# Spaced Out
## Perspectives on parking policy

John Bates & David Leibling

July 2012

RAC
Foundation

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# About the Authors

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# Acknowledgements

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# Foreword

Living standards have improved significantly during the past sixty years – ordinary people have benefited particularly from increased travel, not just for leisure but to access work and educational opportunities, and to play a greater part in the economy.

In the early 1950s, cars were relatively expensive; the majority of a smaller population used public transport, lived closer to their families, and travelled less. In 1952 a family car cost four years' worth of an average wage and there were only 2.5 million vehicles on Britain's roads. Today a similar car costs the equivalent of just twenty months' average income and we own 34.5 million vehicles between us. Additional roads and a motorway network have been built in the past six decades, but more vehicles in residential areas, town centres, national parks and other popular venues where parking has not been properly planned have led to congestion, tension and conflict.

In some areas it is still possible to find a parking space with as much ease as sixty years ago, but in other places it is necessary to exploit the latest technology to park without wasting time and adding to congestion. How we view these matters is important to local authority policymakers who have the responsibility to ensure the smooth flow of traffic and to allow drivers to park near their destinations. Alongside potholes and fuel prices, congestion and parking have become the staples of motoring journalism. It is almost impossible to read or listen to any popular piece in the media without gaining the impression that motorists and authorities are engaged in daily skirmishes, if not all-out war, over parking issues in particular. The reasons for such negative attitudes towards parking need to be explained.

The simple act of parking which motorists may have performed comfortably during a driving test and which has to be repeated at each end of every journey masks the difficulty of understanding the plethora of regulations surrounding leaving vehicles anywhere, including on private land. Restrictions for on-street parking vary from area to area and across days of the week. Signage, too, is inconsistent and, as local authorities begin to design their own signs following a national review of signs and lines may become more so.

The need for regulation and payment for services is well understood by most citizens. Those who drive or are driven in cars also understand that controlling car parking to avoid congestion in busy high streets and providing purpose-built car parks is not cost free, although there is more resistance to paying for residents' parking on the street, even when the cost is relatively low, and in villages where congestion is not perceived as a problem.

Proper parking management demands that the authorities impose parking charges, in order to cover the cost of administering the schemes and impose penalty charges to deter those who disobey the rules. However, there is concern that the scope and level of those charges appears to be driven more by the need for the local authorities to raise money than by the proper management of parking.

This report argues the need for an overarching strategy setting out the principles for regulating and charging for parking, and the provision of information relating to it. Prepared for the RAC Foundation, it is intended as a contribution to the debate about local authority parking policy.

The document has been written by two experts in the fields of data analysis and parking policy: John Bates and David Leibling. It interprets the latest statistics and legislation to describe how parking provision and enforcement has found itself at the crossroads of local authority funding, transport policy, social equity, justice, and national regulation.

The study illustrates how little information has been collected about the quantity of parking that is available. Whilst local authorities must take responsibility for parking control at local level, they have limited resources to carry out large-scale audits of available parking in their areas. The report authors maintain that it is important to construct an overall picture so that the real cost of parking can be calculated, both in terms of local authority expenditure and its impact on the environment.

The authors argue that parking charges in some areas may actually be too low to allow authorities to focus on the need to make parking and compliance with the regulations less difficult. They also highlight differences amongst parking authorities as illustrated by the quality of their annual reports.

For anyone involved in parking as a constituent of local transport policy this report identifies significant practical elements on which to focus. It acknowledges that there needs to be a renaissance of interest in both the theory and practice of parking models but that in the meantime much worry may be avoided by agreeing the aims and objectives of a sensible parking strategy and communicating it effectively to motorists.

S. Glaister.

Stephen Glaister
Director, RAC Foundation

# Executive Summary

Given the predominant role of the car in the nation's transport, and the fact that almost every car journey requires a parking space at each end, the relatively slight attention paid to parking in planning policy is perhaps surprising. The average car spends about 80% of the time parked at home, is parked elsewhere for about 16% of the time, and is thus only actually in use (i.e. moving) for the remaining 3–4% of the time.

This report seeks to update a previous report on parking by the RAC Foundation published in 2004, and it includes a substantial and novel analysis of the National Travel Survey (NTS) to give an overall impression of the demand for parking.

One important consequence of this lack of attention to parking is the consequent lack of data, particularly as it relates to parking **supply**. For residential parking, a reasonable overall picture can be obtained from the English Housing Survey (EHS) undertaken by the Department for Communities and Local Government (and the corresponding survey for Scotland, 'the Scottish House Condition Survey'). Local authorities do not have the resources or motivation to carry out adequate audits of available on- and off-street capacity except in small areas, such as for the installation of a local parking zone. While much of parking control has to be at a local level, there is still a need to understand the overall picture. Local authorities are required to submit certain financial information about their parking income and expenditure, but its accuracy is uncertain. In addition, while local authorities are also strongly advised to produce an annual parking report showing their resources and policies, only a small proportion of the nearly 300 Local Authorities who have powers under the Traffic Management Act 2004 to enforce parking regulations produces a full and easily accessible report.

Section 2 discusses these data issues and shows that, even in London, where parking issues are potentially most serious and where more research has been undertaken than elsewhere in Great Britain, obtaining an up-to-date assessment of parking supply is difficult, and the survey techniques are expensive. From the aforementioned housing surveys, it may be concluded that although the number of dwellings in Great Britain has been increasing by about 0.2 million per year, the number of garages has remained constant: this suggests that garages in older dwellings are being converted to living rooms or other storage, and that cars are increasingly kept in the open.

The analysis of the NTS data, presented in Section 3, is divided into residential parking and destination parking. It shows how the type of residential parking used (garage, on-street, etc.) varies strongly with housing type and residential density. Overall, 25% of vehicles are parked on-street overnight, but this rises to 60% at the highest densities. For destination parking, nearly 70% of all

parking acts are for less than 3 hours, and nearly 90% are for less than 8.5 hours. In spite of most parking acts being of short duration, the pattern is dominated by workplace parking, for three reasons:

a. travel to work is the most frequent reason for parking (outside London, 70% of people commute by car);

b. with the minor exception of holiday parking, workplace parking has the greatest duration; and

c. the starting time is more concentrated than that for other purpose.

The highest overall demand for parking spaces is at 12 p.m., when the non-workplace parking demands add about 44% to the base demand due to workplace parking.

The breakdown of parking acts by purpose actually varies very little by type of area. But purpose is strongly associated with different kinds of parking location, public car parks being especially used by shoppers and those travelling for social and recreational activities, while most people travelling to work by car use company car parks.

In terms of the charges people pay for parking, it is noteworthy that according to the NTS, for 94% of all destination parking acts there is no charge. Of the remaining 6% that do pay something, over 82% pay less than £3, and almost half pay less than £1. Overall, the analysis suggests that, **excluding** any charges for residential parking, the average annual parking cost is about £42 per vehicle, and, with an average of 1.14 cars per household, this translates to about £47 per household per year. These figures are in line with other sources, and show that despite the outcry in the local press which has often accompanied the introduction of residents' parking charges, or changes in fees for local authority car parks, the average parking costs cannot be considered significant. By contrast the amount spent on fuel alone is about £1,600 per vehicle.

Section 4 discusses in some detail how local authorities deal with parking, including within its scope the finances and the issue of parking tickets. After summarising the history of parking legislation and the Policy Paper resulting from the recent Department for Transport (DfT)'s traffic signs policy review (the so-called 'signs and lines' review), *Signing the Way* (DfT, 2011d), it presents an account of local authority attitudes to parking policy and how the legislation works in practice. In 2009/10, 7.1 million on-street penalty charge notices (PCNs) were issued, with a further 1.8 million tickets for off-street parking.

In terms of council finances, London boroughs make most of their current parking account surplus from on-street parking, the total surplus amounting to 33% of their parking income. Outside London, the corresponding proportion is 39%, over 80% of which is derived from off-street parking. However, when

capital charges, largely for off-street car parks, are offset against this surplus, it is reduced to 19% of income. In any case, these surpluses are small in relation to overall revenue expenditure: in London the £180 million total parking surplus of all the London boroughs combined is only some 20% higher than the amount raised by the central area congestion charge. Of the total income from on-street parking in London, half comes from parking fees and permits and half from penalties. Outside London, the ratio is around 55:45 (fees/permits:penalties).

Section 5 reviews the main results of a survey by the DfT in 2009 about parking, a rare example of a survey of public attitudes to parking. Despite the widespread view that parking restrictions are considered oppressive and unfair, two thirds (65%) of people with parking restrictions in their local area said that they thought there were about the right number of restrictions, 22% thought there were too many and 13% thought there were too few. Most people (60%) also thought that the level of enforcement was about right, with the rest equally divided between those who said it was too rigid and those who said it was too lenient.

Section 6 reviews a number of recent developments in the administration, information and organisation of parking, especially those associated with new technology. It also picks up a number of other issues which are dealt with only cursorily in the report – including park-and-ride, and facilities for vehicles other than cars.

Section 7 then discusses the general effect of the provision of residential parking on car ownership, and the particular issue of standards for new developments. This is an area which needs more research. There is also a brief section on destination parking standards.

The report concludes with a general assessment of the issues under a number of key headings:

> *Information about parking resources*
> *Environmental effects*
> *Effect of parking supply on car ownership (and car use)*
> *Provision for new dwellings*
> *Pricing policy*
> *Compliance and the control of parking*
> *Ease of use*
> *Other vehicles*

There is a plea for a more 'economic' approach to pricing for parking, largely to ensure good use and provision of capacity. At the same time, it is recognised that there is a significant need for quality improvements, especially in information and convenience of payment. These two policies need to go hand in hand. The two appendices review the progress made, both in terms of research and policy implementation, with respect to the recommendations made in the 2004 report.

# 1. Introduction

## 1.1 Context

There are over 27 million private cars registered in Great Britain and a further 3 million light vans (DfT, 2011e). On average, each person makes some 400 one-way trips per year as a car driver, and with a population of a little over 60 million, this equates to nearly 25 billion car trips, each one requiring a parking space at each end. Of these journeys, 86% start or end in the home.

Outside urban areas, space is not generally at a premium. In parking provision and policy, the problems are found mainly in the urban areas, though they may arise at specific sites elsewhere. This document is concerned chiefly with private trips made by car, though parking issues do also arise for other types of vehicle (lorries and coaches, motorbikes and cycles).

Parking is controlled in a number of ways – partly by charging and partly by restricting its availability, particularly when it comes to on-street parking. Within publicly owned land, the regulations are managed by individual local authorities. There is perceived to be wide variation between local authorities, both in terms of regulations and of the level of their enforcement, leading to confusion both for local residents and visitors to the area.[1]

The reasons for control are also manifold: ensuring road capacity for moving traffic, allocating road between different groups of users (e.g. local residents and visitors to the area), rationing valuable space, as well as controlling car use and encouraging modal shift away from car. Parking charges may also be viewed by local authorities as a useful source of revenue.

While highway and transport policy in general is concerned with unreliability of journey times caused by unanticipated congestion, journey times can also become uncertain because of the failure to find appropriate parking, with further consequences to local congestion arising from the search for spaces. This is rarely taken into account in transport assessment, however.

As Bayliss (2002: 1) noted:

> "An essential preface to any paper on the parking scene in Great Britain must be a caution about the availability of parking statistics. Considering the importance of car parking in the transport scene its supply, usage and pricing are probably the least well researched and documented of any aspect of transport in Great Britain."

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1    Two papers compiled by Butcher (2011a; 2011b) and published in November 2011 by the House of Commons Library provide a useful summary of the history and practice of on- and off-street parking.

This caution remains valid ten years later.

There is a need for an overarching strategy which sets out the principles for the regulating and charging of parking, and the provision of information. Where parking measures are used for the control of car use, this should also be related to the possibility of road user charging. This document is intended as a contribution to the argument.

## 1.2   This report

In November 2004, the RAC Foundation published a report called *Parking in Transport Policy* as part of the 'Motoring Towards 2050' programme of research (RAC Foundation, 2004). It covered people's attitudes and experiences, the supply and demand of parking, the economics of parking, and the role of parking in overall transport policy. It also looked at the impact of technology on parking and reported the first possible use of pay by phone in Putney. It made a number of recommendations about increasing off-street parking, simplifying parking regulations, taking a longer-term view of parking (by, for example, renewing multistorey car parks) and providing more information for motorists. It also identified some areas for additional research on supply, enforcement and parking management, which we briefly review at the end of this document.

This report is intended as an update of the 2004 report, and concentrates particularly on developments over the last seven years. In Section 2 we discuss the supply of car parking at different types of locations, although, as already noted, the data is inadequate in a number of respects. Section 3 then looks at the demand for parking, particularly in terms of the time spent at different locations. Section 4 discusses parking management, regulation and charging. In Section 5 we discuss the evidence in terms of public attitudes to aspects of parking policy. Section 6 discusses a number of miscellaneous issues including the use of new technology for information and payment, and Section 7 reviews the evidence for the connection between the provision of parking and the ownership and use of cars, as well as the implications for standards.

In the final section we draw up specific recommendations for moving forward to an overarching policy on parking, and set out a number of key issues.

# 2. The Supply of Parking

Given that a parking space is required at the beginning and end of each car journey, we begin by considering what space is actually available. As we show in the next section, most cars spend the majority of their time parked at the owner's residence, and it makes sense to consider the supply of residential parking separately. Of course, some parking spaces can be used for both residential and non-residential purposes.

Other key distinctions are between on-street and off-street, between publicly and privately owned spaces, and (to draw a slightly different distinction) between spaces that are generally accessible to motorists and those that are in some way restricted. These different variables make classification and measurement difficult; even in London, where the greatest efforts have been made, the availability of data is patchy. For this reason, we begin by giving a general picture of residential parking. A more detailed discussion of the different types of parking is given in the later section specifically devoted to London.

In a report for the Department for Transport (DfT), the Transport Research Laboratory (TRL) refers to the lack of statistics on the availability of parking, especially that related to private non-residential (PNR) parking – over which local authorities have limited control (Palmer & Ferris, 2010). As this forms the starting point for understanding the relationship between supply and demand, TRL suggests that more research is needed in this area.

## 2.1   Parking availability at home

The English Housing Survey (EHS, formerly the English Housing Condition Survey) (DCLG, 2010b) and the Scottish House Condition Survey (SHCS) both monitor availability of parking.[2] England accounts for 86% of dwellings in Great Britain, Scotland for 9%, and Wales for 5% (DCLG, 2012a). Table 2.1 shows how parking availability has changed in recent years.

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2    There does not appear to be equivalent information for Wales – the last full housing condition survey for Wales was done in 1998 with an update in 2003, neither of which mention parking availability.

**Table 2.1: Number of dwellings with different parking availability, number of households with a car, and number of licensed cars in GB (2009, million)**

|  | 1996 | 2005 | 2009 |
|---|---|---|---|
| Garage | 10.2 | 10.6 | 10.3 |
| Other off-street parking | 4.2 | 5.9 | 6.8 |
| Adequate street parking | 4.5 | 4.8 | 5.0 |
| Inadequate street or no parking | 5.0 | 4.2 | 4.2 |
| **All** | **23.9** | **25.5** | **26.4** |
|  |  |  |  |
| Households with a car | 16.5 | 19.1 | 19.7 |
| No. of licensed cars | 21.2 | 26.2 | 27.1 |
| Cars/dwelling with adequate space | 1.12 | 1.23 | 1.22 |

Source: Based on the EHS (DCLG, 2010b) and the SHCS, adjusted for Wales (assumed to have same characteristics as Scotland) and totals from EHS live tables. Car data from Transport Statistics Great Britain (TSGB).

Table 2.1 shows that although the number of dwellings increases at nearly 180,000 per year, the number of garages has remained constant: there has been a concomitant increase in other forms of off-street parking. Since it may be presumed that a reasonable proportion of new dwellings are built with garages, this suggests that garages in older dwellings are being converted to living rooms, and also that blocks of garages are possibly being demolished, to make more parking space available in the open. Most garages are only suitable for a single car, so the number of garage parking spaces will be only slightly higher than the 10 million shown – let us postulate 11 million. It is difficult to measure

total parking availability from this figure, as 'other off-street' and 'adequate street parking' may accommodate more than one car per household; but as Figure 2.4 shows, the highest parking pressure is on households with one car.

While most households and dwellings are in urban areas, the following figures show that the distribution of parking availability is very different between urban and rural areas, and moreover that, as expected, inadequate parking provision is essentially an urban phenomenon, and is particularly acute for dwellings on main roads.

**Table 2.2: Number of dwellings with differing parking availability by type of area in GB (2009, million)**

|  | Urban | Rural | Total |
|---|---|---|---|
| Garage | 7.7 | 2.6 | 10.3 |
| Other off-street parking | 5.5 | 1.3 | 6.8 |
| Adequate street parking | 4.5 | 0.5 | 5.0 |
| Inadequate street parking | 3.5 | 0.3 | 3.8 |
| No parking provision | 0.4 | 0.0 | 0.4 |
| **Total** | **21.7** | **4.7** | **26.4** |
|  |  |  |  |
| % inadequate or no provision | 18% | 6% | 16% |

Source: Based on EHS (DCLG, 2010b) and the SHCS, adjusted for Wales (assumed to have same characteristics as Scotland)
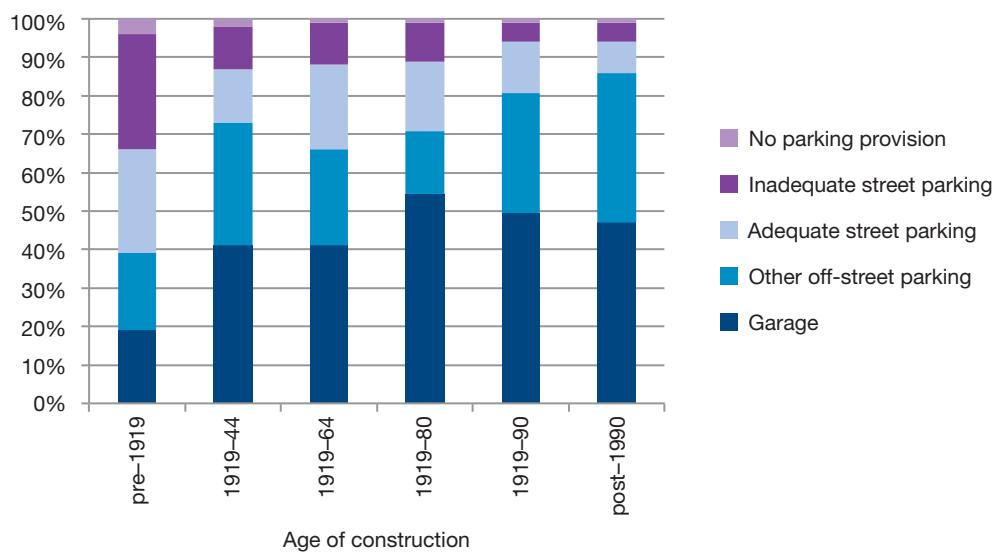
**Table 2.3: Percentage of dwellings with differing parking availability by type of road in England (2008)**

|  | Main road | Other roads |
|---|---|---|
| Garage | 36% | 42% |
| Other off-street parking | 14% | 19% |
| Adequate street parking | 25% | 25% |
| Inadequate street or no parking | 25% | 15% |
| **All** | **100%** | **100%** |
|  |  |  |
| % of dwellings | 14% | 86% |

Source: DCLG (2010b)
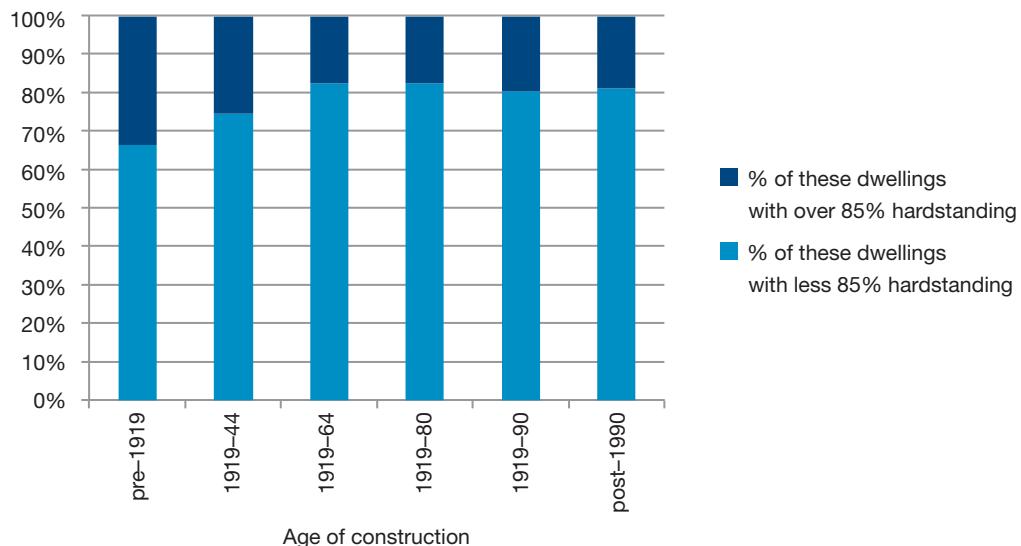
Figure 2.1 below shows how parking provision varies with the age of dwelling, and, in addition, the tendency for front plots to be converted to hardstanding.

**Figure 2.1: Percentage of dwellings with differing parking availability by age of housing, in England (2009)**



Source: DCLG (2010b)

**Figure 2.2: Percentage of dwellings with front gardens hard landscaped, by age of house, in England (2009)**
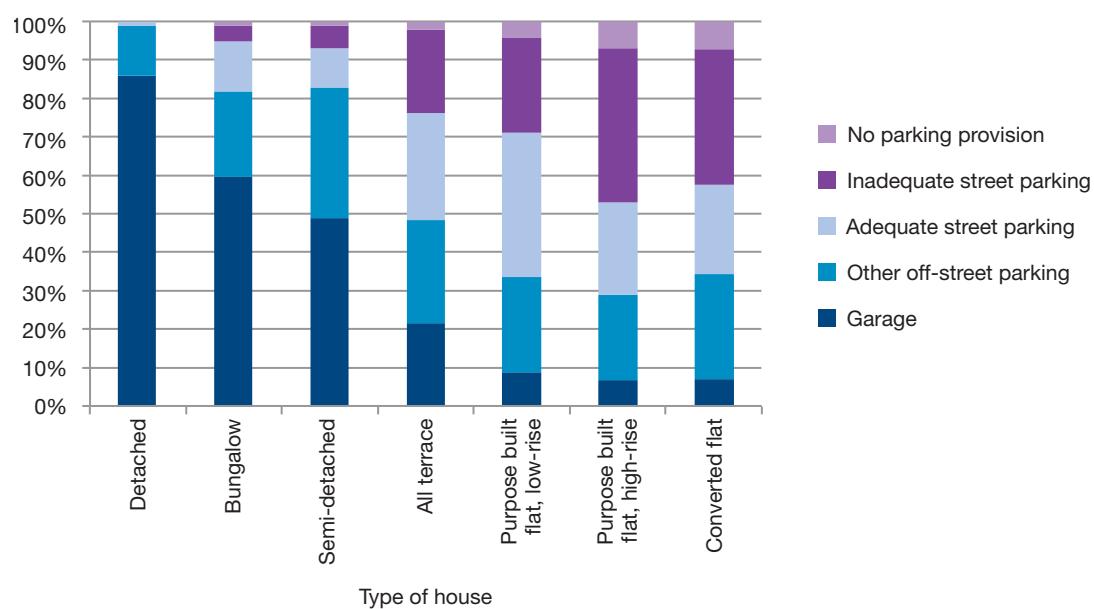


Source: DCLG (2010b), front plot data from 2008

The highest proportion of houses with garages were built in 1965–80; since then a higher proportion of properties have been built with parking spaces rather than garages, as builders reflect the same factors as noted above for the use of garages. Although more recent homes have been built with more garages and off-street parking, the surrounding areas have less space for on-street parking. Builders of new estates generally try to maximise their profits by achieving the highest density per acre within local planning constraints, thus restricting off-street availability. In addition, local authorities have tried to limit off-street parking to preserve the amenity of the developments.

Four fifths of all dwellings have a front plot. Of these, almost a third have virtually all of it (over 85%) converted to hardstanding. Homes built between 1919 and 1964 are most likely to have a front plot, and houses built after 1965 are least likely to have it paved over as these homes were built with adequate front gardens and sufficient garage or other parking. More recently built houses generally have less adequate provision.

As well as the age of dwelling, it is also of interest to investigate parking availability by type of dwelling. Figure 2.3 shows the variation.

**Figure 2.3: Percentage of parking availability by type of house, in England (2009)**
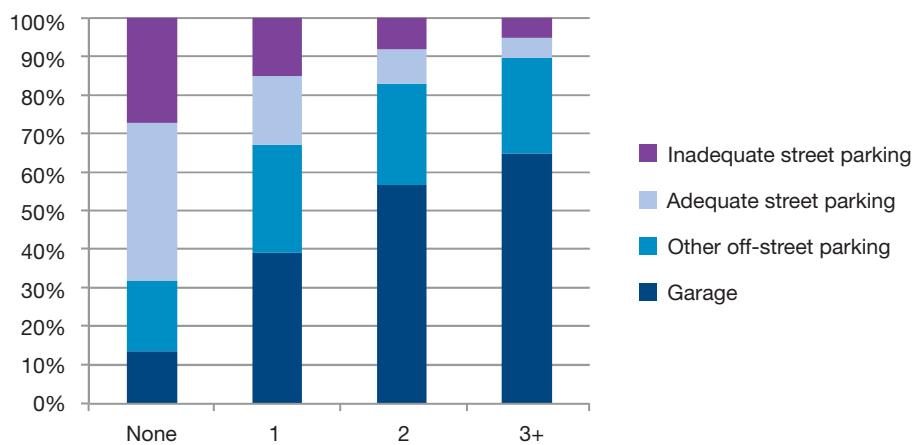


Source: DCLG (2010b) – Summary Statistics Table SST2.4

Figure 2.4 shows the high proportion of flats, both purpose-built and conversions, which do not have adequate parking. There has been a tendency for local authorities not to approve the provision of any off-street parking at all for new blocks of flats in areas with good public transport; at the same

time, owners of such properties may be prevented from applying for residents' parking permits. While this will discourage car ownership, property owners may still own cars and park them some distance away in residential streets. This is an issue we return to in Section 6.

**Figure 2.4: Percentage of households with differing parking availability by number of vehicles in household, in England (2008)**



Source: DCLG (2010b) (special analysis)

This figure shows that households with more than one car are more likely to have a garage, which reflects the associated higher income and greater probability of living in a less densely populated area. Over a quarter of the 23% of households without a car would not be able to park their car, if they had one, on their own premises or the street.

Table 2.4 investigates this in more detail, breaking it down by housing type. It is clear from this table that there is a particular problem with flats and, to a slightly lesser extent, with terraced houses.

