Data gathering on disability and driving statistics – stage 2

This TRL Report gathers existing data on disabled drivers and enhances the value of such datasets by surveying subsets of the recorded populations. Analysis and comparison of these data sources has created a number of statistics relating to disabled drivers and their vehicles.

Having a disability does not automatically preclude a person from driving. For some of the 9.5 million disabled adults in Great Britain (Department for Work and Pensions, 2006), driving can be a successful route to improved mobility. For many disabled people, a car is often the most appropriate mode of transport and, sometimes, the only viable option. What is not known is how many disabled people currently drive and how many may wish to do so in the future. Disabled people wanting to drive have been helped by the range of options in the marketplace for vehicle adaptations and the number of organisations providing assistance and advice to disabled drivers. However, the number of adapted vehicles currently in use is largely unknown and, again, there is little indication of whether adapted vehicles will grow in numbers.

Estimates of current and future numbers of disabled drivers and adapted vehicles are essential to help target future policy and resources. Understanding the demographics and the different disabilities and vehicle adaptations within this population is also valuable. Furthermore, to develop safety improvements, an understanding of accidents involving disabled drivers and/or adapted vehicles is required.

Related publications

RR29 Car control conversions for disabled drivers. C Haselgrave. 1986
PR27 The long term driving patterns of people with disabilities. L O’Toole and B Simms. 1993
CT104.2 Vehicle design for disabled people update (2002-2006)
Data gathering on disability and driving statistics – stage 2

S Tong, J Broughton and R Tong
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Executive Summary

Having a disability does not automatically preclude a person from driving. For some of the 9.5 million disabled adults in Great Britain (Department for Work and Pensions, 2006), driving can be a successful route to improved mobility. For many disabled people, a car is often the most appropriate mode of transport and, sometimes, the only viable option. What is not known is how many disabled people currently drive and how many may wish to do so in the future. Disabled people wanting to drive have been helped by the range of options in the marketplace for vehicle adaptations and the number of organisations providing assistance and advice to disabled drivers. However, the number of adapted vehicles currently in use is largely unknown and, again, there is little indication of whether adapted vehicles will grow in numbers.

Estimates of current and future numbers of disabled drivers and adapted vehicles are essential to help target future policy and resources. Understanding the demographics and the different disabilities and vehicle adaptations within this population is also valuable. Furthermore, to develop safety improvements, an understanding of accidents involving disabled drivers and/or adapted vehicles is required.

This study gathered existing data on disabled drivers and enhanced the value of such datasets by surveying subsets of the recorded populations. Analysis and comparison of these data sources created a number of statistics relating to disabled drivers and their vehicles. The five tasks conducted for this project were:

**Task 1: Data collection from the DVLA DMG database**
Driver and Vehicle Licensing Agency (DVLA) data provided summary statistics on the total population of drivers who had notified DVLA of a medical condition and, where applicable, were licensed to use adapted vehicles. Analysis of the DVLA Driver Medical Group (DMG) database explored drivers with listed medical conditions and with vehicle-restriction codes for vehicle adaptations.

**Task 2: Survey of drivers notifying DVLA of a medical condition**
The DVLA DMG database provided an overview of the number and range of licensed drivers with a listed medical condition. Several thousand DVLA DMG-listed drivers were subsequently sampled for a survey. This survey explored: how many valid licence holders with recorded medical conditions currently drive; their demographics; their driving experience and vehicle usage; the difficulties associated with driving with a medical condition; and their accident involvement. These data (partly) represented the characteristics of the total population defined by the DVLA DMG database.

**Task 3: Data collection from existing sources**
Existing data on disabled drivers were gathered from three different sources: UK records of Blue Badge holders; the National Travel Survey or NTS (Department for Transport, 2002); and Motability client profiles.

Blue Badge parking concessions are available to individuals who have some form of functional impairment that hinders their ability to walk. Such individuals represent a sizeable proportion of the total UK disabled population and data were available to define the size and location of these Badge holders. As with the DVLA DMG database, these data were enhanced by surveying a sample of Blue Badge holders to provide further information on their characteristics (Task 4).

The NTS is a continuous survey that monitors changes in travel behaviour over time. NTS data covers the age, gender and mileage of drivers that are ‘disabled’ (defined as any driver who has difficulties walking or using a bus). Statistics were compared with those for all licensed drivers and general household vehicle ownership.

Motability provides mobility solutions for disabled people, such as new cars on contract hire schemes. Some vehicles are fitted with adaptations. As of 2004, Motability had a client base of approximately 400,000 people. Motability’s client database represented the largest single source of disabled drivers.
with adapted vehicles and provided detailed information on the adaptations fitted and the demographics of clients.

**Task 4: Survey of Blue Badge holders**
A sample of Blue Badge holders was surveyed to identify: the proportion of drivers and passengers within the Blue Badge population; their demographics; the range of reported disabilities; licence status; driving experience; vehicle usage; and accident involvement.

**Task 5: Data from Government-funded road accident databases**
To explore the accident involvement of disabled drivers and/or adapted vehicles, five Government-funded road accident databases were analysed: the Co-operative Crash Injury Study (CCIS); the On the Spot (OTS) study; the police Fatals Intermediate Database (IDB); the police Contributory Factors database; and the Vehicle and Operator Services Agency (VOSA) accident database. Incidents involving disabled drivers, passengers and/or adapted vehicles were uncommon and analysis was mostly qualitative.

Data from the different sources were combined to describe the overall population of disabled drivers in the UK, both now and in the future. The main findings from the study are presented below.

- The number of licensed disabled drivers was estimated to be at least 1.9 million (approximately 20% of the 9.5 million disabled adults in Great Britain and the equivalent of 33 drivers with medical conditions per 1,000 GB population or 6% of the licensed population).
- Disabled drivers were commonly male (61%).
- Ethnic minority groups were under-represented (97% of each sample was white, compared with 92% of the UK population).
- In Great Britain, Wales had the highest density of disabled drivers.
- In England, the South East (excluding London) had the greatest density and volume of drivers with listed medical conditions.
- By 2010, Blue Badge holders in Great Britain are expected to grow by 430,000 (210,000 will be drivers and most will reside in England).
- Survey data indicated that between 175,000 and 428,000 adapted vehicles could be in use across the UK. In addition, 37,000 drivers had licences that restricted them to driving vehicles with adaptations.
- Primary car-control adaptations (such as modified steering, braking and acceleration controls) were the most prevalent type of vehicle adaptation.
- An additional 25,000 adapted vehicles are expected by 2010.
- Between 8% and 20% of all surveyed drivers had had at least one accident as a driver in the five years before the survey. (No direct comparison could be made with accidents among non-disabled populations.)
- Disability was a contributory factor in 0.1-0.3% of fatal or injurious accidents (according to Government road accident databases).

By 2010, both the number of disabled drivers and the number of adapted vehicles in the UK is expected to grow. The data provided in this report should help identify where resources can be appropriately distributed to cater for this growing population of drivers. Further investigation of the safety, suitability, provision and usage of vehicle adaptations would be desirable. Access to all mobility services should also be confirmed for all ethnic minorities. Final consideration should
also perhaps be given towards establishing a UK-wide method for monitoring the number of disabled drivers and closely sampling their experiences. This report has highlighted the rather disjointed range of current data sources and the need for a collaborative method of data collection to improve monitoring and servicing the needs of the growing population of disabled drivers.

1 Introduction

1.1 Background

An increasing number of disabled people are able to enjoy the freedom and independence that driving provides. This increased access has been brought about by a combination of factors including: innovative developments in car-control adaptations and vehicle conversions; financial assistance from organisations such as Motability; mobility roadshows demonstrating the choice of options in the marketplace; and improved availability of advice, information and assessment within the Forum of Mobility Centres. Organisations like Mobilise (formerly the Disabled Drivers’ Association and Disabled Drivers’ Motor Club) have played a key role in supporting those disabled people who want to drive.

The number of disabled drivers is expected to increase. In 2006, the Department for Work and Pensions estimated that there were 10.1 million disabled people in Great Britain, with almost 9.5 million being of driving age. However, little is known about the prevalence of adapted vehicles and the variety of vehicle adaptations that are used by disabled drivers. The safety of some vehicle adaptations is also not known. Equally, little is known about the involvement of disabled drivers in accidents. There are few documented statistics regarding the safety of drivers with perceptual and/or cognitive disabilities, as well as those with functional mobility impairments.

There is therefore a requirement for robust data on the prevalence and relative risk of disabled drivers, including those who drive adapted vehicles, as well as their relative experiences. Data of this type would help target resources for disabled drivers, such as Mobility Centres, and inform Government policy in this area. Such data could assist with quantifying the costs and benefits of potential changes in regulations or practices and are likely to form a useful tool for the Government and various stakeholders, such as the vehicle-adaptation industry, the Driver and Vehicle Licensing Agency (DVLA), Mobility Centres, rehabilitation workers and disabled drivers themselves.

1.2 Project overview

This research project comprised two stages. The first was a scoping study to determine the level of existing data on disability and driving held by various stakeholders. The second stage of this project is reported here; it gathered existing data on disabled drivers (as identified within Stage 1) and collected new data from appropriate sources. Analysis and comparison of these data sources has created a number of statistics relating to disabled drivers and their vehicles.

Five tasks were conducted for the second stage of this project. This final report presents the findings from all tasks:

1. Data collection from the DVLA Driver Medical Group (DMG) database (Section 2).
2. A survey of drivers notifying DVLA of a medical condition (Section 3).
3. Data gathered from existing sources including statistics on the number of Blue Badge holders in the UK, and data on disabled drivers from Motability and the National Travel Survey (NTS).
4. A survey of Blue Badge holders (Section 5).
5. Data gathered from Government-funded road accident databases (Section 6).

The sources of data that were used for this project often took a differing view of what constituted a ‘disability’. However, this project took a broad view of disability. For the purposes of gathering data, a disabled person was defined as anyone who had a...
longstanding medical condition or functional impairment that created difficulties with day-to-day activities and therefore could affect their ability to drive and/or require them to use mobility-related services.

1.3 Project objectives

The overall objectives of this project were to:

• Estimate the total number of disabled drivers in the UK, including data on:
  - age
  - gender
  - ethnicity
  - geographical spread
  - type of disability
  - driving experience
  - the projected growth in this population

• Estimate the number of adapted vehicles on UK roads, including additional data on:
  - the types of adaptations used
  - the safety of vehicle adaptations
  - experience of adaptation usage
  - the potential demand for vehicle adaptations

• Estimate the involvement of disabled drivers in accidents on UK roads, including additional data on:
  - the contribution of vehicle adaptations to accidents/injuries
  - the contribution of disability to accidents

2 Data collection from the DVLA DMG database

DVLA is an executive agency of the Department for Transport (DfT). It holds the licence records of all drivers in Great Britain (Northern Ireland is covered by a separate department). The Secretary of State for Transport has the responsibility, via the medical advisers at DVLA, to ensure that all licence holders are fit to drive. The Road Traffic Act defines disabilities that require notification. A ‘prescribed’ disability is a legal bar to holding a licence. A ‘relevant’ disability is any medical condition where the driver is a source of danger while driving. A ‘prospective’ disability is any medical condition with a progressive or intermittent nature that may lead to a prescribed or relevant disability over time. It can result in a restricted licence with a duration of one, two or three years.

The licence holder is legally responsible for notifying the Drivers Medical Branch of DVLA if they have a medical condition that may affect safe driving. It is then the responsibility of DVLA to assess their fitness to drive. If a licence holder requires vehicle modifications to compensate for a physical disability, this will be noted, in code form, on the driving licence. The DMG database holds data on these items together with other demographic driver data and is a valuable resource for deriving national statistics on the prevalence of disabled drivers and adapted vehicles.

2.1 Objectives

DVLA data were expected to provide summary statistics on the total population of drivers who had notified DVLA of a medical condition and/or drove with a licence that restricted them to modified vehicle controls. Analysis of the DVLA DMG database set out to explore:

1. The proportion of drivers with each listed medical condition.
2. The proportion of drivers with each of the vehicle-restriction codes that relate to modified vehicle controls (and indicate use of an adapted vehicle).
3. The demographics of drivers with medical conditions (age, gender and geographical location).

2.2 Method

DVLA provided a database of all current, full/substantive Category B licence holders with one or more notified medical conditions and, if recorded, the following vehicle-restriction codes relating to adaptations:

• Code 10 – modified transmission
• Code 15 – modified clutch
• Code 20 – modified brake
• Code 25 – modified accelerator
• Code 30 – modified combined brake and accelerator
• Code 35 – modified control layouts
• Code 40 – modified steering
• Code 42 – modified rear-view mirror(s)
• Code 43 – modified driver seat

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2 A Category B licence allows the use of cars with a maximum authorised weight of 3,500kg and trailers of up to 750kg.
2 DATA COLLECTION FROM THE DVLA DMG DATABASE

• Code 78 – restricted to vehicles with automatic transmission
• Code 114 – with any special controls required for safe driving

The age, gender and postal town of each driver was also provided.

2.3 Results
DVLA held records for 1,904,174 drivers with at least one medical condition and a valid substantive driving licence (as of June 2006). Further findings relating to this population of disabled drivers are discussed in this section. Drivers with medical conditions but without a substantive licence were not included in the results. Therefore, drivers with provisional, surrendered and revoked licences (and any other licence type) were not included in this analysis. Moreover, the population of drivers accounted for by the DVLA database may not be representative of all disabled drivers in Great Britain due to possible under-reporting of medical conditions to DVLA; indeed, while all medical conditions that may impact upon driving must be reported, it is probable that a number of drivers make their own decision about whether a condition should be declared. Due to these issues, the presented findings may not represent all drivers listed by the DVLA DMG database.

2.3.1 Age and gender
Three-quarters (75%) of all drivers listed on the DVLA DMG database were male. They had a mean age of 57 years. Respondents over 70 years of age constituted the largest proportion of the surveyed sample (30%, n=1,904,174), with lower proportions of respondents in the younger age brackets of 17-29 years, 30-39 years, 40-49 years, 50-59 years and 60-69 years (6%, 12%, 16%, 19% and 17% respectively). Specifically, there were more drivers with medical conditions aged 70-79 years than in any other age band (21%). In each age band, there were more males and the number of male drivers generally increased with age; an effect that was less pronounced among female drivers (Figure 2.1 and Appendix A). The number of drivers generally increased with age, reaching a peak at 70-79 years; the number of drivers aged 80 years and above declined rapidly, accounting for 9% of all those listed. Overall, fewer medical conditions were registered by younger drivers. For example, there were approximately twice as many drivers with medical conditions aged 30-39 years than there were aged 7-29 years (235,000 and 88,000 respectively).

Adult drivers with medical conditions accounted for 6% of the estimated 34 million drivers in Great Britain (Figure 2.2 and Appendix B). Overall, 8% of all male drivers in Great Britain had listed medical conditions, compared with 3% of all female drivers. The percentage of drivers with medical conditions rose substantially among all GB drivers above 70 years to 22% of all male drivers and 14% of all females.

2.3.2 Geographical distribution
The geographical location of drivers on the DVLA DMG database was provided using postal towns. These were grouped by the countries in Great Britain and, in England, by Government Office Region (GOR). Wales had the highest density of disabled drivers (36 per 1,000 population) but, in absolute terms, Wales had the fewest disabled drivers of the three countries. England had the most (Table 2.1). The GOR with the largest number of disabled drivers (both in absolute terms and per 1,000 population) was the South East of England. London had the lowest number of disabled drivers by a considerable margin, at 15 per 1,000 population. Overall, there were 33

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3 Code 78 was not part of the selection criteria but was provided by DVLA when it was listed with one or more of the other requested codes.
4 Code 114 is used for provisional licence holders when it is not entirely clear which controls they will need for safe driving. Once they pass their test, their licence is coded with more specific restrictions based upon the exact controls that they needed when they passed. DVLA is unable to apply standard EU restriction codes to provisional licences as they are a ‘national’ and not an ‘EU’ category. Other, non-EU licence categories can also require Code 114 to be used where typically another code may be more relevant. Finally, Code 114 may also be applied to EU licence categories if a DVLA medical adviser feels it is appropriate.

5 There were 29 people (26 males and three females) aged 6 years who were also listed on the DVLA DMG database.
disabled drivers per 1,000 population across Great Britain.

2.3.3 Medical conditions
At the time of reporting, DVLA listed 207 medical condition codes. The number of drivers listed with each of these codes is provided in Appendix C. Diabetes was the most prevalent medical condition affecting approximately a quarter of the 1.9 million drivers on the database. This was followed by high-risk offenders (HROs), of which there were approximately 204,000 (HROs are drivers with persistent or extreme alcohol abuse, or who fail to provide a specimen). Approximately 199,000 drivers had ‘no relevant medical condition’, which indicates that they had informed DVLA of a medical

Figure 2.1 Age and gender of drivers on the DVLA DMG database

Figure 2.2 Drivers with medical conditions as a percentage of the total licensed population in Great Britain, by age and gender
condition that was not relevant to their medical entitlement to drive (although such medical conditions may still be ‘disabling’).

The 207 individual codes for medical conditions were grouped into 34 different categories for ease of analysis. When grouped, diabetes was still the most prevalent medical condition overall, among both males and females (Appendix D). It was also the most prevalent medical condition among almost all age groups, with the exception of drivers aged 17-29 years (Appendix E). Diabetes affected 6% (n=108,311) of this youngest age group, with neurological conditions affecting the greatest percentage in this age group (23%), followed by ‘no relevant medical condition’ (19%).

After grouping the medical codes, heart problems were second to diabetes in their prevalence among listed drivers (Appendix D). This was followed by neurological conditions, alcohol misuse, ‘no relevant medical condition’, vision problems, ‘other’ (relevant) medical conditions and strokes.

There were marked gender differences for some of the grouped medical conditions. More male drivers were affected by heart problems, alcohol misuse, ‘no relevant medical condition’ and blood/circulation problems. Conversely, more female drivers were affected by neurological problems and multiple sclerosis.

2.3.4 Vehicle-restriction codes
The European Driving Licence Directive introduced a harmonised driving licence with provisions to make it easier for people with physical disabilities to drive. It includes codes that define the minimal solution to enable a person with a physical disability to drive. The Directive defines obligatory main codes, which demonstrate that a modification to a vehicle control is required (e.g. Code 25 – modified accelerator). It also defines optional sub-codes, which prescribe the method of operating the control (e.g. Code 25 – hand-operated accelerator, 25.05 – knee-operated accelerator, 25.07 – accelerator pedal on the left of the brake pedal). The UK has adopted only the main codes. Therefore, the data that follow only identify if there is a functional impairment
and do not provide details of specific vehicle adaptations. So, in the above example, the driver may have Code 25 for a modified accelerator, but it would not be known if this was for a hand control, a left-foot accelerator or simply a pedal extended for operation by a shortened limb.

It is the responsibility of the licence holder to inform DVLA of any special controls required, but the lack of guidance available on the harmonised codes means there may be inconsistency in the way these codes are applied. DVLA provided additional data on 11 of these vehicle-restriction codes (Table 2.2).

Approximately 2% (37,185 drivers) of the 1.9 million drivers with medical conditions had at least one vehicle-restriction code. Of all drivers with restrictions of this type, approximately two-thirds (60%) were required to drive a vehicle with automatic transmission (Code 78). It should be noted that Code 78 (automatic transmission) applies to any driver who has passed their driving test in a vehicle with automatic transmission. However, it is also used if a driver with a disability is required to drive a vehicle with automatic transmission as a result of their disability. The data presented here exclude details of drivers who had a licence restricted only with Code 78. Instead, they capture drivers who had a licence with Code 78 and one other code. The data therefore potentially exclude many drivers with a physical disability that requires no change to the vehicle, other than to drive a vehicle with automatic transmission.

Modified steering (Code 40) was the second most common code. The third was for combined braking and accelerator systems (Code 30).

There were few gender differences in the application of vehicle-restriction codes, with two exceptions: Code 42 for modified rear-view mirror(s) was far more frequently applied to female drivers (19% of females and 7% of males, Table 2.2); and Code 15 for modified clutch systems, which was used by twice as many males (6% of males and 3% of females). Such gender differences (where there is no obvious explanation) may indicate under-reporting of some vehicle adaptations.

The gender distribution among drivers with vehicle-restriction codes was male biased (63% males, 37% females, n=37,182), but to a lesser extent than in the total DVLA DMG database (75% males, 25% females, n=1,904,174). This increased female representation among those driving with vehicle restriction codes was present in all age bands (Figure 2.3). However, whereas the number of males with vehicle-restriction codes (and therefore driving adapted vehicles) increased with age until 80 years before decreasing sharply, the number of females with restriction codes peaked at 50-59 years and declined gradually.

There was little age- or location-related variation in the proportion of drivers with each vehicle-restriction code (Appendices F and G). Moreover, drivers with vehicle-restriction codes were geographically distributed in the same way as all drivers with medical conditions.
Table 2.2 Vehicle-restriction codes by gender (number and percentage out of all drivers with vehicle-restriction codes)

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<tr>
<th>Vehicle-restriction code</th>
<th>Gender</th>
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<tr>
<td></td>
<td>Male (n=23,286)</td>
<td>Female (n=13,896)</td>
<td>Total</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>n</td>
<td>%**</td>
<td>n</td>
<td>%**</td>
<td>n</td>
<td>%**</td>
<td></td>
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<tr>
<td>78 – restricted to vehicles with automatic transmission</td>
<td>14,100</td>
<td>61</td>
<td>8,327</td>
<td>60</td>
<td>22,427*</td>
<td></td>
<td></td>
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<td>40 – modified steering</td>
<td>8,766</td>
<td>38</td>
<td>5,820</td>
<td>42</td>
<td>14,586</td>
<td></td>
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<td>30 – modified combined brake and accelerator</td>
<td>8,377</td>
<td>36</td>
<td>4,267</td>
<td>31</td>
<td>12,644</td>
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<tr>
<td>114 – with any special controls required for safe driving</td>
<td>6,863</td>
<td>30</td>
<td>4,123</td>
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<td>10,986</td>
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<td>40 – modified steering</td>
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<td>30 – modified combined brake and accelerator</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>114 – with any special controls required for safe driving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42 – modified rear-view mirror(s)</td>
<td>1,641</td>
<td>7</td>
<td>2,621</td>
<td>19</td>
<td>4,262</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 – modified brake</td>
<td>2,099</td>
<td>9</td>
<td>1,362</td>
<td>10</td>
<td>3,461</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 – modified clutch</td>
<td>1,309</td>
<td>6</td>
<td>369</td>
<td>3</td>
<td>1,678</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43 – modified driver seat</td>
<td>695</td>
<td>3</td>
<td>563</td>
<td>4</td>
<td>1,258</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 – modified transmission</td>
<td>508</td>
<td>2</td>
<td>254</td>
<td>2</td>
<td>762</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Not the total number of drivers with Code 78, but the number of drivers who have one of the other codes listed here and Code 78.

**Total percentages for each gender exceed 100 due to use of multiple codes. Totals for each code also exceed the total number of drivers for the same reason.

Figure 2.3 Age and gender of all drivers with vehicle-restriction codes
Combinations of vehicle-restriction codes

Drivers with vehicle-restriction codes are likely to use adapted vehicles in order to comply with their licensing conditions, although this is an assumption and DVLA do not monitor levels of compliance. In Table 2.3, Code 78 has been removed from some of the data because it was not a selection variable. Therefore, although more than 22,000 drivers were listed as having Code 78, this does not represent the total number of drivers with Code 78, merely the number of drivers with one of the selected codes in Table 2.1 and Code 78. If restrictions for automatic transmissions (Code 78) are excluded, more than half of all drivers with vehicle-restriction codes had only one code applied to their licence (Table 2.3). Code 114 was also excluded from one column in Table 2.3 to provide a comparison with the data that were collected from the survey of Blue Badge holders (Section 5.3.7). The maximum number of reported codes for a single driver was ten.

3 Survey of drivers notifying DVLA of a medical condition

Licensed drivers in Great Britain are required to notify DVLA if they have one or more medical conditions that may affect their ability to drive. DMG considers each case and makes a decision based upon medical evidence and, sometimes, reports from Mobility Centres as to whether the person in question can drive. When a licence is issued to a disabled driver, DVLA applies one or more medical codes to that person’s licence. The DVLA database of such drivers is potentially the most comprehensive record of disabled drivers in Great Britain.

3.1 Objectives

Data from the DVLA DMG database provided an overview of the number and range of licensed drivers with a medical condition for which DVLA holds a record. The survey objective was to sample drivers to explore

Table 2.3 Number of vehicle-restriction codes for each driver (frequency and percentage, n=37,185)

<table>
<thead>
<tr>
<th>Number of codes</th>
<th>All codes*</th>
<th>All codes (except 78 and 114)**</th>
<th>All codes (except 78)***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Frequency</td>
</tr>
<tr>
<td>1</td>
<td>9,718</td>
<td>26</td>
<td>21,517</td>
</tr>
<tr>
<td>2</td>
<td>13,313</td>
<td>36</td>
<td>7,333</td>
</tr>
<tr>
<td>3</td>
<td>8,547</td>
<td>23</td>
<td>3,500</td>
</tr>
<tr>
<td>4</td>
<td>3,683</td>
<td>10</td>
<td>1,045</td>
</tr>
<tr>
<td>5</td>
<td>1,280</td>
<td>3</td>
<td>401</td>
</tr>
<tr>
<td>6</td>
<td>450</td>
<td>1</td>
<td>93</td>
</tr>
<tr>
<td>7</td>
<td>125</td>
<td>0</td>
<td>42</td>
</tr>
<tr>
<td>8</td>
<td>46</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>9</td>
<td>15</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>37,185</td>
<td>100</td>
<td>33,948</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>37,182</td>
</tr>
</tbody>
</table>

*Codes 10, 15, 20, 25, 30, 35, 40, 42, 43, 78 and 114.

**Codes 10, 15, 20, 25, 30, 35, 40, 42 and 43.

***Codes 10, 15, 20, 25, 30, 35, 40, 42, 43 and 114.
their experiences of driving with a medical condition, including:

1. What proportion of valid licence holders with recorded medical conditions currently drive.
2. Reasons for not driving with a medical condition even if licensed to do so.
3. The demographics of drivers notifying DVLA of a medical condition (age, gender, ethnicity).
4. The process followed when notifying DVLA of a medical condition.
5. The types of licences issued to drivers with medical conditions (including restrictions).
6. Vehicle usage, including vehicle access and adaptations.
7. The process of driving with a medical condition, including problems experienced, sources of assistance and accident rates.
8. Accident involvement among drivers notifying DVLA of a medical condition and the perceived contribution of vehicle adaptations to accidents and occupant injuries.

3.2 Method

A self-completion questionnaire (Appendix H) was used to survey 5,000 drivers across the UK. The questionnaire asked about:

- The experience of notifying DVLA of a medical condition.
- Driving experience, including licence status and restrictions, and mileage.
- Vehicle usage, including access issues and adaptations.
- Accident involvement and the perceived contribution of vehicle adaptations to accidents or injuries.
- The demographic status of each respondent.

A covering letter (Appendix I) was included with the questionnaire to assure recipients that the survey was confidential and responding would not affect their entitlement to hold a driving licence.

Survey materials were packaged and distributed to DVLA (Swansea), who applied address labels to the questionnaires before sending. The sample for the survey was drawn from Category B drivers who had their medical cases considered by DVLA in 2002-2003. For the period 2002-2003, DVLA listed 174 medical conditions for which it required notification. Given the wide range of conditions, it was agreed with the DfT that the sample would be limited to surveying eight specific conditions (each with a notification rate of at least 150 drivers in 2002-2003; Table 3.1).

This sampling strategy explored those medical conditions that appeared to be most

Table 3.1 Sampling specification for DVLA survey (n=5,000)

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>DVLA code</th>
<th>Number of drivers to be included within sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limb disability – static*</td>
<td>L02</td>
<td>1,000</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>M08</td>
<td>1,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>A04</td>
<td>822</td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>P01</td>
<td>534</td>
</tr>
<tr>
<td>Stroke</td>
<td>B08</td>
<td>534</td>
</tr>
<tr>
<td>Spinal injury</td>
<td>S03</td>
<td>509</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>C03</td>
<td>417</td>
</tr>
<tr>
<td>Muscular dystrophy or atrophy</td>
<td>M09</td>
<td>184</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>5,000</strong></td>
</tr>
</tbody>
</table>

*Limb disabilities that do not change over time, such as amputations.*
prevalent among disabled drivers, based on the results of the Blue Badge survey (Section 5) and client research from the Forum of Mobility Centres (2005). Medical conditions sampled for the survey were likely to be linked with physical disablement. Although they represented common medical conditions, they were a small subset of the 207 conditions currently listed by DVLA. Estimates made using this survey data may not be representative of all drivers listed on the DVLA DMG database. Moreover, outcomes based on such survey data may be exaggerated as a result of the strong bias towards sampling drivers with predominantly physical disabilities.

Nevertheless, advantages of restricting the sample included increasing the likelihood of receiving an adequate response rate for statistical analysis by medical condition, as well as capturing drivers who had already started or returned to driving (given that their notification was at least two years ago).

The DfT was keen for the selected sample to cover drivers with medical conditions most likely to require a functional assessment. Such conditions were preferred over those where a decision on driving ability could be made by a medical practitioner only, or where there were strict rules governing whether one can drive or not (e.g. epilepsy). Sampled drivers held full, substantive driving licences. DVLA excluded any driver whose licence was no longer valid because it had been withdrawn, surrendered or the driver was deceased.

3.3 Results

The following survey results have also been used to make estimates relating to all drivers with substantive licences listed on the DVLA DMG database. Such estimates may not be representative of all drivers listed on the DVLA DMG database. This is because the survey sample was selected from a set of specific medical conditions that did not represent the full range of conditions listed on the DMG database.

3.3.1 Response rate

The overall survey response rate was 33% (n=4,708). DVLA was unable to distribute 155 questionnaires due to an administrative error. A further 137 (approximately 3% of the 4,845 distributed) were returned due to the recipient being deceased or not known at the address.

The percentage response for each disability was similar to the percentage that was initially sampled (Table 3.2). Although respondents were selected based on one particular disability, some reported multiple disabilities that included one or more of the other eight sampled conditions. This may have contributed to slightly greater proportions than were initially sampled for conditions such as arthritis and multiple sclerosis.

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>% sampled (n=5,000)</th>
<th>% responding (n=1,525)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limb disability – static</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>20</td>
<td>27</td>
</tr>
<tr>
<td>Arthritis</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Stroke</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Spinal injury</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Muscular dystrophy or atrophy</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

*Total percentage greater than 100 due to multiple disabilities among some respondents.
3.3.2 Age and gender
The mean age of respondents was 57 years. More males than females were represented in the sample (61% against 39%, n=1,512). It differed from the gender distribution of all drivers recorded on the DVLA DMG database (75% male and 25% female), although it did match that obtained for drivers from the Blue Badge survey and the NTS (Department for Transport, 2002). Mean age was identical. However, the DVLA DMG database was heavily skewed by male-dominated conditions, such as alcohol misuse. Respondents over 70 years of age comprised the largest proportion of the surveyed sample (30%, n=1,501), with lower proportions of respondents in the younger age brackets of 17-29 years, 30-39 years, 40-49 years, 50-59 years and 60-69 years (8%, 10%, 16%, 19% and 18% respectively). This was comparable with all full licence holders listed on the DVLA DMG database, of which 30% were aged 70 years or above, with similar proportions of younger drivers. DVLA survey data were also characterised by a sharp increase in older male drivers (Figure 3.1). However, female respondents aged 40-49 years outnumbered similarly aged males.

These general age and gender characteristics were also evident in other data sources sampled for this study, such as disabled drivers holding Blue Badges, DVLA DMG-listed drivers or those surveyed for the NTS. This indicated that DVLA survey respondents were at least demographically representative of other groups of disabled drivers.

3.3.3 Ethnicity
White respondents were over-represented in the DVLA survey when compared with UK Census (2001) data (97% white respondents against a white UK population of 92%; Appendix J). The same ethnic distribution was found when surveying Blue Badge holders (Section 5.3.4). A larger sample size may have yielded different results and, as the survey was paper based, it did depend upon a certain level of English literacy that may have attributed to some non-response among minority ethnic groups whose first language was not English.

3.3.4 Disability and driving
At the time of surveying, 86% (n=1,540) of respondents were active drivers (Table 3.3). The distribution of drivers and non-drivers did not vary considerably for the different disabilities sampled. Exceptions were those with Parkinson’s or cerebral palsy, where the percentage of non-drivers almost doubled (28%, n=193; and

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6 Percentages have been calculated using the number of respondents who actually answered the particular question item as the base number. This is shown as ‘n’.
The most common reasons for not driving, even when licensed to do so, were increasing age and/or the effects of a medical condition, and lack of confidence in one’s ability to drive. Other, slightly less common reasons included prohibitively expensive vehicle adaptations, confusion regarding the appropriateness of adaptations and feeling that the process of starting or returning to drive was too complicated.

The data on driving rates were assumed to be representative for the purpose of estimating the number of active drivers with full licences listed on the DVLA DMG database in Great Britain. Using the proportion of active drivers from the survey, 1.638 million of the 1.904 million drivers on the DVLA DMG database were assumed to be active drivers. The remaining 267,000 drivers were assumed to no longer drive, despite being licensed to do so with one or more medical conditions. However, fewer inactive drivers might realistically exist; the sampled disabilities giving rise to this estimate were predominantly physically disabling, perhaps influencing any decision to not drive.

### Table 3.3 Overall percentage of respondents currently driving and not driving (compared with percentage responding to survey), by disability

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Overall % surveyed (n=1,525)*</th>
<th>% driving (n=1,521)</th>
<th>% not driving (n=1,521)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple sclerosis</td>
<td>27</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>Limb disability – static</td>
<td>21</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td>Arthritis</td>
<td>20</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Spinal injury</td>
<td>13</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>13</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Stroke</td>
<td>10</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>6</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Muscular dystrophy or atrophy</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total (n=1,540)</strong></td>
<td><strong>100</strong></td>
<td><strong>86</strong></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

*Total percentage greater than 100 due to multiple disabilities among some respondents.

### 3.3.5 Other characteristics

Blue Badge ownership was reported by 70% (n=1,497) of all respondents. The same proportion applied to all drivers listed on the DVLA DMG database assumes that there were 1.337 million drivers with Blue Badges. However, among active drivers responding to the survey, the rate of Blue Badge ownership was marginally lower (69%, n=1,296). That proportion applied to the estimated number of active drivers listed on the DVLA DMG database assumes that there were 1.131 million active drivers with Blue Badges.

Some 23% (n=1,395) of survey respondents drove vehicles obtained via Motability. The same proportion applied to all drivers listed on the DVLA DMG database assumes that there were 444,000 drivers with vehicles supplied by Motability. However, among active drivers responding to the survey, ownership of Motability vehicles was slightly greater (24%, n=1,238). Therefore, it could be assumed that there were 394,000 active DVLA-

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7 It was estimated that active and inactive licensed drivers with Blue Badges totalled 1.251 million in the UK in 2004, or 1.218 million in Great Britain (Section 4.1).
listed drivers with vehicles supplied by Motability.

More than a third of all respondents (35%, n=1,544) had had their driving ability assessed; 17% at the Forum of Mobility Centres, 13% at a driving school or with an instructor and the remaining 4% using a range of different sources, including the Institute of Advanced Motorists, a GP or other medical adviser, or an employer. This would indicate a substantial number of drivers with a demand for driving assessments.

3.3.6 Licence status and DVLA notification

When notifying DVLA of a medical condition, 86% (n=1,529) of respondents were existing licence holders. These drivers made a variety of choices when they realised that they had a medical condition that may affect their entitlement to drive. The vast majority did notify DVLA in the first instance but, within this group, more continued to drive after notifying DVLA than those who waited for DVLA to first make a decision before driving again (Table 3.4). This was true for most of the medical conditions sampled, with the exception of limb disabilities, spinal injuries and strokes. Licensed respondents with these conditions predominantly waited for DVLA to make a decision before continuing to drive, perhaps because such conditions can have a pronounced and sometimes sudden physical impact. Very few licensed respondents claimed not to have notified DVLA in the first instance or did not indicate on the questionnaire whether or not they had continued to drive. Others could not remember the action they had taken.

Almost half of all respondents (46%, n=1,518) already knew to notify DVLA of their medical condition. However, the need to notify DVLA was also explained to them by other sources. These included:

- GP, medical consultant or other healthcare professional such as an occupational therapist, nurse or physiotherapist (45%, n=1,518).
- DVLA via driving licence, website, leaflet or helpline (2%).
- Friend, relative or partner (9%).
- Other sources, such as insurance companies, motoring organisations, charities, employers or the police (10%).

Once respondents knew they were obliged to notify DVLA, the vast majority (89%, n=1,523) did so themselves. A GP, medical consultant or other healthcare professional was responsible in 6% of cases. A minority of respondents (5%) had their case notified to DVLA by a range of other sources such as friends, relatives, partners, employers or the police. These findings indicated that most respondents with medical conditions were at least prompted to consider their driving status.

Motability estimated that 270,000 drivers were insured to drive themselves in 2004 (Section 4.3). The estimated number of drivers listed on the DVLA DMG database who were also Motability clients exceeded this figure, although this was probably an example of the bias introduced by sampling specific disabilities for the survey.

<table>
<thead>
<tr>
<th>First action taken</th>
<th>% (n=1,288)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notified DVLA, continued driving</td>
<td>56</td>
</tr>
<tr>
<td>Notified DVLA, stopped driving, waited for outcome</td>
<td>36</td>
</tr>
<tr>
<td>Continued driving, did not notify DVLA</td>
<td>1</td>
</tr>
<tr>
<td>Stopped driving, did not notify DVLA</td>
<td>1</td>
</tr>
<tr>
<td>Driving status undisclosed, notified DVLA</td>
<td>1</td>
</tr>
<tr>
<td>Driving status undisclosed, sought medical advice</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
</tbody>
</table>
The process of notifying DVLA was easy for respondents, with 96% (n=1,427) not finding it difficult to source contact information. Half (51%, n=1,514) sought further information on the notification process directly from DVLA, either by calling its general enquiries line, looking at its website or simply reading the information on their driving licence. Some commonly used alternative sources included GPs, consultants or healthcare professionals (15%), various leaflets (11%) and friends or family members (5%). A fifth of respondents (19%) could not remember where they found DVLA contact information.

A few respondents (6%, n=1,495) had difficulties with the process of notifying DVLA of their medical condition. In most of these instances (58%, n=91), DVLA simply took longer than expected to process notifications although, specifically, there were complaints relating to DVLA not keeping respondents informed of progress with their case (32%, n=91), not providing clear information when they did communicate (15%) and sometimes losing information relating to notifications (11%). However, some of the reported difficulties with the notification process (33%) were case specific and may have been related to DVLA providing an unfavourable ruling.

3.3.7 Problems with vehicle usage

A wide range of disabilities were represented in the surveyed sample along with a wide range of corresponding difficulties with vehicle usage. Overall, 36% (n=1,430) of respondents reported experiencing one or more problems with using and driving their vehicles. The percentages experiencing certain difficulties are shown in Table 3.5. In addition, estimates of those affected across Great Britain are given, based on all drivers with full licences listed on the DVLA DMG database.

Within these areas of difficulty, respondents provided detailed descriptions of the specific problems they faced. Several respondents reported similar problems to each other and these are described collectively in the following sections.

Vehicle access

Vehicle access problems were the most prevalent, affecting almost a quarter of respondents. Commonly reported problems included:

- Being unable to transfer to and from a vehicle independently, especially when raising from the seat and negotiating door sills.
- Difficult ingress/egress due to insufficient door opening widths and angles.
- Needing to adjust controls and seat each time to enable entry/exit.

### Table 3.5 Respondents’ vehicle-usage problems (percentage) and estimated number in Great Britain experiencing similar problems (based on data from the DVLA DMG database)

<table>
<thead>
<tr>
<th>Type of problem with vehicle usage</th>
<th>% of survey respondents (n=1,430)*</th>
<th>Number experiencing problems in Great Britain (n=1,904,174; estimate, 000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting in and out of your car/van</td>
<td>23</td>
<td>443</td>
</tr>
<tr>
<td>Loading and storing equipment (e.g. wheelchair)</td>
<td>14</td>
<td>257</td>
</tr>
<tr>
<td>Using primary controls (steering, braking or accelerating)</td>
<td>8</td>
<td>146</td>
</tr>
<tr>
<td>Seating</td>
<td>4</td>
<td>79</td>
</tr>
<tr>
<td>Using secondary controls (e.g. lights, parking brake)</td>
<td>4</td>
<td>77</td>
</tr>
<tr>
<td>Other problems</td>
<td>3</td>
<td>56</td>
</tr>
<tr>
<td>No problems experienced</td>
<td>64</td>
<td>1,225</td>
</tr>
</tbody>
</table>

*Total percentage greater than 100 due to multiple problems among some respondents.
• Restricted access due to steering wheel.
• Existing ingress/egress problems being exacerbated by the fatigue that can be caused by driving, or that is associated with some conditions.
• Slow access, which was felt to place drivers in danger from other traffic when getting in and out. Moreover, when coupled with difficult-to-use controls, the problems can be amplified, e.g. one respondent had trouble engaging the handbrake and was crushed by their car on exiting when it started to roll.

Storage of mobility equipment
Storing mobility equipment in vehicles also presented respondents with the following common difficulties:
• Unable to lift heavy equipment or other items in or out of a vehicle.
• Unable to lift, fold or store mobility equipment easily or independently.
• Unable to close the bootlid after loading/unloading.

Primary controls
Using primary controls (standard or adapted) tired some respondents. Several instances of localised or global fatigue were reported. These included experiencing tremors in feet or hands that respondents felt were safety-critical. Such difficulties were often attributed to the design of primary controls and their ease of use.

Secondary controls
Only 4% (n=1,430) of respondents had problems with secondary controls. The problems they reported included:
• Secondary controls not readily adaptable and subsequently causing problems (e.g. headlight dimming, using the horn).
• Some existing controls being difficult to use even if well placed (e.g. high pressure required to activate the horn).
• Adaptations, especially for hand controls, obstructing some secondary controls or restricting their use. For example, in order to use some secondary controls for heating, ventilation and stereo, respondents reported it was necessary to compromise safety by relinquishing full control of some primary controls. Similarly, there were respondents who found it impossible to operate some secondary controls while driving, which they felt affected their comfort levels and, subsequently, their ability to drive safely.
• Handbrakes that were difficult to use independently. This was in part due to poor location on the left. To overcome this difficulty, it was reported that another person would be asked to help engage and disengage the handbrake when necessary.

Seating
A poor, minimal range of seating adjustment for basic-model vehicles was commonly noted by respondents.

Other
Although the above categories captured the vast majority of problems experienced by respondents, there were a couple of other items that repeatedly emerged from the survey. The first was that additional observation devices do not always provide the necessary range of vision, especially when negotiating angled junctions. The second was pain experienced because of unsuitable control layouts. Ideally, adaptations would overcome this problem. However, due to the cost of adapting controls, especially for secondary functions, some respondents felt they were forced to compromise their safety by either not always having proper control over their vehicles when using the range of available controls or because of the physical effects (e.g. pain, fatigue) of driving with inappropriate controls.

3.3.8 Vehicle adaptations
Just over one-fifth (22%, n=1,454) of those surveyed had one or more vehicle adaptations. The most popular adaptations were for primary car controls, such as steering, braking and accelerating, and these were fitted to 19% (n=1,454) of all vehicles. By comparison, other adaptations for secondary car controls, loading and storage, access, seating and wheelchair travel were less prevalent (none were fitted to more than 4% of all vehicles). Observation devices made up the majority of ‘other’ adaptations (Table 3.6).

Estimates for the number of adapted vehicles used by full licence holders listed
Data Gathering on Disability and Driving Statistics – Stage 2

On the DVLA DMG database were made using this data (Table 3.6). Across Great Britain, 365,000 drivers were believed to have primary car-control adaptations, 68,000 had secondary car-control adaptations and less than 50,000 drivers had adaptations in each of the other categories. Overall, an estimated 428,000 people were thought to have vehicle adaptations across Great Britain (representing 22% of the 1.9 million listed drivers).

Overall, 17% (n=1,454) of all respondents had just one type of adaptation fitted to their vehicle, equivalent to 321,000 of the 428,000 drivers who were estimated to have vehicle adaptations (based on data from the DVLA DMG database). Some 5% of all survey respondents drove vehicles with two types of adaptations fitted (excepting one respondent who reported using five different types covering secondary controls, access, seating, loading/storage and wheelchairs).

Of the 17% (n=1,454) of survey respondents with just one type of adaptation fitted to their vehicle, primary car-control adaptations were by far the most commonly fitted, accounting for 86% (n=245) of all vehicles in this group (Figure 3.2). Other adaptation types each accounted for less than 3% of those with just one type of adaptation.

An analysis of only respondents with vehicle adaptations showed that a mixture of primary and secondary control adaptations was the most common combination, accounting for 13% (n=326) of all respondents with either one or two adaptation types (see the matrix in Table 3.7). Primary car-control adaptations were also included in most other adaptation combinations, making it the most popular type of adaptation. As combinations of more than two adaptation types were only found for one respondent, Table 3.7 captures most adaptation combinations.

Almost three-quarters of respondents (72%, n=1,065) driving without vehicle adaptations reported not experiencing any current problems with their vehicle usage. For those who did experience problems, vehicle access was the most common difficulty (20%), followed by loading and storing wheelchairs and/or other mobility equipment (9%). Some of those respondents might have had a need for vehicle adaptations that had not yet been met, in order for them to try and overcome their current difficulties (Figure 3.3). Across Great Britain, an estimated 413,000 drivers were without vehicle adaptations and were experiencing problems (calculated using the DVLA DMG database).

