

# REPORT 99/2

# Research into Trip Rate Variation

# Research by Harrison Webb

1 Hillside Cottages, Blackheath, Guildford, Surrey GU4 8QU Tel/fax: 01483-892137

for



Consulting Civil, Structural and Transportation Engineers
172 Tottenham Court Road, London W1P 0NA
Tel: 0171-388 5331 Fax: 0171-387 0078
E-Mail:London@jmp.co.uk

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# **Executive Summary**

# Aims and research design

In today's transport planning policy climate of car-use management and restraint, it is appropriate that private development-related transport infrastructure is provided on a similar basis to public sector infrastructure. Failure to manage vehicular trip-ends at development sites will undermine efforts elsewhere to achieve more sustainable growth. The assessment of development infrastructure needs is based fundamentally on the use of trip rate assumptions in Transport Impact Assessments (TIAs). TRICS is the leading source of such data.

The aim of this research is to encourage better practice in trip rate selection from the TRICS database by analysing how and why trip rates vary. It is hoped that better understanding will lead to more thoughtful and policy-compliant TIAs. The research never set out to provide a new set of statistically robust rules for trip rate selection. The available data from TRICS or similar sources, though plentiful, still does not permit this on a generalised basis.

The research was not restricted to TRICS data. It considered the messages contained in:

- consumer expenditure data
- the commercial performance of competing retail operators.

The work also looked at the way trip rate assumptions are translated into forecasts of peak parking accumulation and at the resulting relationship between measured peak parking demand and the actual parking capacity provided at a large number of sites.

Suggestions are made for further research studies.

# Research findings

Trip rates

- there is no consistent justification for applying trip rate growth rates to forecasts, especially in food retailing
- trip rates at a given retail site will vary over time because of competition, market maturity and product development; competition is probably the most important variable
- town centre locations tend to have lower vehicular trip rates than elsewhere
- there is no clear regional pattern.

Parking accumulation

there is little doubt that peak parking accumulation has been systematically (but not universally) over-estimated in recent years, particularly in the retail and leisure sectors but to a much lesser extent for employment and industrial uses; this has often been translated into parking over-provision by developers and authorities alike.

# **Towards better practice**

TIAs should refer explicitly to the extent and nature of a development's competitive environment, where this is relevant. Typically it will be relevant for retail and leisure developments but there is also competition for skilled labour in many parts of the country. Trip rate selection should relate sensibly to such findings by being compatible with retail impact assessments, for example. This research shows that a great deal of information is available for this purpose.

Locational characteristics also influence trip rates and the quality of such information in TRICS is being increased.

Practitioners should recognise more readily that the lowest trip rates in TRICS are just as valid as the highest ones. Their duty is to try to understand trip rate variability and make selections accordingly.

The routine use of or requirement for 85<sup>th</sup> percentile trip rates in traffic impact work is inappropriate except for sensitivity testing of access arrangements. It is certainly inappropriate as the sole basis of parking accumulation calculations.

The resulting more frequent use of lower trip rates may lead to less extensive off-site highways works as development-related traffic impacts will reduce but additional expenditure will be required to bolster accessibility by non-car modes.

#### 1: Introduction

# The purpose of this research

- 1.1 The TRICS database has grown in scale and scope since its inception in the late 1980s. The amount of data has grown steadily in terms of sites and the number of days surveyed and there are now many more land use categories than in the first versions of the database. This growth has increased the usefulness and statistical reliability of TRICS.
- 1.2 At the same time, the procedures used for incorporating TRICS data in traffic impact assessments (TIAs) were refined, reflecting not only the existence of better information in TRICS but also the need for greater rigour in assessment. Traffic impact assessment became a more serious issue as congestion increased and road-building decreased. Most recently, the emphasis has shifted to more broadly based Transport Impact Assessments, reflecting increasing interest in non-car travel modes.
- 1.3 The Consortium has always been concerned to assist practitioners in the use of best practice in trip rate selection. With the advent of the White Paper and its further endorsement of sustainability principles, it is even more important that the Consortium develops its advice on trip rate selection. The aims of this research are:
  - to generally refine trip rate selection by research that provides a better understanding of how and why trip rates might vary from site to site and over time
  - in so doing, help to avoid the inappropriate use of high car trip rates (eg when assessing parking supply)
  - to ensure that all the data in TRICS is regarded by users as valid, not just the mean, 50<sup>th</sup> or 85<sup>th</sup> percentile values
  - to ensure that TRICS continues to be perceived as <u>the</u> tool for transport impact assessment by refining its use and content based on research findings
  - to develop data collection and research programmes that support the above aim.

- 1.4 The Consortium has been addressing these concerns through its Conference and User Group programmes over the last two years in particular. There is detectable sympathy for the need to address these issues further but it appears that common practice is still based on the adoption of 85<sup>th</sup> percentile trip rates identified in a rapid trawl of the national dataset in TRICS.
- 1.5 Whilst higher than average trip rates may help to develop access arrangements in a programme of sensitivity tests, it has been incompatible with Government policy since 1994 (PPG13) to use such high rates to determine on-site parking provision.
- 1.6 What has always been clear is that the trip rate of a foodstore at a point in time is likely to be considerably affected by its competitive environment and that, as competition varies over time, the trip rate is likely to vary similarly. Most practitioners would find this intuitively correct although few refer to it explicitly. Time-series analysis may help to develop a better understanding of this effect.
- 1.7 It is also highly likely that location affects trip rates. If this were not the case, the Government would have no basis for emphasising the value of locational policies as the key to sustainable development; trip rates for town centre sites would be the same as those for more peripheral sites. This seems unlikely given the greater choice of non-car modes and the relative disincentives (congestion and cost) of using cars in town and city centres.
- 1.8 There is growing evidence and awareness of over-provision of parking at some types of recent development that may be explained, at least in part, by the inappropriate use of the same trip rate for highway testing and parking provision. This relates quite neatly to the recent (1998) research into parking standards for the Government Office for the South East (GOSE) which suggests a need for a sea-change in attitude to accommodating the private car at new developments through restrained parking standards and more prescriptive locational policies (if Government policies are to achieve stated objectives).
- 1.9 A weakness affecting research into all trip rate variation is that a statistical basis for firm conclusions is not available, even from TRICS, despite its status as the largest database of its kind in the UK. We do not rely solely on a data-led approach in this research as a result. It is intended to promote thought processes rather than simple answers.

- 1.10 The data weaknesses will remain in the short term. The research should therefore not seek only statistical conclusions. By example and interpretation, it should encourage practitioners to think more clearly about transport impact assessment processes, especially trip rate selection, and what trip rates imply for trip distribution. This could be achieved through a better understanding of the way developments function in transport terms.
- 1.11 In the retail sector for example, catchment, trip rates and net traffic impact are all affected by competition. If a new foodstore simply takes trade from a nearby existing store which subsequently closes (eg Safeway, St Albans where the adjacent Coop closed soon after Safeway opened), the net impact is minimal except at the new and old accesses. The traffic is virtually all on the local network already.
- 1.12 If the new store claws back shopping spending from another town and all stores survive then vehicle kilometres may reduce overall as average trip lengths reduce but the impact on the local network will be more significant. TIAs should show an understanding of these effects and tie in with shopping impact analyses that address competition implications directly. This effect has most recently been studied in TRICS Report 99/1: Transport Characteristics of Foodstores at Retail Parks.
- 1.13 It is also important to understand how parking restraint could affect trip-making and mode choice and then seek proof of this effect through a specific data collection programme. Examining parking accumulation and provision data in TRICS can start this process.
- 1.14 The overall aim of better practice is not to make TIA production more complicated. The available data often does not justify extra complexity. For example, there is only a minimal understanding of the specific impact on mode choice of a subsidised bus service. However, the Consortium believes that the knowledge and judgement already gained can be used to better effect.

- 1.15 A mode shift from the car can be forced in certain circumstances, as shown by the TRICS/SERPLAN-sponsored research into parking at offices (Parking and Public Transport, the Effect on Mode Choice. A Study of B1 Developments (TRICS Report 93/1) and Additional Surveys at B1 Developments with Constrained Parking respectively (TRICS Report 95/1)). Where there is a choice of modes, Government policy is to encourage different behaviour at the margin (to address the problem of car dependency for very short trips for example) by reducing car parking opportunities and improving accessibility by other modes.
- 1.16 This approach does not involve classical forecasting but the adaptation of practice to be more in tune with the prescriptive approach to new development the Government says it supports. "Predict and provide" set the scene for conventional forecasting. It could now be argued that demand management is not amenable to such an approach. We are being encouraged by the Government to deliberately under-provide relative to unconstrained car demand
- 1.17 This therefore seems an opportune time to consider best practice in trip rate selection given:
  - the heightened awareness of the adverse impacts of traffic
  - Planning Policy Guidance (PPG) variously issued by and expected shortly from the Government, including the revised version of PPG 13
  - ♦ up-dated Regional Planning Guidance (RPG)
  - reviews of parking standards for new development initiated by some local authorities in response to this Government guidance that aim to impose maximum standards which could help to restrain car use
  - the continuous development of the TRICS database.
- 1.18 This research paper therefore considers:
  - the latest available information about the variation in trip rates over time
  - information about the regional and locational variation in trip rates
  - information about parking supply and peak demand.

# **Technical approach**

- 1.19 TIAs, by their very nature and purpose, concentrate on road traffic associated with development. The primary transaction that really matters, the expenditure of personal time and money on services and consumer products in the retail, leisure and service sectors is rarely considered.
- 1.20 It is still relatively uncommon for retail impact studies to provide the basis for a TIA, despite the fact that such studies are one of the established ways of addressing local competition effects and trends in consumer expenditure.
- 1.21 This research therefore considers the messages in information about domestic expenditure behaviour in order to introduce this important link with the driving force behind traffic attraction and generation associated with, for example, new retail developments.

# **Background influences**

- 1.22 Before presenting the research findings, it is worth considering the likely future influences on consumer expenditure and travel behaviour. Although past trends are always instructive, future trends can be affected by policies and events which have not been influential in the past (eg revisions to PPG 6 and PPG 13). While such influences are generally inherently difficult to predict, the general direction of future policy now seems established, having been introduced by the previous Government and re-affirmed by the new one.
- 1.23 A number of current influences cannot yet be reflected in retail or travel trends although they are increasingly evident in recent Planning Appeal decisions. There are lag effects associated with many of these influences which mean that some years may pass before the effect is quantifiable in measured trip rates.
- 1.24 The following effects will tend to <u>increase</u> car use and hence, potentially, the worst transport impacts:
  - the continuing tendency for household units to acquire second (and third) cars
  - the gradual reduction in household size
  - the increasing affluence, fitness and life expectancy of the elderly

- the tendency towards centralisation of some land uses to achieve economies of scale and greater concentrations of expertise and resources, involving the closure of many schools and hospitals and the expansion of those that are left
- the pressures that maintain competitive environments and heighten customers' awareness of quality and choice, resulting in the tendency to travel further in search of apparently greater consumer satisfaction
- commercial pressures to attract appropriately skilled labour brought about by changing socio-economic patterns and an expanding female workforce (for whom convenience and security is considered paramount and perceived to be best provided by car use)
- the policy-remoteness of the private sector funding institutions (that back developers) from travel restraint principles and issues means that footloose funding will often find a home in a less successful local economy that seeks inward investment and employment at any price in environmental and energy resources terms (and consequently be diverted from more sustainable locations where reduced parking provision is a condition)
- the limited investment to date in new, high quality public transport services which might attract car users in conjunction with car use restraint policies, especially at a local level.
- 1.25 The following effects will tend to <u>decrease</u> or influence car use in such a way as to reduce transport impacts, especially in terms of peak demand:
  - a greatly reduced current road building programme that will inevitably be associated with increased traffic congestion and peak spreading for as long as attractive alternatives to the car are unappreciated and under-funded and attitudes to car use and cost do not change
  - increasingly congested car parking stock in urban centres
  - PPG 6 and 13 guidance reflected in the contents of Package Bids, TPPs, LTPs, revised local and structure plans and the general presumption against out-of-town development

- company transport plans imposed as conditions of planning permission or to enable expansion without relocation
- gradual education of the general public about the implications of its travel behaviour through the media and Travelwise campaigns
- reviews of parking standards for new development which move from minimum to maximum standards, especially if such change is coupled with strengthened parking management measures and enforcement (eg decriminalised parking enforcement)
- greater public acceptance of park and ride facilities
- the continuing development programmes of leading retailers, which will tend to reduce average travel distances as markets mature and saturate
- the increased use of IT and telecommunications systems as a substitute for business and personal travel eg modems, faxes, home banking and shopping channels, etc
- Sunday opening, late night shopping and similar adjustments to the times at which services can be accessed, combined with a return to home delivery services commonplace in the 1950s and 1960s.
- 1.26 It appears there are roughly equal numbers of powerful influences tending to increase and decrease travel demand.

# **Structure of this report**

- 1.27 Section 2 of this report contains information about consumer expenditure in relation to a variety of retail activities, gathered from published sources. The information relates to the retail equivalent of trip rates, turnover per unit area of retail floorspace (known as "sales density"). There is therefore a focus on retail land uses in the research. Further research will be needed to fully examine leisure-related development, another fast-growing sector.
- 1.28 Sales density describes the purchasing activity attracted by a given amount of retail development. It is reasonable to assume that trends in this measure will be reflected in trends in travel and car trip rates. TIAs could therefore take account of this information when explaining how a new development will work.

- 1.29 Section 3 of the report is concerned with time-series analyses of trip rate data in TRICS, which seeks evidence of variation over time. Account has been taken of the limited data for some land use categories, despite the size of the overall database (this variation in the amount of data for some land uses and some geographical areas is currently being addressed in the data collection programmes for TRICS).
- 1.30 Section 4 reports on information in TRICS about peak parking demand and actual parking supply.
- 1.31 Section 5 considers the overall implications of the above research.

# 2: Consumer expenditure

#### Information available

- 2.1 Consumer expenditure is one of the key economic variables monitored by the Government to assist management of the national economy. The level of "High Street" sales is used as a proxy for the much sought after "feel-good" factor in the current political climate. Such information also guides investment trends in the private development sector. The demand for and importance of such information has resulted in it being available from a number of sources.
- 2.2 This research concentrates on retail activity. This is the area with the largest amount of TRICS data and also accounts for a large proportion of private sector development activity.
- 2.3 The following sources of published data have been used:
  - Office for National Statistics (consumer expenditure data)
  - Retail Intelligence, part of the Corporate Intelligence Group (recent time-series sales density data for leading retail companies published in Retail Rankings)
  - The Unit for Retail Planning Information (URPI)
     (early time-series sales density data for selected retail
     companies)
  - ♦ Annual Reports of leading retailers, which contain performance data in time-series, format
  - performance data for individual stores.

# National expenditure trends

- 2.4 The Office for National Statistics publishes very long time series data on many economic indicators, including consumer expenditure, in Consumer Trends.
- 2.5 Figure 2.1 shows trends in personal expenditure on selected items in real terms (1995 prices in this instance). The data on which it is based is in Table A1 in Appendix A.

#### 2.6 The published data shows that:

- total consumer expenditure has increased in real terms by 2.8 per cent per annum on average between 1980 and 1998, similar to but slightly faster than the long term GDP growth rate of 2.4 per cent per annum over the same period (this apparent contradiction is possible if saving reduces and borrowing increases)
- ◆ consumer expenditure fell in real terms during the recession (1991, 1992), again in line with GDP

#### 2.7 Figure 2.1 shows that:

- expenditure on food has grown very slowly but steadily by 1.0 per cent per annum since 1980 in real terms (much more slowly than overall expenditure)
- durable goods and clothing expenditure has risen faster than food but durable goods sales suffered badly in the recession; drink and tobacco sales have been falling steadily in real terms, particularly since 1990

average annual growth rates for these sectors are:

durable goods:	4.8 per cent
clothing and footwear:	4.4 per cent
drink and tobacco:	-1.0 per cent

- the average growth rate of the above sectors plus food is
   1.8 per cent per annum.
- 2.8 This limited growth in food expenditure could be entirely due to demographic change. Although the UK population has grown by only 0.2 per cent per annum in the last 20 years the number of households has grown by 1.5 per cent per annum. The volume of food purchased (and hence the travel activity associated with it) would tend to grow at a rate somewhere between these two rates. This analysis shows that the driving force behind trip-making for shopping purposes, total consumer expenditure in the retail sector, is growing at a slower rate than the national economy and that expenditure on food is growing very slowly, at under 1 per cent. Non-food expenditure is growing faster than the national economy.

- 2.9 Another factor, which could result in increasing real expenditure for an almost static volume of food consumption, is a willingness to buy better quality items and more premium-priced products. Former luxury goods bought only by the few now regularly adorn foodstore shelves. Real increases in personal affluence allow such choices, driven by the ever-increasing national interest in food and cooking generated by television programmes and personalities, some of which is closely associated with certain operators. Conversely, there is an increasing tendency, associated with busier lifestyles, to buy pre-packed convenience foods, which also tend to be more expensive than fresh produce.
- 2.10 Increasing personal affluence is resulting in growth in the durable and clothing sectors that currently exceeds national economic and total consumers' expenditure rates.
- 2.11 This macro-economic information suggests that:
  - there is no obvious justification for hypothesising overall trip rate growth in the food retail sector
  - there is a possible justification for hypothesising overall trip rate growth in non-food sectors, at least in the short term.

# **Retail sector performance trends**

- 2.12 The next phase of the research considers the performance of specific operators in the retail sector.
- 2.13 Data has been collated from a number of sources (see above) in order to provide meaningful performance time-series for leading operators, ie those with the highest total sales volumes.
- 2.14 Figure 2.2 summarises the data for comparison and mixed retail businesses (non-food). The data is in the form of sales density figures: sales turnover per square foot of trading floorspace. It is presented in constant prices and the time period includes the worst of the recession. The data for Figure 2.2 is in Table A2 in Appendix A.

#### 2.15 Figure 2.2 shows that:

- many of these leading operators have experienced falling sales densities since 1990 when inflation is allowed for
- there are exceptions that have maintained growth through difficult trading conditions

- 2.16 The basis of the figures changes as acquisitions and disposals affect overall trading. A few examples are:
  - Sainsbury (Homebase) acquired Texas in 1995
  - Boots acquired WH Smith's interest in Do It All in 1996 and sold it to Focus in 1998
  - . IKEA's parent acquired Habitat in 1992
  - Dixon's acquired Seeboard in 1998
    - Kingfisher acquired Norweb in 1996
- 2.17 This data shows that although the non-food sector is growing as a whole in real terms, the increasing number of outlets and competition between operators makes life for individual operators quite difficult. This suggests that it would be inappropriate for forecasting purposes to apply growth factors to trip rates measured in recent years.
- 2.18 The next series of Figures are for the food sector. This sector is undergoing great change as the characteristics of outlets evolve to improve perceived service and compete more strongly in an almost static food-buying market.
- 2.19 Figure 2.3 shows that increase in the number of Petrol Filling Stations (PFS) associated with foodstores since the early 1990s. Tesco, Sainsbury's and Safeway account for much of the overall growth in these facilities. The data for this Figure is in Table A3 in Appendix A.
- 2.20 Figure 2.4 shows that the average outlet size of the leading operators has tended to increase slowly over time although it is noticeable that Tesco, the current market leader, has not followed this trend. These trends include Tesco Metro-type developments in cities. The data for this Figure is in Table A4 in Appendix A. The latest trend is the growth of small foodstore outlets at petrol stations. The current position is shown in Table 2.1 overleaf.

Table 2.1: Oil company and food retail partnerships

Oil company	Partner	Details (early 1999)
BP	Safeway	9 at present plans for 100 more over next 4 years
BP	Budgens	6 Budgens Express stores at present
Elf	Somerfield	5 at present plans for 50 more over next 18 months
Esso	Tesco	plans for 12 more in 1999
Murco	Costcutter	13 by the end of 1998
Petrol Express	Londis	25 badged as Londis at present Londis delivers to 56 in total
Q8	Budgens	12 Budgens Express at present 13 others supplied by Budgens
Texaco	Spar	21 at present in Scotland
Total	Budgens	2 at present
Total	Alldays	184 at present

- 2.21 Figure 2.5 shows how intense competition has eroded net margins. Most market leaders have falling margins, one exception being ASDA, which has risen from a lower base. The data for this Figure is in Table A5 in Appendix A.
- 2.22 Figures 2.6 (a) and (b) show the variation over time of the key traffic-related parameter: sales density. The data for these Figures is in Table A6 in Appendix A. Figure 2.6(a) presents the sales density data in current price terms and indicates that most operators enjoy strong growth on this basis.
- 2.23 The sales density data in Figure 2.6(b) takes account of inflation and this changes this picture significantly. Sainsbury's losing battle with Tesco is clear. Elsewhere, most operators seem to be struggling to maintain sales densities in real terms.
- 2.24 There is therefore no question that this is a highly competitive market and that typically it would be inappropriate to apply a growth rate to trip rates in forecasts. Indeed, on the basis of this data it would not be unreasonable to reduce trip rates over time for many operators' stores. What is clear is that local competition should be taken into account in TIAs. This may result in the use of lower trip rates than in the past but the possibility of competitor failures that would restore higher rates must be acknowledged.

#### Performance of individual stores

- 2.25 The impact of competition on retail and hence traffic activity at a specific retail operation has been discussed above. New information has been offered by a leading operator to illustrate this feature but cannot be made available within the publishing timescale for this research.
- 2.26 Previously published data (TRICS Conference 1997; Harrison T, Trip Rates: Stability and Application) shows customer flows at a specific store over time, correlated with changes in the competitive environment caused by in-store improvements and new openings within the store catchment area.
- 2.27 While customer numbers do not necessarily directly reflect car traffic flows, it is not unreasonable to assume that mode choice, car occupancy, transaction sizes and similar variables remained reasonably constant in the assessment period and that there should be a strong correlation between customer flows and vehicular trip rates.

#### 2.28 The data showed:

- a sharp fall in patronage not long after the peak associated with opening and the associated customer curiosity
- ◆ a steady increase in customer numbers in the first few years after opening ("early maturity") as the store's market matures
- sharp upward and downward shifts in customer flows associated, for example, with changes in the competitive environment and in-store improvements
- gradual changes between these competition-based step changes as marketing, product mixes and services are adjusted by all competitors to maximise interest.
- 2.29 This data suggests that trip rates established by a survey shortly after opening are very likely to be exceeded in the next few years as the trading environment matures. After that period, competition effects may result in long-term stability at a level close to or possibly less than "early maturity" values. About 20 per cent of TRICS data for foodstores was collected in the year of opening.

2.30 This data\_does not support the application of long term growth assumptions to early maturity trip rates. The application of early maturity trip rates to year-of-opening transport impact calculations will probably over-estimate traffic impacts, according to this data.

# **Summary of findings**

- 2.31 The above analyses of consumer expenditure, operator and store performance suggest, under current national transport policies, that:
  - there is no consistent evidence to support the general application of growth factors to trip rates used to forecast the traffic impact of new retail developments
  - a general growth in trip rates could only result in the nationally growing non-food sector if no or few additional outlets were permitted
  - competition is a major source of differences in trip rates for ostensibly the same retail operation and possibly explains most of the variation observed.
- 2.32 The implications of these findings for TIAs are that:
  - trip attraction calculations should consider competition effects explicitly and translate them into related traffic effects:
    - is this the first or third outlet of a particular type in a town/catchment?
    - is it likely to put competitors out of business?
    - will it claw-back trade lost to other towns?
  - practitioners will be aware of the uncertainties associated with changes of site ownership and operator but can acknowledge that there is evidence in TRICS and this research of the likely traffic impact of such changes (which lie outside the control of the planning system).

Figure 2.1
Consumer expenditure at 1995 prices: selected items

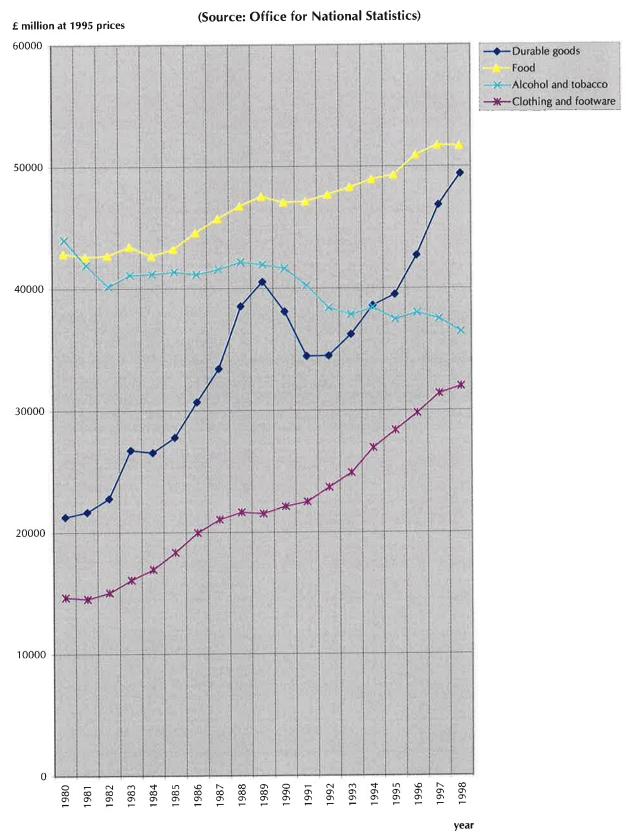
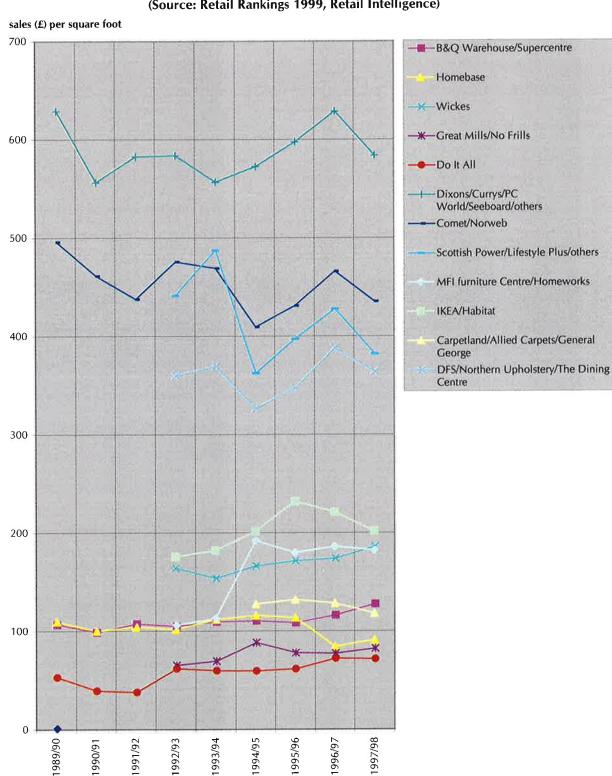


Figure 2.2 Sales density for leading non-food retailers at constant prices

(Source: Retail Rankings 1999, Retail Intelligence)



year

Figure 2.3 Petrol forecourt developments at leading grocers (Source: Retail Rankings 1999, Retail Intelligence)

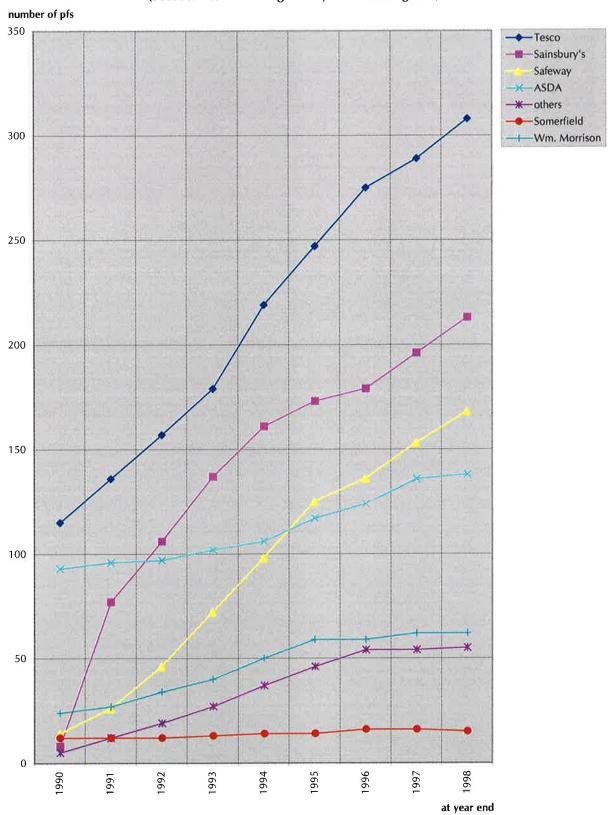
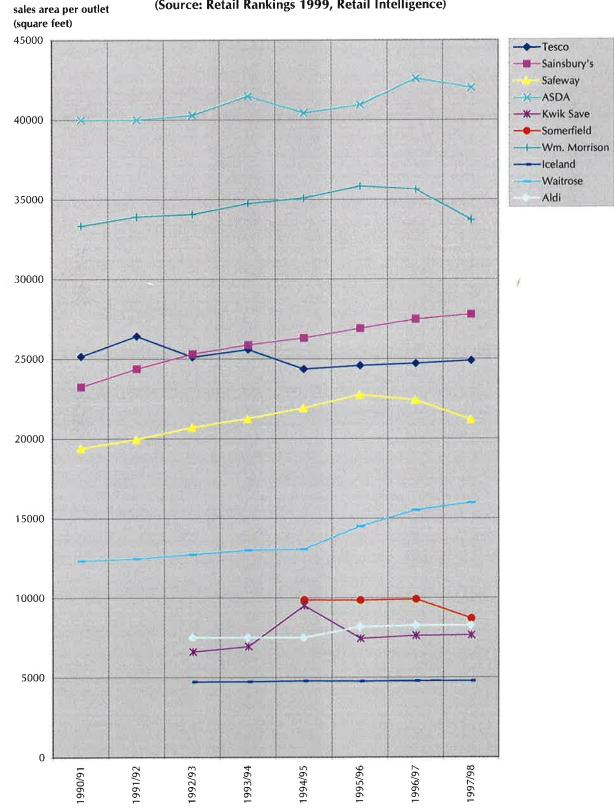


Figure 2.4 Average outlet size of leading grocers (Source: Retail Rankings 1999, Retail Intelligence)



year

Figure 2.5 Net margins of leading grocers (Source: Retail Rankings 1999, Retail Intelligence)