**Table 2.4: Parking availability by type of dwelling and number of cars in the household**

| Type of dwelling | % of house-holds in this dwelling category | Cars in house-hold | Percentage with | | | |
|---|---|---|---|---|---|---|
| | | | Garage | Other off-street parking | Adequate street parking | Inadequate street or no parking |
| Flats | 19 | 2+ | 22 | 35 | 24 | 20 |
| | | 1 | 13 | 33 | 28 | 27 |
| | | None | 3 | 17 | 39 | 41 |
| | | **All** | **9** | **25** | **33** | **33** |
| Terraced house | 29 | 2+ | 33 | 32 | 15 | 19 |
| | | 1 | 22 | 27 | 27 | 23 |
| | | None | 10 | 21 | 42 | 27 |
| | | **All** | **22** | **27** | **28** | **23** |
| Semi-detached house | 26 | 2+ | 56 | 35 | 5 | 4 |
| | | 1 | 50 | 35 | 10 | 6 |
| | | None | 29 | 30 | 26 | 16 |
| | | **All** | **49** | **34** | **10** | **7** |
| Detached house | 17 | 2+ | 87 | 12 | 0 | 0 |
| | | 1 | 85 | 13 | 1 | 1 |
| | | None | 77 | 20 | 2 | 1 |
| | | **All** | **86** | **13** | **1** | **0** |
| Bungalow | 9 | 2+ | 75 | 21 | 3 | 1 |
| | | 1 | 63 | 24 | 9 | 4 |
| | | None | 35 | 22 | 32 | 11 |
| | | **All** | **60** | **23** | **12** | **5** |
| **Total** | **100** | **2+** | **61** | **26** | **6** | **7** |
| | | **1** | **40** | **28** | **17** | **14** |
| | | **None** | **15** | **21** | **36** | **28** |
| | | **All** | **41** | **26** | **18** | **15** |

Source: DCLG (2010b) (special analysis)

What these figures do not show is how much the decision not to own a car is influenced by the lack of parking. This remains a controversial topic, which we discuss in more detail in Section 7.

## 2.2 Non-residential parking availability
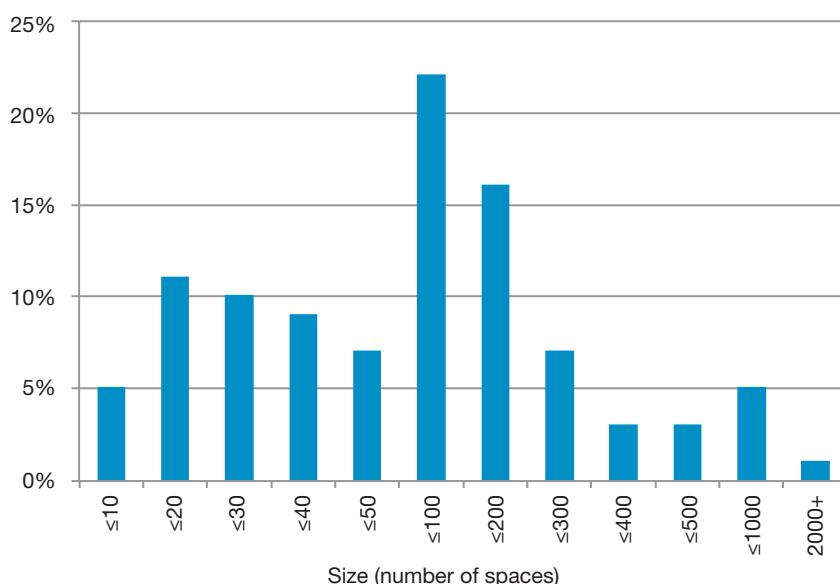
The information here is much harder to acquire. Most local authorities compile information about parking within their jurisdiction, but there is no standard format for reporting, and authorities vary considerably in the degree of information which they make available. At the top end of the scale, for example, is Brighton & Hove City Council, who have recently been producing an annual parking report. This authority administers 14 controlled parking zones (CPZs) and 11 off-street car parks. Overall there are nearly 26,000 parking spaces to be managed – 23,333 on-street (these are mainly residents' parking schemes) and 2,490 off-street. However, even this kind of information does not cover PNR spaces, nor on-street spaces outside CPZs.

Two sources of data on non-residential parking have kindly provided information for this report – Parking Data & Research International (PDRI) and Parkopedia (see also section 6.1). PDRI estimate that there are around 17,000 public non-residential car parks in Great Britain, of which it has nearly 15,000 on its database; Parkopedia estimates the total at around 20,000, of which it has 18,000 listed. Based on these sources, which include the size of each car park, the total number of non-residential spaces in Great Britain is between 3 and 4 million. These include local authority car parks (surface-level, multistorey and underground); commercial car parks; car parks run by shops and shopping centres; hospitals; educational establishments; and transport locations such as stations, airports, motorway service stations and park-and-ride sites. In addition there are private off-street car parks, for example for offices with unknown capacity.

Both databases show that 92% of these public car parks are surface-level / not covered, and 8% are structures, mainly multistorey. About 42% of car parks are free, and around 50% are pay and display, the rest being pay on entry or exit, or contract. Figure 2.5 shows the distribution in terms of the number of parking spaces at each establishment (based on a combination of both sources, as their figures are very similar).

**Figure 2.5: Distribution of car parks by size**



Source: PDRI and Parkopedia

Increasingly, owners of all types of public car parks are outsourcing the management of the parks to companies which provide a complete range of services, including physical maintenance, fee collection and penalty collection. Many of these companies also provide outsourcing services for local authorities' management of their on-street parking enforcement. In order to prevent excess parking stays and to ensure adequate space for customers, owners of free car parks at shopping centres now limit the amount of free time, usually to two hours, and then use a car park management company to enforce compliance.

Major companies involved in car park ownership and management are shown below:

- APCOA
- Britannia Parking
- CP Plus
- Euro Car Parks
- Legion Group (originally British Legion, now part of OCS Group)
- Meteor Parking (formerly part of Go Ahead Group, now part of VINCI Park UK)
- NCP
- Q-Park
- RCP Parking
- VINCI Park UK (part of VINCI, France)

Parkopedia estimates that local authorities run 10,000 car parks, the major companies listed above operate 1,500, and the seven largest retail operators have 2,000 between them. In addition there are 1,700 station car parks and over 1,000 hospital car parks.

## 2.3 Parking supply in London

Faced with the difficulty of obtaining reliable data, we have concentrated on available data from London, which is generally where the greatest supply problems are encountered, and hence more effort has been made to obtain appropriate data. Even here, however, the results are decidedly patchy.

In 1966, Michael Thomson of the LSE carried out a survey of parking in central London (Thomson, 1968) supported by the Rees Jeffreys Road Fund together with the GLC. The GLC had identified that there were 125,000 parking spaces (paying and free, on- and off-street) and it was decided to survey 5% of them over a single day using 44 observers. At the same time a short questionnaire was given out to drivers asking how far they had come, the reason for their journey, their frequency of travelling by car to London, and what they would do if parking was not available.

Thomson concluded that more than a quarter of spaces in unrestricted streets (and in some streets, more than half) were taken up by overnight (resident) parkers. Occupancy, defined as whether the space was in use or not, of on-street spaces was higher than off-street; on-street as a whole "never reached 90%", off-street 75%. The survey also found a high level of illegal parking – meter feeding, moving between bays and overstaying on meters (with over a third of motorists exceeding the permitted time). The Thomson survey measured the turnover of spaces over the working day – this was found to be once for off-street parking, nearly six times for meters, and just over twice for free spaces. When asked what they would do if it was impossible to find a parking space in central London, 62% of drivers said they would use public transport, 16% taxis, and 13% said they would not make the journey; 4% said the car was essential.

While this survey was undertaken in very different conditions from those prevailing today, and in an environment where enforcement was much more lax (clamping was introduced in 1983 to increase compliance), its methodology remains valuable for measuring driver behaviour and compliance.

In 1999 the Government Office for London, prior to the formation of Transport for London (TfL), commissioned MVA Consultancy to measure the availability of parking in London as input to policymaking about workplace parking levies and congestion charging. The study (MVA, 2000) involved inspection on-street of a sample of 300 areas, each 500 metres square (25 hectares), in London. This study was updated in 2005 (MVA, 2005) when 50 squares were resurveyed to take into account changes that may have occurred as a result of alterations to land-use and parking regulations (including the extension of CPZs) and changes associated with traffic management initiatives, such as bus priority schemes and congestion charging.

The types of parking considered were:

- OSC: On-street controlled parking – this comprises mainly parking at meters or pay-and-display bays, and parking in residential bays.
- OSN: On-street non-controlled parking – this covers free parking on-street, which comprises unrestricted parking where there is no yellow or red line, and parking at single yellow or single red lines, which is normally allowed overnight.
- POS: Public off-street car parks – these are car parks open to the public and often charged.
- PNR: Private non-residential car parks – these are car parks related specifically to the organisation that owns it. Examples are car parks for employees of offices, factories and shops, and car parks for customers of shops, leisure centres or sports grounds. Sometimes these will levy charges for customer parking.
- PR: Private residential parking – this comprises parking in private residential drives or garages (driveway), or in communal car parks at blocks of flats and houses (communal).

This 1999 study established an important methodology for the measurement of parking supply. The total area surveyed, around 7,500 hectares, represented just under 5% of the surface area of London (157,000 hectares). Of the 300 sampling units, 15% were in areas designated as strategic town centres, where a large proportion of public car parks and CPZs exist, and a further 23% in the central area, where similar conditions apply. In practice, however, surveyors had considerable difficulty in recording OSC spaces, possibly because of the multiplicity of types of controlled parking spaces. For this category, it was necessary to rely substantially on aggregate information from the boroughs, not all of which were able to provide the data.

The main findings of the 1999 study were that there were some 6.8 million parking spaces within London, of which:

- 230,000 were in POS car parks, and 220,000 were public spaces in PNR car parks;
- 560,000 spaces were for employees in PNR car parks;
- PR: 1.8 million spaces were in private driveways or garages, and a further 860,000 in shared residential car parks;
- OSN: 2.4 million spaces were available on the road, without restrictions, and a further 630,000 on single yellow (or red) lines providing overnight parking; and
- OSC: 170 thousand spaces were either at meters or at residents' bays in CPZs.

In the 1999 survey, PNR was divided between car parks for employees and those for others, PR was divided between 'driveway' and 'shared' spaces, OSN between (completely) unrestricted and spaces on single yellow (or red)

lines, and OSC between meters and residents' spaces.

On resurveying in 2005, PR parking was excluded, as it was felt there would be little change. Evidence from the EHS (DCLG, 2010b) cited in section 2.1 suggests that this might have failed to take account of the reduction in garage spaces. In addition, the much smaller scale of the update study (consisting, as it did, of 50 rather than 300 squares) casts some doubt on the accuracy of the figures relating to change. OSC spaces were again obtained from borough sources, where available, and more categories were used: meter spaces, pay-and-display spaces, voucher spaces, free parking spaces, resident spaces, business spaces and shared-use spaces.

The conclusions of the update study were:

- A reduction in PNR employee parking spaces in central and Inner London. It seems likely that some of this change has been associated with the introduction of congestion charging in 2003.
- An increase in spaces available to the public, whether in public or private car parks, in Inner and Outer London.
- A reduction in OSN, especially in central London.

It also notes that it is possible that some of the changes can be attributed to differences in surveyor practice between the two surveys. This may apply particularly in the case of OSN, although undoubtedly much of the reduction found here will also reflect real changes on the ground, such as the extension of CPZs. Here we summarise, and draw some conclusions.

**Table 2.5: Change in number of non-residential off-street and on-street parking bays (1999–2004, thousands)**
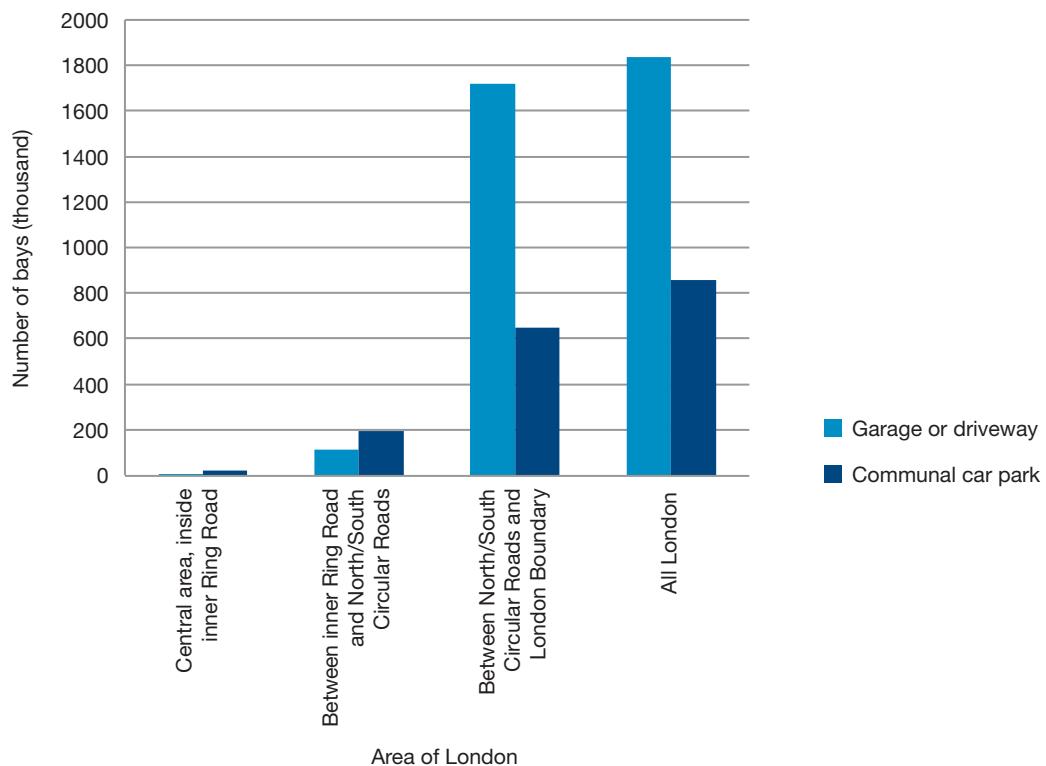
| % change | Off-street non-residential | | | | On-street non-controlled | | | On-street controlled |
|---|---|---|---|---|---|---|---|---|
| | POS public | PNR employee | PNR other | All non-residential car parks | OSN un-controlled | OSN single yellow/ red line | OSN total | OSC total* |
| Bays (2004), London | 222 | 671 | 378 | 1,272 | 2,132 | 604 | 2,736 | 459 |
| | | | | | | | | |
| Change (1999 to 2004) | | | | | | | | |
| Central area, inside Inner Ring Road | −21 | −46 | +235 | −26 | 0 | −28 | −43 | n/a |
| Between Inner Ring Road and North/ South Circular Roads | +18 | +3 | +84 | +24 | −9 | −14 | −11 | n/a |
| Between North/ South Circular Roads and London boundary | −3 | +29 | +71 | +31 | −9 | +3 | −7 | n/a |
| **All London** | **−4** | **+20** | **+74** | **+27** | **−9** | **−4** | **−8** | **+177** |

Source: MVA (2005)
*These OSC figures are not available for the central and other areas as defined, being based on borough estimates. They also exclude (at least) Lewisham, where no estimates are available. More detail is given in Figure 2.7.

As noted, the indicated changes between 1999 and 2004 must be treated with caution because of the small scale of the original study and the even smaller scale of the update. Some of the large change in the 'other' category may be due to the use of different classifications.
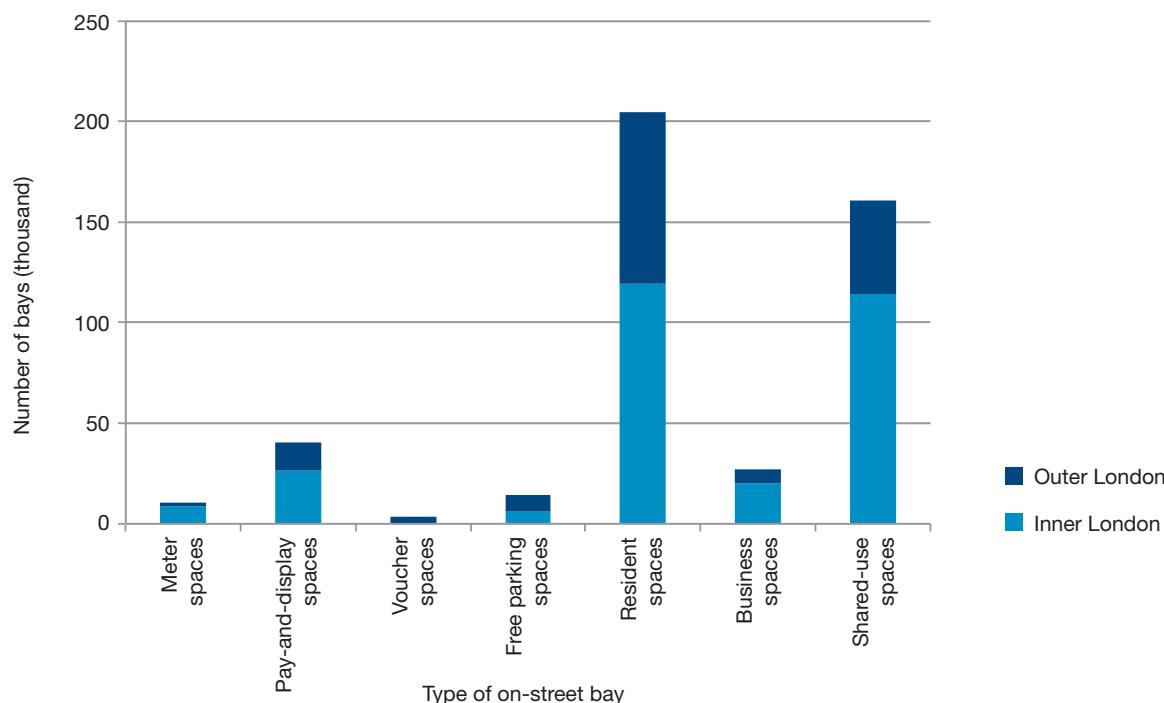
**Figure 2.6: Private off-street residential bays (1999)**



Source: MVA (2005) (as noted, these were not updated from the original study)

In the 1999 study MVA attempted to measure on-street residents' bays, but since many of these schemes were only just coming into use at that time, the data was very patchy owing to their limited sampling method. MVA also tried to survey local authorities in London with limited success. In 2004 MVA again surveyed local authorities via the ALG (the Association of London Government, now called London Councils), but found the data to be very inconsistent and out of date. Part of the problem is that local authorities often measure the length of street subject to parking restrictions, rather than converting it to the number of bays (5 metres per bay being a typical conversion factor). One or two councils do publish in their annual parking reports the number of bays, and even the number of permits in use (which generally exceeds the number of bays). Westminster's 2010 report states that there are currently just over 35,000 permits in use and approximately 32,000 resident bays. This is the same number as recorded by MVA in 2004 (City of Westminster, 2011).

**Figure 2.7: Number of on-street parking bays in controlled areas (OSC) (London local authority returns)**
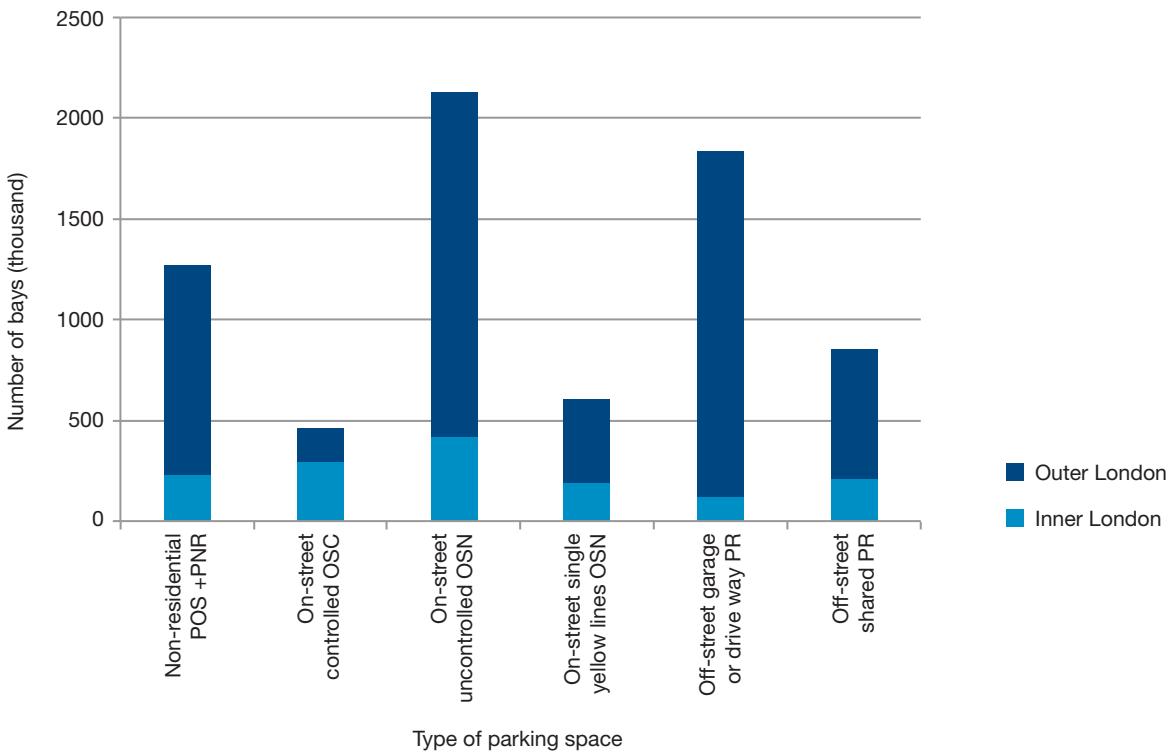


Source: MVA (2005)
Note: Many of the figures are from earlier years or are imputed; also that 'Inner' and 'Outer' here relate to groups of boroughs

The number of spaces available for the general public includes meter, pay and display, voucher, free and shared spaces. The number of spaces for residents and business also includes shared spaces. Figure 2.7, based on local authority returns, shows a total of 459,000 OSC spaces (i.e. areas with yellow lines and/or CPZs), whereas MVA's own on-street survey shows 603,000 (±50,000). MVA did not survey areas where on-street parking was not allowed (e.g. double yellow lines, crossings or bus cages).

On this basis, we can make the following approximate summary as in Figure 2.8:

**Figure 2.8: Summary of parking provision in London**



Source: MVA (2005)

The maximum number of spaces available for residential car parking at night is the sum of the controlled and uncontrolled on-street parking plus the off-street parking, and assumes that all OSC spaces and single yellow line areas are available for residential parking (which is largely true at night except possibly in central London). It also assumes that all the garage spaces are used for parking cars, which, as noted in section 2.1, is unlikely. The MVA data does not split off-street between garages and open parking, but nationally the urban ratio is about 60:40 (see Table 2.5).

We can then use this data, together with National Travel Survey (NTS) data for parking demand in London, to give some idea of the balance between residential supply and demand. Of course, it must be recognised that these aggregate areas hide considerable local variation: parking is essentially a local phenomenon, and there are local variations which give excess demand in some locations at night and plenty of free space elsewhere. It may be noted that Westminster has about 1.5 permits on issue for each residents' space, and both Kensington & Chelsea and Camden have more than 1.

**Table 2.6: Approximate residential supply/demand balance for London (thousands)**

| | Maximum available residential spaces, on-street | Maximum available residential spaces, off-street | Maximum available residential spaces, total | Cars in use (average for 2005–8) | As percentage of maximum spaces |
|---|---|---|---|---|---|
| Inner London | 903 | 328 | 1,231 | 705 | 57 |
| Outer London | 2,292 | 2,363 | 4,655 | 1,852 | 40 |
| All London | 3,195 | 2,692 | 5,886 | 2,557 | 55 |
| % split, on-street/ off-street | 54 | 46 | 100 | | |
| | | | | | |
| Cars parked | 946 | 1,560 | 2,506 | | |
| Use of space (%) | 30 | 58 | 43 | | |

Source: MVA (2005) as above, plus London Travel Demand Survey for cars in use.
Note: NTS data excludes 'other' parking places (for available categories, see next section).

Table 2.6 compares the maximum available residential parking with cars in use, and must be treated with extreme caution as it is based on small samples and several different years of largely out-of-date data. 'On-street' includes controlled and uncontrolled areas; 'off-street' includes garages and drives. However, comparing the number of cars in use with the maximum available residential spaces suggests that Inner London is 57% saturated and Outer London 40% (although there will be large variations on a local level, and some areas are super-saturated, as witnessed by double parking). These figures can be compared with the 85% maximum occupancy of parking bays which is considered good practice for satisfactory turnover of vehicles.

## 2.4  Summary

This section has shown that, based on London data, it is possible to construct a supply/demand balance for parking, but that the data is extremely patchy and inconsistent. Detailed roadside surveys of available space on- and off-street are required before an accurate assessment can be made of the supply/demand balance. Many local authorities carry out small-scale local surveys before introducing CPZs, and it is possible that some councils have undertaken larger-scale citywide projects (e.g. Nottingham before introducing the workplace parking levy) but that these have not been publicised. Much more data is needed in order to make a wider assessment, and to understand the implications of increasing car ownership.

# 3. The Demand for Parking
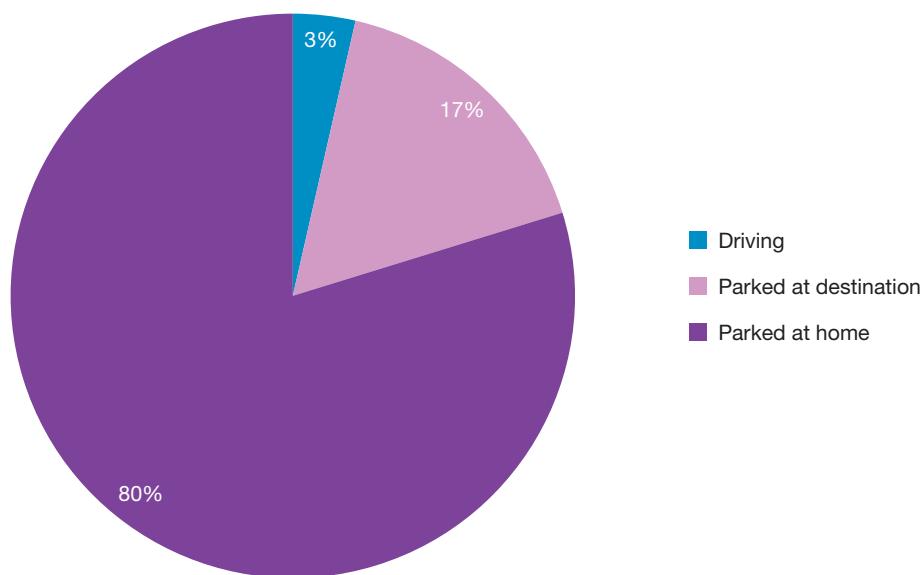
### 3.1 Introduction

As noted, there are about 25 billion car trips per year, and with some 27 million cars, this suggests an average of just under 18 trips per car every week. Since the duration of the average car trip is about 20 minutes, the typical car is only on the move for 6 hours in the week: for the remaining 162 hours it is stationary – parked. Our analysis suggests that on average it is parked away from home for about 28 hours a week, though this conceals much variation, especially between those who drive to work and those who do not. Nonetheless, the average car is parked at home for about 80% of the time, parked elsewhere for about 16.5% of the time, and only actually used for the remaining 3.5%, as illustrated in Figure 3.1.