Table 3.6 All vehicle adaptations among respondents (percentage) and estimated number in Great Britain (based on data from the DVLA DMG database)

<table>
<thead>
<tr>
<th>Type of vehicle adaptation</th>
<th>% of survey respondents (n=1,454)*</th>
<th>Number in Great Britain (n=1,904,174; estimate, 000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary car-control adaptations (steering, acceleration, braking)</td>
<td>19</td>
<td>365</td>
</tr>
<tr>
<td>Secondary car-control adaptations (e.g. for operating lights, parking brake, indicators, horn)</td>
<td>4</td>
<td>68</td>
</tr>
<tr>
<td>Adapted to load and store wheelchair or mobility equipment (e.g. hoists, ramps)</td>
<td>3</td>
<td>48</td>
</tr>
<tr>
<td>Adapted to enable main user to get in and out of the car/van more easily (e.g. using swivel seats, hoists)</td>
<td>2</td>
<td>33</td>
</tr>
<tr>
<td>Adapted to enable main user to have an adequate seating position (e.g. with cushions, replacement seats)</td>
<td>2</td>
<td>31</td>
</tr>
<tr>
<td>Adapted to enable main user to travel in a wheelchair</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Other</td>
<td>&lt;1</td>
<td>13</td>
</tr>
<tr>
<td>Not adapted in any way</td>
<td>78</td>
<td>1,476</td>
</tr>
</tbody>
</table>

*Total percentage greater than 100 due to multiple adaptations among some respondents.
Figure 3.2 Distribution of adaptations among respondents with only one type of vehicle adaptation (percentage, n=245)

Table 3.7 Matrix to show the percentage distribution of all vehicle adaptations among respondents, including dual combinations (n=326)

<table>
<thead>
<tr>
<th>Adaptation type</th>
<th>Primary</th>
<th>Secondary</th>
<th>Loading/storage</th>
<th>Access</th>
<th>Seating</th>
<th>Wheelchair travel</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>64</td>
<td>13</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Secondary</td>
<td>13</td>
<td>2</td>
<td>&lt;1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Loading/storage</td>
<td>8</td>
<td>&lt;1</td>
<td>2</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>-</td>
</tr>
<tr>
<td>Access</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>&lt;1</td>
<td>-</td>
</tr>
<tr>
<td>Seating</td>
<td>5</td>
<td>-</td>
<td>&lt;1</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Wheelchair travel</td>
<td>3</td>
<td>-</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>&lt;1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>&lt;1</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>
Overall, vehicle adaptations might have had a positive effect on users. When fitted, the percentage of users reporting problems in a specific area was generally between 20% and 30% of all respondents with adaptations in that particular category (Appendix K). The exception to this was for vehicle-access adaptations, where 45% (n=22) of respondents with access adaptations had current problems with vehicle access. However, this was in the context of vehicle access creating more problems for all respondents than any other aspect of vehicle use.

Factors affecting adaptation choice

The importance of seven factors when choosing vehicle adaptations was rated by the respondents who reported using them. They were asked to rate the factors on a scale of one to ten, where one represented ‘not at all important’ and ten represented ‘extremely important’. Respondents indicated that the most important factors when choosing adaptations were finding solutions that were reliable and that were suitable for their physical needs (Table 3.8). It was notable that the deviation in rating scores was greatest when considering cost; this factor polarised opinion more than any other. The order of importance for these seven factors was identical to that reported by Blue Badge holders (Section 5).

3.3.9 Licence characteristics

Approximately one-fifth (21%, n=1,057) of all respondents below 70 years of age reported that DVLA reviewed their licence on a regular basis. (Upon reaching 70 years, a review is required by law every three years.) In the general population, approximately 28,000 drivers below 70 years with medical conditions are therefore believed to require regular licence reviews by DVLA (based on data from the DMG database).

Table 3.8 Importance of factors affecting choice of vehicle adaptations (rated by DVLA survey respondents)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Importance (mean rating)</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitability for physical needs (n=318)</td>
<td>9.57</td>
<td>1.59</td>
</tr>
<tr>
<td>Reliability (n=303)</td>
<td>9.24</td>
<td>1.85</td>
</tr>
<tr>
<td>Safety in the event of an accident (n=298)</td>
<td>9.08</td>
<td>2.08</td>
</tr>
<tr>
<td>Available quickly (n=298)</td>
<td>7.14</td>
<td>2.30</td>
</tr>
<tr>
<td>Available locally (n=295)</td>
<td>6.59</td>
<td>3.14</td>
</tr>
<tr>
<td>Cost (n=305)</td>
<td>5.85</td>
<td>3.35</td>
</tr>
<tr>
<td>Appearance (n=294)</td>
<td>3.67</td>
<td>2.83</td>
</tr>
</tbody>
</table>
The driving licences of 27% (n=1,478) of all respondents restricted them to vehicles equipped with automatic transmissions. Some 78% (n=1,359) of all respondents had no licence restriction codes relating to the adaptations listed in Table 3.9, and 69% (n=1,323) had none of these codes nor any requirement for automatic transmission. Most vehicle-restriction codes related to primary controls; most common in this sample was the code for a modified combined brake and accelerator (8%). The percentage of drivers reporting adaptations (23%, n=1,459) was the same as those reporting at least one of the codes listed in Table 3.9 (23%, n=1,359).

Table 3.9: All vehicle adaptations among respondents (percentage)

<table>
<thead>
<tr>
<th>Vehicle-restriction code</th>
<th>% (n=1,359)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the following codes</td>
<td>78</td>
</tr>
<tr>
<td>30 – modified combined brake and accelerator</td>
<td>8</td>
</tr>
<tr>
<td>40 – modified steering</td>
<td>6</td>
</tr>
<tr>
<td>25 – modified accelerator</td>
<td>5</td>
</tr>
<tr>
<td>10 – modified transmission</td>
<td>4</td>
</tr>
<tr>
<td>20 – modified brake</td>
<td>3</td>
</tr>
<tr>
<td>35 – modified control layouts</td>
<td>3</td>
</tr>
<tr>
<td>15 – modified clutch</td>
<td>2</td>
</tr>
<tr>
<td>42 – modified rear-view mirror(s)</td>
<td>2</td>
</tr>
<tr>
<td>43 – modified driver seat</td>
<td>1</td>
</tr>
<tr>
<td>9 – modified vehicle (non-Photocard licence only)</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

*Total percentage greater than 100 due to multiple codes among some respondents.

3.3.10 Experience of driving with a medical condition

Drivers were sampled for the survey from records of medical cases considered by DVLA between 2002 and 2003. It was therefore known that during this time drivers had either notified DVLA of a medical condition for the first time or had their licence status reviewed by DVLA because of their medical condition. Typically, respondents either began or returned to driving within three months of DVLA returning a decision on their licence (71%, n=1,384). Licences do not always have to be surrendered for DVLA to consider a medical case so it is also plausible that some of those who were driving within three months of receiving a decision never actually stopped driving in the first place; indeed, 9% of respondents specifically stated that they did not interrupt their driving. A smaller proportion (11%) delayed starting, or returning, to driving for between three and 24 months after receiving a decision on their licence. Very few (2%) waited for longer than two years (Figure 3.4).

There were also some respondents (7%) who neither started nor returned to driving (and do not currently drive). The few respondents with ‘other’ actions generally had had a medical case considered for a large
goods vehicle (LGV) licence rather than for a Category B vehicle. Starting or continuing to drive with a medical condition after receiving a decision from DVLA was easy for the majority of respondents (93%, n=1,184). For those who found it difficult (7%), the greatest problem was a lack of confidence (54%, n=76). The effects of increasing age and/or medical condition(s) also made it difficult for respondents to start or resume driving (37%). Vehicle adaptations also caused problems for some respondents because they were difficult to master (20%) or costly (13%). A range of other difficulties were reported by 8% of this group, including a lack of information, difficulty sourcing a suitable driving instructor, the cost of driving lessons and the time required to source and fit vehicle adaptations.

Respondents were asked to select factors that influenced their decision to return to driving from those items listed in Figure 3.5. The most common reason for respondents choosing to start or continue driving with a medical condition was the convenience of using a car (Figure 3.5). Another popular reason was not wanting to restrict one’s social life by not having transportation (cited by 51%, n=1,240), as well as the enjoyment that driving brings (50%). Of the ‘other’ reasons given for starting or returning to drive with a medical condition, the majority were motivated by a desire to remain independent. Other common reasons included avoiding the pain caused by walking and other modes of transport.
transport, or simply feeling healthy enough to
drive.

In 43% (n=1,240) of cases, respondents’
disabilities made it difficult for them to use
public transport. Two disabilities stood out for
making the use of public transport difficult.
Specifically, those with static limb disabilities
made up one-third (32%, n=529) of respondents
who started or returned to driving because
their disability made the use of public transport
difficult – despite people with limb disabilities
representing a much smaller proportion of all
survey respondents (2%, n=1,525; Table 3.10).
Some 23% (n=529) of respondents who started
or returned to driving because their disability
made the use of public transport difficult had
spinal injuries – again, higher than this group’s
overall representation in the survey (13%,
n=1,525). Conversely, among those who had
had a stroke or Parkinson’s, no more than half
of the represented proportion in the survey
indicated that they started or returned to driving
because their disabilities made using public
transport difficult.

3.3.11 Obtaining information about
driving with a medical condition

Three-quarters of respondents (75%, n=1,464)
obtained some information about driving with
their medical condition. The most commonly
used source of information was healthcare
professionals such as GPs, occupational
therapists and nurses (Figure 3.6). Second to
this was DVLA itself, including all literature
such as leaflets and driving licences as well
as websites such as dvla.gov.uk and direct.
gov.uk. Some of the ‘other’ unlisted sources
of information included: garages and vehicle
dealerships; insurers; Motability; employers;
and adaptation specialists. A quarter of
respondents (25%, n=1,464) did not get any
information about driving with their medical
condition.

Almost all of those who received
information were either satisfied with it or
did not have any opinion on it (90% and 9%
respectively, n=1,077). Very few respondents
(<2%) were dissatisfied because they felt
the information was difficult to find, not
sufficiently comprehensive or unclear.
However, 22% (n=1,393) would have liked
more information about driving with their
disabilities and would have welcomed:
• Advice on adaptations – including different
types, comfort, duration of fitment, process
of fitting, and places for sampling and
fitting. Advice/recommendations on all
issues from similarly affected drivers
(similar either in terms of adaptations or
disability, or both).

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>% finding public transport difficult (n=529)</th>
<th>Overall % surveyed (n=1,525)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limb disability – static</td>
<td>32</td>
<td>21</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>Arthritis</td>
<td>23</td>
<td>20</td>
</tr>
<tr>
<td>Spinal injury</td>
<td>23</td>
<td>13</td>
</tr>
<tr>
<td>Stroke</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Muscular dystrophy or atrophy</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>4</td>
<td>13</td>
</tr>
</tbody>
</table>

*Total percentage greater than 100 due to multiple disabilities among some respondents.
Data Gathering on Disability and Driving Statistics – Stage 2

- Advice on what financial support is available for adapting vehicles and where to apply for it.
- Advice on physical and non-physical factors related to driving with medical conditions (e.g. pain/fatigue management and confidence building).
- Advice on the legality of driving with medical conditions to be delivered at the point of diagnosis, and a wider awareness of one’s legal responsibility to inform DVLA of any medical problems to be generated.
- Advice on where to seek specialist tuition and advice on how to sensibly adapt as tuition is not always mandatory.
- Condition-specific advice on how to recognise and monitor safety-critical degeneration (e.g. eyesight, physical control, reactions) so driving can be postponed or stopped when it is no longer safe.
- Advice on insurance considerations when driving with a medical condition.
- A more comprehensive, easily accessible DVLA helpline, possibly locally sourced rather than central.

In general, the preference was for additional information to be presented in the form of a leaflet, although a dedicated helpline, website or team of advisers were all popular preferences too. Other suggestions for information provision included an email subscription service with regular updates, and an online forum and web-chat facility (staffed by knowledgeable advisers). Ideally, respondents felt that this information should be provided by disability-related groups, GPs and healthcare professionals, the NHS or DVLA. However, other suggested providers of information about driving with a medical condition included:
- Vehicle insurers and dealerships.
- Job advisers.
- The Post Office.
- The Driving Standards Agency.
- Local authorities.
- Driving schools/instructors.

3.3.12 Accidents
One-fifth of all respondents had at least one accident as a driver in the five years prior to the survey (Table 3.11). Accident severity was unspecified to encourage reporting and could have ranged from minor bumps to injurious accidents. Respondents mostly reported just one accident. As passengers, just 4% (n=1,090) were involved in accidents.

Using the survey results, in the five-year period prior to the survey an estimated 383,000 drivers may have had an accident as a driver and 86,000 as a passenger in a vehicle. Five respondents who had been involved in accidents thought that their vehicle adaptations may have contributed to the accident. Four explained why:
Incorrectly fitted adaptations caused accelerator to stick open.
Poorly located left-foot accelerator in an unsafe position.
Wheelchair not securely fixed in vehicle.
Hand slipped off steering knob when turning into a junction.

Six respondents felt that the adaptations fitted to their vehicles had contributed to the injuries sustained by occupants of the vehicle during an accident. However, just one respondent explained why, stating that their steering knob had contributed to their whiplash injuries, especially in their arm and neck.

4 Data gathering from existing sources on disability and driving

Existing data on disabled drivers were gathered from three different sources: UK records of Blue Badge holders; the NTS; and Motability client profiles. The findings from these sources are presented in this section.

4.1 Vehicle parking badge data

Blue Badges issued as part of the UK’s vehicle parking concessions scheme were first introduced (as Orange Badges) in 1971. They are most often made available to individuals with some form of functional impairment that hinders their ability to walk. Distribution of the vehicle parking badges (which have been blue since April 2000 to ensure they are recognised across Europe) is via Local Authority areas.

Each constituent country of the UK collects data on the number of badges issued by Local Authorities under their control. The level of detail gathered varies, although the figures describing the total population of Blue Badge holders are provided for this research study. Cumulative data recording the number of badges on issue in England, Wales, Scotland and Northern Ireland have been routinely collected over a number of years and represent a sizeable proportion of the disabled population within the UK. In Section 5, these data have been combined with findings from a survey of Blue Badge holders to provide further information on the characteristics of this disabled population using vehicles in the UK as drivers and/or passengers.

Blue Badge data for England were not originally provided by GOR; instead, the data from each Local Authority in England were arranged into five geographical areas. It was possible to redistribute the data into the nine GORs for comparison with population statistics and other data sources (e.g. Motability). Unfortunately, due to widespread changes in the organisation of Local Authority areas from 1998 onwards, it was not feasible to sort the data from years prior to 1998 into the current GORs.

4.1.1 Objectives

Data covering the number of vehicle parking badges on issue across the UK were collected. Where possible, such data were expected to provide:

1. The total number of badges on issue across the UK (by gathering current data from England, Scotland, Wales and Northern Ireland).
2. A regional breakdown of badges issued in each of the nine GORs across England.
3. Historical data for projecting annual trends by country.
4. The proportion of badges issued to individuals and to institutions (such as care homes and hospitals).
5. The proportion of badges issued to individuals under the three different categories of issue specified by Local Authorities. These categories are:

- **Category A**: Badges are granted in this automatic category to recipients of the Higher Rate Mobility Component (HRMC) of the Disability Living Allowance; recipients of Government-issued cars or grants towards cars; recipients of a vehicle supplied by the Department of Health; those registered blind; and recipients of the War Pensioners’ Mobility Supplement (WPMS).

- **Category B**: Badges are issued in this discretionary category to people with a permanent and substantial disability who are unable or almost unable to walk. Local Authorities award badges at their own discretion.

- **Category C**: Badges are granted to drivers with a severe upper limb disability in both upper limbs who cannot turn a steering wheel by hand even if fitted with a steering spinner.

**4.1.2 Results**

It was possible to gather data covering the total number of badges on issue in the UK. Cumulative data were available for England from the DfT, data for Scotland from the Scottish Executive, data for Wales from the Welsh National Assembly and data for Northern Ireland from the Roads Service, Northern Ireland. Statistics from Northern Ireland were not tabulated due to a lack of historical data. Current population data from the UK Census (2001) were also incorporated to provide the rate of badges issued each year, in each country, per 1,000 population (Figure 4.1). The proportion of badges issued to individuals and to institutions each year, for each country, was also calculated. Furthermore, where badges were issued to individuals, the proportion issued in each category was also calculated.

Northern Ireland used only categories A and B, while no data on category distribution was available for Wales. Supplementary data included: a regional breakdown for England by GORs; the number of badges currently

![Figure 4.1 Rate of badges on issue per 1,000 population for Great Britain](image)
issued to drivers by one Local Authority in Scotland; and the age and gender of badge recipients in Northern Ireland. Where there were limitations in the amount of data received, mean values have been used. This refers primarily to the categorisation of badges issued to individuals.

All three countries that provided data showed growth in the total number of badges on issue for each year (Table 4.1). Each year the net issue of Blue Badges in England, Wales and Scotland was greater than the previous year. Although data from Northern Ireland were not tabulated due to a lack of historical figures, current data were available; 76,772 badges were on issue as of January 2005, with 25,015 of these issued between 2003 and 2004. Given the limited historical data available for Wales and Northern Ireland, it was not possible at the time of reporting to provide a current UK total for the number of vehicle parking badges on issue at the end of 2004. However, using the most recent data for each country, there were approximately 2,580,000 badges on issue in 2004, equivalent to about 50 per 1,000 UK population. As not all data were comparable across countries, further data have been summarised within country, using the most recent figures available.

In addition to an overall growth in badge issue for England, Scotland and Wales, an accelerated rate of issue was noted for Wales (Figure 4.1). Wales issued at least an additional 25 badges per 1,000 population over England and Scotland from 2000 to 2003. (At the start of 2005, 45 per 1,000 population in Northern Ireland were in receipt of a Blue Badge.)

<table>
<thead>
<tr>
<th>Year</th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Badges (000s)</td>
<td>% change</td>
<td>Badges (000s)</td>
</tr>
<tr>
<td>1987</td>
<td>673</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1988</td>
<td>792</td>
<td>+18</td>
<td>-</td>
</tr>
<tr>
<td>1989</td>
<td>929</td>
<td>+17</td>
<td>-</td>
</tr>
<tr>
<td>1990</td>
<td>979</td>
<td>+5</td>
<td>-</td>
</tr>
<tr>
<td>1991</td>
<td>1,102</td>
<td>+13</td>
<td>-</td>
</tr>
<tr>
<td>1992</td>
<td>1,187</td>
<td>+8</td>
<td>-</td>
</tr>
<tr>
<td>1993</td>
<td>1,275</td>
<td>+7</td>
<td>-</td>
</tr>
<tr>
<td>1994</td>
<td>1,336</td>
<td>+5</td>
<td>-</td>
</tr>
<tr>
<td>1995</td>
<td>1,463</td>
<td>+10</td>
<td>-</td>
</tr>
<tr>
<td>1996</td>
<td>1,517</td>
<td>+4</td>
<td>-</td>
</tr>
<tr>
<td>1997</td>
<td>1,636</td>
<td>+8</td>
<td>134</td>
</tr>
<tr>
<td>1998</td>
<td>1,706</td>
<td>+4</td>
<td>145</td>
</tr>
<tr>
<td>1999</td>
<td>1,821</td>
<td>+6</td>
<td>170</td>
</tr>
<tr>
<td>2000</td>
<td>1,855</td>
<td>+2</td>
<td>180</td>
</tr>
<tr>
<td>2001</td>
<td>1,925</td>
<td>+4</td>
<td>196</td>
</tr>
<tr>
<td>2002</td>
<td>2,019</td>
<td>+5</td>
<td>210</td>
</tr>
<tr>
<td>2003</td>
<td>2,031</td>
<td>+1</td>
<td>217</td>
</tr>
<tr>
<td>2004</td>
<td>2,074</td>
<td>+2</td>
<td>224</td>
</tr>
</tbody>
</table>
England
Over the period 1998-2004, each GOR in England experienced a rise in badges issued per 1,000 population, which indicated that the population applying for a Blue Badge was increasing universally. Increases were greater in some areas than others; notably the North East, East of England and South West all recorded increases in badge issue of at least ten per 1,000 population. (A breakdown of vehicle parking badge distribution in the nine English GORs is provided in Appendix L.)

Nationally, the statistics also indicated over-and under-representation of Blue Badge holders in each region. London, East Midlands and the South East were all under-represented in terms of the number of badges issued per 1,000 population, with the national rate being 42 and these three regions last recording rates of 35, 39 and 34 respectively (Appendix L). The remaining six regions all achieved equal or above-average representation, with the North West recording a rate of 52 per 1,000 population, which was ten more than the national average rate.

The proportion of badges issued to individuals and institutions (e.g. care homes) remained relatively stable. Individuals received 98-99% of all badges issued each year from 1997 to 2004 (Appendix M).

Data recording badges issued to individuals across the three categories of distribution were incomplete. Some Local Authorities do not report badges issued in each category on an annual basis. A six-year mean therefore provided a better indication of the badge distribution in the three individual categories. From 1998 to 2004, an average of 37% of all badges were issued in Category A (automatic issue); 61% were issued in Category B (discretionary issue); and less than 0.1% (892 badges) were issued annually in Category C (severe upper limb disability).

Scotland
There was no regional breakdown of vehicle parking badges issued by Scottish Local Authorities. Badge issue to individuals and institutions remained stable from 1997 to 2004. Individuals received 98-99% of all badges, comparable with England over the same period (Appendix M).

As with the statistics for England, data on the number of badges issued to individuals in each category were also incomplete, with several Local Authorities reporting only the total number of badges issued for their area. Therefore, the mean percentage issued in each category from 1997 to 2004 was calculated: 51% of all badges were issued in Category A, 41% in Category B and 8% were not categorised. Just 95 badges were issued annually in Category C. It is interesting that from 1997 to 2003, fewer than 40 badges were issued annually in Category C, yet in 2004 this rose to 565 badges. It appears that the City of Glasgow Local Authority had not reported badge issue by category from 1997 to 2003 but did so in 2004, hence the sudden rise (and the use of means here).

Additionally, the City of Edinburgh Local Authority recorded the number of badges on issue to drivers and passengers. The data reported that 35% of the 16,300 Blue Badges in Edinburgh City went to drivers.

Wales
There was no regional division of Blue Badge data for Wales. From 2000 to 2003, 99% of all badges were issued to individuals rather than institutions (Appendix M). Further data on the allocation of badges in each category were not available. Badge issue per 1,000 population was notably higher than in England, Scotland and Northern Ireland, at 70 per 1,000 population (Figure 2.1).

Northern Ireland
As discussed, Northern Ireland had no historical data on Blue Badge issue, just the current total. Some 52% of all badges given to individuals were automatically allocated (equivalent to Category A). The remaining 48% were issued after ‘assessed eligibility’ (equivalent to Category B). There was no listed equivalent to Category C.

Unlike the data gathered by the rest of the UK, Northern Ireland also provided gender distribution (42% male, 57% female and 1% ‘other’) and age distribution (2% were 2-18 years, 36% were 18-64 years and 61% were 65 years or above).
4.1.3 Summary
For England and Scotland, the historical data on badge issue allowed growth rates for these populations to be predicted (Section 5).

There were several constraints on how relevant vehicle parking badge data were when considering the total population of disabled drivers. Primarily, badges issued on the basis of Government mobility benefits restrict the sample to those with physical impairments that limit walking capability. This provides fewer opportunities for someone with a cognitive impairment to qualify. Some badges are issued to people who are registered blind, or deaf and blind, and therefore are not eligible drivers. Moreover, the Disability Living Allowance (DLA) is only open to applicants under 65 years of age, thus limiting the data to those who claim for disabilities before they reach 65 (those receiving DLA once they turn 65 can continue to do so until it is no longer required). However, concerns regarding a lack of representation among those over 65 years of age are probably unfounded; demographics from Northern Ireland confirmed that the majority of badge holders in that area were over 65 years of age (61%). It should also be noted that some badges are issued on a discretionary basis (Category B), on the understanding that the applicant has difficulty walking a certain distance because of their impairment. It was assumed that many elderly (i.e. over 65 years of age) and infirm individuals received badges through Category B as a result of reduced mobility. This captures functional, age-related impairments. Moreover, this discretionary issue captures those individuals who were not eligible for DLA or did not claim it.

4.2 National Travel Survey data
The NTS monitors changes in travel behaviour over time. Since 1988, the NTS has become a continuous survey based on monthly fieldwork, collected from interviews and travel diaries from 5,000 households per annum. Survey data are collected using face-to-face interviews and weekly travel diaries. Several thousand private households are randomly selected by postcode each year to provide a nationally representative sample of Great Britain.

The NTS has provided statistics to cover the age, gender and mileage of drivers that are recorded as ‘disabled’ (defined as any driver who has difficulties walking or using a bus). Data were considered against the wider context of licensed drivers and household vehicle ownership.

4.2.1 Objectives
NTS data were used to compare disabled drivers with the national driving population, with the following specific objectives:

- To compare, by age and gender, the number of licensed disabled drivers against the national population of driving licence holders.
- To compare, by age and gender, the annual and weekly mileages of disabled drivers against the national driving population.

4.2.2 Results
The data holder of the NTS, the National Centre for Social Research, tabulated the number of disabled drivers and their respective mileage, sorted by ten-year age bands and gender. Comparative data for the total driving population in Great Britain were provided.

The NTS defines a ‘disabled driver’ as any licensed driver who has difficulty going out on foot or using a bus. The qualifying criteria for these items centre on poor health and/or reduced functional mobility.

Number of disabled drivers
There were approximately 320,000 NTS-defined disabled drivers in Great Britain (i.e. drivers with difficulty travelling by bus or by foot due to poor health or impairment). This was calculated from survey data collected from 1995 to 2003. Of the total number of NTS disabled drivers, 61% were male. The number of disabled drivers rose with age (Figure 4.2), although the growth in numbers of male drivers continued whereas the number of female drivers reached a plateau at 60-69 years of age.

Comparing NTS disabled drivers with the general driving population in Great Britain showed that the reverse was true: up to the age of 40 there was sustained growth in drivers followed by a steady decline, whereas the total number of disabled drivers continued to rise.
with age (Figure 4.3 vs. Figure 4.2). However, the ratio of males to females in the general driving population was more even (53% of licensed drivers were male).

Figure 4.4 illustrates the age and gender distribution of disabled drivers as a percentage of the total driving population in Great Britain, split by gender and ten-year age bands. **Overall, disabled drivers as defined by the NTS account for 0.9% of Great Britain’s licensed population.** The percentage of disabled drivers in the licensed population rose with age, with disabled male drivers accounting for a slightly greater proportion of all male drivers in all but the youngest age bands when compared with the respective number of female disabled drivers as a proportion of the total female driving population. The disparity between the respective proportions of male and female disabled drivers was greatest from 50 to 69 years, when the proportion of male disabled drivers grew more than the comparative female proportion.

**Mileage of disabled drivers**

Of the total annual mileage travelled by disabled male drivers, 87% of the distance was covered by car. For female disabled drivers, 89% was by car (Table 4.2). This was greater than the proportion of miles travelled by car for the overall male and female population.
licensed population, which was 75% and 78% respectively.
Table 4.2 shows the annual mileage travelled by car for disabled male and female drivers as a total and as a percentage of their overall mileage using all modes of transport. Mileage was provided for three age bands and comparison figures have been included for the total GB licensed population. Total annual car mileage was higher for both male and female disabled drivers than it was for the respective groups in the overall driving population. Unfortunately, the NTS makes its calculations for disabled drivers using small samples collected to provide continuously updated results. This means it was not possible for the NTS to provide annual figures for licence holding and mileage with any accuracy (for the calculation of annual trends in growth for the disabled population), just as it was also not possible for them to sub-divide the sample into a greater number of age bands or to assess the distribution of the disabled driving population geographically.

4.3 Motability data
Motability is an independent, not-for-profit organisation, which provides mobility solutions for disabled people. These include new cars on three-year contract hire schemes or new/used cars on hire purchase over a two- to five-year term. It has a client base of approximately 400,000. Some vehicles are fitted with adaptations to suit customers’ needs and charitable financial support is available for those who are unable to fund adaptations. Customers are eligible for the Motability scheme if they are in receipt of either the HRMC of DLA or the WPMS. Motability’s eligibility criteria are important.

Table 4.2: Annual mileage by car for disabled drivers, by age and gender, compared with GB population (1995-2003 GB averages)

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Male disabled</th>
<th>All male drivers</th>
<th>Female disabled</th>
<th>All female drivers</th>
<th>All disabled</th>
<th>All drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-29</td>
<td>5,345 (88)</td>
<td>4,159 (68)</td>
<td>5,553 (87)</td>
<td>4,836 (76)</td>
<td>5,449 (87)</td>
<td>4,498 (72)</td>
</tr>
<tr>
<td>30-59</td>
<td>7,025 (86)</td>
<td>5,596 (77)</td>
<td>6,992 (92)</td>
<td>4,029 (75)</td>
<td>7,009 (89)</td>
<td>4,813 (76)</td>
</tr>
<tr>
<td>60+</td>
<td>4,654 (88)</td>
<td>3,508 (79)</td>
<td>6,039 (89)</td>
<td>4,519 (84)</td>
<td>5,347 (89)</td>
<td>4,014 (82)</td>
</tr>
<tr>
<td>Average</td>
<td>5,675 (87)</td>
<td>4,421 (75)</td>
<td>6,195 (89)</td>
<td>4,461 (78)</td>
<td>5,471 (88)</td>
<td>4,640 (78)</td>
</tr>
</tbody>
</table>
Applicants are only accepted onto the scheme if they are in receipt of the following Government benefits:

- **HRMC of DLA**: To qualify for this benefit, an individual must:
  - Be unable or virtually unable to walk; or
  - Have no feet or legs; or
  - Be both deaf and blind; or
  - Be severely mentally impaired with severe behavioural problems; or
  - Be endangering their health or life; or
  - Need help with getting around out of doors.

People need to be under 65 years of age to qualify for DLA but, once awarded, they may continue to receive DLA past the age of 65 as long as their needs stay the same.

- **WPMS**: To qualify for this benefit, an individual will need to be in receipt of a war pension and be unable to walk or have difficulty walking. Disablement can be due to a number of causes, although to qualify for the WPMS, the level of disablement must be 40% or greater. In addition, those who are 80% blind and at least 80% deaf also qualify.

These qualifying criteria should be noted when considering data from Motability as clients may not be representative of the overall disabled population using private motor vehicles as drivers and/or passengers.

### 4.3.1 Objectives
Motability provided data describing its existing client base. From this data, the objectives were to obtain:

- The total number of Motability clients on car-based schemes and their demographics (age, gender, location, disability, ethnicity).
- The number and ages of customers that drive themselves.
- The number of adapted vehicles and adaptation types fitted.
- Any supplementary data to further describe Motability clients.

### 4.3.2 Results
Motability provided cumulative figures and percentages for current clients. Accident information and risk data could not be disclosed. The following statistics were extracted from Motability customer profiling studies (Motability Customer Profile Survey (2005); unpublished).

**Number of clients and key demographics**
From December 2004, 387,302 current Motability clients used a motor vehicle as either a driver or a passenger (Table 4.3). This cumulative total excluded the average number of agreements terminating early or expiring each month. In the second half of 2004, Motability’s client base increased by an average of 1,191 clients per month across all schemes.

The majority of clients in the contract hire scheme (the vast majority of all Motability customers) were aged 45–64 years, with a third above 65 years and less than one-quarter below 45 years.

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Scheme size</th>
<th>Agreements going live by month</th>
<th>Full/extended term agreements expiring or terminating early</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract hire</td>
<td>368,859</td>
<td>13,965</td>
<td>13,895</td>
</tr>
<tr>
<td>Extended contract hire agreements</td>
<td>Included above</td>
<td>2,883</td>
<td>1,926</td>
</tr>
<tr>
<td>Hire purchase (new cars)</td>
<td>7,301</td>
<td>104</td>
<td>206</td>
</tr>
<tr>
<td>Hire purchase (used cars)</td>
<td>11,142</td>
<td>479</td>
<td>213</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>387,302</strong></td>
<td><strong>17,431</strong></td>
<td><strong>16,240</strong></td>
</tr>
</tbody>
</table>

45 years (Table 4.4). Most clients were middle-aged or older. Although one of the two qualifying criteria is only open to applicants under 65 years (the HRMC of DLA), in excess of 100,000 current clients were over 65 and clearly applied for DLA before becoming 65.

Comparison with UK population figures for the period indicates that clients under 45 years were under-represented in the scheme compared with the general population (22% against a UK figure of 52%), whereas clients above 45 years were over-represented in the scheme by an average of 5% compared with the UK population. However, there were roughly equal proportions of male (53%) and female (47%) clients within the contract hire scheme.

England accounted for the largest proportion of Motability clients (80% in total, contract hire scheme only), spread across nine GORs (with East and West Midlands combined). In England, the highest proportion of Motability clients was based in the combined Midlands region (21%). Of the single GORs in England, the North West had the highest percentage of Motability clients (13%) and London the fewest (2%). Scotland, Wales and Northern Ireland had 12%, 5% and 3% of Motability clients respectively (Table 4.5).

Table 4.6 shows the incidence of a range of disabilities among a small sample of Motability clients (n=484). Motability did not

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Number in contract hire scheme (n=368,859)</th>
<th>% of contract hire car scheme</th>
<th>% of UK population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 45</td>
<td>81,149</td>
<td>22</td>
<td>52</td>
</tr>
<tr>
<td>45-64</td>
<td>165,987</td>
<td>45</td>
<td>29</td>
</tr>
<tr>
<td>65+</td>
<td>121,723</td>
<td>33</td>
<td>19</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Geographical location</th>
<th>% of contract hire car scheme (n=368,859)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midlands (East and West)</td>
<td>21</td>
</tr>
<tr>
<td>North West England</td>
<td>13</td>
</tr>
<tr>
<td>Yorkshire and The Humber</td>
<td>12</td>
</tr>
<tr>
<td>South West England</td>
<td>10</td>
</tr>
<tr>
<td>South East England (excluding London)</td>
<td>10</td>
</tr>
<tr>
<td>North East England</td>
<td>7</td>
</tr>
<tr>
<td>East of England</td>
<td>4</td>
</tr>
<tr>
<td>London</td>
<td>2</td>
</tr>
<tr>
<td>England (total)</td>
<td>80</td>
</tr>
<tr>
<td>Scotland</td>
<td>12</td>
</tr>
<tr>
<td>Wales</td>
<td>5</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>3</td>
</tr>
</tbody>
</table>

have extensive records of client disabilities; these data were collected as part of a customer satisfaction survey in 2004. The four most prevalent disabilities were, in order of prevalence: arthritis (including osteo arthritis and rheumatoid arthritis); back problems; heart problems; and respiratory disabilities. Only a small percentage of disabilities appeared to be cognitive-based impairments, indicating a strong bias towards physical impairment among clients. This was expected given the qualifying criteria for the scheme.

In another 2004 customer satisfaction survey conducted by Motability, 483 customers were asked to give their ethnicity. The number of white clients far exceeded the number of non-white clients. All other ethnic groups except for mixed race were represented in the survey by one or zero clients. This made it difficult for Motability to draw conclusions about the representation of different ethnic minorities within their scheme, except for making the following observations:

- White people comprised 98% of scheme use.
- The proportion of non-white customers was lower than the UK total, with totals not exceeding 8,000 out of 368,000 users.
- The proportion of non-white people in the UK population was 7.9% while within the scheme it was just 2%.
- Among non-white customers, Asians were under-represented.

Table 4.6 Incidence of disability among a sample of current Motability clients in receipt of a motor vehicle

<table>
<thead>
<tr>
<th>Disability (car scheme only)</th>
<th>% (n=484)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthritis – osteo and rheumatoid</td>
<td>35</td>
</tr>
<tr>
<td>Back problems</td>
<td>23</td>
</tr>
<tr>
<td>Heart condition/stroke/angina/arterial disease</td>
<td>21</td>
</tr>
<tr>
<td>Respiratory incl. asthma/emphysema/bronchitis</td>
<td>13</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>6</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>5</td>
</tr>
<tr>
<td>Congenital condition</td>
<td>5</td>
</tr>
<tr>
<td>Diabetes</td>
<td>4</td>
</tr>
<tr>
<td>Paralysis and restricted movement</td>
<td>4</td>
</tr>
<tr>
<td>Neurological</td>
<td>4</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>3</td>
</tr>
<tr>
<td>Injury sustained through accident</td>
<td>6</td>
</tr>
<tr>
<td>Blood/circulation</td>
<td>3</td>
</tr>
<tr>
<td>Autism/special needs</td>
<td>3</td>
</tr>
<tr>
<td>Cancer</td>
<td>3</td>
</tr>
<tr>
<td>Liver/kidney/renal</td>
<td>2</td>
</tr>
<tr>
<td>Spina bifida</td>
<td>1</td>
</tr>
<tr>
<td>Polio</td>
<td>1</td>
</tr>
<tr>
<td>Amputation</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
</tr>
</tbody>
</table>

*Total percentage greater than 100 due to multiple disabilities among some survey respondents

Number of disabled driver-customers

Although Motability was unable to grant access to its insurance database for this study, it did provide data on the number of clients insured to drive themselves. Motability often grants vehicles to clients who are unable to drive, allowing them to nominate up to two other people to be insured and drive on their behalf. Therefore, the number of disabled drivers is not equal to the number of insured drivers.

The age distribution for all clients and for driver-customers was comparable, with most drivers aged 50+ (78%). At ages 16-20 and 20-24 years, the proportion of drivers was less than 1%, confirming that the older the client, the more likely they were to drive (Table 4.7).

Clients only accounted for 39% of all insured drivers within the scheme, indicating that the majority were driven by someone else either all or some of the time. (Insured drivers do not have to be Motability clients and can be family, friends or carers nominated by the client as a driver.) However, 70% of all Motability clients were insured to drive themselves.

Types of adaptations

In 2004, 3,642 clients requested financial help with the fitment of vehicle adaptations. Some 22% of those clients obtained ‘heavy adaptations’ such as ramps, lifts and complex driving controls, whereas 78% obtained ‘light adaptations’ such as hand controls, steering spinners, pedal modifications and hoists. Table 4.8 provides a description of the most commonly fitted adaptations (regardless of whether financial support was provided) and how common such fitments were among all vehicles adapted within the Motability scheme. The statistics were compiled from a customer satisfaction survey conducted by Motability in 2002, for which 550 clients with vehicle adaptations were interviewed.

Hand controls were used most frequently, accounting for over half of all fitments (Table 4.8). Steering spinners were the second most frequent fitment accounting for almost one-third of all adaptations. Motability estimated that the overall incidence of vehicle adaptation across its fleet was 7%, equal to approximately 27,000 adapted vehicles.

Mileage with Motability

Most clients travelled 13,000-36,000 miles during a three-year period, equivalent to an average annual mileage of 8,000 miles for 75% of all clients (contract hire scheme only; Table 4.9). This compared with 5,000 miles annually for all drivers (based on NTS data). Almost all miles travelled were for social, domestic or pleasurable reasons, with only 0.6% being insured for low-level business use.

4.3.3 Summary

Most Motability clients were aged 45 years or above (over 50 for driver-customers). Their client base was growing by 1,200 per month (over a six-month period). Clients were primarily located in England, with most in the North West and the East and West Midlands. London had fewest clients, attributed to a high concentration of accessible transport, relatively localised municipal and medical services, and parking difficulties, prompting little need for a vehicle within the capital.

Table 4.7 Number of current Motability clients insured to drive themselves, by age

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Number of clients insured to drive themselves</th>
<th>% of sample (n=271,456)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-20</td>
<td>816</td>
<td>0.3</td>
</tr>
<tr>
<td>21-24</td>
<td>1,360</td>
<td>0.5</td>
</tr>
<tr>
<td>25-29</td>
<td>2,720</td>
<td>1</td>
</tr>
<tr>
<td>30-49</td>
<td>54,400</td>
<td>20</td>
</tr>
<tr>
<td>50+</td>
<td>212,160</td>
<td>78</td>
</tr>
<tr>
<td>Total</td>
<td>271,456</td>
<td>100</td>
</tr>
</tbody>
</table>
Ethnic distribution within the Motability client base indicated that non-white ethnic groups were under-represented within the scheme. Although conducted with a small sample size, the extremely low representation of non-white ethnic groups was unlikely to have been due to response bias as the survey results were obtained via telephone interviews rather than self-completion questionnaires.

Motability clients should all qualify for Blue Badges under Category A entitlement. This clear interrelation between Motability clients and Blue Badge holders did, however, make it difficult to identify if Motability clients would already be accounted for in the Blue Badge data. It was unclear how much Motability data would add to existing data sources; instead, it appeared to contribute further information to describe a subset of Blue Badge holders and DVLA-listed drivers with medical conditions.

5 Survey of Blue Badge holders

Vehicle parking concession badges have been issued since 1971 to individuals who have some form of impairment that hinders their ability to walk. The current scheme distributes Blue Badges to qualifying individuals via Local Authorities. Using the most recent data for the UK (provided in Section 4), there were approximately 2,580,000 badges on issue, equivalent to approximately 50 per 1,000 UK population. As such, this is one of the largest known datasets of disabled people in the UK who are likely to access privately owned vehicles.

5.1 Objectives

Although the size and location of the Blue Badge population has been thoroughly documented, further information on the

Table 4.8 Types of vehicle adaptations fitted to the Motability fleet (2002)

<table>
<thead>
<tr>
<th>Adaptation</th>
<th>% of clients (n=550)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand controls</td>
<td>51%</td>
</tr>
<tr>
<td>Steering spinner</td>
<td>31%</td>
</tr>
<tr>
<td>Left-foot accelerator</td>
<td>17%</td>
</tr>
<tr>
<td>Hoist</td>
<td>14%</td>
</tr>
<tr>
<td>Seat conversion</td>
<td>10%</td>
</tr>
<tr>
<td>Lightened power-assisted steering</td>
<td>8%</td>
</tr>
<tr>
<td>Infra-red</td>
<td>4%</td>
</tr>
<tr>
<td>Ramp for a wheelchair</td>
<td>4%</td>
</tr>
<tr>
<td>Other</td>
<td>8%</td>
</tr>
</tbody>
</table>

*Total percentage greater than 100 as some vehicles had more than one adaptation.


Table 4.9: Mileage of current Motability clients over a three-year period

<table>
<thead>
<tr>
<th>Mileage</th>
<th>% of clients within contract hire scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-12,000</td>
<td>14%</td>
</tr>
<tr>
<td>13,000-24,000</td>
<td>39%</td>
</tr>
<tr>
<td>25,000-36,000</td>
<td>36%</td>
</tr>
<tr>
<td>37,000+</td>
<td>10%</td>
</tr>
</tbody>
</table>
driving experiences of these individuals has not been collected. Nor is it known how many people holding Blue Badges are able to drive. Therefore, a sample of this population was surveyed so that the data could be used as an indicator of the number and characteristics of the disabled population using vehicles in the UK as drivers and/or passengers. This survey had a number of specific objectives to explore, including:

1. The proportion of drivers and passengers in the Blue Badge population.
2. The demographics of the Blue Badge population (age, gender, ethnicity).
3. The range of disabilities within the Blue Badge population.
4. The differences in licence status among Blue Badge holders.
5. The mileage travelled by Blue Badge holders.
6. The different types of vehicle adaptations used by Blue Badge holders and experiences/opinions regarding adaptation usage.
7. Accident involvement among Blue Badge holders and the perceived contribution of vehicle adaptations to accidents and occupant injuries.

5.2 Method
A self-completion questionnaire (Appendix N) was used to survey 5,000 Blue Badge holders across the UK. The questionnaire asked about:

- Driving experience, including licence status/restrictions and mileage.
- The use of vehicle adaptations and opinions/experiences of these.
- Accident involvement and the perceived contribution of vehicle adaptations to accidents or injuries.
- The demographic status of each respondent.

A covering letter (Appendix P) was included with the questionnaire to explain to recipients the purpose of the survey and to assure them that their entitlement to a Blue Badge would not be affected by responding.

Survey materials were packaged and distributed equally to ten different Local Authorities within the UK. Each Local Authority addressed its allocation of questionnaires to a random selection of current Blue Badge holders (a badge is valid for three years). Questionnaires were not sent to those applying for their first Blue Badge to ensure that respondents would have relevant experience as Blue Badge holders.

The ten participating Local Authorities were chosen because they covered a broad range of geographical areas. Seven Local Authorities were chosen to represent England (Oxfordshire, Cornwall, Gloucestershire, Derby, Northumberland and the London Boroughs of Sutton and Wandsworth), one was chosen from Scotland (Edinburgh City) and one from Wales (Swansea). Finally, the whole of Northern Ireland was sampled as Blue Badges were distributed centrally. Completed questionnaires were returned directly to TRL in pre-paid reply envelopes.

5.3 Results
5.3.1 Response rate
Questionnaires were received from Blue Badge holders across ten different Local Authorities. Table 5.1 shows the response rate for each Local Authority. The overall response rate was 34% (n=5,000).

5.3.2 Drivers and passengers
Of the 1,710 Blue Badge holders who returned the questionnaire, slightly less than half (48.5%) travelled by car or van as drivers and 51% travelled by car or van as passengers. The remaining eight (0.5%) reported that they did not currently travel by car or van. For the purposes of this report, estimates for the UK population of Blue Badge holders can be made using data collected up to 2004: the approximate number of Blue Badge holders in the UK at that time was 2,580,000. Therefore, the UK population holding Blue Badges (Table 5.2) was estimated to comprise slightly more passengers (1.31 million) than drivers (1.25 million).

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10 Those respondents who indicated that they travelled as a ‘driver only’ (and never as a passenger) and those who travelled as ‘both a driver and a passenger’ were combined and referred to as ‘drivers’.
11 This group included respondents who indicated that they only travelled as passengers and is referred to as ‘passengers’.
12 This number reflects data collected in 2004 (Section 4.1).
In addition, a small number of Blue Badge holders (approximately 13,000) were believed to not actively travel by private motor vehicle.

### 5.3.3 Age and gender

The mean age of all Blue Badge holders responding to the survey was 68 years. The average age of those who drive was statistically significantly lower than that of passengers (65.3 years and 70.5 years respectively). Among respondents who drove, most were over 70 years (40%, n=805), with lower percentages in the younger age brackets of 17-29 years, 30-39 years, 40-49 years, 50-59 years and 60-69 years (1%, 3%, 10%, 16% and 31% respectively). There was a higher percentage of older drivers with Blue Badges in comparison with drivers listed on the DVLA DMG database and responding to the DVLA survey. Drivers with Blue Badges were, comparatively, an older population.

