TRICS

REPORT 99/2

Research into Trip Rate Variation

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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 85th 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, 50th or 85th percentile values
- to ensure that TRICS continues to be perceived as **the** 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 85th 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 Co-op 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 **increase** 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 **decrease** 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

(Source: Office for National Statistics)

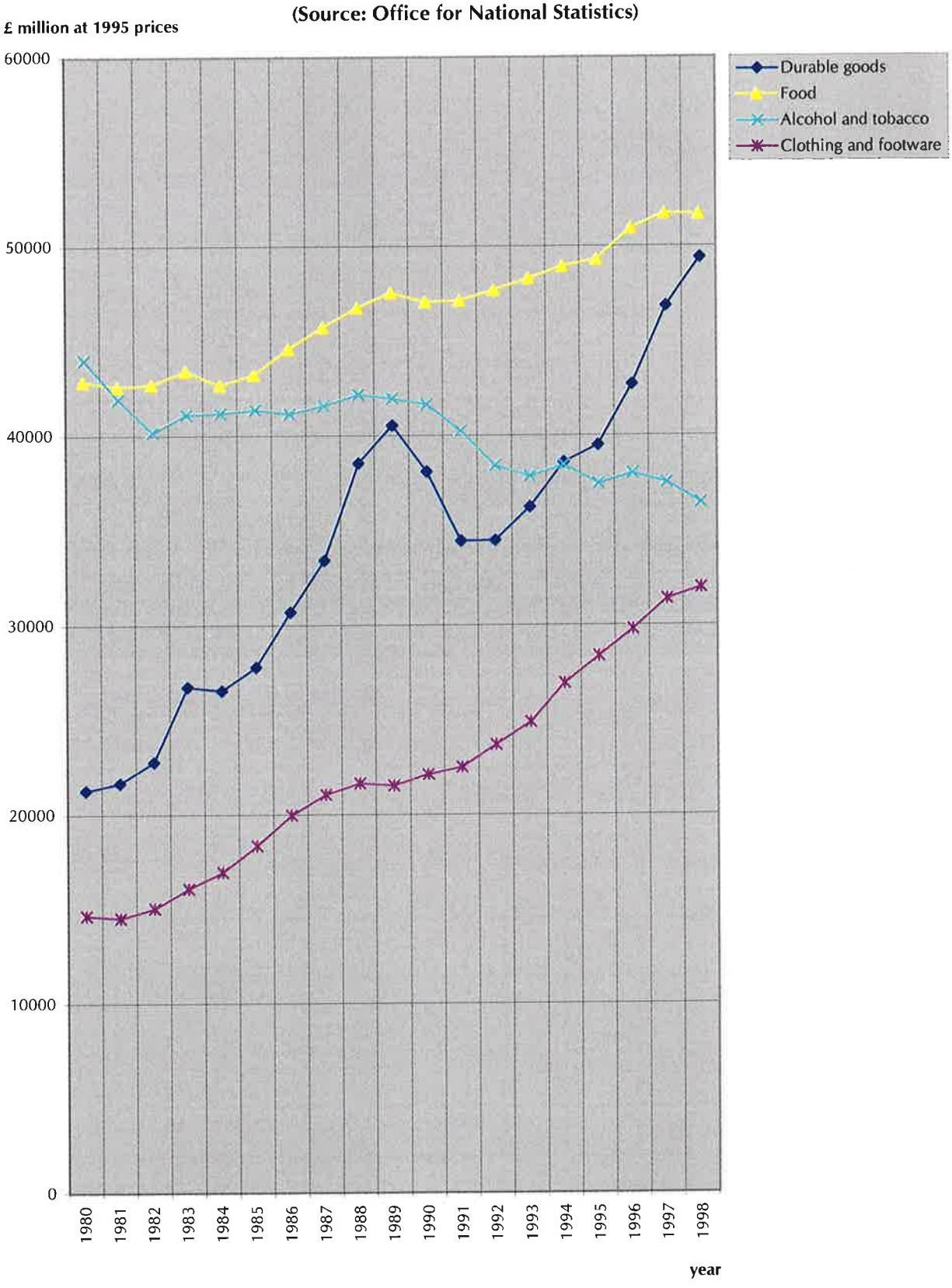


Figure 2.2
Sales density for leading non-food retailers at constant prices

(Source: Retail Rankings 1999, Retail Intelligence)

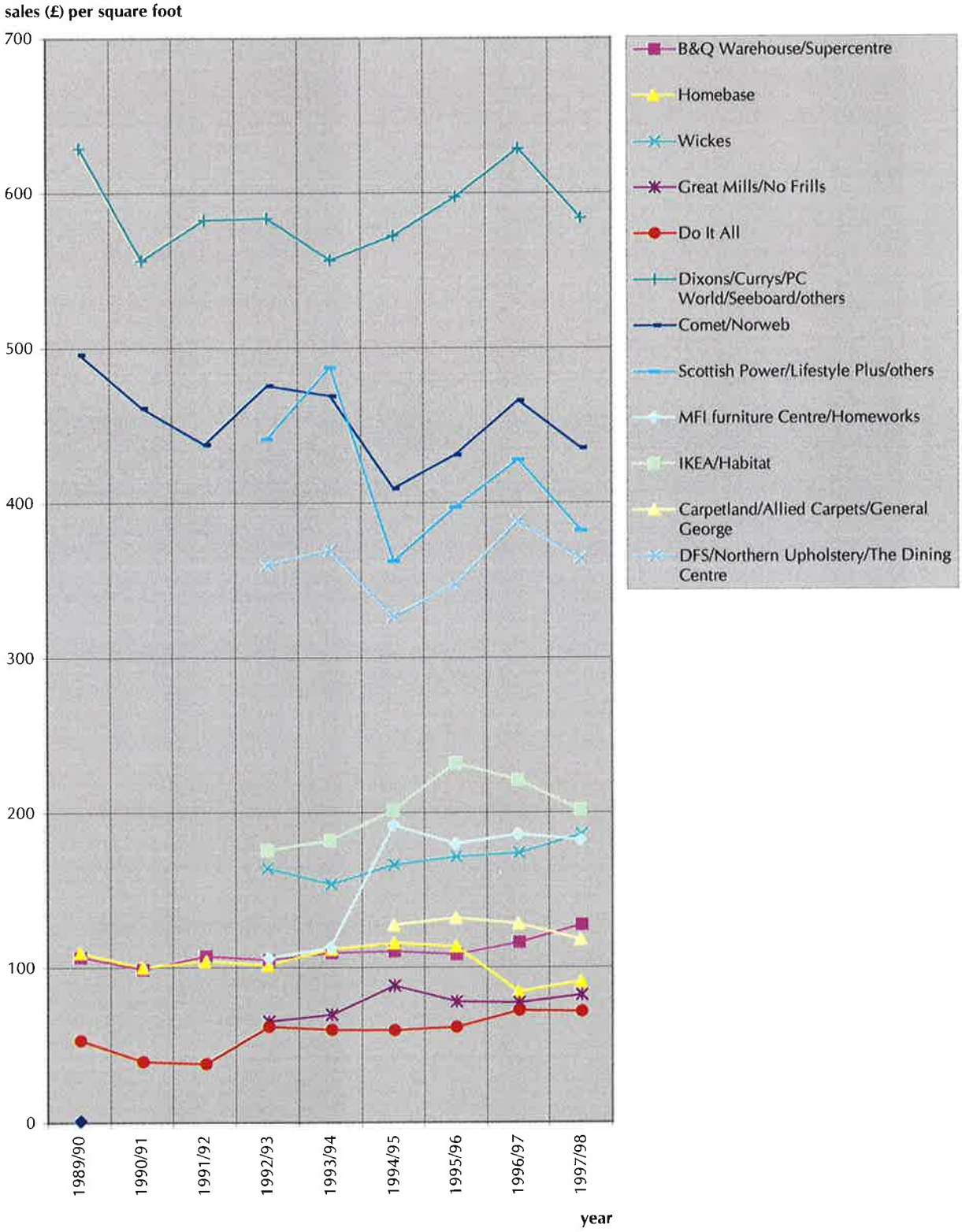


Figure 2.3
Petrol forecourt developments at leading grocers
(Source: Retail Rankings 1999, Retail Intelligence)