**Figure 3.1: Approximate percentage split of average car activity by time**



- Driving
- Parked at destination
- Parked at home

Source: Authors' analysis
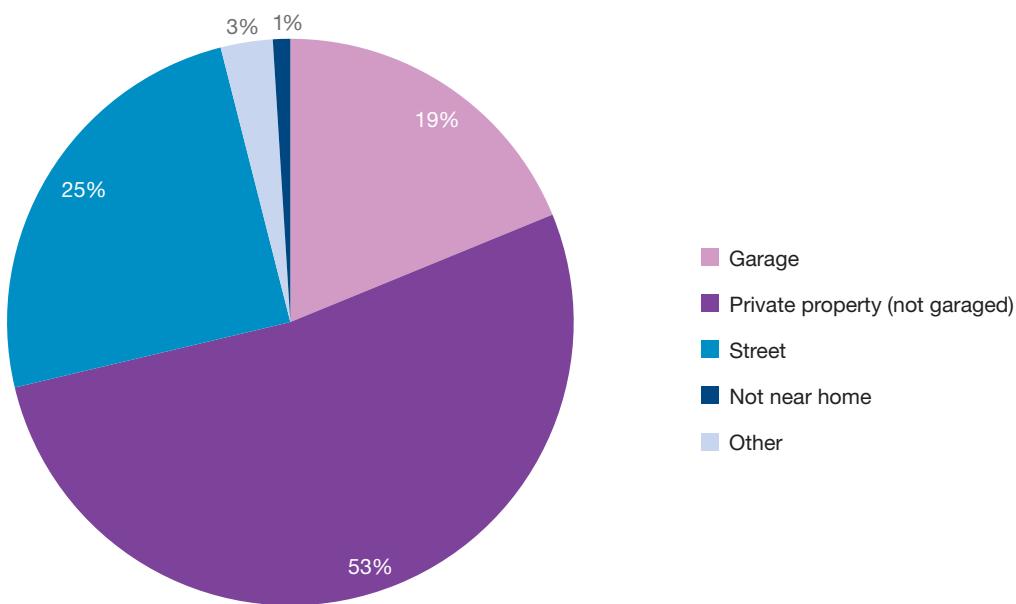
It thus makes sense to discuss parking at home separately from what we refer to as 'destination parking', which occurs when the car is actually used to convey people to another location to carry out various activities.

For this section we have carried out a careful analysis of the DfT's NTS for the years 2002–8 from the ESDS (Economic and Social Data Service) archive, together with additional variables provided by the Department. A separate technical note is available on request to the author (Bates) which contains more detail on the specific NTS variables and methods used for analysis. No warranty is given by the DfT as to the accuracy and comprehensiveness of either the data or the analysis.

## 3.2 Cars parked at home

In four of the years covered (2002–3 and 2007–8), the NTS asked where each vehicle available to the household was parked overnight. Responses were obtained for just over 99% of vehicles, and for these the results are shown in Figure 3.2.

**Figure 3.2: Where cars are parked at night (2002–8)**
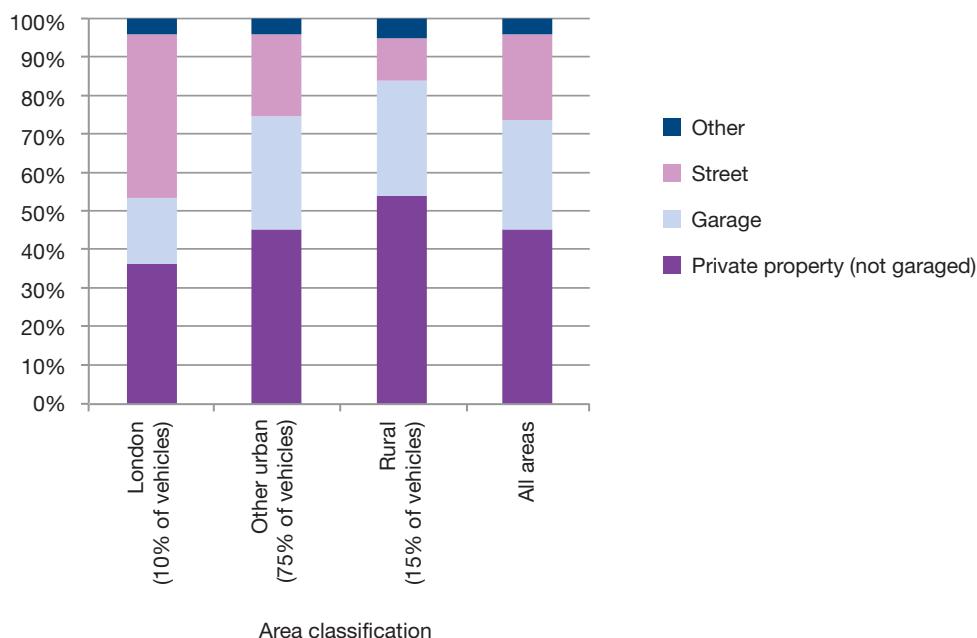


Source: NTS data 2002–3, 2007–8; Authors' analysis

Between the first two years (2002–3) and the last two (2007–8), there has been some reallocation between the first two categories, garages and private property, with the proportion in garages falling (from 21.5% to 16.4%). There has been no overall change in the numbers parked on-street, or in the residual categories.

Published figures for NTS 1995–7 reveal the pattern shown in Figure 3.3.

**Figure 3.3: Where cars are parked at night (1995–7)**



Source: NTS 1995–7
Note: The classification of urban areas is somewhat different from that used in the analysis of the 2002–8 data.

Thus there has been a significant drop in the use of garages, with cars now being parked on the property, in a drive or in a front area that has been paved over. This corresponds with what we saw in section 2.1, with a decline in the relative proportion of dwellings with garages.

Compared with 1995–7, approximately 1.5 million fewer cars are now parked in garages, 3.5 million more in drives and front gardens, and 1.5 million more on the road, despite increased parking restrictions and the extension of residents' parking zones, with limited permits available for on-street parking particularly in the Inner London boroughs. This change represents a move over the 1990s and the early part of this century to convert front gardens into parking as a way of guaranteeing a parking space for the resident. Most councils no longer allow this (for both environmental reasons and because, with road parking space lost to ensure access, it does not increase net parking capacity), but it did involve a large switch at the time.

This reduction in the use of garages can be considered to be due to four factors:
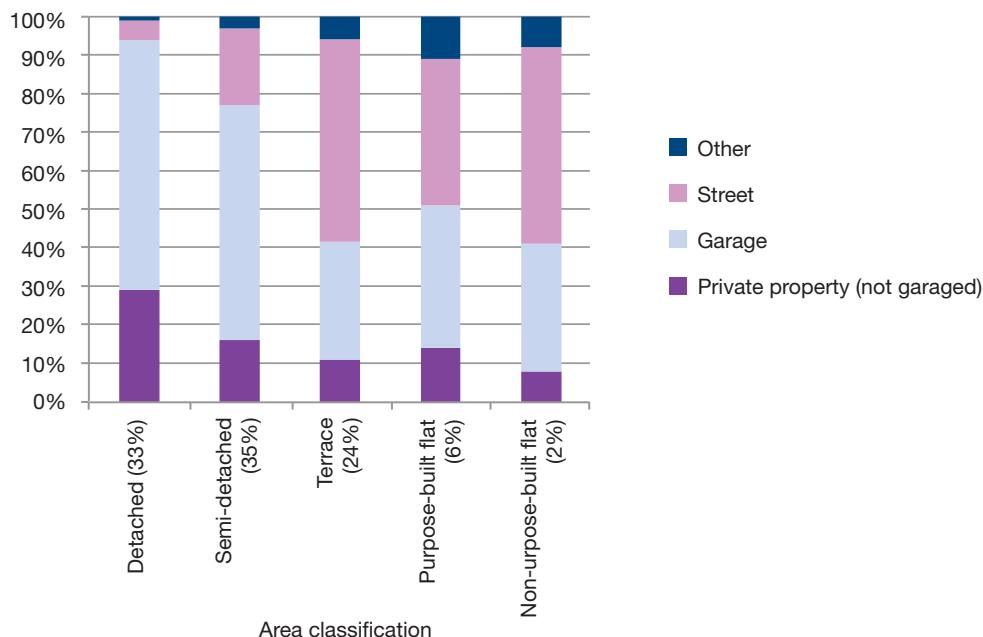
- garages are increasingly used for storage of other items besides cars, particularly in modern houses which tend to be less well equipped with storage;
- modern cars tend to be larger and do not fit into the garages of older houses;[3]

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3    The average width of a new car sold in the UK in 2011 was 6 ft 1 in (1.85 m). The Ford Escort was 5 ft 2 in (1.57 m) wide in 1968 and its replacement, the Focus, is now 6 ft 1 in (1.85 m). This also causes problems where bays are marked out in public car parks, as the DfT recommended width is 5 ft 11 in (1.80 m) (*Sunday Times*, 19 February 2012).

- modern cars are more reliable, with better corrosion protection, and can be stored in the open with the confidence that they will start; they also have better theft protection;
- there has been a growth in multi-car households – the extra cars cannot be parked in the garage.

Nationally, only about a quarter of vehicles are parked on-street. However, this varies strongly with the type of area and the type of dwelling, and these two factors themselves are of course related. As far as dwelling type is concerned, the results for the main categories are shown in Figure 3.4.

**Figure 3.4: Where cars are parked by type of housing**



Source: NTS data 2002–3, 2007–8; Authors' analysis

The parking pattern is as one would expect, with over 50% of vehicles in terraced houses or non-purpose-built flats being kept on the street. About 26% of all vehicles are owned by households living in these housing types.

The pattern of parking is most strongly influenced by the level of residential density[4] (persons per hectare, ppha). In the most rural areas (less than 1 ppha), most of the houses are detached, while in the most urban (greater than 60 ppha) there are virtually no detached houses and most people live in terraces or flats. About 10% of all households live in the most rural areas, and another 10% in the most urban areas. In Inner London, about 83% of households are in areas with density greater than 60 ppha; for Outer London, the corresponding figure is about 20%; and for conurbations, built-up areas and other urban areas with a population of more than 250,000, it is about 10%.

4    Density is calculated for the sampling area units used in the NTS: in size, though not in definition, these areas are slightly smaller than census Middle Layer Super Output Areas (MSOAs) in England and Wales.

Table 3.1 gives some key information by density.

**Table 3.1: On-street parking by housing density**

| Density (ppha) | Approximate % of households living at this density | Average cars per household | % of vehicles parked on-street |
|---|---|---|---|
| less than 1 | 9 | 1.44 | 14 |
| 1 to 5 | 17 | 1.37 | 17 |
| 5 to 10 | 10 | 1.24 | 19 |
| 10 to 20 | 16 | 1.14 | 22 |
| 20 to 30 | 14 | 1.10 | 25 |
| 30 to 40 | 12 | 1.06 | 28 |
| 40 to 60 | 13 | 0.93 | 37 |
| over 60 | 10 | 0.64 | 60 |
| **All** | **100** | **1.12** | **25** |

Source: NTS data 2002–8 (last column excludes period 2004–6); Authors' analysis

The average number of cars per household falls regularly with increasing density. Although some of this effect is due to smaller households in the more urbanised areas, the pattern mainly reflects the greater cost and reduced utility of car ownership in built-up areas. The lower car ownership to some extent offsets the increased tendency to park on-street shown clearly in the last column. However, even with the lower urban car ownership, the propensity *per household* for a vehicle to be parked on-street in the most urban areas is double that in the most rural area.
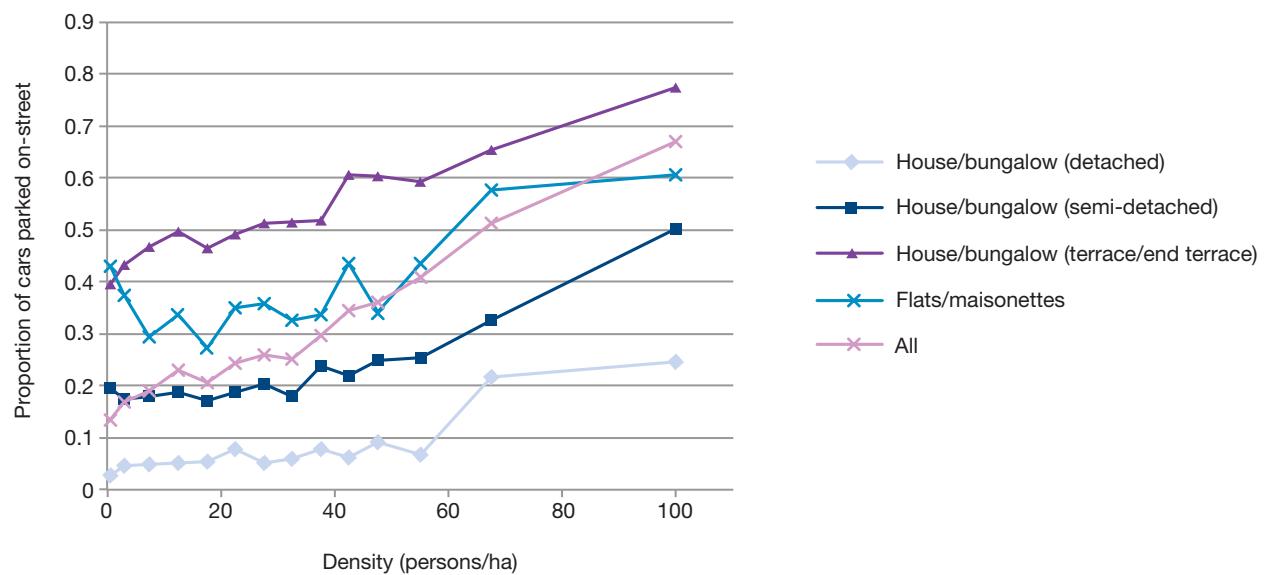
While there is some evidence that for multi-car households, the primary vehicle has a higher chance of being parked in a garage, there is no strong indication that secondary vehicles are more likely to be parked on the street.

Thus we conclude that the proportion of vehicles parked overnight on the street is most affected by housing type and the degree of 'urban-ness', best represented by the density.

Of course these two variables are related, as already noted. In terms of the most common housing type, detached houses dominate at densities below 10 ppha, semi-detached houses dominate between 10 and 50 ppha, and thereafter terraced housing is the most common. Flats and maisonettes only first achieve a share of more than 10% at above 45 ppha, but thereafter their share rises steadily. Nonetheless, the proportions parking on-street still increase with density, even within the dwelling types, as Figure 3.5 shows, so

separate effects arising from dwelling type and density can be discerned (the two types of flat/maisonette categories have been combined for reasons of sample size; however, at higher densities, there is a tendency for non-purpose-built flats to have more on-street parking).

**Figure 3.5: Proportion parking on-street by dwelling type and density**
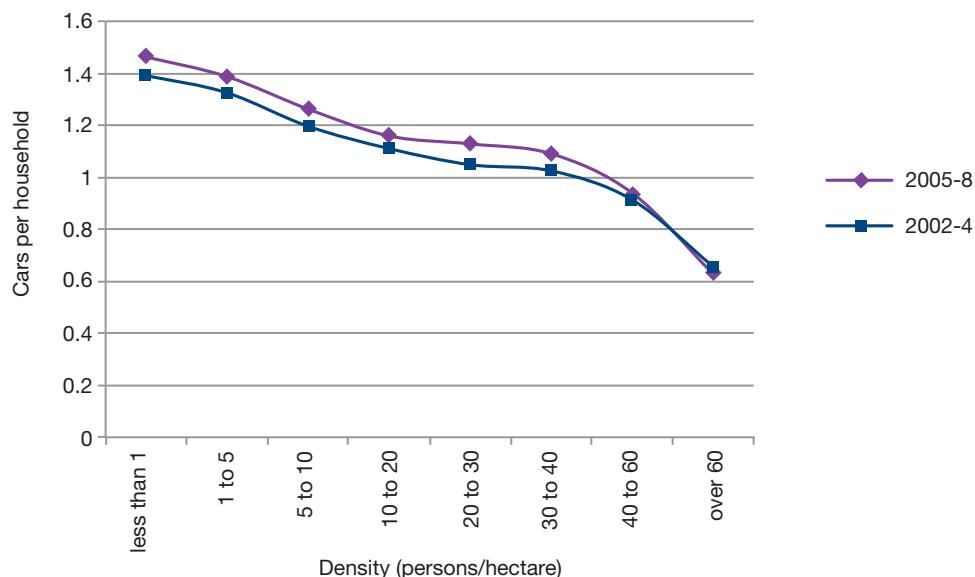


Source: NTS data 2002–3, 2007–8; Authors' analysis

### 3.2.1 Trends in car ownership

It should be noted that within the period 2002–8 there has been a general increase in cars per household, though, interestingly enough, this is not evident at the highest densities, as Figure 3.6 shows.

**Figure 3.6: Changes in household car ownership at different densities**



Source: NTS 2002–8; Authors' analysis

More detailed evidence on changes in car ownership in London is available from other sources. Comparing the 2001 census with the averages of the three years of the London Travel Demand Surveys (LTDS) shows that while the population of London increased by about 600,000 and the number of households by over 200,000, the number of cars fell by over 100,000 (see Table 3.2).

**Table 3.2: Changes in car ownership in London in the context of other demographic changes (thousands)**

|  | 2001 census | LTDS 2007/8 to 2009/10 | Change |
|---|---|---|---|
| Population | 6,993 | 7,596 | +603 |
| Households | 3,016 | 3,232 | +217 |
| Cars | 2,693 | 2,575 | −117 |

Source: 2001 census / LTDS

The drop in car ownership is spread between the inner and outer boroughs – 50,000 in inner boroughs and 66,000 in outer. All but five boroughs showed a drop, the largest being in Southwark (14,000), but Ealing, Kensington & Chelsea, Richmond and Waltham Forest all experienced a drop of 8,000 or more. The boroughs which increased were Greenwich (by 8,000), Westminster (6,000), Tower Hamlets (4,000), Havering (3,000) and Camden (1,000), despite Camden and Westminster having particularly rigorous parking controls. This shows that parking availability is only one of a number of factors affecting car ownership.

TfL's own modelling shows that the following factors explain the level of car ownership at a detailed geographical level:

- household structure
- household income
- tenure
- nationality
- parking availability
- public transport accessibility
- access to employment and services
- upfront and ongoing costs

MVA has done some work for TfL (Whelan et al., 2010) on car ownership at a much finer level of detail, and concludes that "…parking control, public transport levels of service, and walk/cycle accessibility to key attractions were all statistically significant and had parameter estimates of a plausible sign and magnitude. Findings from a recent study by the DfT on sensitivities to car costs allowed the model to respond to variables that varied in a temporal as opposed to spatial dimension." However, they point out that the information on parking controls for different areas is very incomplete.

## 3.3  Destination parking

In order to produce the figures in this section, a substantial analysis has been carried out of the car driver trips in the NTS diary dataset. NTS is a survey of travel rather than parking. The parking duration has to be calculated by following successive trips through the day and calculating the elapsed time between the end of one trip and the start of the next. In some cases, there are intervening trips by other modes while the car is left parked. However, the nature of the travel 'diary' (which is completed over a seven-day period) makes this a more or less unique source for derivation of parking activity of all kinds. Although detailed addresses of destinations are not available, the destination location is described according to an urban area classification.

The analysis has been conducted by re-forming the diary data into a series of car driver trips beginning and ending at the home, and then examining all the implied parking 'acts' at locations other than the home. It should be noted that this includes cases which are not strictly parking acts – cases where someone or something is picked up or dropped off: these represent 8% of all the identified acts. As would be expected, the incidence of parking acts is reduced at weekends, as shown in Table 3.3.

**Table 3.3: Parking acts by day of week**
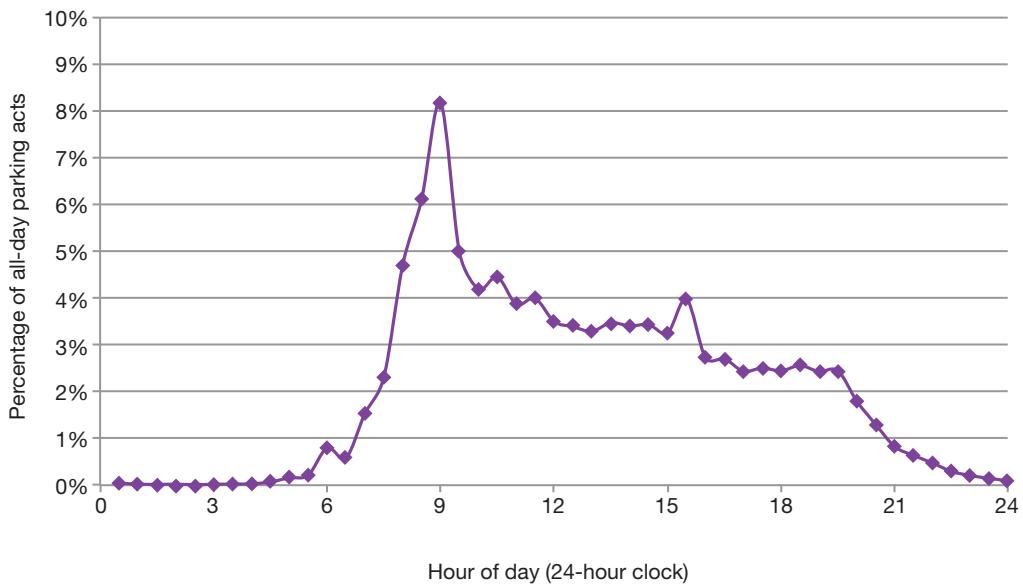
| Day | % of all parking acts |
|---|---|
| **Sunday** | **10** |
| Monday | 15 |
| Tuesday | 16 |
| Wednesday | 16 |
| Thursday | 16 |
| Friday | 16 |
| **Saturday** | **13** |
| **All** | **100** |

Source: NTS data 2002–8; Authors' analysis

Figures 3.7 and 3.8 give a general overview of the time at which parking events start, and the variation in their duration. However, as we shall see, there is considerable variation between weekends and weekdays because of the different purpose mix.
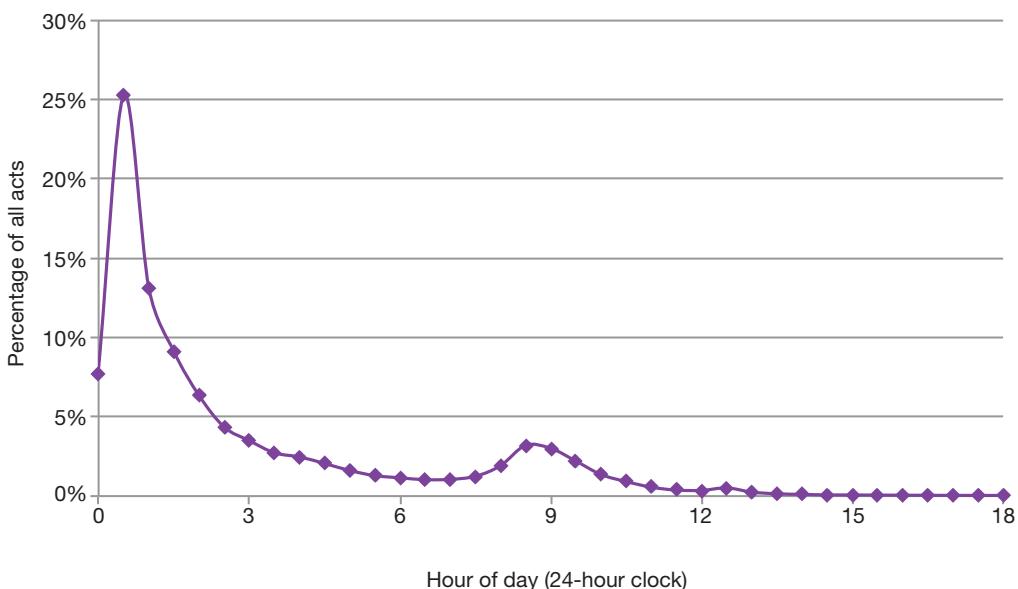
**Figure 3.7: Onset of destination parking events**



Source: NTS data 2002–8; Authors' analysis

Figure 3.7 shows that only 10% of all parking events begin before 6 a.m. and only 10% begin after 6.30 p.m. Of the remainder, 20% occur between 0800 and 0930: thereafter the trend is more or less linear (although slightly decreasing) throughout the day. The peak time for parking is between 0900 and 0930, when more than 8% of all acts occur. It should be noted that the secondary peak at 1530 is associated with escort trips, predominantly school pick-ups (there is a corresponding escort peak at 0900, though it coincides with the much larger commuting category).

**Figure 3.8: Duration of destination parking events**
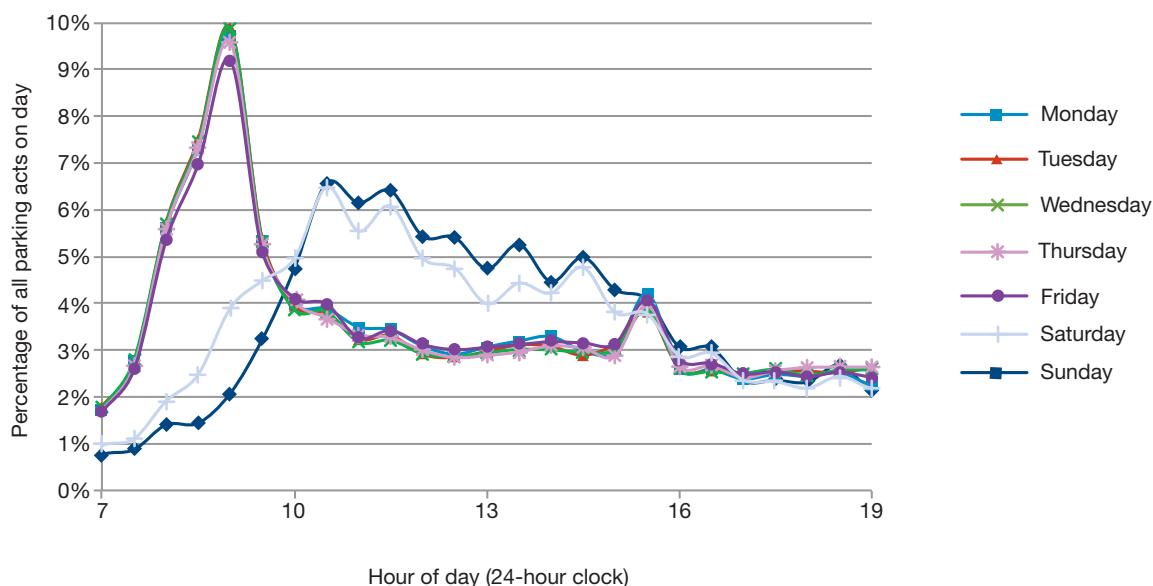


Source: NTS data 2002–8; Authors' analysis

Figure 3.8 shows the highly skewed duration of most parking acts. After the 8% that do not park at all, there are a further 38% who park for less than one hour, including 25% who park for less than half an hour. Nearly 70% of all parking acts are for less than 3 hours, and nearly 90% are for less than 8.5 hours. The secondary peak around durations of between 8 and 9 hours is, of course, associated with commuting.