Overall, there were more females (59%, n=1,661) in the surveyed sample. Significantly more females were passengers (Table 5.3). Correspondingly, significantly more males were drivers (61%, n=814). A similar pattern

### Table 5.1 Response rate for each Local Authority

<table>
<thead>
<tr>
<th>Local Authority</th>
<th>Questionnaires issued</th>
<th>Questionnaires returned</th>
<th>Response rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloucestershire</td>
<td>300</td>
<td>138</td>
<td>46</td>
</tr>
<tr>
<td>Oxfordshire</td>
<td>500</td>
<td>215</td>
<td>43</td>
</tr>
<tr>
<td>Northumberland</td>
<td>500</td>
<td>202</td>
<td>40</td>
</tr>
<tr>
<td>Edinburgh City</td>
<td>500</td>
<td>197</td>
<td>39</td>
</tr>
<tr>
<td>Cornwall</td>
<td>700</td>
<td>234</td>
<td>33</td>
</tr>
<tr>
<td>Derby City</td>
<td>500</td>
<td>156</td>
<td>31</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>500</td>
<td>148</td>
<td>30</td>
</tr>
<tr>
<td>Swansea</td>
<td>500</td>
<td>153</td>
<td>30</td>
</tr>
<tr>
<td>Sutton (London Borough of)</td>
<td>500</td>
<td>136</td>
<td>27</td>
</tr>
<tr>
<td>Wandsworth (London Borough of)</td>
<td>500</td>
<td>131</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5,000</strong></td>
<td><strong>1,710</strong></td>
<td><strong>34</strong></td>
</tr>
</tbody>
</table>

*An additional 200 questionnaires were distributed by Cornwall as this Local Authority had greater resources whereas Gloucestershire only had resources to distribute 300 questionnaires.

<table>
<thead>
<tr>
<th>Travel status (private vehicles)</th>
<th>Estimated number in UK Blue Badge population (000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers</td>
<td>1,251*</td>
</tr>
<tr>
<td>Passengers</td>
<td>1,315</td>
</tr>
<tr>
<td>Not currently travelling</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,579</strong></td>
</tr>
</tbody>
</table>

*An estimated 1.337 million drivers listed on the DVLA DMG database had Blue Badges, or 1.131 million active drivers (Section 3.3.5).
was observed when looking at data collected in Section 4.2.2 from the NTS. Using the NTS definition of a disabled driver, there were a total of approximately 320,000 disabled drivers in Great Britain (from survey data collected between 1995 and 2003). Although the total number of drivers classified as disabled by the NTS was approximately a quarter of the number estimated within the Blue Badge population, it is worth noting that the NTS definition of a disabled driver was quite prescriptive (i.e. a driver who expresses difficulty travelling by bus or by foot due to poor health or impairment). In spite of this difference, of the total number of disabled drivers identified by the NTS, an identical 61% were male.

A similar gender distribution was not observed when analysing the DVLA DMG database. However, the predominance of males (75% of all listed drivers) was likely to be a product of specific medical conditions being more frequently applied to male drivers (such as alcohol misuse).

When used to describe the total UK Blue Badge population, the survey data suggested that the vast majority of Blue Badge holders were over 40 years of age – and most were over 60 (Figure 5.1). Up to 70 years, badges were almost evenly distributed by gender. However, beyond the age of 70, almost twice as many females held Blue Badges.

Further age and gender differences were observed in the driving status of Blue Badge holders (Figure 5.2). From 17 to 59 years of age, similar numbers of males and females were estimated to hold Blue Badges as drivers. However, from 60 years of age, twice as many male Blue Badge holders were estimated to be drivers than females. So while there were more female Blue Badge holders above 70 years of age, there were still approximately two male Blue Badge holders who drove for every one female who drove beyond the age of 60 years. A similar pattern of results was also observed in the data collected from the NTS (Figure 5.3).

NTS data on the total driving population in Great Britain were also collected and presented in Section 4.2. NTS data have been used here to present the estimated numbers of drivers holding Blue Badges in Great Britain as a percentage of the total licensed population, by both age and gender (Figure 5.4). Although the survey data estimated that more male Blue Badge holders were drivers than females, when expressed as a percentage of all drivers in Great Britain the gender distribution of drivers was relatively equal. The exception to this was between the ages of 60 and 69 years, when the percentage of driving males with Blue Badges was higher than for similarly aged females. Another observation was the general rise in the percentage of disabled drivers with age, from less than 1%

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13 Survey data from respondents in Northern Ireland was deducted to provide the number of drivers holding Blue Badges in Great Britain so it could be expressed as a percentage of the licensed GB population. There was no indication that Blue Badge holders in Northern Ireland had significantly different demo-graphics to the GB samples.
of all licensed drivers below the age of 40 years to 9% of those aged 60-69 years and 17% of those aged 70 years and above. This distribution closely matched the estimated percentages of disabled drivers for each age band according to the NTS (Figure 5.5). However, the overall percentage of the licensed population estimated to be disabled was four times greater when using data from the Blue Badge survey (at 4%) than when using data from the NTS (at 1%).

Although the Blue Badge population held more passengers, several thousand were below the legal driving age. Among non-drivers, the distribution of badges differed with a high female representation – there were between two and five times as many females above 40 years (Figure 5.6).

**Figure 5.1** Estimated number of Blue Badge holders by age and gender (UK estimate)

**Figure 5.2** Estimated number of drivers in Blue Badge population by age and gender (UK estimate)
Figure 5.3 Number of disabled drivers from the NTS by age and gender

Figure 5.4 Drivers holding Blue Badges in Great Britain as a percentage of the total GB licensed population, by age and gender (NTS 1995-2003 averages)
**Figure 5.5** Disabled drivers (NTS definition) as a percentage of all GB licensed drivers, by age and gender (NTS 1995-2003 averages)

**Figure 5.6** Estimated number of passengers in total Blue Badge population, by age and gender
5.3.4 Ethnicity
White respondents accounted for 97% (n=1,636) of the sample. The survey data indicated that representation of minority ethnic populations was lower within the Blue Badge population than in the total UK population (Appendix J). This was similar to the ethnic distribution of respondents to the DVLA survey (Section 3). Motability also uncovered a similarly low representation of minority ethnic groups within their client base (Motability Customer Profile Survey (2005); unpublished). However, Motability chose not to draw firm conclusions from its survey as it acknowledged that a larger sample size may have revealed different results. This may also be true of the Blue Badge survey, and it should also be noted that as the survey was paper based, it did depend upon a certain level of English literacy and this may have attributed to some non-response among minority ethnic groups whose first language was not English.

5.3.5 Mileage
On average, respondents travelled 6,337 miles in their car or van during the 12-month period prior to the survey (Table 5.4). Drivers travelled an average of 6,546 miles whereas passengers travelled slightly more than half that distance (an average of 3,577 miles).

Disabled drivers responding to the survey of Blue Badge holders were, on average, driving further than those disabled drivers who were sampled for the NTS. On average, male Blue Badge holders drove further than male disabled drivers sampled for the NTS, although the reverse was true for females. Although gender differences were not consistent between the two samples of disabled drivers from the NTS and from the Blue Badge survey, both samples did indicate that the average annual mileage for disabled drivers was greater than the average travelled by all drivers in the population. However, mileage estimates can be unrealistic and actual differences between these groups may vary.

5.3.6 Disabilities
Survey respondents were invited to offer open details of their disability, or disabilities, and these were subsequently coded for analysis. Some respondents described symptoms rather than a specific medical condition so the incidence of certain disabilities may be distorted by the level of information provided by each client. A large number of clients reported general mobility difficulties (such as being unable to walk very far) that may or may not have been a result of more specific disabilities. These respondents were recorded as having ‘functional’ disabilities.

There were six prevalent disabilities among the Blue Badge survey respondents. They were, in order of prevalence: arthritis; restricted movement; heart condition; back problems; respiratory problems; and functional disability.

Although vision impairments were prevalent among respondents who travelled as passengers (12.7%, n=820), only 0.4% of

<p>| Table 5.4 Mean mileage of Blue Badge holders compared with disabled drivers and all drivers (NTS 1995-2003 averages) |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|</p>
<table>
<thead>
<tr>
<th>Age (years)</th>
<th>NTS</th>
<th>Male</th>
<th>Female</th>
<th>Blue Badge</th>
<th>Male</th>
<th>Female</th>
<th>All drivers (NTS)</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-29</td>
<td></td>
<td>5,345</td>
<td>5,553</td>
<td>n/a*</td>
<td>n/a*</td>
<td></td>
<td>4,159</td>
<td>4,836</td>
<td></td>
</tr>
<tr>
<td>30-59</td>
<td></td>
<td>7,025</td>
<td>6,992</td>
<td>7,831</td>
<td>6,467</td>
<td></td>
<td>5,596</td>
<td>4,029</td>
<td></td>
</tr>
<tr>
<td>60+</td>
<td></td>
<td>4,654</td>
<td>6,039</td>
<td>6,938</td>
<td>4,164</td>
<td></td>
<td>3,508</td>
<td>4,519</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>5,675</td>
<td>6,195</td>
<td>7,385</td>
<td>5,316</td>
<td></td>
<td>4,421</td>
<td>4,461</td>
<td></td>
</tr>
</tbody>
</table>

*Due to a low response rate for this age band, mean mileage could not be provided.
respondents who travelled as drivers reported vision impairments. Another disability where differences were observed between respondents depending on their driving status was back problems, with 17% of drivers reporting back problems but only 5.5% of passengers doing so. Differences in the incidence of certain disabilities among drivers and passengers within the sample provides some insight into some of the conditions that generally permit driving and those that perhaps prevent driving.

Table 5.5 shows the incidence of disability among the whole sample of Blue Badge holders and among drivers and passengers separately. The incidence of disability among Motability clients provides a point for comparison. Overall, Motability clients reported similar incidences of disability; arthritis, heart, back and respiratory problems were similarly prevalent disabilities within this sample. Other differences in the incidence of disability between Motability clients and Blue Badge holders could be due to some Motability clients having more specific mobility needs than Blue Badge holders or perhaps a result of the different qualifying criteria for the two schemes.

The distribution of disabilities among Blue Badge holders within the surveyed sample was used to provide estimates of the overall number of Blue Badge holders driving with certain conditions (Table 5.6). For example, according to these data, almost half a million Blue Badge holders are estimated to be driving with arthritis.

5.3.7 Licence restrictions

Of all drivers responding to the survey, the majority (59%, n=829) drove without restricted licences. The licences of 8% required regular review by DVLA (at least yearly) for reasons other than age. A further 23% of drivers also had regular licence reviews but these were attributed to being above 70 years of age. Some 8% were restricted to vehicles with automatic transmission only, while 3% were restricted to driving adapted vehicles. A further 2% stated that their driving licence had ‘other’ (unspecified) restrictions.

Specific driving licence codes relating to mandatory vehicle adaptations were applied to a small number (4%, n=829) of respondents’ licences. These data were used to indicate the estimated number of Blue Badge holders driving in the UK with these specific licence codes (Table 5.7). Estimates have been provided for the number of people across the UK with one, two or more vehicle-restriction codes.

A comparison of actual numbers of drivers with these vehicle-restriction codes, as provided by the DVLA DMG database, is also included in Table 5.7. There were fewer drivers with each code, and overall, according to the DVLA data; estimates from the Blue Badge data indicated there could be 51,000 drivers with one or more of these codes, whereas the DVLA data suggested there were 34,000 drivers. However, DVLA data were limited because they covered Great Britain rather than the UK and were only provided for drivers who notified DVLA of a medical condition that was then recorded on their licence record. Several thousand may be driving without reporting existing medical conditions.
Table 5.5 Incidence of disability among the sample of Blue Badge holders (and comparison with Motability client data)

<table>
<thead>
<tr>
<th>Disability</th>
<th>Motability clients % (n=484)*</th>
<th>Surveyed Blue Badge holders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All % (n=1,610)*</td>
<td>Drivers % (n=782)*</td>
</tr>
<tr>
<td>Arthritis – osteo and rheumatoid</td>
<td>35.0</td>
<td>36.1</td>
</tr>
<tr>
<td>Restricted movement and paralysis**</td>
<td>4.0</td>
<td>13.9</td>
</tr>
<tr>
<td>Heart condition/angina/arterial disease</td>
<td>21.0</td>
<td>13.7</td>
</tr>
<tr>
<td>Back problems</td>
<td>23.0</td>
<td>11.2</td>
</tr>
<tr>
<td>Respiratory condition incl. asthma/emphysema/bronchitis</td>
<td>13.0</td>
<td>10.6</td>
</tr>
<tr>
<td>Functional disability***</td>
<td>n/a</td>
<td>10.4</td>
</tr>
<tr>
<td>Vision impairment</td>
<td>n/a</td>
<td>6.9</td>
</tr>
<tr>
<td>Neurological****</td>
<td>4.0</td>
<td>5.6</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>5.0</td>
<td>4.3</td>
</tr>
<tr>
<td>Stroke</td>
<td>n/a</td>
<td>4.3</td>
</tr>
<tr>
<td>Diabetes</td>
<td>4.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>6.0</td>
<td>2.7</td>
</tr>
<tr>
<td>Cancer</td>
<td>3.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Blood condition/circulation****</td>
<td>3.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Amputation</td>
<td>1.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Renal/liver/kidney</td>
<td>2.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Learning disabilities</td>
<td>3.0</td>
<td>1.1</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>3.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Polio</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Injury through accident</td>
<td>6.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Spina bifida</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Congenital</td>
<td>5.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Other</td>
<td>12.0</td>
<td>1.2</td>
</tr>
</tbody>
</table>

*Total percentage greater than 100 due to multiple disabilities among respondents.

**Including replacement joints and limb abnormality.

***Including elderly and those with non-specific walking/mobility problems.

****Including dementia and Parkinson’s disease.

*****Including hypertension and hypotension.
Table 5.6 Estimated number of drivers holding Blue Badges in the UK, by disability type

<table>
<thead>
<tr>
<th>Disability</th>
<th>Estimated number for drivers holding Blue Badges in UK (000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthritis – osteo and rheumatoid</td>
<td>463</td>
</tr>
<tr>
<td>Back problems</td>
<td>216</td>
</tr>
<tr>
<td>Restricted movement and paralysis</td>
<td>206</td>
</tr>
<tr>
<td>Heart condition/angina/arterial disease</td>
<td>199</td>
</tr>
<tr>
<td>Respiratory condition incl. asthma/emphysema/bronchitis</td>
<td>141</td>
</tr>
<tr>
<td>Functional disability</td>
<td>101</td>
</tr>
<tr>
<td>Neurological</td>
<td>41</td>
</tr>
<tr>
<td>Cancer</td>
<td>39</td>
</tr>
<tr>
<td>Blood/circulation</td>
<td>35</td>
</tr>
<tr>
<td>Diabetes</td>
<td>35</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>34</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>33</td>
</tr>
<tr>
<td>Renal/liver/kidney</td>
<td>24</td>
</tr>
<tr>
<td>Stroke</td>
<td>24</td>
</tr>
<tr>
<td>Amputation</td>
<td>23</td>
</tr>
<tr>
<td>Polio</td>
<td>19</td>
</tr>
<tr>
<td>Injury through accident</td>
<td>13</td>
</tr>
<tr>
<td>Spina bifida</td>
<td>5</td>
</tr>
<tr>
<td>Vision impairment</td>
<td>5</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>4</td>
</tr>
<tr>
<td>Autism/special needs</td>
<td>1</td>
</tr>
<tr>
<td>Congenital</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Other</td>
<td>16</td>
</tr>
</tbody>
</table>
Table 5.7 Estimated number of drivers holding Blue Badges in the UK, by vehicle-adaptation licence codes

<table>
<thead>
<tr>
<th>Vehicle-restriction code</th>
<th>Estimated number for drivers holding Blue Badges in UK (000s)</th>
<th>% from Blue Badge survey (n=829)</th>
<th>Actual number among drivers with medical conditions (000s)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 – modified accelerator</td>
<td>17</td>
<td>1.3</td>
<td>5</td>
</tr>
<tr>
<td>30 – modified combined brake and accelerator</td>
<td>15</td>
<td>1.2</td>
<td>8</td>
</tr>
<tr>
<td>10 – modified transmission</td>
<td>12</td>
<td>1.0</td>
<td>&lt;1</td>
</tr>
<tr>
<td>20 – modified brake</td>
<td>11</td>
<td>0.8</td>
<td>2</td>
</tr>
<tr>
<td>40 – modified steering</td>
<td>11</td>
<td>0.8</td>
<td>9</td>
</tr>
<tr>
<td>42 – modified rear-view mirror(s)</td>
<td>8</td>
<td>0.6</td>
<td>2</td>
</tr>
<tr>
<td>15 – modified clutch</td>
<td>6</td>
<td>0.5</td>
<td>1</td>
</tr>
<tr>
<td>35 – modified control layouts</td>
<td>6</td>
<td>0.5</td>
<td>5</td>
</tr>
<tr>
<td>43 – modified driver seat</td>
<td>6</td>
<td>0.5</td>
<td>&lt;1</td>
</tr>
<tr>
<td>9 – modified vehicle (non-Photocard licence only)</td>
<td>6</td>
<td>0.5</td>
<td>n/a</td>
</tr>
<tr>
<td>Total with ONE code only</td>
<td>32</td>
<td>2.5</td>
<td>22</td>
</tr>
<tr>
<td>Total with TWO codes only</td>
<td>11</td>
<td>0.8</td>
<td>8</td>
</tr>
<tr>
<td>Total with three or more codes</td>
<td>9</td>
<td>0.7</td>
<td>5</td>
</tr>
<tr>
<td>Total with one or more code</td>
<td>51</td>
<td>34</td>
<td>34</td>
</tr>
</tbody>
</table>

*Data provided for all drivers with recorded medical conditions as taken from the DVLA DMG database (Section 2) and applies to Great Britain only.
5.3.8 Adaptations
Overall, 7% (n=1,702) of respondents reported that they had adaptations fitted to their car. Of this group, there were slightly more drivers than passengers (53% and 47% respectively, n=1,16). Table 5.9 shows the percentage of drivers and passengers using different vehicle adaptations within the surveyed sample, and the estimated frequency of such adapted vehicles within the total Blue Badge population.

The majority of adapted vehicles were fitted with primary and/or secondary car-control adaptations (e.g. for steering, braking) and most were reported by drivers rather than passengers (two passengers reported travelling in vehicles with car-control adaptations that were presumably driven by other disabled drivers). In contrast, vehicle adaptations to allow travel in a wheelchair were the most prevalent modification for passengers responding to the survey and the least common among drivers. The ability to drive had less effect on the distribution of other types of adaptations among those surveyed.

It was common to have just one type of adaptation fitted (76% of respondents with adaptations had just one type, n=116). Some respondents had two different types of adaptations (22%). The proportion using one type of adaptation or a combination of two is presented in Table 5.8. Three respondents had three or more adaptations.

Approximately 175,000 of the vehicles used by the total Blue Badge population were believed to be adapted. Blue Badge holders who were licensed drivers were thought to be using 92,000 of these vehicles while the remaining 83,000 were believed to be used by badge holders who are unable to drive (i.e. passengers). Approximately one-third of all these adapted vehicles were estimated to be fitted with primary and/or secondary car-control adaptations (Table 5.9).

Within the surveyed sample, there was comparable usage of adapted vehicles between white and non-white ethnic groups. Approximately 7% (n=1,588) of all white respondents used adapted vehicles compared with 10% (n=48) of non-white respondents (comprising three Asian, one Indian and one ‘Black – other’ respondents). A larger survey sample would be required to more accurately assess usage levels within ethnic minorities.

### Table 5.8 Matrix to show the percentage distribution of all vehicle adaptations among respondents, including dual combinations (n=116)

<table>
<thead>
<tr>
<th>Adaptation type</th>
<th>Primary/secondary</th>
<th>Loading/storage</th>
<th>Access</th>
<th>Seating</th>
<th>Wheelchair travel</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary/secondary</td>
<td>27</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Loading/storage</td>
<td>5</td>
<td>9</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Access</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Seating</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>19</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Wheelchair travel</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>
It should also be noted that ethnic minorities were under-represented within the survey, when compared with the UK Census (2001).

**Factors affecting adaptation choice**
Respondents rated the importance of seven factors when deciding upon vehicle adaptations on a scale of one to ten, where one represented ‘not at all important’ and ten represented ‘extremely important’. Respondents reported that the most important factors when choosing adaptations were finding solutions that were reliable and that were suitable for their physical needs (Table 5.10). However, 63% (n=94) rated suitability for their physical needs as the single most important factor when choosing adaptations (Table 5.10), whereas only 9% thought that reliability was the most important factor. Safety in the event of an accident was also a high priority (and was the single most important factor for 10% of the sample). While quickly and locally available adaptations were of slightly more importance than cost, not all respondents shared this opinion and 8% rated cost as the single most important factor for them.

**Funding adaptations**
Twice as many respondents (45%, n=85) found it easy to fund their vehicle adaptations compared with those who found it difficult (22%). Common explanations as to why it was easy to fund adaptations included:

- Receiving help from charitable organisations.
- Receiving financial help from friends and family.
- Purchasing vehicles already fitted with adaptations.
- Obtaining finance.
- Availability of savings, grants or compensation payments.

It was also easy for respondents to find funding when the required adaptations were considered

<table>
<thead>
<tr>
<th>Adaptations</th>
<th>Drivers (%; n=61)*</th>
<th>Passengers (%; n=55)*</th>
<th>Estimated number within total Blue Badge population (000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary and/or secondary car-control adaptations (e.g. for steering, braking)</td>
<td>41</td>
<td>2</td>
<td>65</td>
</tr>
<tr>
<td>Adapted to enable main user to have an adequate seating position (e.g. with cushions, replacement seats)</td>
<td>15</td>
<td>17</td>
<td>48</td>
</tr>
<tr>
<td>Adapted to enable main user to get in and out of the car/van more easily (e.g. using swivel seats, hoists)</td>
<td>7</td>
<td>18</td>
<td>38</td>
</tr>
<tr>
<td>Adapted to enable main user or a carer to load and store a wheelchair or equipment (e.g. with hoists, ramps)</td>
<td>11</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>Adapted to enable main user to travel in a wheelchair</td>
<td>1</td>
<td>20</td>
<td>32</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Estimated total within Blue Badge population (000s)</td>
<td>92</td>
<td>83</td>
<td>175</td>
</tr>
</tbody>
</table>

*Total greater than ‘n’ due to multiple adaptations among some survey respondents.

Table 5.9 Vehicle adaptations among drivers and passengers, and within total Blue Badge population (UK wide)
Data Gathering on Disability and Driving Statistics – Stage 2

Inexpensive. However, one respondent (a passenger) claimed that he had fabricated, from an aluminium ladder, his own adaptation to load or store his mobility equipment to save costs.

Common reasons for respondents finding it difficult to fund adaptations centred on the high single cost of purchase and fitment. The financial assistance available was sometimes felt to be inadequate. Respondents who found it neither easy nor difficult to fund their vehicle adaptations (33%) offered pragmatic reasons. As one respondent put it, ‘you can’t drive the car without adaptations so cost doesn’t matter’.

Motability assisted 11% (n=94) of respondents with funding their adaptations, although only one explicitly stated that this made it easier.

Fitting adaptations
The overall experience of having a vehicle adapted was easy for more than two-thirds of respondents (69%, n=84) and neither easy nor difficult for a quarter (25%). Two common reasons for people having good or unremarkable experiences were that vehicles were often adapted prior to purchase or the adaptations were fitted by a competent, skilled company. Other related factors included using a local company, having adaptations fitted quickly, having adaptations fitted at home and receiving high-quality advice and support from sources such as Motability or an occupational therapist.

Few respondents (6%) found it difficult to get their vehicles adapted. Specific problems that were encountered included:
- Poor choice of smaller vehicles available (large vans considered impractical for parking).
- High associated maintenance and fuel costs.
- High fitment costs.
- Time without vehicle when adaptations were fitted.
- Lack of locally available adaptation specialists.

Safety of adaptations
The majority of respondents (89%, n=97) felt safe when travelling in their adapted vehicle, especially those with years of experience who had high confidence levels. In addition, respondents reported that their adaptations were easy to use, securely fixed, comfortable and enabled safe control of their vehicles. Other reasons for feeling safe were attributable to the vehicles used, and included good visibility and passive safety systems such as airbags and seatbelts. Some 8% of respondents using adapted vehicles felt neither safe nor unsafe while the remaining 3% felt unsafe. Reasons for feeling unsafe included fears about the extent of adaptations used within a vehicle and how they might cause bodily injury if an accident were to occur (for example, one person stated ‘If I had an accident, the hand control is likely to irreparably shatter my left knee’). Concerns

Table 5.10 Importance of factors affecting choice of vehicle adaptations (rated by Blue Badge survey respondents)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Importance (mean rating)</th>
<th>Standard deviation</th>
<th>% rated as single most important factor (n=94)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitability for physical needs</td>
<td>9.33 (n=93)</td>
<td>2.13</td>
<td>63</td>
</tr>
<tr>
<td>Reliability</td>
<td>9.00 (n=87)</td>
<td>2.35</td>
<td>9</td>
</tr>
<tr>
<td>Safety in the event of an accident</td>
<td>8.93 (n=86)</td>
<td>2.34</td>
<td>10</td>
</tr>
<tr>
<td>Available quickly</td>
<td>6.77 (n=84)</td>
<td>3.16</td>
<td>2</td>
</tr>
<tr>
<td>Available locally</td>
<td>6.32 (n=82)</td>
<td>3.32</td>
<td>2</td>
</tr>
<tr>
<td>Cost</td>
<td>5.37 (n=84)</td>
<td>3.37</td>
<td>8</td>
</tr>
<tr>
<td>Appearance</td>
<td>3.78 (n=81)</td>
<td>3.13</td>
<td>0</td>
</tr>
</tbody>
</table>
were also raised regarding how some adaptations prevented airbags from deploying and also caused ‘great pain’ on long journeys. Even though most respondents felt safe, the majority (86%, n=85) felt there should be a need for adaptations to meet certain safety standards.

Servicing adaptations
Yearly or regular servicing of vehicle adaptations was carried out by over one-third of respondents (36%, n=90), while a further third of respondents had their adaptations serviced only when a specific problem arose (33%). A minority of respondents (7%) had either not had their vehicles long enough to consider servicing requirements or carried out servicing themselves and did not specify how frequently. The remaining quarter (24%) stated they their vehicle adaptations were never checked or serviced. Thus 21% (n=43) of car-control adaptations reported by survey respondents were never serviced. Furthermore, nor were 10% (n=21) of wheelchair conversions, 8% (n=25) of access adaptations and 8% (n=25) of mobility equipment storage solutions. These figures suggest vehicles with safety-critical adaptations are never checked or serviced to ensure continued safe operation. A quarter of seating solutions (25%, n=32) were also reported to never be serviced, although this type of adaptation was more likely to be a fixed solution such as a complete replacement seat.

Of those respondents who did have their adaptations serviced, more than half (52%, n=66) had the servicing conducted by the original supplier or fitter of the adaptations or by another adaptation specialist. A further 41% serviced them at their regular garage while the remaining 8% either had not had their vehicles long enough to consider servicing requirements or carried out servicing themselves. Specific problems with servicing and removal/refitting of adaptations were not reported.

Vehicle-usage problems
The survey explored vehicle-related problems experienced by adaptation users. Access problems were most commonly experienced; for 42% (n=116) of respondents, getting in and out of their car or van was difficult. Slightly less common were difficulties with seating (16%) and loading and storing mobility equipment (13%). Adapted vehicle controls were problematic for 5% of respondents with adapted vehicles.

Specifically, a common complaint was that adaptations had still not provided respondents with the independence they required. Comments were received regarding how it was necessary to obtain assistance when getting in or out of their vehicle, or how mobility equipment could not be stored or retrieved without help. Other problems related to:
- Pain when getting in or out of vehicles.
- Pain caused by uncomfortable or inadequate seating.
- Access difficulties caused by heavy doors or low-level seating.
- Comfort and visibility difficulties caused by lack of seat-height adjustment.
- Limited storage space after loading mobility equipment, restricting the carriage of passengers and luggage.

Only those with adapted vehicles were requested to specify details of their vehicle-usage problems, but over 100 other respondents without adapted vehicles also used the questionnaire to express their difficulties. As with those who already had adapted vehicles, the most common problem was vehicle access. Trouble with vehicle access was often exacerbated by medical conditions such as arthritis, which caused people considerable pain and discomfort when trying to get in and out of their vehicles. Comments were also received regarding the lack of independence experienced when using vehicles because of the assistance required for access and storage of mobility equipment. The height of a vehicle was a further complication; if it was too low or too high it hindered access. Once seated in their unadapted vehicles, respondents also complained of the poor comfort afforded by some seats and the pain caused by seatbelts.

5.3.9 Accidents
Overall, more respondents were involved in accidents as drivers (8.3%, n=1,615) than
as passengers (3.1%, n=1,644). As with the DVLA survey, accident reporting was not categorised by severity as this may have elicited limited responses due to the relatively rare occurrence of accidents. Even so, most respondents had no accidents. In the five years prior to the survey, the majority of Blue Badge survey respondents involved in accidents had only been involved in one accident (Table 5.1). By comparison, DVLA survey respondents had almost three times as many accidents when they were driving (Section 3.3.12) as the comparative group of Blue Badge holders.

It was therefore estimated that during the five-year period prior to the survey, approximately 104,000 Blue Badge holders may have been involved in at least one accident when they were driving a vehicle themselves. Furthermore, it was estimated that over the same period of time, approximately 66,000 Blue Badge holders may have been involved in at least one accident as a passenger in a vehicle. These figures suggest that, in an average year, there may be 21,000 accidents involving vehicles that are driven by Blue Badge holders and 13,000 involving Blue Badge holders travelling as passengers. These estimates were somewhat greater than those produced from an analysis of Government-funded road accident databases. For example, over a four-year period, the police Contributory Factors database indicated that only 0.2% of the 198,000 accidents recorded involved disabled drivers for which disability was believed to be a contributory factor (Section 6.5.2). However, the type of accident reported was different.

The Government-funded road accident databases (analysed in Section 6) focused on injury accidents where the police attended. Moreover, in these accidents, disability was identified as a contributory factor, whereas there was no indication from respondents that disability contributed to any of the accidents they reported. The accidents reported by Blue Badge survey respondents were also likely to have ranged in severity, from minor parking incidents through to multiple vehicle road traffic accidents. The majority were anticipated to have been non-injury, minor accidents. These survey figures therefore provide an indication of general accident rates among a sample of disabled people. They should provide a useful benchmark for future comparison of self-reported accidents among non-disabled drivers or against the total driving population.

### 5.3.10 Motability

Some 7% (n=829) of drivers responding to the survey reported that they were customers of Motability. Nationally, this indicated that approximately 20,000 Blue Badge holders were drivers of vehicles supplied by Motability. In 2004, approximately 270,000 Motability clients were insured to drive themselves and were therefore potential disabled drivers (Motability Customer Profile Survey (2005); Section 4.3.2). The survey data indicated a similar number of drivers within the Blue Badge population were also Motability clients. It could therefore be assumed that the estimate of approximately 1.25 million disabled drivers with Blue Badges was inclusive of those people driving through Motability.

### Table 5.11: Percentage of respondents involved in accidents as a driver or as a passenger in the five years prior to the survey

<table>
<thead>
<tr>
<th>Number of accidents</th>
<th>% as a driver (n=1,615)</th>
<th>% as a passenger (n=1,644)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>6.3</td>
<td>2.7</td>
</tr>
<tr>
<td>Two</td>
<td>1.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Three</td>
<td>0.2</td>
<td>-</td>
</tr>
<tr>
<td>More than three</td>
<td>0.2</td>
<td>-</td>
</tr>
<tr>
<td>At least one accident</td>
<td>8.3</td>
<td>3.1</td>
</tr>
</tbody>
</table>
However, only 2% (n=873) of passengers indicated that their vehicle was supplied through Motability. This was lower than expected and the high levels of non-response may have been a product of the survey structure. It would be unwise to make further assumptions about whether non-driving Motability clients are a sub-sample of non-driving Blue Badge holders based on this small survey response.

5.3.11 Growth projections
Historical data on the issue of Blue Badges across England, Wales and Scotland were collected and presented in Section 4.1.2. Only current data on badge issue in Northern Ireland were available. The years covered by the data varied: for England, the number of Blue Badges issued was known from 1987 to 2004; for Scotland, data covered 1997 to 2004; and for Wales, 2000-2003.

The historical data were used to calculate the rate of Blue Badge issue per 1,000 population (reported for England, Scotland and Wales in Section 4.1.2 for all available years). Growth in the issue of Blue Badges was projected. A quadratic regression was used to project growth rates for England up to 2017 and for Scotland up to 2010. A linear regression was the most appropriate statistical model for Wales given the limited years for which data were available (Table 5.2).

The latest accurate figures indicated that the proportion of Blue Badge holders was greatest in Wales (at 70 per 1,000 population in 2003), followed with some margin by Scotland (45 in 2004) and England (42 in 2004). Northern Ireland reported 45 per 1,000 population in early 2005. Projected rates for Great Britain indicated no change in this relationship.

In England and Scotland, the proportion holding Blue Badges was anticipated to rise by between five and six per 1,000 population. However, Wales was predicted to experience more rapid growth, with perhaps 10% of its population holding Blue Badges in the next ten years (Figure 5.7).

Using the estimated ratio of drivers to passengers for the population of Blue Badge holders, rates per 1,000 population were calculated for each country within Great Britain (Table 5.13). Rates per 1,000 population for drivers and passengers with Blue Badges were comparable in England and Scotland but were almost doubled in Wales. Nationally, the rate of disabled drivers holding Blue Badges is expected to rise from an actual rate of 21 per 1,000 population in 2004 to a projected rate of 24 per 1,000 population in 2010.

Projected rates of Blue Badge issue were combined with projected population statistics for Great Britain (Government Actuary’s Department, 2004) to predict the number of Blue Badges on issue up to 2017 (Table 5.14). By 2010, Great Britain is expected to be home to almost three million Blue Badge holders, a rise of almost half a million from 2004. By 2017, in England alone, a further half million Blue Badges are expected to be issued to take the country’s total to 2.6 million.

Figure 5.8 illustrates the projected growth in the number of Blue Badges estimated for distribution to English, Scottish and Welsh populations.

As of 2004, approximately 2.5 million Blue Badges were on issue in Great Britain. This was expected to rise to almost three million in 2010 (Table 5.15, Figure 5.9). If the current known ratio of drivers, passengers and non-users of vehicles remains static, estimates can be made of their numbers in future years. On this basis, a further 200,000 disabled drivers with Blue Badges would be anticipated by 2010.

Most of the growth expected in the population of disabled drivers by 2010 will occur in England (Table 5.16). However, the rate of growth in Wales was projected to be greater than England and Scotland. By 2010, in excess of 160,000 additional disabled drivers with Blue Badges are expected in England, a further 26,000 in Wales and 15,000 in Scotland.

14 No historical data were available to calculate how the estimated driver–passenger ratio within the Blue Badge population might change. It was assumed to remain static although it is possible that trends within the overall licensed population could impact upon this, along with other factors. Therefore the estimates should only be used as a guide to how the projected growth in the issue of Blue Badges might be distributed among drivers and non-drivers.
Data from the survey of Blue Badge holders indicated that approximately 175,000 adapted vehicles were being used by this group across the UK (171,000 in Great Britain). If the number of Blue Badges on issue grows as projected, it is possible that adapted vehicle use will exceed 200,000 by 2010 (Table 5.17, Figure 5.10).

Table 5.12 Blue Badge issue per 1,000 population in England, Scotland and Wales (actual and projected rates)

<table>
<thead>
<tr>
<th>Year</th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
<th>Great Britain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>34</td>
<td>26</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1998</td>
<td>35</td>
<td>29</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1999</td>
<td>37</td>
<td>33</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2000</td>
<td>38</td>
<td>36</td>
<td>62</td>
<td>-</td>
</tr>
<tr>
<td>2001</td>
<td>39</td>
<td>39</td>
<td>64</td>
<td>40</td>
</tr>
<tr>
<td>2002</td>
<td>41</td>
<td>41</td>
<td>67</td>
<td>42</td>
</tr>
<tr>
<td>2003</td>
<td>41</td>
<td>43</td>
<td>70</td>
<td>42</td>
</tr>
<tr>
<td>2004</td>
<td>42</td>
<td>45</td>
<td>72**</td>
<td>43</td>
</tr>
<tr>
<td>2005</td>
<td>43*</td>
<td>47*</td>
<td>75**</td>
<td>45</td>
</tr>
<tr>
<td>2006</td>
<td>44*</td>
<td>48*</td>
<td>78**</td>
<td>46</td>
</tr>
<tr>
<td>2007</td>
<td>45*</td>
<td>49*</td>
<td>81**</td>
<td>47</td>
</tr>
<tr>
<td>2008</td>
<td>46*</td>
<td>50*</td>
<td>83**</td>
<td>48</td>
</tr>
<tr>
<td>2009</td>
<td>46*</td>
<td>50*</td>
<td>86**</td>
<td>49</td>
</tr>
<tr>
<td>2010</td>
<td>47*</td>
<td>50*</td>
<td>89**</td>
<td>49</td>
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<td>91**</td>
<td>-</td>
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<td>2012</td>
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<td>94**</td>
<td>-</td>
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<tr>
<td>2013</td>
<td>48*</td>
<td></td>
<td>97**</td>
<td>-</td>
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<tr>
<td>2014</td>
<td>48*</td>
<td></td>
<td>100**</td>
<td>-</td>
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<tr>
<td>2015</td>
<td>48*</td>
<td></td>
<td>102**</td>
<td>-</td>
</tr>
<tr>
<td>2016</td>
<td>48*</td>
<td></td>
<td>105**</td>
<td>-</td>
</tr>
<tr>
<td>2017</td>
<td>48*</td>
<td></td>
<td>108**</td>
<td>-</td>
</tr>
</tbody>
</table>

*Projected rate based on quadratic regression.
**Projected rate based on linear regression.
Figure 5.7 Blue Badge issue per 1,000 population in England, Scotland and Wales (actual and projected rates)

Table 5.13 Blue Badges issued to drivers and passengers per 1,000 population in England, Scotland and Wales (actual and projected rates)

<table>
<thead>
<tr>
<th>Year</th>
<th>Blue Badge issue per 1,000 population, by country</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>England</td>
</tr>
<tr>
<td></td>
<td>Drivers</td>
</tr>
<tr>
<td>2001</td>
<td>19</td>
</tr>
<tr>
<td>2002</td>
<td>20</td>
</tr>
<tr>
<td>2003</td>
<td>20</td>
</tr>
<tr>
<td>2004</td>
<td>20</td>
</tr>
<tr>
<td>2005</td>
<td>21</td>
</tr>
<tr>
<td>2006</td>
<td>21</td>
</tr>
<tr>
<td>2007</td>
<td>22</td>
</tr>
<tr>
<td>2008</td>
<td>22</td>
</tr>
<tr>
<td>2009</td>
<td>22</td>
</tr>
<tr>
<td>2010</td>
<td>23</td>
</tr>
</tbody>
</table>

*Passengers.
### Table 5.14 Number of Blue Badges on issue in England, Scotland and Wales (actual and projected totals)

<table>
<thead>
<tr>
<th>Year</th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
<th>GB total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>1,636</td>
<td>134</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1998</td>
<td>1,713</td>
<td>145</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1999</td>
<td>1,821</td>
<td>170</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2000</td>
<td>1,854</td>
<td>180</td>
<td>179</td>
<td>2,213</td>
</tr>
<tr>
<td>2001</td>
<td>1,925</td>
<td>196</td>
<td>186</td>
<td>2,307</td>
</tr>
<tr>
<td>2002</td>
<td>2,019</td>
<td>210</td>
<td>196</td>
<td>2,425</td>
</tr>
<tr>
<td>2003</td>
<td>2,031</td>
<td>217</td>
<td>205</td>
<td>2,453</td>
</tr>
<tr>
<td>2004</td>
<td>2,074</td>
<td>224</td>
<td>214</td>
<td>2,511</td>
</tr>
<tr>
<td>2005</td>
<td>2,180</td>
<td>238</td>
<td>223</td>
<td>2,640</td>
</tr>
<tr>
<td>2006</td>
<td>2,236</td>
<td>245</td>
<td>232</td>
<td>2,712</td>
</tr>
<tr>
<td>2007</td>
<td>2,288</td>
<td>250</td>
<td>241</td>
<td>2,778</td>
</tr>
<tr>
<td>2008</td>
<td>2,345</td>
<td>254</td>
<td>250</td>
<td>2,838</td>
</tr>
<tr>
<td>2009</td>
<td>2,379</td>
<td>256</td>
<td>259</td>
<td>2,893</td>
</tr>
<tr>
<td>2010</td>
<td>2,419</td>
<td>256</td>
<td>268</td>
<td>2,943</td>
</tr>
<tr>
<td>2011</td>
<td>2,456</td>
<td>-</td>
<td>278</td>
<td>-</td>
</tr>
<tr>
<td>2012</td>
<td>2,489</td>
<td>-</td>
<td>287</td>
<td>-</td>
</tr>
<tr>
<td>2013</td>
<td>2,518</td>
<td>-</td>
<td>296</td>
<td>-</td>
</tr>
<tr>
<td>2014</td>
<td>2,543</td>
<td>-</td>
<td>306</td>
<td>-</td>
</tr>
<tr>
<td>2015</td>
<td>2,565</td>
<td>-</td>
<td>316</td>
<td>-</td>
</tr>
<tr>
<td>2016</td>
<td>2,582</td>
<td>-</td>
<td>325</td>
<td>-</td>
</tr>
<tr>
<td>2017</td>
<td>2,596</td>
<td>-</td>
<td>335</td>
<td>-</td>
</tr>
</tbody>
</table>

**Figure 5.8** Number of Blue Badges on issue in England, Scotland and Wales (actual and projected totals)
### Table 5.15 Total number of Blue Badges on issue in Great Britain and number on issue to drivers, passengers and non-users of vehicles (actual and projected totals)

<table>
<thead>
<tr>
<th>Year</th>
<th>GB total (000s)</th>
<th>Drivers (000s)</th>
<th>Passengers (000s)</th>
<th>No vehicle use</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>2,213</td>
<td>1,073</td>
<td>1,129</td>
<td>11</td>
</tr>
<tr>
<td>2001</td>
<td>2,307</td>
<td>1,119</td>
<td>1,177</td>
<td>12</td>
</tr>
<tr>
<td>2002</td>
<td>2,425</td>
<td>1,176</td>
<td>1,237</td>
<td>12</td>
</tr>
<tr>
<td>2003</td>
<td>2,453</td>
<td>1,190</td>
<td>1,251</td>
<td>12</td>
</tr>
<tr>
<td>2004</td>
<td>2,511</td>
<td>1,218</td>
<td>1,281</td>
<td>13</td>
</tr>
<tr>
<td>2005</td>
<td>2,640</td>
<td>1,280</td>
<td>1,346</td>
<td>13</td>
</tr>
<tr>
<td>2006</td>
<td>2,712</td>
<td>1,315</td>
<td>1,383</td>
<td>14</td>
</tr>
<tr>
<td>2007</td>
<td>2,778</td>
<td>1,348</td>
<td>1,417</td>
<td>14</td>
</tr>
<tr>
<td>2008</td>
<td>2,838</td>
<td>1,377</td>
<td>1,448</td>
<td>14</td>
</tr>
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<td>2009</td>
<td>2,893</td>
<td>1,403</td>
<td>1,476</td>
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<tr>
<td>2010</td>
<td>2,943</td>
<td>1,428</td>
<td>1,501</td>
<td>15</td>
</tr>
</tbody>
</table>

**Figure 5.9** Total number of Blue Badges on issue in Great Britain and number on issue to drivers, passengers and non-users of vehicles (actual and projected totals)
Table 5.16 Number of Blue Badges on issue to drivers only in England, Scotland and Wales (actual and projected totals)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Blue Badges on issue to drivers (000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>England</td>
</tr>
<tr>
<td>2001</td>
<td>934</td>
</tr>
<tr>
<td>2002</td>
<td>979</td>
</tr>
<tr>
<td>2003</td>
<td>985</td>
</tr>
<tr>
<td>2004</td>
<td>1,006</td>
</tr>
<tr>
<td>2005</td>
<td>1,057</td>
</tr>
<tr>
<td>2006</td>
<td>1,084</td>
</tr>
<tr>
<td>2007</td>
<td>1,109</td>
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<tr>
<td>2008</td>
<td>1,132</td>
</tr>
<tr>
<td>2009</td>
<td>1,154</td>
</tr>
<tr>
<td>2010</td>
<td>1,173</td>
</tr>
</tbody>
</table>

Table 5.17 Total number of adapted vehicles used by Blue Badge holders in Great Britain and usage by drivers and passengers (actual and projected totals)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of adapted vehicles (000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GB total</td>
</tr>
<tr>
<td>2000</td>
<td>151</td>
</tr>
<tr>
<td>2001</td>
<td>157</td>
</tr>
<tr>
<td>2002</td>
<td>165</td>
</tr>
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<td>2003</td>
<td>167</td>
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<tr>
<td>2004</td>
<td>171</td>
</tr>
<tr>
<td>2005</td>
<td>180</td>
</tr>
<tr>
<td>2006</td>
<td>185</td>
</tr>
<tr>
<td>2007</td>
<td>189</td>
</tr>
<tr>
<td>2008</td>
<td>193</td>
</tr>
<tr>
<td>2009</td>
<td>197</td>
</tr>
<tr>
<td>2010</td>
<td>201</td>
</tr>
</tbody>
</table>
6 Government-funded road accident databases

There are a number of Government-funded road accident databases for which TRL holds administrative responsibility on behalf of the Government. This study analysed data from five such databases: the Co-operative Crash Injury Study (CCIS) database; the On the Spot (OTS) study database; the police Fatals Intermediate Database (IDB); the police Contributory Factors database; and the Vehicle and Operator Services Agency (VOSA) database.

The low number of incidents held within the CCIS, OTS and Fatals Intermediate databases involving disabled drivers, passengers and/or adapted vehicles has led to a qualitative approach to analysing the available data. In each instance, a ‘case study’ summary has been produced to describe each collision. The VOSA database was analysed for further examples of accidents involving adapted vehicles. Analysis from the police Contributory Factors database was used to confirm the incidence of injury accidents involving disabled drivers.