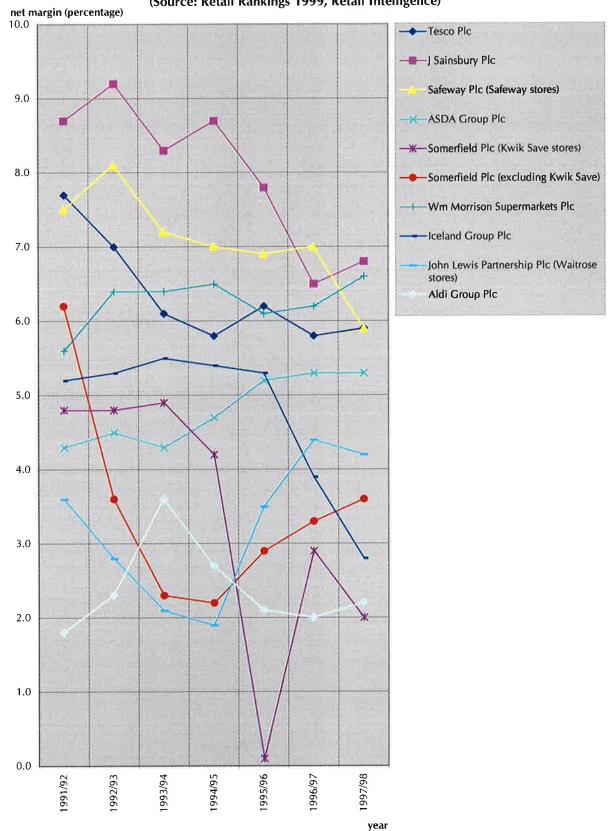


Figure 2.6(a)
Sales density for leading grocers at current prices

(Source: Retail Rankings 1999, Retail Intelligence)

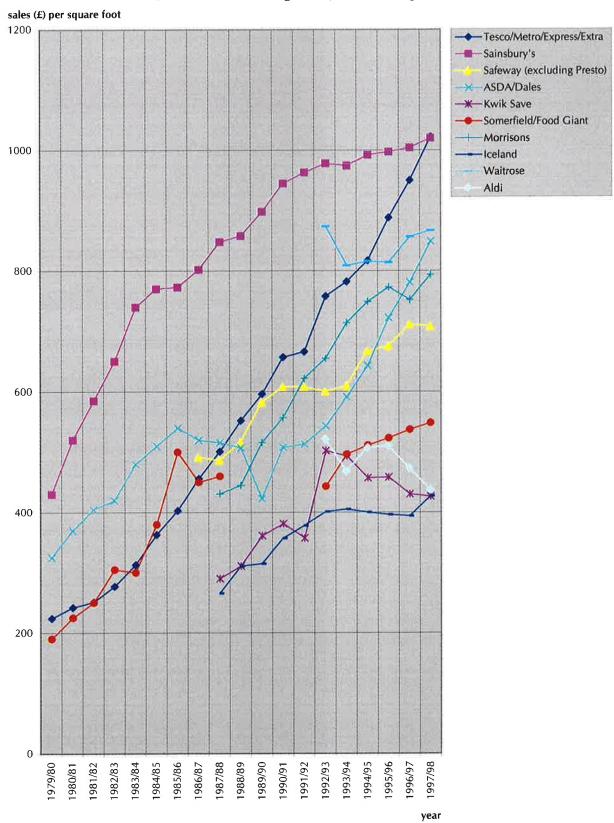
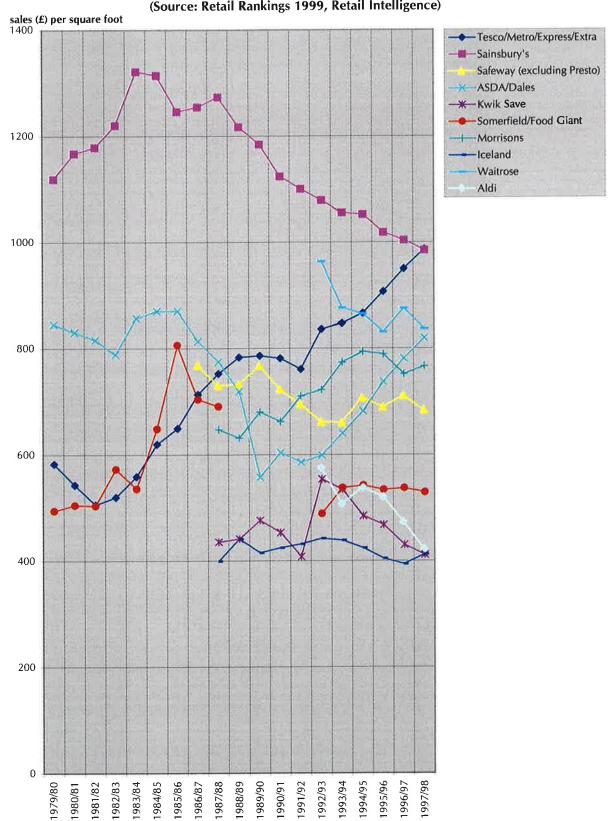


Figure 2.6(b)
Sales density for leading grocers at 1996/97 prices
(Source: Retail Rankings 1999, Retail Intelligence)



year

# 3: Time-series analysis of trip rates

#### **Previous research**

- 3.1 Allen P. presented a paper (Long Term Changes in Superstore Traffic Generation) to the TRICS Conference in 1993 containing time-series analyses of trip rates for foodstores, the best represented land use category on the database (this remains the case).
- 3.2 The work examined average yearly percentage changes in trip rates for 17 food stores that had data for comparable days in more than one year.
- 3.3 It did not prove possible to establish a statistically significant trend, such was the variability of trip rate values in this data subset. The impact of competition effects was referred to and the analysis in this research shows how influential it is in transport terms.

# Form of analysis for this current research

- 3.4 It is well established that trip rate data is characterised by very considerable variation within a broad land use category. Disaggregation into sub-categories will potentially reduce variability but introduces sample size problems in any subsequent analysis. Small sample sizes increase uncertainty.
- 3.5 A further feature of high variability and uncertainty is the potential unreliability of average trip rate values. Whilst an average is a useful measure associated with a symmetrical distribution of variability, modest sample sizes tend to have skewed distributions in which the lowest or highest percentile values are very distant from the range of second and third quartile values. In these circumstances, the average value will change significantly according to whether extreme values occur or not.
- 3.6 The analysis that follows uses median (50th percentile) values to try to address this particular problem.
- 3.7 In order to maximise sample sizes to try to extend the analysis beyond foodstores and provide a more robust calculation, data has been grouped into overlapping year pairs, a standard smoothing technique.

# **Results of analysis**

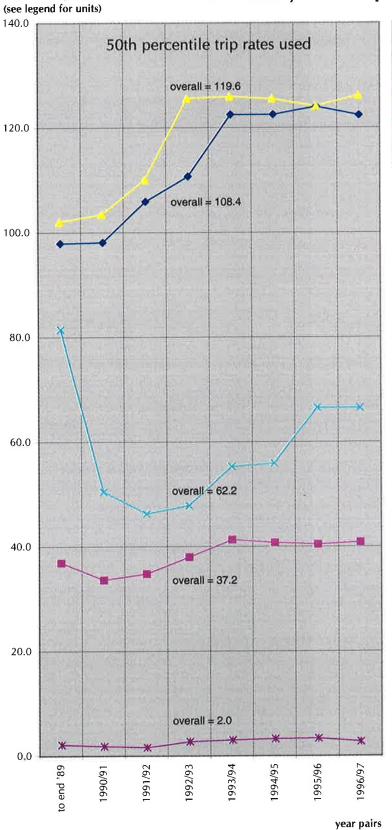
- 3.8 Figure 3.1 shows the variation in median trip rates in TRICS over time for:
  - foodstores on Fridays between 0900 and 1900
  - foodstores on Fridays between 1600 and 1900
  - foodstores on Saturdays between 0900 and 1900
  - DIY outlets without garden centres on Saturdays between 0900 and 1700
  - offices on Thursdays or Fridays between 0700 and 1900.
- 3.9 Figure 3.1 shows that:
  - foodstore trip rates in TRICS have stabilised following a period of growth
  - DIY rates have recovered from a period of decline and grown since the recession
  - office rates are stable.
- 3.10 The data suggests that:
  - the national foodstore market is approaching saturation and competition is reducing growth prospects despite operators' attempts to extend product ranges beyond the very slowgrowing food sector
  - the non-food sector has not yet fully matured and growth is still possible for the market leaders in this strongly growing national market.
- 3.11 Figure 3.2 analyses TRICS data on a regional basis over time. Foodstores is the only use category in TRICS with enough data to allow this disaggregate approach. Even so, the results should be interpreted with caution in all cases.
- 3.12 Figure 3.2 shows that:
  - whilst trip rates may have stabilised in London and the South East, growth is taking place elsewhere in England and Wales

small sample sizes create major variability in trip rates measured in Wales and northern regions of England (the Scottish dataset is too small to analyse at present: this is being addressed in the data collection programme).

#### 3.13 This data suggests that:

- there are still growth prospects for foodstore operators in the less-affluent parts of the country where the market is not yet saturated.
- 3.14 Figure 3.3 shows foodstore trip rates in TRICS disaggregated by type of location and analysed over time. Once again, these results should be interpreted with caution.
- 3.15 Figure 3.3 shows that:
  - small sample sizes contribute a lot of variability
  - town centre locations generally have lower trip rates than more peripheral locations.
- 3.16 This data tends to support the principle that town centre locations are more sustainable than other locations in transport impact terms.

Figure 3.1 Time-series analysis of trip rates



total two-way vehicles

foodstores Fridays 0900-1900 /100m2gfa foodstores Fridays 1600-1900 /100m2gfa foodstores Saturdays 0900-1900 /100m2gfa DIY without garden centre Saturdays 0900-1700 /100m2gfa -offices Thu/Fri 0700-1900 /employee

Figure 3.2

Time-series analysis of trip rates by region

total two-way vehicle
trips per 100 m2 gfa

(foodstores)

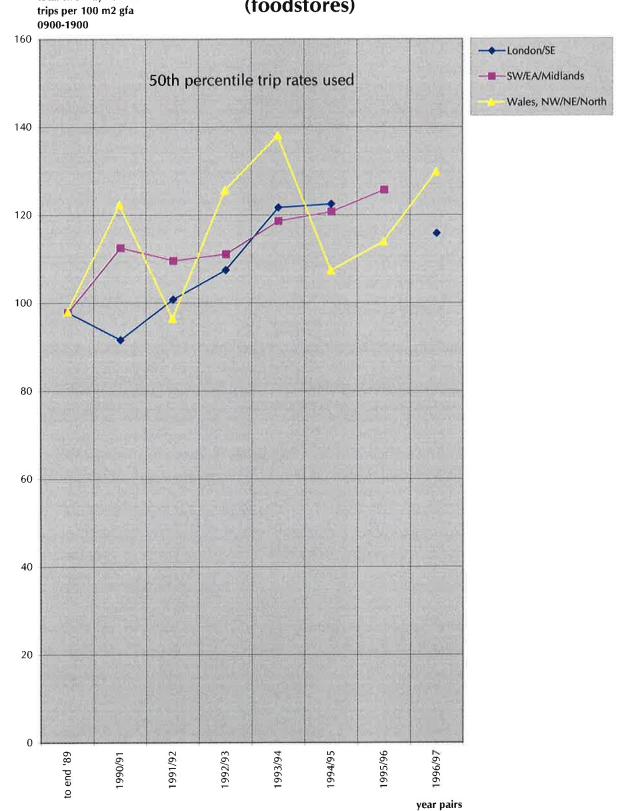
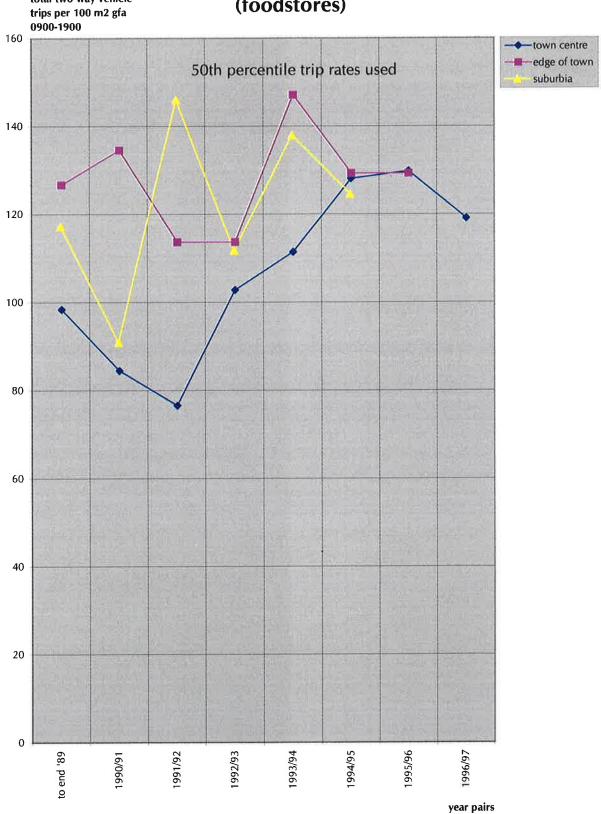


Figure 3.3

Time-series analysis of trip rates by location total two-way vehicle trips per 100 m<sup>2</sup> gfa (foodstores)



#### Introduction

- 4.1 Parking accumulation forecasts for a new development are generally directly linked to trip attraction calculations and these are based on trip rate assumptions. Trip rate data for arrivals and departures by time period (eg one hour) allows parking accumulation to be calculated on a similar basis. The higher the trip rate selected, the higher will be the peak parking demand calculated using this method. Thus an analysis of measured parking demand and actual provision may have important messages about how to select and use trip rates.
- 4.2 It has been shown above how and why trip rates might vary. There is no consistent evidence that trip rates grow systematically over time and it is also clear that competition can reduce trip rates. The tendency to base transport impact assessments on 85<sup>th</sup> percentile trip rates has been noted and doubts expressed about this practise. Given that Government policy seeks the use of reduced parking provision as a demand management tool, the way parking accumulation calculations are done is important. If there is evidence that parking demand has been consistently overestimated, this would add weight to arguments not to use 85<sup>th</sup> percentile trip rates when calculating demand. This issue is examined below.

# Parking supply and demand analysis

- 4.3 Sites were selected from TRICS (Version 4.1) to analyse the number of parking spaces provided with respect (generally) to gross floor area (gfa) in square metres and determine how well utilised the car parks are. The site selection criteria were:
  - exclude ATC data
  - use the most recent data if repeat surveys exist
  - use Friday data if possible for weekday retail/leisure activity
  - otherwise, use the day with the highest parking accumulation.

Sunday data was checked to ensure it did not exceed Saturday demand. All data used was collected after 01/01/90.

4.4 The following Figures 4.1 to 4.18 show peak parking accumulations expressed as a percentage of the available capacity for a range of development sizes. Each point on the graph represents a TRICS site survey. Peak accumulations that exceed 100 per cent of the official capacity on the site are assumed to be the result of parking on grass verges and other undesignated parking areas and to queuing on-site whilst waiting for a vacant space.

#### 4.5 These Figures show:

- widespread over-provision at food superstores
- even greater over-provision at retail parks
- over-provision at DIY superstores
- less systematic over-provision at offices, especially A2 uses, and business parks
- a relatively balanced picture at industrial and warehousing sites
- over-provision at the small number of multiplex sites.
- 4.6 The data for these Figures is in Appendix B.
- 4.7 Figures 4.19 to 4.21 translate this data into the units used for parking standards (floor area per parking space) and compare the capacity provided on this basis (effectively the standard imposed) in blue with peak demand in red. This analysis addresses the major sub-datasets: foodstores and B1 offices.
- 4.8 Figures 4.19 and 4.20 show that authorities have imposed or accepted parking provision at foodstores generally at rates between 1 space to 6 and 15 square metres of gross floor area. Very few sites lie outside this range. In contrast, the majority of sites have peak demand requiring a parking standard in the range 11 to 25 square metres. This indicates systematic and significant over-provision.

- 4.9 Figure 4.21 shows that the standards provided at B1 office developments generally lie in the range 16 to 35 square metres per space, although much lower standards are also evident. Peak demand generally matches this range, although the most frequently occurring rate of provision is in the range 1 space per 21 to 25 square metres and the most frequent peak demand is in the range 36 to 40 square metres.
- 4.10 Although there is an understandable tendency for retailers to seek factors of safety to deal with unexpected peaks (and no doubt to allow for further expansion), the scale of over-estimation often exceeds what may be considered a reasonable response in this respect. The demand data is for the busiest hour; for much of the rest of the day, demand will generally be much less.
- 4.11 Future advice on parking standards for new development (eg RPG 3, RPG 9 reviews) is likely at least to seek to eliminate this excess provision, even at those sites which will continue to be carorientated and for which only modest restraint on car use may be considered appropriate.
- 4.12 On the basis of evidence in this research, parking over-provision on this scale is thought likely to be associated with the general application of 85<sup>th</sup> percentile trip rates which, by their very nature over-estimate typical impacts. It is no longer appropriate to continue down this path under current and likely future policy guidance.
- 4.13 Retailers should also reconsider design guidance that suggests that greater commercial success flows from initially having a great deal of excess parking on-site. If the product is attractive, customers will adjust their travel behaviour to find less congested visiting times (of which there is a great deal). This will help to reduce the in-store provision for peak trading eg the number of operational tills. Encouraging this change of behaviour is arguably in retailers' long-term interests; it will allow better use of available land.

Figure 4.1
A1 Retail Food Superstores
peak weekday parking accumulation

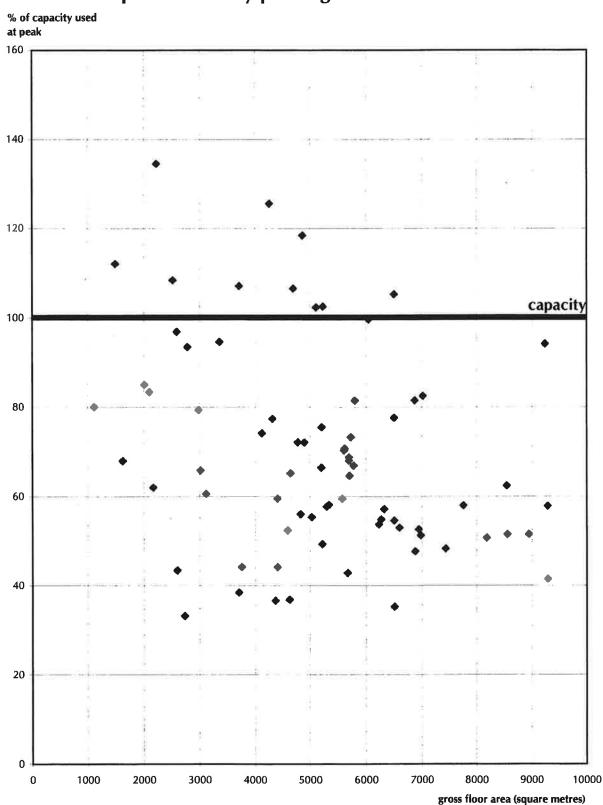


Figure 4.2
A1 Retail Food Superstores
peak Saturday parking accumulation

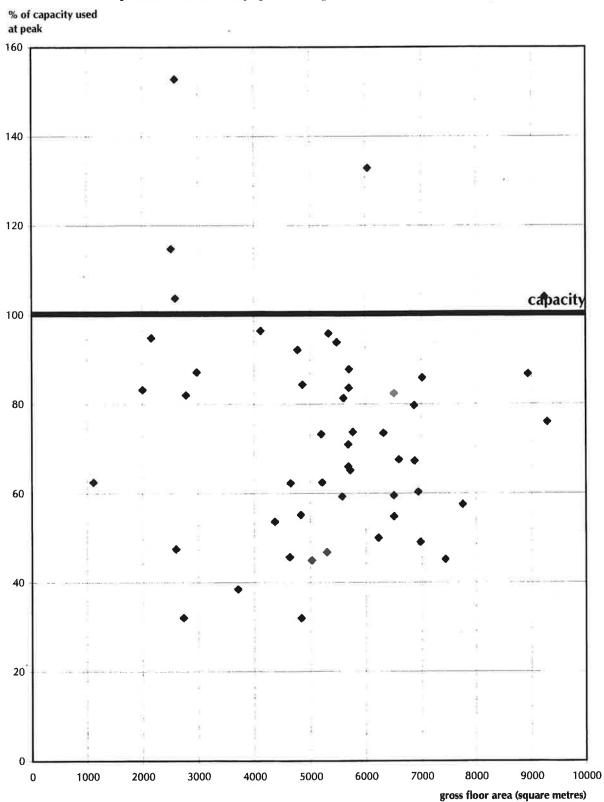


Figure 4.3
A1 Retail Retail Parks incl. Food
peak weekday parking accumulation

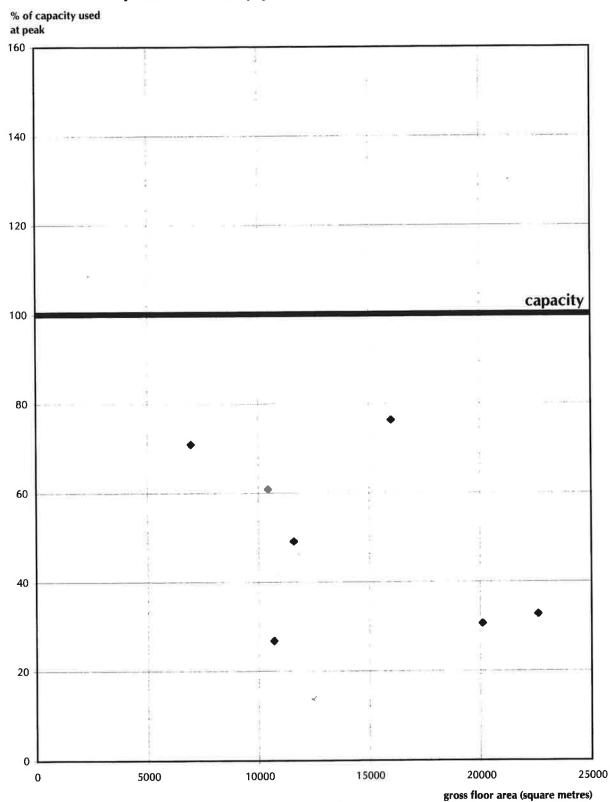


Figure 4.4
A1 Retail Retail Parks incl. Food
peak Saturday parking accumulation

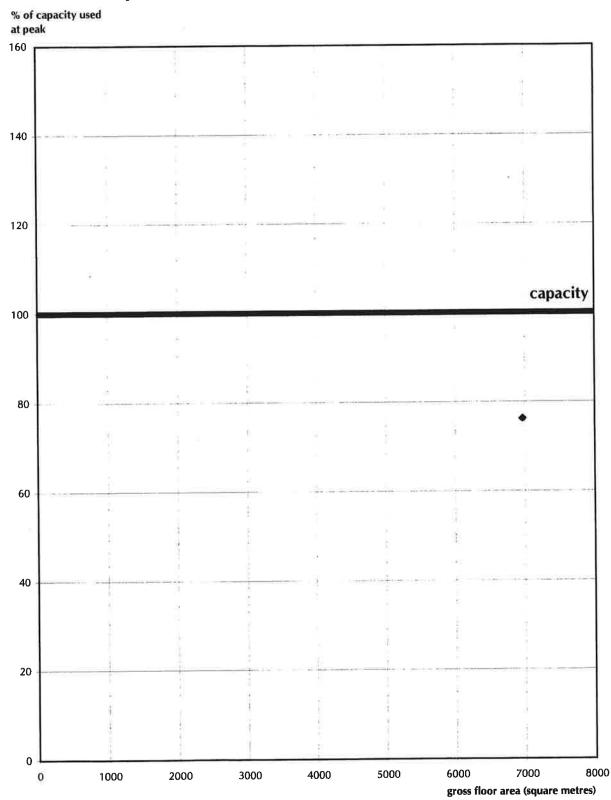


Figure 4.5
A1 Retail Non-Food Retail Parks
peak weekday parking accumulation

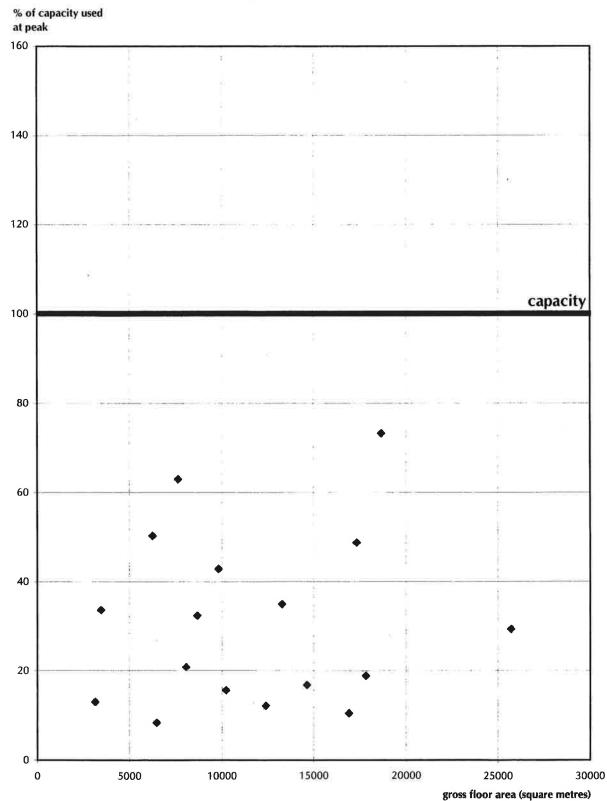


Figure 4.6
A1 Retail Non-Food Retail Parks
peak Saturday parking accumulation

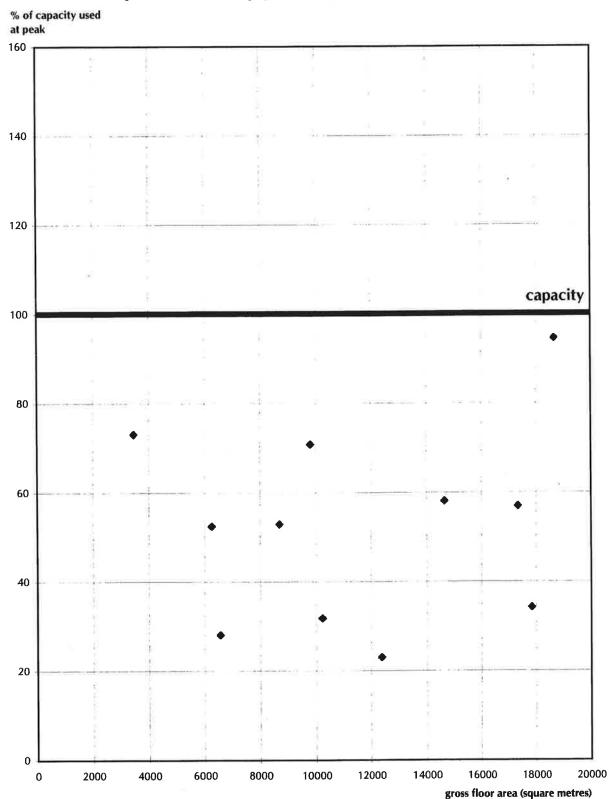


Figure 4.7
A1 Retail DIY Superstores (with garden centre)
peak weekday parking accumulation

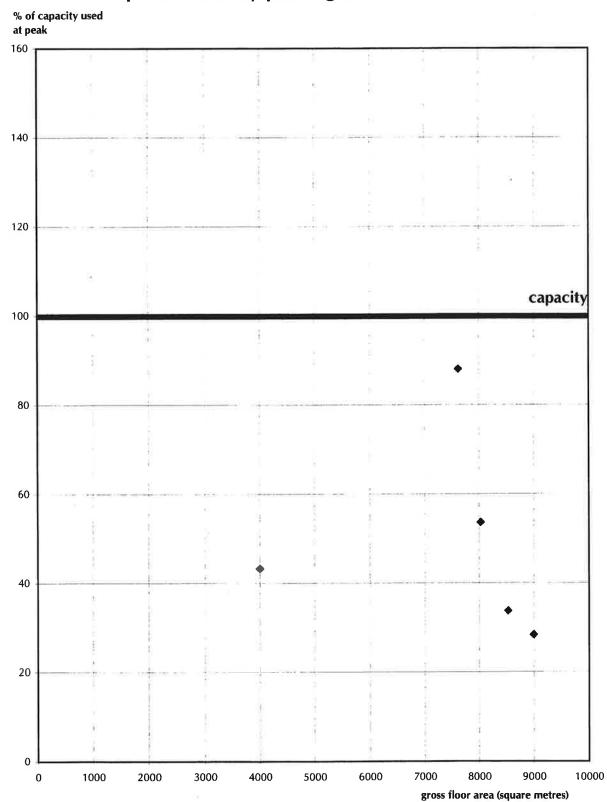


Figure 4.8
A1 Retail DIY Superstores (with garden centre)
peak Saturday parking accumulation

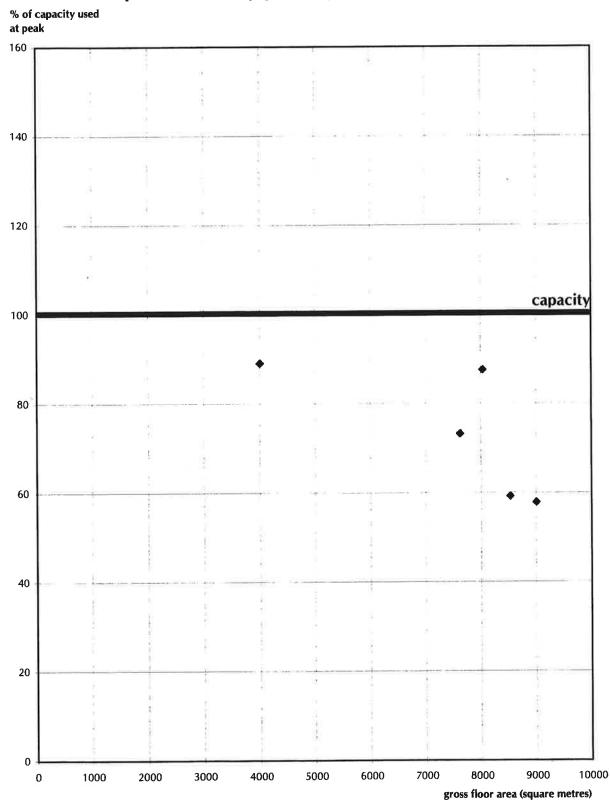
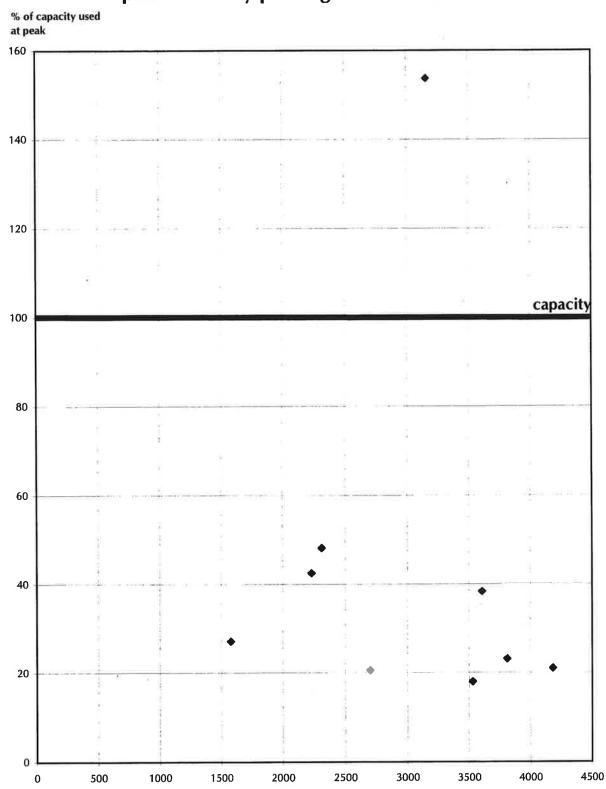