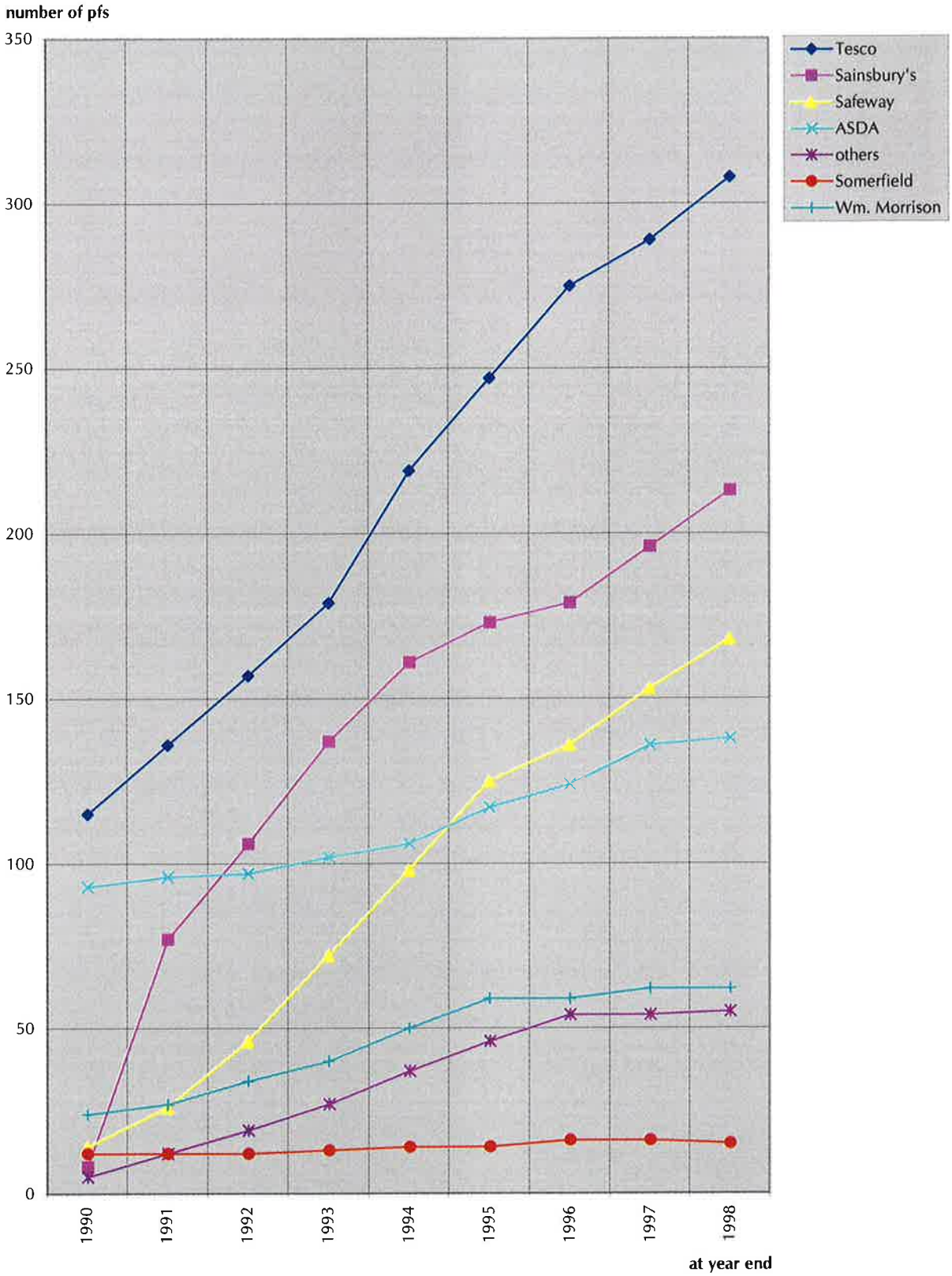


Figure 2.4
Average outlet size of leading grocers
(Source: Retail Rankings 1999, Retail Intelligence)

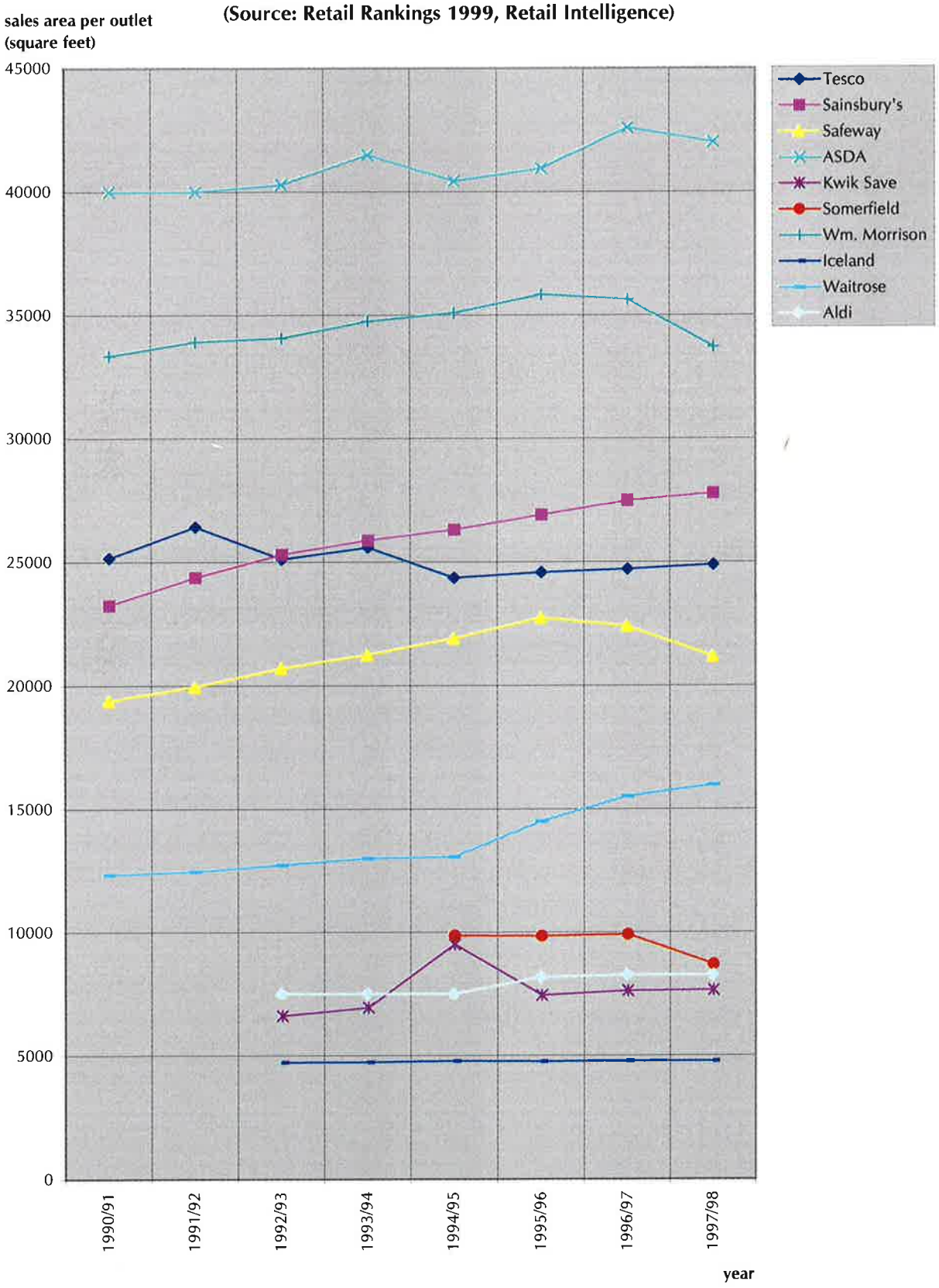


Figure 2.5
Net margins of leading grocers
(Source: Retail Rankings 1999, Retail Intelligence)