6.1 Co-operative Crash Injury Study

CCIS began in 1983 and its sixth phase ran from 1998 to 2002. As Europe’s largest study into the causes of car occupant injury, it examines over 1,200 vehicles each year.

6.1.1 Objectives

Case files within the CCIS database were analysed in order to gather in-depth descriptions of accidents involving disabled occupants and/or adapted vehicles. Given that CCIS is foremost an injury causation study, it was not possible to draw conclusions about whether an occupant’s disability or vehicle adaptations were the cause of any accidents. Therefore, the main objectives were to identify:

1. The cause and outcome of each accident involving a disabled occupant and/or a vehicle adapted for a disabled occupant.
2. If any vehicle adaptations (where fitted) were responsible for injury causation.

6.1.2 Results

A systematic analysis of the CCIS database was conducted to identify all accidents involving disabled occupants and/or vehicles adapted for use by a disabled person.

Summary results for each case include:

- A description of the cause and outcome of each accident.
- A description of the disabled occupants, including age, gender, type of disability and position in vehicle (driver or passenger).
- A description of any vehicle adaptations.
- A summary of all injuries sustained through

Figure 5.10 Total number of adapted vehicles used by Blue Badge holders in Great Britain and usage by drivers and passengers (actual and projected totals)
the accident including injuries that may have been caused by any vehicle adaptations that were fitted.

It should be emphasised that CCIS exists to develop an understanding of how vehicle occupants are injured, to collect information on the crash-worthiness of current vehicles and to identify where vehicle safety can be improved in the future. Accident causation is not researched. In addition, CCIS only examines vehicles under seven years old (although this is less of a concern as many disabled people will use modern cars, as provided by organisations such as Motability). Nevertheless, the CCIS database was an opportunity to establish the incidence of injury accidents involving disabled occupants, as well as offering insight into the potential harm that adaptations could cause to vehicle occupants.

Few (4) accidents involved disabled occupants, accounting for 0.3% of the 4,402 cases in the sixth phase of CCIS. All disabled occupants were drivers and four were using adapted vehicles. Whether adaptations are a potential cause of occupant injury is explored below in the four cases involving adapted vehicles (full case summaries are in Appendix Q). In total, two vehicles were fitted with hand controls, one of which also had a steering wheel spinner, and a further two vehicles were fitted with steering wheel spinners only. None of these adaptations contributed to occupant injuries. The 14 cases that were identified from the CCIS database comprised eight male drivers and six female drivers, occupying a broad age range from 20 years to 63 years.

**Accident 3**
A 20-year-old male driver negotiated a bend too quickly and rolled his vehicle. His disability was not described although he was driving with hand controls linked to the brake and accelerator. The driver lost control when his foot slipped and became stuck on the accelerator pedal. Although the adaptations did not directly contribute to the driver’s injuries, it is possible that this accident could have been avoided if the pedals were deactivated.

**Accident 9**
A 40-year-old female disabled driver was involved in a non-fault collision with a car that lost control travelling in the opposite direction. Her disability was not specified. Her vehicle was fitted with a steering wheel spinner, which was not recorded as having caused any injury to the driver.

**Accident 11**
A 29-year-old female disabled driver crossed the path of an oncoming vehicle, resulting in a near head-on collision. Her vehicle was fitted with hand controls for the accelerator, brake and indicators, and a steering wheel spinner. The adaptations did not contribute to any of the driver’s injuries. The driver’s disability was not specified and there was no indication in the file as to why the accident occurred.

**Accident 13**
A 30-year-old male disabled driver lost control of his vehicle and collided with an oncoming vehicle, causing a three-car accident. The driver had a steering wheel spinner fitted to his vehicle. His disability was not described. The steering wheel adaptations did not cause any injury. The reason for the accident was not recorded.

**6.1.3 Summary**
There is no evidence to suggest that vehicle adaptations caused or exacerbated any of the injuries sustained by the vehicle occupants in these cases. It is unfortunate drivers’ disabilities were not described (except for one driver with an eyesight problem).

**6.2 Fatals Intermediate Database**
Occupant disability is not recorded in STATS19, although it is included as an option in the supplementary Contributory Factors framework (Section 6.5). However, it is coded only rarely, and the coding gives no information as to the nature of the disability or its exact role in the accident. Only if a person’s disability is considered to have been primarily responsible for causing an accident is this coding applied. If a disabled person is involved, but is considered to have been (at least relatively) blameless, disability will not be coded as a contributory factor.

IDB was developed by TRL under contract to the Department for Transport. IDB
contains information that has been extracted from files acquired from nearly all police forces in England and Wales. Although data are no longer being added to the database, it still contains details of 11,996 fatal accidents (18,379 vehicles). The accidents in the database cover the period 1986-1998, though over 90% date from 1990 to 1995. The Contributory Factors coding system currently used to supplement STATS19 was incorporated into IDB at an early stage, so these data are available for all 11,996 accidents in the database. The relevant cases listed in the IDB files only pertain to those incidents where a driver’s disability was seen to be a contributory factor in an accident that resulted in one or more fatalities. Non-blameworthy disabled occupants cannot be identified but, for those who can be identified, the hard-copy police files can be consulted to shed light on the exact nature of the disability and its role in causing or compounding the effects of the accident.

6.2.1 Objectives
The small number of fatal accidents in IDB for which disability was recorded as a contributory factor were summarised to satisfy the following objectives:
1. To establish the role of disability in each accident and why an occupant’s disability contributed to the accident.
2. To establish the role in each accident of any vehicle adaptations associated with the recorded disabilities.
3. To gather secondary data on the type of disability, age and gender of disabled occupants.

6.2.2 Results
From IDB, 41 cases were identified where disability was coded as a contributory factor; in one of these cases, two disabled occupants were involved. Generally, only vehicle drivers and pedestrians were coded as causing accidents, but on rare occasions, a passenger was considered to have been the prime cause. This was true in one of the 41 accidents. For this study, only accidents with disabled vehicle drivers (and not pedestrians or passengers) were selected. For each accident it was necessary to:
• Provide a description of the accident.
• Describe the disabled occupants, including age, gender, type of disability and position in vehicle (either driver or passenger).
• Describe the cause of the accident with the aim of identifying the contributory role of disability. Each summary also set out to establish whether disability was indeed contributory or if, with hindsight, other factors were a more obvious causation factor.
• Describe any vehicle adaptations fitted as a result of an occupant’s disability that may have had some impact on the accident by, for example, exacerbating any injuries sustained or contributing to a loss of vehicle control.

In addition to the case summaries described above (Appendix R), analysis also established some of the key characteristics of the disabled occupants involved in these incidents. Although 36 cases were summarised, 37 disabled occupants were recorded in the data, as one incident involved two disabled occupants.

Age, gender and driving status
Of the 37 disabled occupants in the 36 accident summaries, 27 (73%) were male and ten (27%) were female. The youngest was 21 years, the oldest 91 years. Half were aged 60 years or above (Table 6.1).

Disability and fatal accident causation
The majority of fatal accidents recorded in IDB with ‘disability’ as a contributory factor related to occupants with poor eyesight. This accounted for twice the number of accidents than those caused by a non-eyesight-related disability (Table 6.2).

A much lower proportion (0.1%) of the fatal accidents on IDB were given a coding of disability that related to some form of functional impairment other than poor eyesight (Table 6.3). Of the nine cases that did emerge, four included occupants with hip replacements or hip/knee problems along with arthritis-related complaints. Two occupants were recorded as amputees, with one missing an arm and one missing a leg from above the knee (replaced with a prosthesis). Another
occupant was paralysed from the waist down while a further occupant had reduced mobility in their right leg. The remaining occupant had spondylitis.

Cases where disability clearly contributed
The nine cases that were not eyesight related all reported impairments that may have restricted or reduced the occupant’s mobility. Three of these cases described a fatal accident in which the occupant’s disabilities were clearly a contributory factor:

Case 3
A 70-year-old female driver was attempting a parking manoeuvre. She had enlisted the help of her passenger, who was leaning out of the nearside door to help guide the driver while reverse parking. The driver attempted an abrupt stop (on seeing an approaching vehicle) but instead she accelerated backwards and trapped her passenger between two vehicles, fatally injuring the passenger. The driver had reduced lower limb mobility as a result of hip replacements, which left her unable to walk unaided. The contributory role her disability played in the accident was summarised from the case notes as follows:

‘It is likely that reversing was a difficult manoeuvre for this lady, since the reduced mobility of her hips would have restricted her ability to swivel in her seat. The limited mobility of the driver’s legs is also likely to have compromised her ability to react quickly to the mistake she made in pressing the accelerator instead of the brake.’

Case 6
A 71-year-old male driver with arthritis in his right knee and numbness in his left foot was attempting to exit his automatic vehicle while double-parked on a busy street. He had succeeded in getting his right leg out of the vehicle when the car suddenly accelerated forwards, mounting a kerb and knocking down a pedestrian before coming to rest in a kerb.

Table 6.1 Age of disabled vehicle occupants

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
<th>% of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-29</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>30-39</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>40-49</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>50-59</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>60+</td>
<td>19</td>
<td>51</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 6.2 Number of fatal accidents coded as ‘disability’ on IDB, by disability type and causation confidence

<table>
<thead>
<tr>
<th>Causation confidence</th>
<th>Disability (non-eyesight related)</th>
<th>Disability (eyesight related)</th>
<th>Illness</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disability clearly contributed</td>
<td>3</td>
<td>11</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>Disability may have contributed</td>
<td>5</td>
<td>6</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Disability did not contribute</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Unknown causation</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>24</td>
<td>4</td>
<td>37</td>
</tr>
</tbody>
</table>
collision with a lamp-post and a parked car. The case file reports that the driver:
‘...offered the theory that his coat may have caught the gear selector and pulled it into “Drive”, while his numb left foot may have pressed on the accelerator without him really being aware of it’.

The driver’s disability, therefore, may have been the reason why the car unexpectedly accelerated. It may have also contributed to the driver’s inability to begin to regain control, as the case file concluded that:
‘While it is quite likely that his [the driver’s] leg problems would not affect his ability to drive an automatic vehicle in normal circumstances, they probably did limit his ability to regain control in this case.’

Case 35
A 91-year-old female driver failed to negotiate a bend in her automatic vehicle and collided with a building. The events that led the driver to accelerate rapidly around the corner are slightly confused; the driver attributed the error to her shoe becoming stuck on the accelerator but elsewhere in the file the error is attributed to cramp in her leg. The driver’s disability was recorded as osteo arthritis and this was compounded by several hip replacements that necessitated the use of crutches. The case file concludes that, ‘clearly, the lack of mobility in her [the driver’s] legs had a significant bearing on the course of events’.

Cases where disability may have contributed
A further five cases documented accidents in which the occupants’ functional disabilities may have been a contributory factor. These cases are described below:

Case 1
A 75-year-old female driver with spondylitis was leaving a friend’s house on a cold night. On setting off in her automatic vehicle, she almost immediately lost control, accelerated harshly across a junction, through a hedge and collided with a house at about 30mph. The case file documents how the police, in conjunction with a technical expert from Volkswagen UK, constructed a plausible theory to account for the events:
‘As well as having an automatic gearbox, the car also had an automatic choke. Although it was June, it was quite a cold night, with an air temperature of about 4°C, so the choke would have been fully operational, resulting in high engine revs at idle. Engaging “Drive” in these circumstances would result in the vehicle beginning to move quite quickly, with no input from the driver. If the driver, taken by surprise in this way, attempts to brake, but hits the accelerator pedal by mistake, then very quick reactions would be needed to regain control. The driver in this case most certainly did not have quick reactions, on account of her disability. Thus the likely cause of the accident was minor driver error, resulting in a train of events which a person with restricted limb movements would have found difficult to control.’

Case 18
Both of the drivers in this accident were reported as having disabilities. The first driver, a 43-year-old male who was missing one arm,
was driving a manual transmission vehicle along a straight road towards a crossroads junction. The second driver, a 71-year-old male, was approaching the first driver from the opposite direction. This driver had defective eyesight that became worse in poor light (the accident happened on a dark, unlit road at night). The second driver attempted a right turn at the crossroads across the path of the first driver but, on seeing the approaching driver, stopped somewhere on or over the centre line of the road. Nevertheless, the first driver hit the vehicle of the second driver.

It is unclear whether the second driver actually attempted to turn across the path of the approaching vehicle. The police chose to prosecute the second driver for not exercising due care. The first driver, whose disability is of interest to this research, died from the impact. The case file reports that there was some concern over his driving style, which necessitated that, when changing gear, he would steady the steering wheel with his knees while his only arm operated the gearshift. It is questionable as to whether driving with one arm would have contributed to the impact given that the road was straight. However, had the first driver been changing gear at the time he approached the crossroads, he may have had limited control over the precise direction of his vehicle as he would have been steering with his knees. There is a possibility that his disability may have contributed to the impact, assuming that the other vehicle had not actually turned across his path.

**Case 20**

Case 20 describes how a 30-year-old male driver lost control of his vehicle on a downhill bend and subsequently veered off the road, causing the vehicle to roll and him to be ejected, inflicting fatal injuries. Prior to the accident, the driver was paralysed from the waist down and drove with hand controls for the throttle and footbrake. The road had been resurfaced and therefore a 20mph temporary limit was in place, although the road usually had a 60mph limit. However, the driver was reported as having overtaken another vehicle at 70-80mph just prior to the accident. There was little to suggest his disability contributed to the error but he was receiving medication for painful muscle spasms. The case concluded by stating that:

‘It will never be known whether the muscle spasms to which he was prone were affecting his driving at the time, though there was evidence that the front wheels had locked at some time during the crash sequence, so he must have been capable of applying the brakes at that point.’

**Case 24**

The case describes a 24-year-old male, driving a manual transmission vehicle, with a prosthetic right leg (replacing an amputated limb from above the knee). The driver usually drove vehicles with automatic transmissions, to allow his left leg to control acceleration and braking. However, on this particular occasion he was driving a manual transmission vehicle at excessive speed. The accident occurred when he lost control during an overtaking manoeuvre and collided with an oncoming vehicle. While an able-bodied driver may have also lost control in such a situation, the case file concludes that the circumstances of this particular case suggest that, ‘faced with the need to manoeuvre quickly, possibly combined with emergency braking, at 100mph, [the driver’s] disability certainly cannot have helped’. Moreover, the driver’s limb loss may have been a less significant factor in the causation of the accident had he been driving an appropriate vehicle.

**Case 34**

A 66-year-old male driver with a lack of mobility in his right leg struck a pedestrian who was crossing in front of his vehicle. The glancing blow was fatal. The driver took no avoiding action. The driver subsequently described his frailty and disabilities to the police, who concluded that these factors were contributory in the accident. However, it is not clearly specified in the case file how such factors explain why he failed to see the pedestrian (his eyesight was acceptable), failed to take avoiding action and also failed to realise what he had hit until stopping to check.

**Unknown contribution**

The final case, wherein ‘disability’ referred to a non-eyesight-related physical impairment, did not have a clear cause; indeed, the factors
leading to the accident were unclear to the point where it was not possible to determine the contributory role of disability.

**Case 31**

An 81-year-old male with knee and hip problems was driving along a minor road towards a junction with a major B class road. He approached the junction slowly as if he was about to stop; however, he did not and emerged into the path of a vehicle approaching from the right. The case file reported that the disabled driver was a highly active man who drove on a daily basis. He was awaiting a knee operation and just prior to his journey on the day of the accident, he had complained of an unusual pain in his left hip. Nevertheless, there was no substantial evidence to suggest that disability was a probable contributing factor. Analysis of the case concluded that: ‘The reason why he failed to stop at the junction will never be known. The three main possibilities are: firstly, a lapse of attention; secondly, sudden illness; thirdly, that his control of the vehicle was impaired by the problems with his legs.’

Four cases also emerged from the analyses that were initially coded with ‘disability’ as a contributory factor but have been recoded here as ‘illness’ (Tables 6.2 and 6.3). The conditions displayed by the occupants included one with epilepsy, one with heart and thyroid problems and two with diabetes.

### 6.2.3 Summary

The vast majority of these cases document accidents in which eyesight problems were a contributory factor. This could perhaps be expected. Poor eyesight is common and in the Contributory Factor coding framework used by the police it can only be coded as ‘disability’.

Only one-quarter of the fatal accidents in IDB where disability was a contributory factor related to occupants with some form of functional impairment that was unrelated to poor eyesight or illness. Analysis of these fatal accident files indicates that the functional mobility impairments of drivers contributed to an extremely low number of the total fatal accidents that occurred in the UK between 1986 and 1998.

Where some form of physical disability was clearly a contributory factor, an emerging theme was the problems people with reduced lower limb mobility have trying to control their vehicles when presented with unexpected occurrences, even when their vehicle was fitted with an automatic transmission. Although inappropriate or insufficient responses are also common factors in accidents involving able-bodied drivers, several examples presented in this analysis indicate that lower limb impairments perhaps inhibit the ability of a driver to respond quickly and appropriately to relatively low-speed incidents.

Given that the total number of fatal accidents with disability as a contributory factor constitute a tiny percentage of overall fatal accidents (just 0.3%), there was little evidence in the analysis of these files to suggest that a disabled driver, using any necessary vehicle adaptations, is more at risk of a fatal accident than an able-bodied driver on account of their disability alone. This is especially true when one considers that only a quarter of accidents with a ‘disability’ coding actually relate to some form of impairment that is not eyesight related or classifiable as an illness. Indeed, in this instance, the incidence of fatal accidents where this type of disability was a contributory factor was just 0.1%.

### 6.3 On the Spot study

OTS accident research collects ‘live’ road accident data via two investigation teams based at TRRL and the Vehicle Safety Research Centre at Loughborough University who receive direct, secure notifications of incidents from Nottinghamshire and Thames Valley police forces.

#### 6.3.1 Objectives

Analysis of OTS case files provided detailed, qualitative examples of accidents involving disabled drivers and/or vehicles adapted for disabled occupants. Each case summary (Appendix S) identified:

1. The cause and outcome of each accident involving a disabled occupant and/or a vehicle adapted for a disabled occupant.
2. The role of disability in each accident, where applicable.
3. The role of vehicle adaptations for disabled occupants in each accident, in terms of both accident and injury causation, where appropriate.
4. Secondary data on the type of disability, age and gender of disabled occupants.

6.3.2 Results
All OTS cases involving disabled occupants and/or vehicles fitted with adaptations were summarised to provide: a description of the accident; any probable causes of the accident; the occupants; and all injuries and probable causes of injury. This was with the specific aim of identifying the role of disability and/or vehicle adaptations in the cause of the accident and/or any occupant injuries.

It is worth noting that the OTS specialises in gathering ‘perishable’ data that are only available when visiting the scene of a road traffic accident immediately after its occurrence. As such, it is geared towards collecting these data and, therefore, factors such as disability and vehicle adaptations may be secondary priorities for investigators. That is not to say that these factors are ignored, but they perhaps will not be given the same consideration as for the police IDB. Moreover, OTS case files are not compiled with the specific aim of assigning a contributory value to any disabilities or adaptations.

The incidence of disabled occupants in the OTS database was extremely low: just four cases were documented, all involving disabled drivers. This was just 0.3% of the 1,513 cases from December 1999 to October 2003. Complete case summaries are provided in Appendix S. A brief description of their relevance is presented below.

Accident 2
A vehicle driven by a 45-year-old male with muscular dystrophy struck a vehicle that entered a roundabout the driver was negotiating. The cause of the accident was listed as an error of judgement on behalf of the disabled driver, but there is no evidence to suggest that this error was a result of his disability; he stated that fatigue and road layout were the main contributory factors. He was not driving an adapted vehicle, although it was fitted with an automatic transmission.

Accident 3
This incident was a single-vehicle accident whereby a 28-year-old disabled female driver drove over a vehicle barrier at a private exit, which rose and damaged the underside of her vehicle as she was completing the manoeuvre. Accident investigators suspected she was trying to follow another vehicle through the barrier.

The driver had tetraplegia and hypotension. She was driving an adapted vehicle fitted with controls for the brake and accelerator as well as a steering spinner, all of which enabled her to drive one-handed. There is no indication that the vehicle adaptations contributed to her minor injuries. There is also no definitive evidence to suggest that her adaptations were responsible for her manoeuvre; she did comment that her disability was a contributory factor in the accident although it is not recorded how it contributed. Her familiarity with the vehicle and the route suggests that loss of control or confusion over how to negotiate the barrier were unlikely to have been causes, although her hypotension may have led to temporary confusion, dizziness, light-headedness and blurred vision.

Accident 4
The final OTS case documents how a 29-year-old female driver turned across the path of an oncoming vehicle at a traffic junction and was struck. The driver was a wheelchair user and taking codeine phosphate on prescription. Her vehicle was adapted for her needs and was fitted with a steering wheel spinner, a brake/accelerator hand control and a raised seat. The case file attributes the accident to an error of judgement on the part of the disabled driver. Elsewhere in the file, the disabled driver cited rain, poor road surface conditions and careless driving on the part of the other driver as contributory factors. These factors were dismissed in the file. Nowhere is there any suggestion that the female driver’s disabilities were in any way a contributory factor. The reason for her error of judgement was not specified.

6.3.3 Summary
Of the four reported cases involving disabled drivers from the OTS database, none demonstrated any clear connection between
accidents and a driver’s disability or adapted vehicle. The small number of relevant cases indicated that accidents involving disabled drivers were infrequent, although this may be a result of the study operating in a limited area and thus only capturing a fraction of all road accidents.

6.4 Vehicle and Operator Services Agency accident database
The VOSA vehicle-defects database contains details of all accidents where VOSA inspectors investigated a vehicle where there was an alleged defect that may have been contributory to an accident. This database is maintained by TRL on behalf of VOSA, using data collected by VOSA inspectors when they carry out post-accident vehicle inspections. A search was conducted of the 2003-2004 database, which contained 1,109 cases.

6.4.1 Objectives
Analysis of VOSA was undertaken to ascertain whether any road accidents were attributable to faulty vehicle adaptations fitted to assist disabled occupants.

6.4.2 Results
The VOSA vehicle-defects database was not easily searched for vehicles with adaptations for disabled drivers (and contained no information on whether a non-adapted vehicle was driven by a disabled driver). However, one relevant case emerged for which the hard-copy forms also included (unusually) a summary of the findings of the investigation and newspaper cuttings of the accident.

A summary of the single VOSA case file is presented in Appendix T. The accident, which resulted in one pedestrian fatality, involved the single driver of an adapted hire vehicle. The driver of this vehicle had lower limb disabilities that necessitated the use of the vehicle’s hand controls for the accelerator and brake. According to the file, the operation of these controls was described as follows:

‘The hand control comprised a handle with thumb-operated buttons. Pushing the buttons down operated the accelerator, while pushing the whole handle down operated the brake.’

This does not appear to have been an intuitive control device; the accident was caused when the driver’s vehicle accidentally shot forward, trapping a pedestrian between his car and the car in front and, after reversing, driving forwards into the pedestrian again. This lack of controlled operation was mirrored by a VOSA inspector during the investigation. It was concluded that during an emergency braking manoeuvre, there was a natural tendency to push on the lever and the buttons simultaneously, thus providing acceleration and braking forces together.

6.4.3 Summary
This accident appears to not have been directly caused by the existence of a disability as the error was reproduced by an able-bodied driver. Instead, it seems that the error was the result of hand-operated controls that did not have intuitive functionality.

6.5 Police Contributory Factors database
Many British police forces have recorded contributory factors in road accidents for several years but, until recently, the recording systems were inconsistent and results could not be combined to provide a broader picture of accident causation. In 1996, however, TRL developed a new Contributory Factors system to operate as an extension of the regular STATS19 system, which records all injury road accidents in Great Britain.

6.5.1 Objectives
Twelve police forces used the TRL-developed Contributory Factors system between 1999 and 2003 (and 15 forces used it from 2001), capturing a range of road conditions. Analysis aimed to determine:

1. The number of injury accidents in Great Britain where disability was recorded as a contributory factor.
2. The level of confidence with which disability was recorded as a contributory factor in each accident.
3. The overall incidence of injury accidents with disability as a contributory factor, based on injury severity and the level of confidence recorded in the contributory factor.

The TRL system had two factors when recording accident causation:

6 GOVERNMENT-FUNDED ROAD ACCIDENT DATABASES
1. **Precipitating factors** describe the failure or manoeuvre that led directly to the accident, with one recorded per accident (the factor is allocated to the person responsible); and

2. **Contributory factors** describe the reasons for the precipitating factor in an accident and up to four can be recorded; much of the evidence needed to identify these factors is subjective so the police are asked to record their confidence in each factor as ‘definite’, ‘probable’ or ‘possible’.

One of the 51 contributory factors was disability. The Contributory Factors database of injury accidents in Great Britain was searched for those cases where disability was considered to be a contributory factor. For each accident where disability was a contributory factor, the severity of the injury/injuries sustained by those involved and the level of confidence the police recorded in disability as a factor were also noted. Accidents were only recorded if one or more persons sustained fatal, serious or slight injuries.

It is important to note that the criteria for assessing whether disability was present among any of the persons involved in an accident were not explicitly specified; instead, disability as a contributory factor was recorded based upon the subjective appraisal of the investigating police officer(s). As it can be somewhat difficult to identify different types of disability, no provision was made within the system for classifying this.

### 6.5.2 Results

Table 6.4 presents the incidence of disability as a contributory factor in accidents where one or more car occupants were injured. The results are presented according to the severity of any injuries.

These results suggest that a driver’s disability contributed to relatively few injury accidents. In order to assess its incidence more precisely and to allow for the variable levels of confidence recorded by the police, Table 6.5 has three columns of results:

1. **Definite** – the proportion of accidents where one or more definite factors was recorded and in which disability was recorded as a definite factor.
2. **Definite or probable** – the proportion of accidents where one or more definite or probable factors was recorded and in which disability was recorded as a definite or probable factor.
3. **Any level** – the proportion of accidents in which disability was recorded with any level of confidence.

The incidence of disability as a contributory factor in injury road accidents was extremely low, regardless of the injury severity or level of confidence recorded in the factor (Table 6.5).

### 6.5.3 Summary

As the database covered approximately one-quarter of all accidents recorded on STATS19, the results of this analysis could be nationally representative. Furthermore, the wide range of participating police forces indicated extensive coverage of all types of road, driver

<table>
<thead>
<tr>
<th>Accident severity</th>
<th>Number of accidents with confidence marked as:</th>
<th>Total number of accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Definite</td>
<td>Probable</td>
</tr>
<tr>
<td>Fatal</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Serious</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td>Slight</td>
<td>110</td>
<td>137</td>
</tr>
<tr>
<td>All severities</td>
<td>125</td>
<td>163</td>
</tr>
</tbody>
</table>
and vehicle. However, conclusions about the contributory role of disability in road accidents could not be made without first considering the subjective nature of recording contributory factors.

In the first instance, the existence of a disability is a subjective measure. Police officers were looking for no more than four contributory factors, so it was unlikely a disability would be recorded in error if the driver did not show clear signs of a recognisable impairment; however, it should be noted that officers were not medically trained for their role and misdiagnosis and misinterpretation of disabilities may have occurred, especially as some disabilities are not obvious. As all fatal accidents are attended by qualified accident investigators, the incidence of disability as a contributory factor in fatal accidents should be reliable. Contrastingly, most police officers who attend road accidents where there was not a fatality are not qualified accident investigators, the incidence of disability as a contributory factor in non-fatal accidents should be reliable.

7 Discussion and conclusions

Data for this study were gathered from several different sources. Key summary statistical estimates are provided in this section, with a discussion of the main findings. When reading the results, two points should be considered. The first is that data collected from the DVLA DMG database reflect drivers with substantive (full) licences. The database does not capture provisional licence holders and does not reflect the number of disabled people who attempt to obtain a licence but fail, or have an existing licence revoked because of a disability. Therefore, these data may only reflect the minimum number of disabled people that perhaps attempt to access and use services to facilitate driving with a disability. The second point is that estimates made from the survey of drivers with medical conditions listed by DVLA may be biased by the specific conditions that were sampled. The resulting estimates are perhaps biased towards drivers whose disabilities result in functional, physical impairments and generally reflect the needs and experiences of drivers with the sampled disabilities rather than all drivers listed on the DVLA DMG database.

Estimated number of disabled drivers

From the outset, the primary objective of this research study was to estimate the number of disabled drivers. Over ten million disabled people are thought to be living in Great Britain, of which almost 9.5 million are thought to be adults and therefore of driving age (Department for Work and Pensions, 2006). From the data gathered during this study, the largest estimate indicated that the number of licensed disabled drivers was at least 1.9 million (approximately 20% of the estimated number of disabled adults). This figure related to the total number of drivers with medical conditions listed on the DVLA DMG database (Table 7.1). It covered only Great Britain rather than the whole of the UK.

Table 6.5 Incidence of disability as a contributory factor, 1999-2003

<table>
<thead>
<tr>
<th>Accident severity</th>
<th>Confidence recorded in factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Definite</td>
</tr>
<tr>
<td>Fatal</td>
<td>0.0%</td>
</tr>
<tr>
<td>Serious</td>
<td>0.1%</td>
</tr>
<tr>
<td>Slight</td>
<td>0.1%</td>
</tr>
<tr>
<td>All severities</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
and was the equivalent of 33 drivers with medical conditions per 1,000 population. Approximately 6% of the 34 million licensed drivers in Great Britain had DVLA-listed medical conditions (8% of all male drivers and 3% of all female drivers). The proportion of all licensed drivers with medical conditions increased with age; among those over 70 years, 22% of all males and 14% of all females had medical conditions.

Consideration of other data sources potentially increased this estimate. In the UK, an estimated 1.251 million drivers held Blue Badges, and therefore had a disability that impaired their ability to walk. Survey data collected from drivers who had notified DVLA of a medical condition indicated the percentage of drivers listed by DVLA DMG who also had Blue Badges – equivalent to 1.131 million active drivers. This was 120,000 fewer than the number of active drivers indicated by the Blue Badge survey, suggesting that the two populations were not entirely homogeneous.

As of 2004, approximately 270,000 Motability clients drove in the UK; somewhat less than the estimated 394,000 drivers with DVLA-listed medical conditions who were also believed to be Motability clients in Great Britain as of 2006 (based on 24% of respondents to the DVLA survey stating they were Motability clients).15 Similarly, the NTS estimated 320,000 disabled drivers were in Great Britain (average from 1995-2003, based on a restricted definition). Unfortunately, these four data sources were heavily interrelated to an unknown extent: it was unclear what percentage of the Blue Badge population was also listed on the DVLA DMG database; it was unclear whether all Motability clients had Blue Badges (although it was likely); and, likewise, it was not known whether the population of disabled drivers that was estimated by the NTS had either Blue Badges or was included in the DVLA DMG database.

Therefore, approximately two million licensed disabled drivers were estimated to be in the UK, based on the largest single data source (the DVLA DMG database). That assumed that DVLA listed all disabled drivers; this was unlikely, especially as the data already estimated that some Blue Badge holders were not represented on the DVLA DMG database. However, because not all licensed disabled drivers were thought to be current, active drivers, it is feasible that the number of active disabled drivers in the UK may be closer to 1.7 million. Yet the true figure may be greater than 1.7 million (and quite possibly in excess of two million) as it was also plausible that there were active disabled drivers who had neither a Blue Badge nor a medical condition listed with DVLA or were accounted for by just one of the four data sources quoted for this report.

### Table 7.1 Estimated number of disabled drivers (multiple sources)

<table>
<thead>
<tr>
<th>Source</th>
<th>DVLA database and survey (GB)</th>
<th>Blue Badge database and survey (UK)</th>
<th>Motability (UK)</th>
<th>NTS (GB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of licensed disabled drivers (000s)</td>
<td>1,904</td>
<td>1,251</td>
<td>270</td>
<td>320</td>
</tr>
<tr>
<td>Number of active licensed disabled drivers (000s)</td>
<td>1,638</td>
<td>1,251</td>
<td>270</td>
<td>320</td>
</tr>
</tbody>
</table>

15 The discrepancy between Motability data and estimates from the survey data is likely to be a product of sampling predominantly physical disabilities for the survey of DVLA-listed drivers.

**Estimated age, gender and ethnicity of disabled drivers**

The mean age of drivers in the largest single source of data was 57 years (DVLA DMG database). Respondents to the DVLA survey had an identical mean age (Table 7.2). Drivers with Blue Badges had an estimated mean age
of 65 years (based on the mean age of survey respondents). The population of disabled drivers with Blue Badges appeared to be older than disabled drivers listed by other sources, evident in the distribution by age band for each of the listed sources in Table 7.2. Otherwise, the age distribution of drivers with medical conditions (listed by DVLA in their DMG database) was similar to the NTS estimates, perhaps with the exception of the NTS estimating slightly greater proportions of disabled drivers aged 60-69 years. The DVLA survey produced a near-identical age distribution when compared with the DMG database, suggestive of a representative surveyed sample.

Among all sources, there were more male disabled drivers than females. With the exception of the DVLA DMG database, all other sources indicated that the male–female ratio of disabled drivers was 6:39 (Table 7.2). The DVLA database indicated a higher proportion of males, but this was likely to be attributed to a few male-dominated medical conditions, such as alcohol misuse.

In both the DVLA survey and the survey of Blue Badge holders, ethnic minority groups were under-represented (97% of each sample was white, compared with 92% of the UK population). This may have been a product of the English-language dependent survey method of the (relatively) small samples. However, it could indicate that ethnic minority groups were perhaps not fully represented among disabled drivers and that this is worthy of further investigation.

### Estimated geographical distribution of disabled drivers

In Great Britain, Wales was estimated to have the highest density of disabled drivers: 36 per 1,000 population for drivers with listed medical conditions (according to the DVLA DMG database) and 38 per 1,000 population from the projected figures for Blue Badge holders who drove. This was greater than the respective average rates for Great Britain (Table 7.3). Region-specific data for England were available via the DVLA DMG database. The South East of England (excluding London) had the greatest density and volume of drivers with listed medical conditions, whereas London had the lowest density of disabled drivers, followed by the North East of England, which also had the lowest volume.

### Estimated range of disabilities for disabled drivers

The range of grouped medical conditions from the DVLA DMG database, and the variety of self-reported disabilities from survey respondents with Blue Badges, was evidence of the diversity of medical problems affecting
a large number of drivers. There were notable differences in the prevalent medical conditions listed by DVLA and the disabilities reported by surveyed Blue Badge holders (Table 7.4). The descriptive nature of some of the self-reported survey responses prevented exact categorisation of disabilities but it was also clear that several of the disabilities reported by survey respondents would not be listed by DVLA as they did not require DVLA to make a medical decision. Examples included the wide range of functional disabilities that were often related to non-specific walking difficulties. Although not warranting consideration by DVLA, such drivers were still considered ‘disabled’ and received parking concessions as a result.

There was a large difference in the levels of reporting of some conditions. Diabetes was frequently reported to DVLA (by 25% of listed drivers) but by just 3% of Blue Badge holders. This is very likely to be a reflection of the legal requirement to notify DVLA of diabetes, whereas Blue Badge holders probably did not view diabetes as their main reason for receiving parking concessions. Conversely, arthritis was reported by 37% of Blue Badge holders but represented just 0.7% of DMG-listed drivers. This difference is probably due to underreporting to DVLA. Arthritis is most likely viewed by the individual as a condition that seriously affects their mobility outside of a car rather than their ability inside, behind the wheel.

This difference in the range of disabilities reported by these two key sources of disabled drivers suggested that the populations were not homogeneous. This supported the projection that the total number of disabled drivers could be in excess of the total number listed on the DVLA DMG database.

### Estimated growth in the population of disabled drivers

Due to the collection of historical statistics for the rate of Blue Badge issue since 1987 (for England, at least), growth was projected based on findings from a surveyed sample of existing Blue Badge holders (which was assumed to be representative). Calculations of growth assumed that the driver–passenger ratio will remain static. On this basis, by 2010 Blue Badge holders in Great Britain are expected to grow by 430,000 (in comparison with the actual rate in 2004): 210,000 will be drivers, and the majority will reside in England (Table 7.5). Indeed, England was found to have the greatest volume of disabled drivers in 2004 and was predicted to maintain that position in 2010. However, this was an artefact of its inflated population when compared with Scotland and Wales: in terms of disabled driver density, this was greater in Scotland and greatest in Wales in 2004 and this trend was projected to continue.
<table>
<thead>
<tr>
<th>Medical condition</th>
<th>DVLA DMG database</th>
<th>Blue Badge survey*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of total (n=1,904,174)</td>
<td>% of total (n=782)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>24.7</td>
<td>2.8</td>
</tr>
<tr>
<td>Restricted movement and paralysis**</td>
<td>-</td>
<td>16.5</td>
</tr>
<tr>
<td>Heart problems</td>
<td>12.5</td>
<td>15.9</td>
</tr>
<tr>
<td>Neurological</td>
<td>11.9</td>
<td>3.3***</td>
</tr>
<tr>
<td>Alcohol misuse</td>
<td>11.4</td>
<td>-</td>
</tr>
<tr>
<td>No relevant medical condition</td>
<td>10.4</td>
<td>-</td>
</tr>
<tr>
<td>Vision problems</td>
<td>8.8</td>
<td>0.4</td>
</tr>
<tr>
<td>Functional disability****</td>
<td>-</td>
<td>8.1</td>
</tr>
<tr>
<td>Other</td>
<td>6.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Stroke</td>
<td>6.5</td>
<td>1.9</td>
</tr>
<tr>
<td>Blood/circulation problems*****</td>
<td>3.5</td>
<td>2.8</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>3.4</td>
<td>-</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>1.9</td>
<td>2.7</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>-</td>
<td>2.6</td>
</tr>
<tr>
<td>Limb disability – static/amputation</td>
<td>1.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Brain damage – acquired</td>
<td>1.6</td>
<td>-</td>
</tr>
<tr>
<td>Polio</td>
<td>-</td>
<td>1.5</td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>1.3</td>
<td>-</td>
</tr>
<tr>
<td>Cancer</td>
<td>1.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Injury through accident</td>
<td>-</td>
<td>1.0</td>
</tr>
</tbody>
</table>

*Drivers only.

**Including replacement joints and limb abnormality.

***Including dementia and Parkinson’s disease.

****Including elderly and those with non-specific walking/mobility problems.

*****Including hypertension and hypotension.
Table 7.4 (cont’d) Disabilities among drivers listed on the DVLA DMG database (grouped) and drivers responding to the Blue Badge survey (percentage within each source)

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>DVLA DMG database</th>
<th>Blue Badge survey*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of total (n=1,904,174)</td>
<td>% of total (n=782)</td>
</tr>
<tr>
<td>Brain tumour</td>
<td>0.9</td>
<td>-</td>
</tr>
<tr>
<td>Sleep disorders</td>
<td>0.8</td>
<td>-</td>
</tr>
<tr>
<td>Arthritis</td>
<td>0.7</td>
<td>37.0</td>
</tr>
<tr>
<td>Liver/kidney/renal</td>
<td>0.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Drug misuse</td>
<td>0.3</td>
<td>-</td>
</tr>
<tr>
<td>Spinal injuries</td>
<td>0.3</td>
<td>-</td>
</tr>
<tr>
<td>Other non-neurological</td>
<td>0.3</td>
<td>-</td>
</tr>
<tr>
<td>Brain damage – generalised</td>
<td>0.2</td>
<td>-</td>
</tr>
<tr>
<td>Dementia</td>
<td>0.2</td>
<td>-</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Spina bifida</td>
<td>0.1</td>
<td>0.4</td>
</tr>
<tr>
<td>Muscular dystrophy or atrophy</td>
<td>0.1</td>
<td>-</td>
</tr>
<tr>
<td>Back problems including all spinal injuries</td>
<td>-</td>
<td>17.3</td>
</tr>
<tr>
<td>Back problems</td>
<td>0.1</td>
<td>-</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>0.1</td>
<td>-</td>
</tr>
<tr>
<td>Motor neurone disease</td>
<td>0.1</td>
<td>-</td>
</tr>
<tr>
<td>Hearing impairment</td>
<td>0.1</td>
<td>-</td>
</tr>
<tr>
<td>Immunocompromised</td>
<td>&lt;0.1</td>
<td>-</td>
</tr>
<tr>
<td>Respiratory</td>
<td>&lt;0.1</td>
<td>11.3</td>
</tr>
<tr>
<td>Learning disabilities</td>
<td>&lt;0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

*Drivers only.

Table 7.5 Blue Badges on issue in 2004 (actual) and 2010 (projected)

<table>
<thead>
<tr>
<th>Location</th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
<th>Great Britain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate per 1,000 population for all Blue Badge holders (and drivers only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>42 (20)</td>
<td>45 (21)</td>
<td>72 (35)</td>
<td>43 (21)</td>
</tr>
<tr>
<td>2010</td>
<td>47 (23)</td>
<td>50 (24)</td>
<td>89 (43)</td>
<td>49 (24)</td>
</tr>
<tr>
<td>Number of Blue Badges on issue (and to drivers only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>2,074 (1,006)</td>
<td>224 (109)</td>
<td>214 (104)</td>
<td>2,511 (1,218)</td>
</tr>
<tr>
<td>2010</td>
<td>2,419 (1,173)</td>
<td>256 (124)</td>
<td>268 (130)</td>
<td>2,943 (1,428)</td>
</tr>
</tbody>
</table>
Estimated number of adapted vehicles

There were estimated to be at least 27,000 adapted vehicles used by Motability clients across the UK (Section 4). However, data from the surveys conducted for this study suggested that there could be between 175,000 and 428,000 adapted vehicles (Table 7.6). The lower estimate was based on data for the population of Blue Badge holders: 92,000 of these vehicles were believed to be adapted for disabled drivers and the rest for passengers. The upper estimate of 428,000 adapted vehicles applied to the number of drivers with listed medical conditions held on the DVLA DMG database. Adapted vehicle estimates for each population were not thought to be exclusive and were likely to overlap. The true total could well exceed the upper estimate, but, as the surveyed sample of DVLA-listed drivers was biased towards respondents with physical disabilities (and therefore having the greatest need for vehicle adaptations), the actual number of adapted vehicles could also be less than 428,000.

In addition, there were known to be 37,000 drivers with licences that restricted them to driving vehicles with adaptations. These data related to all drivers with medical conditions listed by DVLA. Within the population of Blue Badge holders, there were estimated to be 51,000 drivers with this type of licence restriction; this was greater than the number listed on the DVLA DMG database. However, because licence holders have responsibility for notifying DVLA of any special controls, and because guidance for doing so is not comprehensive, it is likely that there was some misreporting and underreporting of special controls. Moreover, data were only provided by DVLA for drivers with full licences and there would be provisional licence holders with similar restrictions. This may account for some of the variation (some variation may also occur as a product of surveying a small sample to represent a large population of drivers).

Drivers with these types of licence restriction would generally be expected to use an adapted vehicle if they were an active driver but in some circumstances they may not need to. For example, a driver who requires power-assisted steering would not necessarily need an adapted vehicle and a driver who requires a modified clutch may choose to drive an automatic vehicle, thus negating the requirement for an adaptation. Thus a different interpretation of the requirements might also have contributed to variation in data.

Primary car-control adaptations were clearly the most prevalent type of vehicle adaptation among all sources of disabled drivers consulted for this study. Most of the DVLA vehicle-restriction codes that were applied to licences related to modified steering (according to the DVLA DMG database), although among DVLA survey respondents it was modified combined brakes and accelerators, and among the surveyed sample of Blue Badge holders it was modified accelerators. The overwhelming majority of disabled drivers from all three sources had just one category of adaptation fitted to their vehicle.

<table>
<thead>
<tr>
<th>Source</th>
<th>DVLA database and survey (GB)</th>
<th>Blue Badge database and survey (UK)</th>
<th>Motability (UK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of adapted vehicles (000s)</td>
<td>428</td>
<td>175 (92 for drivers)</td>
<td>27</td>
</tr>
<tr>
<td>Number of licensed drivers restricted to adapted vehicles (000s)</td>
<td>37</td>
<td>51</td>
<td>-</td>
</tr>
</tbody>
</table>
Estimated growth in vehicle adaptations

As with the overall population of disabled drivers, growth could only be projected for numbers of adapted vehicles within the population holding Blue Badges. Again using data collected from the survey of Blue Badge holders, the proportion of drivers and passengers using adapted vehicles was calculated. Growth for drivers of adapted vehicles was estimated at 25,000 additional vehicles by 2010 (compared with 90,000 in 2004). Adapted vehicles for passengers with Blue Badges were expected to rise by 14,000 (although it was assumed that some of these adapted vehicles would also be driven by disabled drivers based on the types of adaptations reported by passengers). These data did not account for adapted vehicles in Northern Ireland (an additional 4,000 in 2004) and applied to Great Britain only (Table 7.7).

Estimated involvement of disabled drivers in road accidents

Respondents to both surveys provided an indication of the number of road accidents in which they had been involved as a driver or as a passenger in the last five years. Accident severity was not specified and therefore included all severities, from minor bumps and scrapes to accidents involving occupant injuries. Approximately 20% of all drivers responding to the DVLA survey had had at least one accident as a driver, compared with 8% of Blue Badge survey respondents. These accident rates were used to estimate the number of accidents occurring in the last five years for each of the respective populations. For the population of drivers with medical conditions listed on the DVLA DMG database, the number of estimated accidents as drivers was 383,000, compared with 104,000 for Blue Badge holders (Table 7.8). Rates were also calculated for accidents as passengers in the respective populations.

No direct comparison could be made with accidents among non-disabled populations. There was no indication that the estimated accident rates for these populations were in any way unusual and there was no suggestion that disability was a contributory factor in these accidents. Indeed, the incidence of disability as a contributory factor in fatal or injurious accidents was found to be between 0.1 and 0.3% (according to the Government-funded road accident databases analysed in Section 6). Nevertheless, it should be noted that road collisions involving drivers who are elderly and/or have pre-existing medical conditions are more likely to result in serious injury or death. This may make it difficult for attending police officers to identify any disability-related contributory factors.

However, a small number of incidents were reported by survey respondents to suggest that vehicle adaptations were contributing to accident causation and/or occupant injury. In light of the high volume of estimated accidents (of varying severity) within these populations, and the relatively high numbers of adapted vehicles, this is worthy of further investigation.