Figure 4.9
A1 Retail DIY Superstores (no garden centre)
peak weekday parking accumulation



gross floor area (square metres)

Figure 4.10
A1 Retail: DIY Superstores (no garden centre)
peak Saturday parking accumulation

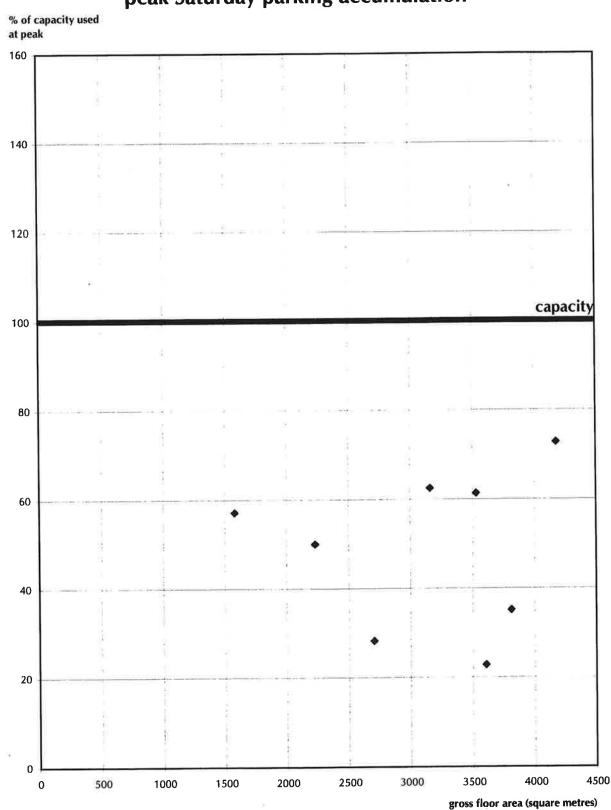


Figure 4.11
A2 Offices
peak weekday parking accumulation

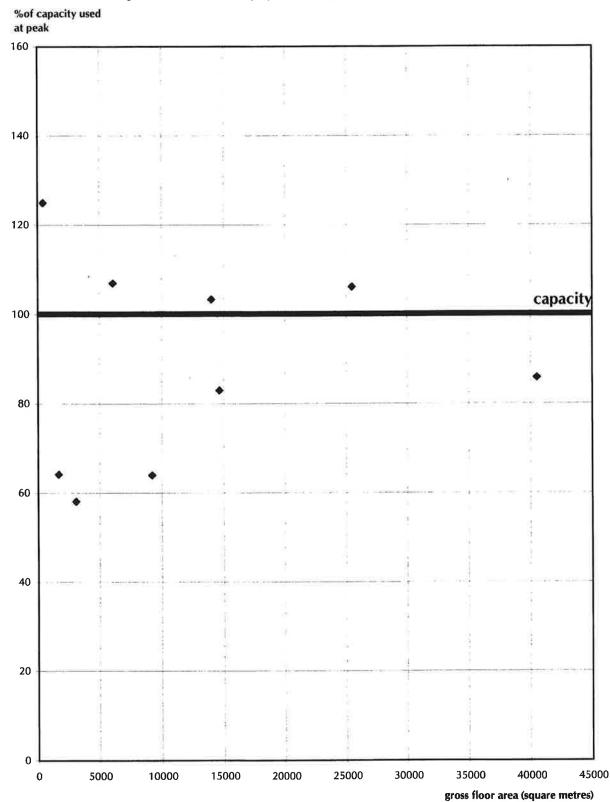


Figure 4.12 B1 Offices peak weekday parking accumulation

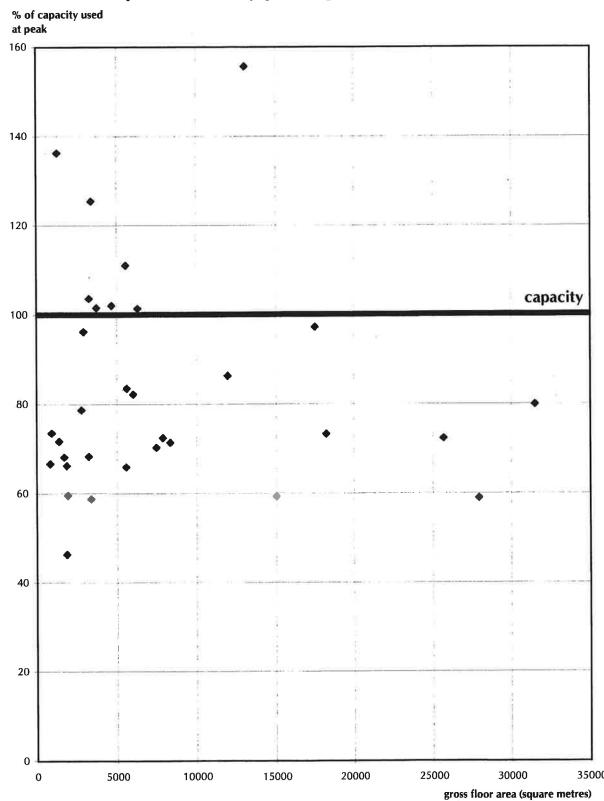
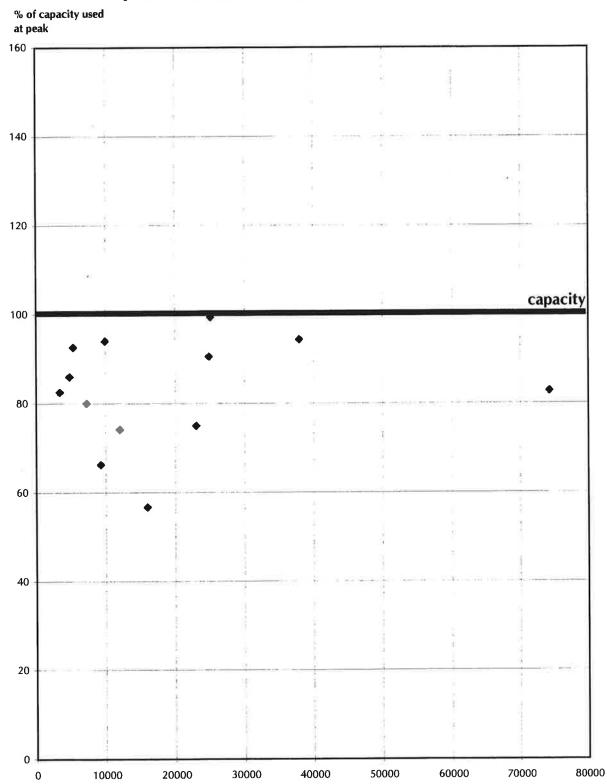


Figure 4.13
B1 Business Parks
peak weekday parking accumulation



gross floor area (square metres)

Figure 4.14
B2 Industry Industrial Estates and Units peak weekday parking accumulation

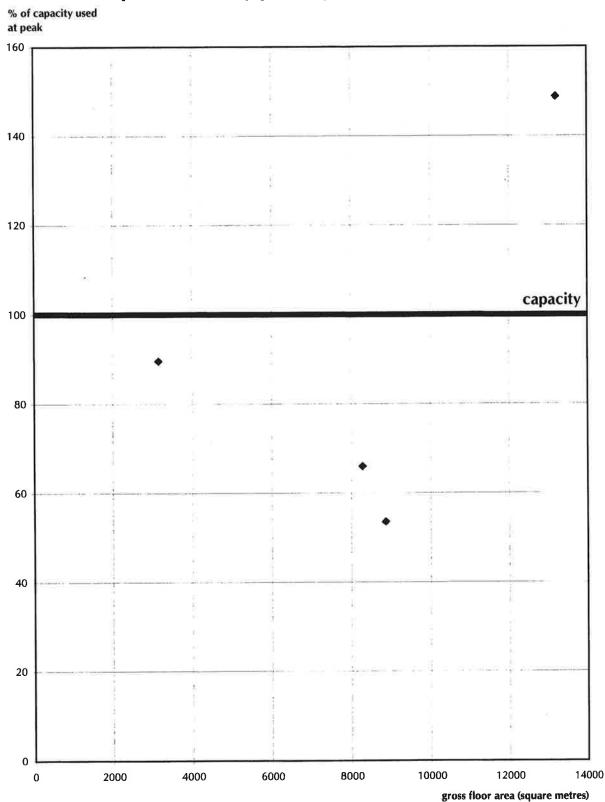


Figure 4.15
B8 Warehousing and distribution
peak weekday parking accumulation

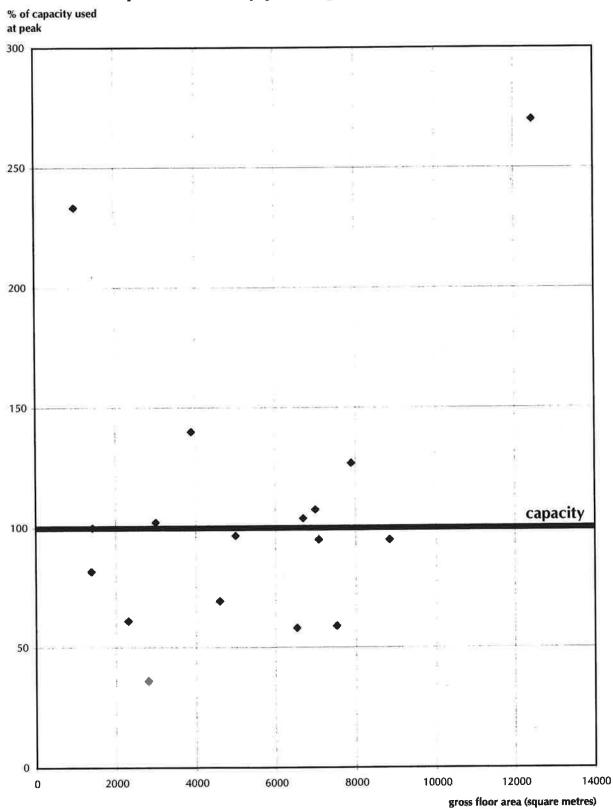


Figure 4.16
B8 Warehousing and Distribution
peak weekday parking accumulation

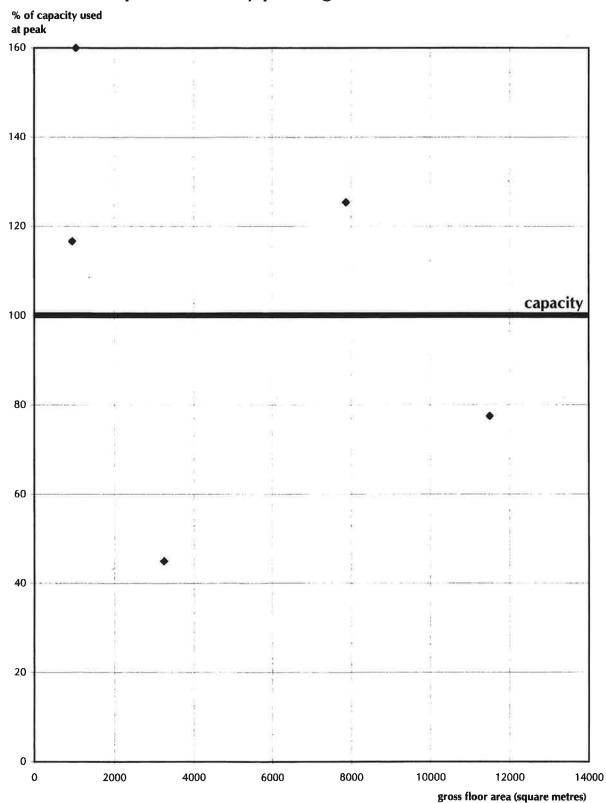


Figure 4.17
D2 Leisure Multiplex Cinemas
peak weekday parking accumulation

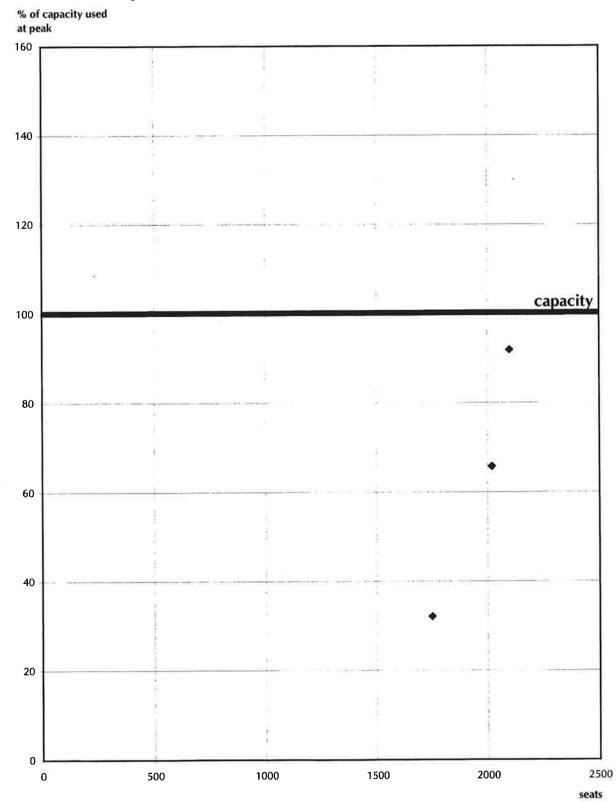


Figure 4.18
D2 Leisure Multiplex Cinemas
peak Saturday parking accumulation

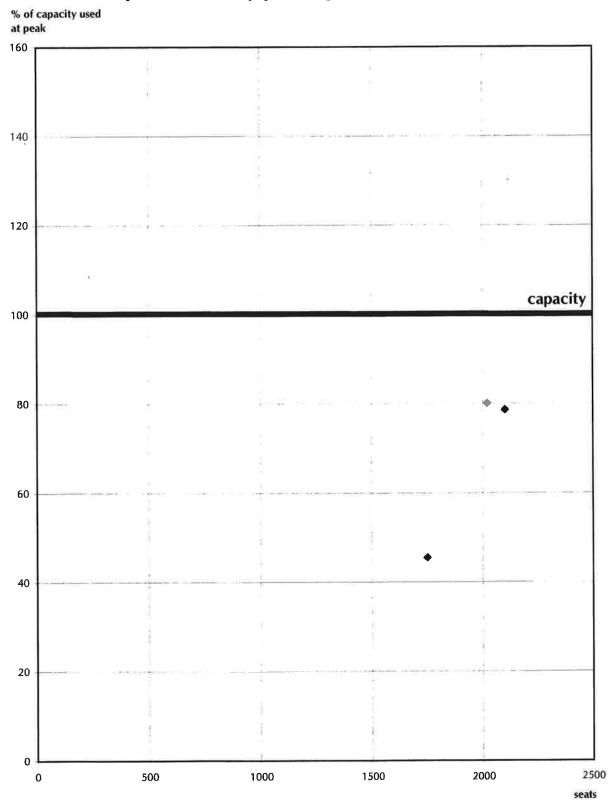


Figure 4.19
Comparison of supply and peak demand gross floor area per parking space
Foodstores on weekdays

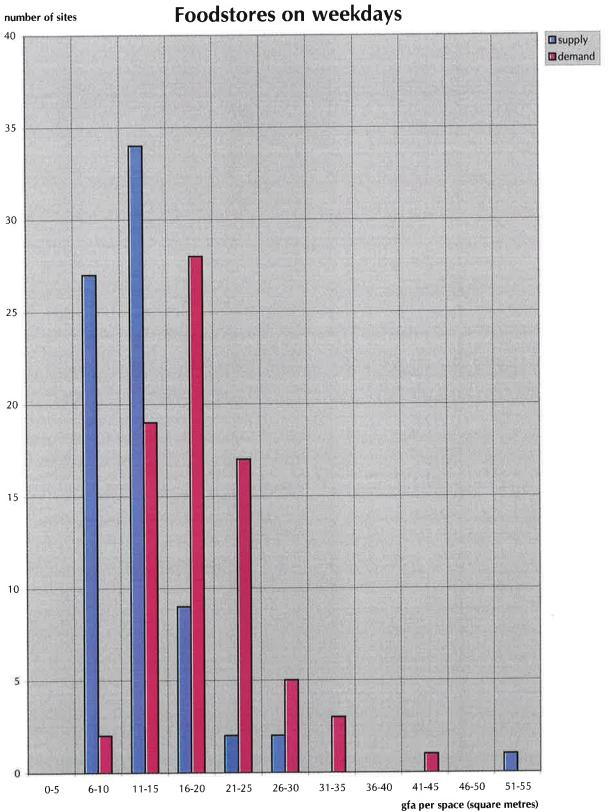


Figure 4.20
Comparison of supply and peak demand gross floor area per parking space
Foodstores on Saturdays

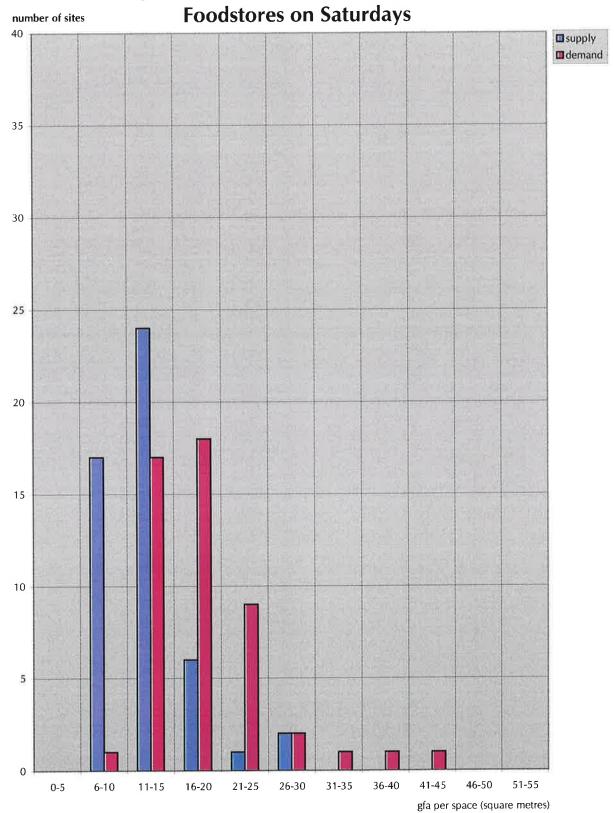
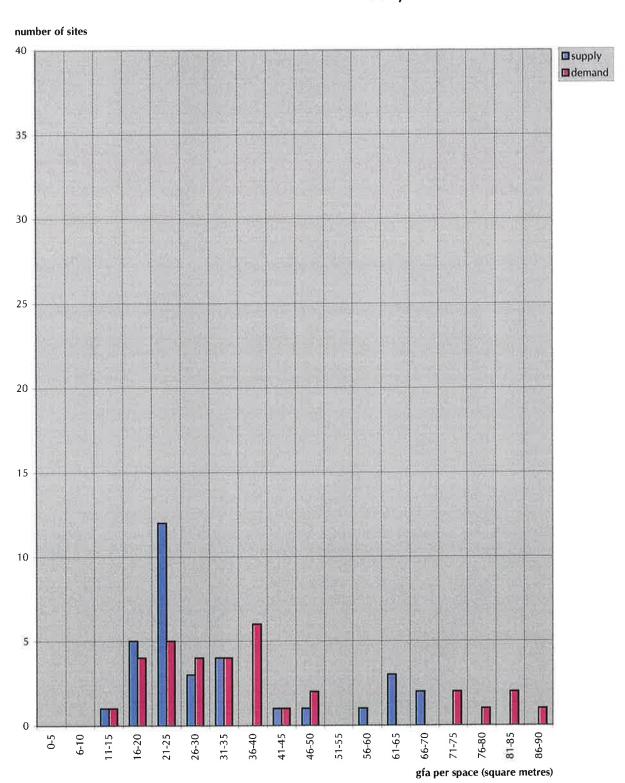


Figure 4.21
Comparison of supply and peak demand gross floor area per parking space
B1 Offices on weekdays



## Aim of this research

5.1 The aim of this research has been to explore the circumstances in which trip rates vary and, using various data sources, develop guidance on good practice in trip rate selection and use. The relationship between parking supply and peak demand has also been examined. This has important implications for the use of trip rates.

## Time-series analysis

- 5.2 In addition to the very considerable data in TRICS, the research has also considered:
  - macro-economic data concerned with consumer expenditure
  - the performance of major retailers in terms of turnover per unit trading floorspace
  - the performance of individual stores in a competitive environment.
- 5.3 The analyses suggest that:
  - there is no consistent evidence to support the general application of growth factors to trip rates for retail developments; any such growth is more likely in the nonfood retail sector than the food sector
  - trip rates resulting from surveys in the earliest period of operation of a new foodstore development (and maybe other retail operations) may result in under-estimating traffic impacts when the development "matures" but competition may well restore the surveyed rate; trip rates surveyed at "mature" stores will tend to over-estimate impacts in the year of opening (disregarding the first weeks of curiosity visits)
  - competition is always likely to be a major source of change in trip rates over time; the change may be positive or negative according to circumstances
  - town centre locations tend to attract relatively fewer vehicles per unit floor area than more peripheral locations

- there is no clear regional pattern in the dataset; although there are signs of saturation in the food retailing sector in the SouthEast that are not obvious elsewhere.
- 5.4 The implications of these findings for good practice are that:
  - trip attraction assessments in the retail and leisure sectors should refer explicitly to competition effects
  - greater account should be taken of national trading trends to ensure that the local scenario can be explained in the context of the national scene
  - more account should be taken of locational descriptions of individual sites in TRICS, especially in terms of catchment, competition and the potential use of non-car modes (this will be progressively easier in TRICS series 4); users should recognise that all the trip rates in TRICS are valid and occur for a reason, including the lowest ones
  - ♦ 85<sup>th</sup> percentile trip rates should not routinely be used or demanded for base case assessments of impact (but they could be considered routinely valid for sensitivity testing of highways operations at accesses)
  - regional differences are likely to be related to spending power, car ownership (closely related to spending power) and the competition climate; it remains valid to use TRICS as a national dataset

## Parking supply and demand

- 5.5 There is powerful evidence that peak parking demand to date has probably been systematically over-estimated. Further Government-inspired guidance on parking standards is likely to seek to eliminate this practice, accompanied by pressure to improve parking control and enforcement on the public highway. This over-provision is in large part probably due to the adoption of 85<sup>th</sup> percentile trip rates for all calculations in TIAs and in reviews of parking standards.
- 5.6 There is also pressure from developers and some local authorities to maximise parking provision. There is a strong perceived link between economic success and maximising the convenience of car use.

- 5.7 Under current Government policies, the "worst case" approach is no longer appropriate for general transport impact or parking supply assessment, although it remains a useful basis for sensitivity testing of operational and access arrangements. If it is generally inappropriate to increase road space on the main highway network (because this will tend to encourage car use), it must also be correspondingly inappropriate to do the same for development infrastructure.
- 5.8 As Government guidance has suggested for some time, this research shows that there is ample scope for reducing parking provision relative to current or previously adopted minimum standards at many types of new developments, particularly in the retail sector. There is no reason to believe that this should automatically inflict significant economic damage. Competition is exerting downward pressure on attraction rates (and hence parking demand) at specific outlets and will continue to do so under current circumstances.
- It appears generally inappropriate to determine parking provision by 5.9 routinely using 85<sup>th</sup> percentile trip rates for accumulation calculations. This is bound to build-in unnecessary spaces in most cases. The evidence of this research does not support such a large factor of safety. By the same token, it would also be inconsistent to propose low trip rates in a TIA and then not accept the imposition of maximum parking standards (and the consequent lower parking provision) than may have been sought/demanded in the past. Similarly, local authorities should accept that there is a link between trip rates and parking provision and the scale of off-site highway improvements works required. If lower parking provision is sought, it follows that traffic impacts will be reduced. This could reduce the scale of off-site highways works required to deal with developmentrelated traffic. Additional expenditure will be required to bolster accessibility by non-car modes of transport.



Time-series Data

Table A1	Househol	Household final consumption expenditure data ("consumer expenditure")	mption expe	inditure data	("consume	r expenditur	(a)													
	(seasonal	seasonally adjusted, ESA95 basis of calculation, constant 1995 prices)	SA95 basis	s of celculati	on, constar	11 1995 price	(SE				-									
	(source: (	source: Office for National Statistics)	onal Statisti	ics)																
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1983	1994	1985	1996	1997	1998
Durable goods		21278	21674	22796	26750	26557	27807	30704	33426	38552	40546	38101	34436	34474	36221	38583	39496	42701	46839	49399
Services		124641	126391	127150	132401	136802	142760	155413	165256	181806	190016	193927	190514	191542	196810	200706	204815	209645	218460	228282
Food		42866	42591	42694	43416	42676	43213	44572	45709	46745	47538	47055	47114	47664	48282	48931	49274	50931	51722	51682
Alcohol and tobacco		44008	41948	40200	41129	41217	41389	41167	41601	42181	41968	41654	40258	38415	37861	38441	37456	38007	37529	36459
Clothing and footware	e	14655	14520	15054	16091	16946	18356	19975	21053	21654	21531	22105	22502	23683	24875	26928	28347	29773	31372	31958
Energy products		22893	22976	23096	23128	23575	24665	26165	26717	27464	27283	27389	28281	27961	28123	27754	27118	28210	27558	27496
other non-durables		31009	31163	31856	32677	34033	35680	38513	41559	45053	46968	47995	47567	47817	49035	50119	51947	55419	59711	89609
Total		301350	301263	302846	315592	321806	333870	356509	375321	403455	415850	418226	410672	411556	421207	431462	438453	454686	473191	486244
															420081					
															1126					

Table A2	Non-food retailing	etailing										
	]											
Company	Operations											
DIY				189/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Kingfisher Plc	B&Q Ware	B&Q Warehouse/Supercentre	rcentre	81	83	94	95	101	104	106	116	132
J. Sainsbury Plc	Homebase			83	84	91	. 92	103	109	111	84	94
	Wickes						149	142	157	168	174	193
) Ltd	Great Mills/No Frills	/No Frills					59	64	83	76	77	82
Focus Do It All Ltd	Do It All			40	33	33	26	55	26	90	72	74
Electrical												
Dixons Group Plc	Dixons/Cur	TVS/PC Wor	Dixons/Curvs/PC World/Seeboard/others	477	468	510	529	514	540	585	629	605
Kinafisher Plc	Comet/Norweb	web		376	388	383	431	433	386	422	466	451
Scottish Power Plc	Scottish Po	wer/Lifestyk	Scottish Power/Lifestyle Plus/others				400	450	342	389	428	396
Furnture & Carpets												
	7 1 1 1						90	704	404	476	404	400
Mr. rumme op Pic	MF I TUTNIC	Mrt Iumiture Centre/Homeworks	OIIIeworks				1 100	100	- 00	700		200
Sucriting Ingka Fouring INCA/Habitat	וומפטאבאווו	ial					2	3	130	177		207
Allied Carpets Gp Plc   Carpetland/Allied Carpets/General G	Carpetland	//Allied Carp					000		120	129		771
DFS Furniture Co Plc		em Upholsti	DFS/Northern Upholstery/The Dining Centre	a)			326	341	808	340	288	3//
Ida				75.8	84 1	87.5	9 06	92.3	94.3	97.9	100	103.6
				1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Kingfisher Plc	B&Q Ware	B&Q Warehouse/Supercentre	ercentre	107	66	107	105	109	110	108	116	127
. Sainsbury Plc	Homebase			109	100	104	102	112	116		84	91
Wickes Plc	Wickes						164	154	166			186
RMC Group Ltd	Great Mills/No Frills	/No Frills					9	69	88	8/		82
Focus Do It All Ltd	Do It All			23	66	38	62	09	29	61	72	71
Dixons Group Plc	Dixons/Cur	rrys/PC Wor	Dixons/Currys/PC World/Seeboard/others	629	999	583	584	557	573	298	629	584
Kingfisher Plc	Comet/Norweb	web		496	461	438	476	469	409	431	466	435
Scottish Power Plc	Scottish Po	ower/Lifestyl	Scottish Power/Lifestyle Plus/others				442	488	363	397	428	382
MFI Furniture Gp Plc	MFI furnitui	MFI furniture Centre/Homeworks	omeworks				106	113	192	180	186	182
Stichting Ingka Found IKEA/Habitat	KEA/Habit	tat					175	182	201	232	221	202
lied Carpets Gp Plc	Carpetland	I/Allied Carp	Allied Carpets Gp Plc   Carpetland/Allied Carpets/General George						127	132	128	118
CO Christing Co Dio	ATON/NOTAL	tological Inches	1110 TILL THE									