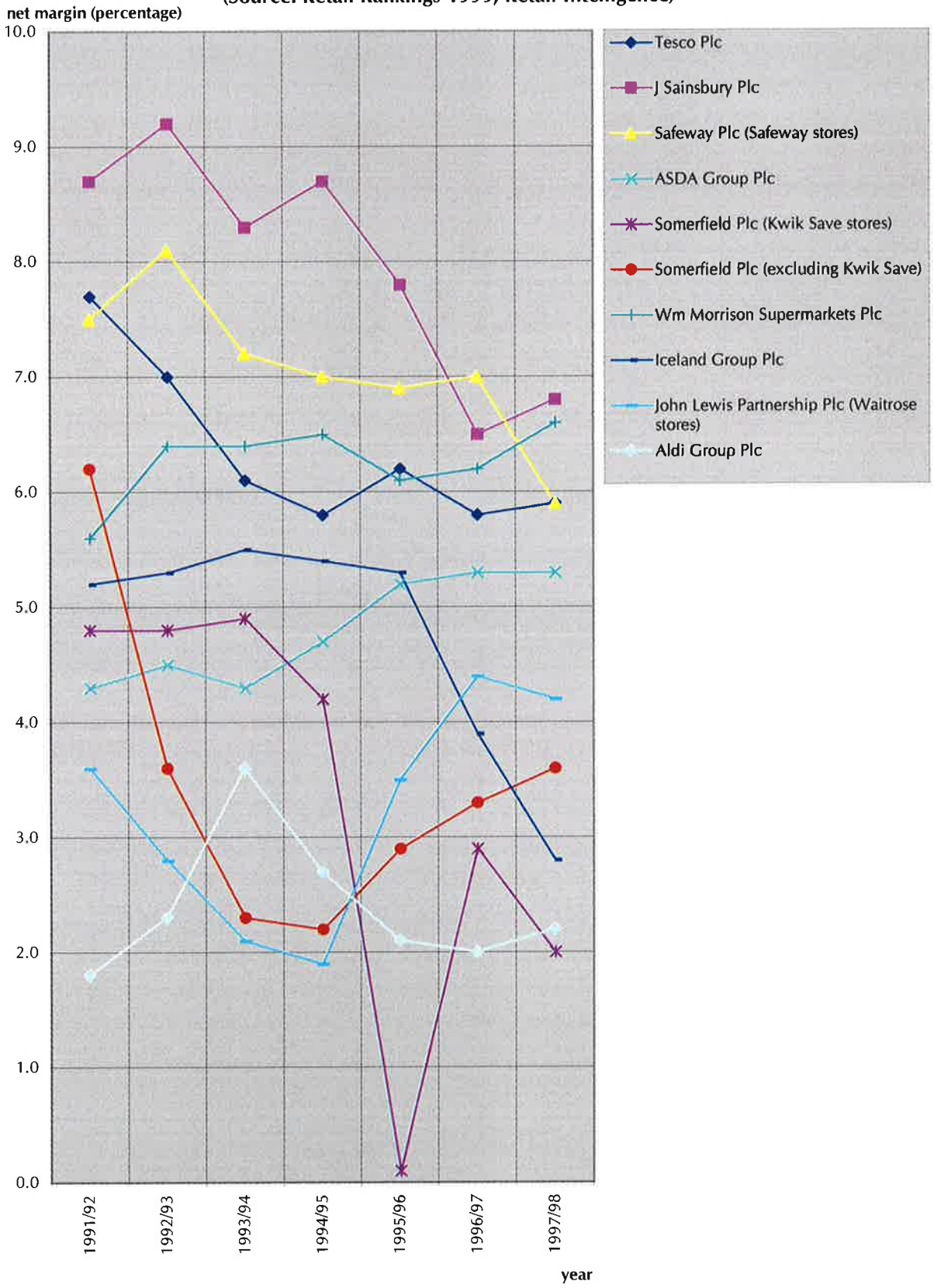


Figure 2.6(a)
Sales density for leading grocers at current prices
(Source: Retail Rankings 1999, Retail Intelligence)