If we investigate how the profile of the start times of parking events varies by day of week, we see, as expected, that the pattern is different at weekends, but that all the weekdays are very similar, as shown in Figure 3.9. This concentrates on the main period of interest (7 a.m. to 7 p.m.) – there is little difference between any of the days outside this period.

**Figure 3.9: Variation in start time profile of parking by day of week**



Source: NTS data 2002–8; Authors' analysis

Given this, we concentrate on the weekday data, and do not make any further distinctions by day of week.

### 3.3.1 The pattern of parking (location and duration)

Clearly, the mix of purposes for which the journeys are made is important for both the timing and the duration of parking acts. For the weekday data, the proportion of parking acts associated with each purpose, together with their average duration, is given in the Table 3.4.

**Table 3.4: Parking acts by purpose and time**

| Purpose category | % of parking acts | Average duration (hours) |
|---|---|---|
| Work | 28 | 7.6 |
| Employers' business | 6 | 3.5 |
| Education | 1 | 5.2 |
| Personal business | 9 | 1.5 |
| Shopping | 17 | 1.5 |
| Social/recreational | 10 | 2.5 |
| Holiday | <1 | 12.2 |
| Visiting friends/relatives | 8 | 3.1 |
| Escorting passengers | 20 | 0.8 |
| **All purposes** | **100** | **3.5** |
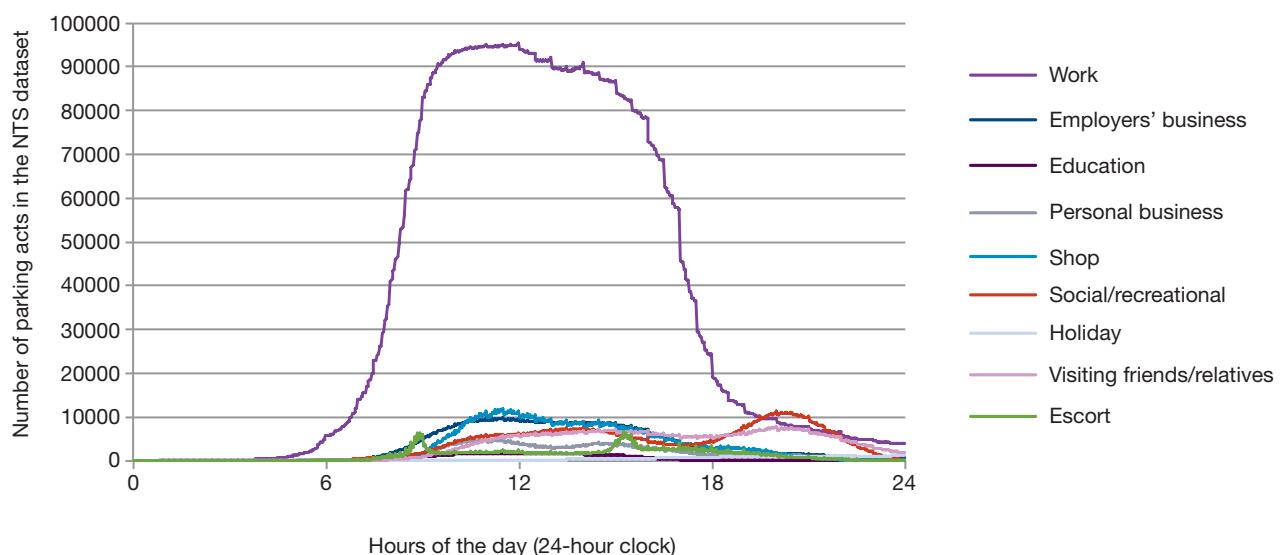
Source: NTS data 2002–8 (weekdays only); Authors' analysis

It should be noted that the overall average of 3.5 hours is strongly influenced by the commuters ('Work'). If we omit them, the average falls sharply to 1.3 hours.

By taking the starting time of each parking event, and allowing for its duration, we can construct a profile of parking 'activity', showing the level of parked vehicles at any time in the day. We describe this as the parking 'accumulation'. First of all, we do this separately by purpose category. It should be noted that the scale of the vertical axis should only be interpreted in relative terms: the actual numbers refer to the number of parking acts in the NTS dataset.

It is obvious from Figure 3.10 that, during working hours, the accumulation pattern is dominated by parking associated with the workplace: the height of the 'Work' purpose is more than nine times that of any other single purpose. This is for three reasons: (a) as shown in Table 3.4, workplace parking is the largest single category; (b) with the minor exception of holiday parking, workplace parking has the greatest duration; and (c) the onset of working time is more concentrated than that for other purposes.

**Figure 3.10: Time profile of parked vehicles, by journey purpose**
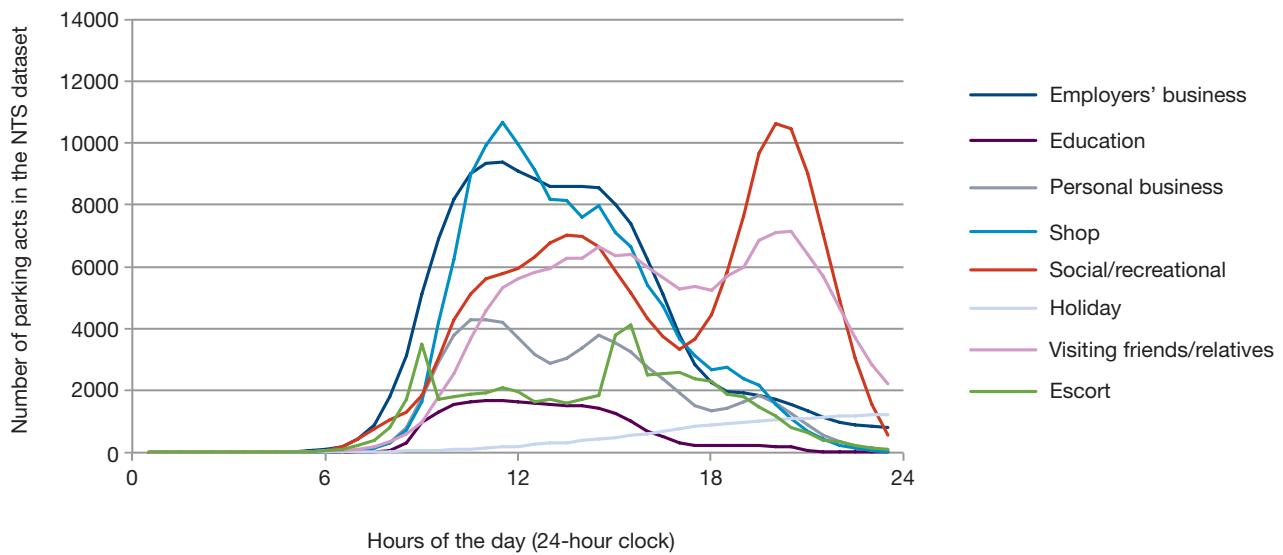


Source: NTS data 2002–8 (weekdays only); Authors' analysis

In order to see the pattern of the other purposes more clearly, we include a second version of the figure, omitting the workplace parking, and changing the vertical scale. Note the later peaks for VFR and social/recreational purposes.
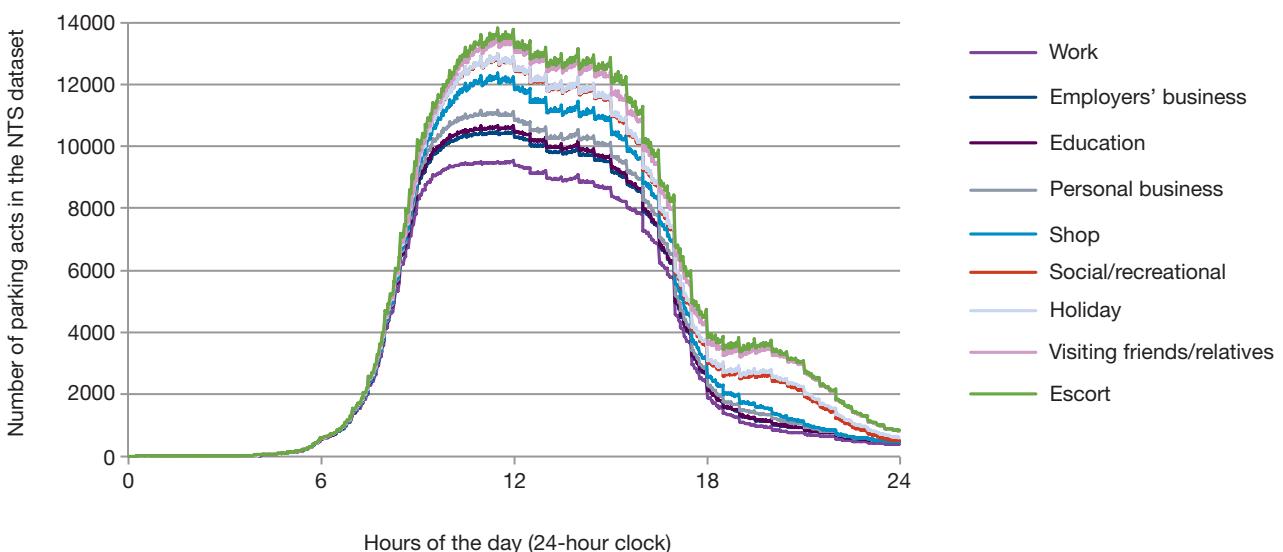
**Figure 3.11: Time profile of parked vehicles, for non-work purposes**



Source: NTS data 2002–8 (weekdays only); Authors' analysis

So far, we have been looking at the individual purposes separately. We now successively add the purpose-specific accumulations, starting with the 'Work' purpose and using the same data. Shown in Figure 3.12, this allows us to see the cumulative effect of the various purposes on the total demand for parking spaces throughout the day.

**Figure 3.12: Contribution to total profile of parked vehicles**



Source: NTS data 2002–8 (weekdays only); Authors' analysis

The highest demand for parking spaces is seen to be at 12 p.m. At this time, the non-workplace parking demands add about 44% to the base demand due to workplace parking.

Of course, a further important issue is *where* the parking takes place, both in terms of the area (urban or rural, etc.) and location: whether on the street, or in a garage or elsewhere. The following figures and tables provide general information about this.

It turns out that the proportion of all parking acts associated with each purpose varies very little by type of area (that is, London, conurbations, urban areas of varying sizes, and rural). In other words, for parking, the level of urbanisation is a matter of concentration (and hence stress), rather than the specialisation of activities.

Purpose is, however, important, in how it affects the kind of parking location that is used, as Table 3.5 shows (this is based on the years 2002–6 only, as the question about parking location was not asked in the last two years). Because of the small proportion of parking acts associated with holidays and education, these purposes are omitted. In this and the following table, the dominant elements in each row are highlighted in red.

**Table 3.5: Parking location by type of trip (percentages)**

| Purpose: / Location | Work | Employers' business | Personal business | Shopping | Social and recreational | Visiting friends and relatives | Escort | All |
|---|---|---|---|---|---|---|---|---|
| On own/friends' premises | 1 | 6 | 3 | 0 | 2 | 37 | 5 | 5 |
| Firm/work car park | 74 | 20 | 0 | 0 | 0 | 0 | 1 | 22 |
| Other private car park | 1 | 8 | 3 | 1 | 4 | 2 | 1 | 1 |
| Park-and-ride car park | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Public car park | 13 | 32 | 56 | 80 | 71 | 5 | 21 | 37 |
| Street | 11 | 33 | 34 | 17 | 21 | 57 | 44 | 27 |
| Not parked | 0 | 0 | 4 | 2 | 1 | 0 | 28 | 7 |
| Other | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| **All** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Source: NTS data 2002–6 (weekdays only); Authors' analysis

**Table 3.6: Use of parking location by type of trip (percentages)**

| Purpose: Location | Work | Employers' business | Education | Personal business | Shopping | Social and recreational | Holiday | Visiting friends and relatives | Escort | All |
|---|---|---|---|---|---|---|---|---|---|---|
| On own/friends' premises | 6 | 7 | 0 | 5 | 1 | 4 | 2 | 56 | 19 | 100 |
| Firm/work car park | 94 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 100 |
| Other private car park | 13 | 25 | 1 | 13 | 6 | 22 | 1 | 7 | 11 | 100 |
| Public car park | 10 | 5 | 1 | 13 | 39 | 18 | 0 | 1 | 12 | 100 |
| Street | 11 | 8 | 0 | 11 | 11 | 7 | 0 | 18 | 34 | 100 |
| Not parked | 1 | 0 | 0 | 5 | 5 | 2 | 0 | 0 | 87 | 100 |
| Other | 22 | 21 | 0 | 11 | 3 | 33 | 2 | 2 | 7 | 100 |
| All | 28 | 6 | 1 | 8 | 18 | 10 | 0 | 8 | 21 | 100 |

Source: NTS data 2002–6 (weekdays only); Authors' analysis

The types of locations 'firm/work car park', 'public car park', and 'street' account together for 86% of all parking acts, but public car parks are especially used by shoppers and those travelling for social and recreational activities, while firms' car parks are heavily used by people travelling to work, with a lower use for the purpose of 'employers' business' trips. It should be noted that 28% of escort trips do not park at all (in other words, they are 'pick-up' or 'drop-off'). It is noteworthy that the use of park-and-ride by all purposes is very low (<1%).

Viewing the data another way, we can look at each parking type and analyse the proportionate use for each purpose. The park-and-ride sample is too small to give a reliable breakdown by purpose, so it is omitted. The results are shown in Table 3.6.
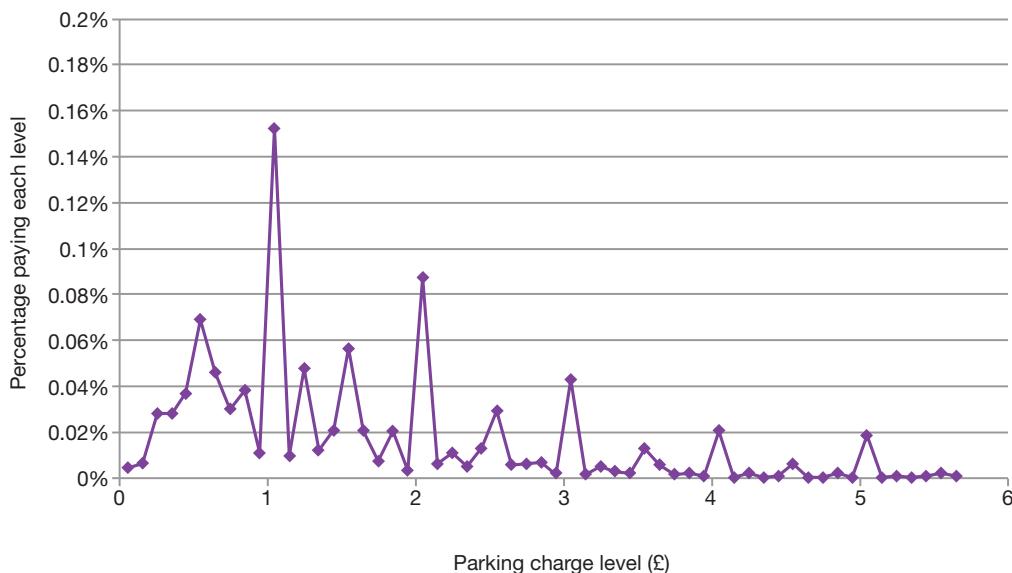
So 94% of parking acts in firms' car parks are by travellers going to their workplace, with only 6% being by travellers on employers' business.

Interestingly, it turns out that there is very little variation in the pattern of parking by purpose in respect of the type of urban area, apart from a slight tendency for greater use of street parking in conurbations and the largest urban areas. The only clear exception to this is for the VFR trips where the balance switches from mainly on-street in the most urbanised areas to mainly 'On own/friends' premises' in the most rural areas: this reflects the housing pattern.

Since the pattern of purpose for parking varies little by type of area, and the types of location used for parking by purpose are also generally regular across area types (with the minor exceptions just noticed), it follows that there is little variation in the proportionate use of different types of parking by type of area.

### 3.3.2 The cost of parking

We now look at the charges for parking. It is highly noteworthy that 94% of all destination parking acts record no charge. Of the remaining 6% that do pay something, over 82% pay less than £3, and almost half pay less than £1 (see Figure 3.13). There is some tendency in the survey data to round to the nearest pound. Of course, we also need to take account of parking location and duration.

**Figure 3.13: The pattern of destination parking charges**



Source: NTS data 2002–8; Authors' analysis

Table 3.7 shows, for each parking category, the total number of parking acts, the percentage not paying any charge, and, for those who do pay, the average charge paid.

**Table 3.7: Proportion of destination parking which is paid**

|  | % of parking acts* | % acts not paid for | Average paid per paid parking act |
|---|---|---|---|
| On own/friends' premises | 6 | 99.8 | n/a |
| Firm/work car park | 24 | 98.8 | £1.48 |
| Other private car park | 2 | 97.8 | £2.16 |
| Public car park | 39 | 87.8 | £1.91 |
| Street | 29 | 98.6 | £1.91 |
| All locations | 100 | 94.5* | £1.89 |

Source: NTS data 2002–6 (weekdays only); Authors' analysis

*The proportions are slightly different from Table 21 because the 7% of trips which do not involve a parking act are excluded from this table.

Considering the first three categories, it is perhaps not surprising that payments are almost invariably not required. In the case of street parking, it may be that for VFR and escort purposes, parking is often covered by visitors' permits under a residents' parking scheme – the resident may have to pay for this, though the charge would not usually be passed on to the visitor. However, even in public car parks, the vast majority of people apparently do not pay. This may seem surprising, though of course many of these may be retail centres, etc., rather than managed car parks. With increasing duration of stay, there is a slight tendency for the proportion not paying to decrease, and the average amount paid to increase, but given the small numbers of people actually paying, the figures cannot be given with any reliability. Overall, the analysis suggests that, **excluding** any charges for residential parking, the average annual parking cost is about £41.50 per vehicle, and, with an average of 1.14 cars per household (NTS, 2008/09), this translates to about £47 per household per year.

Other information is available from the Living Costs and Food Survey (LCFS, formerly the Expenditure and Food Survey, and before that the Family Expenditure Survey). This shows that the average household spends £42 per year on 'Parking fees, tolls, and permits (excluding motoring fines)'. Since the average expenditure on motoring fines, which will include speeding and other offences, is small (£5 per year averaged over all households), virtually all of the £42 must be parking – either tickets, permits or penalties. The proportion of households recording some expenditure each week on personal (as opposed to public) transport is 74%, but only 28% of these households record any expenditure on parking. Of course, these figures include residential parking charges.

Hence, while it is difficult to pinpoint the average annual household expenditure on parking with any certainty, it seems certain to be less than £50. As usual, of course, such averages hide considerable variation: parking at an airport for a few days can easily cost in excess of £50. But in terms of overall car use, these are relatively rare events.

### 3.4   Likely future trends in demand

Undoubtedly the most obvious source of growth in the demand for parking is increased car ownership (though restricted parking availability may itself reduce car ownership). While we noted that the growth had slackened in recent years (at least partly for reasons associated with the economic climate), there is plenty of 'latent' demand, and official forecasts expect further growth, partly fuelled by continuing reductions in household size and increasing population. Even if there is some suggestion from the London data that the highest density areas may be 'choking off' further increases in car ownership, there is likely to be increased stress on residential parking.

On the other hand, there could be a shift in the pattern of destination parking, depending on the development of the labour market. We have seen that commuting is the dominant component of destination parking, both in terms of the volume of parking acts and the duration. If the proportion of those economically active falls (as expected with an ageing population), then the balance of demand may shift somewhat towards short-term parking. More flexible work patterns, including homeworking, could also contribute to this. If this process was well managed, then the required increase in non-residential parking supply could be lessened.

# 4. The Management of Parking

This section discusses how local authorities deal with parking, including the finances and the issue of parking tickets.

## 4.1 Legislation and history

At a seminar on car parking, the following suggestions for town centre parking policy were put forward:

"1 First and most important, the amount, location and operation (including price schedules) of a majority of town centre parking should come under public control.

2 The objective of this control should be to develop the parking so that its provision is broadly in line with available road space thus avoiding costly and avoidable congestion.

3 Price levels should be fixed to ensure that a reasonable supply of short-term parking is always available even at the expense of penalising the longer-term parker.

4 On-street parking should be primarily reserved for short-term parking and the area of public control should be sufficiently extensive to ensure that fringe parking on residential streets does not defeat the objectives of the policy.

The importance in the long term of such measures will depend to a degree on the extent to which it is proposed to accommodate the private vehicle."

The date of the seminar referred to was 1971 (Stamper, 1971), forty years ago, and eight years after the influential Buchanan Report (Crowther, 1963) was published. Parking meters had first been introduced in London in 1958, in the wake of the rapid growth in car ownership,[5] but the main control of parking was by means of restrictions, typically signalled by 'yellow lines' and enforced by the police and the police traffic warden service. Charging for parking was legislated for in the Road Traffic Regulation Act 1967 and substantially extended in the later 1984 Act. Residential Parking areas were already in force in London (e.g. Westminster) in 1971, but these too had to be enforced by police, and resources became increasingly limited.

In 1991, under the new Road Traffic Act 1991, parking offences were decriminalised and became civil offences, with enforcement undertaken by councils rather than the police (Decriminalised Parking Enforcement, DPE, later renamed Civil Parking Enforcement, CPE). The 33 London boroughs were the first to implement the changes in 1993/4, and were followed by councils outside London from the late 1990s onwards. A significant change in procedures followed the implementation of the Traffic Management Act 2004 (TMA), which laid down detailed provisions to ensure consistency and fairness, and which became effective from 2008.

Local authorities have to submit detailed proposals to control parking under CPE to the Secretary of State for Transport (England) or the Secretary of State for Wales and, once approved, the scheme operates under a Special Parking Order. Parking in breach of the regulations is Scotland is largely decriminalised in the large cities, but elsewhere it is still enforced by the police, who issue fixed penalty notices. In Northern Ireland it has been decriminalised since 2006 and is enforced by the Department of the Environment Roads Service.

Some parking offences, such as parking on zigzag lines on pedestrian crossings, remain criminal offences, enforced by the police and subject to penalty points on conviction. Even though parking on the Red Routes in London

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5    There were nearly 2 million cars registered in GB in 1950, nearly 5 million in 1960, and nearly 10 million in 1970.

is covered by CPE, for historic reasons these roads are enforced by police wardens who are now becoming Traffic Police Community Support Officers.

The number of councils in England with CPE outside London has risen from 28 in 2000 to approximately 240 at the time of writing. Allowing for some councils operating combined schemes, this represents a high proportion of the c.330 local authorities in England outside London.

DfT guidance to local authorities (DfT, 2010) states that parking policy should be designed to:

manage the traffic network to ensure the expeditious movement of traffic, (including pedestrians and cyclists), as required under the TMA network management duty;

- improve road safety;
- improve the local environment;
- improve the quality and accessibility of public transport;
- meet the needs of disabled people, some of whom will be unable to use public transport systems and thus depend entirely on the use of a car; and
- manage and reconcile the competing demands for kerb space of different users.

It is noteworthy that this contains no reference to meeting the demand for parking for legitimate everyday use of the car.

The Institution of Highways & Transportation (IHT, 2005) suggests that relevant objectives for parking might include:

- to provide parking to support the local economy;
- to manage parking to encourage short-stay visits in the town centre;
- to integrate the charges for parking with objectives for other modes of travel;
- to charge for parking to ensure a reasonable balance between the demand and supply for parking at all times; and
- to ensure that parking revenues cover parking costs.

Councils are obliged to consult with local residents and other relevant road users before introducing controlled parking or residents' parking schemes. They will normally conduct local parking surveys to measure stress on the local road network, which also provide benchmarks for post-implementation studies. Local councillors are, unsurprisingly, strongly influenced by local residents' views; thus the views of users of the streets for parking from outside the locality, for example commuters, do not get the same attention, although they also have a right to use the street. Local consultation also leads to anomalous decisions about the location of parking zones, with parts of streets being treated differently and parking restrictions being applied long distances from town centres or stations, with little transport logic behind them.

The acts also provide for appeals services, one for London (Parking and Traffic Appeals Service, PATAS), and one for the rest of England and Wales (Traffic Penalty Tribunal, TPT). Similar bodies operate in Scotland and Northern Ireland: the Scottish Parking Appeals Service and the Northern Ireland Traffic Penalty Tribunal. Motorists can appeal against penalty charge notices (PCNs) issued by councils, with appeals being heard by independent adjudicators in person, and now by telephone.

## 4.2  'Signs and lines' review

The management of parking is totally dependent on correct signage, including road markings. These are set down in great details in the Traffic Signs Regulations and General Directions (TSRGD), the latest version being published in 2002. However, there has been concern about their intelligibility and interpretation, with numerous appeals against PCNs being based on the accuracy or otherwise of the signs and lines.

The DfT therefore undertook a two-year period of discussion and research, the traffic signs policy review, sometimes known as the 'signs and lines' review, which culminated in the DfT Policy Paper *Signing the Way* (DfT, 2011d). Its main recommendations were to:

- provide more flexibility for local authorities;
- reduce signing on the road network;

- deliver effective enforcement;
- provide traffic signs for all road users;
- provide road users with better information; and
- develop local solutions built on local knowledge.

Implementation will be in stages, but the main changes will not be effective until the TSRGD are revised, which will not take place until 2014.

Specifically on parking, the recommendations are:

- Allow signs for electric cars and car clubs, park by phone and the like to be determined by local authorities.
- Provide more choice of marking of parking bays, including use of coloured surfaces and imposing fewer restrictions on the marking of bays, to eliminate rejections of PCNs on minor technical grounds.
- Eliminate the need for vertical roadside posts where the road markings are sufficiently clear.
- Simplify the wording on parking signs, particularly where it is not clear whether there are any restrictions outside the marked hours.
- Simplify signs and lines for area-wide parking, for example for restricted parking zones and permit-holders-only zones. Restricted parking zones can replace CPZs and reduce signs and lines by up to 80%.