9c

y's at end-December 1992 1992 1990 1991 1992 157 106 146 14 26 46 97 93 96 97 12 19 112 112 112 112 113 113 113 113 113 113	ble A3  Le	ading gr	Table A3   Leading grocers: petrol forecourt developments	forecourt de	evelopment	S					
1990 1991 1992 115 136 157 106 199 14 26 46 93 96 97 5 12 19 12 12 19 12 12 19 12 12 12	peration		ببوا	mber							
y's 8 77 136 77 14 26 93 96 96 12 12 12 12 12 12 12 12 12 12 12 12 12			1	1991	1992	1993	1994	1995	1996	1997	1998
y's 8 77 14 26 93 96 5 12 14 16 12 12 15 12 15 12 15 12 15 12 15 12	OSS		115	136	157	179	219	247	275	289	308
14 26 93 96 5 12 1d 12 12 rison 24 27	sinsbury's		8	77	106	137	161	173	179	196	213
93 96 5 12 1d 12 12 rison 24 27	Ifeway		14	26	46	72	86	125	136	153	168
Field 12 12 12 12 12 12 12 12 12 12 12 12 12	M		93	96	26	102	106	117	124	136	138
ield 12 12 orrison 24 27 27 326 4	hers		5	12	19	27	37	46	22	ফ্র	52
24 27	merfield		12	12	12	13	14	14	16	16	15
396	m. Morrisor	ا	24	27	क्ष	40	20	29	29	62	62
000	Fotal		321	386	471	570	685	781	843	906	959

Table A4	Leading	grocers: a	Leading grocers: average outlet size (sq.ft.)	ıtlet size (	sq.ft.)			
Operation								
	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Tesco	25159	26422	25126	25595	24356	24582	24711	24889
Sainsbury's	23247	24383	25314	25886	26304	26906	27479	27775
Safeway	19390	19950	20704	21241	21899	22746	22400	21184
ASDA	40000	40005	40294	41500	40443	40951	42597	42018
Kwik Save			6617	6945	9499	7442	7623	7650
Somerfield					6986	9842	9913	8695
Wm. Morrison	33347	33925	34085	34750	35097	35840	35642	33721
Iceland			4728	4742	4784	4761	4772	4782
Waitrose	12340	12474	12745	13010	13063	14509	15513	15991
Aldi			7500	7500	7500	8168	8267	8265

.0

100

Table A5	Net margins of le	ins of leading grocers	cers						
			1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Teen Dir			7.7	7.0	6.1	5.8	6.2	5.8	5.9
Sainchury Plc			8.7	9.2	8.3	8.7	7.8	6.5	6.8
Safeway Plc (Safeway stores)	stores)		7.5	8.1	7.2	7.0	6.9	7.0	5.9
ASDA Group Pic	(accord		4.3	4.5	4.3	4.7	5.2	5.3	5.3
Somerfield Plc (Kwik Save stores)	Save stores)		8.4	4.8	4.9	4.2	0.1	2.9	2.0
Somerfield Plc (excluding Kwik Say	ling Kwik Save)		6.2	3.6	2.3	2.2	2.9	3.3	3.6
Wm Morrison Supermarkets Plc	arkets Plc		5.6	6.4	6.4	6.5	6.1	6.2	6.6
Iceland Group Pic			5.2	5.3	5.5	5.4	5.3	3.9	2.8
John Lewis Partnershi	John I ewis Partnership Plc (Waitrose stores)		3.6	2.8	2.1	1.9	3.5	4.4	4.2
Aldi Group Plo			8.	2.3	3.6	2.7	2.1	2.0	2.2

					Ì													
Operations	1979/80	19R0/R1	1981/82	1982/83			1985/86	1986/87	987/88 19	1988/89 19	1989/90 190	1990/91 1997	1991/92 1992	1992/93 1993/94	1994/95	5 1995/96	1996/97	1997/98
Tesco/Metro/Express/Extra	T	4	_	-	313	363	-	100	501	552	-		999			Н	ш	102
Sainsbury's	430	520	585	850		770	773		848	858	898	945	963					102
Safeway (excluding Presto)	0				01				486	516	582	808	808				1	708
ASDA/Dales	325	370	405	420	480	510	540		516	507	423	508	513				1	84
Kwik Save									280	311	381	381	357	- 1				428
Somerfield/Food Glant	190	225	250	305	300	380	200	450	480		1			-		511 523	1	200
Morrisons									431	445	516	257	622				1	
Iceland							1	1	266	311	315	357		- 1				421
Waltrose														- 1			1	8
Aldi								1	1	1	1						1	43
			1	1		1	1		1	1	1	1	+	1	1			
				1	1		1	1	1	+	1	1			1			
acquired Wm. Low 1894, ABF Irish grocers 1897	ABF Irish grocers	/88/		1	1	1	1	1	+	+	1	1		1				1
				1	Ì	t	1	t	1			1						١
o-cost sold 1984, joint venture to develop 15 Wellworth stores in N	nture to develop	5 Wellworth	stores in NI			1	1			1		1	1	+	1			
includes 7 Dates discount stores	stores												-	1	1			
acquired Shoprite 1994, closure of 107 shops 1997, agreed merger with Somerfi	osure of 107 shop	s 1997, agre	ed merger w	with Somerfile	ld 1998		_											
sold Wellworth 1994, Gateway name phased out, agreed merger with Kwik Save	away name phase	1 out, agreed	I merger with	h Kwik Save	1998					_								
										1								
					1		1		1	1	1	1	+	1	1			
	000000	10000	0017007	COLCOOL	100001	2004004	4000000	4 700000	4007/00	90/	1000/00	100000	1001 1001	1000	100005	1005/08	1008/07	1007/08
Charles (Charles of Charles	18/81	200	000	1007001	1303004	+		100	504	55.5	4	+	100	758		3		00
lesco/meno/cxpress/cxna			202	000	740	220	100	coa	gya		808	OAR		970	ı			100
Sainsburys	430	970		000	/40		2//	404	486	848	582	ROB	ROB	900	RUB	887 875	711	708
Sareway (excluding Presio)	1			007	1	070	9	000	9		100	900		243	П	l		18
ASDA/Dales	329	370	£	420	480	OLC	240	076	arc c		450	900		200	ı		1	1
Kwik Save				1	1	1000			282		100	100		700	ı			
Somerfield/Food Glant	180	225	250	305	300	380	200	420	460					443	1		1	2
Morrisons	1				Ì		1	1	431	440	918	700	270	000	ı		1	2
celand				1	1		1		997		CIS	705		401	ı			177
Waitrose					1	1			1	1				100	ı		1	
Aldi					1		†	1	†	+	t	1	+	170	1			3
The state of the s	700	200	0.0%	0 *0		1,00	1 20				448.8		1948	130 4	141 9 145	145.0 150.8	1	159.3
KPI mid-year (September)				4							75 B	84.1	R7.5	808	92 4		1000	103
1890/8/ = 100	4,000	*0/000*	90,	_								100	1/00 1000	1001 1002	4004/0	4095/96	1998/97	1947/96
	1	+		+					1			781	761	836	BAR R	87 907	950	65
Calnebury's			ľ	1221	1322	1314	1246	1255	1274	1217	1184	1124	1100	1079	1058 1052	52 1018	1004	985
Safeway (excluding Prestn)		L	L	_								723	695	662	2 099	07 689	711	98
ASDAMPIN CONTRACTOR	BAR	821	836	780	A57	R71	R71		1		•	604	588	589	641 8	737	781	82
Coult Cave							4-					453	408	554	534 4	85 468	430	41
Somerfield/Food Glant	757	505	504	573	536	849	806	704			400			489	538 5	42 534	537	52
Morrisona									647	831	681	683	711	723	774 7	94 789	752	76
Colond									400	441	415	425		442	438 4	24 404	394	4
Achtron						İ	l			-				964	877	88 83	878	8
a seamond					Ì	t	l						-	Ĭ	-			1
					•			_		_		-	-	10/0	5071	38	4/3	755

## APPENDIX B

Parking Accumulation Data

92 8 96 62 65 8 8 99 67 68 55 8 8 4 133 86 8 % of supply utilised at шах. 5769 5704 5704 5697 5687 5574 5338 5296 5217 5202 4869 5687 5601 6500 6224 2269 6938 6875 6594 6503 6500 (m bs) gfa 20 16 17 1 gfa per max. space used parking demand: 369 369 383 244 341 305 387 218 181 290 281 281 260 263 460 478 408 393 388 576 441 471 471 439 570 643 555 360 289 511 415 maximum parking accum. 2 6 1 5 2 15 20 흔 12 0 9 6 7 12211 힏 Ξ 21 gfa per space parking supply: parking gfa 585 249 640 640 640 630 spaces Sainsbury's Morrisons Morrisons Morrisons Morrisons Morrisons Safeway Safeway Safeway Safeway Safeway Safeway Morrisons Safeway Safeway operator neighbourhood centre Co-op Tesco Tesco Asda Asda Tesco Asda Asda Asda Asda Asda Asda neighbourhood centre neighbourhood centre neighbourhood centre development zone commercial zone suburban area suburban area suburban area suburban area edge-of-town suburban area suburban area edge-of-town edge-of-town edge-of-town edge-of-town freestanding freestanding freestanding edge-of-town town centre town centre edge-of-town freestanding town centre town centre freestanding freestanding town centre town centre town centre town centre town centre town centre site location town centre town centre Ashton-under-Lyne, Gtr Manchester Malvern, Hereford & Worcester Chettenham, Gloucestershire Camden Town, Gtr London Rochdale, 6tr Manchester Eastboume, East Sussey Rawtenstall, Lancashire Kensington, 6tr London Trafford, Gtr Manchester Chichester, West Sussex Hatch End, Gtr London Bolton, Gtr Manchester Bolton, Gtr Manchester Southport, Merseyside St Helens, Merseyside Accrington, Lancashire Wigan, Gtr Manchester Brighton, East Sussex Fareham, Hampshire Thornton, Lancashire Stamford, Lincolnshire Bournemouth, Dorset Bournemouth, Dorset Chorley, Lancashire Christchurch, Dorset Preston, Lancashire Preston, Lancashire Reading, Berkshire Lincoln, Lincolnshire Hove, East Sussex Hull, Humberside Falkirk, Scotland Sevenoaks, Kent Kendal, Cumbria Reigate, Surrey Poole, Dorset site address Dover, Kent site reference GS-01-A-01 MS-01-A-02 LC-01-A-03 HC-01-A-01 GM-01-A-13 GM-01-A-18 GM-01-A-14 SC-01-A-03 GL-01-A-05 C-01-A-10-3 SC-01-A-04 S-01-A-06 GM-01-A-15 DC-01-A-05 NS-01-A-05 IB-01-A-03 2-01-A-13 NS-01-A-01 IW-01-A-01 GL-01-A-11 3M-01-A-19 KC-01-A-16 (C-01-A-14 C-01-A-07 C-01-A-09 site details: GM-01-A-17 C-01-A-15 DC-01-A-02 JN-01-A-04 DC-01-A-04 CB-01-A-02 LN-01-A-03 .C-01-A-14 ES-01-A-10 GL-01-A-07 ES-01-A-01 FA-01-A-01

Table B2: A1 Retail - Food Superstores (Saturday parking demand)

Table B2: A1 Retail - Food Superstores (Saturday parking demand)

4				parking supply:	<u> </u>	parking demand:	and:		
site details:					1	wining.	vem you cho	(m us) eyu	of of supply
cito reference	site address	site location	operator	parking	did per	١	dia loci Illav.	and and	indana or
200000000000000000000000000000000000000				spaces	space	parking	space used		utilised at
						accum.			тах
70 1 70 11		tour centre	Cafeway	483	6	529	17	4371	54
-A-01-W	Grantnam, Uncomstille		Cofemon	306	13	295	14	4125	96
GL-01-A-10	Acton, Gir London	Town centre	Saleway	100	ľ			2707	30
GS-01-A-02	Tewkesbury, Gloucestershire	freestanding	Safeway	400	חת			70/0	
KC-01-A-11	Toohidoe & Malling Kent	town centre	Somerfield	179	17	156	19	1867	
EC 01 A 04	Factbourne Fact Cuccev	od centre	Safeway	200	14	164	17	2787	82
0.000	Lastivalile, Last Sussex	core activities	E H Booth	268	10	98	32	2733	32
LC-01-A-12	Preston, Lancasmire		11.000	221	12	105	25	2601	48
LC-01-A-07	Blackpool, Lancashire	suburban area	E.H Boom	77				2596	104
GI-01-A-08	Faling, Gtr London	not known	Waitrose	162				500	
CC 04 A 07	Erimbov Curray	town centre	Somerfield	89	29	136	19	7657	501
20-01-0-02	i inime), our ey		Somerfield	189	13	712	12	2522	115
EN-17-17	Hallsham, East Sussex			250	o	237	σ	2168	95
SA-01-A-01	Troon, Scotland	town centre	Sareway	202				2010	83
IC-01-A-08	Lancaster, Lancashire	suburban area	E.H Booth	113				102	
GM-01-A-16	Salford, Gtr Manchester	neighbourhood centre Netto	Netto	40	78	25	45	CILI	

Table B1: A1 Retail - Food Superstores (weekday parking demand)

otto dotailos				parking s	:Ajddr	parking den	nand:		
Sile details.	17	cita location	operator	parking	ofa per	maximum	qfa per max.	gfa (sq m)	% of supply
site reference	site address	Sie location	operation of the state of the s	Smarks	space	parking	space used		utilised at
				- Constant		accim			max.
						accum.		2777	
GM-01-A-16	Salford Gtr Manchester	neighbourhood centre	Netto		40 2	28 32	35		80

69 89 58 58 53 35 53 55 57 8 67 2 2 2 2 % of supply utilised at Max. 5574 6317 6266 6224 6046 5794 5769 5687 5687 5667 6938 6875 6870 6594 6503 6500 6500 6500 5697 5611 7432 7017 6977 5601 qfa (sq m) 24 9 8 12 23 12 81 13 16 23 23 26 27 gfa per max. space used parking demand: 326 428 432 356 356 395 243 397 211 342 279 358 487 222 491 323 362 326 489 320 253 356 317 343 366 312 497 434 582 330 330 437 437 363 maximum parking accum. 9 1 2 ᅙ 힏 ᅙ <del>0</del> 0 Ξ 힏 은 9 9 9 9 9 Ξ 7 14 13 12 12 12 13 10 Ξ gfa per space parking supply: parking gfa spaces spa 640 Sainsbury's Sainsbury's Sainsbury's Sainsbury's Sainsbury's Sainsbury's Sainsbury's Sainsbury's Morrisons Morrisons Morrisons Morrisons Morrisons Safeway Safeway Safeway Safeway Safeway operator Tesco Tesco Tesco Tesco **Lesco** Asda Tesco Asda Asda Asda Asda \sda Asda Asda Asda Asda Asda neighbourhood centre neighbourhood centre neighbourhood centre neighbourhood centre neighbourhood centre development zone commercial zone commercial zone suburban area freestanding edge-of-town suburban area suburban area edge-of-town suburban area edge-of-town edge-of-town edge-of-town edge-of-town edge-of-town reestanding freestanding edge-of-town town centre edge-of-town freestanding town centre town centre freestanding town centre freestanding reestanding site location town centre town centre town centre town centre town centre Ashton-under-Lyne, 6tr Manchester Malvem, Hereford & Worcester Chettenham, Gloucestershire Camden Town, Gtr London Chichester, West Sussex Eastbourne, East Sussey Frafford, Gtr Manchester Bolton, Gir Manchester Southport, Merseyside Accrington, Lancashire Bolton, Gtr Manchester Migan, Gtr Manchester St Helens, Merseyside Brighton, East Sussex Stamford, Lincolnshire Grimsby, Humberside Bournemouth, Dorset Bournemouth, Dorset Bury, Gtr Manchester Brighton, East Sussex Preston, Lancashire Christchurch, Dorset Reading, Berkshire Neasden, Gtr London Lincoln, Lincolnshire Chorley, Lancashire Kirkcaldy, Scotland St Austell, Cornwall Hull, Humberside Sevenoaks, Kent Kendal, Cumbria Gillingham, Kent Kendal, Cumbria Sunbury, Surrey Iruro, Comwall Poole, Dorset site address Dover, Kent site reference DC-01-A-02 LN-01-A-04 GM-01-A-18 GM-01-A-14 NS-01-A-05 IB-01-A-03 MS-01-A-02 KC-01-A-13 BC-01-A-03 GM-01-A-15 C-01-A-05 KC-01-A-14 CW-01-A-02 DC-01-A-07 CB-01-A-01 C-01-A-13 -W-01-A-01 GM-01-A-19 C-01-A-04 CB-01-A-02 N-01-A-03 C-01-A-14 S-01-A-10 SC-01-A-05 GL-01-A-07 MS-01-A-01 1B-01-A-01 GM-01-A-17 GM-01-A-04 3S-01-A-01 S-01-A-01 GL-01-A-09 KC-01-A-16 CW-01-A-01 ES-01-A-03 C-01-A-15 FI-01-A-04 site details

Table B1: A1 Retail - Food Superstores (weekday parking demand)

99 3 8 108 126 4 0 95 97 167 107 65 22 용 3 4 % of supply utilised at max. 3359 3120 3019 2787 2733 2596 2592 2522 2230 2100 2010 1626 1496 4413 4371 4266 4125 3764 3717 3707 2601 4650 4631 4699 4596 4413 2981 gfa (sq m) 31 27 17 12 22 gfa per max. space used parking demand: 149 136 136 136 194 212 148 142 187 57 98 346 103 227 155 375 154 355 236 307 310 315 308 308 308 228 228 228 228 228 238 177 177 maximum parking accum. 23 8 13 16 29 20 13 14 ᅙ 12 2 2 Ξ 6 16 gfa per space parking supply: parking gfa spaces Somerfield Sainsbury's Sainsbury's Sainsbury's Sainsbury's E.H Booth Somerfield Sainsbury's Somerfield E.H Booth E.H Booth Safeway Safeway Safeway Rainbow Gateway Safeway Safeway Safeway Waitrose Safeway Safeway Safeway Safeway Safeway Safeway Safeway Safeway Safeway operator Tesco Tesco Tesco <del>о</del> О Tesco Leo's Tesco Asda neighbourhood centre neighbourhood centre neighbourhood centre neighbourhood centre commercial zone suburban area suburban area suburban area suburban area suburban area suburban area edge-of-town suburban area edge-of-town edge-of-town edge-of-town edge-of-town edge-of-town freestanding town centre edge-of-town town centre town centre town centre town centre town centre own centre town centre freestanding town centre town centre town centre town centre town centre town centre site location not known Tewkesbury, Gloucestershire Tonbridge & Malling, Kent Eastbourne, East Sussex Bridlington, Humberside East Dereham, Norfolk Bolton, Gtr Manchester Rawtenstall, Lancashire Hailsham, East Sussex Kensington, Gtr London Grantham, Lincolnshire Blackpool, Lancashire ancaster, Lancashire St. Andrews, Scotland Hatch End, Gtr London Peckham, Gtr London Lancaster, Lancashire Clitheroe, Lancashire Preston, Lancashire Thornton, Lancashire Warrington, Cheshire Fareham, Hampshire Fulham, Gtr London Falmouth, Comwall Cambome, Cornwall Penzance, Comwall Ealing, Gtr London Hove, East Sussex Newquay, Сотwall Godalming, Surrey Redruth, Comwall Acton, Gtr London Lanark, Scotland Blandford, Dorset Frimley, Surrey Troon, Scotland Exmouth, Devon Reigate, Surrey site address site reference GM-01-A-05 CW-01-A-06 ES-01-A-12 C-01-A-08 NF-01-A-02 CW-01-A-05 4B-01-A-02 ES-01-A-04 C-01-A-12 GL-01-A-08 LC-01-A-04 CW-01-A-03 SC-01-A-06 C-01-A-03 GL-01-A-10 GL-01-A-04 GL-01-A-02 C-01-A-07 SC-01-A-07 SA-01-A-01 FI-01-A-03 SL-01-A-01 ES-01-A-06 GS-01-A-02 KC-01-A-11 site details: CW-01-A-04 DV-01-A-12 GL-01-A-05 C-01-A-10 C-01-A-06 GL-01-A-11 CW-01-A-07 N-01-A-01 CH-01-A-04 C-01-A-03 HC-01-A-01 SC-01-A-04

Table B1: A1 Retail - Food Superstores (weekday parking demand)

Table B3: A1 Retail - Retail Parks including food (weekday parking demand)

site details:				parking supply	Jy:	parking demand:	nand:		
site reference   site address	site address	site location	operator	parking	gfa per	maximum	gfa per max.	gfa (sq m)	% of supply
				sbaces	space	parking	space used		utilised at
						accum.			тах.
WS-01-1-01	Shoreham hv Sea West Sussex	edae-of-town	Texas, Tesco, M&S	1750	13	573	39	22584	33
51-01-1-01	Fast Kilbride Scotland	not known	Haffords Texas, Sainsbury's etc	1205	1	369	9 54	2002	31
EL01-1-01	Durfermline Scotland	edae-of-town	Asda. Curvs etc	902	18	169	1 23	16000	) 76
\$5-01-1-02	Weshridge Surrey	commercial zone	Tesco, M6S	1300		639	18	11600	9 46
GM-01-1-07	Middleton Gtr Manchester	suburban area	Heaton Mills	009		18 161	99	10684	12
KC-01-1-01	Crayford Kent	town centre	Sainsbury's, Homebase	972	-	591	18	10436	9 91
GM-01-1-02	Tameside. Gtr Manchester	town centre	Do-It-All, Food Giant	492	17	349	02 6	1969	7

Table B4: A1 Retail - Retail Parks including food (Saturday parking demand)

site details:				ba	parking supply:		parking demand:	ınd:		
site reference	e reference   site address	site location	operator	ed	parking gr	gfa per	maximum	gfa per max.	gfa (sq m)	% of supply
				Š		space	parking	space used		utilised at
							accum.			тах.
GM-01-J-02	Tameside, Gtr Manchester	town centre	Do-ft-All, Food Giant		492	14	375	19	2969	7 76

7 % of supply utilised at тах. 13299 10219 9816 7645 6470 6259 3460 17340 16926 14642 18677 12387 8687 8071 gfa (sq m) 多 8 5 6 74 115 37 117 42 260 132 74 157 138 63 gfa per max. space used parking demand: 338 568 152 416 65 3 6 4 100 th 15/4 800 maximum parking ассиш. gfa per space parking supply: parking gfa 775 804 852 616 514 648 648 366 336 330 320 320 320 360 360 661 spaces Courts, MFI, Texas, Comet, Homebase etc. Furniture City, Furniture Land, Maples Texas, Argos, Childrens' World etc Magnet, Atlantis, Carpet Right etc Mothercare, Argos, Powerhouse Allied Carpets, Poundstretcher MFI, Comet, Halfords, Do-It-All Staples, Carpetworld, B&Q etc Halfords, Do-It-All, MFI etc MFI, Wickes, Halfords etc Do-It-All, MFI, Currys etc Homebase, Sports Max WH Smith, Do-lt-All etc B&Q, KwikFit, etc not known Courts etc not known operator commercial zone commercial zone industrial zone edge-of-town edge-of-town edge-of-town edge-of-town freestanding edge-of-town freestanding freestanding freestanding freestanding town centre site location town centre town centre town centre Bognor Regis, West Sussex Rochdale, Gtr Manchester Tameside, Gtr Manchester Stockport, Gtr Manchester Oldham, Gtr Manchester Ancoats, Gtr Manchester Southport, Merseyside ancaster, Lancashire Blackburn, Lancashire Preston, Lancashire Weybridge, Surrey Pontypridd, Wales Reading, Berkshire Reading, Berkshire Guildford, Surrey Poole, Dorset Poole, Dorset site address site reference 3M-01-K-06 GM-01-K-05 SM-01-K-03 GM-01-K-09 GM-01-K-02 C-01-K-05 MS-01-K-02 BC-01-K-03 DC-01-K-06 BC-01-K-02 C-01-K-04 site details: MS-01-K-01 C-01-K-03 SC-01-K-04 RC-01-K-02 .C-01-K-02 3C-01-K-01

Table B5: A1 Retail - Retail Parks excluding food (weekday parking demand)

7 32 53 55 7 % of supply utilised at max. 9816 8687 17340 14642 12387 10219 6555 6259 gfa (sq m) gfa per max. space used parking demand: 733 275 485 384 149 150 191 171 171 maximum parking accum. gfa per space parking supply: parking gfa 775 804 852 661 661 472 366 366 428 428 297 spaces Courts, MFI, Texas, Comet, Homebase etc Magnet, Atlantis, Carpet Right etc Mothercare, Argos, Powerhouse MFI, Comet, Halfords, Do-It-All Halfords, Do-It-All, MFI etc MFI, Wickes, Halfords etc Do-It-All, MFI, Currys etc B7Q, Halfords Homebase, Sports Max not known not known operator commercial zone edge-of-town edge-of-town edge-of-town freestanding freestanding freestanding freestanding town centre town centre site location town centre Stockport, Gtr Manchester Rochdale, Gtr Manchester Sompting, West Sussex Southport, Merseyside Lancaster, Lancashire Blackburn, Lancashire Preston, Lancashire Weybridge, Surrey Guildford, Surrey Poole, Dorset Poole, Dorset site details: site reference site address LC-01-K-03 GM-01-K-05 GM-01-K-03 LC-01-K-04 SC-01-K-04 DC-01-K-06 DC-01-K-05 WS-01-K-04 MS-01-K-01 C-01-K-02 SC-01-K-01

Table B6: A1 Retail - Retail Parks excluding food (Saturday parking demand)

Table B7: A1 Retail - DIY Superstores with Garden Centres (weekday parking demand)

a per         maximum         gfa per max.         gfa (sq m)           bace         parking         space used         8993           accum.         62         8993           20         143         60         8528           22         193         42         8027           20         338         23         7618           26         67         60         4000					parking supply:		parking demand:	and:		
site address         site location         operator         operator         parking         graper graper         maximum         graper graper         graper graper         graper	site details:						L	The same of the	(m os) epo	of cumby
Southampton, Hampshire         industrial zone         B&Q         Follow         Follow <th></th> <th>г</th> <th>cite location</th> <th>operator</th> <th>parking</th> <th></th> <th></th> <th>gia per max.</th> <th>Aid (34 III)</th> <th>Indian in a</th>		г	cite location	operator	parking			gia per max.	Aid (34 III)	Indian in a
Southampton, Hampshire         industrial zone         B&Q         512         18         145         62         893           Leicester, Leicestershire         town centre         B&Q         424         20         143         60         8528           Poole, Dorset         edge-of-town         B&Q         22         193         42         8027           Havant, Hampshire         freestanding         B&Q         384         20         338         23         7618           Leatherhead, Surrey         not known         B&Q         60         60         4000	site reference	$\neg$	SIC CORPOR		spaces			space used		utilised at
Southampton, Hampshire         industrial zone         B&Q         512         18         145         62         8993           Leicester, Leicestershire         town centre         B&Q         424         20         143         60         8528           Poole, Dorset         edge-of-flown         B&Q         22         193         42         8027           Havant, Hampshire         freestanding         B&Q         384         20         338         23         7618           Leatherhead, Surrey         not known         B&Q         60         60         4000         4000					Chande	T	١			-
Southampton, Hampshire         Industrial zone         B&Q         512         18         145         62           Leicester, Leicestershire         town centre         B&Q         424         20         143         60           Poole, Dorset         edge-of-town         B&Q         22         193         42           Havant, Hampshire         freestanding         B&Q         384         20         338         23           Leatherhead, Surrey         not known         B&Q         155         26         67         60							accum.			IIIdx.
Southampton, Hampshire         Industrial zone         B&Q         512         18         142         02           Leicester, Leicestershire         town centre         B&Q         424         20         143         60           Poole, Dorset         edge-of-fown         B&Q         22         193         42           Havant, Hampshire         freestanding         B&Q         23         338         23           Leatherhead, Surrey         not known         B&Q         67         60         67         60							144		800	28
Southampton, Hampshire         Industrial Zone         Doctor         Doctor         Leicester, Leicestershire         Lown centre         B&Q         22         193         42           Poole, Dorset         Gdge-of-frown         B&Q         384         20         338         23           Havant, Hampshire         freestanding         B&Q         155         26         67         60		The state of the s	and Indicated	CSA	1 512		C41		650	
Leicester, Leicestershire         town centre         B&Q         424         20         143         60           Poole, Dorset         360         22         193         42         42           Havant, Hampshire         freestanding         B&Q         384         20         338         23           Leatherhead, Surrey         not known         B&Q         67         60         60	HC-01-D-01	Southampton, Hampshire	Illionstrial Zollic	hand		-	1	00	003	34
Lexester, Leicestershire         Town Centure         Low         B&Q         22         193         42           Poole, Dorset         edge-of-fown         B&Q         384         20         338         23           Havant, Hampshire         freestanding         B&Q         155         26         67         60           Leatherhead, Surrey         not known         B&Q         25         26         67         60			dame contro	REO	424	2	143	09	200	5
Poole, Dorset         edge-of-town         B&Q         22         193         42           Havant, Hampshire         freestanding         B&Q         384         20         338         23           Leatherhead, Surrey         not known         B&Q         155         26         67         60	E-01-D-01	Leicester, Leicestershire	IOWII CEITII E	a mon				67	200	54
Poole, Dorset         Edge-Or-Town         Dock         384         20         338         23           Havant, Hampshire         freestanding         B&Q         155         26         67         60           Leatherhead, Surrey         not known         B&Q         60         60         60			minot to onto	DSO	360		33	74	200	
Havant, Hampshire         freestanding         B&Q         554         20         530         23           Leatherhead, Surrey         not known         B&Q         155         26         67         60	DC-01-D-02	Poole, Dorset	imoj-io-afina	A POO	200		220		192	8
Havanit, hampsnite incoranalist 26 67 60 leatherhead, Surrey not known B&Q 60	0000000		freectsoding	RXO	384		220		5	
Leatherhead, Surrey not known B&Q (25) 20 (27) 00 (18)	HC-01-D-02	Havant, Hampshire	II cestationing	a non	11.		7.3	03	400	0
Learner Search	2000		not known	BÃO	20		0	200	202	
	25-1-25		THOUSE TOTAL							

Table B8: A1 Retail - DIY Superstores with Garden Centres (Saturday parking demand)

				parking supply		parking demand:			T
site details:					mimiscan and	ofs ner max	(ma (sa m)	% of supply	
	all and deposit	site location	operator	parking	gia pei	١	( La) 1.6		Γ
site reference	site address	100000000000000000000000000000000000000		Spaces	space parking	space used		utilised at	٦
					T			Acm	Ī
					accum.			llido.	T
							5000	20	
		100000	Cad	512	00	296	0993		T
HC-01-D-01	Couthamnton Hampshire	Industrial zone	DOW				0000	20	
0000		- Control -	Coc	424	201	251 34	0709		1
1F-01-D-01	Il eicester, Leicestershire	town centre	Day				7000	88	
200			030	360	22	315	/700		I
DC-01-D-02	Poole. Dorset	edge-or-town	Day			100	0134	73	
		4.4.35.4	V3a	384	50	781	010/		T
HC-01-D-02	Havant, Hampshire	reestanding	Davi			000	0007	80	
		man burning	OSB	155	97	38 29	1004		1
SC-01-D-01	Leatherhead, Surrey	DOL KNOWN	hand						