In addition to the survey findings, there were also results from the various Government-funded road accident databases. The CCIS data analysis suggested adaptations were not a significant factor in injury causation; however, none of the vehicles included in the database were fitted with ‘heavy’ adaptations (a drive-from-wheelchair conversion, for example) and the sample was small.

The OTS database analysis suggested that disability and vehicle adaptations were not major contributory factors in either accident or injury causation. Analysis of both OTS

<table>
<thead>
<tr>
<th>Year</th>
<th>GB total</th>
<th>Used by drivers</th>
<th>Used by passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 (actual)</td>
<td>171</td>
<td>90</td>
<td>81</td>
</tr>
<tr>
<td>2010 (projected)</td>
<td>200</td>
<td>105</td>
<td>95</td>
</tr>
</tbody>
</table>
and CCIS databases demonstrated that the incidence of accidents involving disabled drivers was extremely low in both samples, accounting for just 0.3% of all cases.

When specifically assessing the incidence of fatal accidents where disability was recorded as a contributory factor at all confidence levels, disability contributed to just 0.3% of accidents. This figure was further reduced when the number of miscoded accidents was accounted for. Moreover, less than one-quarter of all fatal accidents where disability was recorded as a contributory factor were attributable to a ‘disability’ that was not eyesight related or technically classifiable as an illness.

IDB did not indicate that disability was a major contributory factor in fatal road traffic accidents. Yet the finding that physical disability, especially in lower limbs, may have a bearing on the ability of a driver to exercise control in an emergency situation is worthy of further consideration. The few examples of this were extreme cases where fatal accidents occurred because the disabled drivers that were involved appeared to make errors that they were unable to correct. (It was also recognised that an able-bodied driver may have not been able to regain control in the cases documented in this study.)

The largest of all the databases analysed for this study confirmed that the incidence of disability as a contributory factor in all injury accidents was extremely low: just 0.2%. This figure was taken from the Contributory Factors database used by about one-quarter of all police forces to record the contributory factors for all accidents they attended that resulted in injury (be it fatal, serious or slight). When only definite or probable causes of accidents with disability as a contributory factor were considered, the incidence of disability as a contributory factor halved to just 0.1%. Unfortunately, the Contributory Factors database did not record instances where accidents may have been caused by vehicle-adaptation faults or misuse. Only one clear example of an accident attributed to adaptation fitment was discovered; that example came from the VOSA database and documented a fatal accident caused by the misuse of hand controls that were of a non-intuitive design. This case raised questions about the suitability of some vehicle-adaptation designs although, on its own, it did not indicate that a significant risk was presented through the fitment of such devices. There may be other, less serious accidents also partly due to poorly designed adaptations that never come to light. This aspect of adaptation fitment was further explored through the surveys of Blue Badge holders and DVLA-classified drivers and a small number of similar examples emerged. At present it is one issue that, despite a thorough search of all recognised accident-recording databases, remains relatively obscure. Whether this is due to the fact that such adaptations pose little or no risk as indicated so far, or whether it is due to their contributory role in accidents rarely being recorded, remains to be explored.

**Problems with vehicle use**

The most common problem for disabled drivers was vehicle access. Even when adaptations were fitted, this remained the most prevalent problem among drivers. Storage of wheelchairs and mobility equipment was the second most common problem and this

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### Table 7.8 Blue Badges on issue in 2004 (actual) and 2010 (projected)

<table>
<thead>
<tr>
<th></th>
<th>Accidents five years prior to survey</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>As a driver</td>
<td>As a passenger</td>
</tr>
<tr>
<td>DVLA survey</td>
<td>Blue Badge survey</td>
<td>DVLA survey</td>
</tr>
<tr>
<td>Blue Badge survey</td>
<td></td>
<td>Blue Badge survey</td>
</tr>
<tr>
<td>% of total population</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Estimated total number of accidents (000s)</td>
<td>383</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>86</td>
<td>66</td>
</tr>
</tbody>
</table>
was followed by (in order): difficulty using primary controls; seating problems; difficulty using secondary controls; and other problems. These findings highlight the main areas of concern and may help target desirable areas for the development and improvement of vehicle adaptations.

**Experience of vehicle adaptations**

Overall, it was estimated that 413,000 drivers without vehicle adaptations may have problems with vehicle use. This is a potential market for further assistance, perhaps in the form of vehicle adaptations. It is feasible to believe this group would also increase with the expected increase in the number of disabled drivers.

When vehicle adaptations were fitted, they were often chosen for their suitability for the occupant’s physical needs over and above other factors. Adaptation reliability was the next most common factor affecting adaptation choice and this was followed by (in order): safety in the event of an accident; fast availability; local availability; cost; and appearance. These factors were given the same priority by both surveyed samples. They appear to be fairly robust findings and provide insight into the most desirable characteristics of vehicle adaptations. Such findings may be of value to the vehicle-adaptation industry.

**Conclusion**

Of the 9.5 million disabled adults living in Great Britain, approximately 20% are believed to drive. Several sources of data have been used throughout this report to explore the population of disabled drivers. Overall, there are thought to be at least 1.25 million disabled drivers with Blue Badges across the UK. These drivers all have disabilities that impair their ability to walk, among other factors. A considerable proportion of these Blue Badge holders (some 1.13 million) are thought to be included in the 1.64 million active drivers with medical conditions listed by DVLA. However, the actual number of drivers on the DVLA DMG database is 1.9 million (the total number of drivers with medical conditions that could actually be driving).

The majority of disabled drivers are thought to be male and most live in the South East of England. Wales is believed to have the highest density of disabled drivers, which is projected to be growing more rapidly than the rest of Great Britain. It is estimated that there are as many as 428,000 adapted vehicles on UK roads. Most have primary car-control adaptations. While these figures estimated the number of disabled people successfully driving, they did not account for those going through the process of becoming a licensed disabled driver (and those who failed during this process). Therefore, the overall volume of people accessing services and facilities for driving with a disability was believed to be greater than the estimates provided in this report for current drivers.

By 2010, growth in both the number of disabled drivers and the number of adapted vehicles in the UK is expected. The data provided in this report should help identify where resources can be appropriately distributed to cater for this growing population of drivers. In particular, there is a need to further investigate the safety, suitability, provision and usage of vehicle adaptations. There is also uncertainty over whether ethnic minorities have the mobility options that are available to others. Final consideration should perhaps also be given towards establishing a UK-wide method for monitoring the number of disabled drivers and closely sampling their experiences. This report has highlighted the rather disjointed range of current data sources and the need for a collaborative method of data collection to improve monitoring and servicing the needs of this growing population of drivers.
8 Acknowledgements

The authors are grateful to Motability for their contribution to the findings of this work, to the Local Authorities that assisted with the survey and to DVLA for providing data and administrative services.

9 References


## Appendixes

### Appendix A Drivers in each age band, by gender (n=1,904,126)

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Male</th>
<th></th>
<th></th>
<th>Female</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td></td>
<td>Number</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>17-29</td>
<td>69,344</td>
<td>4</td>
<td></td>
<td>38,967</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>164,206</td>
<td>9</td>
<td></td>
<td>70,646</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>221,256</td>
<td>12</td>
<td></td>
<td>83,949</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>50-59</td>
<td>274,929</td>
<td>14</td>
<td></td>
<td>82,242</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>60-69</td>
<td>261,963</td>
<td>14</td>
<td></td>
<td>68,753</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>70-79</td>
<td>296,362</td>
<td>16</td>
<td></td>
<td>95,023</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>80-89</td>
<td>125,101</td>
<td>7</td>
<td></td>
<td>4,097</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>90-99</td>
<td>8,203</td>
<td>&lt;1</td>
<td></td>
<td>2,209</td>
<td>&lt;1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,421,364</strong></td>
<td><strong>75</strong></td>
<td></td>
<td><strong>482,762</strong></td>
<td><strong>25</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Proportions within each ethnic group were not all reported by Motability due to very low representation within these groups.

### Appendix B Drivers with medical conditions as a percentage of the total licensed population in Great Britain, by age and gender

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>% of all licensed drivers in Great Britain*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (n=18,073,276)</td>
</tr>
<tr>
<td>17-29</td>
<td>2</td>
</tr>
<tr>
<td>30-39</td>
<td>4</td>
</tr>
<tr>
<td>40-49</td>
<td>6</td>
</tr>
<tr>
<td>50-59</td>
<td>9</td>
</tr>
<tr>
<td>60-69</td>
<td>11</td>
</tr>
<tr>
<td>70+</td>
<td>22</td>
</tr>
<tr>
<td><strong>All adults</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

*Number of licensed drivers in Great Britain is taken from the NTS and is derived from the average number of license holders between 1995 and 2003.
### Appendix C Number of drivers with each medical condition

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Medical group</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes – tablet</td>
<td>Diabetes</td>
<td>236,612</td>
</tr>
<tr>
<td>Diabetes – insulin</td>
<td>Diabetes</td>
<td>212,373</td>
</tr>
<tr>
<td>High-risk offenders</td>
<td>Alcohol misuse</td>
<td>204,055</td>
</tr>
<tr>
<td>No relevant medical condition</td>
<td>No medical condition</td>
<td>198,581</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>Neurological</td>
<td>151,560</td>
</tr>
<tr>
<td>Unclassified medical condition</td>
<td>Other</td>
<td>117,601</td>
</tr>
<tr>
<td>Stroke</td>
<td>Stroke</td>
<td>92,165</td>
</tr>
<tr>
<td>Pacemaker</td>
<td>Heart problems</td>
<td>57,465</td>
</tr>
<tr>
<td>Angina</td>
<td>Heart problems</td>
<td>56,750</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>Vision</td>
<td>50,243</td>
</tr>
<tr>
<td>Hypertension – VOC</td>
<td>Blood/circulation</td>
<td>47,028</td>
</tr>
<tr>
<td>Visual problem – other</td>
<td>Vision</td>
<td>44,520</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>Multiple sclerosis</td>
<td>35,824</td>
</tr>
<tr>
<td>Diabetes – diet</td>
<td>Diabetes</td>
<td>34,846</td>
</tr>
<tr>
<td>Depression</td>
<td>Psychiatric</td>
<td>32,014</td>
</tr>
<tr>
<td>Limb disability – static</td>
<td>Limb disability – static</td>
<td>31,299</td>
</tr>
<tr>
<td>Heart notification</td>
<td>Heart problems</td>
<td>24,796</td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>Parkinson’s</td>
<td>24,649</td>
</tr>
<tr>
<td>Cataract</td>
<td>Vision</td>
<td>22,983</td>
</tr>
<tr>
<td>Retinopathy</td>
<td>Vision</td>
<td>22,819</td>
</tr>
<tr>
<td>Alcohol misuse</td>
<td>Alcohol misuse</td>
<td>22,419</td>
</tr>
<tr>
<td>Cancer – other</td>
<td>Cancer</td>
<td>21,279</td>
</tr>
<tr>
<td>Blackout – unknown cause</td>
<td>Neurological</td>
<td>21,087</td>
</tr>
<tr>
<td>Heart application</td>
<td>Heart problems</td>
<td>20,919</td>
</tr>
<tr>
<td>Seizure – solitary, unprovoked</td>
<td>Neurological</td>
<td>20,458</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Blood/circulation</td>
<td>19,000</td>
</tr>
<tr>
<td>Brain transient ischaemic attack – TIA stroke</td>
<td>Stroke</td>
<td>17,289</td>
</tr>
<tr>
<td>Heart attack</td>
<td>Heart problems</td>
<td>17,281</td>
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<tr>
<td>Sleep apnoea</td>
<td>Sleep disorders</td>
<td>15,190</td>
</tr>
<tr>
<td>Subarachnoid haemorrhage</td>
<td>Stroke</td>
<td>14,946</td>
</tr>
</tbody>
</table>

**All medical conditions** | **2,205,456**

*VOC=vocational licence use only.*
### Appendix C (cont’d) Number of drivers with each medical condition

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Medical group</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart arrhythmia</td>
<td>Heart problems</td>
<td>14,028</td>
</tr>
<tr>
<td>Head injury – 0</td>
<td>Acquired brain damage – traumatic</td>
<td>11,865</td>
</tr>
<tr>
<td>Angina – VOC</td>
<td>Heart problems</td>
<td>11,695</td>
</tr>
<tr>
<td>Blackout – provoked syncope</td>
<td>Neurological</td>
<td>11,244</td>
</tr>
<tr>
<td>Arthritis</td>
<td>Arthritis</td>
<td>10,923</td>
</tr>
<tr>
<td>Brain tumour – benign</td>
<td>Brain tumour</td>
<td>10,577</td>
</tr>
<tr>
<td>Monocular vision</td>
<td>Vision</td>
<td>10,062</td>
</tr>
<tr>
<td>Chest pain – non-cardiac – VOC</td>
<td>Other</td>
<td>9,127</td>
</tr>
<tr>
<td>Bipolar affective disorder</td>
<td>Psychiatric</td>
<td>8,652</td>
</tr>
<tr>
<td>Heart valve disease</td>
<td>Heart problems</td>
<td>7,969</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>Psychiatric</td>
<td>7,925</td>
</tr>
<tr>
<td>Giddiness</td>
<td>Neurological</td>
<td>7,453</td>
</tr>
<tr>
<td>Head injury – in last six months</td>
<td>Acquired brain damage – traumatic</td>
<td>6,499</td>
</tr>
<tr>
<td>Heart – other</td>
<td>Heart problems</td>
<td>6,389</td>
</tr>
<tr>
<td>Giddiness – Ménières disease</td>
<td>Neurological</td>
<td>6,088</td>
</tr>
<tr>
<td>Visual acuity – reduced</td>
<td>Vision</td>
<td>6,023</td>
</tr>
<tr>
<td>Drug abuse</td>
<td>Drug misuse</td>
<td>5,562</td>
</tr>
<tr>
<td>Spinal injury</td>
<td>Spinal injuries</td>
<td>5,411</td>
</tr>
<tr>
<td>Heart – defibrillator</td>
<td>Heart problems</td>
<td>5,385</td>
</tr>
<tr>
<td>Arrhythmia – VOC</td>
<td>Heart problems</td>
<td>5,310</td>
</tr>
<tr>
<td>Mental illness – other</td>
<td>Psychiatric</td>
<td>5,207</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Psychiatric</td>
<td>4,918</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>Heart problems</td>
<td>4,662</td>
</tr>
<tr>
<td>Head injury – in last 12 months</td>
<td>Acquired brain damage – traumatic</td>
<td>4,554</td>
</tr>
<tr>
<td>Depression – mild or moderate</td>
<td>Psychiatric</td>
<td>4,407</td>
</tr>
<tr>
<td>Visual field defect</td>
<td>Vision</td>
<td>4,356</td>
</tr>
<tr>
<td>Perip vas or art disease – VOC</td>
<td>Other non-neurological</td>
<td>3,842</td>
</tr>
<tr>
<td>Double vision</td>
<td>Vision</td>
<td>3,696</td>
</tr>
<tr>
<td>Coronary artery bypass graft – VOC</td>
<td>Heart problems</td>
<td>3,518</td>
</tr>
<tr>
<td>Angioplasty – VOC</td>
<td>Heart problems</td>
<td>3,489</td>
</tr>
<tr>
<td><strong>All medical conditions</strong></td>
<td></td>
<td><strong>2,205,456</strong></td>
</tr>
</tbody>
</table>

*VOC=vocational licence use only.
### Appendix C (cont’d) Number of drivers with each medical condition

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Medical group</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macular degeneration</td>
<td>Vision</td>
<td>3,394</td>
</tr>
<tr>
<td>Dementia</td>
<td>Dementia</td>
<td>3,326</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>Cerebral palsy</td>
<td>2,995</td>
</tr>
<tr>
<td>Seizure – provoked</td>
<td>Neurological</td>
<td>2,972</td>
</tr>
<tr>
<td>Kidney disease – transplant</td>
<td>Liver/kidney/renal</td>
<td>2,900</td>
</tr>
<tr>
<td>Heart murmur – innocent</td>
<td>Heart problems</td>
<td>2,842</td>
</tr>
<tr>
<td>Subarachnoid haematoma – no cause</td>
<td>Acquired brain damage – traumatic</td>
<td>2,812</td>
</tr>
<tr>
<td>Brain tumour – pituitary</td>
<td>Brain tumour</td>
<td>2,779</td>
</tr>
<tr>
<td>Spina bifida</td>
<td>Spina bifida</td>
<td>2,742</td>
</tr>
<tr>
<td>Psychosis</td>
<td>Psychiatric</td>
<td>2,523</td>
</tr>
<tr>
<td>Kidney disease – dialysis</td>
<td>Liver/kidney/renal</td>
<td>2,396</td>
</tr>
<tr>
<td>Heart – congenital</td>
<td>Heart problems</td>
<td>2,374</td>
</tr>
<tr>
<td>Muscular dystrophy or atrophy</td>
<td>Muscular dystrophy or atrophy</td>
<td>2,357</td>
</tr>
<tr>
<td>Detached retina</td>
<td>Vision</td>
<td>2,357</td>
</tr>
<tr>
<td>Subdural haematoma – acute</td>
<td>Acquired brain damage – traumatic</td>
<td>2,310</td>
</tr>
<tr>
<td>Lower back pain – VOC</td>
<td>Back problems</td>
<td>2,242</td>
</tr>
<tr>
<td>Assessment centre code</td>
<td>Other</td>
<td>2,124</td>
</tr>
<tr>
<td>Myasthenia gravis</td>
<td>Neurological</td>
<td>2,054</td>
</tr>
<tr>
<td>Kidney disease – unspecific</td>
<td>Liver/kidney/renal</td>
<td>2,040</td>
</tr>
<tr>
<td>Cervical spondylosis</td>
<td>Arthritis</td>
<td>1,991</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>Cognitive impairment</td>
<td>1,862</td>
</tr>
<tr>
<td>Subdural haematoma – chronic</td>
<td>Acquired brain damage – traumatic</td>
<td>1,820</td>
</tr>
<tr>
<td>Brain – arteriovenous malformation</td>
<td>Neurological</td>
<td>1,803</td>
</tr>
<tr>
<td>Valve disease – VOC</td>
<td>Heart problems</td>
<td>1,782</td>
</tr>
<tr>
<td>Neurological – unknown</td>
<td>Neurological</td>
<td>1,622</td>
</tr>
<tr>
<td>Brain tumour – malignant</td>
<td>Brain tumour</td>
<td>1,502</td>
</tr>
<tr>
<td>Ventriculoperitoneal shunt</td>
<td>Brain damage – generalised</td>
<td>1,399</td>
</tr>
<tr>
<td>Peripheral neuropathy</td>
<td>Other non-neurological</td>
<td>1,390</td>
</tr>
<tr>
<td>Diabetes on insulin – C1</td>
<td>Diabetes</td>
<td>1,376</td>
</tr>
<tr>
<td>Motor neurone disease</td>
<td>Motor neurone disease</td>
<td>1,345</td>
</tr>
<tr>
<td><strong>All medical conditions</strong></td>
<td></td>
<td>2,205,456</td>
</tr>
</tbody>
</table>

*VOC=vocational licence use only.
### Appendix C (cont’d) Number of drivers with each medical condition

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Medical group</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart transplant</td>
<td>Heart problems</td>
<td>1,294</td>
</tr>
<tr>
<td>Brain encephalitis</td>
<td>Brain damage – generalised</td>
<td>1,280</td>
</tr>
<tr>
<td>Ocular hypertension</td>
<td>Vision</td>
<td>1,248</td>
</tr>
<tr>
<td>Hydrocephalus</td>
<td>Brain damage – generalised</td>
<td>1,153</td>
</tr>
<tr>
<td>Liver disease</td>
<td>Liver/kidney/renal</td>
<td>1,137</td>
</tr>
<tr>
<td>Monocularity – from observations of daily living</td>
<td>Vision</td>
<td>1,085</td>
</tr>
<tr>
<td>Benign infratentorial brain tumour</td>
<td>Brain tumour</td>
<td>1,074</td>
</tr>
<tr>
<td>Depression – psychotic</td>
<td>Psychiatric</td>
<td>1,055</td>
</tr>
<tr>
<td>Narcolepsy or catalepsy</td>
<td>Neurological</td>
<td>1,044</td>
</tr>
<tr>
<td>Heart cardiomyopathy</td>
<td>Heart problems</td>
<td>998</td>
</tr>
<tr>
<td>Heart bypass – VOC</td>
<td>Heart problems</td>
<td>994</td>
</tr>
<tr>
<td>Cancer – lung</td>
<td>Cancer</td>
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<tr>
<td>Deafness</td>
<td>Hearing impairment</td>
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<tr>
<td>Brain meningitis</td>
<td>Brain damage – generalised</td>
<td>891</td>
</tr>
<tr>
<td>Visual – unknown</td>
<td>Vision</td>
<td>881</td>
</tr>
<tr>
<td>Brain abscess</td>
<td>Brain tumour</td>
<td>877</td>
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<tr>
<td>Systemic lupus erythematosus</td>
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<td>855</td>
</tr>
<tr>
<td>Diabetes – non-insulin</td>
<td>Diabetes</td>
<td>843</td>
</tr>
<tr>
<td>Vision trawl cases</td>
<td>Vision</td>
<td>800</td>
</tr>
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<td>Eye haemorrhage – thrombosis</td>
<td>Vision</td>
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<td>Transient global amnesia</td>
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<td>773</td>
</tr>
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<td>Migraine</td>
<td>Other</td>
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</tr>
<tr>
<td>Sight affected in one eye</td>
<td>Vision</td>
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</tr>
<tr>
<td>Extratradural haematoma</td>
<td>Acquired brain damage – traumatic</td>
<td>689</td>
</tr>
<tr>
<td>Congenital heart – S</td>
<td>Heart problems</td>
<td>674</td>
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<tr>
<td>Case to be referred to planning at all stages</td>
<td>Other</td>
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<tr>
<td>Heart failure – VOC</td>
<td>Heart problems</td>
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<td>Giddiness – vertebrobasilar ischaemia</td>
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<tr>
<td>Airways disease – constructive obstructive pulmonary disease</td>
<td>Respiratory</td>
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</tr>
<tr>
<td>Pacemaker – VOC</td>
<td>Heart problems</td>
<td>593</td>
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</table>

**All medical conditions** 2,205,456

*VOC=vocational licence use only.*
### Appendix C (cont’d) Number of drivers with each medical condition

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Medical group</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left bundle branch block</td>
<td>Heart problems</td>
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<tr>
<td>Spasticity</td>
<td>Neurological</td>
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<tr>
<td>Drug misuse – in last six months</td>
<td>Drug misuse</td>
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<tr>
<td>Schizo-affective disorder</td>
<td>Psychiatric</td>
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<tr>
<td>Post-traumatic stress syndrome</td>
<td>Psychiatric</td>
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</tr>
<tr>
<td>Heart – unknown</td>
<td>Heart problems</td>
<td>444</td>
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<tr>
<td>Sleep disorders – other</td>
<td>Sleep disorders</td>
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</tr>
<tr>
<td>Cardiomyopathy – VOC</td>
<td>Heart problems</td>
<td>415</td>
</tr>
<tr>
<td>Drug misuse – in last 12 months</td>
<td>Drug misuse</td>
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</tr>
<tr>
<td>Cough syncope</td>
<td>Neurological</td>
<td>406</td>
</tr>
<tr>
<td>Retinitus pigmentosa</td>
<td>Vision</td>
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</tr>
<tr>
<td>Heart defibrillator – atrial</td>
<td>Heart problems</td>
<td>329</td>
</tr>
<tr>
<td>Arrhythmia – not significant</td>
<td>Heart problems</td>
<td>327</td>
</tr>
<tr>
<td>Learning difficulties</td>
<td>Learning disabilities</td>
<td>305</td>
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<tr>
<td>Seizure – pseudo</td>
<td>Neurological</td>
<td>300</td>
</tr>
<tr>
<td>Heart cardiomyopathy – hypertrophic</td>
<td>Heart problems</td>
<td>287</td>
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<tr>
<td>Intra-cerebral haematoma – no cause</td>
<td>Acquired brain damage – traumatic</td>
<td>267</td>
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<tr>
<td>Grade 1 or 2 malignant brain tumour</td>
<td>Brain tumour</td>
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<td>Huntington’s chorea</td>
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<td>Ocular melanoma</td>
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<td>Neurological – other</td>
<td>Neurological</td>
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<tr>
<td>Longstanding static vision</td>
<td>Vision</td>
<td>213</td>
</tr>
<tr>
<td>Heart cardiomyopathy – dilated</td>
<td>Heart problems</td>
<td>212</td>
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<tr>
<td>Psychiatric – unknown</td>
<td>Psychiatric</td>
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<tr>
<td>Loss of awareness</td>
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<tr>
<td>Friedreich’s ataxia</td>
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<tr>
<td>Cerebellar ataxia</td>
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<td>181</td>
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<tr>
<td>Ataxia – other</td>
<td>Neurological</td>
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</tr>
<tr>
<td>Central defect – three neighbouring spots</td>
<td>Vision</td>
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</tr>
<tr>
<td><strong>All medical conditions</strong></td>
<td></td>
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*VOC=vocational licence use only.*
### Appendix C (cont’d) Number of drivers with each medical condition

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Medical group</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Malignant vasovagal</td>
<td>Heart problems</td>
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<tr>
<td>Grade 3 malignant brain tumour</td>
<td>Brain tumour</td>
<td>148</td>
</tr>
<tr>
<td>Memory and/or understanding impairment</td>
<td>Cognitive impairment</td>
<td>145</td>
</tr>
<tr>
<td>Myocardial perfusion scan</td>
<td>Acquired brain damage – traumatic</td>
<td>129</td>
</tr>
<tr>
<td>Intracranial haematoma</td>
<td>Heart problems</td>
<td>129</td>
</tr>
<tr>
<td>Asperger’s syndrome</td>
<td>Psychiatric</td>
<td>122</td>
</tr>
<tr>
<td>Gilles de la Tourette</td>
<td>Psychiatric</td>
<td>119</td>
</tr>
<tr>
<td>Stenosis</td>
<td>Heart problems</td>
<td>113</td>
</tr>
<tr>
<td>Unknown</td>
<td>Other</td>
<td>111</td>
</tr>
<tr>
<td>Drugs – insignificant</td>
<td>Drug misuse</td>
<td>110</td>
</tr>
<tr>
<td>Prophylactic defibrillator</td>
<td>Heart problems</td>
<td>98</td>
</tr>
<tr>
<td>Congenital heart – C</td>
<td>Heart problems</td>
<td>93</td>
</tr>
<tr>
<td>Right hemi (right-side limb disability)</td>
<td>Limb disability – static</td>
<td>92</td>
</tr>
<tr>
<td>Central defect</td>
<td>Vision</td>
<td>88</td>
</tr>
<tr>
<td>Malignant infratentorial brain tumour</td>
<td>Brain tumour</td>
<td>83</td>
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<tr>
<td>Left hemi (left-side limb disability)</td>
<td>Limb disability – static</td>
<td>81</td>
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<tr>
<td>Aids</td>
<td>Immunocompromised</td>
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<tr>
<td>Grade 4 malignant brain tumour</td>
<td>Brain tumour</td>
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<tr>
<td>Neurofibromatosis</td>
<td>Neurological</td>
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<tr>
<td>Heart defibrillator – ventricular</td>
<td>Heart problems</td>
<td>65</td>
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<tr>
<td>Subdural empyema</td>
<td>Neurological</td>
<td>64</td>
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<tr>
<td>Hypoglycaemia while driving</td>
<td>Diabetes</td>
<td>63</td>
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<tr>
<td>Conduction defect</td>
<td>Heart problems</td>
<td>63</td>
</tr>
<tr>
<td>Right upper quad</td>
<td>Limb disability – static</td>
<td>62</td>
</tr>
<tr>
<td>Belpharospasm</td>
<td>Vision</td>
<td>57</td>
</tr>
<tr>
<td>Right lower quad</td>
<td>Learning disabilities</td>
<td>48</td>
</tr>
<tr>
<td>Mental subnormality</td>
<td>Limb disability – static</td>
<td>48</td>
</tr>
<tr>
<td>Bradycardia – VOC</td>
<td>Heart problems</td>
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<tr>
<td>Left lower quad</td>
<td>Limb disability – static</td>
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<td>Drug misuse – VOC in last three years</td>
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<td><strong>All medical conditions</strong></td>
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*VOC=vocational licence use only.
### Appendix C (cont’d) Number of drivers with each medical condition

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Medical group</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug misuse – VOC in last 12 months</td>
<td>Drug misuse</td>
<td>35</td>
</tr>
<tr>
<td>Right bundle branch block</td>
<td>Heart problems</td>
<td>35</td>
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<tr>
<td>Acute coronary syndrome</td>
<td>Heart problems</td>
<td>34</td>
</tr>
<tr>
<td>Left upper quad</td>
<td>Limb disability – static</td>
<td>34</td>
</tr>
<tr>
<td>Birth injury</td>
<td>Neurological</td>
<td>29</td>
</tr>
<tr>
<td>Heart transplant – VOC</td>
<td>Heart problems</td>
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<tr>
<td>Genetic code</td>
<td>Other</td>
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<tr>
<td>Hypoxic brain damage</td>
<td>Brain damage – generalised</td>
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</tr>
<tr>
<td>Inability to control a vehicle safely at all times – VOC</td>
<td>Other</td>
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<tr>
<td>Subdural abscess</td>
<td>Neurological</td>
<td>15</td>
</tr>
<tr>
<td>Medication – side effect</td>
<td>Other</td>
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<tr>
<td>Stress echo</td>
<td>Heart problems</td>
<td>12</td>
</tr>
<tr>
<td>Lumboperitoneal shunt</td>
<td>Neurological</td>
<td>12</td>
</tr>
<tr>
<td>Angina – in last six weeks</td>
<td>Heart problems</td>
<td>7</td>
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<tr>
<td>Mental illness – unwell in last six months</td>
<td>Psychiatric</td>
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<tr>
<td>Inability to control a vehicle safely at all times – from observations of daily living</td>
<td>Other</td>
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<tr>
<td>Antitachycardia device fitted</td>
<td>Heart problems</td>
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<tr>
<td>Alcohol misuse – dependency in last 12 months</td>
<td>Alcohol misuse</td>
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<tr>
<td>Drug misuse – dependency in last 36 months</td>
<td>Drug misuse</td>
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</tr>
<tr>
<td>Case has been referred to panel/panel members</td>
<td>Other</td>
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<tr>
<td>Psychiatric condition – three years off</td>
<td>Psychiatric</td>
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</tr>
<tr>
<td>Usher’s syndrome</td>
<td>Vision</td>
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<tr>
<td>Alcohol misuse – dependency in last 36 months</td>
<td>Alcohol misuse</td>
<td>2</td>
</tr>
<tr>
<td>Drug misuse – dependency in last 12 months</td>
<td>Drug misuse</td>
<td>2</td>
</tr>
<tr>
<td>Unallocated</td>
<td>Other</td>
<td>2</td>
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<tr>
<td>NDIS notifications</td>
<td>Other</td>
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</tr>
<tr>
<td>Night blindness</td>
<td>Vision</td>
<td>2</td>
</tr>
</tbody>
</table>

**All medical conditions** 2,205,456

*VOC=vocational licence use only.*
Appendix D Grouped medical conditions, by gender (frequency, and percentage of all listed drivers with medical conditions)

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
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<tbody>
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<td></td>
<td>n</td>
<td>% of total</td>
<td>n</td>
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<tr>
<td>Diabetes</td>
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<tr>
<td>Heart problems</td>
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<td>38,881</td>
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<tr>
<td>Neurological</td>
<td>132,224</td>
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<td>94,822</td>
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<tr>
<td>Alcohol misuse</td>
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<td>21,697</td>
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<tr>
<td>No relevant medical condition</td>
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<td>37,720</td>
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<tr>
<td>Vision problems</td>
<td>119,300</td>
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<td>47,556</td>
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<tr>
<td>Other</td>
<td>94,569</td>
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<td>35,945</td>
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<td>Stroke</td>
<td>92,179</td>
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<td>31,378</td>
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<tr>
<td>Blood/circulation problems</td>
<td>64,626</td>
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<td>1,380</td>
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<td>Psychiatric</td>
<td>46,803</td>
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<td>18,713</td>
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<tr>
<td>Multiple sclerosis</td>
<td>12,298</td>
<td>0.9</td>
<td>23,893</td>
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<tr>
<td>Limb disability – static</td>
<td>23,263</td>
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<td>8,215</td>
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<tr>
<td>Brain damage – acquired</td>
<td>24,518</td>
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<td>5,913</td>
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<tr>
<td>Parkinson’s</td>
<td>18,553</td>
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<td>6,096</td>
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<td>Cancer</td>
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<td>Brain tumour</td>
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<td>Sleep disorders</td>
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<td>Arthritis</td>
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<td>Liver/kidney/renal</td>
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<td>Other non-neurological</td>
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<td>Brain damage – generalised</td>
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<td>Hearing impairment</td>
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<td>46</td>
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<td>Immunocompromised</td>
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<tr>
<td>Respiratory</td>
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<td>Learning disabilities</td>
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### Appendix E Grouped medical conditions, by age (number, and percentage of all listed drivers with medical conditions)

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>17-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70+</th>
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<td>n</td>
<td>% of total (n=234,852)</td>
<td>n</td>
<td>% of total (n=305,205)</td>
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<td>Diabetes</td>
<td>17,229</td>
<td>15.9</td>
<td>33,931</td>
<td>14.4</td>
<td>56,201</td>
<td>18.4</td>
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<tr>
<td>Heart problems</td>
<td>2,601</td>
<td>2.4</td>
<td>4,876</td>
<td>2.1</td>
<td>11,584</td>
<td>3.8</td>
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<td>Neurological</td>
<td>24,855</td>
<td>22.9</td>
<td>47,784</td>
<td>20.3</td>
<td>51,342</td>
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<td>Alcohol misuse</td>
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<td>Vision problems</td>
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<td>15,508</td>
<td>5.1</td>
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<td>Other</td>
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<td>7.7</td>
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<td>5,405</td>
<td>2.3</td>
<td>10,404</td>
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### Appendix E (cont’d) Grouped medical conditions, by age (number, and percentage of all listed drivers with medical conditions)

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Age (years)</th>
<th>17-29</th>
<th>% of total (n=108,311)</th>
<th>30-39</th>
<th>% of total (n=234,852)</th>
<th>40-49</th>
<th>% of total (n=305,205)</th>
<th>50-59</th>
<th>% of total (n=357,171)</th>
<th>60-69</th>
<th>% of total (n=330,716)</th>
<th>70+</th>
<th>% of total (n=567,871)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limb disability – static</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Brain damage – acquired</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Parkinson’s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Brain tumour</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Sleep disorders</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Arthritis</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Liver/kidney/renal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug misuse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinal injuries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other non-neurological</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain damage – generalised</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix E (cont’d) Grouped medical conditions, by age (number, and percentage of all listed drivers with medical conditions)

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17-29 % of total (n=108,311)</td>
</tr>
<tr>
<td>Dementia</td>
<td>4 0.0</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>1,300 1.2</td>
</tr>
<tr>
<td>Spina bifida</td>
<td>536 0.5</td>
</tr>
<tr>
<td>Muscular dystrophy or atrophy</td>
<td>267 0.2</td>
</tr>
<tr>
<td>Back problems</td>
<td>35 0.0</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>105 0.1</td>
</tr>
<tr>
<td>Motor neurone disease</td>
<td>9 0.0</td>
</tr>
<tr>
<td>Hearing impairment</td>
<td>54 0.0</td>
</tr>
<tr>
<td>Immuno-compromised</td>
<td>41 0.0</td>
</tr>
<tr>
<td>Respiratory</td>
<td>23 0.0</td>
</tr>
<tr>
<td>Learning disabilities</td>
<td>192 0.2</td>
</tr>
</tbody>
</table>
# Appendix F Vehicle-restriction codes, by age (number, and percentage of all listed drivers with vehicle codes)

<table>
<thead>
<tr>
<th>Vehicle code</th>
<th>17-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70+</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>% of total (n=3,372)</td>
<td>n</td>
<td>% of total (n=5,283)</td>
<td>n</td>
<td>% of total (n=6,575)</td>
</tr>
<tr>
<td>78</td>
<td>1,612</td>
<td>47.8</td>
<td>3,206</td>
<td>60.7</td>
<td>3,952</td>
<td>60.1</td>
</tr>
<tr>
<td>40</td>
<td>1,978</td>
<td>58.7</td>
<td>2,218</td>
<td>42.0</td>
<td>2,506</td>
<td>38.1</td>
</tr>
<tr>
<td>30</td>
<td>958</td>
<td>28.4</td>
<td>2,117</td>
<td>40.1</td>
<td>2,493</td>
<td>37.9</td>
</tr>
<tr>
<td>114</td>
<td>1,011</td>
<td>30.0</td>
<td>1,508</td>
<td>28.5</td>
<td>1,888</td>
<td>28.7</td>
</tr>
<tr>
<td>25</td>
<td>738</td>
<td>21.9</td>
<td>1,008</td>
<td>19.1</td>
<td>1,258</td>
<td>19.1</td>
</tr>
<tr>
<td>35</td>
<td>1,289</td>
<td>38.2</td>
<td>1,260</td>
<td>23.9</td>
<td>1,269</td>
<td>19.3</td>
</tr>
<tr>
<td>42</td>
<td>739</td>
<td>21.9</td>
<td>611</td>
<td>11.6</td>
<td>706</td>
<td>10.7</td>
</tr>
<tr>
<td>20</td>
<td>435</td>
<td>12.9</td>
<td>488</td>
<td>9.2</td>
<td>599</td>
<td>9.1</td>
</tr>
<tr>
<td>15</td>
<td>88</td>
<td>2.6</td>
<td>238</td>
<td>4.5</td>
<td>326</td>
<td>5.0</td>
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<tr>
<td>43</td>
<td>170</td>
<td>5.0</td>
<td>242</td>
<td>4.6</td>
<td>232</td>
<td>3.5</td>
</tr>
<tr>
<td>10</td>
<td>87</td>
<td>2.6</td>
<td>102</td>
<td>1.9</td>
<td>162</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Vehicle codes: 10=modified transmission; 15=modified clutch; 20=modified brake; 25=modified accelerator; 30=modified combined brake and accelerator; 35=modified control layouts; 40=modified steering; 42=modified rear-view mirror(s); 43=modified driver seat; 78=restricted to vehicles with automatic transmission; 114=with any special controls required for safe driving.
### Appendix G Vehicle-restriction codes, by geographical location (frequency, and percentage of all listed drivers with vehicle codes)

<table>
<thead>
<tr>
<th>Vehicle code</th>
<th>East Midlands</th>
<th>East of England</th>
<th>London</th>
<th>NE England</th>
<th>NW England</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=3,234)</td>
<td>(n=3,785)</td>
<td></td>
<td>(n=2,266)</td>
<td>(n=1,172)</td>
</tr>
<tr>
<td></td>
<td>% of total</td>
<td>% of total</td>
<td></td>
<td>% of total</td>
<td>% of total</td>
</tr>
<tr>
<td>78</td>
<td>1,989</td>
<td>2,376</td>
<td>1,422</td>
<td>645</td>
<td>2,612</td>
</tr>
<tr>
<td></td>
<td>61.5</td>
<td>62.8</td>
<td>62.8</td>
<td>55.0</td>
<td>58.4</td>
</tr>
<tr>
<td>40</td>
<td>1,292</td>
<td>1,523</td>
<td>922</td>
<td>461</td>
<td>1,743</td>
</tr>
<tr>
<td></td>
<td>40.0</td>
<td>40.2</td>
<td>40.7</td>
<td>39.3</td>
<td>39.0</td>
</tr>
<tr>
<td>30</td>
<td>1,109</td>
<td>1,234</td>
<td>810</td>
<td>412</td>
<td>1,483</td>
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<tr>
<td></td>
<td>34.3</td>
<td>32.6</td>
<td>35.7</td>
<td>35.2</td>
<td>33.2</td>
</tr>
<tr>
<td>114</td>
<td>958</td>
<td>1,076</td>
<td>690</td>
<td>364</td>
<td>1,355</td>
</tr>
<tr>
<td></td>
<td>29.6</td>
<td>28.4</td>
<td>30.5</td>
<td>31.1</td>
<td>30.3</td>
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<tr>
<td>25</td>
<td>667</td>
<td>895</td>
<td>541</td>
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<td>861</td>
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<td>20.6</td>
<td>23.6</td>
<td>23.9</td>
<td>17.7</td>
<td>19.3</td>
</tr>
<tr>
<td>35</td>
<td>615</td>
<td>840</td>
<td>489</td>
<td>210</td>
<td>836</td>
</tr>
<tr>
<td></td>
<td>19.0</td>
<td>22.2</td>
<td>21.6</td>
<td>17.9</td>
<td>18.3</td>
</tr>
<tr>
<td>42</td>
<td>366</td>
<td>322</td>
<td>208</td>
<td>161</td>
<td>568</td>
</tr>
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<td>11.3</td>
<td>8.5</td>
<td>9.2</td>
<td>13.7</td>
<td>12.7</td>
</tr>
<tr>
<td>20</td>
<td>282</td>
<td>387</td>
<td>244</td>
<td>86</td>
<td>395</td>
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<tr>
<td></td>
<td>8.7</td>
<td>10.2</td>
<td>10.8</td>
<td>7.3</td>
<td>8.8</td>
</tr>
<tr>
<td>15</td>
<td>150</td>
<td>182</td>
<td>72</td>
<td>49</td>
<td>201</td>
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<td></td>
<td>4.6</td>
<td>4.8</td>
<td>3.2</td>
<td>4.2</td>
<td>4.5</td>
</tr>
<tr>
<td>43</td>
<td>95</td>
<td>143</td>
<td>105</td>
<td>38</td>
<td>127</td>
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<tr>
<td></td>
<td>2.9</td>
<td>3.8</td>
<td>4.6</td>
<td>3.2</td>
<td>2.8</td>
</tr>
<tr>
<td>10</td>
<td>54</td>
<td>93</td>
<td>45</td>
<td>21</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>1.7</td>
<td>2.5</td>
<td>2.0</td>
<td>1.8</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Vehicle codes: 10=modified transmission; 15=modified clutch; 20=modified brake; 25=modified accelerator; 30=modified combined brake and accelerator; 35=modified control layouts; 40=modified steering; 42=modified rear-view mirror(s); 43=modified driver seat; 78=restricted to vehicles with automatic transmission; 114=with any special controls required for safe driving.
**Appendix H DVLA medical condition survey**

**Survey of drivers who notified DVLA of a medical condition**

Please read this before starting the questionnaire
- Please tick the appropriate boxes and write in BLOCK CAPITALS in the spaces provided. This questionnaire should take about 10 minutes to complete.
- This questionnaire concerns when you told DVLA about your medical condition.
- This questionnaire will help us understand your experiences of starting, or continuing, to drive with a medical condition or disability.
- Some questions may ask for sensitive information. All your answers will be handled anonymously and in the strictest confidence and will not be passed on to any third party (including DVLA). The information you provide will be used for research purposes only and will not be related to you directly.

Thank you for your help.