The report does not address the issue of driver awareness of the restrictions on area-wide parking zones once they have passed the entry sign, which may be placed at a junction where there are many other signs and hazards to be observed. However, drivers need some guidance in large CPZs. For example, it could be made compulsory for all plates on individual bays within the zone to display the times restrictions are in force.

The Department will provide detailed advice on the provision and design of area-wide parking control which will set out a toolkit approach to the consideration of parking controls that meet the needs of users. Its main concern is to reduce the environmental impact both of the signs and of the parking restrictions themselves, and to ensure that zones are only introduced where there is a clear benefit and that they are appropriately sized. One suggestion is that proposed signs should be shown in the consultation for new Traffic Regulation Orders, so that the public and concerned organisations can comment on their intelligibility and positioning.

As all parking restrictions have to be supported by Traffic Regulation Orders and approved signs and lines, it is incumbent on local authorities to ensure that their procedures follow the appropriate legislation. A number of appeals against PCNs have been upheld by adjudicators because of discrepancies in the paperwork. Increasingly the use of digital maps and online resources has made the process easier, but councils need to be vigilant. Civil Enforcement Officers (CEOs) can perform a valuable role in reporting faulty signs and lines.

## 4.3  Local authorities' attitudes to parking policy

Local authorities are encouraged by the DfT guidance, and recommendations from the British Parking Association (BPA), to produce an annual report on their parking activities. In practice these vary – from brief reports to the relevant council committee, to well-produced 50-page documents which are interesting and informative about the council's policies and facilities, providing information on how enforcement is carried out. PATROL, which manages the out-of-London penalty appeals process, has for the last two years presented an award for the best annual parking report, but disappointingly only about 40 councils have submitted their reports. Many of the reports are published on the council websites; others are not.

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The following extracts give some indication of how local authorities view their parking provision:

**London Borough of Camden (Camden Parking Report, 2011: 2):**

> "Demand for parking in Camden far outstrips the supply of kerb space available and the Council seeks to maintain an active balance between the different demands – from residents, their visitors, businesses and their deliveries and customers, access for disabled people, etc. This also needs to be balanced with the duty on the Council to keep traffic moving, avoiding unsafe and obstructive parking, and making sure there is good access for pedestrians, cyclists, buses and vehicles of all sorts."

**Royal Borough of Kensington and Chelsea (2009: 5):**

> "Parking controls play an important part in the Council's transport strategy by regulating the amount of traffic within the Royal Borough and encouraging the use of public transport.
>
> We believe that parking issues affect everyone that uses our streets not only car owners.
>
> Demand for parking in Kensington and Chelsea far outweighs the supply of kerb space available and the Council seeks to maintain a balance between the different demands – from residents, businesses and visitors, whilst ensuring there is good access for pedestrians, bicyclists, buses and other vehicles. Our general policy is to provide the maximum number of car parking spaces while allowing the satisfactory and safe movement for traffic and the maintenance of a good quality residential environment. When allocating car parking spaces the needs of residents are the Council's primary consideration. Where possible, we cater for a minimum basic demand for visitor parking, after providing for residents and loading requirements.
>
> The Council constantly monitors and reviews its parking policies to ensure that they meet the needs of the local community and reflect the Council's transport policy objectives."

**Sheffield City Council (2011: 3):**

> "Our key concern is to ensure that the road network operates at maximum effectiveness, balances conflicting demands, is fair to law abiding and observant road users, and is considerate of any individual circumstances put forward in mitigation of offences.

We understand that different groups across the city will have different parking needs. Our aim is to balance these needs, to make sure that the system is fair for all. Whilst parking restrictions are rarely popular with motorists, without them there would be significantly higher levels of congestion and even gridlock…

Residents, businesses, commuters, people with disabilities, shoppers, students and visitors are just some of the groups who have differing needs for parking and travel. Traffic and parking management are the ways that the council makes sure that available parking areas can be shared in a fair and transparent way. They are not revenue raising tools, no "targets" are set, and any surplus income is invested in traffic management improvements."

**Brighton & Hove City Council (2010: 4):**

"[Our parking policy objectives are to]
- Reduce congestion and keep traffic moving
- Provide access to those that need it most
- Deliver excellent customer service"

**Cornwall County Council (2010: 3):**

"Enforcement objectives are compatible with those of The Local Transport Plan (LTP):-
- To reduce congestion, and thereby
- To improve air quality
- To maximise safety
- To support economic regeneration

These objectives formed the basis for determining enforcement priorities and levels. Criteria were developed based on existing hierarchies of roads and on the strategic importance given to towns and villages by the LTP."

Key concepts for parking policy that emerge from these reports are:

- the need to reduce congestion;
- safety; and
- the need for balance between the needs of different road users.

There are differing views on the value of parking provision for visitors – a council such as Cornwall, which is very dependent on tourists, sees it as much more important than Kensington and Chelsea, where the needs of local residents take priority since shoppers are more likely to come by public transport.
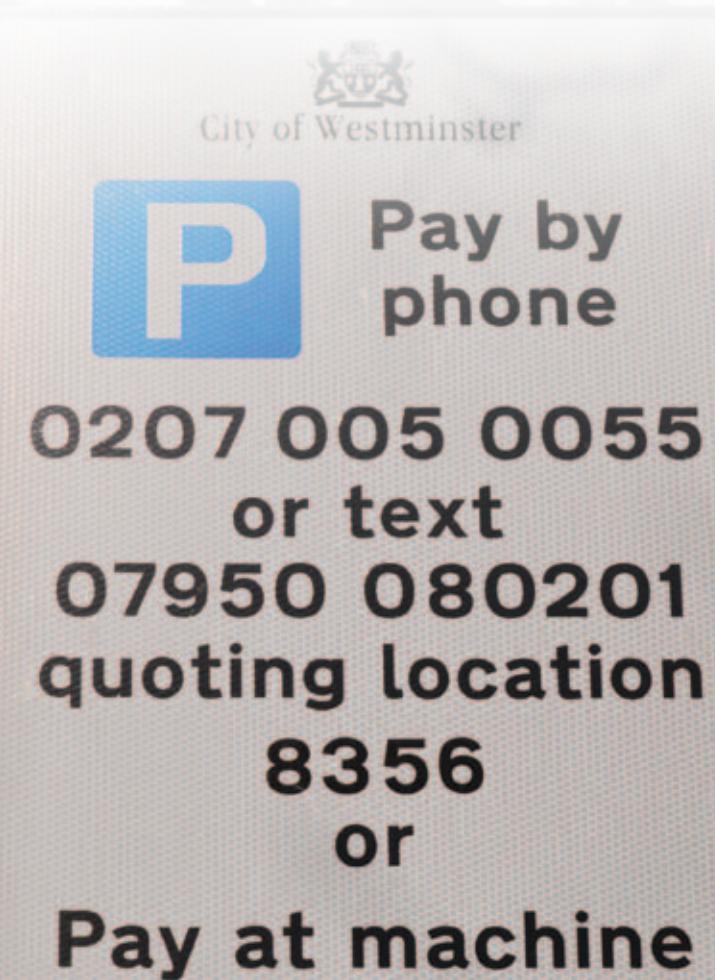
## 4.4 Current legislation in practice

### 4.4.1 Pricing

Pricing is almost invariably designed to encourage short-term parking close to the city centre and to provide cheaper parking on the outskirts for long-term parking, including commuter provision. The aim is to create turnover of spaces so that more visitors can use the city centre facilities. In some local shopping areas, shoppers are allowed a free period of up to half an hour to enable the quick purchase of a few items, but a parking ticket still has to be obtained from the pay-and-display machine to control the time of arrival and departure. This system has been extensively trialled and monitored in Germany and Norway and has been shown to make no difference at all to retail activity, but has proved useful as a gesture to local traders and residents.

Milton Keynes introduced premium parking for bays closest to the shopping centres, but has had to withdraw the differential following complaints from users.

In December 2011, the Department for Business, Innovation and Skills published a report by Mary Portas, the shopping expert, entitled *High Street Review* (Portas, 2011). One of her recommendations was more free parking in high streets as a way of encouraging shoppers to use the high street rather than out-of-town shopping centres where parking is generally free. However, there is evidence that such free parking is taken up by shop staff preferentially and that it does not provide the additional resource for shoppers.

Relatively little work has been done on the effect of pricing on behaviour. A very early, and seemingly unique, study carried out by the Road Research Laboratory in Westminster in 1965 (Inwood, 1966, quoted by Shoup, 2011) measured the effects of increasing meter prices in different parts of the City of Westminster. Where the price was quadrupled, sufficient spaces became available to reduce by 66% the time taken by a motorist to search for a space, park and walk to the destination; where they were doubled, the time reduced by 38%, and where there was no change, the time was down by 4%. Shoup (2005) (in the US context where on-street parking is generally free) suggests a simple algorithm for local authorities to set their on-street charges:

1. Look to see if your parking lot is full or empty.
2. Check your competition (off-street commercial car parks).
3. If you are full and they are empty, raise your price.
4. If you are empty and they are full, lower your price.

He adds:

> "Pricing curb parking to ensure a few vacancies and reduce cruising does not mean that travel will become unaffordable. As drivers adapt to the higher money cost of parking and lower time cost of driving, they can employ several strategies to economize on parking:
>
> - They can reduce their parking durations.
> - They can carpool and split the cost of parking.
> - They can park off-street.
> - They can divert some trips to off-peak hours when parking is cheaper.
> - They can make more trips by public transit, cycling, and walking.
>
> Each strategy reduces peak-hour parking use. Note especially that diverting trips to walking, cycling, high-occupancy vehicles, and public transit reduces vehicle travel without reducing human travel, and all real travel is by people, not cars."

## 4.4.2 Remote payment

When the RAC Foundation published its last report on parking in 2004, pay-by-phone parking was just being introduced. It is now widespread, and some boroughs such as Westminster have eliminated on-street cash machines altogether. The majority of local authorities (and rail companies) now use one of two suppliers: RingGo and PayByPhone. Once a motorist has registered their mobile phone with one supplier, they can use the same account in a number of different locations. Payment by phone avoids the need for small change, it provides a reminder when time is up, and generally allows for

parking to be extended up to the time limit on the parking place. For the council it is generally cheaper and safer than cash, although some councils feel that the charges by the commercial companies are too high and offset many of the benefits, which include the elimination of the problems of machine maintenance, vandalism and theft. Residents can purchase visitors' permits through the same mechanism, thereby avoiding the need for scratch cards. Smartphone apps and VAT receipts are further enhancements. There remains, however, the issue of how those without credit cards or mobile phones can pay, as cash is still legal tender.

### 4.4.3 Enforcement

Enforcement can be carried out by councils' own staff or by contractors. A survey undertaken by the BPA in January 2011 showed that the vast majority of local authorities favoured outsourcing.[6] Out of the 150 authorities questioned, 94 (62%) stated that they outsource some aspects of their parking services, 22% had them entirely in-house, and 15% either did not operate CPE or failed to answer the question.

Councils are increasingly using both fixed and mobile cameras to enforce parking infringements (as well as moving traffic offences, such as illegal use of bus lanes and banned turns). Camera enforcement has been used in London since 1998, and became possible in the rest of England when the TMA 2004 allowed PCNs to be issued by post together with a photograph of the offence. Fixed cameras can cover shopping areas or main through-routes, and monitor both parking and moving offences. Mobile camera enforcement is particularly valuable for enforcing zigzag lines outside schools, where badly parked cars can be a significant safety hazard for young children.

Council housing estates are often a problem because of abandoned and unregistered cars. Councils undertake joint enforcement activities with the police and DVLA (Driver and Vehicle Licensing Agency) to identify and remove such vehicles, often uncovering other crimes.

### 4.4.4 Environmental initiatives

Councils have started to provide free residents' permits parking for low-emission vehicles, and free dedicated parking bays for electric vehicles to recharge and for car clubs. (See, for example, recommendations in Hanley, 2011.) However, all cars take up kerb space and cause congestion, regardless of fuel type. Some councils have differential parking charges for high-emission vehicles, but in Richmond upon Thames these proved so unpopular that they were abandoned.

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6    Private communication.

### 4.4.5 Review of parking restrictions.
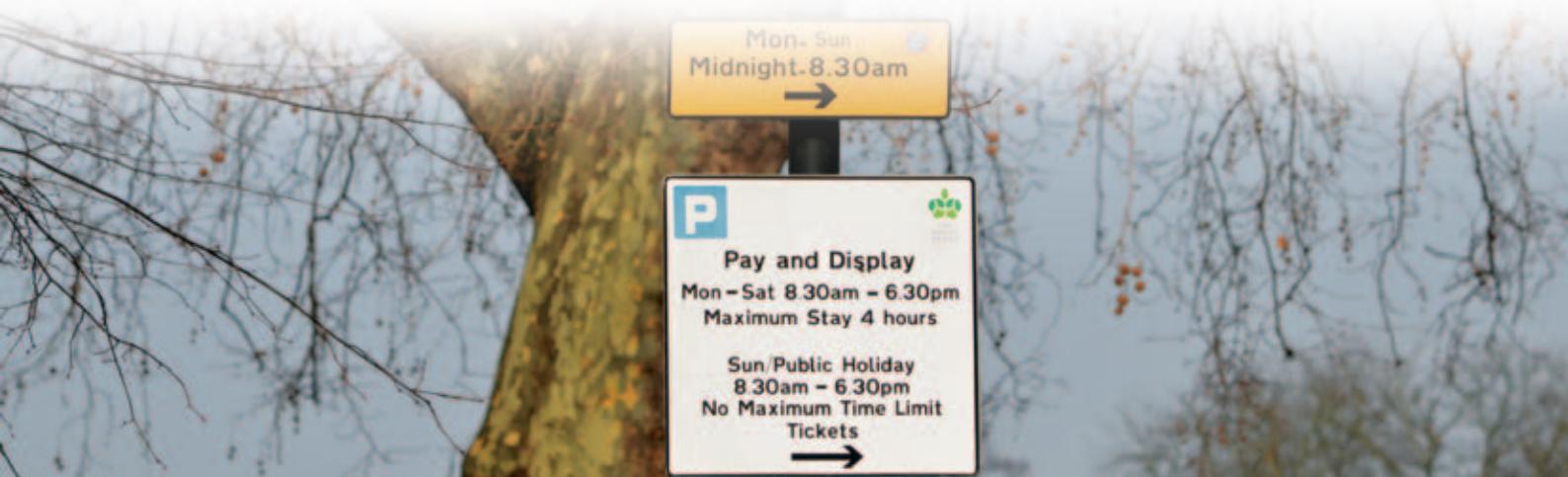
Good practice suggests that parking restrictions should be reviewed regularly. There is a trend towards adding restrictions in response to pressure from residents, or from bus companies where reliability is impeded by parked vehicles. However, it is rare for councils to consider whether restrictions could be lifted or amended, for example by replacing a single yellow line with residents' permit bays. Changes will inevitably be slight, because land-use changes are slow. It is only if there is a major change, such as a large school opening or a big factory closing, that a significant change in restrictions might be appropriate.

A major exercise was undertaken some years ago by an Inner London borough, probably stimulated by political objectives, to review the parking restrictions in a residential area, which led to the provision of a number of additional residents' bays. In Bromley, a local supermarket with a multistorey car park was being redeveloped, leading to a temporary loss of off-street parking bays. The council reviewed its on-street parking arrangements and was able to create a number of additional bays which offset the loss. The council is still reviewing whether to revert to the previous on-street arrangement. Other boroughs have also reduced the length of yellow lines in order to increase capacity.

### 4.4.6 Holiday, Sunday and night-time enforcement

There is considerable confusion amongst motorists as to whether parking controls operate on bank holidays, as different councils take different attitudes. A number of councils have Traffic Regulation Orders which exclude bank holidays or do not enforce on bank holidays, as parked vehicles are less likely to cause obstructions and it encourages visitors to come to shop and sightsee. Councils may specifically advertise that they will be offering free parking over Christmas. Other councils only enforce restrictions which apply at all times (such as double yellow or red lines). Information to motorists is variable – Westminster puts temporary stickers on its parking signs ahead of bank holidays to indicate that there is no restriction; Watford has permanent signs at entry points to the town indicating that parking restrictions still apply on bank holidays.

Many councils do not enforce restrictions overnight on double yellow lines, leading to parking in potentially dangerous areas. Some have wardens on call out of normal hours to respond to specific illegal and dangerous parking.

Councils are now widely introducing parking charges on Sundays, as local shopping centres can then be as busy as, or busier than, on weekdays. Birmingham, Manchester, Stoke, Hereford and Nottingham have introduced such schemes, with Chichester and Salford planning to do so later in 2012. One of the problems is that shop staff, who during the week do not use their car, come in early by car on Sunday, leaving no space for shoppers.

Westminster was planning to introduce charges from January 2012 at its parking bays in central London in the evening and on Sundays, as it claims that congestion and overcrowding in these periods is now as bad as on weekdays in the daytime. This was challenged by local businesses, who are concerned that the primary objective is fundraising rather than traffic management, with the result that the change is not now going to be implemented before late in 2012, if indeed at all.

## 4.5 Penalty charges

In July 2007, parking offences were categorised into higher- and lower-level penalties, determined originally by London Councils for the London boroughs, and then used in the rest of the country. Table 4.1 shows the penalty charges in different regions associated with these levels. Higher penalty offences include parking on yellow lines or in resident parking zones without a permit, while the lesser offences include overstaying the time on a meter or parking in an off-street car park without paying (PATROL, 2012).

**Table 4.1: Level of penalty charges in 2012**

| Region | Band | Charge level | |
|---|---|---|---|
| | | Higher | Lower |
| London | Band A | £130 | £80 |
| | Band B | £110 | £60 |
| Out of London | Band 1 | £60 | £40 |
| | Band 2 | £70 | £50 |

Source: London Councils, PATROL (2012)

Councils can define areas as Band A or B, or 1 or 2, according to the parking conditions in the area. The charges are all halved for prompt payment.

The penalty charges are set in London by London Councils, and elsewhere by the DfT. They are updated every few years but can get out of step with parking charges. For example the daily off-street parking rate in the centre of Cambridge is £37 compared with a possible £30 penalty on-street (£60 discounted by 50% for prompt payment).

Numerous websites have grown up to offer information to motorists about how parking regulations work and how they can appeal.[7]

In total in 2009/10, 7.1 million on-street PCNs were issued: 4.0 million in London (representing 56%) and 3.1 million in the rest of England. A further 1.8 million tickets were issued for off-street parking: 0.7 million in London (39%) and 1.1 million outside London. The smaller proportion of off-street tickets in London is a result of there being fewer council-run off-street sites, particularly in central London. Table 4.2 sets out the numbers issued for on-street offences.

**Table 4.2: Penalty charge notices issued on-street by area type, England, 2000 to 2009/10 (thousands)**

| Year | London | English metropolitan areas | English non-metropolitan areas | England | Authorities with CPE powers |
|---|---|---|---|---|---|
| 2000 | 4,021 | 192 | 444 | 4,657 | 28 |
| 2001 | 4,222 | 332 | 749 | 5,303 | 46 |
| 2002 | 4,799 | 504 | 1,114 | 6,417 | 67 |
| 2003 | 5,053 | 612 | 1,447 | 7,112 | 87 |
| 2004 | 5,392 | 661 | 1,630 | 7,683 | 121 |
| 2005 | 5,060 | 836 | 1,812 | 7,708 | 143 |
| 2006 | 5,180 | 910 | 1,823 | 7,913 | 164 |
| 2007 | 5,081 | 930 | 2,092 | 8,103 | 202 |
| 2007/8 | 5,103 | 908 | 1,956 | 7,967 | 203 |
| 2008/9 | 4,339 | 913 | 2,166 | 7,417 | 244 |
| 2009/10 | 4,023 | 942 | 2,175 | 7,140 | 237 |
| **Cars in use, 2009/10 (million)** | **3.1** | **4.9** | **14.8** | **22.8** | |

Source: DfT annual survey of local authorities with CPE powers (DfT, 2011a)
Notes:
1. Data imputed for missing values.
2. London counts as one authority. Some local authorities joined the scheme during the year and the figures presented therefore include partial years.
3. Until 2007, data on on-street parking was collected for calendar years.
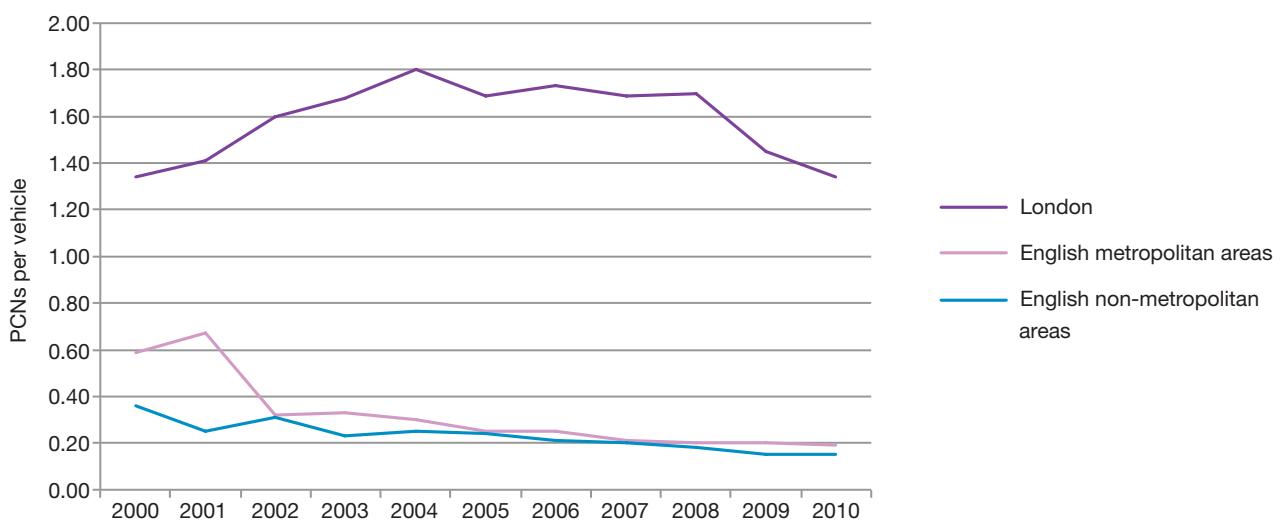
The number of PCNs issued per vehicle can be related to the number of vehicles in use in the areas with CPE, as shown in Figure 4.1. In London, on average every vehicle registered in London received 1.4 tickets per year in 2009/10,

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7    For example, see www.newparkinglaws.co.uk or www.moneysavingexpert.com/reclaim/parking-ticket-appeals.

although this has fallen from a peak of nearly 1.8 in 2004. This figure almost certainly overestimates the proportion, as there are additional non-London-registered vehicles in the city during the day as a result of inward commuters. However, it is almost an order of magnitude more than in areas of England outside London, where the figure now stands at about 0.17 tickets for every vehicle. There is little difference between metropolitan and non-metropolitan areas, but the ratio is nearer 0.2 in the South East and 0.1 in the West Midlands.

Both in London and outside, the number has fallen, largely as a result of more rigorous enforcement, leading to greater conformity by motorists.

**Figure 4.1: Number of on-street PCNs per vehicle related to number of cars registered in relevant area**



Source: DfT annual survey of local authorities with CPE powers, and authors' estimates
For notes, see Table 4.2 above.

If a PCN (on- or off-street) is paid within 14 or 21 (depending on local authority) days, the penalty is halved. Between 50% and 58% of PCNs are paid within that period, the proportion having increased since 2000 – see Figures 4.2 and 4.3. Anecdotally, drivers increasingly accept the penalty as a cost of motoring, having taken the chance that they will not get caught. They are then likely to pay promptly, if reluctantly, particularly as the cost of the penalty could rise. In England, 15% are paid in full, after the discount period has expired (DfT, 2011c).
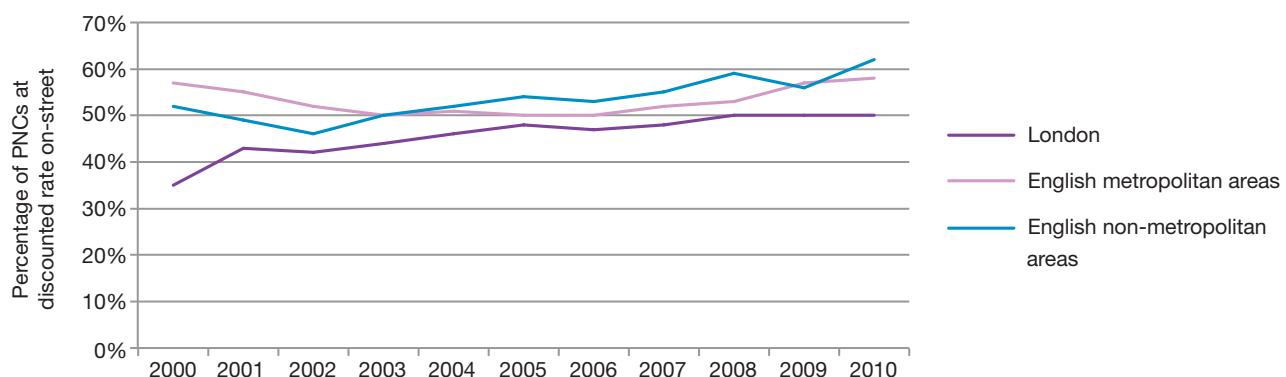
A PCN can be challenged informally when it is received, and the council has the discretion to cancel it, for instance if a ticket was purchased but not visible to the parking attendant (the CEO). If the council rejects the informal challenge and the ticket is not paid, the council will send a formal 'Notice to Owner' (NTO) outlining the appeal procedure.

Around a quarter of PCNs are challenged informally, of which half are cancelled. The rest may be paid, appealed through one of the parking adjudication services, and some will remain unpaid. Of those challenged, one fifth (4% of all PCNs) in London and one tenth (3% of all PCNs) outside London are written off at the discretion of the local authority, despite there being no obvious reason the PCN was incorrectly issued.

About one third of challenged PCNs (6% of all PCNs) are written off on the basis that additional information has been provided by the motorist, or the PCN was incorrectly issued for statutory reasons (wrongly completed by the CEO, errors in traffic orders, signs or lines etc.).

Local authorities can then apply to the county court to take civil action to recover the remaining unpaid tickets as civil debts. These are handled centrally by the Traffic Enforcement Centre, part of Northampton County Court.

**Figure 4.2: Trend in proportion of on-street PCNs paid at the discounted rate**



Source: DfT annual survey of local authorities with CPE powers, and authors' estimates
For notes, see Table 4.2 above.