21 23 38 154 154 88 154 154 % of supply utilised at max. 4181 3809 3605 3530 3160 2702 2313 2230 gfa (sq m) maximum gfa per max.
parking space used accum. 100 131 131 131 130 100 100 83 parking demand: gfa per space parking supply: parking gfa spaces spa 225 225 180 150 131 120 70 suburban area B&Q
edge-of-town B&Q
commercial zone Do-It-All
edge-of-town Great Mills
town centre Texas
neighbourhood centre Wickes operator B&Q Do-tt-All Do-tt-All suburban area edge-of-town town centre site location Preston, Lancashire Kirkcaldy, Scotland Rawtenstall, Lancashire Burnage, Gtr Manchester Worthing, West Sussex Kendal, Cumbria Bexhill, East Sussex Nelson, Lancashire Reigate, Surrey site address site reference FI-01-E-01 LC-01-E-02 ES-01-E-04 ES-01-E-07 CB-01-E-01 SC-01-E-01 site details: GM-01-E-01 LC-01-E-03 LC-01-E-01

Table B9: A1 Retail - DIY Superstores without Garden Centres (weekday parking demand)

Table B10: A1 Retail - DIY Superstores without Garden Centres (Saturday parking demand)

				parking supply:	×	parking demand:	:pui		
site details:							of a see man	(m us) eju	Months in %
	The caldwards	eite location	operator	parking	gra per	MAXIMUM	yla pei illak.	Aia (34 111)	Total Control
Site reference   Site address	Sue address			charbe	chare	parking	space used		utilised at
				T	- American	Ī			Acm
						accum.			Tay.
				36	21	00	42	4180	73
70 7 10 72	D. 151 1/24	cerhirhan area	SEXA	200	1	23	1		
K-01-1-0-3	Darmord, Nent		cours.	325	17	70	48	3809	35
10 1	Malaan Lancachina	Podop-of-town	038	C77	-	( )	2		
12-12-1	Neison, Lancasing			180	20	41	-88	3605	63
10 04 17 07	Westing Wort Cuccay	rommercial zone	Z-1-00	100	3				
10-0-10-01	WOLUMING, MCSL SUSSEX			150	24	92	38	3530	٩
CR Of E O1	Kandal Cumbria	edge-of-town	Great Mils	3				23.50	
200	Incindal, Cultural	100000000000000000000000000000000000000		8	40	22	63	3100	93
SC-01-E-01	Reigate, Surrey	town centre	IEXAS		1	7.0	73	2077	28
100	D	pointhouthood centre	Wirker	151	17	2/	(3)		
L(-01-E-03	Preston, Lancasnire	Inciding control		120	10	9	37	2230	20
1001 500	Dauganetal Lancachine	town centre	Do-It-All	021	2	3		5	
TC-01-E-05	Nawichistan, Lancasinic		11 to 12	70	3	40	39	15/9	)C
FS-01-F-04	Bexhill, East Sussex	edge-of-town	Do-It-All	2					

8 4 % of supply utilised at max. gfa (sq m) gfa per max. parking demand: maximum gfa pe parking асспш. gfa per space parking supply: parking spaces Halifax Building Society HQ Royal Life Financial Planning Refuge Assurance Insurance Frizzell Insurance (Broking) Woolwich Admin Centre 3 insurance companies Emst & Young Bardays Bank HQ First Data Resources сотралу

Table B11: A2 Offices (weekday parking demand)

40500 25469 14643 14000 9200 6080 3066 1663 959 743 434 192 104 104 700 305 420 300 300 179 67

cite de ais				parking supply:	oly:	parking demand:	nand:		
o coforonco	otto addrace	site location	COMPANY	parking	gfa per	maximum	gfa per max.	gfa (sq m)	% of supply
אוב ובובובווים	SIC dunces			spaces	space	parking	space used		utilised at
						accum.			шах.
10 A CO VA	Dietal Asses	) adop-of-town	Gateway Corporate HO	1000		662	39	31500	80
10-4-20-	Disto, Avoi		GPT/Siemens	1253	22	739		2790(	
DC-02-A-07	Poole, Dorset	2	l egal & General	1550		1121	1 23	25657	
SC-02-A-08	Ningswood, Surrey		Manchester International Office Centre	850		623		18208	
GM-02-A-04	Manchester, utr manchester		Com HO	515			1 35	17500	
GM-02-A-06	Kochdale, utr Manchester	9	Comment Morthorn IIO	009		356		15000	
GM-02-A-03	Manchester, Gtr Manchester		Semens Nounerin ne	020				13057	
SR-02-A-01	Stirling, Scotland		Central Regional Council	3/0				11958	
GM-02-A-01	Bolton, Gtr Manchester	industrial zone	Norweb	26.				0001	
FI-02-A-01	Dunfermline. Scotland	suburban area	British Sky Broadcasting	200		m		8361	
ER 02 A 01	Edinburch Scotland		Forestry Commission HQ	127				7897	
CM 62 4 63	Charlengt Gr Manchater		Hewlett Packard	350		1 246		7491	
1-02-W-02	Months Mon Control		Southern Water	285		5 289		6325	
WS-02-A-02	Worthing, West Sussex	١	NEC	06				6039	
GL-02-A-08	Ealing, off London		N THIST	85		5 71		5633	3 84
GL-02-A-09	Ealing, of London		D. Lillott	264				5585	
DC-02-A-01	Bournemouth, Dorset		MCSSCA Froms	290				5574	
SC-02-A-09	Claygate, Surrey	20	Cr.C. Foods Lid	47 47	48		9 47	4677	7 102
GL-02-A-16	Ealing, Gtr London	Τ	LOTION DOLONGIT OF LAMING (CITETS)	180		192		3750	102
LC-02-A-03	Preston, Lancashire		DSS UIIKES	140				3416	
GL-02-A-14	Ealing, Gtr London	commercial zone	IVSMS	01.				2301	
W-02-A-01	Carisbrooke, Isle of Wight	edge-of-town	NFI Electronics Ltd	8				339	100
DC-02-A-05	Poole, Dorset	town centre	Link House Publishing	109				3283	
C-02-A-04	Preston. Lancashire	t zone	Northern British Housing Association	142				3252	
SC-02-A-07	West Fwell Surrey	Г	Surrey County Council	186				2943	3 96
FR 02.4.02	Edinburch Scotland		Wimpey	122				2787	
DC 02 A 03	Poole Dorest		HM Customs	78				1936	
C 02 A 05	Charles Lancachine	od centre	Amec Civil Engineering	8			53 35	1859	99 6
C-N2-N-2	Edinburgh Conford		Adobe House	.8			38 49	1858	
CD-02-N-03	Faling Grandon	commercial zone	Chelsea House	157			107 16	1708	8 68
EB 02 4 04	Edinhurch Scotland	edoe-of-town	Scott House	53		26 3		1394	
RD 02-A-02	Acoley Heath Reffordshire	freestanding	Shanks & McEwans	8			109 12	1296	6 136
FR.02.4.03	Edinburch Scotland	edae-of-town	Telford House	3	34 2	27 2	25 37	929	
G 02-4-12	Faling Gri Jodgo	age of	IT Lab	1				84	845 67
מבימביעור	Calling, del Coroni	I	NEC LIK HO				36	427	17

% of supply utilised at шах. 25060 24866 23000 9940 9290 7300 5350 4823 38000 16000 12077 gfa (sq m) 33 28 83 34 40 145 51 51 33 23 40 gfa per max. space used 371 1116 144 172 619 450 240 maximum parking accum. 13 4 32 38 24 27 27 41 4 4 7 7 gfa per space 1183 500 500 368 362 1080 623 190 parking spaces 74284 38000 25060 24866 23000 16000 16000 17000 9940 9940 9290 7300 7300 8350 84823 gfa (sq m) Glaxo Wellcome Medical Research company or business park name Digital Equipment Company Ltd Citizen Manufacturing (UK) Ltd Navigation Business Village Business Park, Edinburgh Business Park, Edinburgh Carrington Business Park The South Gate Centre Woking Business Park Communications Ltd Hewlett Packard Ltd Mole Business Park Sony UK Ltd development zone industrial zone suburban area industrial zone industrial zone suburban area suburban area industrial zone edge-of-town edge-of-town freestanding freestanding town centre site location Sheerwater, Woking, Berkshire Edinburgh, Scotland Stockport, Gtr Manchester Scunthorpe, Humberside Urmston, Gtr Manchester Wokingham, Berkshire Bracknell, Berkshire Edinburgh, Scotland Leatherhead, Surrey Preston, Lancashire Newbury, Berkshire Reading, Berkshire Ealing, Gtr London site details: site reference | site address EB-02-B-02 GM-02-B-02 BC-02-B-06 SC-02-B-02 BC-02-B-05 GM-02-B-01 BC-02-B-08 HB-02-8-01 .C-02-B-02 GL-02-B-06 BC-02-B-07 EB-02-B-01 SC-02-B-01

parking demand: parking supply:

Table B13: B1 Business Parks (weekday parking demand)

Table B14: B2 Industry - Industrial Estates and Units (weekday parking demand)

ace parking gfa per max. ace parking space used accum. 35 58 23 53 90 98 41 132 63 41 69 46					parking supply:	×	parking demand:	and:		
site address         site location         company or industrial estate name         parking         gita per linaximum         Infaximum         gar per linax           Scunthorpe, Humberside         edge-of-town         Ericssons Ltd         382         35         568         23           Weybridge, Surrey         freestanding         Taylor & Penton         Acom Centre         200         41         132         63           Goldham, Gtr Manchester         edge-of-town         Acom Centre         Leith Industrial Estate         77         41         69         46	Site details:							now you afe	(m vs) cm	of or cumply
Scunthorpe, Humberside         edge-of-town         Ericssons Ltd         Acom Centre         Face         Parking           Oldham, Gtr Manchester         edge-of-town         Taylor & Penton         168         53         90           Fedinburgh, Scotland         suburban area         Leith Industrial Estate         200         41         132	otto roforono	sample of a	site location	-		gra per	- 1	yid bei IIIdx.	131a (34 III)	reduce to a
Scunthorpe, Humberside         edge-of-town         Ericssons Ltd         382         35           Weybridge, Surrey         freestanding         Taylor & Penton         168         53           Oldham, Gtr Manchester         edge-of-town         Acom Centre         200         41           Edinburgh, Scotland         suburban area         Leith Industrial Estate         77         41	אוכו בוכובוורב	Site addicas				space	parking	space used		utilised at
Scurthorpe, Humberside         edge-of-town         Ericssons Ltd         382         35           Weybridge, Surrey         freestanding         Taylor & Penton         168         53           Oldham, Gir Manchester         edge-of-town         Acom Centre         200         41           Edinburgh, Scotland         suburban area         Leith Industrial Estate         77         41		•			Ī					>500
Scunthorpe, Humberside         edge-of-town         Ericssons Ltd         382         35           Weybridge, Surrey         freestanding         Taylor & Penton         168         53           Oldham, Gtr Manchester         edge-of-town         Acom Centre         200         41           Edinburgh, Scotland         suburban area         Leith Industrial Estate         77         41							accum.			IIIdv
Scunthorpe, Humberside         edge-of-town         Ericssons Ltd         382         35           Weybridge, Surrey         freestanding         Taylor & Penton         168         53           Oldham, Gir Manchester         edge-of-town         Acom Centre         200         41           Edinburgh, Scotland         suburban area         Leith Industrial Estate         77         41						1		cc	UUCC+	071
Scutting Per Inumberside         Construction         Taylor & Penton         168         53           Weybridge, Surrey         freestanding         Taylor & Penton         200         41         1           Oldham, Gtr Manchester         edge-of-town         Acom Centre         77         41         1           Edinburgh, Scotland         suburban area         Leith Industrial Estate         77         41	20 00 01	C. M. Louisk	number of town	Friceons 10	382	35		53	1350	
Weybridge, Surrey         freestanding         Taylor & Penton         53           Oldham, Gtr Manchester         edge-of-town         Acom Centre         200         41         1           Edinburgh, Scotland         suburban area         Leith Industrial Estate         77         41	HB-02-D-03	Scumonge, numberside	CUGC-OL-10mil		00,	1	5	90	1700	72
Weyondge, Surrey accounting to the Collins of the C	20000	6	froottanding	Taylor & Penton	168	S	₹	30	000	
Oldham, Gtr Manchester edge-of-town Acom Edinburgh, Scotland suburban area Leith Ir	20-7-70-70	Weybridge, Surrey	II CCStal Idling		000		433	63	8285	29
Edinburgh, Scotland suburban area Leith Ir	100000	O. W. C. Mar. Landson	ados of town		007	4	751	60	OFO	
Edinburgh, Scotland Leith Ir	GM-02-D-01	Oldnam, oir Manchester	CONC. COLINE		1	4.4	0,0	34	2154	6
Editibulgit, Scottain	50 00	Edishumah Continued	suhurhan area		//	4	60	40	5	
	EPACADI	Editionight, Scottain	Sandingin and							

Table B15: B8 Warehousing and Distribution - primarily distribution including Parcel Distribution Centre (weekday parking demand)

					anthing cum	. In	narking demand.	and.	
cite details:					parking suppry.		Dailwing or		N. Carrier
		cite location	company	gfa (sq m)	parking	gfa per	maximum	gta per max. % of supply	% or supply
site reference	site address	olic location			spaces	space	parking	space used	utilised at
							accum.		max.
		commercial zone	John Lewis Partnership	12463	8	156	216	58	2
GL-02-1-01		commercial zone	Acda Distribution Centre	8848	120	74	114	78	95
GM-02-F-01	iter	COMMINERCIAL ZUME	Course Distribution Course	7900	41	193	52	152	127
GL-02-F-11	Ealing, Gtr London	commercial zone	Glaxo	101	200			64	59
GI_02.E_12		commercial zone	Pioneer High Fidelity (GB) Ltd	575/	90				
CC 02 E 04		freestanding	Courage	7085	141	20			
30-02-1-01		industrial zone	Entonia Wines	7000	40	175	43		
G-7-20-19	Failig, dr. Collool	industrial zone	Allourt Freight Ltd	0029	97	258	72	248	
aL-02-1-02	Ealing, orr London	industrial zone	lambe Biscuite	6533	31	112	18	363	28
BC-02-1-04	Keading, Berkshire	Illuusii lai zoile	Jacobs Discuss	2000	30	167	29	172	97
GL-02-F-03	Ealing, 6tr London	industrial zone	Carlsberg	200					69
RC-02-E-03	Bracknell Berkehire	industrial zone	Christian Salvesen	4590	7/				
20 1-20-70	Estina Ctrl andon	industrial zone	Expandite Ltd	3900	20	195	28		
GL-02-F-00	Falling, Gir London	industrial zone	Ingram Entertainment plc	3000	44	. 68	45	9	102
GL-02-1-04	raing, or London	commercial zone	Holmes Valves	2787	25	111	0,	9 310	
GC-7-20-10		fractanding	TNT Parcel Distribution	2304	152	15	5 93	3 25	61
20-9-70-75		li cestaliuli ig	Cables & Elevibles	1420	20	7.	20	71	100
GL-02-F-09	Ealing, Gtr London	COLIILIEI CIGII ZOLIC	Cables a Levibles	1202		63	18	77	82
GL-02-F-07	Ealing, Gtr London	industrial zone	Oskar Lapp Ltd	CCC	J			1	233
GI -02-F-06	Falina Gir London	industrial zone	Grosfilex (UK) Ltd	1000		16/	14		500
- 70 -	remitles on reminer								

Table B16: B8 Warehousing and Distribution - primarily warehousing (weekday parking demand)

site details:				parking supply:	<u>:</u>	parking demand:	ind:		
site reference	ite reference   site address	site location	company	parking	gfa per	maximum	gfa per max.	gfa (sq m)	% of supply
				spaces	space	parking	space used		utilised at
						accum.			тах.
GL-02-E-05	Ealing, Gtr London	commercial zone	Clothing Retailers	200	22	155	74	11495	5 78
BC-02-E-01	Theale, Reading, Berkshire	industrial zone	Catering Equipment	63	125	79	100	7872	125
GL-02-E-04	Ealing, Gtr London	town centre	Folkard Bolding	40	81	18	180	3248	3 45
GL-02-E-03	Ealing, Gtr London	commercial zone	Milupa	10	105	16	65	1045	5 160
GL-02-E-02	Ealing, Gtr London	commercial zone	Mecalux	9	158	7	136	950	117

Table B17: D2 Leisure - Multiplex Gnemas (weekday parking demand)

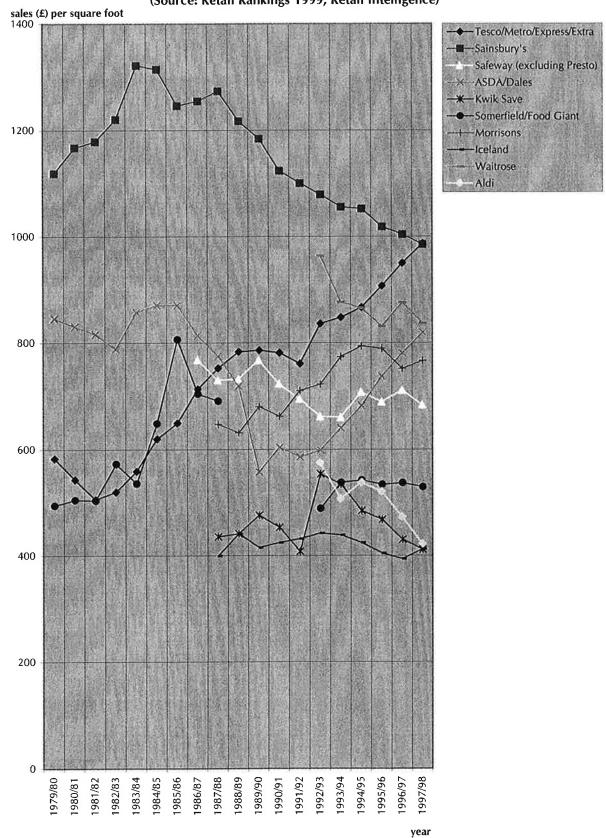
cite details				parking supply:	:Aldc	parking demand:	and:		
cita rafaranca   cita addrace	che address	site location	operator	parking	seats per	maximum	seats per	seats	% of supply
AIC ICICION	SIC dudi CSS			spaces	space	parking	max. space		utilised at
						accum.	pasn		max.
	::		1,191	005	1	542	Δ	21	2100
KC-07-A-01	Strood, Kent	edge-of-town	VIIGIN	5	5	Š			
IC-07-A-02	C-07-A-02 Preston, Lancashire	development zone	<u> </u>	686	9	451	4	07	7070
RI1-07-A-01	High Wycombe, Buckinghamshire	edge-of-town	nci	685	5 3	220	8	17	1748

Table B18: D2 Leisure - Multiplex Gnemas (Saturday parking demand)

cito detaile.				parking supply:	ık:	parking demand:	and:		
SHE UCIAIS.							and a second	-0000	Of of comply
cite reference   cite address	cite address	site location	operator	parking	seats per	maximum	seats per	Scalls	No OI Suppiy
and and and				spaces	space	parking	max. space		utilised at
									200
						accum.	nsed		IIIdX.
							-	240	70
KC 07 A 01	Strood Kent	edoe-of-town	Virgin	290	4	464	C	2100	2
- 4	JUNOU, INCH.			200	_	240		UCUC	08
17.07.A.02	Preston Lancachine	development zone	9	989	3	548	4	202	8
	i icatori, cancazimic			100	٢	243	12	17/19	46
RIL07-A-01	High Wycombe, Buckinghamshire	edge-of-town		685	2	312	0		0

Figure 2.6(b)
Sales density for leading grocers at 1996/97 prices

(Source: Retail Rankings 1999, Retail Intelligence)



#### **Previous research**

- 3.1 Allen P. presented a paper (Long Term Changes in Superstore Traffic Generation) to the TRICS Conference in 1993 containing time-series analyses of trip rates for foodstores, the best represented land use category on the database (this remains the case).
- 3.2 The work examined average yearly percentage changes in trip rates for 17 food stores that had data for comparable days in more than one year.
- 3.3 It did not prove possible to establish a statistically significant trend, such was the variability of trip rate values in this data subset. The impact of competition effects was referred to and the analysis in this research shows how influential it is in transport terms.

# Form of analysis for this current research

- 3.4 It is well established that trip rate data is characterised by very considerable variation within a broad land use category. Disaggregation into sub-categories will potentially reduce variability but introduces sample size problems in any subsequent analysis. Small sample sizes increase uncertainty.
- 3.5 A further feature of high variability and uncertainty is the potential unreliability of average trip rate values. Whilst an average is a useful measure associated with a symmetrical distribution of variability, modest sample sizes tend to have skewed distributions in which the lowest or highest percentile values are very distant from the range of second and third quartile values. In these circumstances, the average value will change significantly according to whether extreme values occur or not.
- 3.6 The analysis that follows uses median (50th percentile) values to try to address this particular problem.
- 3.7 In order to maximise sample sizes to try to extend the analysis beyond foodstores and provide a more robust calculation, data has been grouped into overlapping year pairs, a standard smoothing technique.

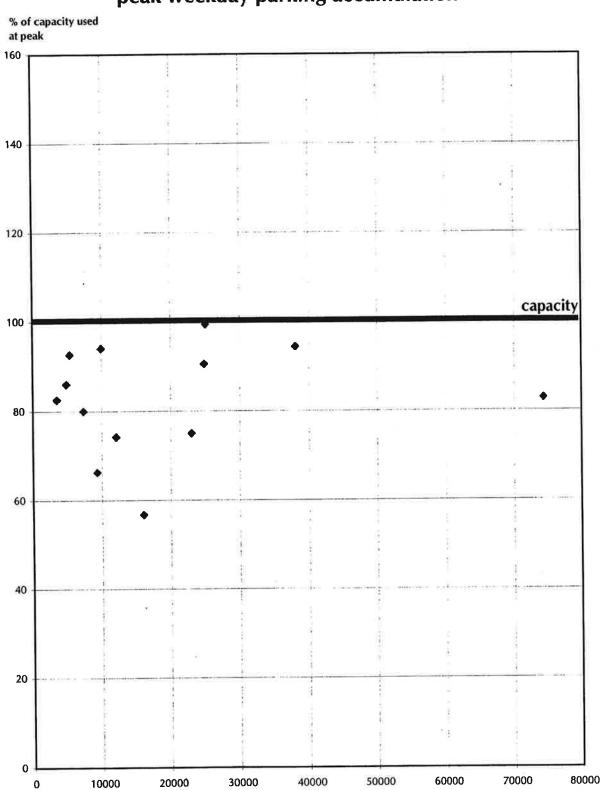
- ♦ small sample sizes create major variability in trip rates measured in Wales and northern regions of England (the Scottish dataset is too small to analyse at present: this is being addressed in the data collection programme).
- 3.13 This data suggests that:
  - there are still growth prospects for foodstore operators in the less-affluent parts of the country where the market is not yet saturated.
- 3.14 Figure 3.3 shows foodstore trip rates in TRICS disaggregated by type of location and analysed over time. Once again, these results should be interpreted with caution.
- 3.15 Figure 3.3 shows that:
  - small sample sizes contribute a lot of variability
  - town centre locations generally have lower trip rates than more peripheral locations.
- 3.16 This data tends to support the principle that town centre locations are more sustainable than other locations in transport impact terms.

4.4 The following Figures 4.1 to 4.18 show peak parking accumulations expressed as a percentage of the available capacity for a range of development sizes. Each point on the graph represents a TRICS site survey. Peak accumulations that exceed 100 per cent of the official capacity on the site are assumed to be the result of parking on grass verges and other undesignated parking areas and to queuing on-site whilst waiting for a vacant space.

#### 4.5 These Figures show:

- widespread over-provision at food superstores
- even greater over-provision at retail parks
- over-provision at DIY superstores
- less systematic over-provision at offices, especially A2 uses, and business parks
- a relatively balanced picture at industrial and warehousing sites
- over-provision at the small number of multiplex sites.
- 4.6 The data for these Figures is in Appendix B.
- 4.7 Figures 4.19 to 4.21 translate this data into the units used for parking standards (floor area per parking space) and compare the capacity provided on this basis (effectively the standard imposed) in blue with peak demand in red. This analysis addresses the major sub-datasets: foodstores and B1 offices.
- 4.8 Figures 4.19 and 4.20 show that authorities have imposed or accepted parking provision at foodstores generally at rates between 1 space to 6 and 15 square metres of gross floor area. Very few sites lie outside this range. In contrast, the majority of sites have peak demand requiring a parking standard in the range 11 to 25 square metres. This indicates systematic and significant over-provision.

Figure 4.13
B1 Business Parks
peak weekday parking accumulation



gross floor area (square metres)

Figure 4.14
B2 Industry Industrial Estates and Units peak weekday parking accumulation

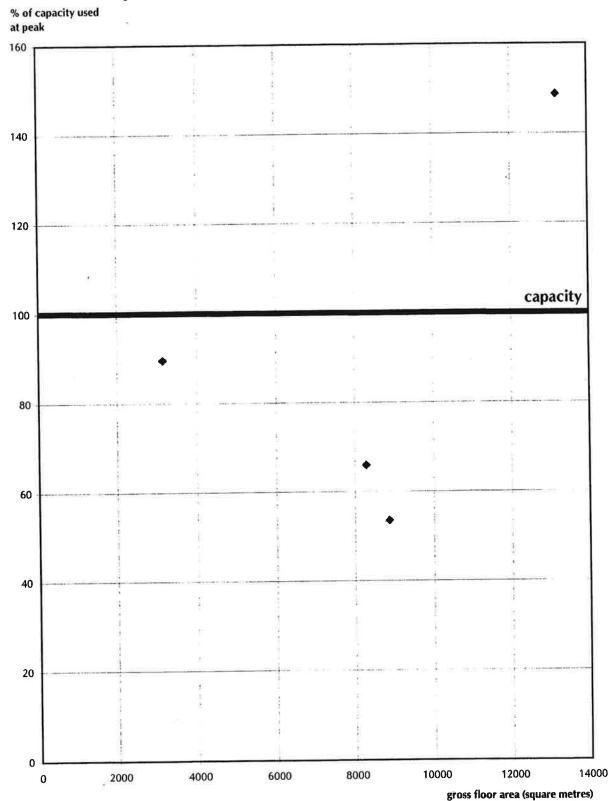
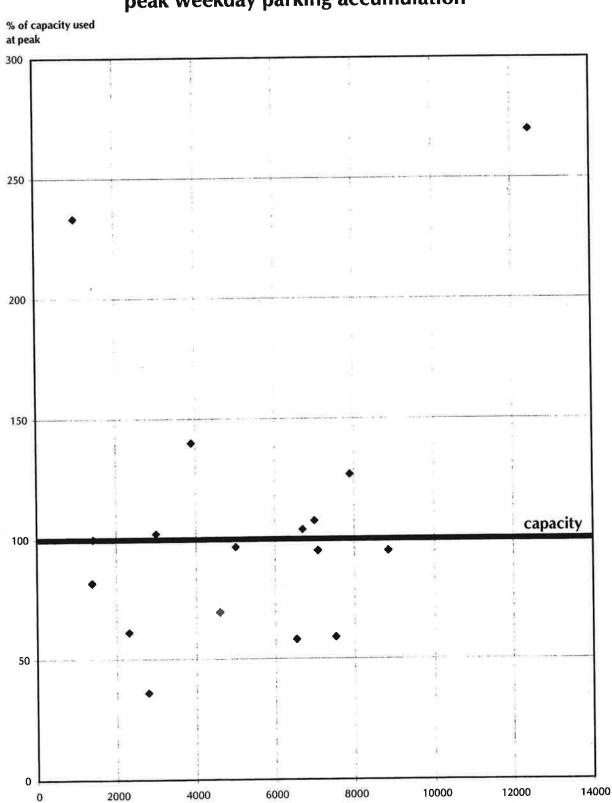


Figure 4.15
B8 Warehousing and distribution
peak weekday parking accumulation



gross floor area (square metres)