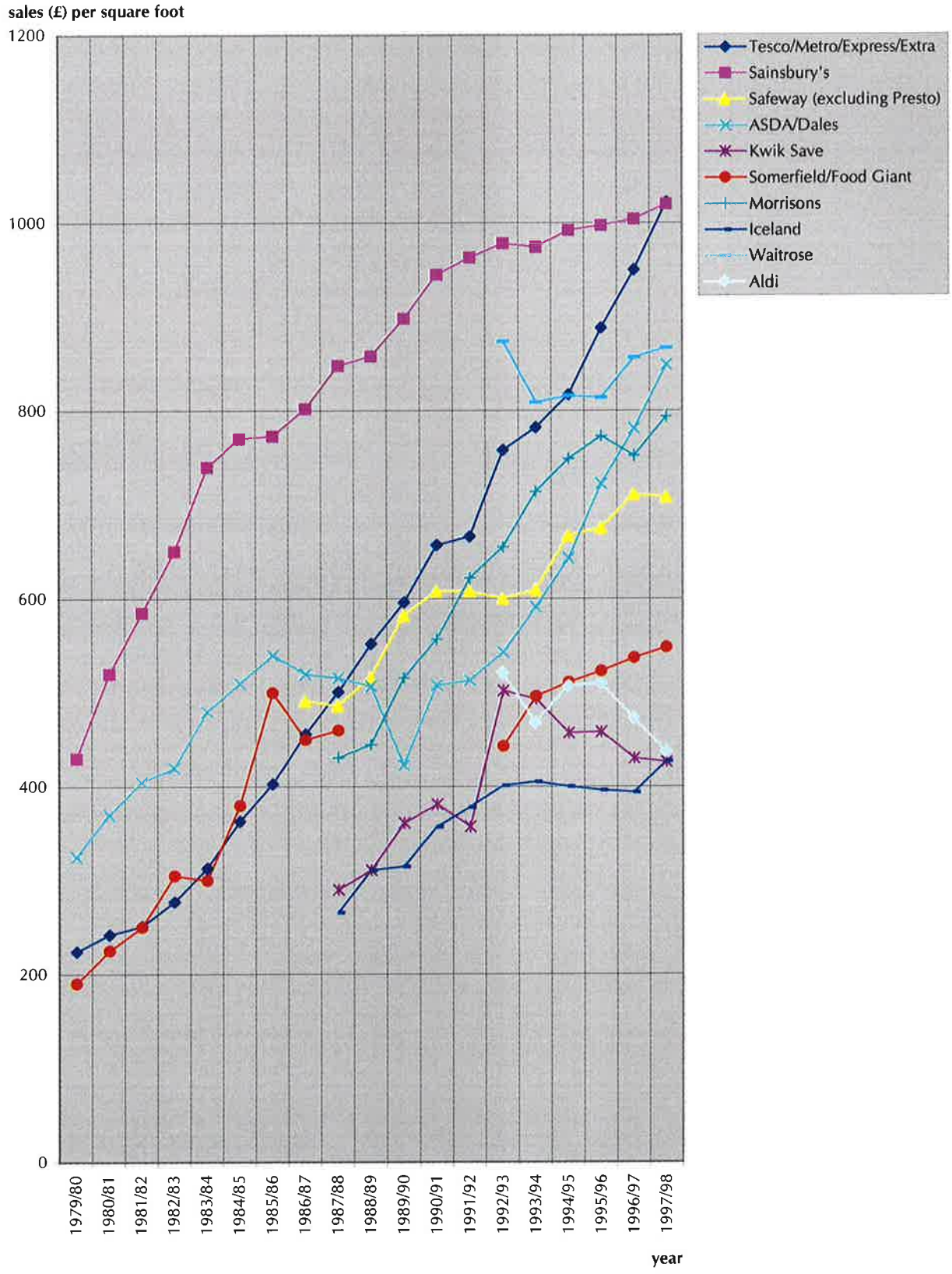
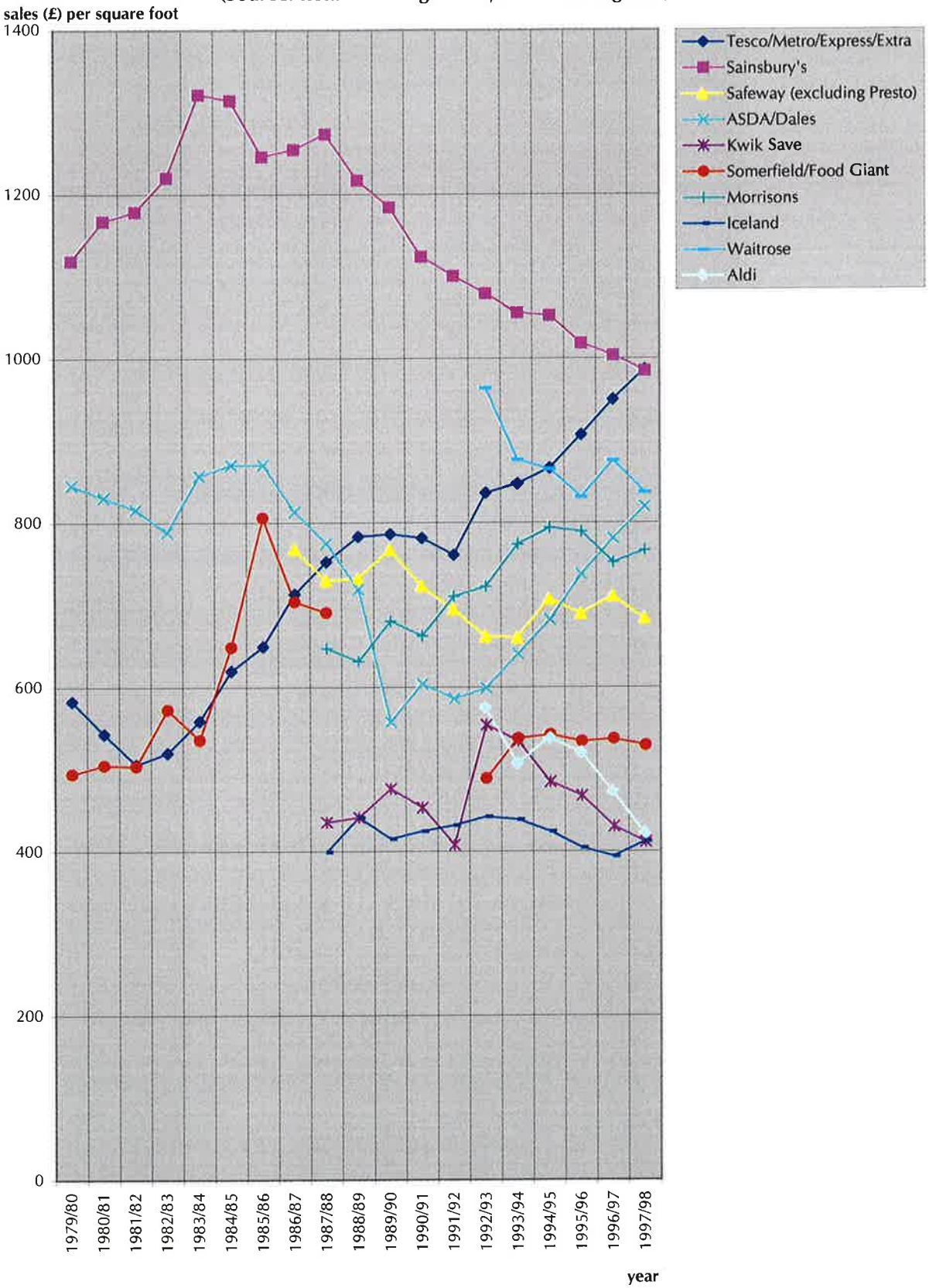


Figure 2.6(b)
Sales density for leading grocers at 1996/97 prices
(Source: Retail Rankings 1999, Retail Intelligence)



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 sub-set. 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 slow-growing 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

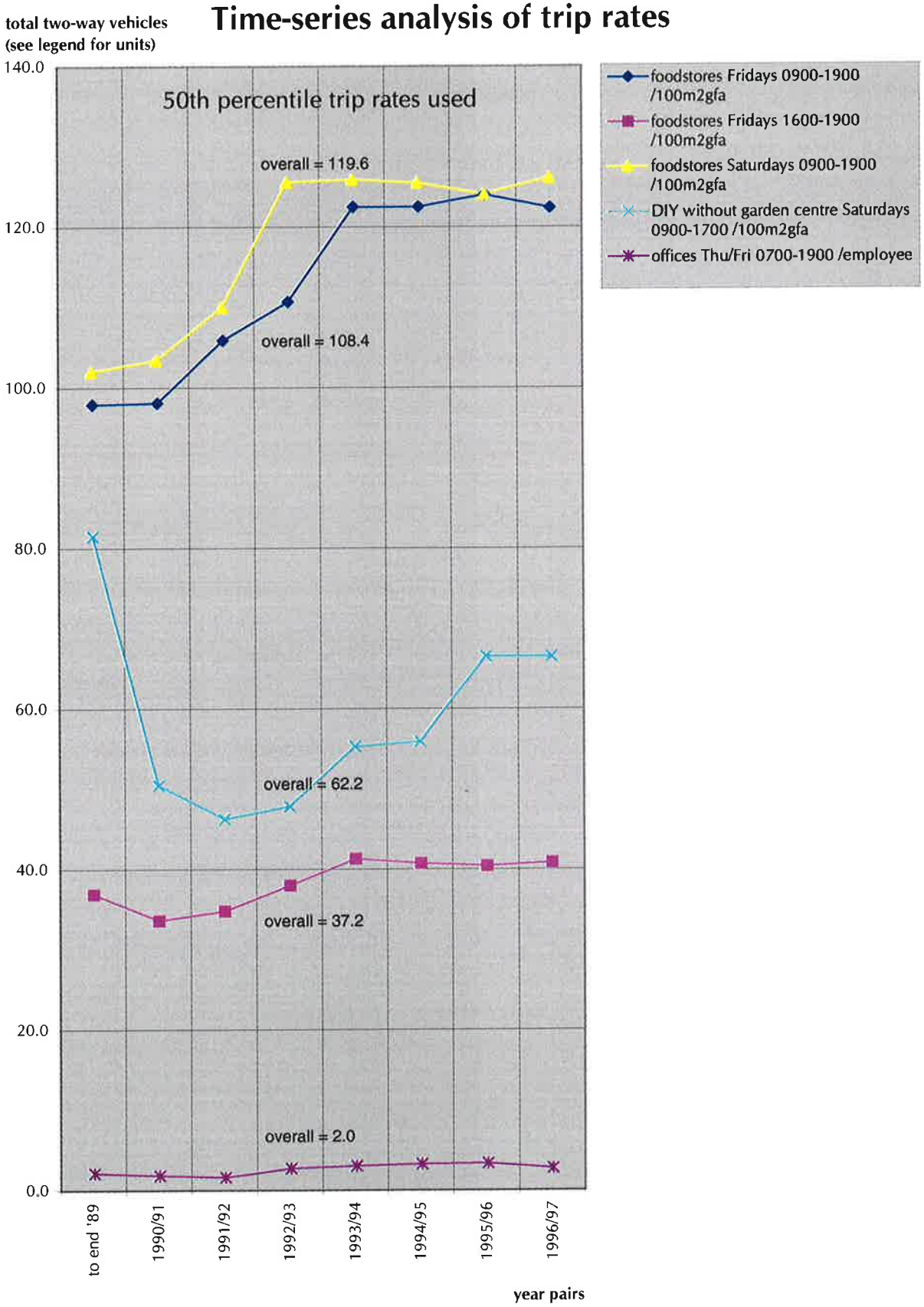


Figure 3.2
Time-series analysis of trip rates by region (foodstores)