**Figure 4.3: Trend in proportion of off-street PCNs paid at the discounted rate**
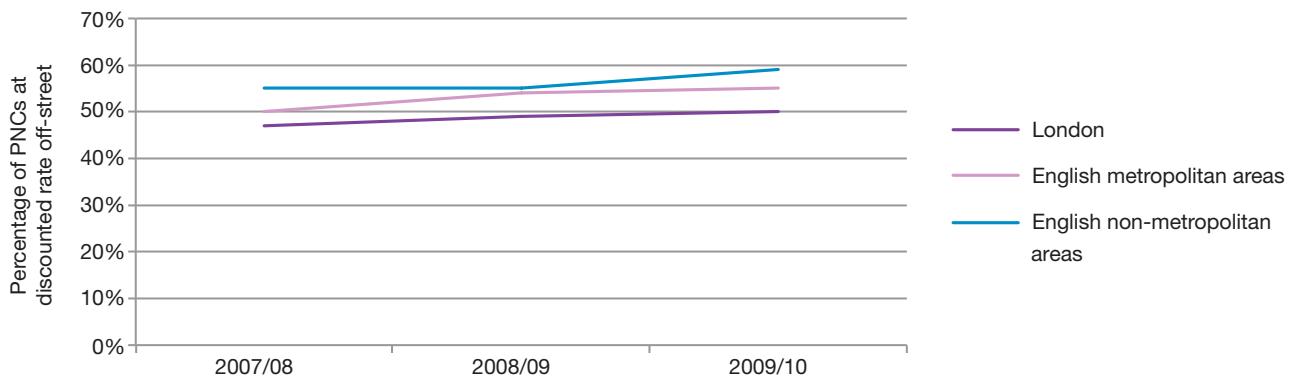


Table 4.3 shows the proportion of PCNs analysed by on and off- street and whether the PCN was paid at a discount or in full. On average, 70% of PCNs are paid – 65% of those issued in London and 72% of those outside London. Of these, just over three quarters (77%) are paid at the discounted rate.

**Table 4.3: Analysis of on- and off-street PCNs (2009/10)**

| Percentage of PCNs issued | Total (thousands) | % split | | Paid at discount (%) | Paid in full (%) | % split | | Challenged (%) |
|---|---|---|---|---|---|---|---|---|
| | | Higher rate | Lower rate | | | Paid | Not paid | |
| **On-street** | | | | | | | | |
| London | 4,023 | 79 | 21 | 50 | 16 | 65 | 35 | 18 |
| Rest of England | 3,117 | 63 | 37 | 58 | 14 | 73 | 26 | 25 |
| **England** | **7,140** | **70** | **30** | **53** | **15** | **70** | **30** | **22** |
| **Off-street** | | | | | | | | |
| London | 660 | 17 | 83 | 53 | 14 | 70 | 30 | 15 |
| Rest of England | 1,139 | 13 | 87 | 56 | 13 | 69 | 31 | 32 |
| **England** | **1,799** | **14** | **86** | **56** | **13** | **69** | **31** | **30** |
| **Total** | | | | | | | | |
| London | 4,683 | 76 | 24 | 47 | 16 | 64 | 36 | 18 |
| Rest of England | 4,256 | 50 | 50 | 57 | 14 | 72 | 28 | 27 |
| **England** | **8,939** | **60** | **40** | **54** | **15** | **70** | **30** | **24** |

Source: DfT, London Councils and Traffic Penalty Tribunal data.
Note: Data is not consistent between sources.

## 4.6 Appeals

Following an unsuccessful formal challenge and the issuing of an NTO, the PCN can be appealed. Just over 1% of PCNs are appealed in London, compared with about 0.3% in the rest of England. Of the appeals, roughly equal numbers are not contested by the council, allowed and refused, meaning that two thirds of appeals are successful, one third not successful (see Tables 4.4 and 4.5).

**Table 4.4: Parking appeals in London**

| Year | Appeals received | PCNs issued | PCNs appealed (%) | Appeals not contested (%) | Appeals allowed (%) | Appeals refused or withdrawn (%) |
|------|------------------|-------------|-------------------|---------------------------|---------------------|----------------------------------|
| 2003/4 | 44,280 | 5,178,879 | 0.86 | 29 | 29 | 41 |
| 2004/5 | 54,526 | 5,000,283 | 1.09 | 31 | 32 | 40 |
| 2005/6 | 48,277 | 5,075,478 | 0.95 | 25 | 33 | 47 |
| 2006/7 | 51,484 | 5,206,738 | 0.99 | 36 | 39 | 35 |
| 2007/8 | 57,851 | 5,268,382 | 1.10 | 39 | 27 | 25 |
| 2008/9 | 68,090 | 4,689,399 | 1.45 | 42 | 25 | 25 |
| 2009/10 | 50,185 | 4,151,901 | 1.21 | 37 | 31 | 39 |
| 2010/11 | 51,773 | 4,022,476 | 1.29 | 25 | 34 | 58 |

Source: PATAS annual reports
Note: Totals do not add up to 100 because of carry-over of cases from year to year.

**Table 4.5: Appeals outside London**

| Year | Appeals received | PCNs issued | PCNs appealed (%) | Appeals not contested (%) | Appeals allowed (%) | Appeals refused or withdrawn (%) |
|------|------------------|-------------|-------------------|---------------------------|---------------------|----------------------------------|
| 2003 | 9,213 | 2,500,398 | 0.37 | 37 | 28 | 33 |
| 2004 | 10,441 | 2,853,089 | 0.37 | 35 | 27 | 38 |
| 2005 | 9,449 | 3,402,860 | 0.28 | 29 | 27 | 43 |
| 2006 | 9,968 | 3,568,462 | 0.28 | 37 | 31 | 30 |
| 2007–8 | 11,182 | 3,832,322 | 0.29 | 31 | 29 | 39 |
| 2008–9 | 12,423 | 4,035,555 | 0.31 | 34 | 29 | 35 |
| 2009–10 | 14,269 | 4,245,998 | 0.34 | 27 | 29 | 41 |

Source: TPT annual reports
Note: Totals do not add up to 100 because of carry-over of cases from year to year. Until 2007, data on on-street parking was collected for calendar years.

Councils do not always contest appeals for a number of reasons, including failure to prepare the case in time, or the appellant producing further (and better) information to the adjudicator (even though the council may have rejected the motorist's informal challenge to the council).

There is a wide range in the percentage rate of appeals and of appeals allowed, reflecting different approaches to informal appeals. Of Lambeth's PCNs, 2.7% are appealed, and they have an 82% success rate on appeal. Hillingdon's appeals amount to 0.3%, with only 50% being successful.

These figures show the much higher level of parking control in London compared with the rest of England, although there has been greater compliance (measured by the number of PCNs) in recent years. Drivers generally take advantage of the 50% early payment discount, even though a quarter of PCNs are challenged. However, formal appeals represent a small proportion of the total issued and there is an evens chance of the appeal not being upheld.

## 4.7 Council finances

The legislation prescribes how the income from parking can be used by local councils. Before CPE, income was retained by central government. Under the new environment, councils are allowed to keep the surplus from on-street parking after expenses, but it has to be used for transport-related expenditure. The surplus from off-street parking can be used to offset any council expenditure. Councils judged "excellent" by the Audit Commission are also allowed to use the surplus from on-street parking for non-transport projects.

Councils are obliged to report their parking income and expenditure to the Department for Communities and Local Government (DCLG); the DfT records the total number of penalties and payment details, while the appeals tribunals publish the number of appeals on their comprehensive websites.[8] (The Scottish Parking Appeals Service does not have a website.)

The analysis that follows draws from DCLG data on local authority finances in England (DCLG, 2010a), based on returns from local authorities, according to a detailed formula of accounts to ensure consistency between authorities. London data includes the 32 London boroughs, the City of London and TfL. It does not include any data on private parking revenues.

8    PATAS: www.parkingandtrafficappeals.gov.uk; TPT: www.trafficpenaltytribunal.gov.uk

**Table 4.6: Income and expenditure from parking in England, 2009/10**

| | London | | Rest of England | |
|---|---|---|---|---|
| | £ million | % of total income | £ million | % of total income |
| **Income from parking** | | | | |
| On-street fees (including permits) | 231 | 43 | 140 | 17 |
| On-street penalties (PCNs) | 234 | 43 | 104 | 13 |
| **Total on-street** | **465** | **86** | **244** | **30** |
| | | | | |
| **Total off-street** | **77** | **14** | **566** | **70** |
| | | | | |
| **Total income** | **542** | **100** | **810** | **100** |
| | | | | |
| **Current expenditure on parking** | | | | |
| *On-street* | | | | |
| Employees | 65 | 12 | 53 | 7 |
| Other expenditure (running expenses) | 251 | 46 | 137 | 17 |
| **Total on-street** | **316** | **58** | **190** | **23** |
| | | | | |
| *Off-street* | | | | |
| Employees | 6 | 1 | 68 | 8 |
| Other expenditure | 40 | 7 | 240 | 30 |
| **Total off-street** | **46** | **8** | **308** | **38** |
| | | | | |
| **Total current expenditure** | **362** | **67** | **498** | **61** |
| | | | | |
| **Surplus on current a/c parking** | | | | |
| On-street | 149 | 27 | 54 | 7 |
| Off-street | 31 | 6 | 256 | 32 |
| | | | | |
| **Total parking current a/c surplus** | **180** | **33** | **310** | **39** |
| | | | | |
| **Capital charges** | | | | |
| On-street | 6 | 1 | 12 | 1 |
| Off-street | 4 | 1 | 144 | 18 |

Source: DCLG (2010c)
Note: Where sub-contractors are used, their employee costs will appear under 'other expenditure' not 'employees'.

Total parking income (fees and penalties) for the whole of England is
£1.35 billion (see Table 4.6), which represents about £55 per car. This is similar
a similar figure to that derived from the LCFS data for Great Britain (noted
at the end of section 3.3), which shows the average family with a car paying
about £56 per year per car on parking. However, this figure also includes any
paid for private parking, which is not included in the DCLG data. In any case,
either figure is low compared with about £1,600 per year for fuel, so parking
represents only a small proportion of the total cost of running a car (RAC, 2011).

There is relatively little public off-street parking in London. Where it exists, it is
found mainly in the outer suburbs. In central London, the majority is provided
by private companies. In London only 14% of parking income comes from off-
street, 42% from on-street, and a similar proportion to that from penalties.

Outside London – where most public off-street parking is provided by the local
authority – 70% of income is from off-street parking, 17% from on-street and
only 13% from penalties.

Of the total income from on-street parking in London, half comes from parking
fees and permits, and half from penalties. Outside London, the ratio is around
55:45.

London boroughs make most of their current account surplus from on-street
parking, the total parking surplus amounting to 33% of their parking income.
Outside London, the surplus represents 39%, of which over 80% is from off-
street parking. However, capital charges, largely for off-street car parks, reduce
the surplus to 19% of income.

**Table 4.7: The top boroughs in London for parking surpluses
(£ million, 2009/10)**

| Borough | Income | Expenditure | Surplus |
|---|---|---|---|
| Westminster | 83 | 48 | 35 |
| Kensington & Chelsea | 39 | 16 | 23 |
| Camden | 41 | 27 | 14 |
| Hammersmith & Fulham | 23 | 11 | 12 |
| Wandsworth | 24 | 12 | 12 |

Source: DCLG (2010c)

Together these five boroughs account for over half of the parking surpluses in
London. No London borough has a deficit on its parking account – the lowest
is Havering with a £0.4 million surplus in 2009/10.

The parking surplus outside London is nearly twice that in London, as a result of the high income from off-street parking. Of the 300 local authorities outside London (see Table 4.8) with income from parking (including the 240 with CPE), 250 show parking surpluses and 50 show losses.

**Table 4.8: Top local authorities outside London for parking surpluses (£ million, 2009/10)**

| Local authority | Income | Expenditure | Surplus |
|---|---|---|---|
| Brighton & Hove Unitary Authority (UA) | 22 | 10 | 12 |
| Cornwall UA | 14 | 4 | 10 |
| Leeds | 12 | 5 | 7 |
| Bath & North East Somerset UA | 11 | 5 | 6 |
| Milton Keynes UA | 9 | 3 | 6 |
| Birmingham | 19 | 13 | 6 |
| Guildford | 9 | 4 | 5 |

Source: DCLG (2010c)

The biggest losses are in West Sussex, Norfolk and Surrey, which each lost around £1 million in 2009/10 (see Table 4.9).

**Table 4.9: Local authorities with largest losses on parking (£ million, 2009/10)**

| Local authority | Income | Expenditure | Loss |
|---|---|---|---|
| West Sussex* | 2.9 | 3.9 | 0.9 |
| Norfolk** | 0.7 | 1.7 | 1.0 |
| Surrey* | 1.7 | 2.8 | 1.1 |

Source: DCLG (2010c)
Notes: * on-street; ** off-street

The surplus on parking can be compared with the total expenditure on transport, shown in Table 4.10. Congestion charging in London raised £153 million in 2009/10, as much as 85% of the £180 million total parking surplus of all the London boroughs combined. This surplus is also very similar to the subsidy for concessionary fares in London of £189 million. It should be noted that according to London Councils (which administers the scheme in London), their total expenditure on concessionary fares was £235 million, so there is some concern about the reliability of the DCLG data.

**Table 4.10: Total highways and transport revenue expenditure (£ million, 2009/10)**

| Expenditure item | London | Rest of England |
|---|---|---|
| Highways and roads – maintenance | 419 | 1,765 |
| Concessionary fares | 189 | 810 |
| Public transport coordination | 180 | 396 |
| Support to operators – bus services | 690 | 381 |
| Support to operators – rail services | 862 | 300 |
| Transport planning, policy and strategy | 53 | 260 |
| Traffic management | 343 | 178 |
| Road safety education | 12 | 112 |
| Support to operators – other | 195 | 33 |
| Congestion charging (net of collection) | −153 | 0 |
| Airports, harbours and toll facilities | 0 | −6 |
| On-street parking current a/c surplus | −149 | −54 |
| Off-street parking current a/c surplus | −31 | −256 |
| **Total highways and transport services** | **2,611** | **3,920** |

Source: DCLG (2010c)

In spite of some uncertainty as to accuracy, this table certainly shows that net parking receipts are a small proportion (8% outside London, 7% within the capital) of total revenue expenditure by local government on transport.

## 4.8 Compliance

Councils rarely measure the effectiveness of their parking policies by undertaking compliance surveys to measure the level of illegal parking. They do report on improvements to road safety or traffic flow, and these can be partly attributed to parking controls – but they are also influenced by other traffic management measures.

Leeds City Council carries out a survey of illegal parking on the same spaces in the city every year in the last week of November, a period selected to avoid seasonal effects such as school holidays. Three areas are chosen to try to reflect the variety of areas across the district, and the number of vehicles parked illegally is recorded by independent assessors. This is more reliable than measuring the number of tickets issued, as that might reflect enforcement levels, deployment, additional restrictions and so on, rather than how many offences are being committed. The results are shown in Table 4.11.

**Table 4.11: Number of illegally parked vehicles in Leeds**

| Area | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|
| Commuter area | 198 | 77 | 46 | 59 | 64 | 20 |
| Disabled parking area | 178 | 87 | 42 | 47 | 42 | 12 |
| City centre shopping area | 255 | 56 | 59 | 90 | 82 | 61 |
| **Total** | **631** | **220** | **147** | **196** | **188** | **113** |

Source: Leeds City Council (2010)

The council took over enforcement powers in 2005, following which there was a sharp drop in illegal parking.

London Councils commissioned Colin Buchanan & Partners in December 2010 to establish a methodology for measuring compliance with parking regulations across London, and to establish a benchmark of what constitutes an acceptable level of parking compliance. Their desktop study (Colin Buchanan, 2011) showed that only limited information was available from London boroughs and TfL.

At present there is no standard method of compliance monitoring used by boroughs across London, and different boroughs use various methods to survey and analyse compliance. Levels of compliance recorded vary greatly by street and borough, with further complexity introduced by differences in land use, types of restriction, and enforcement levels.

The number of PCNs issued – over 4 million, or 1.4 per car, in London in 2009/10 – shows there is a high level of non-compliance, although the number of PCNs has dropped from a peak of 5.4 million in 2004. This decline can be attributed to a number of reasons:
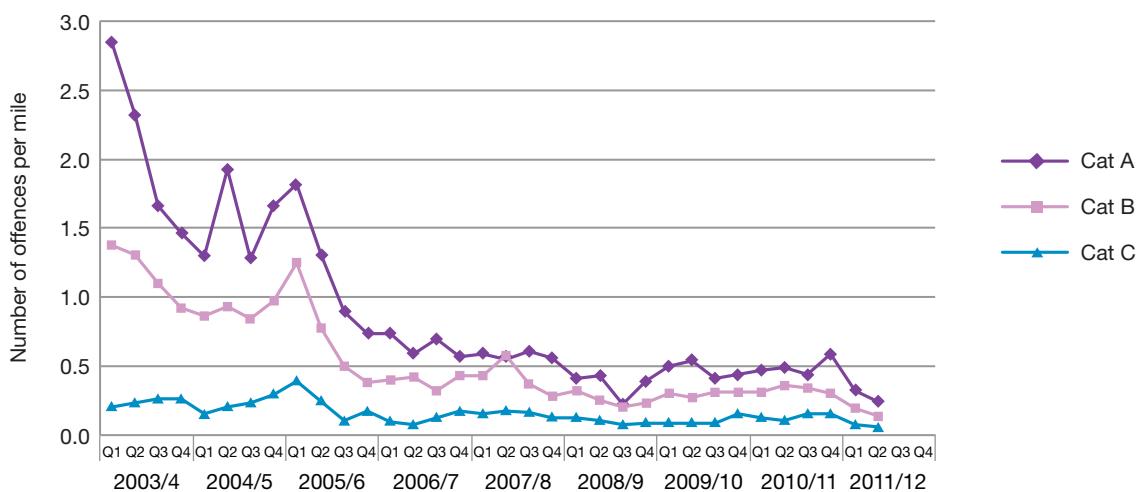
- greater enforcement;
- greater caution by motorists about where they park;
- reduction in car usage in London (car modal share has dropped from 40% to 37% of journeys from 2004 to 2010 – see TfL, 2011); and/or
- the recession.

However, data provided by boroughs did not suggest any relationships between penalties, traffic volumes, parking stress and total number of parking acts which could be used as compliance 'proxies' across London.

The Buchanan report's conclusions were that PCN issue is a crude measure of non-compliance, and that only wide-scale on-street surveys, by boroughs but ideally standardised across boroughs, should be used to measure it, taking into account the economic disbenefits of different forms of non-compliant parking behaviour.

The Buchanan report did not mention the quarterly Red Route compliance survey carried out by the Metropolitan Police Service Safer Transport Command to help measure the effectiveness of compliance activity on the 6% of London's main roads managed by TfL (the TLRN, or Red Route network), which carry about 30% of London's traffic. The survey has been in operation since 2001 and is measured by police staff in a vehicle travelling along the whole of the TLRN spread over a three-month period, with the occupants noting down the number of parking offences per mile on the Red Route itself (not those committed in loading/parking bays, etc.). The number of observed Red Route contraventions is divided by the number of miles driven to identify the rate of Red Route contraventions per mile. There has been a huge fall in the contraventions on high-status roads (see Figure 4.4), from 3 per mile to under 0.5, as the regulations about red routes are understood and observed (and possibly even as motorists realise the benefit of clear red routes to others as well as themselves). This is only a crude measure of compliance as it does not measure the duration of a contravention.

**Figure 4.4: Contraventions on the London Red Route network**



Source: Private communication with TfL

The primary role of CEOs (formerly known as traffic wardens) is to ensure compliance with traffic regulations. Clearly some measure of monitoring their performance is necessary, as they cannot be directly supervised when they are out on the road. A common source of complaint from motorists is that the CEOs are given targets for the number of PCNs they issue. As a result they may be seen to be overzealous, penalising minor infringements, not observing for the required time, or ticketing ambulances and hearses. Local authorities have re-written contracts to ensure that CEOs are not directly or indirectly rewarded for the number of PCNs issued. Brighton and Hove, for example, has set targets for the number of times each street must be visited and how long the CEO should spend there, depending on the amount of restrictions in the street.

Sheffield has set a hierarchy of enforcement:

- Bus lanes and bus stops
- Peak-period waiting and loading (on main roads in and out of the city centre, and on main bus routes)
- Single/double yellow lines on strategic routes
- School zigzags (those with Traffic Regulation Orders)
- Pedestrianised areas – waiting/loading restrictions
- Pedestrianised areas, taxi ranks / Blue Badge bays
- Pay and display
- Permit spaces
- Road junctions, where restrictions are in place
- District shopping areas, where restrictions are in place.

Many CEOs are also expected to take photographs to validate the issue of the PCN and reduce the opportunity for dispute by showing the exact position of the vehicle, the time and the relevant signage.

# 5. Public Attitudes Towards Parking

Although parking is a key part of owning and using a car, the views of motorists are rarely canvassed to discover their attitudes towards it and how it influences their behaviour. Some of these issues were addressed in May 2009 when the DfT published the results of questions asked in December 2008 about parking on the regular monthly ONS omnibus survey of around 1,100 individuals in Great Britain (DfT, 2009).

Three quarters (77%) of respondents had a car or van available to their household; 92% had used a car within the last 12 months, either as a driver (69%) or passenger (76%) or both, and 86% travelled in a car at least once a week.

Table 5.1 shows some of the results as they relate to the perceived importance of parking and transport links in choosing where to live. Of the 34% of respondents that had moved home in the last five years, 62% considered the availability of a garage/off-street parking to be very or fairly important in choosing somewhere to live. This included almost three in ten of those living in households without a car. Access to public transport was rated equally important.

**Table 5.1: The importance of parking and transport links when moving home for respondents that had moved home in the last 5 years**

| Issue in question | Percentage of respondents regarding the issue as: | | | |
|---|---|---|---|---|
| | Very important | Fairly Important | Not very important | Not all important |
| Availability of a garage or off-street parking | 36 | 26 | 20 | 19 |
| Good public transport links | 33 | 28 | 25 | 14 |
| Access to good road links | 33 | 35 | 20 | 13 |

Source: DfT (2009)

Just under half (48%) of all households had access to a garage, and 57% to other off-street parking (multiple responses were permitted). There is a significant difference between the proportion of car-owning households that had access to a garage (55%) and the proportion that used a garage for parking their car overnight (23%). Table 5.2 gives the details.

**Table 5.2: Availability and use of parking for car-owning households (multiple responses possible)**

| Parking facility | Available | Used |
|---|---|---|
| Garage | 55 | 23 |
| Residents' car park | 12 | 10 |
| On-street parking outside the house | 59 | 25 |
| Other off-street parking | 62 | 56 |
| On-street parking at distance from the house | 19 | 4 |

Source: DfT/ONS Omnibus Survey 2008

Nearly one in ten (9%) of those who had availability of on-street parking outside their house required a parking permit if they wished to park there. The proportion was higher for the most deprived areas (11%). Of these who required a permit, 53% did not have to pay for it, but a quarter had to pay £81 or more a year (it should be noted that the sample was small).

Overall, more than half (54%) of people said that there were parking restrictions in their local area (defined as the area within a 5-minute drive / 15-minute walk of their home), ranging by region from only 30% in the West Midlands to 78% in London. Restrictions are more likely in deprived areas (62%).

Despite the widespread view that parking restrictions are considered oppressive and unfair, two thirds of people with parking restrictions in their local area said that they thought there were about the right number of restrictions, 22% thought

there were too many and 13% thought there were too few. Most people (60%) also thought that the level of enforcement was about right, with the rest equally divided between those who said it was too rigid and those who said it was too lenient. Table 5.3 shows the views of those who live in an area with parking restrictions as to why those restrictions are there. Table 5.4 gives their overall attitude to the restrictions, with a notable four fifths (or 71% net agreement, after 9% disagreeing are taken into account) going on record as saying that they thought the restrictions were there for a good reason.

**Table 5.3: Views on why parking restrictions in the local area are in place (for those with restrictions nearby) – multiple responses possible**

| % of those with restrictions in local area | Spontaneous | From pre-coded list |
|---|---|---|
| To help keep traffic moving | 47 | 42 |
| To ration access to limited number of spaces | 20 | 24 |
| To improve environment for local residents | 26 | 28 |
| To improve environment for pedestrians and cyclists | 9 | 19 |
| To make roads safer / reduce accidents | 32 | 40 |
| To allow access for more vehicles | 16 | 38 |
| To provide source of money to local authority | 22 | 25 |

Source: DfT/ONS Omnibus Survey 2008

**Table 5.4: Views on parking restrictions (for those with restrictions nearby)**

| % | Agree | Disagree | Net agree (agree – disagree) |
|---|---|---|---|
| Parking restrictions cause problems | 26 | 61 | –35 |
| Parking restrictions are confusing | 19 | 69 | –50 |
| Parking restrictions are there for a good reason | 80 | 9 | 71 |
| Parking restrictions are there to make money | 35 | 44 | –9 |

Source: DfT/ONS Omnibus Survey 2008

About a third (31%) of car drivers and passengers said they had no problems with the availability of parking. Two fifths (38%) said parking availability caused problems when visiting a hospital, 30% it was a problem when going shopping and 21% it was a problem when they made trips for personal reasons (e.g. going to the bank or the doctor). The complete list of responses is given in Table 5.5.

**Table 5.5: Occasions when parking causes a problem**

| Occasion | % stating problem |
|---|---|
| Visiting hospital | 38 |
| Going shopping | 30 |
| Personal business (e.g. going to the bank, doctors, etc.) | 21 |
| Outside own home | 11 |
| Travelling to work | 11 |
| Visiting friends or relatives | 10 |
| Taking children to or back from school | 8 |
| Leisure/social activities (going to play sport, socialise) | 6 |
| Other journeys | 2 |
| No problems | 31 |
| Don't know | 3 |

Source: DfT/ONS Omnibus Survey 2008

**Table 5.6: Factors which affect how much car drivers and passengers travel by car**

| Factor | Percentage affected to each extent by the factor | | | |
|---|---|---|---|---|
| | A great deal | To some extent | Not very much | Not at all |
| Price of petrol | 6 | 29 | 23 | 42 |
| Cost of parking | 6 | 21 | 24 | 49 |
| Availability of parking | 8 | 20 | 24 | 49 |

Source: DfT/ONS Omnibus Survey 2008

The price of petrol, and the cost of parking and its availability, affect drivers in similar ways, with around a half saying that these factors do not affect their behaviour at all, and about a quarter each saying only that they affect their behaviour to a limited extent, whether positively or negatively (see Table 5.6). When interpreting these views it should be borne in mind that expenditure on fuel is 30 times as high as expenditure on parking.

Nearly one in five (18%) of the approximately 33 million drivers[9] in Great Britain had received at least one parking ticket in the previous 12 months. Young people (under 34) were nearly twice as likely (with 32% having had one), while only 5% of those over 65 had a ticket. As for how many tickets, 11% only received one, 5% two, and 2% three or more. Most people (86%) received their ticket from the local authority or the police, but 14% received tickets on private land.

Grossing up the 2008 survey data, using the total number of motorists in GB, the total number of parking tickets in GB is about 11 million of which about 9.5 million relate to parking on public land and 1.5 million on private land. This agrees very closely with the recorded number of PCNs in England in 2009/10 on- and off-street of 8.9 million plus a further estimate of 0.5 million in Scotland and Wales.