Figure 4.16
B8 Warehousing and Distribution
peak weekday parking accumulation

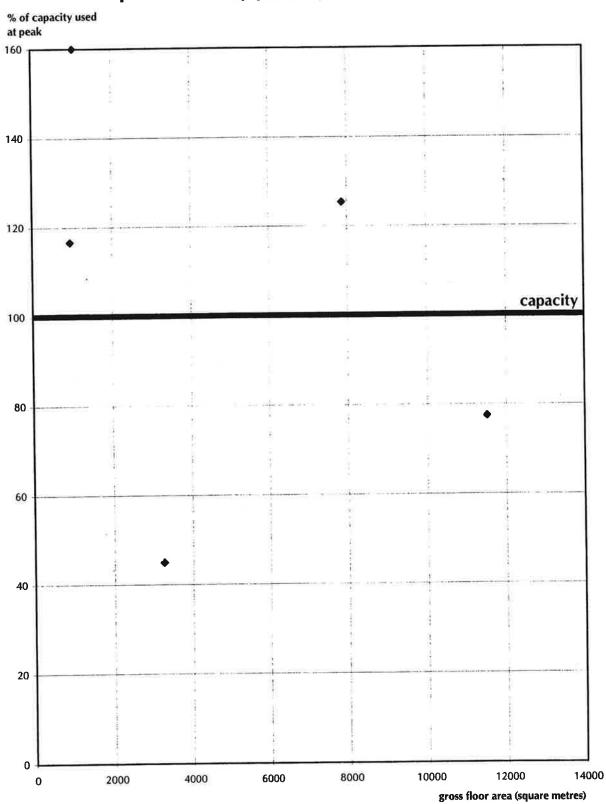


Figure 4.17
D2 Leisure Multiplex Cinemas
peak weekday parking accumulation

% of capacity used at peak

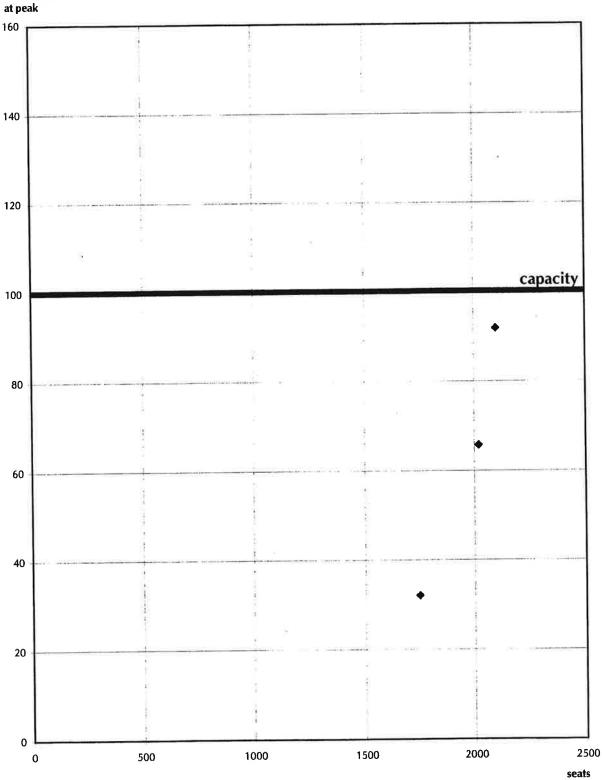


Figure 4.18
D2 Leisure Multiplex Cinemas
peak Saturday parking accumulation



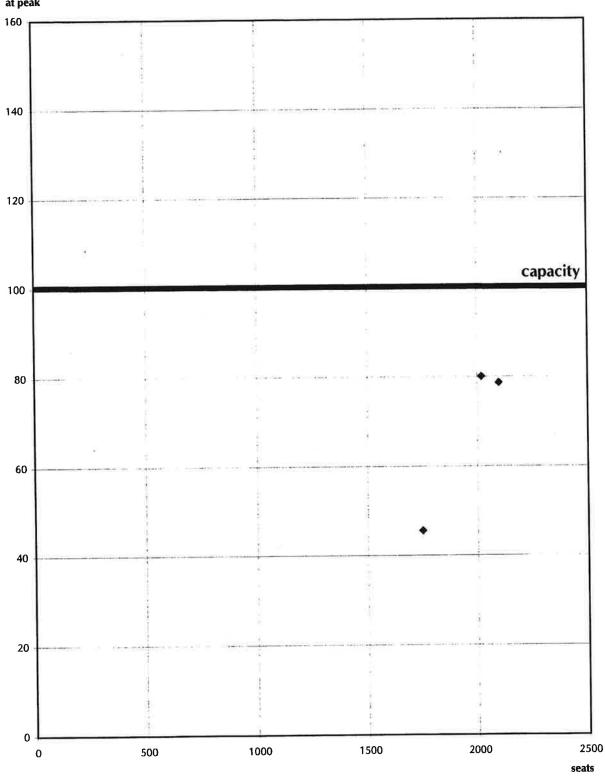
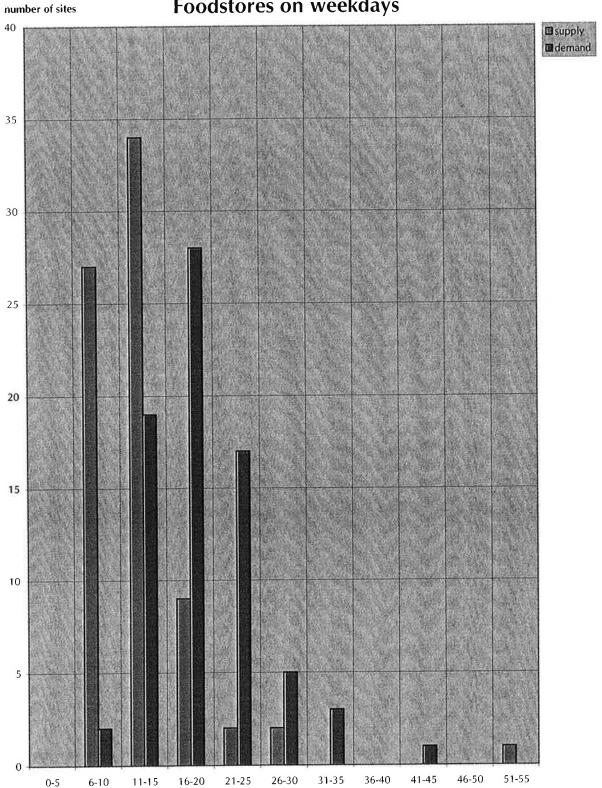


Figure 4.19
Comparison of supply and peak demand gross floor area per parking space
Foodstores on weekdays



gfa per space (square metres)

Figure 4.20
Comparison of supply and peak demand gross floor area per parking space
Foodstores on Saturdays

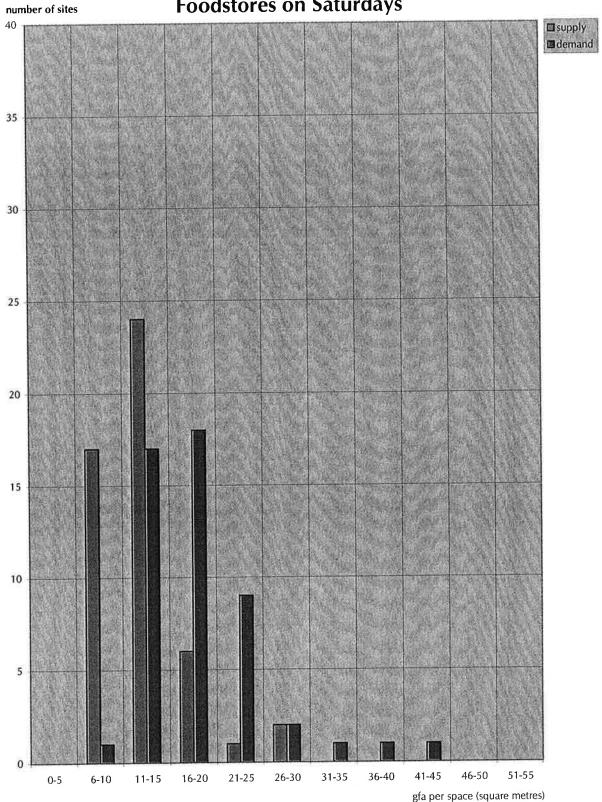
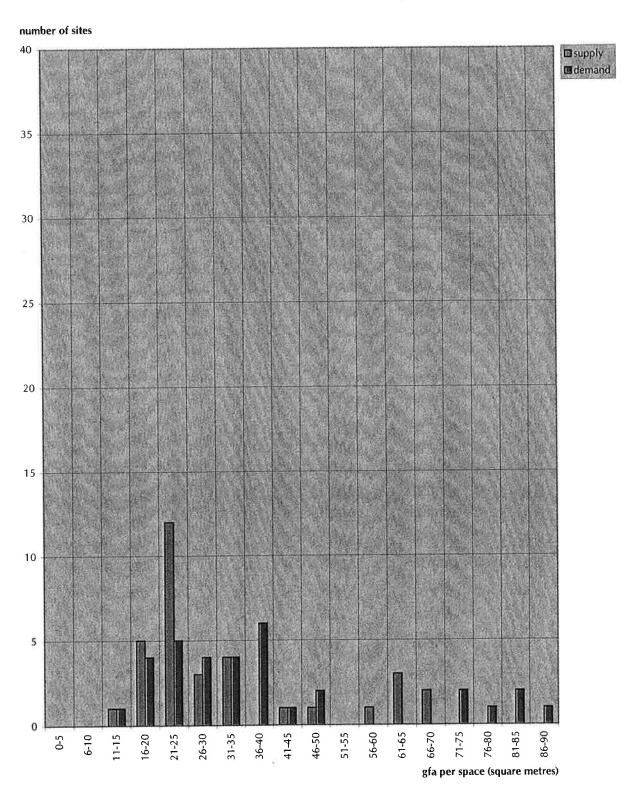


Figure 4.21
Comparison of supply and peak demand gross floor area per parking space
B1 Offices on weekdays



#### Aim of this research

5.1 The aim of this research has been to explore the circumstances in which trip rates vary and, using various data sources, develop guidance on good practice in trip rate selection and use. The relationship between parking supply and peak demand has also been examined. This has important implications for the use of trip rates.

### Time-series analysis

- 5.2 In addition to the very considerable data in TRICS, the research has also considered:
  - macro-economic data concerned with consumer expenditure
  - the performance of major retailers in terms of turnover per unit trading floorspace
  - the performance of individual stores in a competitive environment.

## 5.3 The analyses suggest that:

- there is no consistent evidence to support the general application of growth factors to trip rates for retail developments; any such growth is more likely in the nonfood retail sector than the food sector
- trip rates resulting from surveys in the earliest period of operation of a new foodstore development (and maybe other retail operations) may result in under-estimating traffic impacts when the development "matures" but competition may well restore the surveyed rate; trip rates surveyed at "mature" stores will tend to over-estimate impacts in the year of opening (disregarding the first weeks of curiosity visits)
- competition is always likely to be a major source of change in trip rates over time; the change may be positive or negative according to circumstances
- town centre locations tend to attract relatively fewer vehicles per unit floor area than more peripheral locations

- there is no clear regional pattern in the dataset; although there are signs of saturation in the food retailing sector in the SouthEast that are not obvious elsewhere.
- 5.4 The implications of these findings for good practice are that:
  - trip attraction assessments in the retail and leisure sectors should refer explicitly to competition effects
  - greater account should be taken of national trading trends to ensure that the local scenario can be explained in the context of the national scene
  - more account should be taken of locational descriptions of individual sites in TRICS, especially in terms of catchment, competition and the potential use of non-car modes (this will be progressively easier in TRICS series 4); users should recognise that all the trip rates in TRICS are valid and occur for a reason, including the lowest ones
  - 85<sup>th</sup> percentile trip rates should not routinely be used or demanded for base case assessments of impact (but they could be considered routinely valid for sensitivity testing of highways operations at accesses)
  - regional differences are likely to be related to spending power, car ownership (closely related to spending power) and the competition climate; it remains valid to use TRICS as a national dataset

## Parking supply and demand

- 5.5 There is powerful evidence that peak parking demand to date has probably been systematically over-estimated. Further Government-inspired guidance on parking standards is likely to seek to eliminate this practice, accompanied by pressure to improve parking control and enforcement on the public highway. This over-provision is in large part probably due to the adoption of 85<sup>th</sup> percentile trip rates for all calculations in TIAs and in reviews of parking standards.
- 5.6 There is also pressure from developers and some local authorities to maximise parking provision. There is a strong perceived link between economic success and maximising the convenience of car use.

- 5.7 Under current Government policies, the "worst case" approach is no longer appropriate for general transport impact or parking supply assessment, although it remains a useful basis for sensitivity testing of operational and access arrangements. If it is generally inappropriate to increase road space on the main highway network (because this will tend to encourage car use), it must also be correspondingly inappropriate to do the same for development infrastructure.
- 5.8 As Government guidance has suggested for some time, this research shows that there is ample scope for reducing parking provision relative to current or previously adopted minimum standards at many types of new developments, particularly in the retail sector. There is no reason to believe that this should automatically inflict significant economic damage. Competition is exerting downward pressure on attraction rates (and hence parking demand) at specific outlets and will continue to do so under current circumstances.
- It appears generally inappropriate to determine parking provision by 5.9 routinely using 85<sup>th</sup> percentile trip rates for accumulation calculations. This is bound to build-in unnecessary spaces in most cases. The evidence of this research does not support such a large factor of safety. By the same token, it would also be inconsistent to propose low trip rates in a TIA and then not accept the imposition of maximum parking standards (and the consequent lower parking provision) than may have been sought/demanded in the past. Similarly, local authorities should accept that there is a link between trip rates and parking provision and the scale of off-site highway improvements works required. If lower parking provision is sought, it follows that traffic impacts will be reduced. This could reduce the scale of off-site highways works required to deal with developmentrelated traffic. Additional expenditure will be required to bolster accessibility by non-car modes of transport.

# APPENDIX A

Time-series Data

Table A1	Household	Household final consumption expenditure data ("consumer expenditure")	mption expe	Inditure data	("consume	r expenditu	'e')													
	(seasonal	seasonally adjusted, ESA95 basis of calculation, constant 1995 prices)	ESA95 basis	s of calculat	ion, constar	11 1995 price	(\$6)													
	(source: C	source: Office for National Statistics)	onal Statisti	(SS)		- 1									100					
		1080	1981	1987	1983	1984	1985	1986	1987	1988	1989	1890	1991	1882	1983	1994	1995	1996	1997	1998
Durable goods		21278	١.	22796	26750	26557	27807	30704	33426	38552	40546	38101	34436	34474	36221	38583	39496	42701	46839	49399
Services		124641	-	127150	132401	136802	142760	155413	165256	181806	190016	193927	190514	191542	196810	200706	204815	209645	218460	228282
Food		42866		42694	43416	42676	43213	44572	45709	46745	47538	47055	47114	47664	48282	48931	49274	50931	51722	51682
Alcohol and tobacco		44008			41129	41217	41389	41167	41601	42181	41968	41654	40258	38415	37861	38441	37456	38007	37529	36459
Clothing and footware	9	14655		15054	16091	16946	18356	19975	21063	21654	21531	22105	22502	23683	24875	26928	28347	29773	31372	31958
Energy products		22893		23096	23128	23575	24665	26165	26717	27464	27283	27389	28281	27961	28123	27754	27118	28210	27558	27496
other non-durables		31009	31163	31856	32677	34033	35680	38513	41559	45053	46968	47995	47567	47817	49035	50119	51947	55419	59711	B9609
Total		301350	301263	302846	315592	321806	333870	356509	375321	403455	415850	418226	410672	411556	421207	431462	438453	454686	473191	486244
															420081					
															1126					

	E	Signilization of the state of t										
, accuracy	Oncitoration											
Company	Operations											
DIY				189/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Kingfisher Plc	B&Q Ware	B&Q Warehouse/Supercentre		81	83	94	95	101	104	106	116	132
J. Sainsbury Plc	Homebase			83	8	91	76	103	109	111	84	94
Wickes Plc	Wickes						149	142	157	168	174	193
RMC Group Ltd	Great Mills/No Frills	No Frills					59	64	83	92	11	82
Focus Do It All Ltd	Do It All			40	33	33	99	55	56	90	72	74
Electrical												
Dixons Group Plc	Dixons/Cul	Dixons/Currys/PC World/Seeboard/ot	oard/others	117	468	510	529	514	540	585	629	605
Kingfisher Plc	Comet/Norweb	web		376	388	383	431	433	986	422	466	451
Scottish Power Plc	Scottish Po	Scottish Power/Lifestyle Plus/others	hers				400	450	342	389	428	396
	-											
Furnture & Carpets												
MFI Furniture Gp Plc MFI furniture Centre/Homeworks	MFI furnitu	re Centre/Homework	S				96	104	181	176	186	189
Stichting Ingka Found IKEA/Habitat	1 IKEA/Habit	tat					159	168	190	227	221	209
Allied Carpets Gp Plc   Carpetland/Allied Carpets/General Ge	Carpetland	I/Allied Carpets/Gene	eral George						120	129	128	122
DFS Furniture Co Plc   DFS/Northern Upholstery/The Dining	DFS/North	ern Upholstery/The					326	341	308	340	388	377
RPI				75.8	84.1	87.5	90.6	92.3	94.3	97.9	100	103.6
											90	
				1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Kingfisher Plc	B&Q Ware	B&Q Warehouse/Supercentre		107	66	107	105	109	110	108	•	127
J. Sainsbury Plc	Homebase			109	100	104	102	112				91
Wickes Plc	Wickes						164	154	166	ı	174	186
RMC Group Ltd	Great Mills/No Frills	/No Frills					65	69				82
Focus Do It All Ltd	Do It All			53	39	38	62	60		61	72	71
Dixons Group Plc	Dixons/Cu	Dixons/Currys/PC World/Seeboard/ot	oard/others	629	929	583	584	557	573		629	584
Kingfisher Plc	Comet/Norweb	lweb		496	461	438	476	469	409		466	435
Scottish Power Plc	Scottish Po	Scottish Power/Lifestyle Plus/others	thers				442	488	363	. 1	428	382
MFI Furniture Gp Plc	_	MFI furniture Centre/Homeworks	S				106	113	192			182
Stichting Ingka Found IKEA/Habitat	1 IKEA/Habi	tat					175	182	201	232		202
Allied Carpets Gp Plc	Carpetlanc	Carpetland/Allied Carpets/General Ge	eral George							132	128	118
DFS Furniture Co Plc   DFS/Northern Upholstery/The Dining	: DFS/North	ern Upholstery/The					360	369	327	347	388	364

COMPI	Leading 5	able A3   Leading grocers: petrol forecourt developments	torecourt de	evelopment	S					
			1040							
Operation		1990 1990 199	1991	1992	1993	1994	1995	1996	1997	1998
Tesco		115	136	157	179	219	247	275	289	308
Sainsbury's		8	77	106	137	161	173	· 179	196	213
Safeway		14	26	46	72	86	125	136	153	168
ASDA		83	96	97	102	106	117	124	136	138
others		2	12	19	27	37	46	25	2	55
Somerfield		12	12	12	13	14	14	16	16	15
Wm. Morrison	NO%	24	27	8	9	20	29	29	62	62
Total		321	386	471	220	685	781	843	906	959

Table A5	Net margin	ns of k	s of leading grocers	Irocers						. 02
				1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Tesco Pic				7.7	7.0	6.1	5.8	6.2	5.8	5.9
I Sainsbury Plc				8.7	9.2	8.3	8.7	7.8	6.5	8.9
Safeway Plc (Safeway stores)	( stores)			7.5	8.1	7.2	7.0	6.9	7.0	5.9
ASDA Group PIC				4.3	4.5	4.3	4.7	5.2	5.3	5.3
Somerfield Plc (Kwik Save stores)	Save stores)			4.8	4.8	4.9	4.2	0.1	2.9	2.0
Somerfield Plc (excluding Kwik Save	Jing Kwik Save	(6)		6.2	3.6	2.3	2.2	2.9	3.3	3.6
Wm Morrison Supermarkets Plc	larkets Plc			5.6	6.4	6.4	6.5	6.1	6.2	6.6
Iceland Group Pic				5.2	5.3	5.5	5.4	5.3	3.9	2.8
John I ewis Partnership Plc (Waitrose	ip Plc (Waitros	se stores)		3.6	2.8	2.1	1.9	3.5	4.4	4.2
Aldi Group Pic				1.8	2.3	3.6	2.7	2.1	2.0	2.2
בו ולפסים ופוע										1

7.76

site reference	Library and America								
	Site address	site location	operator	parking	gfa per	maximum	gfa per max.	gfa (sq m)	% of supply
				sbaces	space	parking	space used		utilised at
						accum.			тах.
GL-01-A-09	Neasden, Gtr London	freestanding	Tesco	1198		3 497		9290	
GM-01-A-19	Trafford, Gtr Manchester	development zone	Asda	750	12	434	4 21	9290	
GM-01-A-17	Ashton-under-Lyne, Gir Manchester	Г	Asda	618	15			9244	
KC-01-A-16	Dover. Kent	8	Tesco	640	14		0 27	8943	3 52
GM-01-A-04	Bury, Gtr Manchester		Asda	640	13	330		8556	
CW-01-A-01	St Austell, Comwall		Asda	700			7 20	8547	
ES-01-A-03	Brighton, East Sussex	od centre	Asda	780	10	966 (		8175	
LC-01-A-15	Accinoton, Lancashire		Asda	929		363		7277	
DC-01-A-02	Bournemouth, Dorset		Asda	640	12	309		7432	
1N-01-A-04	Stamford, Lincolnshire	edae-of-town	Morrisons	595	12			7017	
DC-01-A-04	Poole, Dorset		Sainsbury's	930		1 323	3 22	2269	
GM-01-A-15	Bolton, Gtr Manchester		Morrisons	889	3 10			6938	
CB-01-A-02	Kendal. Cumbria	edge-of-town	Morrisons	684			12 21	6875	
LN-01-A-03	Lincoln, Lincolnshire	commercial zone	Morrisons	009	11		14	6870	
LC-01-A-14	Chorley, Lancashire		Morrisons	604	11			629	
DC-01-A-05	Bournemouth, Dorset	٥	Tesco	717			92   81	6503	
ES-01-A-10	Eastbourne, East Sussex	e	Tesco	652				650	
FI-01-A-04	Kirkcaldy, Scotland	edge-of-town	Asda	999	5 10		-	9200	
GM-01-A-18	Wigan, Gtr Manchester		Asda	200				6500	
KC-01-A-14	Sevenoaks, Kent	ea	Sainsbury's	009			3 18	6317	
SC-01-A-05	Sunbury, Surrey	edge-of-town	Tesco	299			17 99	9799	
GM-01-A-14	Bolton, Gtr Manchester		Asda	280	) 11			6224	4 54
GL-01-A-07	Camden Town, Gtr London		Sainsbury's	262	21 21	1 291		6046	
CW-01-A-02	Truro, Cornwall	neighbourhood centre	Tesco	400	14			5794	
WS-01-A-05	Chichester, West Sussex		Sainsbury's	639				5769	
DC-01-A-07	Christchurch, Dorset	edge-of-town	Sainsbury's	589				5720	
HB-01-A-03	Hull, Humberside	neighbourhood centre	Safeway	550	10		91 99	5697	
GS-01-A-01	Cheltenham, Gloucestershire	neighbourhood centre	Safeway	520		1 358	16	5687	
MS-01-A-02	St Helens, Merseyside	town centre	Safeway	280				5687	
CB-01-A-01	Kendal, Cumbria	edge-of-town	Asda	567		1	13 23	2995	
KC-01-A-13	Gillingham, Kent	commercial zone	Tesco	561				5611	
ES-01-A-01	Brighton, East Sussex	neighbourhood centre	Sainsbury's	300			1 27	5601	1 70
LC-01-A-13	Preston, Lancashire	suburban area	Sainsbury's	575	5 10		16	5574	
MS-01-A-01	Southport, Merseyside		Safeway	480	) 11			5338	
BC-01-A-03	Reading, Berkshire	freestanding	Safeway	620		9 358	15	9675	
HB-01-A-01	Grimsby, Humberside	town centre	Sainsbury's	475		1 487		5230	103
HW-01-A-01	Malvem, Hereford & Worcester	freestanding	Safeway	450	) 12		2 24	521	7 49

Table B1: A1 Retail - Food Superstores (weekday parking demand)

95 5 99 92 % of supply utilised at Jæ. 3764 3717 3717 3359 3120 3019 2981 2787 2733 2592 2522 2230 4596 4413 4413 4371 4320 4266 2601 2596 5208 5202 5110 4869 4831 4699 4650 4631 4900 (sd m) ga 15 25 17 17 **8** 4 0 **24** 20 21 27 17 gfa per max. space used parking demand: 89 96 157 152 155 125 125 136 74 maximum parking ассиш. ∞ <u>N</u> 16 13 10 12 16 গ্ৰ 13 20 14 13 52 19 7 12 9 Ξ 1 윘 gfa per space parking supply: 250 150 355 300 385 585 parking spaces Sainsbury's Sainsbury's Sainsbury's E.H Booth Sainsbury's Sainsbury's Somerfield Somerfield Somerfield E.H Booth Safeway E.H Booth Rainbow Safeway Safeway Safeway Gateway Safeway Safeway Safeway Waitrose Safeway Safeway Safeway Safeway Safeway Safeway Safeway Safeway operator Tesco Tesco දි Leo's les Co Tesco Tesco Asda neighbourhood centre neighbourhood centre neighbourhood centre neighbourhood centre commercial zone suburban area edge-of-town edge-of-town edge-of-town edge-of-town edge-of-town edge-of-town freestanding edge-of-town freestanding town centre site location town centre town centre town centre not known Fewkesbury, Gloucestershire Tonbridge & Malling, Kent Eastbourne, East Sussex Bridlington, Humberside Bolton, Gtr Manchester East Dereham, Norfolk Kensington, Gtr London Rawtenstall, Lancashire Grantham, Lincolnshire Lancaster, Lancashire Hailsham, East Sussex Hatch End, Gtr London Lancaster, Lancashire Peckham, Gtr London Blackpool, Lancashire Clitheroe, Lancashire St. Andrews, Scotland Fareham, Hampshire Thornton, Lancashire Warrington, Cheshire Preston, Lancashire Fulham, Gtr London Camborne, Cornwall Falmouth, Cornwall Penzance, Comwall Newquay, Cornwall Godalming, Surrey Ealing, Gtr London Hove, East Sussex Redruth, Cornwall Acton, Gtr London Blandford, Dorset Lanark, Scotland Troon, Scotland Exmouth, Devon Reigate, Surrey Frimley, Surrey site address site reference GL-01-A-04 CW-01-A-06 CW-01-A-05 LN-01-A-01 LC-01-A-03 CW-01-A-04 C-01-A-07 C-01-A-10 W-01-A-07 W-01-A-03 -01-A-06 C-01-A-03 -01-A-10 IB-01-A-02 3M-01-A-05 S-01-A-02 IL-01-A-02 C-01-A-12 -01-A-08 C-01-A-07 S-01-A-12 C-01-A-04 .C-01-A-08 NF-01-A-02 S-01-A-06 1-01-A-11 S-01-A-04 site details: H-01-A-04 3V-01-A-12 -01-A-04 C-01-A-06 (C-01-A-11 SA-01-A-01 GL-01-A-05 FI-01-A-03 SL-01-A-01 C-01-A-01

Table B1: A1 Retail - Food Superstores (weekday parking demand)

Table B1: A1 Retail - Food Superstores (weekday parking demand)

				parking	supply:	parking dem	emand:		
site details:					afe age	an animora	of nor max	(m us) epo	W of supply
cito reference	170	site location	operator	parking	gra per	MAXIMUM	gia pei max.	Ma (34 III)	fulder to a
אום וכוכוכוורם	Sile dudicas			spaces	space	parking	space used		utilised at
						1			
						accum.			IIIdX.
						-		1116	00
20. 1. 10.	C. G. J. Ca. Manager	antron production	Netto	_	40	28	35		00
GM-01-A-10	Sanord, oil manchester	Design Common Co	The state of the s						

133 59 94 96 62 67 68 69 82 60 55 88 28 1 99 % of supply utilised at max. 5574 5483 5338 5217 4869 4836 4631 6046 5769 5704 5697 5687 5687 5601 6875 6870 6594 6500 6224 9290 9244 8943 6938 6503 6317 (sd m) gfa ( 2 6 2 8 15 5 13 15 15 23 16 18 12 18 19 16 14 12 7 gfa per max. space used parking demand: maximum parking accum. 0 19 위 17 7 6 2 2 13 ᅙ Ξ 10 11 4 2 2 2 1 <del>=</del> 유 Ξ 17 gfa per space parking supply: 626 640 parking spaces Sainsbury's Morrisons Morrisons Morrisons Morrisons Morrisons Safeway Morrisons Safeway Safeway Safeway Safeway Safeway Safeway Safeway Safeway operator 9 Tesco Tesco Tesco Asda Asda Asda Asda Asda Asda Asda Asda neighbourhood centre neighbourhood centre neighbourhood centre neighbourhood centre development zone commercial zone suburban area suburban area suburban area suburban area suburban area edge-of-town edge-of-town edge-of-town edge-of-town freestanding edge-of-town freestanding edge-of-town freestanding edge-of-town town centre freestanding freestanding freestanding town centre site location town centre town centre Ashton-under-Lyne, Gtr Manchester Malvern, Hereford & Worcester Cheltenham, Gloucestershire Camden Town, Gtr Londor Rochdale, Gtr Mancheste Eastbourne, East Sussex Chichester, West Sussex Frafford, Gtr Manchester Kensington, Gtr London Rawtenstall, Lancashire Hatch End, Gtr London Bolton, Gtr Manchester Southport, Merseyside Bolton, Gtr Manchester Wigan, Gtr Manchester Accrington, Lancashire Stamford, Lincolnshire St Helens, Merseyside Brighton, East Sussex Fareham, Hampshire Thornton, Lancashire Bournemouth, Dorset Bournemouth, Dorset Christchurch, Dorset Preston, Lancashire Preston, Lancashire Incoln, Lincolnshire Chorley, Lancashire Reading, Berkshire Hove, East Sussex Hull, Humberside Falkirk, Scotland Sevenoaks, Kent Kendal, Cumbria Reigate, Surrey Poole, Dorset site address Dover, Kent site reference 3M-01-A-13 GM-01-A-19 3M-01-A-17 SM-01-A-15 N-01-A-03 C-01-A-05 S-01-A-10 3M-01-A-18 C-01-A-14 3M-01-A-14 S-01-A-05 C-01-A-07 C-01-A-09 IB-01-A-03 S-01-A-02 S-01-A-01 C-01-A-13 1S-01-A-01 3C-01-A-03 IW-01-A-01 C-01-A-03 GL-01-A-05 C-01-A-10 SC-01-A-04 ES-01-A-06 GL-01-A-11 KC-01-A-16 C-01-A-02 N-01-A-04 C-01-A-04 B-01-A-02 C-01-A-14 3L-01-A-07 1-01-A-01 IC-01-A-01 S-01-A-01 C-01-A-15 site details:

Table B2: A1 Retail - Food Superstores (Saturday parking demand)

Table B2: A1 Retail - Food Superstores (Saturday parking demand)

other destroiler				parking supply:		parking demand:	and:		
cito reference	eite address	cite location	operator	parking	a per	maximum	gfa per max.	gfa (sq m)	% of supply
אום ומומומורם		and location		spaces		parking	space used		utilised at
						accum.			тах.
TO A PO MI	Courtham Lincolnehina	town rentre	Safeway	483	6	259	17	4371	54
G 01 A 10	Acton Gral padon		Safeway	306	13	295	14	4125	
01-V-10-30	Toutoebies Clauseships		Cafeway	400	6	154	54	3707	7 39
KF 01 A 11	Tonhidos & Malling Kent		Somerfield	179	17	156	19	2981	87
FC 01 A OA	Factbourne Fact Cuccex	od centre	Safeway	200	14	164	17	2787	
50101	Preston Innestrine	cuburban area	F.H Booth	268	9	98	32	2733	3 32
LC 04 4 07	Dischard Language		FHBooth	221	12	105	52	2601	48
10-4-10-10-10-10-10-10-10-10-10-10-10-10-10-	Diachason, Laireasime		Waitness	162	16	168	15	2596	5 104
GC 01 A 07	Ediniy, ou London		Somerfield	88	62	136	61	2592	2 153
SC 01 A 12	Halleham Cact Circox		Somerfield	189	13	217	12	2522	2 115
CA 04 A 04	Troop Confined		Safeway	250	6	237	6	2168	3 95
17.01 A 08	Foundation	suhirban area	E.H Booth	113	18	98	21	2010	0 83
GM-01-A-16	Salford, Gtr Manchester	neighbourhood centre Netto	Netto	40	28	25	45	1115	5 63