### SECTION A: HOW YOU TRAVEL

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1</strong></td>
<td>Do you currently drive a car or van? (Please tick ONE box only)</td>
<td>1, 2</td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>Go to A3</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>Go to A2</td>
</tr>
<tr>
<td><strong>A2</strong></td>
<td>Why do you currently NOT drive? (Please tick all that apply)</td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>Vehicle adaptations are too expensive</td>
<td>1</td>
</tr>
<tr>
<td>(b)</td>
<td>Unsure which vehicle adaptations to use</td>
<td>1</td>
</tr>
<tr>
<td>(c)</td>
<td>Lack of confidence in ability to drive</td>
<td>1</td>
</tr>
<tr>
<td>(d)</td>
<td>The process of returning or starting to drive is too complicated</td>
<td>1</td>
</tr>
<tr>
<td>(e)</td>
<td>Overall increased costs of motoring (e.g. petrol, insurance)</td>
<td>1</td>
</tr>
<tr>
<td>(f)</td>
<td>Increasing age and/or effects of medical condition</td>
<td>1</td>
</tr>
<tr>
<td>(g)</td>
<td>Other (please specify)</td>
<td>1</td>
</tr>
</tbody>
</table>
When DVLA was notified of your medical condition, were you already a licensed driver? (Please tick ONE box only)

Yes, I was a licensed driver when DVLA was notified of my medical condition

□ 1  →  Go to A4

No, I was applying for my first driving licence when DVLA was notified of my medical condition

□ 2  →  Go to B1

What did you do when you first became aware of your medical condition? (Please tick ONE box only)

(a) Stopped driving, notified DVLA and then waited for their decision

□ 1

(b) Continued driving and notified DVLA

□ 2

(c) Other (please specify)

□ 3

SECTION B: NOTIFYING DVLA OF YOUR DISABILITY

When was DVLA notified of your medical condition? (Please write the year, or give your best guess if you are not sure)

□ □ □ □ Year (e.g. ‘2002’)

Who explained to you that DVLA should be notified of your medical condition? (Please tick all that apply)

□ 1

(a) I already knew

□ 1

(b) DVLA (e.g. information on driving licence, leaflet or DVLA/direct.gov website)

□ 1

(c) GP/medical consultant

□ 1

(d) Other healthcare professional (e.g. occupational therapist, physiotherapist, psychologist, nurse)

□ 1

(e) Case manager

□ 1

(f) Friend, relative or partner

□ 1

(g) Disabled motorists’ organisations (e.g. DDA or DDMC)

□ 1

(h) Police

□ 1

(i) Other (please specify)

□ 1
### B3
Who told DVLA about your medical condition?
(Please tick ONE box only)

- (a) I did [ ] 1
- (b) GP, medical consultant or healthcare professional [ ] 2
- (c) Police [ ] 3
- (d) Friend, relative or partner [ ] 4
- (e) Don’t know [ ] 5
- (f) Other (please specify) [ ] 6

### B4
Where did you, or someone else acting on your behalf, find out how to contact DVLA (e.g. DVLA’s telephone number or address)?
(Please tick all that apply)

- (a) Read it on DVLA/direct.gov website [ ] 1
- (b) Leaflets (please specify which ones) [ ] 1
- (c) Called DVLA general enquiries [ ] 1
- (d) Provided by a friend, relative or partner [ ] 1
- (e) Provided by a GP, medical consultant or healthcare professional [ ] 1
- (f) Don’t know/don’t remember [ ] 1
- (g) Other (please specify) [ ] 1

### B6
How easy or difficult was it to find this contact information?
(Please tick ONE box only)

- (a) Very easy [ ] 1
- (b) Easy [ ] 2
- (c) Difficult [ ] 3
- (d) Very difficult [ ] 4
B7 Were there any problems or difficulties with the process of notifying DVLA of your medical condition? (Please tick ONE box only)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>□ 1</td>
<td>Go to B8</td>
</tr>
<tr>
<td>No</td>
<td>□ 2</td>
<td>Go to C1</td>
</tr>
</tbody>
</table>

B8 What problems or difficulties were there? (Please tick all that apply)

| (a) | DVLA took longer than expected to process my case | □ 1 |
| (b) | DVLA lost information relating to my case | □ 1 |
| (c) | DVLA did not regularly inform me of progress with my case | □ 1 |
| (d) | The information received from DVLA was unclear (please specify why) | □ 1 |
| (e) | Other (please specify) | □ 1 |

**SECTION C: ABOUT YOUR DRIVING LICENCE AND VEHICLE**

C1 Has DVLA requested that your driving licence be reviewed on a regular basis (e.g. annually, every three years)? (Please tick ONE box only)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>□ 1</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>□ 2</td>
<td></td>
</tr>
</tbody>
</table>

C2 Has DVLA restricted you to driving only vehicles with automatic transmissions? (Please tick ONE box only)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>□ 1</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>□ 2</td>
<td></td>
</tr>
</tbody>
</table>
Do you currently have problems with any of the following in your car/van? (Please tick all that apply)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>1</th>
<th>Go to C4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>Getting in and out of your car/van</td>
<td>□</td>
<td>Go to C4</td>
</tr>
<tr>
<td>(b)</td>
<td>Loading and storing equipment (e.g. wheelchair or other mobility aids)</td>
<td>□</td>
<td>Go to C4</td>
</tr>
<tr>
<td>(c)</td>
<td>Seating</td>
<td>□</td>
<td>Go to C4</td>
</tr>
<tr>
<td>(d)</td>
<td>Using primary controls (for steering, braking or accelerating)</td>
<td>□</td>
<td>Go to C4</td>
</tr>
<tr>
<td>(e)</td>
<td>Using secondary controls (e.g. lights, parking brake, indicators, horn, gears)</td>
<td>□</td>
<td>Go to C4</td>
</tr>
<tr>
<td>(f)</td>
<td>Other problems</td>
<td>□</td>
<td>Go to C4</td>
</tr>
<tr>
<td>(g)</td>
<td>No problems experienced</td>
<td>□</td>
<td>Go to C5</td>
</tr>
</tbody>
</table>

Please explain what problems you have. (Please write in the box below)
C5 Does your driving licence have any of the following restrictions/codes telling you which vehicle modifications/adaptations you must drive with? (Please tick all that apply. You can find the codes in Section 12 on the reverse of your Photocard driving licence. If you have a pink and green paper licence you can find this information printed under ‘National Category Entitlement’.)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Ticks</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>None of the following codes</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(b)</td>
<td>Code 10 – modified transmission</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(c)</td>
<td>Code 15 – modified clutch</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(d)</td>
<td>Code 20 – modified brake</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(e)</td>
<td>Code 25 – modified accelerator</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(f)</td>
<td>Code 30 – modified combined brake and accelerator</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(g)</td>
<td>Code 35 – modified control layouts</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(h)</td>
<td>Code 40 – modified steering</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(i)</td>
<td>Code 42 – modified rear-view mirror(s)</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(j)</td>
<td>Code 43 – modified driver seat</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(k)</td>
<td>Code 9 – modified vehicle (non-Photocard licence only)</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(l)</td>
<td>Other (please specify)</td>
<td>□ 1</td>
<td>1</td>
</tr>
</tbody>
</table>

C6 Is the car or van you usually travel in adapted for your use? (Please tick all that apply)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Ticks</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>No – not adapted in any way</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(b)</td>
<td>Yes – fitted with primary car-control adaptations (e.g. for steering, acceleration, braking)</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(c)</td>
<td>Yes – fitted with secondary car-control adaptations (e.g. for operating lights, parking brake, wipers, indicators, horn)</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(d)</td>
<td>Yes – adapted to enable me to travel in a wheelchair</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(e)</td>
<td>Yes – adapted to enable me to get in and out of the car/van more easily (e.g. using swivel seats, hoists)</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(f)</td>
<td>Yes – adapted to enable me to have an adequate seating position (e.g. with cushions, replacement seats)</td>
<td>□ 1</td>
<td>1</td>
</tr>
<tr>
<td>(h)</td>
<td>Other (please specify)</td>
<td>□ 1</td>
<td>1</td>
</tr>
</tbody>
</table>
When deciding which adaptations to have fitted to your vehicle, how important were the following factors?
(Please circle ONE number on EACH line, from ‘not at all important’ to ‘extremely important’)

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available locally</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available quickly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety in the event of an accident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suitability for my physical needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION D: DRIVING WITH YOUR MEDICAL CONDITION

How long after the DVLA returned your licence did you start, or return to driving?
(Please tick ONE box only)

<table>
<thead>
<tr>
<th>Duration</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than three months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than six months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than nine months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than two years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than two years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did not start or return to driving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
D2 Which of the following influenced your decision to return to driving?
(Please tick all that apply)

(a) Convenience of using car □ 1
(b) Car is only choice of transport in area □ 1
(c) Enjoy driving □ 1
(d) Would be unable to work without driving □ 1
(e) Social life would be restricted without driving □ 1
(f) Need to be able to drive to transport other people (e.g. children, friends) □ 1
(g) Disability makes using public transport difficult □ 1
(h) Other (please specify) □ 1

D3 After your licence was returned, how easy or difficult was it to start or continue driving with your medical condition?
(Please tick ONE box only)

(a) Very easy □ 1 → Go to E1
(b) Easy □ 1 → Go to E1
(c) Difficult □ 1 → Go to D4
(d) Very difficult □ 1 → Go to D4

D4 Why was it DIFFICULT to start or continue driving with your medical condition?
(Please tick all that apply)

(a) Vehicle adaptations were too expensive □ 1
(b) Difficult to learn to drive with vehicle adaptations □ 1
(c) Lack of confidence □ 1
(d) Increasing age and/or effects of medical condition □ 1
(e) Other (please specify) □ 1
SECTION E: OBTAINING INFORMATION ABOUT DRIVING WITH YOUR MEDICAL CONDITION

**E1** From which sources did you, or someone else acting on your behalf, get information about driving with your medical condition?  
(Please tick all that apply)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Did not get any information</td>
<td>□ 1</td>
</tr>
<tr>
<td>(b) DVLA (e.g. information on driving licence, leaflet or DVLA/direct.gov website)</td>
<td>□ 1</td>
</tr>
<tr>
<td>(c) GP/medical consultant</td>
<td>□ 1</td>
</tr>
<tr>
<td>(d) Other healthcare professional (e.g. occupational therapist, physiotherapist, psychologist, nurse)</td>
<td>□ 1</td>
</tr>
<tr>
<td>(e) Case manager</td>
<td>□ 1</td>
</tr>
<tr>
<td>(f) Friend, relative or partner</td>
<td>□ 1</td>
</tr>
<tr>
<td>(g) Disabled motorists’ organisations (e.g. DDA or DDMC)</td>
<td>□ 1</td>
</tr>
<tr>
<td>(h) Police</td>
<td>□ 1</td>
</tr>
<tr>
<td>(i) Own knowledge</td>
<td>□ 1</td>
</tr>
<tr>
<td>(j) Other (please specify which individual, organisation, website or publication you consulted)</td>
<td>□ 1</td>
</tr>
</tbody>
</table>

**E2** In general, how satisfied/dissatisfied were you with the information you got?  
(Please tick ONE box only)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Very satisfied</td>
<td>□ 1  → Go to E4</td>
</tr>
<tr>
<td>(b) Satisfied</td>
<td>□ 2  → Go to E4</td>
</tr>
<tr>
<td>(c) Neither satisfied nor dissatisfied</td>
<td>□ 3  → Go to E4</td>
</tr>
<tr>
<td>(d) Dissatisfied</td>
<td>□ 4  → Go to E3</td>
</tr>
<tr>
<td>(e) Very dissatisfied</td>
<td>□ 5  → Go to E3</td>
</tr>
</tbody>
</table>
E3  Why were you dissatisfied?  
(Please tick all that apply)  

(a) The information was not sufficiently comprehensive □ 1  
(b) It was difficult to find relevant information □ 1  
(c) The information was unclear □ 1  
(d) Other (please specify) □ 1  

E4  Would you have liked to have received MORE information about driving with your disability?  
Yes □ 1 → Go to E5  
No □ 1 → Go to F1  

E5  What further information would you have liked?  
(Please write in the box below)  

E6  How would you have liked this information to be made available?  
(Please tick all that apply)  

(a) Leaflets □ 1  
(b) Helpline □ 1  
(c) Website □ 1  
(d) Personally by meeting with an adviser □ 1  
(e) Other (please specify) □ 1
E7 Who do you think should provide this information?  
(Please write in the box below)

---

SECTION F: ACCIDENTS

F1 Have you been involved in an accident during the last five years?  
(Please tick ONE box on EACH line)

<table>
<thead>
<tr>
<th>Yes, one accident</th>
<th>Yes, two accidents</th>
<th>Yes, three accidents</th>
<th>Yes, more than three accidents</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) As a driver?</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
</tr>
<tr>
<td>(b) As a passenger</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
</tr>
</tbody>
</table>

F2 If adaptations were fitted to the car/van involved, do you think they may have contributed to the accident(s)?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 1</td>
<td>□ 2</td>
</tr>
</tbody>
</table>

Yes \(\rightarrow\) Go to F3  
No \(\rightarrow\) Go to F4

F3 Why do you think this?  
(Please write in the box below)
If adaptations were fitted to the car/van involved, do you think they may have contributed to any of the injuries that might have been sustained?

Yes ☐ 1 → Go to F5

No ☐ 2 → Go to G1

Why do you think this?
(Please write in the box below)

SECTION G: ABOUT YOU

Are you male or female?

Male ☐ 1

Female ☐ 2

What was your age on your last birthday?
(Please write in the box below)

□ □ Years

Did you have an assessment of your driving ability at any of the following places?
(Please tick all that apply)

(a) Mobility or assessment centre ☐ 1

(b) Driving school (or with a driving instructor) ☐ 1

(c) Other (please specify) ☐ 1
### G4
Do you have a Blue Badge for parking?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 1</td>
<td>□ 2</td>
</tr>
</tbody>
</table>

### G5
Is your car/van provided by Motability?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 1</td>
<td>□ 2</td>
</tr>
</tbody>
</table>

### G6
Which of the following medical conditions/disabilities do you have? (Please tick all that apply)

| (a) Arthritis | □ 1 |
| (b) Cerebral palsy | □ 1 |
| (c) Limb disability | □ 1 |
| (d) Multiple sclerosis | □ 1 |
| (e) Muscular dystrophy or atrophy | □ 1 |
| (f) Parkinson’s | □ 1 |
| (g) Spinal injury | □ 1 |
| (h) Stroke | □ 1 |
| (i) Other medical condition or disability (please specify) | □ 1 |
What do you regard as your ethnic origin?
(Please tick ONE box only. Ethnic origin questions are not about nationality, place of birth or citizenship. They are about colour and broad ethnic group. UK residents can belong to any of the groups below.)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) White</td>
<td>□ 1</td>
</tr>
<tr>
<td>(b) Pakistani</td>
<td>□ 2</td>
</tr>
<tr>
<td>(c) Indian</td>
<td>□ 3</td>
</tr>
<tr>
<td>(d) Black – Caribbean</td>
<td>□ 4</td>
</tr>
<tr>
<td>(e) Black – African</td>
<td>□ 5</td>
</tr>
<tr>
<td>(f) Black – other (please specify)</td>
<td>□ 6</td>
</tr>
<tr>
<td>(g) Bangladeshi</td>
<td>□ 7</td>
</tr>
<tr>
<td>(h) Chinese</td>
<td>□ 8</td>
</tr>
<tr>
<td>(i) Other (please specify)</td>
<td>□ 9</td>
</tr>
</tbody>
</table>

Please now return your completed questionnaire using the pre-paid envelope provided.

THANKS FOR YOUR HELP!
Dear Licence Holder

RE: Survey of drivers who notified DVLA of a medical condition

TRL Limited is conducting a research project on behalf of the Department for Transport. This study aims to explore the opinions and experiences of drivers who have notified DVLA of a medical condition. This important research will help the Government target resources for improving the provision of services for people with mobility problems.

You have been sent the enclosed questionnaire because we believe you have notified DVLA of one of the following medical conditions or disabilities:

- Arthritis
- Cerebral palsy
- Limb disability
- Multiple sclerosis
- Muscular dystrophy or atrophy
- Parkinson’s
- Spinal injury
- Stroke

DVLA has helped us by posting this questionnaire to you on our behalf. DVLA has kept your name and address details confidential and has not passed them on to TRL or any other third party.

We invite you to complete the enclosed questionnaire and return it to TRL in the pre-paid envelope within three weeks. No stamp is needed. Participation is voluntary and we would greatly appreciate your help in completing the questionnaire. Any answers you provide will be used in the strictest confidence and will be kept anonymous. If you wish to see the results of this research, the final report will be available from the Department for Transport (www.dft.gov.uk) after the project is completed.

Please note: This survey is conducted independently of DVLA and therefore completing the enclosed questionnaire will NOT have any effect on your entitlement to drive.

If the individual to whom this correspondence is addressed has been refused a driving licence from DVLA, please disregard this letter. If the addressee has passed away, please accept our sincere apologies for any distress this letter may have caused.

Please feel free to contact me on 01344 770378 if you have any queries relating to this questionnaire or the survey as a whole.

Thank you for your help with this valuable research.

Yours faithfully
## Appendix J Ethnic origin of survey respondents (compared with Motability client research and the UK Census (2001))

<table>
<thead>
<tr>
<th>Ethnic origin</th>
<th>% DVLA survey (n=1,520)</th>
<th>% Blue Badge (n=1,636)</th>
<th>% Motability (n=483)*</th>
<th>% UK Census (2001) (n=58,789,194)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>97.2</td>
<td>97.1</td>
<td>97.9</td>
<td>92.1</td>
</tr>
<tr>
<td>All minority ethnic populations</td>
<td>2.8</td>
<td>2.9</td>
<td>2.1</td>
<td>7.9</td>
</tr>
<tr>
<td>Indian</td>
<td>0.7</td>
<td>1.0</td>
<td></td>
<td>1.8</td>
</tr>
<tr>
<td>Pakistani</td>
<td>0.5</td>
<td>0.7</td>
<td>0.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Bangladeshi</td>
<td>-</td>
<td>-</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>Other Asian</td>
<td>-</td>
<td>0.4</td>
<td>-</td>
<td>0.4</td>
</tr>
<tr>
<td>Black – Caribbean</td>
<td>0.6</td>
<td>0.5</td>
<td>-</td>
<td>1.0</td>
</tr>
<tr>
<td>Black – African</td>
<td>0.3</td>
<td>0.1</td>
<td>-</td>
<td>0.8</td>
</tr>
<tr>
<td>Black – other</td>
<td>0.1</td>
<td>0.1</td>
<td>-</td>
<td>0.2</td>
</tr>
<tr>
<td>Chinese</td>
<td>0.1</td>
<td>-</td>
<td>-</td>
<td>0.4</td>
</tr>
<tr>
<td>Mixed</td>
<td>-</td>
<td>-</td>
<td>0.6</td>
<td>1.2</td>
</tr>
<tr>
<td>Other</td>
<td>0.5</td>
<td>0.2</td>
<td>-</td>
<td>0.4</td>
</tr>
</tbody>
</table>

*Proportions within each ethnic group were not all reported by Motability due to very low representation within these groups.
### Appendix K Percentage of respondents with adaptations with current vehicle-usage problems

<table>
<thead>
<tr>
<th>Adaptation type</th>
<th>No problems</th>
<th>Primary control problems</th>
<th>Secondary control problems</th>
<th>Loading/storage problems</th>
<th>Access problems</th>
<th>Seating problems</th>
<th>Other problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>None (n=1,065)</td>
<td>72</td>
<td>4</td>
<td>2</td>
<td>9</td>
<td>20</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Primary (n=270)</td>
<td>41</td>
<td>22</td>
<td>10</td>
<td>30</td>
<td>32</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Secondary (n=50)</td>
<td>50</td>
<td>14</td>
<td>26</td>
<td>16</td>
<td>16</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Loading/storage (n=34)</td>
<td>44</td>
<td>12</td>
<td>15</td>
<td>32</td>
<td>32</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Access (n=22)</td>
<td>41</td>
<td>14</td>
<td>23</td>
<td>27</td>
<td>45</td>
<td>27</td>
<td>9</td>
</tr>
<tr>
<td>Seating (n=22)</td>
<td>45</td>
<td>9</td>
<td>9</td>
<td>14</td>
<td>27</td>
<td>32</td>
<td>5</td>
</tr>
<tr>
<td>Other (n=8)</td>
<td>25</td>
<td>13</td>
<td>13</td>
<td>25</td>
<td>50</td>
<td>13</td>
<td>38</td>
</tr>
</tbody>
</table>
Appendix L Total number of badges on issue in each Government Office Region in England and the rate per 1,000 population (1998-2004)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Badges (000s)</td>
<td>Rate per 1,000</td>
<td>Badges (000s)</td>
<td>Rate per 1,000</td>
<td>Badges (000s)</td>
<td>Rate per 1,000</td>
<td>Badges (000s)</td>
</tr>
<tr>
<td>London</td>
<td>190</td>
<td>27</td>
<td>208</td>
<td>29</td>
<td>213</td>
<td>29</td>
<td>217</td>
</tr>
<tr>
<td>North East</td>
<td>101</td>
<td>39</td>
<td>108</td>
<td>42</td>
<td>110</td>
<td>43</td>
<td>118</td>
</tr>
<tr>
<td>North West</td>
<td>305</td>
<td>45</td>
<td>308</td>
<td>46</td>
<td>324</td>
<td>48</td>
<td>328</td>
</tr>
<tr>
<td>Yorkshire and The Humber</td>
<td>191</td>
<td>37</td>
<td>196</td>
<td>38</td>
<td>203</td>
<td>39</td>
<td>207</td>
</tr>
<tr>
<td>East Midlands</td>
<td>159</td>
<td>38</td>
<td>171</td>
<td>41</td>
<td>160</td>
<td>38</td>
<td>168</td>
</tr>
<tr>
<td>West Midlands</td>
<td>184</td>
<td>35</td>
<td>195</td>
<td>37</td>
<td>202</td>
<td>38</td>
<td>217</td>
</tr>
<tr>
<td>East of England</td>
<td>165</td>
<td>31</td>
<td>175</td>
<td>33</td>
<td>182</td>
<td>34</td>
<td>192</td>
</tr>
<tr>
<td>South East</td>
<td>221</td>
<td>28</td>
<td>252</td>
<td>31</td>
<td>249</td>
<td>31</td>
<td>262</td>
</tr>
<tr>
<td>South West</td>
<td>189</td>
<td>38</td>
<td>208</td>
<td>42</td>
<td>212</td>
<td>43</td>
<td>214</td>
</tr>
<tr>
<td><strong>All England</strong></td>
<td>1,706</td>
<td>35</td>
<td>1,821</td>
<td>37</td>
<td>1,855</td>
<td>37</td>
<td>1,925</td>
</tr>
</tbody>
</table>
### Appendix M Number of badges on issue in England, Scotland and Wales, by category (1997-2004)

<table>
<thead>
<tr>
<th>Year</th>
<th><strong>England</strong></th>
<th></th>
<th><strong>Scotland</strong></th>
<th></th>
<th><strong>Wales</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of badges issued (000s)</td>
<td>To individuals (% of total)</td>
<td>To institutions (% of total)</td>
<td>Number of badges issued (000s)</td>
<td>To individuals (% of total)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>To individuals</td>
<td>To institutions</td>
<td>Total</td>
<td>To individuals</td>
</tr>
<tr>
<td>1997</td>
<td>1,636</td>
<td>1,610 (98)</td>
<td>26 (2)</td>
<td>134</td>
<td>132 (98)</td>
</tr>
<tr>
<td>1998</td>
<td>1,706</td>
<td>1,680 (98)</td>
<td>26 (2)</td>
<td>145</td>
<td>143 (98)</td>
</tr>
<tr>
<td>1999</td>
<td>1,821</td>
<td>1,794 (98)</td>
<td>28 (2)</td>
<td>170</td>
<td>167 (98)</td>
</tr>
<tr>
<td>2000</td>
<td>1,855</td>
<td>1,828 (99)</td>
<td>27 (1)</td>
<td>180</td>
<td>178 (98)</td>
</tr>
<tr>
<td>2001</td>
<td>1,925</td>
<td>1,898 (99)</td>
<td>22 (1)</td>
<td>196</td>
<td>193 (99)</td>
</tr>
<tr>
<td>2002</td>
<td>2,019</td>
<td>1,989 (99)</td>
<td>30 (1)</td>
<td>210</td>
<td>206 (98)</td>
</tr>
<tr>
<td>2003</td>
<td>2,031</td>
<td>2,005 (99)</td>
<td>26 (1)</td>
<td>217</td>
<td>215 (99)</td>
</tr>
<tr>
<td>2004</td>
<td>2,073</td>
<td>2,040 (98)</td>
<td>33 (2)</td>
<td>224</td>
<td>221 (99)</td>
</tr>
</tbody>
</table>
Appendix N Blue Badge holder survey

Survey of drivers who hold a Blue Badge

Please read this before starting the questionnaire
- Please tick the appropriate boxes and write in BLOCK CAPITALS in the spaces provided. This questionnaire should take no more than 15 minutes to complete.
- This questionnaire will help us find out how many Blue Badge holders travel in a car or a van, whether the vehicle they use is specially adapted and what their driving experiences are as a Blue Badge holder.
- You may not need to answer some of the questions if you do not use an adapted vehicle. However, please return the questionnaire even if you are only able to answer a few questions as your answers are still important to us!
- All the information you provide will be treated in the strictest confidence and none of your comments will be related to you directly.

Thank you for your help.

SECTION A: HOW YOU TRAVEL

A1 Do you travel by car or van?
(Please tick ONE box only)

- Yes, as a driver only  □ 1 → Go to A2
- Yes, as a passenger only  □ 2 → Go to A5
- Yes, as both driver and passenger  □ 3 → Go to A2
- No  □ 4 → Go to D1

A2 Does your driving licence have any special codes or restrictions on it?
(Please tick all that apply)

(a) Restricted to driving adapted vehicles  □ 1
(b) Annual/three-yearly review required  □ 1
(c) Restricted to vehicles with automatic transmission only  □ 1
(d) Other (please specify)  □ 1
Do you drive with any of the following specific restrictions/codes on your driving licence? (You can find the codes in Section 12 on the reverse of your Photocard driving licence. If you have a pink and green paper licence you can find this information printed under ‘National Category Entitlement’. Please tick all that apply.)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Ticked</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Code 10</td>
<td>modified transmission</td>
<td></td>
</tr>
<tr>
<td>(b) Code 15</td>
<td>modified clutch</td>
<td></td>
</tr>
<tr>
<td>(c) Code 20</td>
<td>modified brake</td>
<td></td>
</tr>
<tr>
<td>(d) Code 25</td>
<td>modified accelerator</td>
<td></td>
</tr>
<tr>
<td>(e) Code 30</td>
<td>modified combined brake and accelerator</td>
<td></td>
</tr>
<tr>
<td>(f) Code 35</td>
<td>modified control layouts</td>
<td></td>
</tr>
<tr>
<td>(g) Code 40</td>
<td>modified steering</td>
<td></td>
</tr>
<tr>
<td>(h) Code 42</td>
<td>modified rear-view mirror(s)</td>
<td></td>
</tr>
<tr>
<td>(i) Code 43</td>
<td>modified driver seat</td>
<td></td>
</tr>
<tr>
<td>(j) Code 9</td>
<td>modified vehicle (non-Photocard licence only)</td>
<td></td>
</tr>
<tr>
<td>(k) Other</td>
<td>Other (please specify)</td>
<td></td>
</tr>
</tbody>
</table>

How far did you travel in your car or van during the last 2 months? (Please write in the box below)

How far did you travel in your car or van during the last 2 months?

Miles

Is your car/van provided via Motability?

Yes

No

Is your car/van provided via Motability?

Yes

No
**SECTION B: VEHICLE ADAPTATIONS**

B1 Is the car or van you usually travel in adapted for your use?  
(Please tick all that apply)

<table>
<thead>
<tr>
<th>Option</th>
<th></th>
<th></th>
<th>Go to B2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Yes – fitted with car-control adaptations (e.g. for steering, braking)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Yes – adapted to enable me to travel in a wheelchair</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Yes – adapted to enable me or a carer to load and store a wheelchair or equipment (e.g. with hoists, ramps)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Yes – adapted to enable me to get in and out of the car/van more easily (e.g. using swivel seats, hoists)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Yes – adapted to enable me to have an adequate seating position (e.g. with cushions, replacement seats)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) No – not adapted in any way</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) Other (please specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B2 What adaptations do you have fitted to your vehicle?  
(Please write in the box below)
B3  Do you currently have problems with any of the following in your car/van?  
(Please tick all that apply)

(a)   Getting in and out of your car/van  □  1
(b)   Loading and storing equipment (e.g. wheelchair or other mobility aids)  □  1
(c)   Seating  □  1
(d)   Using primary controls (steering, braking and accelerating)  □  1
(e)   Using secondary controls (e.g. indicators, gears, parking brake)  □  1

B4  What are the problems you have?  
(Please write in the box below)

B5  How safe do you feel when travelling in your adapted vehicle?  
(Please tick ONE box only)

(a)   Very safe  □  1
(b)   Safe  □  2
(c)   Neither safe nor unsafe  □  3
(d)   Unsafe  □  4
(e)   Very unsafe  □  5
B6 Why do you feel this?  
(Please write in the box below)

B7 When deciding which adaptations to have fitted to your vehicle, how important were the following factors?  
(Please circle ONE number on EACH line)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Not at all important</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Extremely important</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Cost</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>(b) Appearance</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>(c) Available locally</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>(d) Available quickly</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>(e) Reliability</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>(f) Safety in the event of an accident</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>(g) Suitability for my physical needs</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>
Which ONE factor was the most important when choosing adaptations for the car or van that you use?
(Please tick ONE box only)

(a) Cost □ 1
(b) Appearance □ 2
(c) Available locally □ 3
(d) Available quickly □ 4
(e) Reliability □ 5
(f) Safety in the event of an accident □ 6
(g) Suitability for my physical needs □ 7

Did you experience any problems or difficulties with the process of having adaptations fitted to your car/van?

Yes □ 1 → Go to B10
No □ 2 → Go to B11

What problems or difficulties did you experience?
(Please write in the box below)

Do think there is a need for your adaptations to meet certain safety standards?

Yes □ 1
No □ 2
How easy or difficult was it to fund the adaptations fitted to your vehicle?
(Please tick ONE box only)

(a) Very easy □ 1
(b) Easy □ 2
(c) Neither easy nor difficult □ 3
(d) Difficult □ 4
(e) Very difficult □ 5

Why do you feel this?
(Please write in the box below)

Did Motability help fund the adaptations for your car or van?

Yes □ 1
No □ 2

Overall, how easy or difficult was it to have your car or van adapted?
(Please tick ONE box only)

(a) Very easy □ 1
(b) Easy □ 2
(c) Neither easy nor difficult □ 3
(d) Difficult □ 4
(e) Very difficult □ 5
B16 Why do you feel this?  
(Please write in the box below)

B17 How often do you have the adaptations on your car or van checked and serviced?  
(Please tick ONE box only)

<table>
<thead>
<tr>
<th>Option</th>
<th>Number</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yearly or on a regular basis</td>
<td>☐ 1</td>
<td>Go to B18</td>
</tr>
<tr>
<td>When a specific problem arises</td>
<td>☐ 2</td>
<td>Go to B18</td>
</tr>
<tr>
<td>Never</td>
<td>☐ 3</td>
<td>Go to B19</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>☐ 4</td>
<td>Go to B18</td>
</tr>
</tbody>
</table>

B18 Who usually checks and services your adaptations?  
(Please tick ONE box only)

<table>
<thead>
<tr>
<th>Option</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original supplier/fitter</td>
<td>☐ 1</td>
</tr>
<tr>
<td>A different adaptation specialist</td>
<td>☐ 2</td>
</tr>
<tr>
<td>Regular garage</td>
<td>☐ 3</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>☐ 4</td>
</tr>
</tbody>
</table>

B19 Have your adaptations ever been removed and refitted by a different garage from the one that originally fitted them (perhaps while other servicing work was being done)?

<table>
<thead>
<tr>
<th>Option</th>
<th>Number</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>☐ 1</td>
<td>Go to B20</td>
</tr>
<tr>
<td>No</td>
<td>☐ 2</td>
<td>Go to C1</td>
</tr>
</tbody>
</table>
Did you experience any problems?

Yes □ 1 → Go to B21
No □ 2 → Go to C1

What problems did you experience?
(Please write in the box below)

SECTION C: ACCIDENTS

Regardless of whether your car or van is fitted with adaptations, have you been involved in an accident in your car or van during the last five years?
(Please tick ONE box on EACH line)

<table>
<thead>
<tr>
<th>(a) As a driver?</th>
<th>Yes, one accident</th>
<th>Yes, two accidents</th>
<th>Yes, three accidents</th>
<th>Yes, more than three accidents</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(b) As a passenger?</th>
<th>Yes, one accident</th>
<th>Yes, two accidents</th>
<th>Yes, three accidents</th>
<th>Yes, more than three accidents</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
</tr>
</tbody>
</table>
If you have adaptations fitted to your car/van, do you think they may have contributed to the accident(s)?

Yes  □ 1  →  Go to C3
No    □ 2  →  Go to C4

Why do you think this is?
(Please write in the box below)

If you have adaptations fitted to your car/van, do you think they may have contributed to any of the injuries that might have been sustained?

Yes  □ 1  →  Go to C5
No    □ 2  →  Go to D1

Why do you think this is?
(Please write in the box below)
SECTION D: ABOUT YOU

D1 Are you male or female?
- Male □ 1
- Female □ 2

D2 What was your age on your last birthday?
(Please write in the box below)
□ □ Years

D3 What is the nature of your disability or mobility impairment?
(Please write in the box below)

D4 What do you regard as your ethnic origin?
(Please tick ONE box only. Ethnic origin questions are not about nationality, place of birth or citizenship. They are about colour and broad ethnic group. UK residents can belong to any of the groups below)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>White □ 1</td>
</tr>
<tr>
<td>(b)</td>
<td>Pakistani □ 2</td>
</tr>
<tr>
<td>(c)</td>
<td>Indian □ 3</td>
</tr>
<tr>
<td>(d)</td>
<td>Black – Caribbean □ 4</td>
</tr>
<tr>
<td>(e)</td>
<td>Black – African □ 5</td>
</tr>
<tr>
<td>(f)</td>
<td>Black – other (please specify) □ 6</td>
</tr>
<tr>
<td>(g)</td>
<td>Bangladeshi □ 7</td>
</tr>
<tr>
<td>(h)</td>
<td>Chinese □ 8</td>
</tr>
<tr>
<td>(i)</td>
<td>Other (please specify) □ 9</td>
</tr>
</tbody>
</table>
If you are willing to help us with further survey research, please give your contact details below.
You do not need to give your contact details unless you are interested in participating in any future research.

Name: 

Address:  
(including postcode)

Contact telephone number: 

Please now return your completed questionnaire using the pre-paid envelope provided.

THANKS FOR YOUR HELP!
Appendix P Covering letter for Blue Badge holder survey

Dear Blue Badge holder

This letter has been sent to tell you about a research project being carried out by the Transport Research Laboratory (TRL). TRL is working with the Government’s Department for Transport to explore the opinions and experiences of car users (both drivers and passengers) who are Blue Badge holders. The results of this important research will help the Government target resources for improving the provision of services for people with mobility impairments.

You have been sent the enclosed questionnaire because you are a Blue Badge holder. Your local council, Gloucestershire County Council, has helped us by posting this questionnaire to you and other Blue Badge holders in your area on our behalf. Your name and address details have been kept confidential by the council and have not been passed on to TRL or any other third-party organisation.

We invite you to complete the enclosed questionnaire and return it to TRL in the pre-paid envelope within the next three weeks. No stamp is needed. Participation in this survey is voluntary but we would greatly appreciate your help in completing the questionnaire, which should take only a few moments of your time. Any answers you provide will be treated in the strictest confidence and will remain completely anonymous. If you are interested in seeing the results of this research project, the final report will be available from the Department for Transport website (www.dft.gov.uk).

Completing the enclosed questionnaire will NOT have any effect on your entitlement to a Blue Badge.

If you would like to ask anything about this questionnaire, please telephone me on 01344 770378 and I will be happy to assist you.

Thank you for your help with this valuable research.

Yours faithfully
Appendix Q Co-operative Crash Injury Study case summaries

**Key**

n/k=not known  
NFS=not further specified  
FSP=front-seat passenger  
ROS=rear offside  
RNS=rear nearside  
GCS=Glasgow Coma Scale

**Accident 1**

Date: 7/2/98  
Time: 23:53  
Road type: Minor road

**Vehicle 1**

Make/model: Vauxhall Vectra 1.8L  
Controls: Automatic gearbox, power-assisted steering  
Modifications: None noted  
Occupants: 1

**Vehicle 1, occupant 1**

Seat position: Driver  
Age: 55  
Sex: Male  
Disability: NFS  
Restrained: Yes  
Injury severity: Slight

**Accident description**

The driver fell asleep at the wheel; his vehicle left the road and collided with a tree.

**Injuries**

The driver suffered minor injuries, these being back strain, neck strain and a grazed right arm.

**Injury causation**

There was no evidence of injury causation; it is likely that the back and neck strain were deceleration injuries.

**Accident 2**

Date: 8/10/98  
Time: 16:40  
Road type: Motorway

**Vehicle 2**

Make/model: Toyota Carina E GLI 1.6L  
Controls: Automatic gearbox, power-assisted steering  
Modifications: None noted  
Occupants: 2

**Vehicle 1, occupant 1**

Seat position: Driver  
Age: 52  
Sex: Male  
Disability: NFS  
Restrained: Yes  
Injury severity: Serious

**Vehicle 1, occupant 2**

Seat position: FSP  
Age: 10  
Sex: Female  
Disability: No  
Restrained: Yes  
Injury severity: Slight

**Accident description**


**Injuries**

The driver suffered a broken sternum and a contusion over the left pelvic area. The passenger suffered multiple contusions – to her abdomen, thorax, left upper arm and right upper arm – as well as abrasions to both elbows and whiplash.

**Injury causation**

Both of the driver’s injuries are likely to have been caused by his seatbelt.
**Accident 3**

Date: 7/12/98  
Time: 9:05  
Road type: A class

**Vehicle 1**
Make/model: Volkswagen Golf 1.8L  
Controls: Automatic gears  
Modifications: Hand controls added through linkage for brake and accelerator. Made by Alfred Bekker

Occupants: 1

**Vehicle 1, occupant 1**  
Seat position: Driver  
Age: 20  
Sex: Male  
Disability: NFS  
Restrainted: No  
Injury severity: Slight

**Accident description**
Disabled driver’s foot stuck on accelerator pedal while negotiating a bend. Vehicle lost control and rolled over.

**Injuries**
The driver suffered an abrasion to his right arm and a bruise (NFS).

**Injury causation**
The driver is likely to have injured his right arm against the door during the rollover.

---

**Accident 4**

Date: 3/7/99  
Time: 12:40  
Road type: A class

**Vehicle 1**
Make/model: Vauxhall Corsa 16V 1.2L  
Controls: Manual/no power-assisted steering  
Modifications: None noted  
Occupants: 1

**Vehicle 2**
Make/model: Ford Escort  
Controls: Manual, power-assisted steering n/k  
Modifications: None

Occupants: 2

**Vehicle 2, occupant 1**  
Seat position: Driver  
Age: 27  
Sex: Male  
Disability: NFS  
Restrainted: No  
Injury severity: Severe

**Vehicle 2, occupant 2**  
Seat position: FSP  
Age: 47  
Sex: Female  
Disability: None  
Restrainted: No  
Injury severity: None

**Accident description**
Vehicle 1 in same lane as Vehicle 2 on three-lane dual carriageway. Vehicle 1 catches up with Vehicle 2 and collides with rear of Vehicle 2.

**Injuries**
The driver of Vehicle 1 was knocked unconscious with a GCS of 3. He had a laceration to the bridge of his nose and an abrasion to his left forearm. The occupants of Vehicle 2 were uninjured.

**Injury causation**
The unconsciousness and laceration to the nose are likely to have been caused by head contact with the windscreen. The abrasion to the forearm is correlated to the steering wheel.
**Accident 5**

Date: 5/2/99  
Time: 2:35  
Road type: Minor road

**Vehicle 1**

Make/model: Vauxhall Corsa Vegas 1.2L  
Controls: Manual gearbox, no power-assisted steering  
Modifications: None noted  
Occupants: 2

**Vehicle 1, occupant 1**

Seat position: Driver  
Age: 63  
Sex: Male  
Disability: NFS  
Restrained: n/k  
Injury severity: Uninjured

**Vehicle 1, occupant 2**

Seat position: FSP  
Age: 58  
Sex: Female  
Disability: None  
Restrained: n/k  
Injury severity: Slight

**Vehicle 2**

Make/model: Renault Laguna  
Controls: n/k  
Modifications: n/k  
Occupants: 2 (removed by owner before inspection. Two uninjured occupants)

**Accident description**

Vehicle 1 emerged from a junction into the path of Vehicle 2.

**Injuries**

The passenger of Vehicle 1 suffered a neck strain during the collision.

**Accident 6**

Date: 9/21/99  
Time: 14:53  
Road type: A class

**Vehicle 1**

Make/model: Toyota Starlet Sportif 1.3L  
Controls: Automatic gearbox, power-assisted steering  
Modifications: Head restraint removed, probably pre-accident to adjust for driver disability  
Occupants: 1

**Vehicle 1, occupant 1**

Seat position: Driver  
Age: 62  
Sex: Female  
Disability: NFS  
Restrained: Yes  
Injury severity: Serious

**Accident description**

The vehicle clipped the near-side kerb, lost control, crossed to the offside and hit a wall.

**Injuries**

The driver suffered neck strain, bruising and abrasion to her back and bruising to her chest and lower abdomen.

**Injury causation**

The neck strain is linked to an airbag contact, the damage to her back was probably caused by luggage within the car and the bruising to her chest and abdomen was connected to the seatbelt contact.

**Accident 7**

Date: 10/17/00  
Time: 08:44  
Road type: A class

**Vehicle 1**

Make/model: Ford Ka 1.3L  
Controls: Manual gearbox, power-assisted steering  
Modifications: None noted  
Occupants: 1

**Vehicle 1, occupant 1**

Seat position: Driver  
Age: 21  
Sex: Female  
Disability: NFS  
Restrained: Yes
Injury severity: Slight

Vehicle 2
Make/model: Land Rover Range Rover 3.9L
Controls: Automatic gears, power-assisted steering
Modifications: None
Occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: n/k
Sex: n/k
Disability: None
Restrainted: n/k
Injury severity: Uninjured

Accident description
Vehicle 1 collided with the rear of Vehicle 2 while travelling along in the same direction.

Injuries
The driver of Vehicle 1 suffered from neck strain.

Injury causation
The neck strain may have been caused by contact with the airbag as it deployed.

Accident 8
Date: 10/20/01
Time: 16:48
Road type: A class

Vehicle 1
Make/model: BMW 520 iSE 2.0L
Controls: Automatic gearbox, power-assisted steering
Modifications: None noted
Occupants: 2

Vehicle 1, occupant 2
Seat position: FSP
Age: 55
Sex: Female
Disability: No
Restrainted: Yes
Injury severity: Serious

Vehicle 2
Make/model: Bedford HGV, no further details

Accident description
Vehicle 1 collided with the rear offside wheel of Vehicle 2 while attempting to overtake.

Injuries
Driver suffered avulsion chip fracture of the lateral spicondyle right elbow, and whiplash. Passenger suffered severe bruising to left upper thorax, right thorax and breast and lower abdomen, bruising to both upper thighs and whiplash.

Injury causation
The elbow fracture was correlated to contact with the driver’s compartment (not further specified). The whiplash was coded as a non-contact injury.

Accident 9
Date: 08/09/01
Time: 20:45
Road type: A class

Vehicle 1
Make/model: Renault Clio RT 1.2L
Controls: Automatic gears, power-assisted steering
Modifications: Steering ball fitted to wheel
Occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 40
Sex: Female
Disability: NFS
Restrainted: Yes
Injury severity: Slight
### Vehicle 2
- **Make/model:** Vauxhall Calibra I 2.0L
- **Controls:** Automatic gears, power-assisted steering
- **Modifications:** None
- **Occupants:** 1

### Vehicle 2, occupant 1
- **Seat position:** Driver
- **Age:** 50
- **Sex:** Male
- **Disability:** None
- **Restrained:** No
- **Injury severity:** Slight

#### Accident description
Vehicle 2 lost control while travelling around a right-hand bend and collided with Vehicle 1, which was travelling in the opposite direction.

#### Injuries
The driver of Vehicle 1 suffered a small abrasion occiput, a haematoma occiput, abrasions to the forehead, bruising to the left of her face, neck strain, bruising to the right lateral neck, thoracic spine strain, lumbar spine strain, lacerations and bruising to her left hand, bruising to her right upper anterior and left upper lateral legs, superficial lacerations and bruising to her left lower anterior leg, and abrasions to her right ankle and foot. The driver of Vehicle 2 suffered neck strain.

#### Injury causation
The occipital and forehead injuries were correlated with contact with the driver’s side of the compartment. The facial bruising was connected with an airbag contact. Neck and spine strain were non-contact injuries. The right lateral neck bruises were caused by the belt. The lacerations to the left lower leg and left hand were caused by flying glass. The bruising to the left hand was caused by steering wheel contact. The right upper anterior leg bruising was linked to seatbelt contact. The left upper anterior leg bruising was linked to the steering ball adaption that had been fitted to the car. The bruising to the left lower anterior leg and the abrasions to the right foot and ankle were caused by the facia panel (NFS) and the footwell (NFS) respectively.

---

### Accident 10
- **Date:** 03/06/02
- **Time:** 18:04
- **Road type:** A class

#### Vehicle 1
- **Make/model:** Skoda Favorit GLX I E 1.3L
- **Controls:** Manual gearbox, power-assisted steering
- **Modifications:** None
- **Occupants:** 1

#### Vehicle 1, occupant 1
- **Seat position:** Driver
- **Age:** 57
- **Sex:** Male
- **Disability:** No
- **Restrained:** Yes
- **Injury severity:** Fatal

#### Vehicle 2
- **Make/model:** Peugeot 06 XT 1.1L
- **Controls:** Manual gearbox, no power-assisted steering
- **Modifications:** None
- **Occupants:** 2

#### Vehicle 2, occupant 1
- **Seat position:** Driver
- **Age:** 44
- **Sex:** Female
- **Disability:** Glass eye
- **Restrained:** Yes
- **Injury severity:** Fatal

#### Vehicle 2, occupant 2
- **Seat position:** FSP
- **Age:** 11
- **Sex:** Female
- **Disability:** No
- **Restrained:** Yes
- **Injury severity:** Serious

#### Accident description
Vehicle 2 lost control on a right-hand bend, struck the nearside kerb and crossed the hatch markings at the end of the dual carriageway, colliding with the oncoming Vehicle 1.

#### Injuries
The most significant injuries suffered by the
driver of Vehicle 1 were a disrupted small bowel mesentery, a disrupted large bowel mesentery retro-peritoneal haemorrhage, a disrupted pubic symphysis, a displaced fracture of the left sacroiliac region, fractures of both right and left femurs and complex breaks to both left ankle and left foot.

The injuries suffered by the driver of Vehicle 2 were diffuse bruising over the inner aspect of the scalp on the right side, parallel linear abrasions 2.0 x 4.0cm in length on the right forehead, diffuse bruising over the right shoulder, bruising to the right upper arm, fractures of the right third, fifth, seventh, eighth, ninth and tenth ribs anterolaterally, with bilateral haemothorax, bilateral lung contusions, a rupture to the right side of the diaphragm, perforation of the small bowel, a ruptured spleen, a rupture of the right side of the diaphragm, perforation of the small bowel, a fractured left sacroiliac joint, a broken left femur, a 3cm laceration in the right calf, a small laceration on the anterior left shin, a small puncture wound on the back of the right foot and a linear abrasion 3cm in length above the right ankle.

The injuries suffered by the passenger of Vehicle 2 are less extensively recorded, as we have no post-mortem data. The injuries we know of consist of lacerations to the forehead, traumatic perforation of the terminal ileum with ileal caecal perforation 2cm in diameter, bruising to the lower abdomen and lacerations to the left fingers.

**Injury causation**
The diffuse bruising on the scalp was probably caused by an impact with the A-pillar. The forehead injury was linked to contact with the facia (NFS). The diffuse bruising to the right shoulder was probably a seatbelt injury, and the right upper arm injury was likely to have been caused by contact with the driver’s door. The rib fractures, diaphragm rupture and bowel perforation are correlated to contact with the facia (NFS), and the bilateral lung contusions and spleen injury with the steering wheel (NFS). The pelvic break was connected to the bulkhead – the injury may have been caused by knee contact transmitting force back through the hip. The hip dislocation was connected to facia contact (NFS). The dislocated left sacroiliac joint and broken left femur were likely caused by contact with the steering column (NFS). The right calf laceration and right foot puncture wound were linked to footwell contacts (NFS), along with the abrasion above the right ankle. The laceration of the anterior left shin was connected with facia panel contact (NFS).