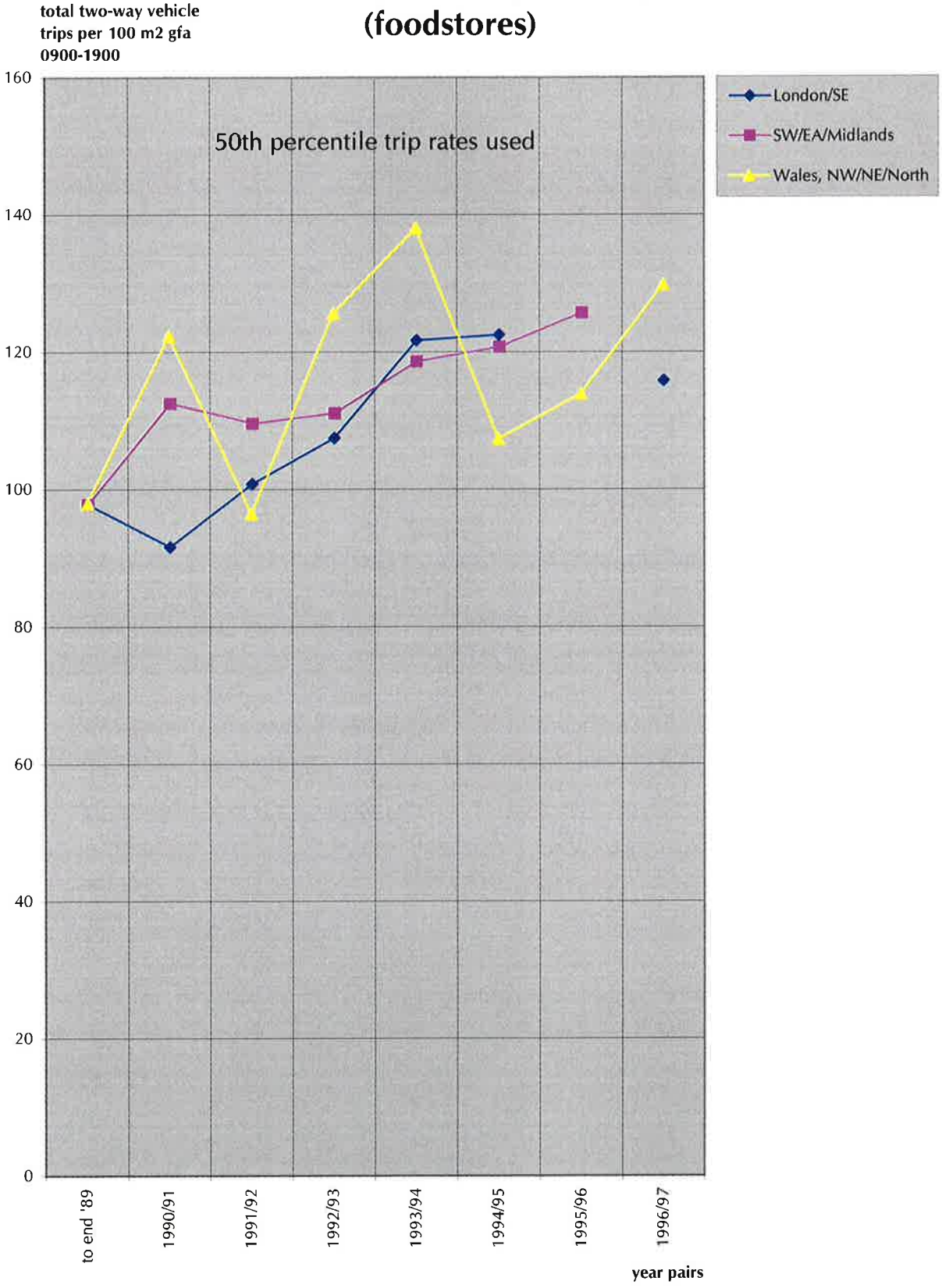
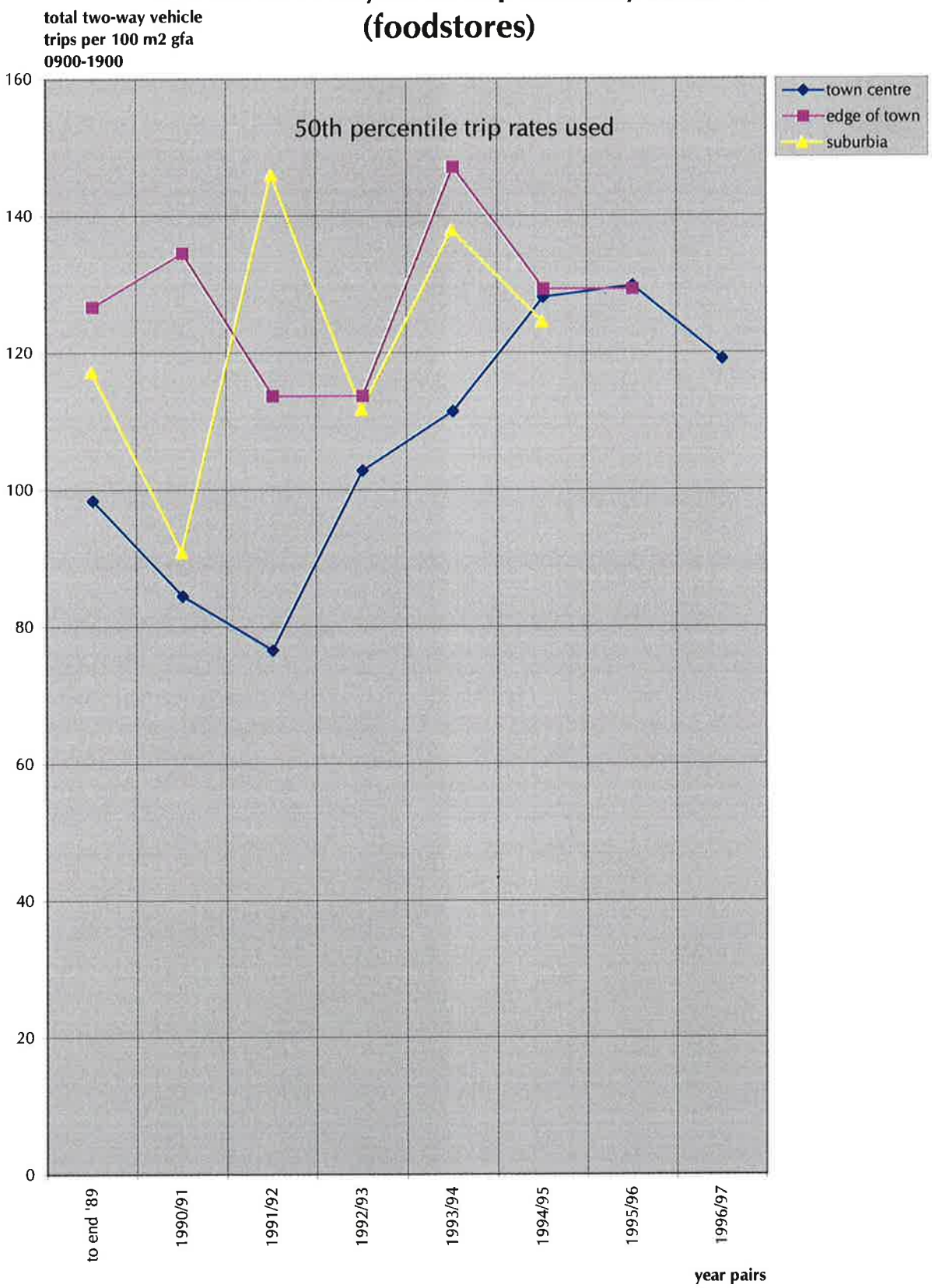