Table B3: A1 Retail - Retail Parks including food (weekday parking demand)

site details:				parking supply	pply:	parking demand:	and:		
site reference   site address	site address	site location	operator	parking	gfa per	maximum	gfa per max.	gfa (sq m)	% of supply
	G C			sbaces	space	parking	space used		utilised at
						accum.			тах.
WS-01-J-01	Shoreham by Sea, West Sussex	edge-of-town	Texas, Tesco, M&S	1750	13	573	39	22584	1 33
SL-01-J-01	East Kilbride, Scotland	not known	Halfords Texas, Sainsbury's etc	1205	17 17	369	54	2002	31
FI-01-J-01	Dunfermline, Scotland	edge-of-town	Asda, Cumys etc	6	905 18	169	23	16000	) 76
SC-01-J-02	Weybridge, Surrey	commercial zone	Tesco, M6S	1300	6 00	639	18	11600	0 49
GM-01-J-07	Middleton, Gtr Manchester	suburban area	Heaton Mills	)9	600	161	99	10684	t 27
KC-01-J-01	Crayford, Kent	town centre	Sainsbury's, Homebase	26	972 11	591	18	10436	5 61
GM-01-J-02	Tameside, Gtr Manchester	town centre	Do-It-All, Food Giant	492	14	349	50	2969	7 71

% of supply utilised at max. 13299 12387 10219 17340 16926 14642 9816 8687 7645 6470 6529 3460 17837 qfa (sq m) 138 42 260 132 74 157 115 240 8 5 6 gfa per max. space used parking demand: 338 157 73 152 65 117 208 <u>\$</u> 5 4 maximum parking асслш. 24 22 20 27 22 26 19 22 22 24 24 23 20 gfa per space parking supply: 514 648 366 336 330 320 320 320 320 320 320 1150 804 852 616 661 parking spaces Courts, MFI, Texas, Comet, Homebase etc Furniture City, Furniture Land, Maples Texas, Argos, Childrens' World etc. Magnet, Atlantis, Carpet Right etc Mothercare, Argos, Powerhouse MFI, Comet, Halfords, Do-It-All Allied Carpets, Poundstretcher Staples, Cametworld, B&Q etc Halfords, Do-It-All, MFI etc MFI, Wickes, Halfords etc Do-It-All, MFI, Currys etc Homebase, Sports Max WH Smith, Do-It-All etc B&Q, KwikFit, etc not known Courts etc not known operator commercial zone commercial zone industrial zone freestanding edge-of-town freestanding edge-of-town edge-of-town edge-of-town freestanding edge-of-town freestanding freestanding town centre town centre town centre town centre site location Bognor Regis, West Sussex Reading, Berkshire Tameside, Gtr Manchester Stockport, Gtr Manchester Rochdale, 6tr Manchester Oldham, Gtr Manchester Ancoats, 6tr Manchester Blackbum, Lancashire Southport, Merseyside Lancaster, Lancashire Preston, Lancashire Reading, Berkshire Weybridge, Surrey Pontypridd, Wales Guildford, Surrey Poole, Dorset Poole, Dorset site reference | site address WS-01-K-02 BC-01-K-03 C-01-K-02 C-01-K-06 DC-01-K-05 GM-01-K-05 M-01-K-06 3M-01-K-09 SM-01-K-03 RC-01-K-02 site details: 3M-01-K-02 15-01-K-01 C-01-K-03 3C-01-K-02 C-01-K-04 3C-01-K-04 C-01-K-01

Table B5: A1 Retail - Retail Parks excluding food (weekday parking demand)

Table B6: A1 Retail - Retail Parks excluding food (Saturday parking demand)

site details:				parking supply:	ply:	parking demand:	and:		
site reference	site address	site location	operator	parking	gfa per	maximum	gfa per max.	gfa (sq m)	% of supply
				sbaces	space	parking	space used		utilised at
						accum,			тах.
SC-01-K-01	Guildford, Surrey	edge-of-town	not known	775	5 24	733	25	18677	95
1C-01-K-02	Blackbum, Lancashire	edge-of-town	Do-It-All, MFI, Currys etc	804	1 22	275	9	17837	34
DC-01-K-06	Poole Dorset	freestanding	Courts, MFI, Texas, Comet, Homebase etc	852	20	485	36	17340	57
MS-01-K-01	Southoort. Mersevside	edge-of-town	Halfords, Do-It-All, MFI etc	661	22	384	38	14642	58
DC-01-K-05	Poole Dorset	freestanding	Magnet, Atlantis, Carpet Right etc	648	3 19	149	83	12387	. 23
1C-01-K-03	l ancaster, l'ancashire	commercial zone	not known	472	22	150	89	10219	32
GM-01-K-05	Stockoot: Gtr Manchester	town centre	MFI, Wickes, Halfords etc	398	5 27	259	38	9816	11 71
GM-01-K-03	Rochdale, Gtr Manchester	town centre	MFI, Comet, Halfords, Do-It-All	361	1 24	191	45	8687	, 53
WS-01-K-04	Somoting. West Sussex	freestanding	B7Q, Halfords	428	3 15	120	22	6555	28
LC-01-K-04	Preston, Lancashire	town centre	Homebase, Sports Max	326	5 19	171	28	6229	25
SC-01-K-04	Weybridge, Surrey	freestanding	Mothercare, Argos, Powerhouse	767	7 12	212	91	3460	73

Table B7: A1 Retail - DIY Superstores with Garden Centres (weekday parking demand)

				parking supply	:Nooi	parking demand:	land:		
site details:				2	-		vem son of	(m vs) cyu	Variation Va
	cite address	site location	operator	parking	gra per	MAXIIIOIII	gia per max.	Ala (3d III)	2000
אום וכוכוכווים	SIC don cas			spaces	space	parking	space used		utilised at
						accum.			max.
					,	Ι.	co	8003	28
UC 01 D 01	Coutbampton Hampehire	lindustrial zone	860	n	1719	6 40		2000	
10-0-10-211	Journalipton, Hampsing	200000000000000000000000000000000000000	0.0	4	7 7	143	109	8528	~~
1 F-01-D-01	lleicecter leicectershire	town centre	DOW						
1	במיכטים במיכטים אווים	manufacture.	Usa	ď.	360	193	42	8027	40
DC-01-D-02	Poole, Dorset	eode-ol-lowii	Day			200		7610	88
L		fractonding	RSO		384	338	[57	310/	
HC-01-D-02	Havant, Hampsnire	Hecotanonia	200		-		03	4000	43
SC 01 D 01	Leatherhead Surrey	not known	B&O		2	0		YANT	

Table B8: A1 Retail - DIY Superstores with Garden Centres (Saturday parking demand)

				narking supply:		parking demand:	īd:			
ite details:								L	Of of cumbin	
	like a different	eito location	poerator	parking	gfa per   IT	maximum	gta per max.	gra (sq m)	A CI SUPPLY	
site reference	Site address	SIE IOGINI		spaces		parking	space used		utilised at	
				T	T	ı			max.	
					,					
			0.0	512	œ.	296	<u>e</u>	8993	28	
1C-01-D-01	Southampton, Hampshire	industrial zone	Day					0000	ED I	
		Andrew Contract	BEO	424	2	251	34	8258		J
E-01-0-01	Leicester, Leicestershire	Dawn Certifice	pan		100	3,7,0	30	7508	28	
		mode of tour	REO	360	77	515	67	200		J
C-01-D-02	Poole, Dorset	edde-oi-rowii	àna	100	50	201	7.6	7618	73	L
20.00	Others Ormanical	fraectanding	028	384	7	107	77	2007		J
20-0-10-2	havant, nampsmie	li cestariali g	****	11,	20	130	20	4000	88	
20 04 0 04	Losthorhood Curren	not known	B&Q	155		130	63			J

Table B9: A1 Retail - DIY Superstores without Garden Centres (weekday parking demand)

				parking supply		parking demand:	•		
site details:				1		ı	200	(m na) eta	Work of Sunniv
-	and a delegan	cite location	operator	parking	gta per maximum	1	gia per max.	dia lod III	indian of
Site releience	site addices	JIE IOCULO		enarae	enare narking		space used	•	utilised at
				Shares		1			
					accum	٠			шах.
				Coc	21	4.5	1001	4181	71
74 O T D 24	Dimage Ctr Manchoctor	suburban area	860	007 -	17	74	3		
10-1-10-lin	Dulliage, til manchester	I		325	12	S	73	3809	53
1001 001	Noteon Lancachine	edge-of-town	8%0	777	71		2		180
נייוריי	Meison, Lancasine			180	20	69	52	3605	82
FC_01_F_07	Worthing West Sussex	commercial zone	Do-II-All	201		3		25.50	0
	Control of the contro	F (1.1.		150	24	27	- 3.	3530	0
CB-01-F-01	Kendal, Cumbria	edge-of-town	ureat miles			1		2460	15.4
		town contro	Tayac	8	40	123	97	2010	
SC-01-E-01	Keigate, Surrey	TOWN CENTE	Codes	1	70	7.0	00+	2702	7
17.01 0.02	Deedon I ancachina	Ineighbourhood centre	Wickes	131	17	77	201		
EC-01-E-03	r resion, cancasmic			108	7	25	4	2313	48
F-01-F-01	Kirkcaldy, Scotland	suburban area	DOW					7000	12
			No 14 All	120	6	21	44	2230	
LC-01-E-02	Rawtenstall, Lancashire	TOWN CENTIFE	וערוורטט			¢	9.5	1579	27
FS-01-F-04	Beyfull Fast Sussex	edge-of-town	Do-It-All	2	67	2	00		
-									

Table B10: A1 Retail - DIY Superstores without Garden Centres (Saturday parking demand)

				parking supply:	<u>ن</u>	parking demand	ind:		
site details:					100 miles		and a second	L	of of cumuly
Che roferonce	cite address:	site location	operator	parking	gra per	maximum	gia per max.	lill he pin	לוקטים וס פע
anicialization and		1000000		Spaces	space	parking	space used		utilised at
									7000
						accum.			Illdx.
				30,0	2.0	00	CV	4180	73
Nr. 04 E OE	Daetford Kont	suburban area	Fexas	130	2	25	7.5	2	
NC-01-E-03	וספו ווטומי עבווו			375	17	70	48	3809	35
ILC OF E O1	Malcon Lancachina	edoe-of-town	860	C77			2		
LC-01-L-01	INCISON, LAINCASINIC			001	٥٥	11	88	3605	23
EC 01 E 07	Worthing West Success	commercial zone	Do-It-All	001	20	-	8		
27.12	If the limit of the standard		- 1 Mil.	150	76	92	38	3530	19
CR-01-F-01	Kendal Cimbria	ledge-of-town	Great MIIIS	251					
1000	School Company	tour contro	Toyot	08	4	20	63	3160	63
25-5-5-5	Keigate, Surrey	IOWII CCIIIIC	COVO			F	r.	2026	28
20 21 20 21	Described Innonchive	painthoughood centre	Wirkes	131	7	3/	/3	2012	
17-01-1-02	rresion, Lancasine	DING POLITICAL P	County	100,	۶	0.7	170	2230	20
1C 04 E 02	Dautonetall Lancachine	town centre	Do-tM	071	2	90	7,0	CE30	
LL-01-E-02	nawichistall, Laileasille			5	33	OF T	20	1579	57
EC OF E OA	Roshill Eact Circox	edne-of-town	Do-t-A	0/			100	0.00	1

Table B11: A2 Offices (weekday parking demand)

			mob paidon	- Page		
	parking supply.	DIY:	המווא תכווומוות:			
company	parking	ofa per	maximum	gfa per max.	gfa (sq m)	% of supply
(malino)	spaces	space	parking	space used		utilised at
			accum.			max.
Bardaye Bank HO	1118	36	959	42	40500	98
First Data Resources	7007	36	743	34	25469	106
Frizzell Incurance (Broking)	305	48	253	28	14643	83
Refine Assurance Insurance	420	33	434	32	14000	103
Woolwich Admin Centre	300	31	192	48	9200	) 64
3 insurance companies	98	12	92	99	0809	107
Frest & Young	179	17	104	53	3066	58
Halifax Building Society HO	29	7 25	43	39	1663	3 64
Royal Life Financial Planning		8 53	우	43	427	7 125

388 099 102 104 84 % of supply utilised at Max. 3416 1936 1859 1858 5585 5574 4677 3750 3283 3252 2943 2787 1394 27900 8361 7897 7491 6325 6039 5633 17500 15000 11958 qfa (sq m) gfa per max. space used parking demand: maximum parking accum. ខាខាខា gfa per space parking supply: 350 285 285 90 90 97 110 8 5 15 34 80 53 1550 909 370 190 500 127 parking spaces Manchester International Office Centre Northern British Housing Association London Borough of Ealing (BRETS) Central Regional Council British Sky Broadcasting Forestry Commission HQ neighbourhood centre | Amec Civil Engineering Gateway Corporate HQ Link House Publishing Surrey County Council Seimens Northern HQ Shanks & McEwans NFI Electronics Ltd Hewlett Packard Southern Water egal & General Chelsea House CPC Foods Ltd Wessex Fields Teiford House GPT/Siemens Adobe House **HM Customs** Scott House SS Offices NEC UK HO Co-op HQ company B. Effort Wimpey TVSMS 別 development zone development zone commercial zone commercial zone commercial zone commercial zone industrial zone suburban area industrial zone suburban area suburban area industrial zone suburban area suburban area edge-of-town edge-of-town edge-of-town edge-of-town edge-of-town edge-of-town freestanding freestanding edge-of-town edge-of-town edge-of-town freestanding freestanding freestanding town centre town centre town centre site location town centre Manchester, Gtr Manchester Manchester, Gtr Manchester Aspley Heath, Bedfordshire Rochdale, Gtr Manchester Stockport, Gtr Manchester Carisbrooke, Isle of Wight Bolton, Gtr Manchester Worthing, West Sussex **Dunfermline**, Scotland Bournemouth, Dorsel Preston, Lancashire Preston, Lancashire Chorley, Lancashire Edinburgh, Scotland Edinburgh, Scotland Edinburgh, Scotland Edinburgh, Scotland Edinburgh, Scotland Ealing, Gtr London Ealing, Gtr London Ealing, Gtr London West Ewell, Surrey Ealing, Gtr London Ealing, Gtr London Ealing, 6tr London Ealing, Gtr London Kingswood, Surrey Stirling, Scotland Claygate, Surrey Poole, Dorset Poole, Dorset Poole, Dorset site address Bristol, Avon site reference GM-02-A-02 -B-02-A-02 C-02-A-03 -B-02-A-05 L-02-A-15 B-02-A-04 3D-02-A-02 3B-02-A-03 -02-A-12 C-02-A-05 C-02-A-05 GM-02-A-04 3M-02-A-06 GM-02-A-03 S-02-A-02 GL-02-A-08 GL-02-A-09 -02-A-09 -02-A-16 :-02-A-03 -02-A-14 -02-A-04 C-02-A-07 GL-02-A-11 site details: AV-02-A-01 3C-02-A-08 M-02-A-01 EB-02-A-01 .-02-A-01 1-02-A-01 C-02-A-07 -02-A-01 SR-02-A-01

Table B12: B1 Offices (weekday parking demand)

% of supply utilised at шах. 9940 9290 7300 5350 74284 4823 3450 38000 25060 24866 23000 16000 gfa (sq m) 145 51 6 33 ខ្ល 51 maximum gfa per max. space used parking demand: 894 1116 619 172 450 397 371 240 144 113 parking <u>8 2 4 E</u> 23 38 27 2 4 4 4 gfa per space parking supply: 1080 1183 1183 190 500 500 500 122 122 126 parking spaces 74284 38000 25060 24866 23000 16000 12077 9940 9290 7300 5350 4823 3450 gfa (sq m) Glaxo Wellcome Medical Research company or business park name Digital Equipment Company Ltd Citizen Manufacturing (UK) Ltd The South Gate Centre Navigation Business Village Business Park, Edinburgh Business Park, Edinburgh Carrington Business Park Woking Business Park Hewlett Packard Ltd Communications Ltd Mole Business Park Sony UK Ltd industrial zone industrial zone suburban area industrial zone industrial zone suburban area suburban area freestanding edge-of-town edge-of-town freestanding site location town centre Sheerwater, Woking, Berkshire Stockport, Gtr Manchester **Urmston**, Gtr Manchester Scunthorpe, Humberside Wokingham, Berkshire Leatherhead, Surrey Bracknell, Berkshire Edinburgh, Scotland Edinburgh, Scotland Newbury, Berkshire Reading, Berkshire Ealing, Gtr London site details: site reference site address EB-02-B-02 GM-02-B-02 -02-B-02 BC-02-B-08 BC-02-B-06 :-02-B-05 C-02-8-02 GL-02-B-06 -02-B-07 EB-02-B-01 C-02-B-01 3M-02-B-01 IB-02-B-01

development zone

Preston, Lancashire

Table B13: B1 Business Parks (weekday parking demand)

Table B14: B2 Industry - Industrial Estates and Units (weekday parking demand)

				barking supply:	ا خِ	parking demand:	and:		
Site details:								1, 1, 1, 1	of of county.
cita reference	site address	site location	company or industrial estate name	parking	gfa per	maximum	maximum gta per max.	gra (sq m)	% of Supply
200000000000000000000000000000000000000	200 000 000			spaces	space	parking	space used		utilised at
						accum.			max.
				100	100	975	.,	00001	140
HR 02.D.03	Scrinthorne Himberside	edge-of-town	Ericssons Ltd	382	35	208	(52)	13500	2
מסקים מיי	ocumino por manociones	1		168	53	06	86	8864	72
20-720-75	Weybridge, Surrey	neestanding	IAVIOLAT CITICAL					1000	95
CM 02.0.01	Oldham Gir Manchester	edoe-of-town	Acom Centre	200	41	132	63	2070	00
0.77	Ordinality du Franchisco			11	7	200	137	2154	06
FR-02-D-01	Edinburgh, Scotland	suburban area	Leith Industrial Estate	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	4	60	40	515	3

Table B15: B8 Warehousing and Distribution - primarily distribution including Parcel Distribution Centre (weekday parking demand)

					parking supply:	×	parking demand:	and:	
site details:			-	Т	Г	of a nor	maximim	ofa per max.  % of supply	% of supply
after software	ato address	site location	company	gra (sq III)	Danning	dia pei	1	3.00	111111111111111111111111111111111111111
אוב ובוכובוורב	Site dudicos			S	spaces	space	parking	space used	utilised at
							accum.		max.
		مرمد امثمتوسيدي	Iohn Lawic Partnership	12463	8	156	216	58	2
GL-02-F-01	Ealing, Gtr London	COMMERCIAI ZUNE	And Distribution Control	8848	120	74	114	78	95
GM-02-F-01	Wigan, Gtr Manchester	commercial zone	Asda Distribution Centre	7900	41	193	52	152	127
GL-02-F-11	Ealing, Gtr London	commercial zone	Glaxo	7525	200	38		64	59
GL-02-F-12	Ealing, Gtr London	commercial zone	Pioneer High Fidelity (GB) LTd	2007	171	2 2			95
SC-02-F-01	Weybridge, Surrey	freestanding	Courage	C80/	1	35			
GI -02-F-05	Faling Gtr London	industrial zone	Entonia Wines	000/	40				
20 20 20	Entire Ort order	industrial zone	Allport Freight Ltd	6700	26				
GL-02-1-02	Ediling, dir London	inductrial zone	lacobs Biscuits	6533	31	211	8		
BC-02-1-04	Keading, berksnire	יין	Codebara	2000	30	167	29	172	97
GL-02-F-03	Ealing, Gtr London	industrial zone	Calishery	4590	72	64	20	92	69
BC-02-F-03	Bracknell, Berkshire	industrial zone	Christian Salvesen	0002	200				140
GL-02-F-08	Ealing, Gtr London	industrial zone	Expandite Ltd	0000	NA L			67	102
GL-02-F-04	Ealing, Gtr London	industrial zone	Ingram Entertainment plc	2000	30			ľ	
GL02-F-10	Faling Gtr London	commercial zone	Holmes Valves	/8/7	67				2
CU 00 CU 00	Weithridge Surrey	freestanding	TNT Parcel Distribution	2304	152	cl cl			Ī
30-05-0-05	Esting Challender	commercial zone	Cables & Flexibles	1420	ଛ	7	8		3
GL-02-1-03	Ealing, oil Luidoil	Ladinated none	Debar Land 14d	1393	22	63	18	3	82
GL-02-F-07	Ealing, Gtr London	Industrial Zone	Cana Lapp Lid	1000	4	167	14	7	233
GL-02-F-06	Ealing, Gtr London	industrial zone	Groshlex (UK) Ltd	200					

Table B16: B8 Warehousing and Distribution - primarily warehousing (weekday parking demand)

site details:				parking supply:	<u>.</u>	parking demand:	ığ:		
site reference   site address	site address	site location	company	parking	gfa per	maximum	gfa per max.	gfa (sq m)	% of supply
				spaces	space	parking	space used		utilised at
						асспш.			тах.
GL-02-E-05	Ealing, Gtr London	commercial zone	Clothing Retailers	200	22	155	74	11495	78
BC-02-E-01	rkshire	industrial zone	Catering Equipment	63	125	79	100	7872	125
		town centre	Folkard Bolding	40	81	18	180	3248	45
	Ealing, Gtr London	commercial zone	Milupa	10	105	16	65	1045	160
1	Ealing, Gtr London	commercial zone	Mecalux	9	158	7	136	950	117

Table B17: D2 Leisure - Multiplex Cinemas (weekday parking demand)

cite details				parking supply:	Ya	parking demand:	and:		
cite reference	the reference   cite address	site location	operator	parking	seats per	maximum seats per	seats per	seats	% of supply
alle lefe like	CC and and				space	parking	max, space	-	utilised at
						accum.	pasn		тах.
VC 07 A 01	Strond Kent	Pdoe-of-town	Virgin	290	4	545	4	21	2100 92
1	Precton   parachire	development zone		989	e e	451	4	20	2020 66
BII-07-A-01	High Wycombe. Buckinghamshire	edge-of-town	DCI	685	E	220	8	17	1748 32

Table B18: D2 Leisure - Multiplex Cinemas (Saturday parking demand)

site details:				۵	parking supply:	×	parking demand:	and:		
site reference	site reference   site address	site location	operator	d	parking	seats per	тахітит	seats per	seats	% of supply
				S	spaces	space	parking	тах. space		utilised at
							accum.	pesn		тах.
KC-07-A-01	Strood, Kent	edge-of-town	Virgin		290	4	464	2	2	100
LC-07-A-02	Preston, Lancashire	development zone	ומ		989	3	549	4	2	2020 8
BU-07-A-01	High Wycombe, Buckinghamshire	edge-of-town	חמו		685	3	312	9	1	1748 4



# APPENDIX A







### APPENDIX A









#### **APPENDIX** A



Figure 4.21
Comparison of supply and peak demand gross floor area per parking space
B1 Offices on weekdays

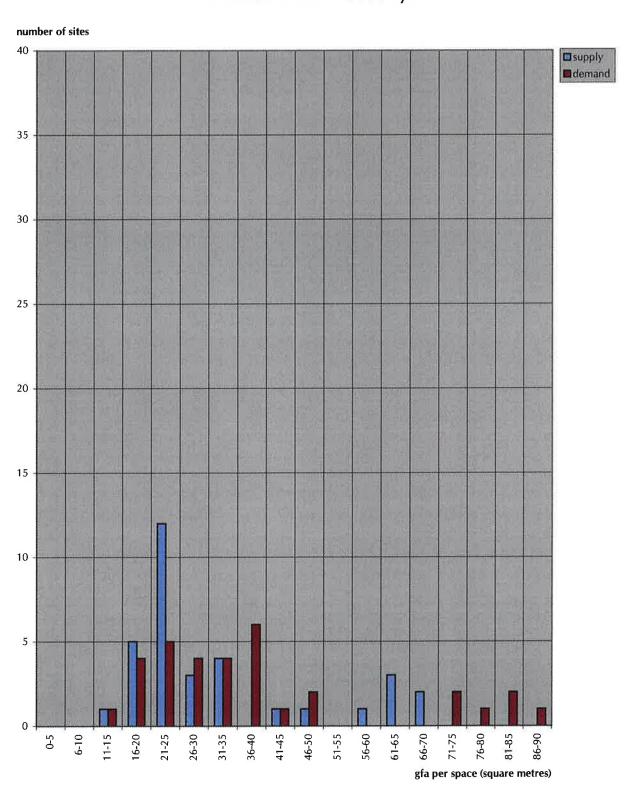


Figure 4.20
Comparison of supply and peak demand gross floor area per parking space
Foodstores on Saturdays

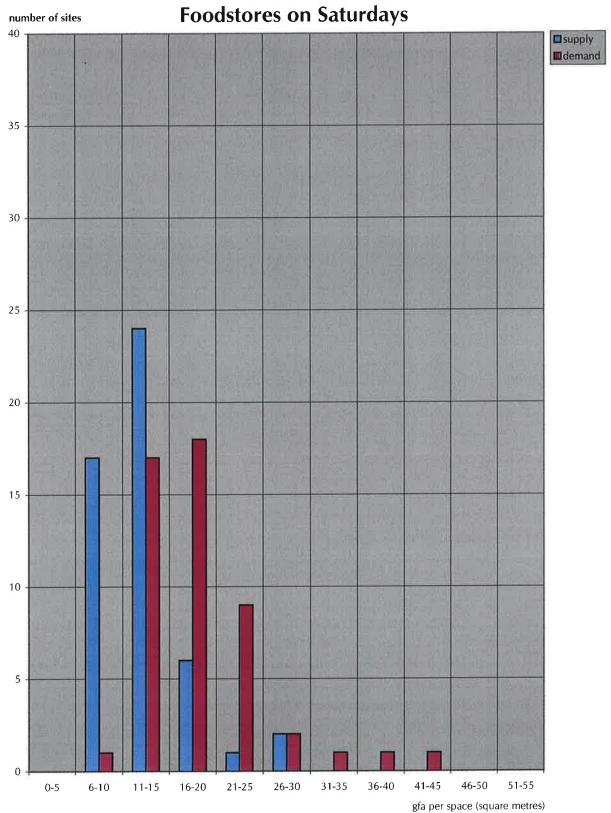
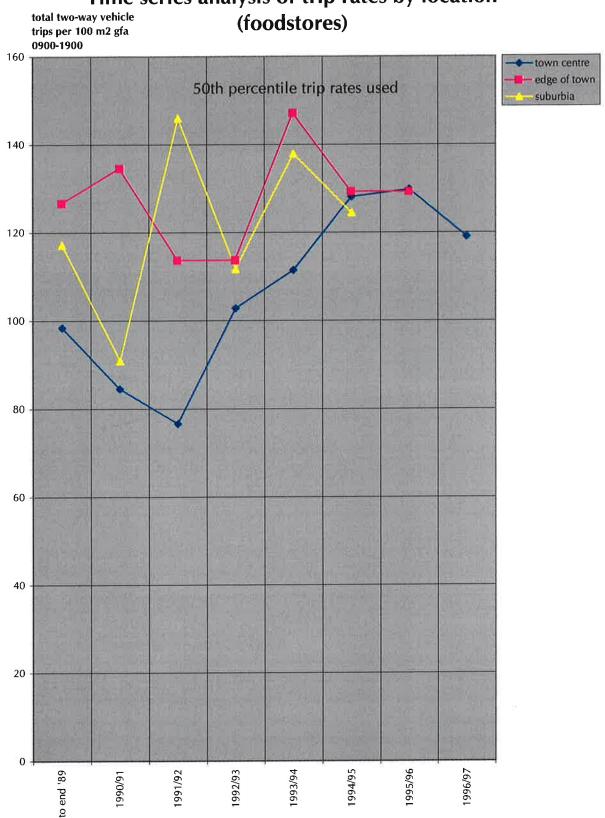


Figure 3.3
Time-series analysis of trip rates by location

way vehicle (foodstores)



year pairs

Figure 3.2

Time-series analysis of trip rates by region total two-way vehicle trips per 100 m2 gfa (foodstores)

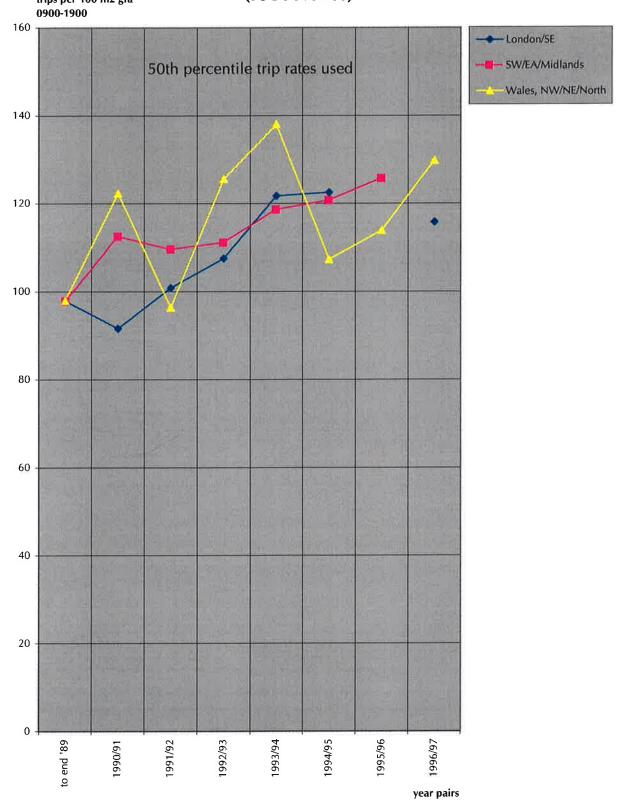
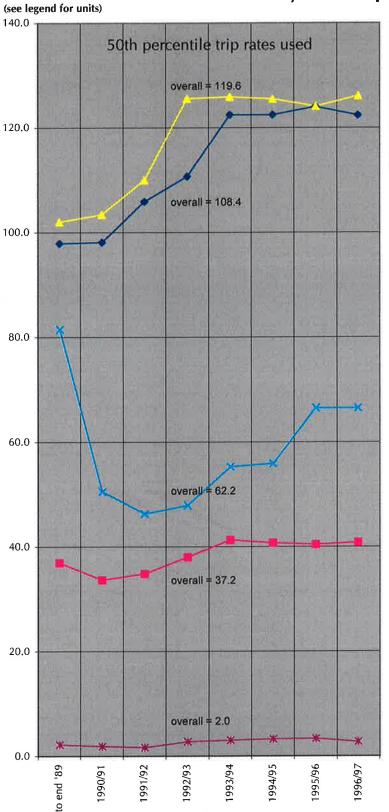


Figure 3.1 Time-series analysis of trip rates

year pairs



total two-way vehicles



Figure 2.6(b)