**Accident 11**

<table>
<thead>
<tr>
<th>Date</th>
<th>02/10/02</th>
</tr>
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<tbody>
<tr>
<td>Time</td>
<td>23:25</td>
</tr>
<tr>
<td>Road type</td>
<td>A class</td>
</tr>
</tbody>
</table>

**Vehicle 1**

<table>
<thead>
<tr>
<th>Make/model:</th>
<th>Volswagen Lupo E 1.4L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls:</td>
<td>Automatic gears, power-assisted steering</td>
</tr>
<tr>
<td>Modifications:</td>
<td>‘Push and go’ right-hand accelerator/brake control/indicator and steering knob. Head restraints removed pre-accident</td>
</tr>
</tbody>
</table>

**Occupants:**

<table>
<thead>
<tr>
<th>Seat position:</th>
<th>Driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age:</td>
<td>29</td>
</tr>
<tr>
<td>Sex:</td>
<td>Female</td>
</tr>
<tr>
<td>Disability:</td>
<td>Yes</td>
</tr>
<tr>
<td>Restrained:</td>
<td>Unknown</td>
</tr>
<tr>
<td>Injury severity:</td>
<td>Serious</td>
</tr>
</tbody>
</table>

**Vehicle 1, occupant 2**

<table>
<thead>
<tr>
<th>Seat position:</th>
<th>FSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age:</td>
<td>36</td>
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<tr>
<td>Sex:</td>
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<td>Disability:</td>
<td>No</td>
</tr>
<tr>
<td>Restrained:</td>
<td>Yes</td>
</tr>
<tr>
<td>Injury severity:</td>
<td>Slight</td>
</tr>
</tbody>
</table>

**Vehicle 2**

| Make/model:       | Ford Fiesta; not examined further. |

**Accident description**
Vehicle 1 turned right and was struck by the oncoming Vehicle 2 in an almost head-on collision.
**Injuries**
The driver of Vehicle 1 suffered from bruising of the cervical nerve roots. The passenger suffered bruising to his left leg (NFS). The driver of Vehicle 2 reported slight whiplash.

**Injury causation**
The Vehicle 1 driver’s injury was a non-contact injury, probably caused by a stretching mechanism.

### Accident 12

<table>
<thead>
<tr>
<th>Date</th>
<th>07/13/02</th>
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<tbody>
<tr>
<td>Time</td>
<td>04:29</td>
</tr>
<tr>
<td>Road type</td>
<td>B class</td>
</tr>
</tbody>
</table>

**Vehicle 1**
- Make/model: Renault Laguna
- Controls: Manual gears, power-assisted steering
- Modifications: None
- Occupants: 4

**Vehicle 1, occupant 1**
- Seat position: Driver
- Age: 25
- Sex: Male
- Disability: Yes
- Restrainted: Yes
- Injury severity: Slight

**Vehicle 1, occupant 2**
- Seat position: FSP
- Age: 25
- Sex: Male
- Disability: None
- Restrainted: Yes
- Injury severity: Serious

**Vehicle 1, occupant 3**
- Seat position: ROS
- Age: 22
- Sex: Male
- Disability: None
- Restrainted: No
- Injury severity: Slight

**Vehicle 1, occupant 4**
- Seat position: RNS
- Age: 22
- Sex: Male
- Disability: None
- Restrainted: No
- Injury severity: Slight

**Accident description**
Vehicle 1, travelling at speed, lost control on a right-hand bend, left the carriageway striking trees and an earth mound, and then caught fire.

**Injuries**
The driver suffered bruising over his right hips. Occupant 2 (FSP) suffered a graze to his right chest, a fracture of his right tibia (mid shaft) and a bilateral compound fracture of his left tibia. Occupant 3 suffered a laceration above his right eyebrow, Occupant 4 suffered cerebral oedema, a graze to his right leg and a laceration to his right leg.

**Injury causation**
The bruising on the driver’s right hip was caused by his seatbelt.

### Accident 13

<table>
<thead>
<tr>
<th>Date</th>
<th>24/02/03</th>
</tr>
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<tbody>
<tr>
<td>Time</td>
<td>20:15</td>
</tr>
<tr>
<td>Road type</td>
<td>A class</td>
</tr>
</tbody>
</table>

**Vehicle 1**
- Make/model: Renault Clio
- Controls: Manual gearbox, power-assisted steering
- Modifications: None
- Occupants: 1

**Vehicle 1, occupant 1**
- Seat position: Driver
- Age: 29
- Sex: Male
- Disability: None
- Restrainted: No
- Injury severity: Slight

**Vehicle 2**
- Make/model: Vauxhall Vectra
- Controls: Automatic gearbox, power-assisted steering, ABS
- Modifications: None
- Occupants: 4
Vehicle 2, occupant 1
Seat position: Driver
Age: 38
Sex: Male
Disability: None
Restrainted: Yes
Injury severity: Uninjured

Vehicle 2, occupant 2
Seat position: FSP
Age: 15
Sex: Male
Disability: None
Restrainted: Yes
Injury severity: Uninjured

Vehicle 2, occupant 3
Seat position: ROS
Age: 14
Sex: Male
Disability: None
Restrainted: n/k
Injury severity: Uninjured

Vehicle 2, occupant 4
Seat position: RNS
Age: 14
Sex: Male
Disability: None
Restrainted: n/k
Injury severity: Uninjured

Vehicle 3
Make/model: Vauxhall Cavalier
Controls: Automatic gearbox, power-assisted steering
Modifications: Steering knob attached to steering wheel
Occupants: 1

Vehicle 3, occupant 1
Seat position: Driver
Age: 32
Sex: Male
Disability: NFS
Restrainted: Yes
Injury severity: Slight

Vehicle 2
Make/model: Rover 25 16V Twincam 1.4L
Controls: Manual gearbox, power-assisted steering
Occupants: None

Vehicle 1, occupant 1
Seat position: Driver
Age: 70
Sex: Male
Disability: None
Restrainted: Yes
Injury severity: Slight

Vehicle 1, occupant 2
Seat position: FSP
Age: 17
Sex: Male
Disability: None
Restrainted: Yes
Injury severity: Serious

Accident description
Vehicle 3 lost control, moved onto the opposite carriageway and collided with Vehicle 2. Vehicle 1, travelling behind Vehicle 2, then collided with Vehicle 2. Vehicle 3 was the car containing the disabled occupant.

Injuries
The driver of Vehicle 1 suffered bruising to his upper left arm, lower posterior left arm, left wrist and right hip, and an abrasion to his lower left arm. The occupants of Vehicle 2 were all uninjured. The driver of Vehicle 3 suffered from neck strain, and also complained of pain in his left shoulder.

Injury causation
The neck strain suffered by the driver of Vehicle 3 was a non-contact injury.

Accident 14
Date: 20/01/03
Time: 17:12
Road type: B class

Vehicle 1
Make/model: Rover 400 16V Twincam 1.4L
Controls: Manual gearbox, power-assisted steering
Occupants: 2
Vehicle 2, occupant 1
Seat position: Driver
Age: 24
Sex: Male
Disability: No
Restrained: Yes
Injury severity: Slight

Vehicle 3
Make/model: Citroen Xantia Turbo D SX 2.0L
Controls: Manual gearbox, power-assisted steering
Modifications: None
Occupants: 2

Vehicle 3, occupant 1
Seat position: Driver
Age: 25
Sex: Female
Disability: NFS
Restrained: Yes
Injury severity: Slight

Vehicle 3, occupant 2
Seat position: FSP
Age: 51
Sex: Male
Disability: None
Restrained: n/k
Injury severity: Uninjured

Accident description
Vehicle 1 failed to stop at a junction and was hit by Vehicle 2 travelling on the main road. Vehicle 1 then collided with Vehicle 3 travelling in the opposite direction on the main road. (From the Vehicle 1 point of view, Vehicle 2 was travelling left to right, Vehicle 3 right to left.) Vehicle 3 was the car with the disabled driver.

Injuries
The Vehicle 1 driver suffered neck strain at the C6 level, and bruising to his chest. His FSP suffered bilateral neck strain. The driver of the Rover 25 suffered neck strain and bruising to his right and left hips. The driver of Vehicle 3 suffered a strain to her neck, as well as contusions to her back, chest and right forearm.

Injury causation
The Vehicle 3 driver’s neck strain was a non-contact injury, the contusion to her back was caused by her seat (NFS), that to her chest was caused by her seatbelt and that to her right forearm was caused by contact with the interior of the passenger compartment.
Appendix R Fatal accident case summaries (fatal accidents where the disability of a vehicle occupant was considered to be a contributory factor)

<table>
<thead>
<tr>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/k=not known</td>
</tr>
<tr>
<td>FSP=front-seat passenger</td>
</tr>
</tbody>
</table>

**Accident 1**

**Date:** 3/6/91  
**Time:** 22:45

**Vehicle 1**

**Make/model:** Volkswagen Golf GL (auto)  
**Year of registration:** 1983/84  
**Modified controls:** None  
**Number of occupants:** 2

**Vehicle 1, occupant 1**

**Seat position:** Driver  
**Age:** 75  
**Sex:** Female  
**Disability:** Spondylitis (fusion of the spine)  
**Restrained:** No (exempted on account of disability)  
**Injury severity:** Fatal (multiple injuries)

**Vehicle 1, occupant 2:**

**Seat position:** FSP  
**Age:** 83  
**Sex:** Female  
**Disability:** None  
**Restrained:** No  
**Injury severity:** Fatal

**Accident description**

The two women had spent the evening visiting friends, and the driver was giving the passenger a lift home. Neither had consumed alcohol. The car had been parked on a service road outside the friend’s house, in a residential area. On setting off, the car went out of control almost immediately, with witnesses describing high engine revs and harsh acceleration. After 60m it reached a T-junction with another minor residential road, having already mounted the nearside grass verge by this point. It failed to stop, but travelled straight on, mounted the opposite pavement, went through a privet hedge, across a garden and crashed into a house at about 30mph. The car was extensively damaged, although the occupant compartment remained relatively intact. However, both occupants, being unrestrained, were thrown forwards, the driver being found sitting in the driver’s footwell, with her walking sticks under her. The passenger was certified dead at the scene, while the driver was dead on arrival at hospital.

**Accident causation**

The cause of this accident will never be known for certain. The post-mortem revealed no evidence of sudden illness on the part of the driver, and no defects were found on the vehicle. However, the police, in conjunction with a technical expert from Volkswagen UK, have constructed a plausible theory.

As well as having an automatic gearbox, the car also had an automatic choke. Although it was June, it was quite a cold night, with an air temperature of about 4°C, so the choke would have been fully operational, resulting in high engine revs at idle. Engaging ‘Drive’ in these circumstances would result in the vehicle beginning to move quite quickly, with no input from the driver. If the driver, taken by surprise in this way, attempts to brake, but hits the accelerator pedal by mistake, then very quick reactions are needed to bring the situation back under control. The driver in this case most certainly did not have quick reactions, on account of her disability. Thus the likely cause of the accident was minor driver error, resulting in a train of events which a person...
with restricted limb movements would have found difficult to control. The only real counter-argument to this theory is that the driver had owned the car for some time, and should not have been taken by surprise by its behaviour.

Incidental matters
1. The police were of the opinion that both occupants would have survived this crash had they been restrained.
2. The driver had declared her spondylitis to DVLA when she renewed her licence at age 70 and again at 73, but had answered ‘no’ to the question of whether she had any defect in limb movement or power. The police felt that this glossed over the extent of her disability. However, her annual mileage was very low and she had declared her intention not to renew her licence when it was next due – 25 days after the accident.

Accident 2
Date: 28/10/92
Time: 16:53

Vehicle 1
Make/model: Volkswagen Golf
Year of registration: 1984/85
Modified controls: None
Number of occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 51
Sex: Male
Disability: Diabetic, high blood pressure, burst blood vessels in eye
Restrained: n/k
Injury severity: Fatal (head and chest injuries)

Vehicle 2
Make/model: Daimler Fleetline double-decker bus
Year of registration: 1976/77
Modified controls: None
Number of occupants: Driver and several passengers (none injured)

Vehicle 2, occupant 2
Seat position: Driver
Age: 44
Sex: Male
Disability: None
Restrained: No
Injury severity: Uninjured

Accident description
Vehicle 1 was being driven on a major urban road, at the head of a line of traffic, at about 30-35mph in a 40mph limit area. The vehicle was displaying dipped headlights (as was Vehicle 2). The driver was returning home from work. The road at the accident scene was straight and level, the road surface was dry and the weather was fine. For no apparent reason, Vehicle 1 crossed the centre white line and entered the opposite lane where it suffered a head-on collision with the oncoming Vehicle 2. The driver was dead on arrival at hospital.

The best description of the events comes from a driver following Vehicle 1, who stated that Vehicle 1 crossed the centre white lines in a controlled movement, and straightened up in that lane. Immediately before impact, Vehicle 1 deviated sharply to the left as though the driver had suddenly become aware of his situation.

This all happened so quickly that the driver of Vehicle 2 was unable to avoid the collision, although he did lock his wheels in an attempt to stop. The driver of the car following Vehicle 1 initially formed the opinion that Vehicle 1 was steering right so as to avoid a flooded area of road. They had passed warning signs for a flood, and the road had been flooded at that location the previous day. However, at the time of the accident, there was no flood.

Accident causation
The reason for Vehicle 1 moving to the wrong side of the road will never be known. Although the driver had been diabetic from the age of 15, his wife stated that he was always very careful about his condition and always ate the right things at the right time. He had had his daily insulin injection that morning, and was always careful to take his blood pressure tablets. The burst blood vessels in the eye were a fairly recent development, and he had been having laser treatment for them as an outpatient. He had left home that morning.
apparently in good spirits, and had no marital or financial problems. He was described as a very careful, non-aggressive driver. His behaviour immediately prior to the crash can only be explained either by a complete lapse of attention to driving (which would be out of character) or by some effect of his medical conditions. It is possible that the causation factor assigned to this case should have been ‘illness’ rather than ‘disability’.

**Accident 3**

<table>
<thead>
<tr>
<th>Date</th>
<th>9/8/91</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>11:00</td>
</tr>
</tbody>
</table>

**Vehicle 1**

- **Make/model:** Ford Escort (automatic)
- **Year of registration:** 1984/85
- **Modified controls:** None
- **Number of occupants:** 2

**Vehicle 1, occupant 1**

- **Seat position:** Driver
- **Age:** 70
- **Sex:** Female
- **Disability:** Replacement hips. Unable to walk unaided
- **Restrained:** n/k
- **Injury severity:** Slight (shock)

**Vehicle 1, occupant 2**

- **Seat position:** FSP
- **Age:** 69
- **Sex:** Female
- **Disability:** None
- **Restrained:** No
- **Injury severity:** Fatal (multiple injuries)

**Vehicle 2**

- **Make/model:** Peugeot 205
- **Year of registration:** 1990/91
- **Modified controls:** None
- **Number of occupants:** 0 (parked, unattended)

**Accident description**

The two occupants of Vehicle 1 had just visited the dentist. They had parked off the road on the dental practice forecourt, parallel to the road. The driver of Vehicle 2 was also visiting the dentist, but had parked on the road, since there was no room on the practice forecourt. She had parked clear of the forecourt so as not to obstruct vehicles entering or exiting. When Vehicle 1 came to leave, it was necessary to reverse off (or within) the forecourt, and the passenger opened her door and leaned out so as to assist the driver in this manoeuvre. However, the driver lost control of the vehicle, accelerated backwards and struck Vehicle 2 a glancing blow, nearside to nearside. The impact forced the passenger door of Vehicle 1 back on its hinges and into the front wing. The passenger, presumably dislodged from her seat during the acceleration, was trapped between the two vehicles, and was pronounced dead at the scene.

**Accident causation**

The occupants of Vehicle 1 were sisters, and the police did not formally interview the driver on account of the mental anguish she was suffering. However, they quoted her as saying that she caught sight of a car which she described as being blue and moving quickly on the road. She reacted by attempting to brake, but must have trodden on the accelerator by mistake, resulting in her losing control and striking Vehicle 2 (which was also blue). The police were fairly sure that the vehicle she saw was, in fact, the parked Vehicle 2. It is likely that reversing was a difficult manoeuvre for this lady, since the reduced mobility of her hips would have restricted her ability to swivel in her seat. That the driver was not sufficiently confident of her ability to reverse using her mirrors is indicated by the fact that the passenger deemed it necessary to lean out of her open door to assist. The limited mobility of the driver’s legs is also likely to have compromised her ability to react quickly to the mistake she made in pressing the accelerator instead of the brake.

**Accident 4**

<table>
<thead>
<tr>
<th>Date</th>
<th>21/9/92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>14:50</td>
</tr>
</tbody>
</table>

**Vehicle 1**

- **Make/model:** Ford Escort
- **Year of registration:** 1987/88
- **Modified controls:** None
- **Number of occupants:** 1
Vehicle 1, occupant 1  
Seat position: Driver  
Age: 77  
Sex: Male  
Disability: Defective eyesight  
Restraint: n/k  
Injury severity: Uninjured

Vehicle 1, pedestrian  
Age: 86  
Sex: Female  
Disability: None  
Injury severity: Fatal

**Accident description**  
Vehicle 1 was being driven at about 15-20mph along a busy urban road (30mph limit) in overcast but clear and dry conditions. The pedestrian lived in a nearby residential home, and was in the habit of taking a walk, unaccompanied except for a four-wheeled shopping trolley, which she pushed along to provide her with stability and support. She was returning from one such walk, and was crossing the road towards the nursing home, moving from right to left as seen by the driver. Vehicle 1 collided with the pedestrian, causing fatal injuries.

**Accident causation**  
There were no witnesses to the events immediately prior to this accident, despite the large number of pedestrians in the vicinity. The driver wore spectacles but was still only able to read a standard number plate from a distance of 13.15m (as opposed to the requirement of 22.8m for 3.5 inch letters). He also gave a very confused account of events, claiming that the pedestrian was crossing from left to right (unlikely, since she was probably returning from her walk, not just starting out), that she was pulling the trolley (unlikely, as she used it for support), that she ‘dashed’ into the road (unlikely for an old lady using a trolley for support), that it was drizzling (it was dry), that he swerved to the left (the final position of his car indicated a swerve to the right) and that he sounded his horn (a witness who heard the impact did not hear a horn). These factors tend to be indicative of a general lack of attention/awareness and, in any case, even if a sharply-focused image of

Vehicle 1, occupant 1  
Seat position: Driver  
Age: 55  
Sex: Male  
Disability: Very poor eyesight, virtually blind in left eye  
Restraint: n/k  
Injury severity: Uninjured

Vehicle 1, pedestrian  
Age: 75  
Sex: Female  
Disability: None  
Injury severity: Fatal

**Accident description**  
The pedestrian was crossing from right to left at a light-controlled pedestrian crossing on a wide residential road. Vehicle 1 had stopped at the crossing, obeying the red light. However, the pedestrian walked very slowly, and was still on the crossing, directly in front of Vehicle 1 when the lights changed to flashing amber. The driver immediately drove off, knocking the pedestrian down, and only stopped because passers-by shouted at him.

**Accident causation**  
The driver admitted to police that he had difficulty with his eyesight, and that he could see very little out of his left eye. He stated that he had been completely unaware of the
pedestrian’s presence in front of his vehicle when he started off from the lights, even though one witness described the pedestrian as having turned to face the vehicle, with her hands on the bonnet, as though trying to stop it. Police conducted an eyesight test, in which the driver was unable to read a number plate at 7ft (approx 2m). The driver had been convicted of driving without due care and attention some five months previously for knocking down a pedestrian whom he had failed to see. In the present case he was convicted of causing death by reckless driving and, inter alia, disqualified from driving for life.

**Accident 6**

Date: 22/10/92  
Time: 9:40

**Vehicle 1**  
Make/model: Mercedes 280 SL (auto)  
Year of registration: Approx 1984  
Modified controls: None  
Number of occupants: 1

**Vehicle 1, occupant 1**  
Seat position: Driver  
Age: 71  
Sex: Male  
Disability: Arthritis in right knee, numbness in left foot  
Restrainted: No  
Injury severity: Serious chest injury

**Vehicle 1, pedestrian**  
Age: 40  
Sex: Female  
Disability: None  
Injury severity: Fatal

**Accident description**  
Vehicle 1 was double-parked, with its engine running, on a side street in the busy commercial centre of a large city. A passenger in the vehicle (an employee of the driver) exited the vehicle and was walking round to the driver’s side, with the intention of driving the vehicle to another location. Meanwhile, the driver was, with some difficulty, also attempting to exit the vehicle (apart from his disabilities, the driver was extremely obese, and the car was a sports model). The driver had opened his door and got his right leg out, when the car suddenly accelerated forwards, executed a tyre-screeching left turn into the main street, mounted the left-hand pavement, struck the pedestrian, then crossed the road and collided with a lamp-post and a parked car before coming to rest. The total distance travelled was 164m.

**Accident causation**  
The driver stated that he had put the car into park mode (although he later used the term ‘neutral’) and set the handbrake before attempting to get out. He was in a hurry, but his size and disability made for a considerable degree of awkwardness in exiting this low-slung sports car, which he was not used to driving (it was his wife’s car). He offered the theory that his coat may have caught the gear selector and pulled it into drive mode, while his numb left foot may have pressed on the accelerator without his really being aware of it. Once the car set off, he claimed that it was all he could do to hold on – he had not intentionally steered the car in any particular direction. There must have been a degree of blind panic involved, since the police calculated that his journey must have lasted about 12 seconds, and took the view that he should have been capable, in this time, of applying the handbrake, switching off the ignition or taking the vehicle out of gear, even if he could not move his foot to the footbrake. He was prosecuted and convicted, but the charge is not recorded in the file.

**Incidental matters**  
As well as his leg problems, the driver had had a heart attack about seven years before the accident. He had not informed DVLA of his disabilities when he had re-applied for his licence, some 15 months previously. However, he claimed that they did not affect his ability to drive, and his GP concurred. When DVLA was informed of his state of health after this incident, it did not restrict his licence. While it is quite likely that his leg problems would not affect his ability to drive an automatic vehicle in normal circumstances, they probably did limit his ability to regain control in this case.
Accident 7

Date: 6/3/95
Time: 14:40

Vehicle 1
Make/model: Rover Metro GTA
Year of registration: 1990/91
Modified controls: None
Number of occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 8
Sex: Female
Disability: Poor eyesight, including cataracts
Restrained: Yes
Injury severity: Slight

Vehicle 2
Make/model: Austin Metro 1.3L
Year of registration: 1982/83
Modified controls: None
Number of occupants: 1

Vehicle 2, occupant 1
Seat position: Driver
Age: 82
Sex: Male
Disability: None
Restrained: Yes
Injury severity: Fatal

Accident description
The accident took place on a predominantly rural, B class road (60mph limit). Vehicle 2 was being driven at about 30mph, approaching a junction with a minor road to its left, and being followed by a queue of other vehicles. Vehicle 1 was approaching from the opposite direction at a low speed, about 5-10mph, intending to make a right turn into the minor road, and signalling this intention. The two vehicles converged opposite the mouth of the junction, and at this point Vehicle 1 commenced its right turn across the path of Vehicle 2, resulting in a head-on collision.

Accident causation
In an eyesight test, the driver of Vehicle 1 was only able to read a number plate at a distance of 14.1m (3.125 inch letters), and then only with some difficulty, holding her spectacles to adjust the angle. She was only able to read a number plate comfortably at 11.7m, as opposed to the required distance of 20.3m. The day of the accident was bright and sunny, and she claimed that the road beyond the junction had been shaded by trees, which may have explained why she completely failed to see any vehicles coming towards her. She was prosecuted for driving without due care and attention and for defective eyesight. As well as fines and endorsements, she was disqualified from driving and instructed to re-take her driving test.

Incidental matters
This was a low-speed impact, which would probably not have been fatal if the driver of the opposing vehicle had been younger or fitter. Although he suffered broken ribs and lung contusions, death was at least partly caused by ischaemic heart disease. The post-mortem states that the shock of the accident probably triggered cardiac arrhythmia. (This has no bearing on the role of disability in the cause of the accident.)

Accident 8

Date: 16/12/94
Time: 16.55

Vehicle 1
Make/model: Austin Maestro
Year of registration: 1983/84
Modified controls: None
Number of occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 32
Sex: Male
Disability: Left eye lost in a previous (industrial) accident
Restrained: n/k
Injury severity: Uninjured

Vehicle 1, pedestrian
Age: 54
Sex: Female
Disability: None  
Injury severity: Fatal

Accident description
The accident occurred on a wide urban/residential road (30mph limit). It was dark, but the road was well lit. The police calculated that Vehicle 1 was being driven at about 30mph along this road, when the pedestrian, who was wearing light-coloured clothing and carrying a white shopping bag, stepped out from between parked cars on the driver’s nearside. She was struck and fatally injured by Vehicle 1, the impact being to the nearside front, around the headlight and to the windscreen, around the vehicle excise licence. The car’s headlights were on at the time of the impact.

Accident causation
There were no witnesses to the impact itself, and the driver could offer no explanation as to why he failed to see the pedestrian. However, the location of the impact on the vehicle indicated that the pedestrian had only just entered the road, and up to this point had probably been partly shielded from the driver’s view by parked cars. The driver had been without his left eye for ten years, but vision in his right eye was good. He claimed to have notified DVLA of his disability on his original licence application. Indeed, he claimed to have learnt to drive after he lost his eye, and to have passed his driving test in this condition. The police attempted to confirm this with DVLA, but were told that computerised records did not go back far enough. The driver was not prosecuted.

Incidental matters
Given that the Crown Prosecution Service (CPS) concluded that the driver had not committed any offence, the view could be taken that this accident should have been coded as being caused by the pedestrian, entering the road carelessly. She was crossing from between parked cars, and the approaching vehicle must have been clearly in view.

Accident 9

Vehicle 1
Make/model: Vauxhall Cavalier  
Year of registration: 1984/85  
Modified controls: None  
Number of occupants: 1

Vehicle 1, occupant 1
Seat position: Driver  
Age: 85  
Sex: Male  
Disability: Bad eyesight – glaucoma and cataracts  
Restrained: n/k  
Injury severity: Uninjured

Vehicle 2
Make/model: Kawasaki 1100R (motorcycle)  
Year of registration: 1984/85  
Modified controls: None  
Number of occupants: 1

Vehicle 2, occupant 1
Seat position: Rider  
Age: 40  
Sex: Male  
Disability: None  
Restrained: n/a  
Injury severity: Fatal

Accident description
The two vehicles were approaching each other from opposite directions along an A class trunk road in a rural area with a 60mph limit. They converged at a junction with a minor road to the motorcycle’s left. The road at this point was straight, with good visibility from both directions. It was daylight, the weather was fine and the road surface dry. Vehicle 1 was travelling at less than 10mph, while a motorist following the motorcycle witnessed his speed to be about 55mph. Vehicle 1, without signalling, then attempted to turn right into the minor road across the path of the motorcyclist, resulting in the fatal collision.

Accident causation
The driver who had been following the motorcyclist described his standard of riding as very good, and his speed was perfectly acceptable. His rear light was on, making it probable that his headlight was also on. By
contrast, Vehicle 1 had, a few miles previously, emerged from a junction into the path of a heavy goods vehicle (HGV), causing the HGV to brake sharply. This HGV then followed Vehicle 1 to the accident scene. The driver of Vehicle 1 was only able to read a number plate (with glasses) at a distance of 40ft (12.1m), and at 38ft (11.5m) without glasses (3.125 inch letters). He had only recently been prescribed glasses, but tended not to wear them for driving as he found they did not help very much. He was not wearing glasses at the time of the accident. He was convicted of causing death by dangerous driving and, *inter alia*, disqualified for five years.

**Accident 10**

Date: 12/11/91  
Time: 16:46  

**Vehicle 1**  
Make/model: Ford Cargo two-axle rigid HGV (unladen), drawing a small compressor  
Year of registration: 1984/85  
Modified controls: None  
Number of occupants: 1  

**Vehicle 1, occupant 1**  
Seat position: Driver  
Age: 54  
Sex: Male  
Disability: Blind in right eye  
Restrained: n/a  
Injury severity: Uninjured  

**Vehicle 1, pedestrian**  
Age: 70  
Sex: Male  
Disability: None  
Injury severity: Fatal  

**Accident description**  
At the time of the accident, it was raining, the road surface was wet, visibility was reasonable to poor and it was dusk – two minutes after lighting-up time. The environment was urban and the speed limit at the accident location was changing from 30mph to 40mph when travelling in the direction of Vehicle 1. The road was a single carriageway with one lane in each direction, divided by centre white lines. The pedestrian was pushing a pedal cycle across the road, returning home from his allotment (he was a keen gardener). Traffic was heavy. He had safely crossed the lane in which Vehicle 1 was travelling, and had stopped at the centre white line, with his cycle positioned parallel to the traffic flow, waiting for an opportunity to cross the other lane, and facing the traffic in that lane. There was no pedestrian refuge at this point and the nearest pedestrian crossing was 0.2 miles away (about 320m), although using it would have more than doubled the pedestrian’s journey. The HGV was travelling at about the speed limit, but was positioned unnecessarily close to the centre white line. It had adopted this position previously, to pass parked vehicles, but had failed to return to a more normal position after passing these vehicles. As the HGV passed the pedestrian its offside wing mirror struck the back of the pedestrian’s head, killing him instantly.

**Accident causation**  
The HGV driver had been blind in his right eye since an accident at the age of six. He wore glasses to correct short-sightedness in his left eye. In the instant before the collision he claimed to have suddenly become aware of a ‘shadow’ on his right, but this was too late to avoid the collision. However, a motorist following the HGV stated that he had looked past the HGV as they rounded a slight right-hand curve, and had clearly seen the pedestrian ahead. The HGV driver was (just) able to pass a standard eyesight test wearing his glasses (which he had been wearing at the time of the accident). The driver was summonsed for careless driving, but the result is not recorded in the file.

**Accident 11**

Date: 19/2/92  
Time: 13:05  

**Vehicle 1**  
Make/model: Daf 2800 artic. HGV (unladen)  
Year of registration: 1983/84  
Modified controls: None  
Number of occupants: 1
### Vehicle 1, occupant 1
- **Seat position:** Driver
- **Age:** 29
- **Sex:** Male
- **Disability:** None
- **Restrainted:** n/k
- **Injury severity:** Slight

### Vehicle 2
- **Make/model:** Austin Metro City
- **Year of registration:** 1987/88
- **Modified controls:** None
- **Number of occupants:** 3

### Vehicle 2, occupant 1
- **Seat position:** Driver
- **Age:** 64
- **Sex:** Male
- **Disability:** Poor eyesight (advanced cataracts in left eye and early-stage cataracts in right eye)
- **Restrainted:** Yes
- **Injury severity:** Fatal

### Vehicle 2, occupant 2
- **Seat position:** ROS
- **Age:** 78
- **Sex:** Female
- **Disability:** None
- **Restrainted:** No
- **Injury severity:** Fatal

### Vehicle 2, occupant 3
- **Seat position:** RNS
- **Age:** 76
- **Sex:** Female
- **Disability:** None
- **Restrainted:** No
- **Injury severity:** Fatal

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### Accident description
The driver, his sister and sister-in-law were on a shopping trip. The weather was fine and dry. They were travelling on an A class road (60mph limit). Several witnesses describe Vehicle 2 as having been driven in an erratic manner prior to the accident, crossing to the offside of the road on a number of occasions in the face of oncoming traffic, and only returning to its correct side at the last moment. One of the oncoming drivers described the driver of Vehicle 2 as looking down towards his feet, but not slumped over the wheel, before suddenly looking up with a frightened expression and swerving back to his own side of the road. The driver of Vehicle 1, which was negotiating a left-hand bend in the opposite direction to Vehicle 2, describes Vehicle 2 as appearing from behind an oncoming large vehicle as if out of control, on its wrong side of the road. Vehicle 1 began to brake heavily, but Vehicle 2 regained its correct side of the road, disappearing again behind the large vehicle. Vehicle 1 continued to brake, as it was now heading towards the grass verge, but Vehicle 2 reappeared and a head-on collision with Vehicle 1 occurred. Vehicle 2 caught fire, but the post-mortems state that all three occupants died of impact-induced injuries.

### Accident causation
The cause of this accident will never be known. Although the driver had poor eyesight, he is specifically described by one witness as looking down while his vehicle wandered and looking frightened when he looked up and became aware of an imminent collision. This indicates a failure to look where he was going, rather than inability to see. A following driver was also surprised to see the two rear passengers sit entirely motionless while the driver repeatedly put them on collision courses with oncoming vehicles. All three occupants had appeared cheerful and normal when they left on their journey, so suicide was not considered. No defects were found on the vehicle, although extensive impact and fire damage limited the scope of the examination.

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### Accident 12
- **Date:** 16/8/89
- **Time:** 21:20

**Vehicle 1**
- **Make/model:** Ford Escort
- **Year of registration:** 1988/89
- **Modified controls:** None
- **Number of occupants:** 1

**Vehicle 1, occupant 1**
- **Seat position:** Driver
- **Age:** 44
Sex: Female
Disability: Diabetic
Restrained: n/k
Injury severity: Uninjured

Vehicle 2
Make/model: Bicycle
Year of registration: n/a
Modified controls: None
Number of occupants: 1

Vehicle 2, occupant 1
Seat position: Rider
Age: 42
Sex: Male
Disability: None
Restrained: n/a
Injury severity: Fatal

Accident description
The accident occurred on an A class dual carriageway in a mixed residential/industrial area (40mph limit). It was dark, but the area was well lit. The weather was fine and dry and traffic was light. Vehicle 1 was observed by a following driver to be travelling at about 30mph, but to be wandering from side to side of the nearside lane, as if the driver were drunk or sleepy. On one of its excursions to the nearside, Vehicle 1 collided with the rear of Vehicle 2, which was travelling in the same direction, resulting in the death of the rider.

Accident causation
The driver of Vehicle 1 had been diabetic for 20 years. She claimed that she had taken her insulin injection that day and had eaten as required by her condition, but that, just prior to the accident, she had experienced blurred vision, indicative of a hypoglycaemic attack. When police arrived at the accident scene she was distressed and confused but, after taking some glucose tablets which she retrieved from her handbag in the boot of her car, she rapidly became quite lucid, but had no memory of the accident. The police and CPS were initially inclined to prosecute her for death by reckless driving, since she had continued to drive after her vision had become blurred and while aware that this was symptomatic of rapidly deteriorating blood sugar levels. She was only a short distance from home, and they felt that she had decided to take a risk and drive home before taking the glucose tablets. She contended that the state of mental confusion which accompanied the blurred vision prevented her from making a rational decision to stop the car. When the police and CPS sought the opinion of a medical expert, this tended to support the driver’s case, and to indicate that this attack was much more severe than anything she had experienced before, so proceedings were dropped.

Incidental matters
DVLA had been informed of the driver’s medical condition, but had issued a licence with no driving restrictions. However, the licence was due to be renewed in the October following the accident and there is a note in the file dated the following January, to the effect that she had not re-applied for a licence at that time.

Accident 13
Date: 14/1/94
Time: 19:00

Vehicle 1
Make/model: Morris Marina
Year of registration: 1977/78
Modified controls: None
Number of occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 53
Sex: Male
Disability: Poor eyesight
Restrained: n/k
Injury severity: Slight

Vehicle 1, pedestrian
Age: 5
Sex: Female
Disability: None
Injury severity: Fatal

Accident description
This accident took place on an urban residential road with a 30mph limit. It was dark, but the road was well lit. The weather was fine and dry. The pedestrian was crossing
the road at a zebra crossing, moving from right to left as seen by the driver of Vehicle 1. She was pushing a toy pram and was accompanied by her mother, older brother and baby cousin, although she was a few paces ahead of the rest of the group. She had almost reached the opposite side of the road, having just manoeuvred her toy pram onto the pavement and had one foot on the pavement, following it, when Vehicle 1 came through at slightly above the speed limit, striking the child and causing fatal injuries. The mother stated that she was at the centre of the crossing as the car came through, and had to pull back the pram carrying her young niece to prevent it being hit by the car. The driver claimed that he saw the main group of pedestrians on the crossing, but that he failed to see the child to his nearside.

**Accident causation**
The driver’s eyes had been injured in a car crash some 20 years previously. Although he had had the lens removed from his right eye, and had recently lost the contact lens which was supposed to compensate for that, his residual vision was certified by a consultant ophthalmologist to be adequate for driving. There was some debate as to whether he may have suffered from a condition where his field of view became abnormally restricted when his attention was focused in a particular direction, and also whether his visual acuity may have been overly affected by poor light conditions, but he never claimed that poor eyesight contributed to the accident. Indeed, he saw the main group of pedestrians, and, when he was prosecuted for causing death by reckless driving, the prosecution case rested mainly on the fact that he had failed to stop at the crossing despite having seen people using it. The result of the prosecution is not given in the file.

**Accident 14**

**Date:** 28/8/94  
**Time:** 11:30

**Vehicle 1**

- **Make/model:** Vauxhall Astra LS  
- **Year of registration:** 1994/95  
- **Modified controls:** None  
- **Number of occupants:** 2

**Vehicle 1, occupant 1**

- **Seat position:** Driver  
- **Age:** 57  
- **Sex:** Male  
- **Disability:** Poor eyesight  
- **Restraint:** n/k  
- **Injury severity:** Uninjured

**Vehicle 1, pedestrian 1**

- **Age:** 78  
- **Sex:** Female  
- **Disability:** None  
- **Injury severity:** Fatal

**Vehicle 1, pedestrian 2**

- **Age:** 77  
- **Sex:** Male  
- **Disability:** None  
- **Injury severity:** Serious

**Accident description**
Vehicle 1 was being driven at about 35mph on a wide suburban A class dual carriageway (40mph limit), in the nearside lane. The weather was fine and dry, visibility was good and the road was straight. The pedestrians had alighted from a bus on the opposite carriageway to that being used by Vehicle 1. This bus had passed through a pelican crossing just prior to the bus stop. To reach their destination, the pedestrians had to walk back in the direction the bus had come from and cross to the other side of the road. However, as traffic was light, rather than walk back to the pelican crossing they crossed the first carriageway diagonally, reaching the centre reservation just outside the pedestrian railings protecting the central area of the pelican crossing. They saw Vehicle 1 approaching in the distance, but decided they had time to cross without making use of the pelican lights, and continued their diagonal path, which meant that they were facing almost in the same direction that Vehicle 1 was travelling, and so were unable to keep an eye on it. They were just within the zig-zag lines and almost at the pavement when Vehicle 1, whose driver had failed to see them, struck them a glancing blow (damage to the side of the front wing only) and knocked them down. Witnesses confirmed that the pelican crossing lights were green for the car.
**Accident causation**
The driver of Vehicle 1 was short-sighted and stated that he possessed glasses, but did not wear them all the time, though he normally wore them for driving. However, he had forgotten to wear them that day. Without glasses he could only read a number plate (3.125 inch letters) clearly at .6m. With them he had no difficulty passing the eyesight test. He claimed that he had been looking straight ahead, not to the sides of the road, and it is likely that his attention would have been drawn to the pelican crossing, and he might not have been expecting pedestrians outside the crossing area. However, the pedestrians had been in the road for some time and must have been visible from a considerable distance. They could be partially blamed for failing to use the available crossing facilities, but in the end the police recommended prosecution of the driver, though the file does not record the charge or the result.

**Accident 15**

Date: 7/1/93  
Time: 16:20

**Vehicle 1**

Make/model: Nissan Sunny 1.3LS  
Year of registration: 1987/88  
Modified controls: None  
Number of occupants: 1

**Vehicle, occupant 1**

Seat position: Driver  
Age: 79  
Sex: Male  
Disability: Poor eyesight  
Restrained: n/k  
Injury severity: Uninjured

**Vehicle, pedestrian**

Age: 12  
Sex: Male  
Disability: None  
Injury severity: Fatal

**Accident description**
The accident occurred on the main street of a village, a mixed residential/commercial area on an A class single carriageway road (30mph limit). It was twilight, the sun having set some 15 minutes earlier, but the weather was dry and visibility clear. Vehicle 1 approached the accident scene around a left-hand bend, entering a wide section of road where an area to the nearside had been marked off as a dedicated parking area. An off-road-type vehicle was parked in this parking area which, at this point, was wide enough to accommodate two vehicles side by side. The pedestrian was standing to the offside of this vehicle, well within the parking area, conversing with the driver, who was seated in the vehicle. As Vehicle 1 approached, at a reasonable speed, it entered the parking area and struck the pedestrian, inflicting fatal injuries. The police calculated that the nearside of Vehicle 1 must have passed only 10cm from the side of the parked vehicle. No defects were found on Vehicle 1.

**Accident causation**
There was no reason for the driver to enter the parking area, as he was not intending to stop. He could offer no explanation of why he had done so, and claimed he had not seen the pedestrian at all. He failed an eyesight test, being unable to read a number plate (3.125 inch letters) from more than 11.5m.

**Incidental matters**
Following the eyesight test, the driver immediately surrendered his licence and stated he would never drive again. However, the police decided that he should be prosecuted for driving without due care and attention and for defective eyesight, in the hope that the publicity might make other people think more carefully about driving with defective eyesight. The result is not recorded in the file.

**Accident 16**

Date: 6/9/94  
Time: 9:35

**Vehicle 1**

Make/model: Austin Mini  
Year of registration: 1983/84  
Modified controls: None  
Number of occupants: 1
Vehicle 1, occupant 1
Seat position: Driver
Age: 84
Sex: Male
Disability: Poor eyesight
Restrainted: No
Injury severity: Fatal

Vehicle 2
Make/model: Vauxhall Cavalier
Year of registration: 1986/87
Modified controls: None
Number of occupants: 2

Vehicle 2, occupant 1
Seat position: Driver
Age: 26
Sex: Female
Disability: None
Restrainted: Yes
Injury severity: Uninjured

Vehicle 2, occupant 2
Seat position: RNS
Age: 8
Sex: Male
Disability: None
Restrainted: Yes
Injury severity: Slight

Vehicle 1 immediately after the impact, and stated that no spectacles were being worn at that time. Evidence came to light that the driver of Vehicle 1 had frequently been seen driving without his glasses. At his last eyesight test, his uncorrected vision was 6/60 in his right eye and 6/24 in his left. With his spectacles, his vision was 6/9 in both eyes (the legal driving limit is 6/10.5). The police concluded that either he had not seen the approaching Vehicle 2 or he had misjudged its speed or distance.

Accident 17
Date: 15/9/95
Time: 15:15

Vehicle 1
Make/model: Ford Fiesta 1.3 Ghia
Year of registration: 1981/82
Modified controls: None
Number of occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 82
Sex: Female
Disability: Poor eyesight
Restrainted: n/k
Injury severity: Uninjured

Vehicle 2
Make/model: Reliant Robin
Year of registration: 1981/82
Modified controls: None
Number of occupants: 1

Vehicle 2, occupant 1
Seat position: Driver
Age: 77
Sex: Male
Disability: None
Restrainted: n/k
Injury severity: Fatal

Vehicle 3
Make/model: BMW 535i
Year of registration: 1988
Modified controls: None
Number of occupants: 1

Accident description
The accident scene was a rural, A class road (60mph limit), at a staggered crossroads junction with a minor road. The main road was single carriageway, with a central dedicated lane for turning right, wide verges and unobstructed views. The weather was fine and dry. Vehicle 1 approached the junction along one of the minor roads, intending to turn right onto the major road. It stopped momentarily at the Give Way lines, but then proceeded across the main road, into the path of Vehicle 2, which was approaching from the right at about 55mph. Vehicle 2 struck the offside of Vehicle 1, in the vicinity of the A-pillar. The driver of Vehicle 1 received multiple injuries and died eight days later from injury complications.

Accident causation
The driver of a vehicle following Vehicle 2 went to give assistance to the driver of
Vehicle 3, occupant 1
Seat position: Driver
Age: 58
Sex: Male
Disability: None
Restained: n/k
Injury severity: Slight

Accident description
The accident occurred in a mainly residential urban area on an unclassified but busy single-carriageway road (30mph limit). The weather was fine and dry. Vehicle 1 approached the accident scene along a straight stretch of road, and was signalling to turn right into a garage forecourt. Vehicle 3 was following Vehicle 1 and had moved to the nearside to pass Vehicle 1, which was at that time moving slowly, near the centre of the road. Vehicle 2 approached the scene from the opposite direction, around a left-hand bend, travelling at about 30mph. Vehicle 1 executed its right turn immediately in front of Vehicle 2, which took evasive action to its offside, had a minor impact with the nearside rear of Vehicle 1, then collided head-on with Vehicle 3, resulting in fatal injuries. The police took careful note of the distances and likely times involved, and concluded that Vehicle 2 must have been in sight when Vehicle 1 commenced its turn.

Accident causation
The driver of Vehicle 1 failed an eyesight test after the accident – she could only read a number plate (3.125 inch letters) at 17.9m (though at 20.5m she only got one number wrong). She immediately surrendered her driving licence, and the police accordingly did not prosecute.

Incidental matters
The eyesight of the driver in this case was nowhere near as bad as that in most other cases in this sample. It seems likely that inattention or a failure to judge how long the manoeuvre would take may have been more important factors in this accident.

Vehicle 1
Make/model: Ford Fiesta 1.6D car-derived van
Year of registration: 1988/89
Modified controls: None
Number of occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 43
Sex: Male
Disability: Missing one arm
Restained: Yes
Injury severity: Fatal

Vehicle 2
Make/model: Ford Sierra
Year of registration: 1992/93
Modified controls: None
Number of occupants: 1

Vehicle 2, occupant 1
Seat position: Driver
Age: 71
Sex: Male
Disability: Poor vision in left eye, but good in right. Fit to drive
Restained: Yes
Injury severity: Serious

Accident description
This accident happened on an open, rural, A class, single-carriageway road. It was late at night and the road was unlit. The location of the accident was at a crossroads with a minor road. Vehicle 2 intended to turn right at this crossroads, and had halted near the centre of the road, signalling to do so, having seen Vehicle 1 approaching. There is some dispute as to whether Vehicle 2 actually stopped with its offside wheels over the centre line, thus encroaching into the opposing lane, or whether Vehicle 2 injudiciously commenced its right turn into the path of Vehicle 1. The point of impact was in Vehicle 1’s lane, and the driver of Vehicle 1 died from the resultant injuries.

Accident causation
There was no indication that either driver had been driving badly prior to the accident.