Three fifths of those who received a ticket accepted that they had parked illegally and a similar number paid immediately, as Table 5.7 shows. This ties up with the very low level of appeals.

**Table 5.7: Action following local authority parking ticket (% of those who received a penalty)**

| Action/situation | % |
|---|---|
| Paid straight away | 65 |
| Paid straight away but complained to the local authority | 5 |
| Paid only after representation / appeal to local authority failed | 7 |
| Paid only after appeal to adjudicator / county court failed | 9 |
| Total paid | 86 |
| Did not pay as local authority accepted appeal | 10 |
| Did not pay as adjudicator / county court accepted appeal | 0 |
| Still in dispute | 4 |
| Other | 1 |

Source: DfT/ONS Omnibus Survey 2008

This survey shows that only a small proportion of motorists need permits for residential parking, and half of these are free. Most motorists understand the reasons for parking controls and think that both the number of parking restrictions and the level of enforcement is about right.

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9    There are 35.3 million driving licence holders in Great Britain according to the NTS 2010, but a proportion of these never drive (see NTS0201).

# 6. Other Parking Issues

## 6.1 New ideas for parking

This section presents some experiments and recent innovations in parking around the world.

### 6.1.1 Multi-modal centre in car park

VINCI Park has introduced a multi-modal choice system called Mobiway in a large car park in the La Défense business district in Paris. Users have access to private cars, public transport, car pooling, taxis, motorbike taxis, bicycles and hire vehicles. Central to the scheme is a travel information centre, where information specific to all mobility solutions in the district is available, as are meeting and waiting areas and facilities such as car wash, luggage lockers and umbrella hire.

### 6.1.2 Virtual parking

During the first half of 2012, one central London borough, in association with 'early adopters' from the commercial freight industry, is introducing proof-of-concept trials of a VPS that allows 'virtual loading bays' or kerbside space to be booked in advance (or in real time) by commercial operators using GPS-enabled devices, including smartphones or in-vehicle telemetry. It is expected that this will allow operators to avoid or reduce the number of parking fines and their associated administrative burden, and in turn move towards a more intelligent way of managing kerb space, thereby helping to reduce congestion and $CO_2$ emissions by smoothing traffic flows and reducing bus journey times.

The solution is attractive to other commercial operators such as the coach, utility and courier segments, who currently absorb the cost of PCNs as part of an operating cost in central London; furthermore, it looks at creating a dynamic way of 'time-slicing' restricted kerb space to encourage modal shift. Other councils in the UK are considering the adoption of the Virtual Parking Solution (VPS) booking platform as a way of managing local problems.

### 6.1.3 Virtual parking permits

NSL, one of the leading companies in on-street parking management in the UK, has developed an e-permits solution for controlling residents' permits, visitor permits or other controlled parking operations. Residents register online

and are immediately 'permitted'. Cars are then checked for eligibility on the street using automatic number plate recognition (ANPR) cameras and handheld computers linked to the permits database. There is no need to distribute paper permits, and the problem of them falling off the windscreen or being forged is also eliminated.

### 6.1.4 Car park search facilities

Car Parks 4U is a free service for locating car parks across the UK which gives details of charges, accessibility and directions.

FindACarPark brings together owners of both private and commercial car parking spaces with individuals seeking to rent or buy a car parking space.

Parkopedia is a worldwide service with details of parking sites and availability. They can also produce parking pressure maps by time of day. The next stage, which is being trialled in Westminster, is a mobile phone application which uses global positioning satellites to locate the car and tell the driver of the restrictions in operation at that location. This requires an online database of the traffic orders made by each local authority which determine the parking controls in each street.

CorePark enables drivers to find a space and purchase a ticket online. It links to car park operators' back office systems.

NovaParking's wireless-enabled parking sensors in the road detect where vehicles are and where there are vacant spaces.

An automated garage in the City of Hoboken, New Jersey, USA – cars are moved around on motorised pallets as used in factories, enabling 30–50% more cars to be parked compared with a conventional ramp garage. Of course, automated garages using lifts have been in use for many years. In Florida, a block of flats is being built with a lift to car parking on each level so that owners can drive right up to their front door even on the 57th floor.

### 6.1.5 Sharing of information about parking

The TRL Parking Benchmark Initiative, launched in 1999, involves the collection and analysis by TRL of operational enforcement data, enabling local authorities to compare their performance confidentially with other authorities. As at 2008, there were 45 members.

A similar scheme, Partners in Parking (PiP), led by the City of Westminster, consists of a group of 12 London boroughs which harmonises parking equipment, services, controls and practices so that there is a more consistent customer experience, both within areas covered by individual authorities and across boundaries with others. There is also a joint procurement programme which delivers direct savings to participating local authorities.

PiP procurements deliver cashable savings to its partners through the buying power of group procurements. However, in 2010 Enfield withdrew as it did not feel the benefits justified the subscription.

### 6.1.6 Rent-a-drive

A number of Internet sites have been set up to match drivers with people who are willing to rent out their driveways during the day while they are at work (though questions have been raised as to whether planning permission is needed, because it is a business). These include the following:

- ParkatmyHouse (www.parkatmyhouse.com), which offers the same service throughout the UK to commuters, shoppers, event visitors and airport parkers, was set up by  Anthony Eskinazi after he was inspired by a visit to a sports game in San Francisco during which he saw an empty driveway close to the stadium. It is partially funded by BMW.
- ParkLet (www.parklet.co.uk) allows car owners to rent private parking spaces and garages on a rolling monthly basis.
- Parkonmydrive (www.parkonmydrive.com) allows people to park for days or parts of days on advertised private driveways.

### 6.1.7 Ideas which were never taken up

Moovit Driver Communication System (trialled in 2004 in Manchester with TNT, and piloted in Camden in 2005) – this idea consists of a transmitter button on trucks/vans linked to a radio receiver carried by the driver. If it is found to be causing an obstruction, a parking attendant (or indeed anyone for whom the vehicle is causing an obstruction) can then recall the driver to move the vehicle instead of getting a parking ticket. The system was publicised in 2005, at which time the parcel delivery company TNT Express, based on the Manchester trial, expected a 30% reduction in fines.

Spacehog – an electronic parking detector for the disabled which detects all vehicles as they arrive. When a vehicle has parked, the Spacehog would automatically trigger a short blip reminding the driver that they have parked in a facility for the disabled. The aim was to enable better policing of disabled parking spaces.

## 6.2  Blue Badge reform

The DfT monitors the number of Blue Badges for disabled drivers in England via a survey of local authorities. According to the latest available statistics, the estimated number of valid Blue Badges held on 31 March 2011 was 2.56 million, compared with 2.55 million in 2010, an increase of 0.6%. On 31 March 2011, 4.9% of the English population held a valid Blue Badge, a statistic unchanged from 2010.

Abuse of Blue Badges issued to people with mobility restrictions has also increased as public parking has become more difficult and expensive, with badges being stolen or used by those who are not eligible. Issue of the badges and consideration of eligibility are currently the responsibility of local authorities, based on a medical report from the driver's doctor. The DfT is currently implementing the results of a widespread review.

The key changes are:

- medical assessment will now be carried out by an independent assessor for which the Department of Health is paying the local authorities;
- there will be a new high-security badge which should eliminate forged or modified badges; and
- there will be a national register of eligible holders which CEOs will be able to interrogate on the street using handheld smartphones.

Of valid badges held on 31 March 2011, 36% were issued under the 'without further assessment' criteria, 63% were issued under the 'with further assessment' criteria, and 1% were issued to organisations. These proportions have remained broadly similar since 1997.

The Scottish and Welsh transport authorities are participating in the same scheme.

The issue remains of European citizens using their own national cards, which are not controlled so rigorously as in the UK. The badges give far fewer benefits in Europe than in the UK, so are not as highly regarded.

It should be noted that the statutory Blue Badge scheme only provides parking privileges on-street. Elsewhere it merely acts as a badge indicating the status of the driver, and any benefits are by concession from the car park operator.

A smartphone app – assist-Mi – has now been released, which not only helps Blue Badge holders find disabled parking spaces but also, if required, informs staff at the destination (e.g. hotel, airport, petrol station) of their imminent arrival so that assistance can be offered. This will also help with the implementation on-street of 'virtual disabled bays', where a disabled driver is given a temporary dispensation by the local authority to park in a given area.

## 6.3  Safer Parking Scheme

The British Crime Survey 2004/5 showed that 19% of vehicle crime takes place in car parks: 3% occurs in 'work' car parks and 16% in 'other' car parks (Nicholas et al., 2005). In order to reduce crime and make people feel safe in parking areas, the BPA runs an award scheme whereby the police recognise car parks that have achieved the standards of the Safer Parking Scheme. The scheme is designed to reduce crime and the fear of crime in car parks, but demands high standards of security and lighting, cleanliness and surveillance. Approved car parks can display the ParkMark and appear on the national register of safe car parks.

There are currently 4,700 car parks which participate in the scheme, from the private and public sectors, and these include facilities in shopping centres, hospitals, stations, leisure parks and hotels.

## 6.4  Private off-street parking

Unauthorised parking in private off-street areas has always been a problem for landowners – examples include public houses and residential estates where parking is restricted to residents. The problem has increased as public parking areas have become more restricted or subject to payment. Owners of these sites have used parking enforcement companies, who issue parking tickets looking very much like PCNs, or clamp vehicles. Recently, car parks in shopping centres and motorway service stations have started using these companies to limit parking to two hours and ensure that the space for customers is not taken up by long-term parkers. Parking in these areas represents a civil offence, and any penalty is technically compensation for breach of contract, the contract being when the motorists enters the car park and reads the sign at the entrance outlining the terms of use. Unclear or hidden signs have been a major cause of disputes over parking on private land.

While many of these companies operate legitimate and fair operations, there have also been 'cowboys' whose levels of parking fines and unclamping fees have reached extortionate levels. These companies have been able to obtain names and addresses of vehicle keepers from the DVLA to enforce payment, and have even used bailiffs to recover the amounts due, sometimes with excessive force.

The BPA launched the Approved Operator Scheme in 2008 and is the only accredited trade association allowed to approve operators. The DVLA will now only give keeper details to members of this scheme. There are currently 156 approved operators, who must conform to a code of conduct and can be penalised or even removed for failure to do so.

One of the commitments of the Coalition government in 2010 was to ban clamping on private land in England (it has always been banned in Scotland, where it is considered to be extortion), and this it has now been included in the Protection of Freedoms Act. A corollary of the ban on clamping is that the keeper of the car will be responsible for any civil debt arising from parking on private land, rather than the driver (the same already applies to PCNs issued on public land). Those who opposed the legislation consider this a serious breach of human rights, but landowners are also looking for some means of controlling unwanted parking on their land. It is estimated there are between 1.8 and 2.3 million parking offences on private land each year compared with nearly 8 million PCNs issued each year in England. The new act will require the removal of any reference to clamping on the signs. The BPA is also planning to set up an appeal service, similar to PATAS and TPT, for PCNs on public land, possibly using one of these statutory bodies under contract. However, the 'adjudicators' would be acting as arbitrators of civil contracts, not statutory contraventions, and would be more like ombudsmen.

## 6.5 Park-and-ride

Park-and-ride (P&R) car parks, where drivers leave their cars on the edge of towns and continue into the centre by bus,[10] have been hailed as a significant way of overcoming the difficulties of parking in town centres, particularly for historic towns such as Oxford, Cambridge and York. The impacts on travel were examined in a study by WS Atkins (Whitfield & Cooper, 1998), and this was followed up in a number of papers by Parkhurst (see, for example, Parkhurst, 2004).

The TAS Partnership, a transport consultancy, carries out regular research into the number of P&R sites and their operation. Their last report in 2007 (TAS, 2012) has identified 117 full-time, year-round bus based P&R sites in Great Britain, and a further 18 served by light rail. Parkopedia has 178 P&R sites on its database as at February 2012. TAS estimated that, between them, these 135 sites supply around 70,000 parking spaces, use about 400 buses each day, and account for over 46 million passenger journeys a year. Revenue is estimated at around £40 million a year.[11] The sites serve 60 towns and cities, and between them remove some 34 million single car journeys a year from congested town and city centres.

The government's ten-year transport plan set a target of 100 new sites by 2010; by 2007 (the latest data available), 51 new sites had opened since 2001.

Research by Meek (2010) identified that surveys of P&R users show that up to a third transfer from conventional public transport. This induces car travel for the access portion of the P&R trip, which generally consists of long trips compared to the bus portion, owing to the edge-of-town location of P&R sites. Combined with the mileage effects of high-frequency bus services, P&R may thus result in an increase in vehicle miles travelled, compared to alternatives.

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10  Station car parks are also a form of park-and-ride – see 'Parking at stations' below.

11  Note that there is a question of allocation between 'park' and 'ride', as the car parking element is subject to VAT while the ride element is zero-rated.

Suggested solutions to this probable increase in overall mileage are:

- Reduce bus frequency. This results in fewer, fuller buses, but longer waits.
- Operate feeders to main P&Rs on a hub and spoke model.
- Use conventional bus routes instead of special buses.
- Move P&R closer to the starting point rather than the destination; this, however, is difficult because of the dispersed journey origins.
- Create 'Link and Ride' – a chain of small interchange sites to intercept drivers earlier. This reduces car mileage but requires more buses.

Meek notes that P&R abstracts from existing public transport users, particularly on vulnerable marginal bus routes. There is also the problem of induced traffic resulting from road space freed up by cars which have parked in P&R sites.

### 6.5.1 Parking at stations

Although it is not normally designated as such, the largest P&R operation actually occurs at railway stations. It is estimated that there are between 200,000 and 250,000 station car park spaces in Great Britain, of which about 150,000 are paying and the rest free. In August 2011 Passenger Focus, the industry watchdog for rail users in Great Britain (and bus users in England), issued a report entitled The Challenge of Getting to the Station (Passenger Focus, 2011). About 45% of rail passengers get to the station on foot, a further 40% use public transport, 8% park at the station, and a slightly smaller number are dropped off (but this involves two return car journeys rather than one if the car is otherwise parked at the station). Research has indicated that if getting to the rail station proves inconvenient, potential rail passengers will often choose to make their whole journey by car, increasing congestion on the roads and adding to transport's carbon footprint. The Better Stations Report (Green & Hall, 2009) recommended that an extra 10,000 spaces a year should be provided for the next ten years (together with 5,000 bicycle spaces).

Less than 50% of passengers in the biannual National Passenger Survey carried out by Passenger Focus are satisfied with current parking arrangements, the lowest satisfaction being among commuters in the South East. An ONS survey of rail users showed a similar pattern.

When asked how car parking could be improved, rail passengers in the East Midlands, and along the Midland Mainline route to London St Pancras, gave the following priorities for improvement:

- cheaper one-day parking prices (28%)
- cheaper season ticket parking prices (21%)
- more efficient pay machines (10%)
- more spaces for cars (8%)
- larger parking spaces (7%).

Passengers also spelled out which areas they were least satisfied with:

- value for money (10%)
- car park payment machines (17%)
- traffic flow around the car park (39%).

Many rail passengers park in residential streets around stations, much to the annoyance of the residents who then request residents' parking zones to restrict all-day parking, for example by securing one hour in the middle of the day when parking is not permitted. Another issue is finding parking during the day for those travelling off-peak, as all the car parking tends to be taken by all-day commuters. Some car parks reserve spaces for those travelling after the rush hour, but there is then a risk of these places not being used.

Most re-franchising contracts demand extra car parking spaces to be supplied. Station travel plans, encouraging passengers to use other means of getting to the station, can also reduce car parking demand.

### 6.5.2 Parking for other vehicles

Many of the issues raised in this section apply to all vehicles. There are specific issues regarding lorries, coaches, motorcycles and bicycles.

### 6.5.3 Lorry parking

According to a recently published detailed survey of lorry parking supply and demand by the DfT (2011b), there were 13,700 heavy goods vehicles parked at night and 13,100 spaces for them in off-street car parks in England – although 41% of vehicles were parked on-street, so utilisation of the off-street parks varied across regions, from 45% to 80%, with the national average being 61%. There was evidence to suggest that many drivers choose to park off-site in lay-bys or industrial estates, even when spaces were available on-site in surrounding areas. The study recorded a total of 5,676 vehicles parked off-site compared to 8,032 parking on-site. This means that approximately 41% of drivers were not using suitable locations for overnight parking. Residents are very reluctant to have lorries parking in their streets overnight, and many areas specifically ban the practice.

The DfT's purpose in producing the report is to provide information about the availability of secure lorry parking sites and inappropriate parking and truck crime, which reportedly costs the economy £250 million per year.

Lorry and van drivers also have problems with unloading, with overzealous CEOs not giving them adequate time to unload legitimately, which if necessary may include going into the building to get paperwork signed off. There is inconsistency between local authorities as to how much time they allow for unloading. TfL has been working with operators such as brewery distribution companies to reduce the number of PCNs issued to them which are subsequently challenged, owing to a genuine need to unload.

### 6.5.4 Coaches

Coaches also suffer from the problem of inadequate parking or space to unload, particularly if they stop in a restricted area to unload disabled people, who may have a valid Blue Badge which would allow stopping in that area. Operators of tourist coaches in London have negotiated with a number of bus companies to use their bus garages during the day when the buses are out on the streets.

### 6.5.5 Motorcycles

Many local authorities provide separate areas within a parking zone for motorcycles, which have traditionally been free. If a motorcyclist wishes to park in a full-size bay, the full parking charge becomes payable. In 2009, Westminster introduced a fee of £1 for motorcycles in designated bays which is reported in the press to raise over £1 million per year. Initially there was an issue as to where the motorcyclist was supposed to put the ticket, but this has been eliminated by the use of pay by phone, where the registration number is recognised by the CEO.

### 6.5.6 Cycle parking

As part of the government's plan to encourage cycling, local authorities are encouraged to ensure that new developments, both residential and commercial, have more spaces for cycles. Detailed guidelines are set down in the Mayor's London Plan, which devotes more space to dealing with cycle parking than car parking.

# 7. Parking and Car Ownership

As noted previously, every car journey requires a parking space at each end. One of the issues which has not been fully addressed is the effect which restricting parking has, either in residential areas or at destinations, on car ownership and use.

## **7.1** Residential parking standards (for new developments)

Historically, local authorities used to set minimum standards for parking provision to avoid excessive on-street parking, which is unattractive and can lead to congestion and lack of access, affecting (for example) refuse or emergency vehicles. It can be argued that this policy leads to inefficient use of space, as well as possibly to increases in car ownership, although there are many other factors explaining rises in car ownership, such as the need to get to work or to transport children. 'Excess' availability of parking is unlikely in itself to lead to increased car ownership, but the space required for extra parking leads to facilities being more spread out, which in turn militates against walking, cycling and use of public transport. On the other hand, the converse may well be true – that an undersupply of parking can reduce car ownership.

About ten years ago local authorities switched to setting maximum standards for parking (and in a small number of cases, known as 'car-free developments', occupants willingly covenant not to own cars as a condition of the lease). Developers were quite happy to accept these maximum provisions, as it meant that they could increase the density of properties they built. It has become clearer that the maximum policy does not necessarily restrict car ownership, as people park on the (inadequate) streets in new developments, creating the same issues of lack of access as occur in older streets. Therefore the government has again reconsidered its guidance to local authorities, and, consistent with the current trend to local decision-making, it has devolved the issue to local authorities, leaving them to decide whether to have minimum or maximum standards, and at what level to set them. This was formally acknowledged by the Housing Minister in January 2011 (Quarterman, 2011):

> "National planning policy requires local authorities to set limits for off street parking in residential development. However, evidence suggests that forcing local authorities to adopt parking limits has not led to housing developments which meet the pattern of car ownership in many communities. In

new developments these restrictions can lead to significant levels of on-street parking causing congestion and danger to pedestrians.

I have today removed the requirement for local authorities to set maximum parking limits for residential development in their area, and instead have given them the freedom to decide what level of parking is right based on the needs of their local community. In doing so they should have regard to the need to promote sustainable transport outcomes.

I also do not think that Government should tell local authorities how to set parking charges. I am, therefore, also amending planning policy to no longer force parking charges to rise, again giving the freedom to local authorities to set charges that reflect local needs."

The relevant paragraphs in the policy guidance PPG13 (Transport) have been amended to:

"Parking

49. Policies on parking should be coordinated with proportionate parking controls and charging set out in the local transport plan, and should complement planning policies on the location of development…

Parking Standards

51. Policies in development plans should set levels of parking for broad classes of development. Standards should be designed to be used as part of a package of measures to promote sustainable transport choices and the efficient use of land, enable schemes to fit into central urban sites, promote linked-trips and access to development for those without use of a car and to tackle congestion…

54. It should not be assumed that where a proposal accords with the relevant local parking standard it is automatically acceptable in terms of achieving the objectives of this guidance. Applicants for development with significant transport implications should show (where appropriate in the transport assessment) the measures they are taking to minimise the need for parking…

56. As part of an overall approach on parking, covering both the local transport plan and development plan, local authorities should adopt on-street measures to complement land use policies. Local authorities should set out appropriate levels and charges for parking which do not undermine the vitality of town centres. Parking enforcement should be proportionate."

As part of the consultation on the National Planning Policy Framework, councils, in particular, are being invited to comment on the following issues (DCLG, 2011: 21):

- How much resource would it cost to develop an evidence base and adopt a local parking standards policy?
- As a local council, at what level will you set your local parking standards, compared with the current national standards?
  Do you think the impact assessment presents a fair representation of the costs and benefits of this policy change?

The final version of the National Planning Policy Framework published in March 2012 (DCLG, 2012b) states:

"39. If setting local parking standards for residential and non-residential development, local planning authorities should take into account:

- the accessibility of the development;
- the type, mix and use of development;
- the availability of and opportunities for public transport;
- local car ownership levels; and
- an overall need to reduce the use of high-emission vehicles.

40. Local authorities should seek to improve the quality of parking in town centres so that it is convenient, safe and secure, including appropriate provision for motorcycles. They should set appropriate parking charges that do not undermine the vitality of town centres. Parking enforcement should be proportionate."

Reference is also made to the Housing Minister's statement on parking in January 2011, quoted above.

WSP Group (2011), a firm of engineering consultants, carried out research on behalf of Berkeley Group, the property developer, using a number of sites which Berkeley had developed in the London area. It found that there is no relationship between car ownership and peak-hour car use. Residents used other means (public transport, walking or cycling) to travel to work, but still valued their cars for evening and weekend use. However, the locations all had relatively good public transport access, so it is difficult to extend the research to other areas. The research does, however, support objectives behind planning policy which seek to ensure that residents have access to a range of sustainable transport choices available in the places where they live.

One development, The Hamptons, situated in the Outer London Borough of Sutton and with only moderate public transport access, offers an important case study: here, parking is provided at 1.4 spaces per dwelling, but funding from the developer as part of the scheme's travel plan was invested in enhancing sustainable travel options and educating residents about these after people had moved in. As a result, bus use increased by 11%, and only 34% of all residents use their car at peak hours, in contrast to a figure of 60% in the existing local area.

The Chartered Institution of Highways and Transportation (CIHT) and The Institute of Highway Engineers launched in April 2012 a new guidance note for residential parking aimed at professionals working in the highways and transport industry (CIHT, 2012).[12]

The new note offers those working in the planning, design and delivery of parking provision with the most up to date good practice residential parking guidance.

Some key points follow.

Inadequate provision of parking results in parking on pavements and verges, blocking roads for other vehicles. It can cause disputes between neighbours and reduces the opportunity for children to play outside.

Maximum standards are appropriate in areas of limited space, but they must be applied together with suitable on-street control measures such as residents' permits (which might not be granted for new developments if public transport access is good).

Minimum standards, if the parking is properly designed, can ensure safe and attractive space for parking without restricting car ownership.

Target, or optimum, levels of car parking can be derived from census data for different types of housing, different types of tenure and location (e.g. rural, urban). However, there are areas with higher-than-expected requirements – for example, where an area is being regenerated, leading to higher levels of income and corresponding increases in expectations of car ownership.

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12   Written by Bob White, formerly Development Planning Manager at Kent County Council and now Transport & Development Business Manager at Kent Highway Services.

Conversely, other areas may be below expectations, such as in large villages in rural areas. Census-derived estimates for parking requirements need to be modified by considering actual experience in similar areas elsewhere.

Besides calculating the number of parking spaces, the parking layout needs to be considered. The size of the spaces, provision for turning or access, and ease of opening doors and tailgates are all important. Garages need to be large enough for storage as well as the car; double garages may sometimes only be used for one car.

The conclusion of the study is:

> "The right number of the right spaces in the right places" is a golden rule that offers:
>
> - designers the opportunity to achieve high quality and actively used public realm;
> - developers the opportunity to design to meet their customers' reasonable expectations; and
> - occupiers the opportunity to enjoy their homes and neighbourhoods without upsetting their neighbours.
>
> All parties involved in the design and assessment of new developments should be following current guidance by identifying parking provision that satisfies reasonable demand, is well-designed and that will satisfy expected demand in the local context."

## 7.2 Changes in car ownership in London

Changes in household car ownership have been examined for London boroughs to see whether the increase in parking restrictions has led to a reduction in car ownership. Data is from the London-wide household travel surveys (the London Area Travel Survey, LATS, 2001, and the average of the LTDSs for 2007–10, undertaken each year by TfL).

**Table 7.1: Changes in population, households and car ownership in London (thousands)**

| Statistic | Date | Inner London | Outer London | London |
|---|---|---|---|---|
| Population | 2001 | 2,646 | 4,348 | 6,994 |
| | 2007–10 | 3,024 | 4,572 | 7,597 |
| | **Incr %** | **14** | **5** | **9** |
| Households | 2001 | 1,220 | 1,796 | 3,016 |
| | 2007–10 | 1,341 | 1,892 | 3,233 |
| | **Incr %** | **10** | **5** | **7** |
| Cars | 2001 | 781 | 1,912 | 2,693 |
| | 2007–10 | 730 | 1,846 | 2,576 |
| | **Incr %** | **–7** | **–3** | **–4** |
| Cars/household | 2001 | 0.64 | 1.06 | 0.89 |
| | 2007–10 | 0.54 | 0.98 | 0.80 |
| | **Incr %** | **–0.16** | **–0.09** | **–0.10** |

Source: TfL LTDS and LATS

Inner London consists of the 13 boroughs which are more or less exactly bounded by the North and South Circular Roads, i.e. areas of predominantly built-up terraced houses and flats with few garages; converted front gardens for other off-street parking; and generally restricted on-street parking. The number of households has not increased as fast as the population, but car ownership has declined in Inner and Outer London – slightly more in Inner London than central London, suggesting that restricted parking availability may have contributed to this. However, there are many other economic factors such as the income effects of the recession, improved public transport services (particularly in Inner London) and, possibly, the influx of immigrants who may not be able to afford cars, or are more used to using public transport. TfL has concluded that more work is needed to be able to establish a cause/effect relationship between parking restrictions and car ownership.