Figure 3.3
Time-series analysis of trip rates by location (foodstores)



4: Analysis of parking supply and peak demand

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 85th 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 over-estimated, this would add weight to arguments not to use 85th 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 car-orientated 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 85th 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

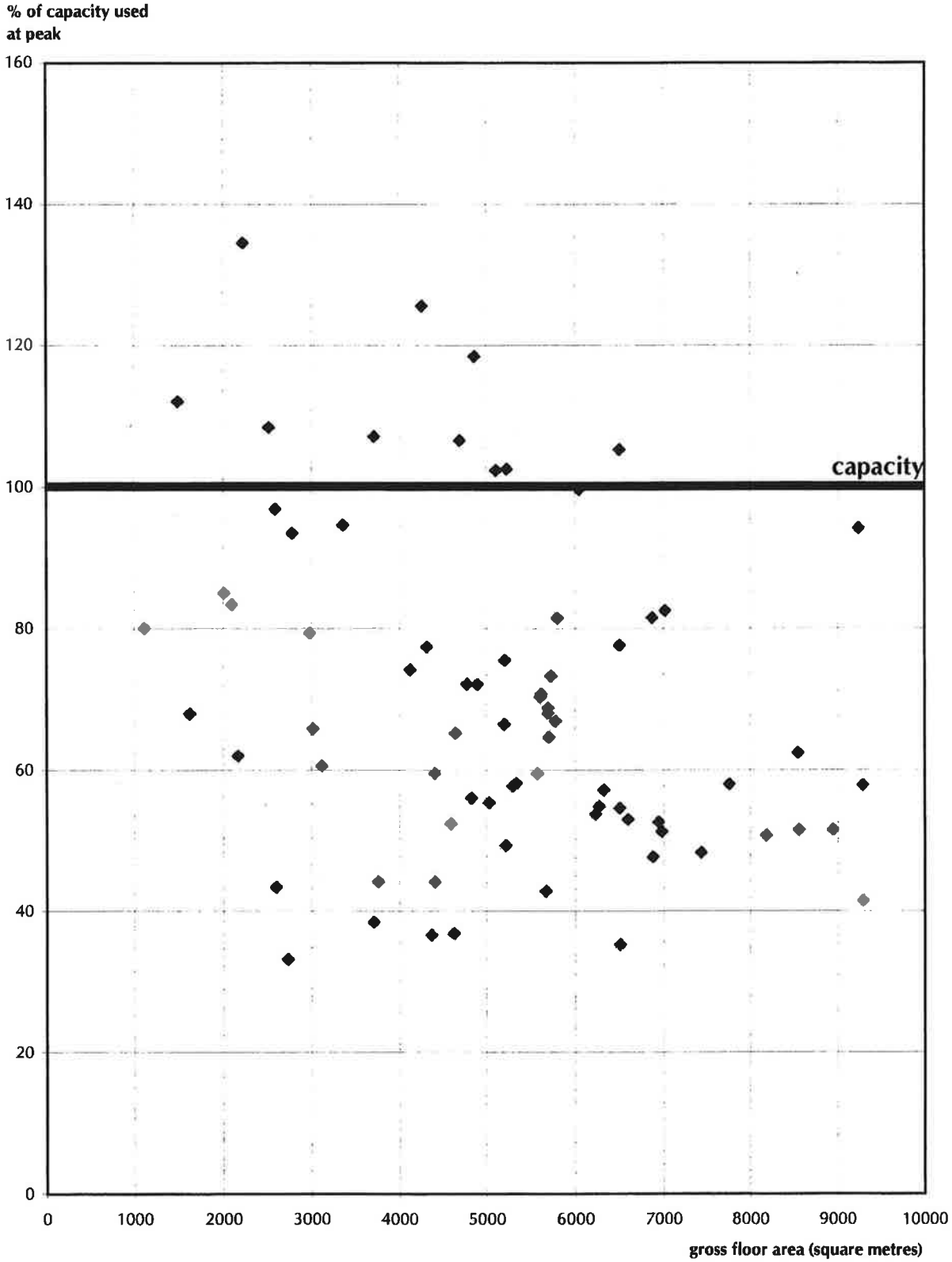


Figure 4.2
A1 Retail Food Superstores
peak Saturday parking accumulation

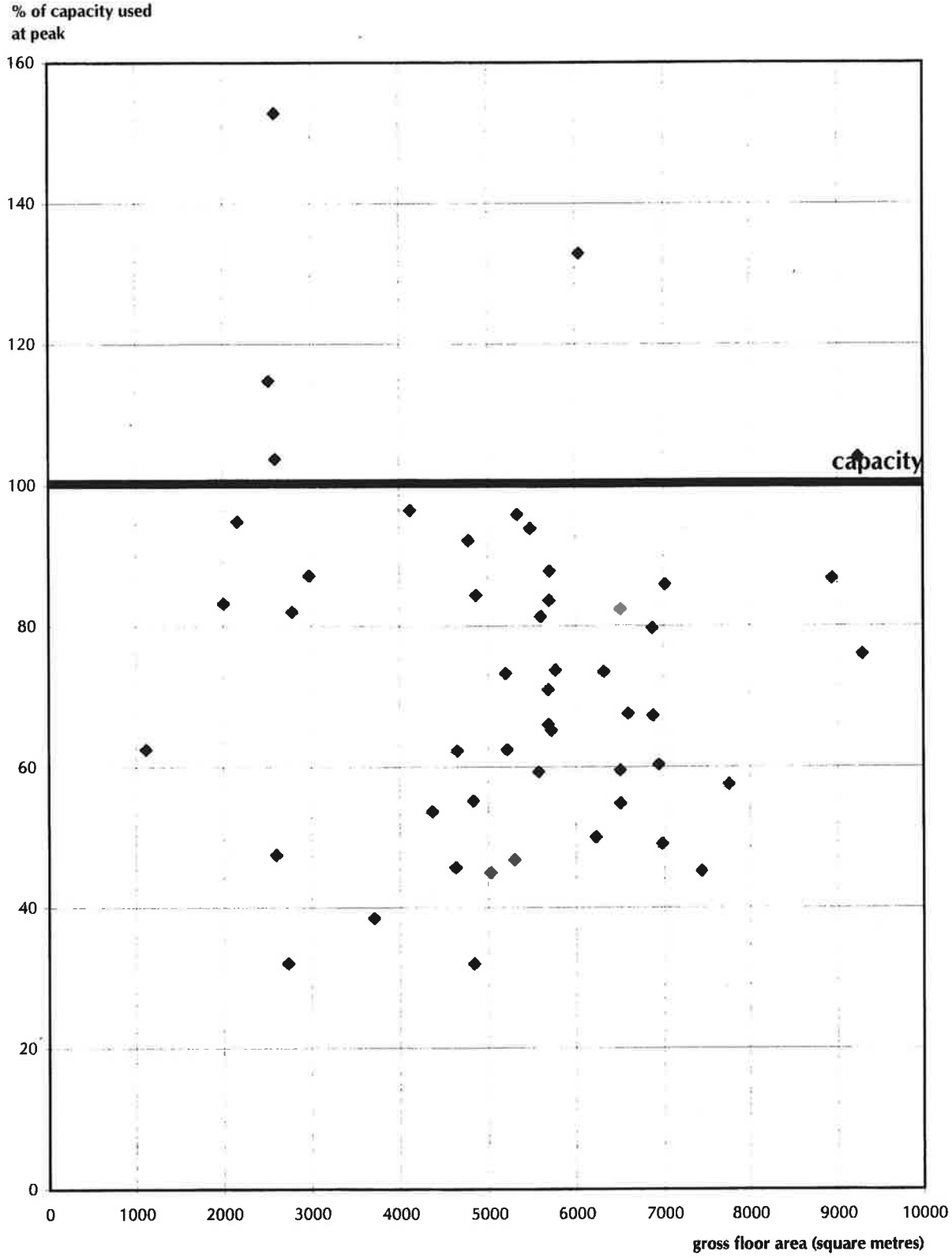


Figure 4.3
A1 Retail Retail Parks incl. Food
peak weekday parking accumulation

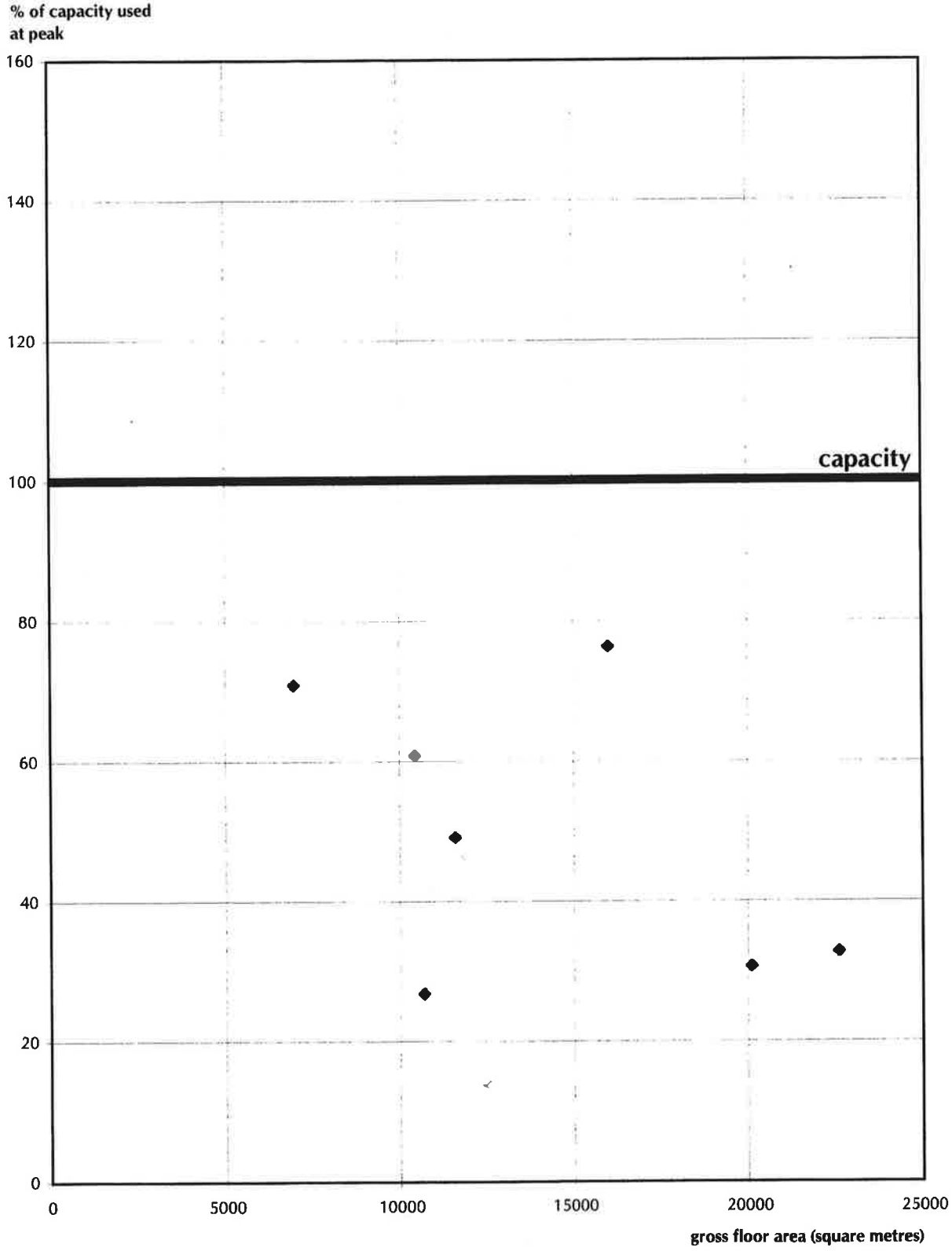


Figure 4.4
A1 Retail Retail Parks incl. Food
