  |  |
|-----------------------|--|--|
|                       | in any way (but which does not cause a mobility difficulty). |  |
| Understanding Society | Based on two-part DDA definition                             | Additionally measures substantial difficulties which disabilities or illnesses causes with different with areas of your life |