Friends and relations of the respective drivers
indicated that their driving was always safe. The driver of Vehicle 1 had lost his left arm in an air accident some 15 years previously, but was driving an unadapted manual transmission vehicle, and was in the habit of steadying the steering wheel with his knees while changing gear with his right hand. Two months before the accident, his ability to control a vehicle had been questioned, and DVLA had been informed. DVLA had written to him, reminding him that his licence entitled him to drive ‘vehicles in Group A with controls which can be correctly and conveniently operated by you’, but placing the responsibility on him to decide whether he needed special controls, bearing in mind that he could be required at any time to demonstrate to someone in authority that he could safely control his vehicle. However, in the circumstances of this accident, where his intention was to drive straight along a major road, it is unlikely that his disability was relevant. The driver of Vehicle 2, although he had only about 30% vision in his left eye, was considered by an ophthalmic specialist to be fit to drive. However, he did admit that his eyesight gave him more trouble at night, and he generally disliked driving at night. The police took the view that responsibility for the accident was his, based on the point of impact in the road, and he was prosecuted for driving without due care and attention.

**Accident 19**

| Date: | 4/12/95 |
| Time: | 9:45 |

**Vehicle 1**

| Make/model: | Vauxhall Cavalier |
| Year of registration: | 1987/88 |
| Modified controls: | None |
| Number of occupants: | 2 |

**Vehicle 1, occupant 1**

| Seat position: | Driver |
| Age: | 65 |
| Sex: | Male |
| Disability: | Poor vision in right eye |
| Restrained: | Yes |
| Injury severity: | Fatal |

**Vehicle 1, occupant 2**

| Seat position: | FSP |
| Age: | 62 |
| Sex: | Female |
| Disability: | None |
| Restrained: | n/k |
| Injury severity: | Fatal |

**Vehicle 2**

| Make/model: | MAN 17-232 Rigid HGV |
| Year of registration: | 1992/93 |
| Modified controls: | None |
| Number of occupants: | 1 |

**Vehicle 2, occupant 1**

| Seat position: | Driver |
| Age: | 30 |
| Sex: | Male |
| Disability: | None |
| Restrained: | n/k |
| Injury severity: | Slight |

**Accident description**

The occupants of Vehicle 1 had just visited a garden centre on the outskirts of an urban area, and were stationary in the entrance driveway to the garden centre, waiting for traffic to clear before turning right onto an unclassified single-carriageway road (60mph limit). Traffic was quite heavy, and there was a Ford Transit van waiting to turn right into the garden centre. Vehicle 2 was on the road approaching the garden centre from Vehicle 1’s right, travelling at about 40mph, following a line of traffic. Vehicle 1 unexpectedly pulled out between Vehicle 2 and the immediately preceding vehicle. This was described as a ‘normal’ manoeuvre, with no harsh acceleration. Vehicle 2 had insufficient room to stop, and impacted Vehicle 1 broadside on, pushing it down the road for some distance.

**Accident causation**

Both occupants of Vehicle 1 had heart complaints. The wife was receiving treatment, and her angina was stable, but the husband had refused treatment. However, the post-mortem did not indicate that heart problems may have contributed to the accident. The driver had no useful vision with his right eye, due to a squint from birth, but this should not
have affected his driving, except perhaps to reduce his field of vision. A witness to the accident stated that the driver was looking to his left as he emerged from the garden centre, so this accident may be due to a simple failure to look rather than anything to do with a disability.

**Accident 20**

Date: 29/7/95  
Time: 16:06

**Vehicle 1**

Make/model: Renault Clio (auto)  
Year of registration: 1993/94  
Modified controls: Yes, hand controls for throttle and footbrake  
Number of occupants: 1

**Vehicle 1, occupant 1**

Seat position: Driver  
Age: 30  
Sex: Male  
Disability: Paralysed from waist down  
Restrainted: n/k  
Injury severity: Fatal

**Accident description**

The accident occurred on an A class, rural, single-carriageway road in dry, sunny weather. The speed limit was generally 60mph but at the accident location there was a temporary 20mph limit following resurfacing work. This work had been completed, but there was a large amount of granite chippings on the road, concentrated towards the edges and the centre of the carriageway, rather than in the running lanes. Vehicle 1 was descending a fairly steep, winding hill at speed and overtook another vehicle at an estimated 70-80mph, kicking up a cloud of dust and chippings as it went, then disappeared round a corner. At this point, the driver lost control of the vehicle, crossed the carriageway, struck the offside grass embankment and rolled over, back onto the road. The driver was fully ejected from the vehicle as it rolled and he was pronounced dead on arrival at hospital. No defects were found on the vehicle.

**Accident causation**

The driver lived locally, and should have been familiar with the road he was using. There were numerous warning signs regarding loose chippings as well as the temporary 20mph speed limit signs. There was no defect on the vehicle. The driver was receiving medication for painful muscle spasms, but there is no way of telling whether muscle spasms could account for the way the vehicle was being driven. The driver worked mainly from home, and had done since the road accident five years previously, which had resulted in his paralysis, but he had attended his workplace that day, and colleagues described him as being in good spirits. He was travelling in the direction of his home at the time of the accident, which appears to have been a result of bad driving. It will never be known whether the muscle spasms to which he was prone were affecting his driving at the time, though there was evidence that the front wheels had locked at some time during the crash sequence, so he must have been capable of applying the brakes at that point.

**Incidental matters**

The driver was not restrained, and this explains his ejection from the vehicle. He habitually drove unrestrained, claiming the seatbelt was uncomfortable and restricted his movement. His doctor had not provided an exemption certificate. Intrusion into the vehicle was not great, and he may have survived if he had not been ejected.

**Accident 21**

Date: 21/10/96  
Time: 15:45

**Vehicle 1**

Make/model: Toyota Celica ST LV Coupe  
Year of registration: 1985/86  
Modified controls: None  
Number of occupants: 2

**Vehicle 1, occupant 1**

Seat position: Driver  
Age: 30  
Sex: Male
Disability: Almost blind in right eye, poor vision in left eye
Restrained: n/k
Injury severity: Uninjured

Vehicle 1, occupant 2
Seat position: FSP
Age: 35
Sex: Male
Disability: None
Restrained: n/k
Injury severity: Uninjured

Vehicle 1, pedestrian
Age: 6
Sex: Female
Disability: None
Injury severity: Fatal

Accident description
Vehicle 1 was being driven at about 36mph in a densely populated urban residential area (30mph limit). The weather was fine and the roads were dry. There were no parked cars obstructing the driver’s view. The pedestrian had been playing with friends on the pavement to Vehicle 1’s nearside. She walked away from the group of friends along the pavement, then went to cross the road, stepping out directly in front of Vehicle 1. The driver locked his wheels but was unable to avoid striking the pedestrian, inflicting fatal injuries. When the police conducted an eyesight test on the driver several weeks after the accident, he was unable to read a number plate from further than 11.05m (3.125 inch letters).

Accident causation
The driver’s right eye was ‘amblyopic’ – also known as ‘lazy eye’. This eye had suffered extreme short-sightedness from birth, so that visual function had never properly developed. Corrective lenses were therefore of no benefit. The left eye was also short-sighted, but the best correction that could be achieved only resulted in borderline vision for driving. He had been prescribed a contact lens for this eye some six years previously, but during the police eyesight test he could not remember whether he had been wearing this lens at the time of the accident. Even if he had been wearing a lens, it would not have been the one he was prescribed, since he claimed to have been buying lenses over the counter at Boots. The optician who carried out the original eye test stated that over-the-counter lenses would not be suitable to correct the particular defects in his eye. Although several witnesses confirmed that the pedestrian was looking the wrong way when she entered the road, a preceding driver had seen the child, recognised that she was liable to enter the road unexpectedly and slowed down. The driver of Vehicle 1 claimed to have seen the children and slowed down, but the police decided to prosecute. He was convicted of causing death by dangerous driving, imprisoned and disqualified for five years.

Incidental matters
The driver in this case did not have a driving licence. He claimed to have a provisional licence, but enquiries with DVLA revealed it had expired some nine years previously. He also had no insurance.

Accident 22
Date: 26/12/96
Time: 13:10

Vehicle 1
Make/model: Ford Escort
Year of registration: 1993/94
Modified controls: None
Number of occupants: 2

Vehicle 1, occupant 1
Seat position: Driver
Age: 29
Sex: Male
Disability: Long history of medical problems including epilepsy, kidney problems (urostomy fitted) and glandular problems
Restrained: No
Injury severity: Fatal

Vehicle 1, occupant 2
Seat position: FSP
Age: 21

APPENDIX R
Sex: Female  
Disability: None  
Restrained: Yes  
Injury severity: Serious

**Accident description**
Vehicle 1 was being driven on an A class, single-carriageway road in an urban (possibly industrial) area (30mph limit). As the road curved round a left-hand bend, the driver made no attempt to alter course or brake, but drove straight ahead into a brick wall. He was medically exempt from wearing a seatbelt because of the urostomy. The airbag prevented major head and torso injuries but he was taken to hospital with a fractured right femur. However, he died from complications associated with his fragile condition.

**Accident causation**
The front passenger in the car (who only suffered broken fingers in one hand) stated that they had been travelling along, talking, when the driver fell silent and started looking to his right. The passenger could see the bend approaching and tried to alert the driver, with increasing alarm, but he was completely unresponsive and made no attempt to control the car. He was still having the epileptic fit with his head cradled in the passenger’s lap when the first witnesses arrived. He remembered nothing of the incident afterwards. His mother stated that his epilepsy was controlled by tablets, and he had not had a fit in the previous eight years. This had enabled him to obtain a driving licence five years before, and DVLA was aware of his condition. His eyesight and other senses were entirely normal.

**Accident 23**

Date: 4/12/95  
Time: 05:45

**Vehicle 1**
Make/model: Vauxhall Chevette  
Year of registration: 1978/79  
Modified controls: None  
Number of occupants: 1

**Vehicle 1, occupant 1**
Seat position: Driver  
Age: 28

Sex: Male  
Disability: Defect in left eye  
Restrained: Probably not  
Injury severity: Fatal

**Accident description**
Vehicle 1 was being driven along an unclassified road in a rural area. It was dark and there was no street lighting. Immediately after negotiating a slight right-hand bend, the vehicle drifted to the nearside, mounted the grass verge and collided with a large tree. When the vehicle first mounted the verge, the wheels were still rolling, although the driver did attempt to brake at the last moment. There were defects on the vehicle, but none likely to have contributed to the accident.

**Accident causation**
The cause of this accident will never be known. The driver was on his way to work, so he would have been familiar with the road. He was not late, so is unlikely to have been hurrying. He had had an accident with a strimmer a few years previously, which had damaged his left eye. He generally wore an eyepatch over this eye, partly to avoid being excessively dazzled by oncoming headlights when driving. The police found such an eyepatch in the glove compartment of the car, but it is not known whether this indicates that he was not wearing the patch at the time of the accident, or whether this was merely a spare. If he was not wearing it, then there is the possibility that he was dazzled by another vehicle, and the driver of this vehicle would very probably have been unaware of the accident. Other possibilities include the driver swerving to avoid an animal or suffering a momentary distraction or lapse of concentration. However, all this is mere speculation.

**Accident 24**

Date: 19/11/95  
Time: 15:40

**Vehicle 1**
Make/model: Vauxhall Astra Sri (manual transmission)  
Year of registration: 1986/87
Accident

Accident description

Vehicle 1 was being driven at about 90-100 mph along a single-carriageway, a class road in a rural area (60 mph limit). It had overtaken a number of cars, whose drivers commented on its excessive speed. Although these overtakes were not dangerous, in that there was no opposing traffic, the vehicle was described as being driven in an aggressive manner. Meanwhile, Vehicle 2 was being driven at about 40 mph from the opposite direction. A Ford Escort overtook Vehicle 2 and pulled back in to the nearside, its driver noticing Vehicle 1 approaching at high speed, straddling the centre line, although there were no other vehicles to its nearside. A Vauxhall Astra then overtook Vehicle 2 in the face of the oncoming Vehicle 1. The driver of Vehicle 1 appears to have swerved to the nearside to avoid this Astra, and lost control, swerving back across the carriageway and impacting Vehicle 2. Neither the Escort nor the overtaking Astra stopped, although the Escort driver later responded to an appeal for witnesses. The driver of Vehicle 1 was fully ejected from the vehicle, but survived. The driver of Vehicle 2 died instantly.

Accident causation

The driver of Vehicle 1 had lost his leg in a fairground accident, but had learnt to drive before this. He had informed DVLA of his disability, but his licence merely stated that he should drive vehicles suited to his disability. He had not received advice from the Forum of Mobility Centres. He had initially tried driving a vehicle with adapted controls, but had found it confusing. He generally drove automatics, using his left foot for acceleration and braking. He admitted to having driven manual cars before, but would not discuss with the police how he managed this. It is not known what bearing his disability had on this accident. The Fatal Accident File collection contains numerous examples of perfectly able-bodied drivers losing control in similar circumstances. However, faced with the need to manoeuvre quickly, possibly combined with emergency braking, at 00 mph, his disability certainly cannot have helped. There is no indication in the file as to whether he was prosecuted.

Incidental matters

Vehicle 1 belonged to the driver’s mother, and he was not insured to drive it and did not have her permission, so technically the vehicle was stolen. The driver had arranged for a friend of his to service the car as a Christmas present for his mother, and when the friend delivered the car back, the driver had decided to take it for a short test drive, with tragic consequences.

Accident 25

Date: 18/10/96
Time: 08:30
Vehicle 1
Make/model: Ford Escort 1.3L
Year of registration: 1986/87
Modified controls: None
Number of occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 23
Sex: Male
Disability: Poor eyesight
Restrainted: n/k
Injury severity: Fatal

Vehicle 2
Make/model: Vauxhall Astra 1.7TD estate
Year of registration: 1995/96
Modified controls: None
Number of occupants: 1

Vehicle 2, occupant 1
Seat position: Driver
Age: 32
Sex: Male
Disability: None
Restrainted: Yes
Injury severity: Slight

Vehicle 3
Make/model: Honda Civic
Year of registration: 1985/86
Modified controls: None
Number of occupants: 1

Vehicle 3, occupant 1
Seat position: Driver
Age: 35
Sex: Female
Disability: None
Restrainted: n/k
Injury severity: Slight

Accident description
The accident took place on a straight, A class, single-carriageway road in a rural area (60mph limit). The weather was dull and the road surface was wet from earlier rain. The road was wide enough to take four cars abreast, although this would require considerable skill at speed. Vehicle 3 was travelling at about 55mph, overtaking slower-moving vehicles on its nearside, following other overtaking vehicles. There is some suggestion that the driver of Vehicle 3 was, in fact, relying on the vehicle in front of her to do the necessary observation, and was merely following it slavishly, although she denied this. Vehicle 1 was approaching from the opposite direction at about 64-68mph, and also pulled out to overtake. The vehicle in front of Vehicle 3 pulled in to a gap in the nearside traffic, leaving Vehicle 3 exposed, with no alternative but to brake. There is some dispute among the witnesses as to which cars were straddling the white line, but the police identified the point of impact between Vehicle 1 and Vehicle 3 as being in Vehicle 1’s lane. This was a glancing impact, which caused Vehicle 1 to spin clockwise into the path of Vehicle 2, which struck Vehicle 1 on its nearside.

Accident causation
Blame for this accident could be shared between Vehicles 1 and 3. The driver of Vehicle 1, who was on his way to work, pulled out to overtake in the face of opposing traffic which was already overtaking. He was not wearing his glasses (his mother found them at home, broken, after the accident, although she stated that his eyesight was ‘not that defective’). There are no further details in the file as to the exact state of his eyesight. Vehicle 3, whose driver was also on her way to work, appears to have been following another overtaking vehicle in such a way that she could not see the road ahead clearly. She was taken by surprise when the vehicle in front of her pulled in to its nearside, revealing Vehicle 1 coming directly towards her. The police considered prosecuting the driver of Vehicle 3 (driving without due care and attention), but the CPS argued that conviction was unlikely, so no proceedings were taken.

Accident 26
Date: 18/6/95
Time: 15:00

Vehicle 1
Make/model: Fiat Uno
Year of registration: 1993/94
Modified controls: None
Number of occupants: 1
Vehicle 1, occupant 1
Seat position: Driver
Age: 67
Sex: Female
Disability: Previous heart and thyroid problems
Restrained: Yes
Injury severity: Fatal

Vehicle 2
Make/model: BMW 535i
Year of registration: 1984/85
Modified controls: None
Number of occupants: 1

Vehicle 2, occupant 1
Seat position: Driver
Age: 69
Sex: Male
Disability: None
Restrained: Yes
Injury severity: Slight

Vehicle 2
Make/model: Seddon Atkinson 325 Strato artic HGV
Year of registration: 1989/90
Modified controls: None
Number of occupants: 1

Vehicle 2, occupant 1
Seat position: Driver
Age: 54

she was not aware of any heart problems. However, a note found at the driver’s home, listing symptoms of headache and eyesight problems after exercise, indicated that the driver herself was aware that all was not well.

Incidental matters
It is quite possible that this accident should have been coded as being caused by illness, rather than disability. It is only the existence of the note written by the driver indicating that she was aware of problems with her eyesight in certain circumstances that might justify the coding of disability as a causation factor.

Accident 27
Date: 23/8/95
Time: 21:40

Vehicle 1
Make/model: Peugeot 205 GTi
Year of registration: 1987/88
Modified controls: None
Number of occupants: 2

Vehicle 1, occupant 1
Seat position: Driver
Age: 21
Sex: Male
Disability: Colour blind
Restrained: Yes
Injury severity: Fatal

Vehicle 1, occupant 2
Seat position: FSP
Age: 17
Sex: Female
Disability: None
Restrained: Yes
Injury severity: Slight

Vehicle 2
Make/model: Seddon Atkinson 325 Strato artic HGV
Year of registration: 1989/90
Modified controls: None
Number of occupants: 1

Vehicle 2, occupant 1
Seat position: Driver
Age: 54

Accident description
Vehicle 1 was being driven on a single-carriageway, a class road (60mph limit) in a rural area, with good visibility. The weather was fine and the road surface was dry. The driver was returning home from a family reunion. For no apparent reason, Vehicle 1 drifted to the offside into the path of Vehicle 2 approaching from the opposite direction. Vehicle 2 took evasive action, mounting the nearside kerb, but was unable to avoid a head-on collision.

Accident causation
The cause of this accident can only be guessed at. The driver had had an eye test not long before the accident, and her eyesight, with glasses, was good. Although she died of injuries sustained in the accident, the pathologist found evidence of a heart attack some time prior to the accident. This had occurred long enough before the accident for the damage to be in the process of healing, but the pathologist stated that the condition could have caused collapse and loss of consciousness, and that this may have precipitated the collision. The driver’s daughter stated that, as far as she was aware, her mother was in very good health, and
Sex: Male
Disability: None
Restrainted: No
Injury severity: Slight

Accident description
Vehicle 2 was parked in a layby on a class, single-carriageway road in a rural area (60mph limit). It was dark, with no street lights, but the weather was fine, with good visibility, and the road surface was dry. The driver of Vehicle 2 had taken a wrong turn and had entered the layby with the intention of executing a U-turn back onto the road. He had been stationary for a couple of minutes waiting for traffic to clear. He stated that when he started his manoeuvre, the road was clear, but this manoeuvre took about eight to ten seconds to complete, and during this time Vehicle 1 approached the scene, travelling opposite to the final intended direction of travel of Vehicle 2, at about 60-70mph. The tractor unit of Vehicle 2 was in its correct lane at this point, but the trailer was skewed at about 20-30º into the opposing lane. Vehicle 1 suffered a massive impact with the rear offside wheels of the trailer, completely crushing the offside of the vehicle, then it left the road to the nearside and rolled down an embankment into a stone wall.

Accident causation
There was no evidence of braking by Vehicle 1, so it can be assumed that the driver did not see the trailer in his lane until it was too late to react. Disregarding his eyesight problems, it is frequently difficult to see unlit or dimly lit objects behind an oncoming pair of headlights. This problem may have been exacerbated if Vehicle 1 was under harsh acceleration, in an attempt to complete the manoeuvre quickly, since this would have the effect of tilting the cab back, so making the headlights more likely to dazzle oncoming drivers. The side marker lights on the trailer were functioning correctly, but interpreting the meaning of a pattern of dim lights in such circumstances can be difficult, especially if the true meaning is a situation which is not often encountered. It may be that the driver of Vehicle 1 interpreted them as belonging to another vehicle, travelling in the same direction as he was. The eyesight problems of the driver of Vehicle 1 are only mentioned in the statement of his passenger. She describes him as being colour blind (seeing red as dark grey, and unable to distinguish dark colours such as blue and brown). She also states that he occasionally wore glasses for reading and driving, but he was not wearing them at the time of the accident. The police make no mention of this in their statements and summaries, but his colour blindness would certainly have exacerbated the problems outlined above regarding the difficulty of seeing the trailer.

Accident 28
Date: 20/10/96
Time: 13:35

Vehicle 1
Make/model: Proton 1.3 GLS
Year of registration: 1993/94
Modified controls: None
Number of occupants: 2

Vehicle 1, occupant 1
Seat position: Driver
Age: 74
Sex: Female
Disability: Initial stages of cataract in left eye
Restrainted: Yes
Injury severity: Slight

Vehicle 1, occupant 2
Seat position: FSP
Age: 48
Sex: Female
Disability: None
Restrainted: Yes
Injury severity: Fatal

Vehicle 2
Make/model: BMW 320i
Year of registration: 1990/91
Modified controls: None
Number of occupants: 3

Vehicle 2, occupant 1
Seat position: Driver
Age: 21
Sex: Female
Disability: None
Restrained: Yes
Injury severity: Serious

Vehicle 2, occupant 2
Seat position: FSP
Age: 14
Sex: Female
Disability: None
Restrained: Yes
Injury severity: Serious

Vehicle 2, occupant 3
Seat position: RNS
Age: 15
Sex: Female
Disability: None
Restrained: Yes
Injury severity: Slight

Accident description
The accident occurred on a dual-carriageway, a class road in a rural area (70mph limit). Vehicle 1 approached this road from a minor road, intending to turn right (west) onto the main road. It crossed the eastbound carriageway without incident and entered the central reservation area and stopped. It then attempted to complete the right turn into the westbound carriageway, directly into the path of Vehicle 2, which was approaching at about 70mph.

Accident causation
The driver of Vehicle 2 stated that she had seen Vehicle 1 stationary in the central refuge when she was still some distance away. There were no other vehicles ahead or behind her. Thinking Vehicle 1 posed no threat, she continued at constant speed in the nearside lane. When she was very close to Vehicle 1 it pulled out in front of her, blocking both lanes. She braked but was unable to stop. Her eyesight was good. The driver of Vehicle 1 was undergoing treatment for glaucoma (mainly in the right eye) and the initial stages of cataract in her left eye. She was slightly long-sighted in her right eye and slightly short-sighted in her left. She had been prescribed bifocal spectacles, and her optician stated that, with these, her visual acuity would have been satisfactory for driving. After the collision, she failed an eyesight test without her glasses, but passed it with them. She was, however, not wearing her glasses at the time of the collision – the police recovered her glasses, in their case, from the glove compartment of the car after the accident. The only other explanation for her admitted failure to see the approaching Vehicle 2 is that she was negligent.

Incidental matters
The driver of Vehicle 1 only escaped prosecution for this incident because of delays in processing the file, leading to the six-month time limit being passed.

Accident 29
Date: 16/2/96
Time: 23:40

Vehicle 1
Make/model: BMW 320
Year of registration: n/k
Modified controls: None
Number of occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 55
Sex: Male
Disability: Poor eyesight
Restrained: Yes
Injury severity: Uninjured

Vehicle 1, pedestrian
Age: 19
Sex: Male
Disability: None
Injury severity: Fatal

Accident description
Vehicle 1 was travelling at about 35-40mph on a wide, A class, single-carriageway road in a semi-rural area, with residential development on one side and open fields to the other. The speed limit was 40mph. The weather was fine, visibility was good and the road was well lit. The driver of Vehicle 1 stated that he saw something in the road, but did not realise it was a person until he was too close to stop.

Accident causation
The pedestrian was very drunk, having spent most of the day drinking with friends. He was
also upset at a breakdown in his relationship with his girlfriend, and had made comments indicating he was thinking of harming himself. He was being driven home with friends when he woke up and asked to get out of the car, as he felt sick. They were close to home at that point, so the friends drove off and left him on the roadside. Witnesses saw him walking down the centre of the road just prior to the accident, but his injuries were considered by the pathologist to be consistent with having been struck while lying down. The driver’s failure to see him until it was too late was therefore rather less surprising than it might have been, but the driver was not wearing his spectacles, and failed an eyesight test, having to approach to 6.6m away before being able to read a number plate (3.125 inch letters). He was convicted of driving without due care and attention.

**Accident 30**

Date: 22/11/90  
Time: 18:10  

**Vehicle 1**  
Make/model: Ford Transit  
Year of registration: 1981/82  
Modified controls: None  
Number of occupants: 1  

**Vehicle 1, occupant 1**  
Seat position: Driver  
Age: 30  
Sex: Male  
Disability: Poor eyesight  
Restrained: n/k  
Injury severity: Uninjured  

**Vehicle 2**  
Make/model: Raleigh Candice (ladies’) cycle  
Year of registration: n/a  
Modified controls: None  
Number of occupants: 2  

**Vehicle 2, occupant 1**  
Seat position: Rider  
Age: 24  
Sex: Female  
Disability: None  

**Vehicle 2, occupant 2**  
Seat position: Child seat above rear wheel  
Age: 2  
Sex: Female  
Disability: None  
Restrained: Yes  
Injury severity: Fatal  

**Accident description**  
The accident took place on an urban, residential, B class road (30mph limit). Although a single carriageway, the road was wide enough for four lanes of traffic. It was dark, but the weather was fine, with good visibility, and the road surface was damp. Traffic was heavy. Vehicle 2 was stationary at the centre of the road, waiting for traffic to clear before turning right into a side street. The cycle was displaying front and rear lights, as well as a rear reflector. The rider was wearing light-coloured clothing. Vehicle 2 was being driven in the same direction that the cycle was facing. Witnesses indicated its speed to be well in excess of 30mph, and it was being driven close to the centre of the road. It collided with the rear of the cycle, causing fatal injuries to the child passenger. Vehicle 2 failed to stop at the scene, but was traced later. A number of defects were found on the vehicle, but none were considered contributory.

**Accident causation**  
The driver of Vehicle 1 had been drinking, though the police found it difficult to establish exactly how much; it was at least four pints and may have been eight. By the time he was traced, his blood alcohol concentration was zero. He was not wearing his glasses at the time of the accident, and he had to approach to 62.5ft (19.05m) before he could read a number plate correctly (3.125 inch letters). He had 13 years’ driving experience, but was still only a provisional licence holder. The most likely cause of the accident, despite the eyesight problems, was alcohol, and this was why the driver had failed to stop at the scene. He was convicted of causing death by dangerous driving.
**Accident 31**

Date: 13/2/96  
Time: 19:50

**Vehicle 1**

Make/model: Ford Escort  
Year of registration: 1989/90  
Modified controls: None  
Number of occupants: 1

**Vehicle, occupant 1**

Seat position: Driver  
Age: 81  
Sex: Male  
Disability: Knee and hip problems  
Restrained: Yes  
Injury severity: Fatal

**Vehicle 2**

Make/model: Vauxhall Cavalier  
Year of registration: 1982/83  
Modified controls: None  
Number of occupants: 1

**Vehicle, occupant 1**

Seat position: Driver  
Age: 19  
Sex: Male  
Disability: None  
Restrained: Yes  
Injury severity: Slight

**Accident description**

The accident occurred on a B class road at a junction with a minor road. The major road at this location was wide, with a cross-hatched central reservation incorporating a right-turn lane for traffic turning into the minor road. It was dark, with no street lights, but the weather was fine and dry. The speed limit was 60mph. Vehicle 1 was travelling on the minor road, approaching the junction, while Vehicle 2 was on the main road, approaching from Vehicle 1’s right. The driver of Vehicle 2 stated that he saw Vehicle 1 approach the junction very slowly, as though it was going to stop, so he assumed it posed no threat. However, Vehicle 1 did not stop, and emerged into the path of Vehicle 2, which by then was too close to stop, although Vehicle 2 did swerve right, in an attempt to avoid the collision. Vehicle 1 was struck squarely on the driver’s door, causing substantial intrusion, and the driver died within 24 hours.

**Accident causation**

The driver of Vehicle 1 was described as an active man who drove every day. He had given up golf only three years previously, due to problems with his knees, and was due for an operation on the cartilage of his right knee. He was returning home from a visit to his daughter and before leaving had complained of pain in his left hip, which was unusual and was ascribed to his having done a lot of walking that day. The reason why he failed to stop at the junction will never be known. The three main possibilities are: firstly, a lapse of attention; secondly, sudden illness; thirdly, that his control of the vehicle was impaired by the problems with his legs.

**Accident 32**

Date: 12/7/90  
Time: 10:55

**Vehicle 1**

Make/model: Vauxhall Astra  
Year of registration: 1985/86  
Modified controls: None  
Number of occupants: 2

**Vehicle, occupant 1**

Seat position: Driver  
Age: 85  
Sex: Female  
Disability: Cataracts in both eyes  
Restrained: Yes  
Injury severity: Fatal

**Vehicle 1, occupant 2**

Seat position: FSP  
Age: 87  
Sex: Female  
Disability: None  
Restrained: Yes  
Injury severity: Slight

**Vehicle 2**

Make/model: Ford Escort  
Year of registration: 1979/80  
Modified controls: None  
Number of occupants: 4
Vehicle 2, occupant 1
Seat position: Driver
Age: 53
Sex: Female
Disability: None
Restrained: Yes
Injury severity: Serious

Vehicle 2, occupant 2
Seat position: FSP
Age: 56
Sex: Female
Disability: None
Restrained: Yes
Injury severity: Serious

Vehicle 2, occupant 3
Seat position: ROS
Age: 52
Sex: Female
Disability: None
Restrained: No
Injury severity: Serious

Vehicle 2, occupant 4
Seat position: RNS
Age: 87
Sex: Female
Disability: None
Restrained: No
Injury severity: Fatal

Accident description
The accident took place at the junction of a minor road with an A class dual carriageway (70mph limit) in a rural area. The weather was fine, it was daylight and the roads were dry. Vehicle 1 approached the junction along the minor road and intended to turn right onto the dual carriageway. The driver stopped at the Give Way line, then proceeded across the first carriageway directly into the path of Vehicle 2, which was approaching from the right at about 55-60mph. The driver of Vehicle 2 applied emergency braking but was unable to avoid a frontal impact into the side of Vehicle 1, in the region of the driver’s door. Both the deceased died in hospital some days later, from injury complications.

Accident causation
The driver of Vehicle 1 suffered from cataracts in both eyes; this was corrected by spectacles, but her eyesight was adversely affected by sunlight. There is no suggestion that she was not wearing her glasses at the time of the accident. She was described as being fit and active, and very alert mentally. The reason why she drove into the path of Vehicle 2 will never be known. A passenger in Vehicle 2 saw her looking right and left before she moved off. She must have either failed to see Vehicle 2 approaching, or completely misjudged its speed. Her eyesight problems are assumed to have been contributory in this.

Accident 33
Date: 27/9/96
Time: 7:40

Vehicle 1
Make/model: Ford Transit 90 Luton bodied panel van
Year of registration: 1988/89
Modified controls: None
Number of occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 57
Sex: Male
Disability: Poor eyesight
Restrained: n/k
Injury severity: Uninjured

Vehicle 2
Make/model: Raleigh gents’ cycle
Year of registration: n/a
Modified controls: None
Number of occupants: 1

Vehicle 2, occupant 1
Seat position: Rider
Age: 56
Sex: Male
Disability: None
Restrained: n/a
Injury severity: Fatal

Accident description
Vehicle 1 was travelling at about 40-50mph on a dual-carriageway, A class road (70mph limit), in a rural area. The weather was bright,
sunny and dry, and the accident took place on a sweeping right-hand bend. Vehicle 1 overtook Vehicle 2 on Vehicle 2’s offside, but passed too close. The nearside door mirror struck the rider of Vehicle 2, knocking him to the ground and causing fatal injuries.

**Accident causation**
The driver of Vehicle 1 claimed that he had not seen Vehicle 2 until practically the moment of impact. He subsequently failed an eyesight test, having to approach to 17.5m before being able to read a number plate correctly (3.125 inch letters). However, at the time of the accident Vehicle 1 was in a line of traffic, and it is possible that Vehicle 2 was to a certain extent obscured by other vehicles. In addition, the general direction of travel was eastwards, and the sun was very bright and very low in the sky. Despite these mitigating factors, the driver of Vehicle 1 was convicted of driving without due care and attention.

**Accident 34**

**Date:** 22/7/94  
**Time:** 11:05

**Vehicle 1**

- **Make/model:** Lada Combi 1500 Estate  
- **Year of registration:** 1978/79  
- **Modified controls:** None  
- **Number of occupants:** 1

**Vehicle 1, occupant 1**

- **Seat position:** Driver  
- **Age:** 66  
- **Sex:** Male  
- **Disability:** Lack of mobility in right leg  
- **Restrained:** n/k  
- **Injury severity:** Uninjured

**Vehicle 1, pedestrian**

- **Age:** 80  
- **Sex:** Female  
- **Disability:** None  
- **Injury severity:** Fatal

**Accident description**
The accident happened in an urban area (30mph limit), on a single-carriageway road. The weather was sunny and hot, and the road was dry. At the accident location, this road curved to the left (as seen by the driver of Vehicle 1), and incorporated a cross-hatched area in the centre to accommodate vehicles turning right into a side street. The pedestrian crossed from Vehicle 1’s offside, and witnesses describe her as walking diagonally across the road, with her head down, apparently not looking at the traffic. The driver of Vehicle 1, who was travelling at about 30mph, failed to take any avoiding action and struck the pedestrian a glancing blow on the offside of the vehicle.

**Accident causation**
The driver of Vehicle 1 was registered disabled because of his leg problem, and displayed a disabled badge on his car. He walked with the aid of a stick and in addition suffered from angina and had had two heart attacks in the previous five years. He described himself as always being ‘a bit shaky’. However, none of this really explains why he failed to see the pedestrian in the road and did not even realise what he had hit until he stopped and walked back to the scene. He passed an eyesight test easily. However, the police were of the opinion that his physical frailty was contributory to the accident. He had not informed DVLA of his disability or medical conditions, and expressed a desire to continue driving. In view of this the police recommended prosecution for driving without due care and attention, but he was found not guilty.

**Accident 35**

**Date:** 22/2/98  
**Time:** 14:06

**Vehicle 1**

- **Make/model:** Fiat Panda Selecta (auto)  
- **Year of registration:** 1992/93  
- **Modified controls:** None  
- **Number of occupants:** 1

**Vehicle 1, occupant 1**

- **Seat position:** Driver  
- **Age:** 91
Sex: Female
Disability: Osteoarthritis. Several hip replacements. Used crutches
Restrainted: No
Injury severity: Fatal

**Accident description**
The accident took place in an urban shopping centre, on a single-carriageway road at a sharp right-hand bend (30mph limit). It was daylight and the weather was fine and dry. Vehicle 1 was not travelling fast, when it failed to negotiate this bend and collided with a building. The driver suffered some broken bones, which would probably have been prevented if she had been restrained, and she died a few days later of injury complications.

**Accident causation**
After the crash, the driver of Vehicle 1 was still conscious, and stated that her right foot had got stuck on the accelerator instead of the brake, and she blamed her shoes, although elsewhere in the file, the error is attributed to cramp in her leg. Clearly, the lack of mobility in her legs had a significant bearing on the course of events. There is no indication in the file as to whether she had informed DVLA of her disability.

**Accident 36**

Date: 3/3/97
Time: 20:30

**Vehicle 1**
Make/model: Nissan Sunny 1.4 LS
Year of registration: 1990/91
Modified controls: None
Number of occupants: 1

**Vehicle 2, occupant 1**
Seat position: Driver
Age: 33
Sex: Male
Disability: None
Restrainted: No
Injury severity: Serious

**Accident description**
The accident occurred on an A(M) class road (70mph limit). It was dark, with no street lighting, and it was raining. The central reservation at this location was very wide and, because of this, there was no central crash barrier. For no apparent reason, Vehicle 1 was driven from its correct carriageway, in an arc over the central grassy reserve onto the opposing carriageway, where it collided with Vehicle 2, which was travelling at about 70-80mph. Tyre marks in the grass indicated that Vehicle 1 was already yawing when it entered the central area. When it entered the opposing carriageway it was presenting its nearside squarely to oncoming traffic. Although Vehicle 2 braked, it lost very little speed before impact.

**Accident causation**
The cause of the accident will never be known. The driver of Vehicle 1 was short-sighted, and wore glasses for driving. She had been visiting her daughter and was on her way home, a distance of only a few miles. The daughter could not recall whether her mother had been wearing her glasses when she left. Although the police could not find the glasses at the scene, they did find the empty glasses case in the car, possibly indicating that they were being worn. If they were not being worn, then poor eyesight, combined with poor visibility due to rain, could perhaps account for the driver possibly over-reacting to the presence of a gentle right-hand curve in the road ahead of her. Other possibilities might include swerving to avoid an animal or a lapse of attention.
Appendix S On the Spot case summaries

Key

n/k=not known  FSP=front-seat passenger

Accident 1
Date: 24/01/01
Time: 07:31
Road type: A class

Vehicle 1
Make/model: Vauxhall Astra LS
Controls: Manual, power steering n/k
Modifications: None
Occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 74
Sex: Male
Disability: Hypertension, on prescribed medication
Restrained: Yes
Severity: Slight

Accident causation
Causation was attributed to an error of judgement on behalf of the driver of Vehicle 1.

Injuries
The driver of Vehicle 1 suffered an unspecified injury to his left arm and was taken to hospital, although he was not admitted.

Incidental matters
The driver of Vehicle 1 reported some confusion after the accident, which he attributed to the rollover.

Accident 2
Date: 15/04/02
Time: 07:08
Road type: Roundabout

Vehicle 1
Make/model: Peugeot 206 LX
Controls: Automatic gearbox with power-assisted steering
Modifications: None
Occupants: 1

Vehicle 1, occupant 1
Seat position: Driver
Age: 45
Sex: Male
Disability: Muscular dystrophy and short-sightedness (was wearing spectacles)
Restrained: Yes
Injury severity: Uninjured

Vehicle 2
Make/model: Ford Mondeo 16V GLX
Controls: Manual gearbox with power-assisted steering
Modifications: None
Occupants: 1

Accident description
Vehicle 2 was travelling along the A412 from Slough towards Uxbridge. Vehicle 1 was turning across the Uxbridge-bound carriageway into Wexham Park Lane. The front of Vehicle 2 struck the nearside of Vehicle 1 and rotated it across to the nearside, where it ‘tripped’ over the kerb and rolled onto its roof.
Data Gathering on Disability and Driving Statistics – Stage 2

Vehicle 2, occupant 1
Seat position: Driver
Age: 37
Sex: Male
Disability: None
Restrainted: Yes
Injury severity: Slight

Accident description
Vehicle 1 was in the nearside lane (designated for traffic travelling down Mill Lane), decided to go round the roundabout and struck the nearside of Vehicle 2 on the roundabout, continuing into a road sign.

Accident causation
Causation was listed as an error of judgement on behalf of the driver of Vehicle 1.

Injuries
The driver of Vehicle 2 suffered slight neck injuries and was taken to hospital but was not admitted.

Incidental matters
Fatigue and road layout were listed as contributory factors by the driver of Vehicle 1.

Vehicle 1, occupant 2
Seat position: FSP
Age: 55
Sex: Female
Disability: None
Restrainted: Yes
Injury severity: Uninjured

Accident description
The driver of Vehicle 1 (Motability car equipped for disabled driver with hand throttle and brake) was exiting a private road (Lace Way) onto a mini island at the junction with Evelyn Street. The driver entered onto a lowered automated barrier, clearly too fast and with no regard for whether the barrier was due to rise. (The attending OTS investigator suspected that the driver was trying to follow another car through the barrier.) Just as Vehicle 1 entered onto the barrier, it started to rise and consequently caused damage to the underside of the car. The car came to rest at the island approach.

Injuries
The driver of Vehicle 1 was taken to hospital unconscious and with minor injuries. She was not admitted as an inpatient.

Incidental matters
The driver listed her disability as a contributory factor in the accident. She was familiar with the vehicle and drove the route daily.

Vehicle 1
Make/model: Ford Focus LX
Controls: Automatic gearbox, power-assisted steering
Modifications: Modifications for one-handed driver in place, hand-operated brake and accelerator, steering knob
Occupants: 2

Vehicle 1, occupant 1
Seat position: Driver
Age: 28
Sex: Female
Restrainted: n/k (not relevant to outcome)
Injury severity: Slight

Accident 3
Date: 26/07/02
Time: 13:47
Road type: Junction of two minor roads

Accident 4
Date: 10/02/02
Time: 23:22
Road type: A class
### Vehicle 1
- **Make/model:** Volkswagen Lupo 1.4
- **Controls:** Automatic gearbox, power-assisted steering
- **Modifications:** Car adapted for disabled driver, steering knob, brake/accelerator hand adapter, foam on driver seat
- **Occupants:** 2

### Vehicle 1, occupant 1
- **Seat position:** Driver
- **Age:** 29
- **Sex:** Female
- **Disability:** Wheelchair bound, on prescribed codeine phosphate
- **Restained:** n/k
- **Injury severity:** Serious

### Vehicle 1, occupant 2
- **Seat position:** FSP
- **Age:** n/k
- **Sex:** Male
- **Disability:** none
- **Restained:** n/k
- **Injury severity:** Slight

### Vehicle 2
- **Make/model:** Ford Fiesta
- **Controls:** Manual gearbox, no power-assisted steering
- **Modifications:** None
- **Occupants:** 1

### Vehicle 2, occupant 1
- **Seat position:** Driver
- **Age:** 33
- **Sex:** Male
- **Disability:** None
- **Restained:** Yes
- **Injury severity:** Slight

### Accident description
Vehicle 2 entered a traffic-light-controlled junction on green light. Vehicle 1, travelling in the opposite direction, turned right across the path of Vehicle 2. The vehicles collided in the middle of the junction.

### Accident causation
The crash was attributed to an error of judgement on behalf of the driver of Vehicle 1.

### Injuries
The driver of Vehicle 1 was admitted as an inpatient to hospital, and stayed for three nights. The other people involved in the crash were taken to hospital but not admitted.

### Incidental matters
It was raining at the time of the crash, and the driver of Vehicle 1 listed both weather conditions and road surface condition as contributory factors in the accident. She also believed that the other road user acted carelessly. This was not borne out by any available evidence.
Appendix T Vehicle and Operator Services Agency accident database case summary

**Key**

n/k=not known

**Accident 1**

Date: 1/8/03  
Time: 11:30  

**Vehicle 1**
Make/model: Renault Espace 2.0T (auto)  
Year of registration: 2003  
Modified controls: Hand controls for accelerator and brake.  
Gripping handle attached to steering wheel  
Number of occupants: n/k

**Vehicle 1, occupant 1**
Seat position: Driver  
Age: 54  
Sex: Male  
Disability: Lower limb disability.  
Restrained: n/k  
Injury severity: Uninjured

**Vehicle 1, pedestrian**
Age: 53  
Sex: Male  
Disability: None  
Injury severity: Fatal

**Accident description**
Vehicle 1 was being manoeuvred in a parking bay at the side of a road in an urban commercial/shopping area. It is not known whether the driver was parking or preparing to leave. The pedestrian had been the driver of the car parked immediately in front of Vehicle 1, and he was standing between his car and Vehicle 1, retrieving objects from the boot of his car. At this point, Vehicle 1 shot forwards, out of control, and trapped the pedestrian between the two cars. Passers-by shouted to the driver of Vehicle 1 to reverse and release the injured man, and he did so, but then Vehicle 1 shot forwards again, killing the pedestrian.

**Accident causation**
The driver of Vehicle 1 was a foreign national, who was visiting relatives in Britain. He had hired the car for his visit, but it is not known whether the vehicle was permanently adapted for disabled use. The photographs in the file give the impression that the adaptations were capable of being fitted or removed according to the needs of the hirer. The hand control comprised a handle with a thumb-operated button. Pushing the button down operated the accelerator, while pushing the whole handle down operated the brake. During the course of his inspection, the vehicle examiner attempted to move the vehicle using the hand control and found that on one occasion, due to his inexperience with this type of control, the vehicle leapt forwards, and he instinctively found himself pulling frantically on the brake control while his thumb pushed the accelerator control right down – i.e. exactly the opposite of what was required to stop the vehicle. He only managed to stop by using his foot on the brake pedal. It is not known what type of controls the driver at the time of the accident was used to, or how much driving experience he had, but it is likely that the cause of the accident was lack of familiarity with the controls in this particular vehicle.
This TRL Report gathers existing data on disabled drivers and enhances the value of such datasets by surveying subsets of the recorded populations. Analysis and comparison of these data sources has created a number of statistics relating to disabled drivers and their vehicles.

Having a disability does not automatically preclude a person from driving. For some of the 9.5 million disabled adults in Great Britain (Department for Work and Pensions, 2006), driving can be a successful route to improved mobility. For many disabled people, a car is often the most appropriate mode of transport and, sometimes, the only viable option. What is not known is how many disabled people currently drive and how many may wish to do so in the future. Disabled people wanting to drive have been helped by the range of options in the marketplace for vehicle adaptations and the number of organisations providing assistance and advice to disabled drivers. However, the number of adapted vehicles currently in use is largely unknown and, again, there is little indication of whether adapted vehicles will grow in numbers.

Estimates of current and future numbers of disabled drivers and adapted vehicles are essential to help target future policy and resources. Understanding the demographics and the different disabilities and vehicle adaptations within this population is also valuable. Furthermore, to develop safety improvements, an understanding of accidents involving disabled drivers and/or adapted vehicles is required.

Related publications

RR29  Car control conversions for disabled drivers. C Haselgrave. 1986
PR27  The long term driving patterns of people with disabilities. L O’Toole and B Simms. 1993
CT104.2  Vehicle design for disabled people update (2002-2006)