The LATS in 2001 asked for reasons for not owning a car, but parking was not specifically mentioned. Economy, ability to drive and use of other modes were the main reasons given (see Table 7.2).

**Table 7.2: Reasons for not owning a car – multiple responses possible**

| Reason | % |
|---|---|
| Can't afford it / financial | 40 |
| Can't drive | 39 |
| Use other modes | 36 |
| Environment/pollution | 2 |
| Other | 8 |

Source: LATS, 2001

Financial reasons are much more likely to be given in the inner boroughs such as Tower Hamlets, Newham and Hackney (52%) than in the outer suburbs, where it only accounts for 25% of the mentions and where not being able to drive is more prevalent as an explanation.

The LATS surveys also show where people parked overnight, as shown in Table 7.3.

**Table 7.3: Overnight parking in London (percentage)**

| Year | Off-street | On-street (permit) | On-street (no permit) | Other |
|---|---|---|---|---|
| 2001 | 54 | 14 | 30 | 2 |
| 2007–10 | 57 | 17 | 25 | 1 |
| Change (rounded) | 2 | 3 | –5 | 0 |

Source: TfL LTDS and LATS TfL

The effect of increased parking restrictions can be seen in the switch from on-street without permit to on-street with permit and to off-street, where more front gardens will have been converted to off-street parking. However, such conversions should be undertaking ensuring permeable surfaces to prevent water run-off. The additional crossover to an off-street space may not necessarily increase total parking space; the most efficient parking in suburban areas is achieved where 3-metre wide crossovers alternate with 5.5-metre lengths of permitted kerb parking – every 8.5 m of kerb length permits one vehicle parked on-street and one (or more) parked off-street. Thus, over a 100 m length of street, 12 vehicles can be parked on-street and at least 12 off-street – 24 or more in total. Without crossovers, a maximum of 16 or 17 cars can be parked against a continuous 100 m kerb length.

The effect of increased residents' parking restrictions in certain boroughs can be seen in Table 7.4.

**Table 7.4: Changes in overnight parking in London 2007–10 compared with 2001 (percentage change)**

| Borough | Off-street | On-street (permit) | On-street (no permit) |
|---|---|---|---|
| Islington | 1 | 45 | –44 |
| Brent | 8 | 17 | –24 |
| Haringey | 6 | 13 | –19 |
| Ealing | 8 | 7 | –15 |
| Hackney | –8 | 21 | –12 |
| Camden | 3 | 6 | –11 |
| Merton | 4 | 6 | –10 |

Source: TfL LTDS and LATS TfL

## 7.3 Destination parking

The same question – does restricted parking reduce car ownership or use? – applies to destination parking also. As with residential parking, local authorities have oscillated between allowing ample parking at shopping centres, sports venues and leisure destinations in order to prevent on-street parking on the one hand, and drawing up restrictive rules which discourage or actually prevent car access to the venues on the other. When the Wembley Stadium was redeveloped in 2007 there was no general car parking on-site, and there were extensive restrictions on parking in the local streets to encourage use of public transport, which was simultaneously substantially upgraded. There is no parking for spectators' cars in the London Olympic site.

The attraction of ample parking in out-of-town shopping centres has been criticised as one of the reasons for the decline of the high street. In the USA, where zoning requirements demand high levels of (almost always free) parking in shopping malls, there has been a reaction that too much space is provided, since each shop provides enough capacity for its peak demand.

In London, the Mayor's London Plan of 2011 defines indicative maximum parking supply for retail use. The space requirements vary from no parking at all in central London, to one car parking space per $75\,m^2$ of retail space in a town centre shopping mall in the rest of London in locations where there is high public transport availability, to one space per $15\,m^2$ in a supermarket with limited public transport access.

There has been some research on the trade-off between spending time to try to park close to the destination versus having to walk from parking further away, both for commuters and for other users. Marsden (2006), quoting Axhausen and Polak (1991), notes that "Walking time to the destination is valued much more highly than search time for a space which in turn is valued more highly than in-car access time."

# 8. Issues and Conclusions

## 8.1 Information about parking resources

A particular problem in formulating a coherent policy on parking is the lack of data, coupled with disparate responsibilities. This study has shown how little information is collected about the quantity of parking space that is available, and about how it is used to calculate supply and demand. In the preceding sections, we have set out as much of the data as is readily to hand, and discussed some of the institutional arrangements. But it is clear that more work needs to be done.

Local authorities do not have the resources or motivation to carry out adequate audits of available on- and off-street capacity except in small areas, such as for the installation of a local parking zone. While much of parking control has to be at a local level, there is still a need to understand the overall picture. Local authorities are required to submit certain financial information about their parking income and expenditure, but its accuracy is uncertain and there is no central record of on- or off-street parking places. Local authorities are also strongly advised to produce an annual parking report following detailed guidance provided by the DfT and the British Parking Association (2010). However, only a small proportion of the nearly 300 local authorities with CPE powers produce a full and easily accessible report showing their resources and policies.

Even with relatively poor data, however, some things are clear. Cars spend the overwhelming majority of their time parked, and the greater part of this time parked at the home. With the exception of highly specific locations such as airports, the duration of destination parking is distinguishable into two categories – workplace and other (conventionally referred to as long-term and short-term respectively). In both cases, it is evident that parking is not a major source of expenditure for the average car-owner.

## 8.2    Environmental effects

Parking has three main effects on the environment – it takes up space, it is visually intrusive, and searching for a parking space uses unnecessary fuel and causes pollution, especially in enclosed car parks. The provision of adequate space and good information about availability can overcome much of the searching problem, but as for the visual and space-occupying aspects, hidden car parks, such as underground ones, are expensive to provide and maintain. Careful landscaping both for residential and non-residential car parks can reduce the visual impact, but at additional cost. Local authorities must take this into account when approving plans for new parking provision.

As noted, parking does require land, and therefore is not intrinsically free, although it is obviously necessary in order to facilitate the use of the car. A Cabinet Office (2009) report suggests space requirements of $11.5\,m^2$ per car, though other sources indicate higher figures (in a recent US article by Barter, 2011, "about 20 to 38 square metres depending on the layout and the form of the parking") – this may reflect the difference in car size between Europe and North America. Although it would not usually be feasible to take an individual parking space and use it for some other purpose, at the margin there should be a sensible valuation between use of land for parking and use for other activities – in particular, residential and commercial. From this point of view, some simple calculations demonstrate that – with the exception of special locations such as airports – current charges are much lower than an economic rent would imply. A consequence of this is that there is no financial incentive to allocate more land to parking.

The Cabinet Office Report notes the following:

- "Current car travel patterns require a lot of parking spaces to be provided around people's homes, public services and around workplaces…

- This adds to the land required for a given land use…

    – this imposes constraints on the maximum density of urban areas – different buildings are further apart

    – this can make alternative modes less attractive – for example, walking and cycling are less feasible due to the longer distances involved."

## 8.3    Effect of parking supply on car ownership (and car use)

As noted in Section 4 and 7, local authorities use parking to try to control both car ownership and use, but there is no hard evidence to demonstrate the effectiveness of these actions, or whether other interventions – such as road pricing – would be more effective.

Examples of control are:

- restrictions on permitted parking supply in new developments, both residential and non-residential
- limited residents' permits
- car-free developments where no off-street parking is provided and residents cannot obtain on-street permits
- parking restrictions around stations.

## 8.4    Provision for new dwellings

Historically, new developments were required to have a minimum number of parking spaces according to expected usage. In the 1990s, this changed as part of the process of controlling car ownership and usage, but it did not obviously reduce the growth in the number of cars, and increasingly cars were parked in the street in uncontrolled ways which were dangerous and unsightly. To a certain extent the reduction in parking enabled developers to increase the density of housing, but, at the same time, it may have reduced the saleability of the properties. The government has now left local authorities to determine their own parking requirements, based on local conditions. However, it is possible to build modern houses with adequate parking laid out in attractive formats which do not use undue amounts of land but which meet the requirements of both developers and purchasers.

There is also the issue of decreasing uses of garages for the reasons stated in section 3.2, leading to cars being left on drives and forecourts, which is unattractive, or being displaced onto the road, especially when there is more than one car per dwelling. Local authorities should consider very carefully planning applications to convert garages into living space where there is inadequate alternative off-street parking, and where it is likely to lead to additional on-street parking.

## 8.5    Pricing policy

Paying for parking is an emotive subject, as motorists feel that they should not pay for parking on the street, it being seen as common property for which they have already paid through taxation. (The same emotive argument applies to road user charging.) Furthermore, paying for parking is a nuisance,

involving either finding small change for machines or paying by credit card over the phone.

Nevertheless, the evidence produced in this report shows that personal expenditure on parking is actually very low. Total local authority revenue from parking in England works out at about £60 per year per vehicle, and includes penalties – which represent about half of the total revenue. By contrast, the amount spent on fuel alone is about £1600 per vehicle (based on an average of 13,500 km per year and a fuel cost of about 12p per km) (RAC, 2011). Thus despite the outcry in the local press which has often accompanied the introduction of residents' parking charges, or changes in fees for local authority car parks, the average parking costs cannot be considered significant. Perhaps this is the reason why parking is rarely cited as an issue affecting travel choice in surveys of travel difficulties.

There is an argument in principle that space should be charged for as a scarce resource. although on practical grounds there will naturally be many situations where the implied level of charges would not be material, and would not therefore be worth collecting, The usual economic argument prevails that if there is a potential shortage, then facilitating a market will result in a combination of demand suppression and indicators for investment (the same arguments as apply, in general, for road pricing[13]). It is important, however, that the arguments are made clearly and in a practical way. The variability of existing charging schemes indicates that the basis of charging needs to be carefully considered: while there should certainly be scope for local initiatives, a more consistent approach across the board should lead to a greater acceptability of the arguments. Ultimately, on-street and off-street parking should be in equilibrium, reflecting the costs of providing a parking space. It should be noted that while some of the parking 'stock' (such as private non-residential stock) is – more or less – outside the scope of regulation and intervention, the creation of an effective market in charging for parking will, sooner or later, impact on all the stock, via the notion of 'opportunity cost'.

In our view, the primary aim of any charging for parking should be to avoid capacity problems in relation to parking search (as noted, as well as conveying loss of time, this also has adverse consequences both for traffic flow and the environment). Hence, the rationale for a (non-trivial) charge for parking arises

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13   See for example Banks et al. (2007), where the following text can be found relating to an 'efficient' pricing system for road use:

"Under this system, a charge would be paid for vehicle use in relation to the actual costs imposed on the road network itself and on other road users together with the wider costs on the rest of the community – including climate change costs. This would comprise
• a tax on transport fuels to reflect their contribution to climate change,
• a standard rate for each type of road to cover the cost of providing and maintaining the road, of additional accidents and adverse environmental effects due to use, and
• a variable rate to reflect the amount of delay, depending on place and time.

The charge would, as far as possible, be objectively determined in relation to costs actually imposed at every location. To work effectively the system would have to be comprehensive, covering all roads."

where the supply of on-street space is too low relative to potential demand (it has been suggested, as a rule of thumb, that demand should not exceed something between 80% and 90% of available supply). Since the demand for parking is highly time-dependent, while the supply (with the exception of time-specific bans discussed below) is not, it is clear that the pricing structure needs to reflect the temporal pattern of demand. However, while the optimum pricing structure might be quite irregular, it will be sensible to allow for some approximation (thus, a more 'regular' table of tariffs) on practical grounds, both to aid acceptance and ease compliance. Pricing should be clear, and enforcement should be effective (the principle should be that no fines are necessary, rather than – as we have seen – local authorities in fact deriving considerable revenue from penalties).

A secondary aim of charging for parking is on grounds of more general travel demand management (as Elliot, 2010, points out, the power to make charges for parking is defined by law to be for "relieving or preventing congestion of traffic"). This is inherently likely to be more controversial, and, while an acceptable instrument of policy, needs to be very carefully communicated and discussed. Although the primary (capacity-related) aim is consistent between different locations, even if the pricing outcomes may be different, the policy-related charges impact very differently on residential parking as opposed to 'destination-based' parking. For residential parking, the impact of charges is primarily on car ownership – and is fairly minor (though there will be knock-on effects on total car travel via the impact on mode and destination choice – total car travel), while for non-residential parking the impact is directly on the choice of mode and/or destination. It is particularly the issue of destination choice which is sensitive between rival centres, both in terms of employment and, more particularly, shopping opportunities.

Thus, there are three main elements to pricing: the cost of parking per hour and the cost of residents' permits – both of which should be set at a level to match supply and demand – and the charges for penalties, which should be set to provide the maximum deterrence, but must also be seen to be fair. Paying a £60 penalty for a few minutes' overstay at a parking bay which costs, say, £2 for an hour's parking is seen as disproportionate (and is a much higher penalty than applies on the Continent, for example). When parking meters were first introduced, there was a half-hour period of grace at a higher hourly rate before a penalty charge was incurred which was probably seen as more reasonable by motorists.

Currently, the law prevents local authorities from charging at a level which is in excess of their costs, and any surplus from on-street parking must be used for transport-related purposes. The surplus from off-street parking can be used to offset any council expenditure. Councils judged "excellent" by the Audit Commission are also allowed to use the surplus from on-street parking for non-transport projects.

Although research in Germany and Norway suggests that short periods of free parking in shopping areas to allow motorists to make quick purchases does not increase shop takings or reduce illegal parking, it is perceived to be a positive move by motorists, shopkeepers and local authorities.

There is also the issue of free parking in most out-of-town shopping centres, which distorts the market and penalises shops in town centres, where parking is generally charged. Certainly the view in the USA is that free parking, both on-street and in shopping centres, is undesirable as it does not reflect the true cost of supplying the parking service, and that parking in these areas should therefore be charged for. There is no reason why the same principle should not apply in the UK.

Charging for parking is likely to always remain a controversial subject. However, if fairly implemented, with principles that are consistent and understandable, it is much more likely to be successful. A properly conducted parking policy should be able to reduce the stress of searching for parking, provide capacity where it is needed, and – within limits – act as a sensible constraint on demand. Concomitant with this should go appropriate information systems, indicating charges and available capacity (in real time).

## 8.6  Compliance and the control of parking

On safety grounds there will be some places where it is desirable to ban on-street parking absolutely (because, for example, of restricted views for moving traffic, or insufficient carriageway width, or because of legally defined priorities, as with motorways). These sections of roadway should be agreed and removed from the consideration of on-street parking. In other cases (such

as 'red routes', 'urban clearways', etc.), a ban may be considered necessary at specific times, typically because of the higher level of demand for moving traffic at those times. The remainder of the network is – in principle – suitable for chargeable parking. While the balance between the use of the highway for parking vis-à-vis keeping vehicles moving could in principle be managed by price, it is reasonable to give priority to the moving vehicle in most cases (again, taking account of temporal variations in demand).[14]

The role of enforcement is, then, to ensure that (a) the restrictions are observed, and (b) appropriate payments are made. However, unless compliance with parking restrictions is measured, it is impossible to determine the effectiveness of the various measures being used to control it. How many spaces of different types are being used at any time, how many motorists are overstaying their permitted time allowance, how many motorists are stopping where they are not allowed to (and for how long) – all these are issues that a proper compliance survey should measure. However, these measurements are expensive to make on the ground, and are usually only done on a small scale, for reasons such as the installation of a new parking zone. The use of mobile surveyors using automatic number plate recognition should make compliance measurement easier.

The mainstay of enforcement is currently the penalty system. A significant change in the penalty regime occurred when offences were split into more and less serious categories, with more appropriate higher- and lower-level penalties, and this has generally been welcomed as being fairer. However, outside London, these levels are currently too low, and do not appear to be an adequate incentive to prevent inappropriate parking behaviour; and in London, some motorists accept that they will get the occasional (or not-so-occasional) penalty, and view this as just another cost of motoring.

## 8.7  Ease of use

We have generally argued that parking charges are too low. On the other hand, and perhaps as a consequence, too little attention has been paid to making both parking itself, and compliance with the regulations, less difficult. Parking has become very complex, with a plethora of regulations concerning waiting and loading which are not fully understood by most motorists. Restrictions vary from locality to locality, and boundaries are not clear – for example, different sides of a square can have different charges and operating hours. Rules about bank holiday restrictions are inconsistent. Where parking needs to be paid for, motorists typically have to predict in advance how long they will require it: usually they will err on the safe side, and they get no rebate if they leave earlier.

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14   More generally, it would be of interest to know how the total area occupied by different types of parking compares with road space ($3065 \text{ km}^2$ in England) (Bayliss, 2008). With current data availability, this comparison cannot be made.

As a result of the complicated rules, signage has to be equally complex to inform the motorist of the appropriate restrictions, but it is too often inconsistent and incomplete, and it does not always match up with the lines on the road or the underlying traffic orders which provide the statutory basis for any penalties. The recent DfT initiative to simplify signs, while welcome, does not go nearly far enough in providing a simpler and clearer mechanism (especially if local authorities have more freedom to design their own signs), and the recent High Court ruling that minor discrepancies can be ignored if the sense of the restriction is clear makes matters more complex, not less.

New technology such as GPS positioning and smartphones has made the provision of information easier, but there is still much integration required before a total service can be provided to motorists informing them where there is available parking space, and ideally giving them the opportunity to pre-book, thus eliminating the need for excessive searching. Currently available technology could be used to establish the location of the car, advise whether parking is permitted – and for how long and at what the cost – and then charge the motorists automatically, according to the time used.

There is an a priori case for coupling any planned increase in charge with a significant increase in convenience: the technology will facilitate this and should be further developed.

## 8.8  Other vehicles

This report has concentrated on parking for cars, which account for 83% of the 34.5 million licensed vehicles in Great Britain. However, there are issues surrounding the provision of adequate and secure parking for lorries, coaches, motorcycles and bicycles. Local authorities must be aware of the special needs of these classes of vehicles and make suitable facilities available. There has been a great increase in cycling parking provision as result of it being a requirement for all new developments, but there is the danger of over-provision (and therefore underutilisation) of cycle parking, which is not always matched by the propensity of local residents to use bicycles.

## 8.9  Final remarks

The study of parking policy appears to be restricted to a small number of dedicated individuals (of whom Donald Shoup, Tod Litman and Paul Barter appear pre-eminent). Operating mainly outside the European context, they have championed an economic approach to the provision of parking space, noting the 'hidden' costs which excessive parking supply imposes on society.

Given what appears to be a considerable divergence between current charges and 'efficient' or market-based prices, any proposed move toward the latter will

need to be introduced gradually. It should also be introduced in a way which minimises the general inconvenience associated with most current parking arrangements (such as poorly functioning machinery, restricted payment opportunities, machines not delivering change, disproportionate penalties for overstaying, and so on), as well as promoting clarity of pricing structure.

Finally, it may be noted that the modelling tools for testing parking policies have not developed in the last ten years, possibly because of the attention paid to other kinds of transport policies. Although parking options are often seen as somewhat blunt instruments (in comparison to sophisticated road user charging measures, for example), they do have the advantage of practicality. There needs to be something of a renaissance of interest in both the theory and practice of models of parking provision and charging.

## 9  Appendix 1

The 2004 RAC Foundation study on parking included an annex with 13 proposals for further research prepared by Malcolm Pickett, TRL Limited and Greg Marsden, University of Leeds. In 2010 the DfT published a review of parking research undertaken by TRL (Palmer & Ferris, 2010), *Parking Measures and Policies Research Review*, to determine how parking fitted in with the Department's key strategic transport goals. The report says, "A particular failing appears to be the lack of reliable parking information. The stock of PNR parking, one of the key influences on driver behaviour, is generally unknown with surveys only covering part of the provision. This is an issue that needs to be addressed. Likewise the level of on-street and residential off-street parking is also uncertain. These data gaps, which would be very difficult, and costly, to rectify across the whole of the UK, nevertheless impede analysis and hence policy making."

The following table indicates Pickett and Marsden's recommendations and reports on the present state of affairs.

**Table A: Areas for research and current status**

| AREA FOR RESEARCH | CURRENT STATUS |
|---|---|
| **Supply** | |
| 1. Actual off-street capacity – residential and non-residential (at a micro level) | There are still huge gaps in the knowledge about actual capacity. |
| 2. The environmental impacts of inadequate provision of off-street parking facilities | It is becoming clearer that providing insufficient parking, particularly in residential areas, leads to unsightly, dangerous and obstructive on-street parking.[15] |
| 3. Effect of restricting parking availability on car ownership | More work needs to be done on this topic, particularly in areas where demand for residents' permits is greater than supply. |
| **Management** | |
| 4. Utilisation of spare parking capacity | Although this is still an issue, the use of GPS location systems should reduce the problem. |
| 5. Effect of price on parking decisions | More research is needed to determine the right level of charges, particularly bearing in mind the apparently disproportionate influence that paying for parking has on motorists' attitudes and decision-making. |

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15  Atkins undertook research for the DfT in 2008 on non-residential standards (Atkins, 2008). In 2007, the DCLG published work by WSP Ltd in association with Phil Jones Associates, TRL and David Lock Associates, which used census data to determine the factors affecting car ownership such as dwelling size and location, and recommended a method for calculating parking demand (DCLG, 2007).

| AREA FOR RESEARCH | CURRENT STATUS |
|---|---|
| 6. Demonstration projects on technology (signing and storage) | New technology, driven by the private sector, is now providing a number of different approaches to information. |
| 7. Where are the parking stress areas going to be in 15 years' time (similar to traffic stress maps)? | This needs to be investigated at a local level as part of local authorities' transport planning. A model has been suggested in section 2.3 in the present study, but it has to be applied at a very local level. |
| 8. Understanding the true cost of parking provision in terms of capital, revenue and opportunity costs | This is still an important area for further research. |
| Enforcement | |
| 9. Understanding of parking regulations by the motoring public | The DfT undertook major research exercises with TRL in 2005 (Pyman & Picket, 2005) and with AECOM in 2010 (Houldin, 2011) prior to the signs review published in October 2011. Both reports show widespread misunderstanding of signage, but the review recommendations are unlikely to make a significant change. Motorists are therefore likely to take a more cautious approach to where and when they park in order to avoid penalties, which may lead to inefficient use of space. |
| 10. Effect of switch to civil enforcement and assaults on attendants | The widespread use civil enforcement has led to better understanding by motorists, which, together with improved training for enforcement officers and the use of both fixed and video cameras, has reduced this problem significantly. |
| 11. Unintended effects of parking restrictions | Further work is still necessary to understand how motorists respond to parking interventions and determine which kinds are the most effective in changing motorists' driving/parking behaviour, and how adverse impacts can best be avoided. |
| **Strategy** | |
| 12. Integrated parking strategies | This report is designed to address some of these issues. |
| 13. Modelling the influence of parking availability, location and price on destination choice, parking location choice and departure time | The work done by Shoup (2005) in the USA and Lipman in Australia as part of the parking paradigm shift has begun to address this issue, mainly in an attempt to persuade those managing locations where there is a large amount of free parking to charge an economic price, to make better use of resources. There is still a need to study this topic in more detail. |

## 9   Appendix 2

**Table B: Recommendations from 2004 RAC Foundation report, Parking in Transport Policy, and follow up**

| RECOMMENDATION | CURRENT STATUS |
|---|---|
| **1. Residential parking** | |
| 1.5 spaces minimum per residence<br><br>More underground parking<br><br>More innovative off-street solutions<br><br>Dual-use residents' bays<br><br>P&R for residents | Rather than setting minimum standards, there was a switch to maximum standards. More recently, there has been a recognition that maximum standards were not appropriate, and a more flexible approach is now recommended. However, car-free housing with no parking is also allowed. There is little evidence of innovation. In some places, bays are dual-use. |
| **2. Parking regulations** | |
| Government review of regulations to simplify them and make them intelligible | 'Signs and lines' review only tinkered at the edges, and did not make fundamental changes. |
| Better training of parking attendants | There has been considerable improvement in training and professional standards, driven by BPA. |
| Graduated penalties | Two-tier penalties were introduced in 2009. |
| The objective of enforcement should be to reduce dangerous and obstructive parking, not to raise money | There is still a concern amongst motorists that raising cash is a key objective. |
| More cashless payment for parking | Cashless payment is now becoming so widespread that there is concern about those who do not have credit cards and mobile phones. |
| National mandatory procedures for clamping and towing | The Protection of Freedoms Act will make it illegal from the beginning of October 2012 to clamp or tow away cars as a means of enforcing parking regulations on private land unless lawful authority has been obtained. |
| Remove anomalies in the appeals system to put fairness above the collection of cash; appellants should be entitled to discounted rates | The appeals system is now seen as fairer, with greater ability of adjudicators to refer cases back to councils, some of which offer discounts to appellants. |
| Rigorous review of yellow lines every five years; unnecessary yellow lines removed | There is no evidence of regular reviews. New lines are continually added. |
| Two small cars should be able to park in one space | No progress |
| Encourage the provision of safer, more secure car parks | BPA manages the ParkMark Safer Parking Scheme |
| More parking spaces for motorbikes, scooters and bicycles | Cycle parking is a requirement of new developments. Motorbikes are now charged for parking in certain areas. |

| RECOMMENDATION | CURRENT STATUS |
|---|---|
| **3. Parking policy** | |
| When road pricing schemes are considered, parking policies should be fundamentally reviewed | No road pricing schemes have been introduced. |
| Government to set clear framework of parking principles for local authorities | No policy has been published. Guidance on civil enforcement has been published. |
| Local authorities to review parking policy in Local Transport Plans and show how they support economic objectives | Reference is generally made to parking, but rarely in a strategic sense. |
| Consultation with residents and business on parking policy | Consultation takes place on local schemes, but rarely on policy. |
| Provisions built in for groups with special needs and disabled drivers | The Blue Badge scheme has been comprehensively revised. |
| Local authorities should maintain and renew local authority car parks, particularly multi-storey ones and attend to their security and cleanliness | Many local authorities are trying to divest themselves of multistorey car parks. Some are being transferred to commercial operators. |
| Pricing of car parks should in future provide for maintenance and renewal, and the money should be used for these purposes | There is no evidence of any action in this respect. |
| **4. Transport interchanges** | |
| More quality P&R schemes | There has been a slowdown in the introduction of new schemes owing to doubts over their effectiveness. |
| More parking provision at railway and bus stations building over tracks and platforms if necessary | There have been many new schemes, often as part of new rail franchise commitments. |
| Longer-term parking linked to car sharing / minibus / HOV lanes at motorway service areas | There has been no action, but a growth of car club parking is in evidence in some city centres. |
| More parkway railway stations | There are presently *c.*30 parkway stations, with more planned. |
| Real-time information about parking availability at stations | This is not yet available, but could easily be provided via smart phones. |
| **5. Information for the motorist** | |
| Wider use of information technology Better interactive signs showing availability of parking Internet parking information Advance information on parking availability More use of parking information on satellite navigation systems Creation of local parking partnerships of local authorities and car park operators to provide and operate information infrastructure Government-funded demonstration projects to showcase information technology | Numerous web- and app-based services are now available. There is a greater use of variable message signs showing availability. There has been no action – it has been left to commercial development. There has been no action – it has been left to commercial development. |

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