Sales density for leading grocers at 1996/97 prices (Source: Retail Rankings 1999, Retail Intelligence) sales (£) per square foot Tesco/Metro/Express/Extra Sainsbury's Safeway (excluding Presto) **ASDA/Dales** Kwik Save Somerfield/Food Giant 1200 - Morrisons Iceland Waitrose Aldi 1000 800 600 400 200

1997/98

year

1979/80

1982/83 1983/84 1984/85 1985/86

1987/88 1988/89 06/6861 1990/91

Figure 2.6(a) Sales density for leading grocers at current prices (Source: Retail Rankings 1999, Retail Intelligence)

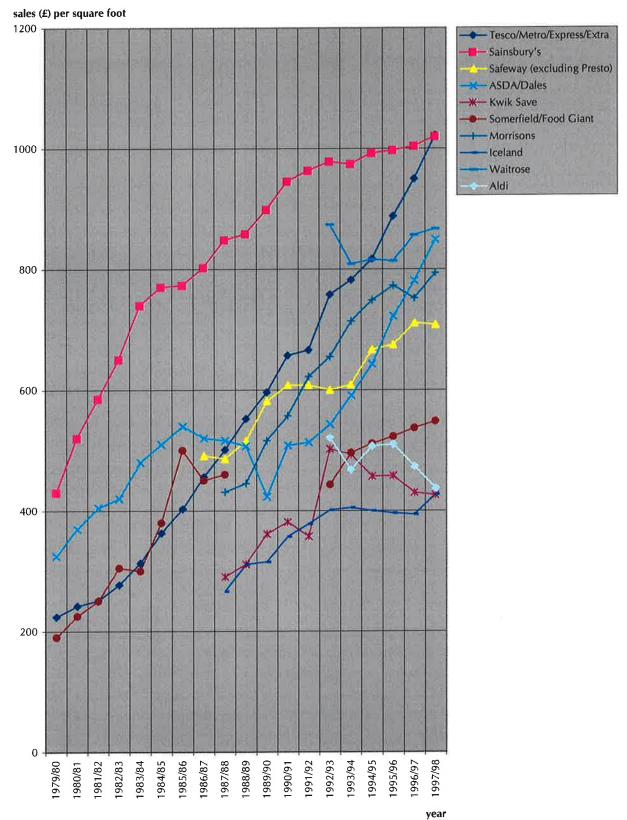


Figure 2.5 Net margins of leading grocers (Source: Retail Rankings 1999, Retail Intelligence)

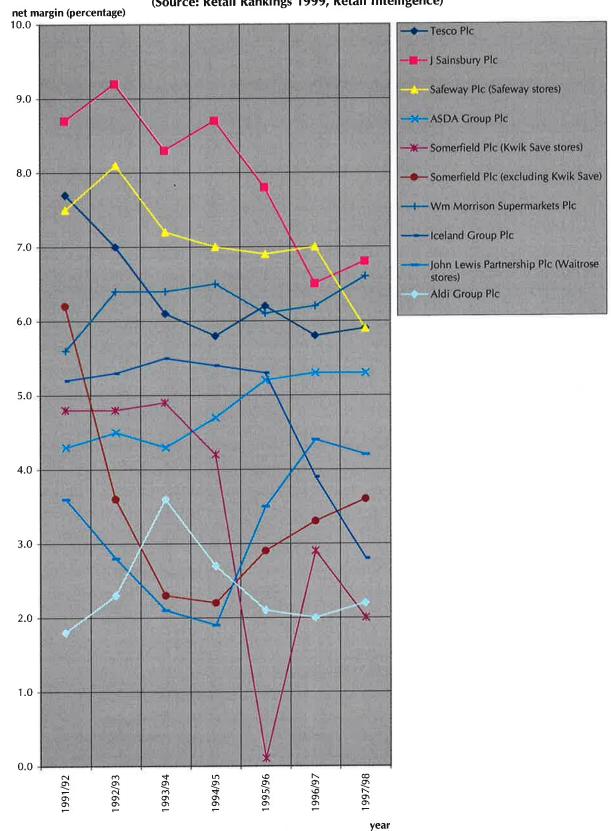
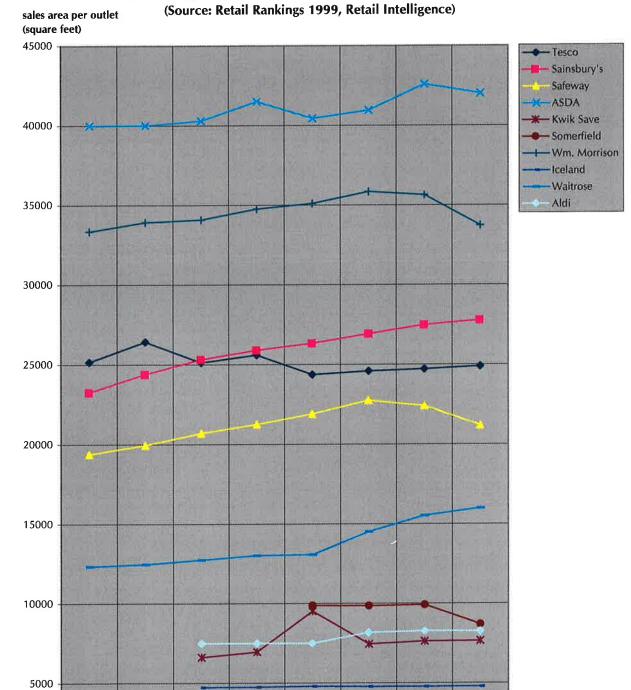


Figure 2.4

Average outlet size of leading grocers
(Source: Retail Rankings 1999, Retail Intelligence)



1995/96

year

1993/94

0 -

1990/91

1991/92

Figure 2.3 Petrol forecourt developments at leading grocers
(Source: Retail Rankings 1999, Retail Intelligence)

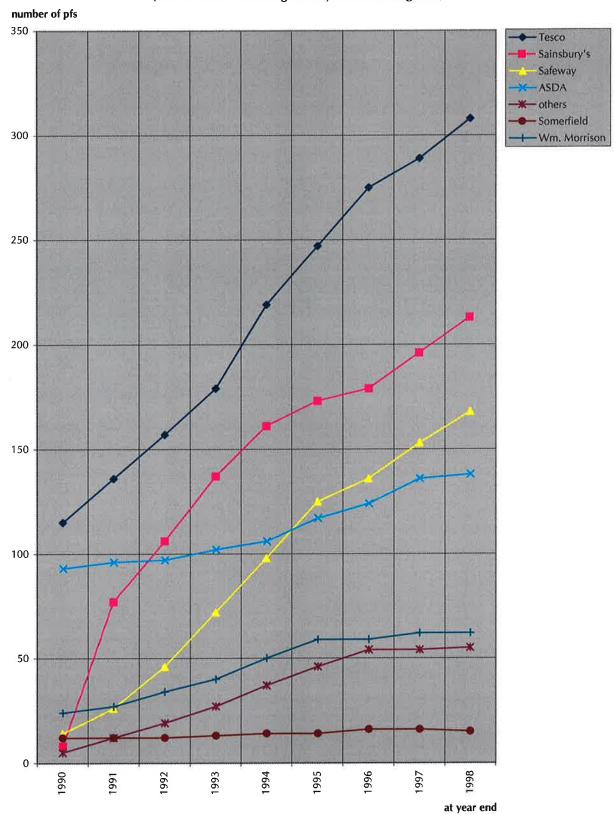
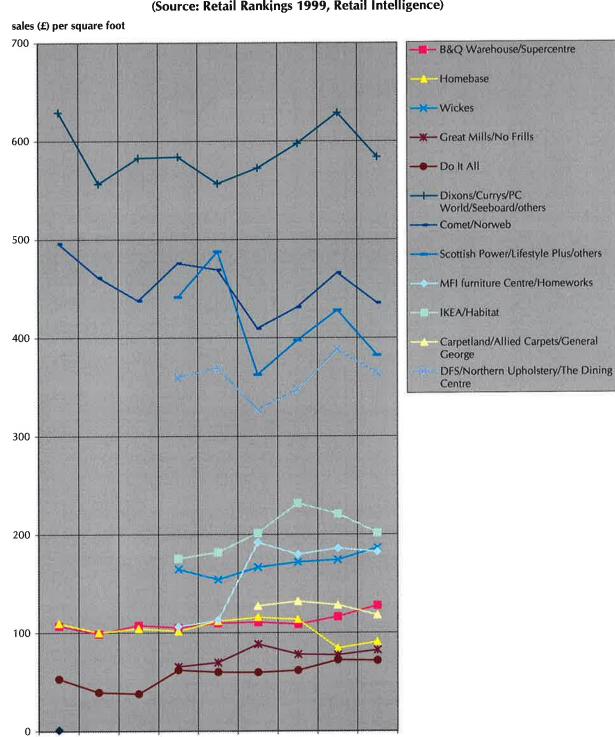


Figure 2.2 Sales density for leading non-food retailers at constant prices

(Source: Retail Rankings 1999, Retail Intelligence)



1997/98

year

1989/90

1993/94

1991/92

1994/95

Figure 2.1 Consumer expenditure at 1995 prices: selected items

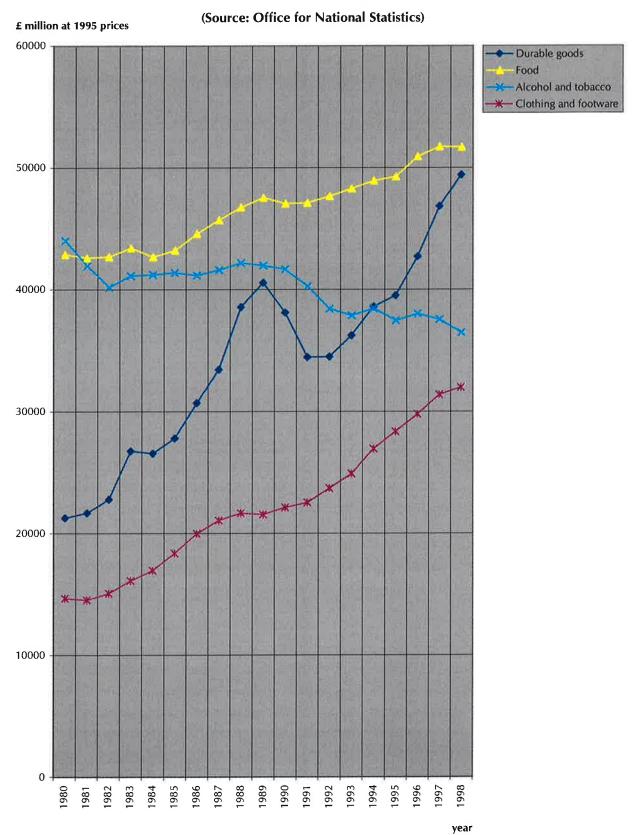


Figure 4.21
Comparison of supply and peak demand gross floor area per parking space
B1 Offices on weekdays

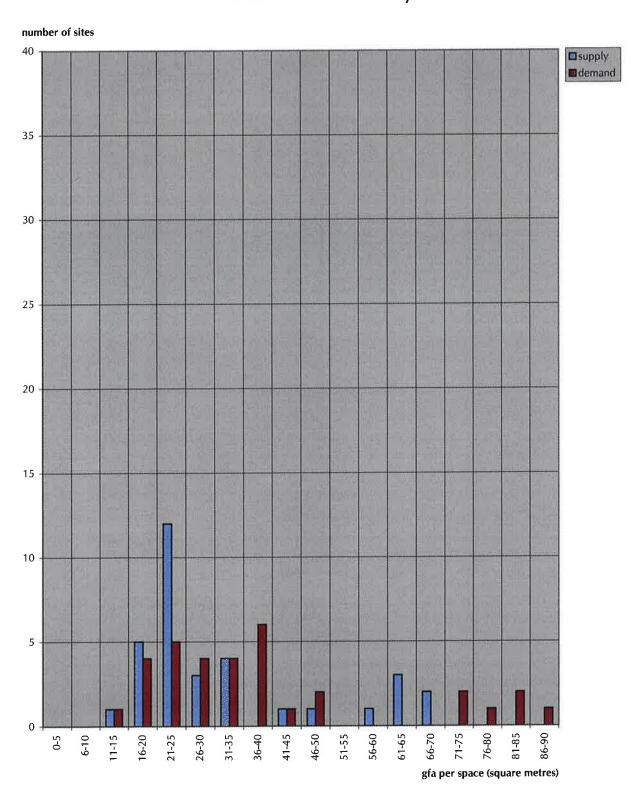


Figure 4.20
Comparison of supply and peak demand gross floor area per parking space
Foodstores on Saturdays

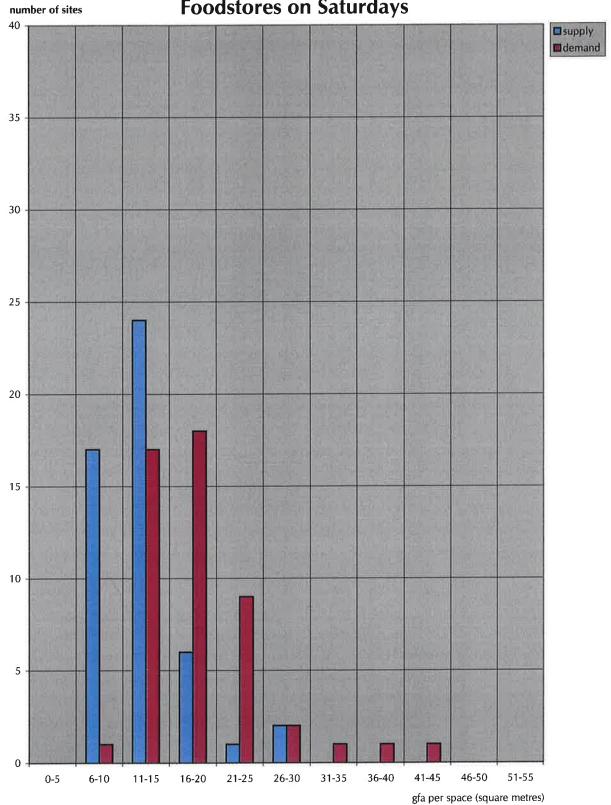


Figure 4.19
Comparison of supply and peak demand gross floor area per parking space
Foodstores on weekdays

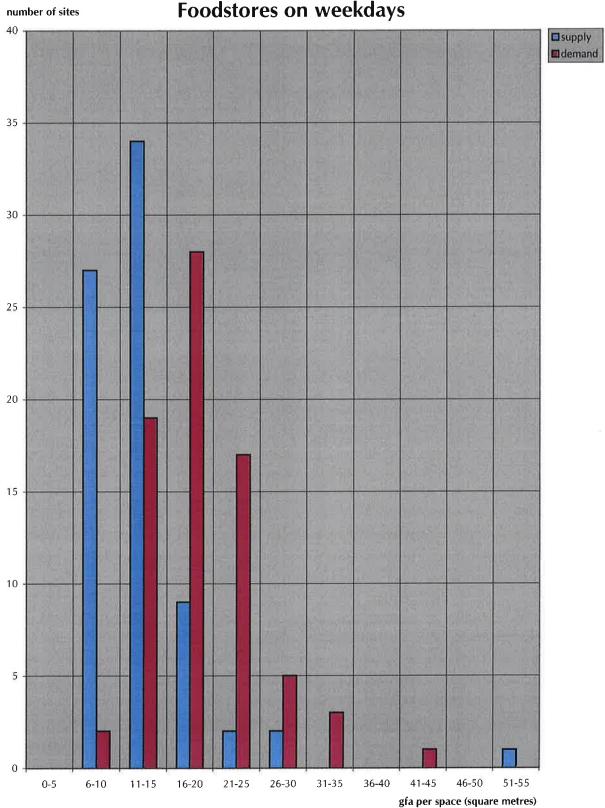
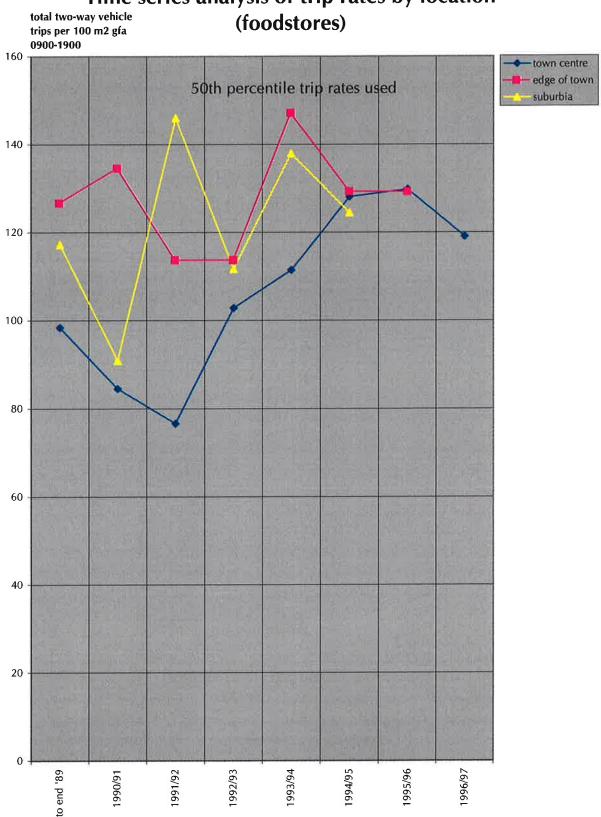


Figure 3.3
Time-series analysis of trip rates by location
o-way vehicle
t 100 m2 gfa
(foodstores)



year pairs

Figure 3.2

Time-series analysis of trip rates by region

total two-way vehicle
trips per 100 m2 gfa
0900-1900

(foodstores)

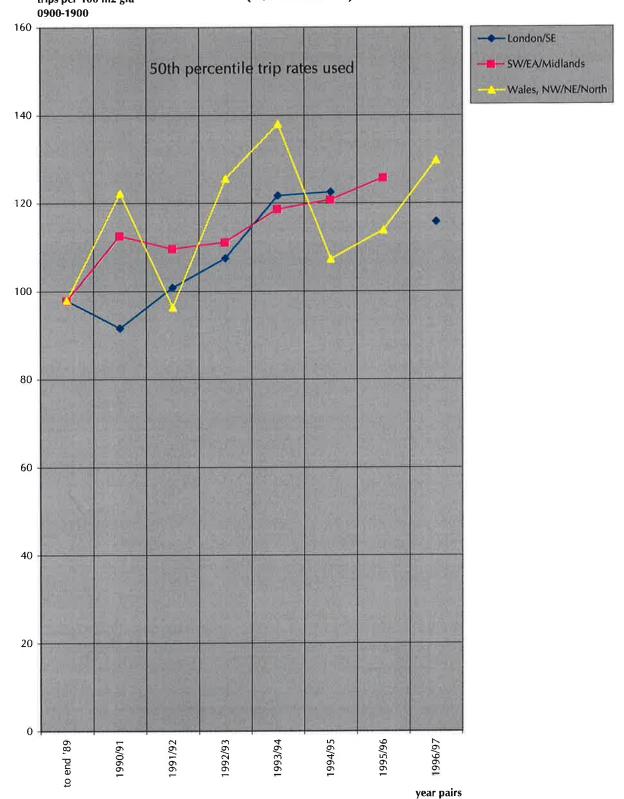
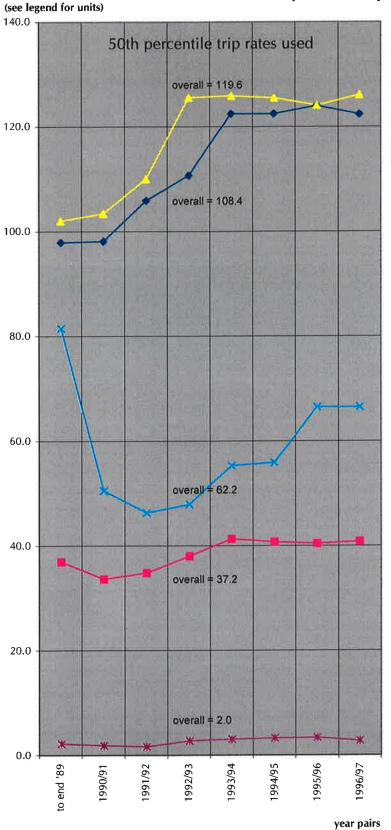


Figure 3.1
Time-series analysis of trip rates



total two-way vehicles



**Figure 2.6(b)** Sales density for leading grocers at 1996/97 prices (Source: Retail Rankings 1999, Retail Intelligence)

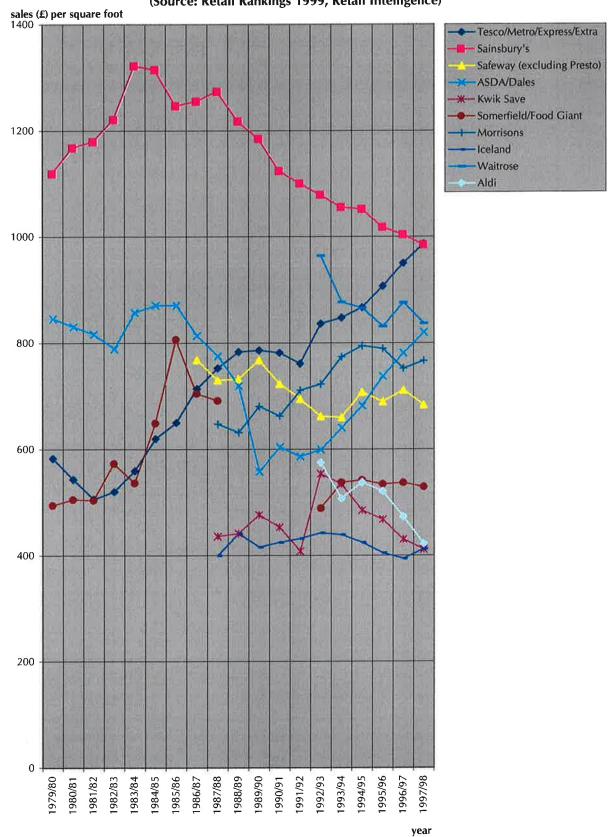
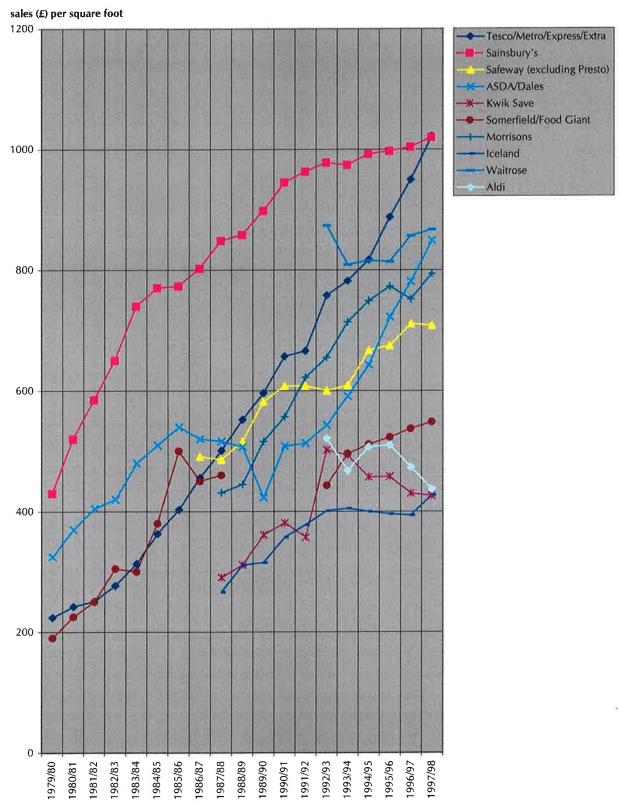


Figure 2.6(a)
Sales density for leading grocers at current prices

(Source: Retail Rankings 1999, Retail Intelligence)



year

Figure 2.5 Net margins of leading grocers (Source: Retail Rankings 1999, Retail Intelligence)

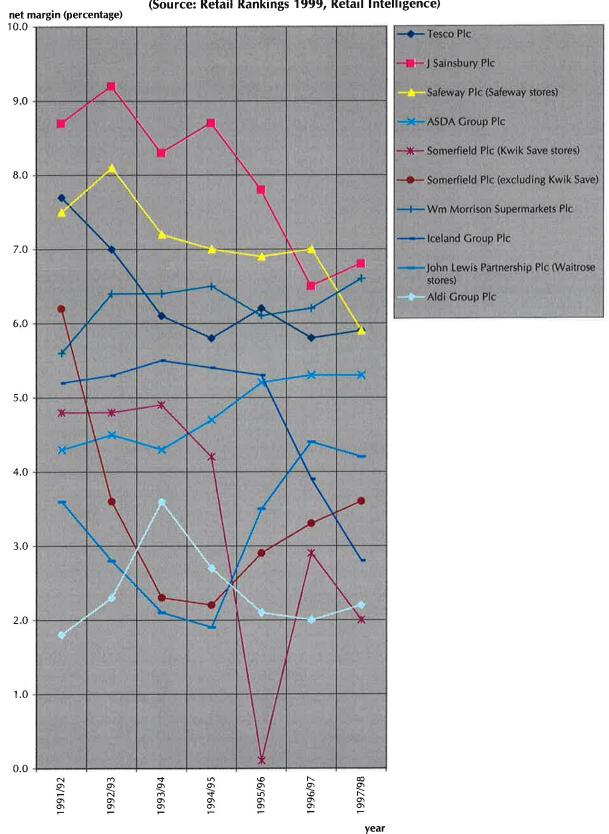
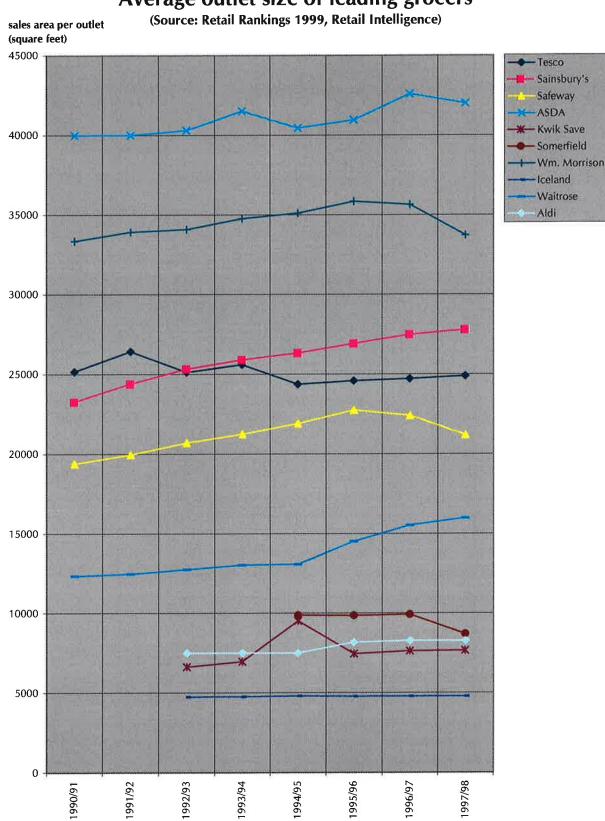


Figure 2.4

Average outlet size of leading grocers
(Source: Retail Rankings 1999, Retail Intelligence)



year

Figure 2.3 Petrol forecourt developments at leading grocers (Source: Retail Rankings 1999, Retail Intelligence)

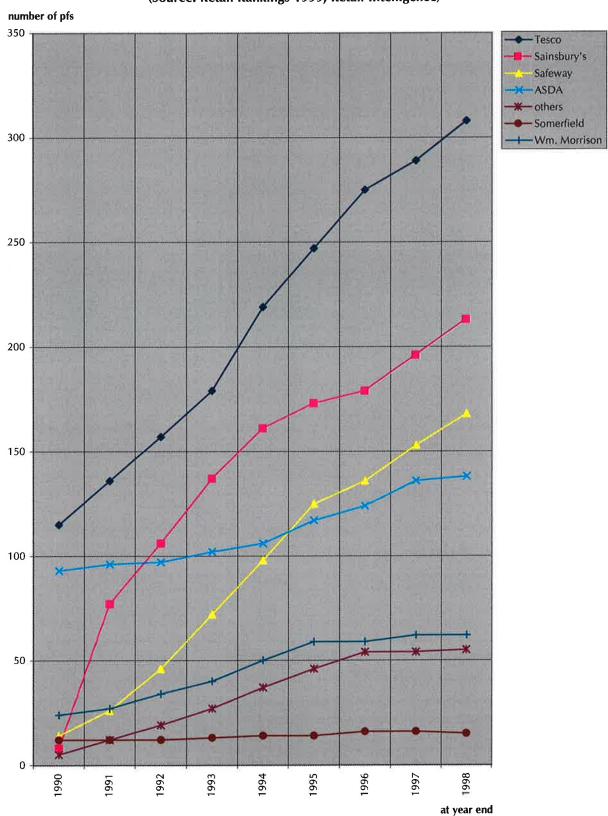
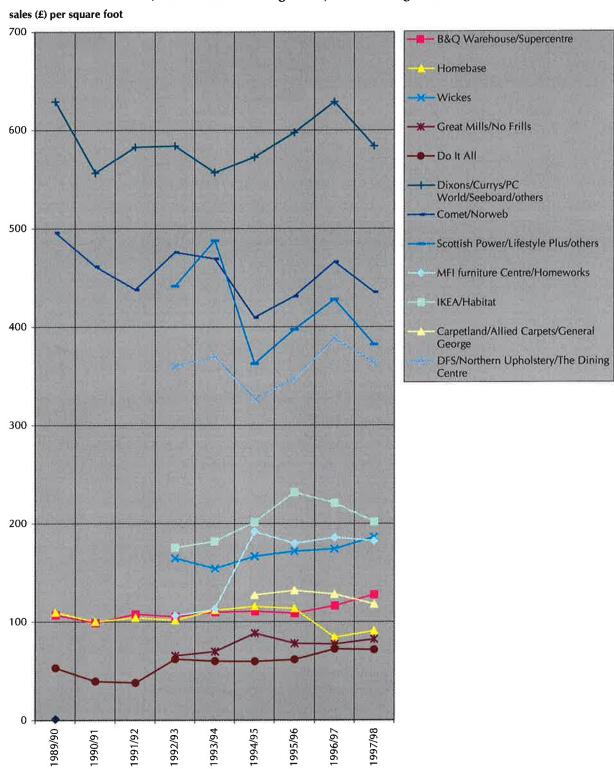


Figure 2.2
Sales density for leading non-food retailers at constant prices

(Source: Retail Rankings 1999, Retail Intelligence)



year

Figure 2.1 Consumer expenditure at 1995 prices: selected items