peak Saturday parking accumulation

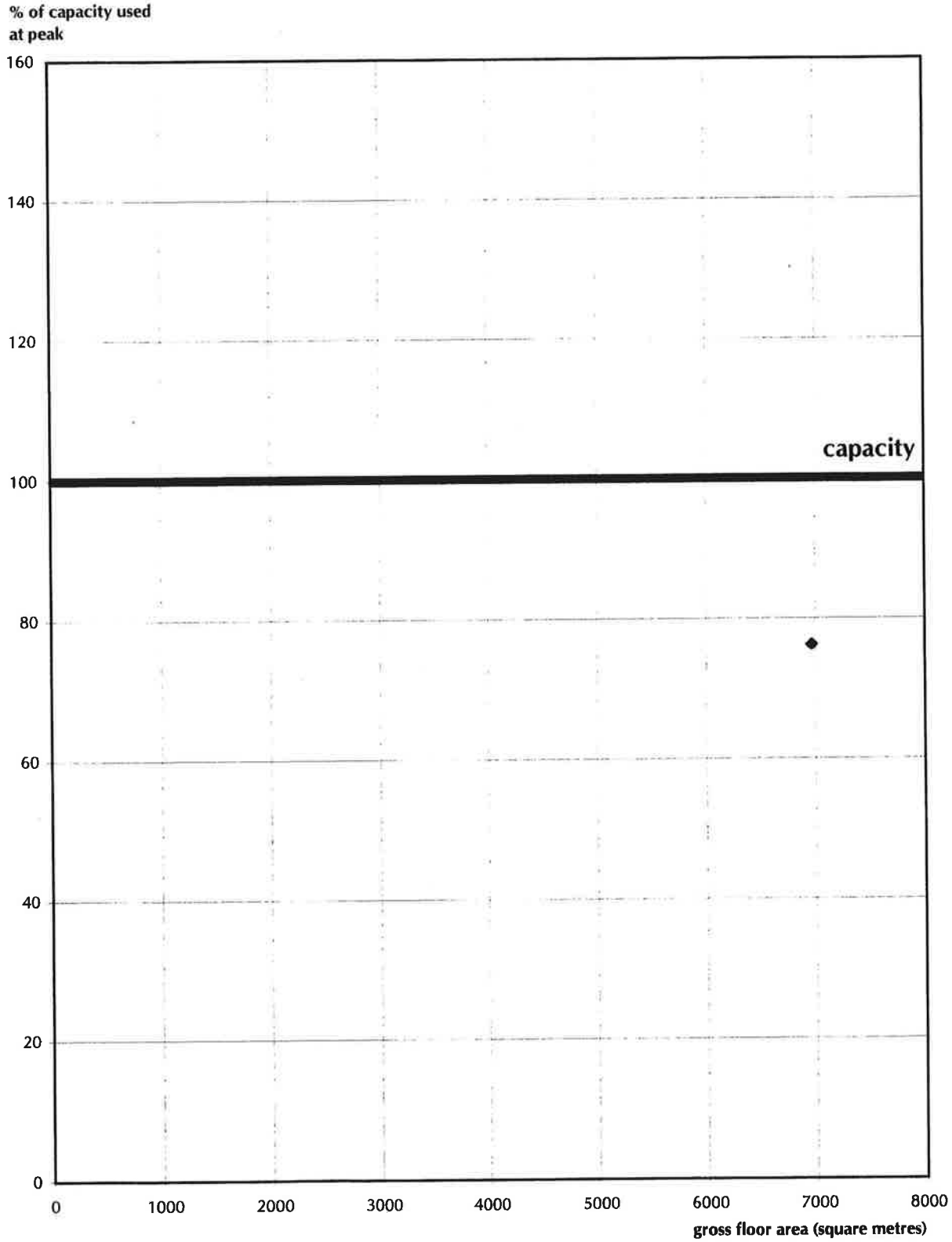


Figure 4.5
A1 Retail Non-Food Retail Parks
peak weekday parking accumulation

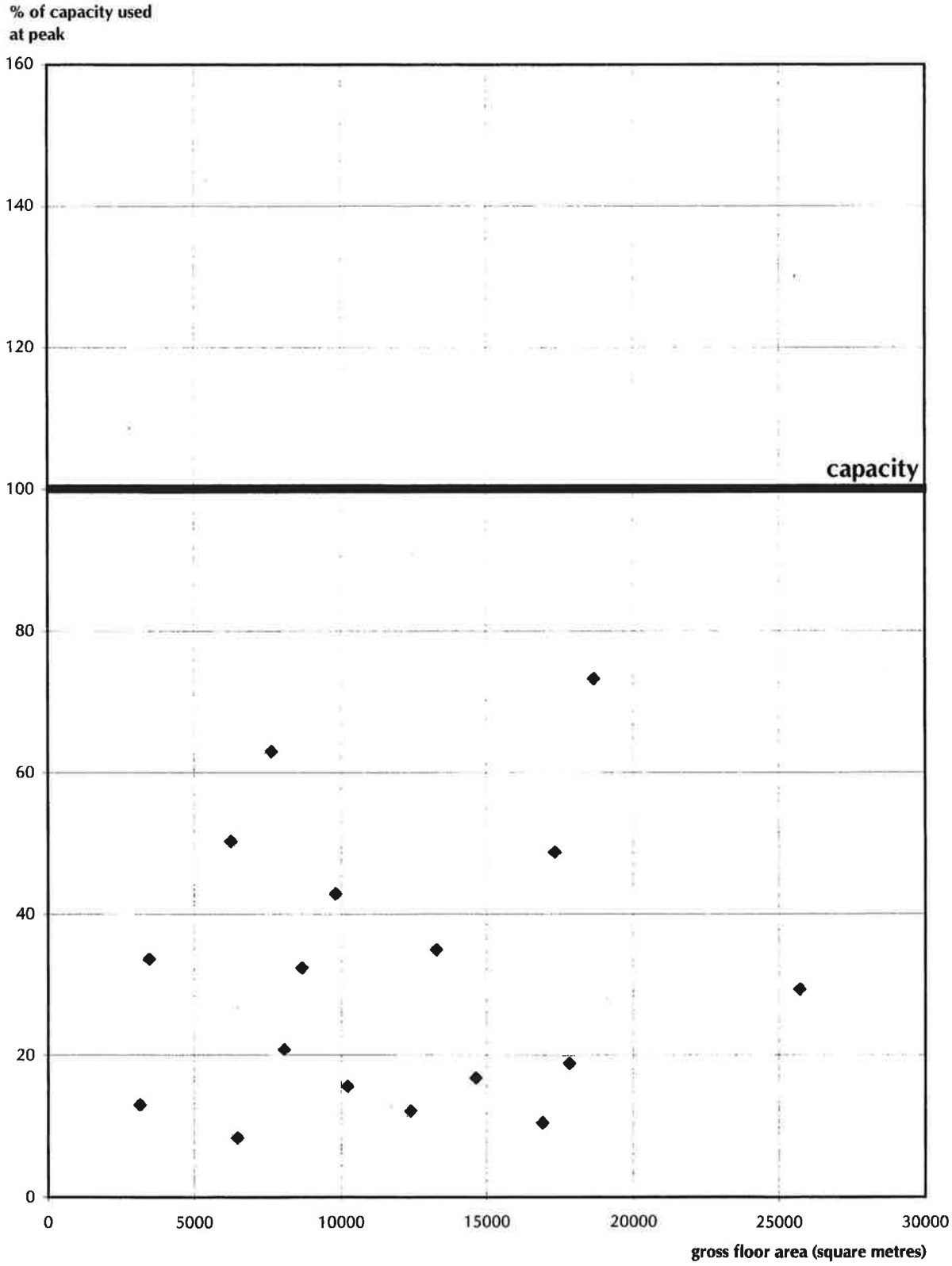


Figure 4.6
A1 Retail Non-Food Retail Parks
peak Saturday parking accumulation

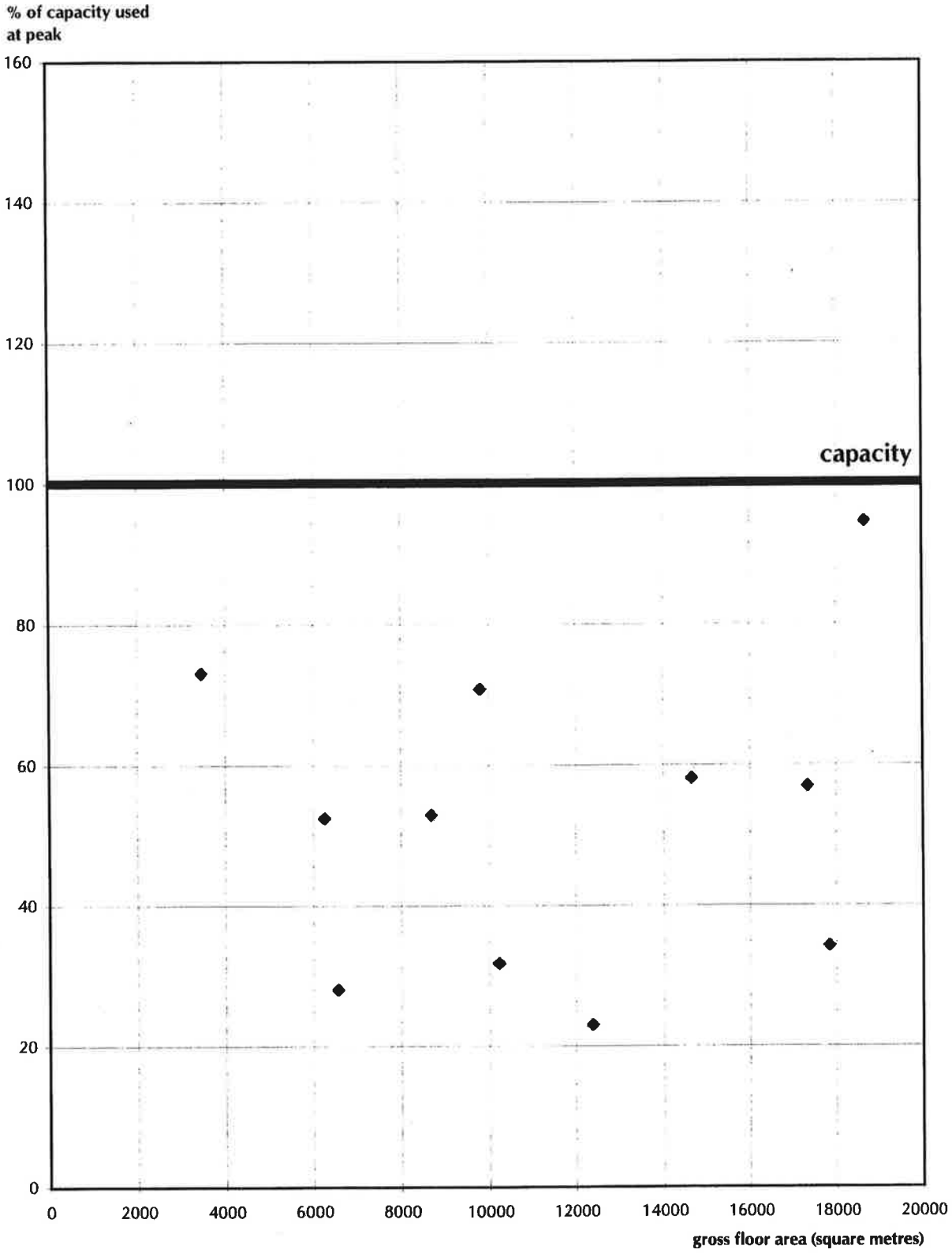


Figure 4.7
A1 Retail DIY Superstores (with garden centre) peak weekday parking accumulation

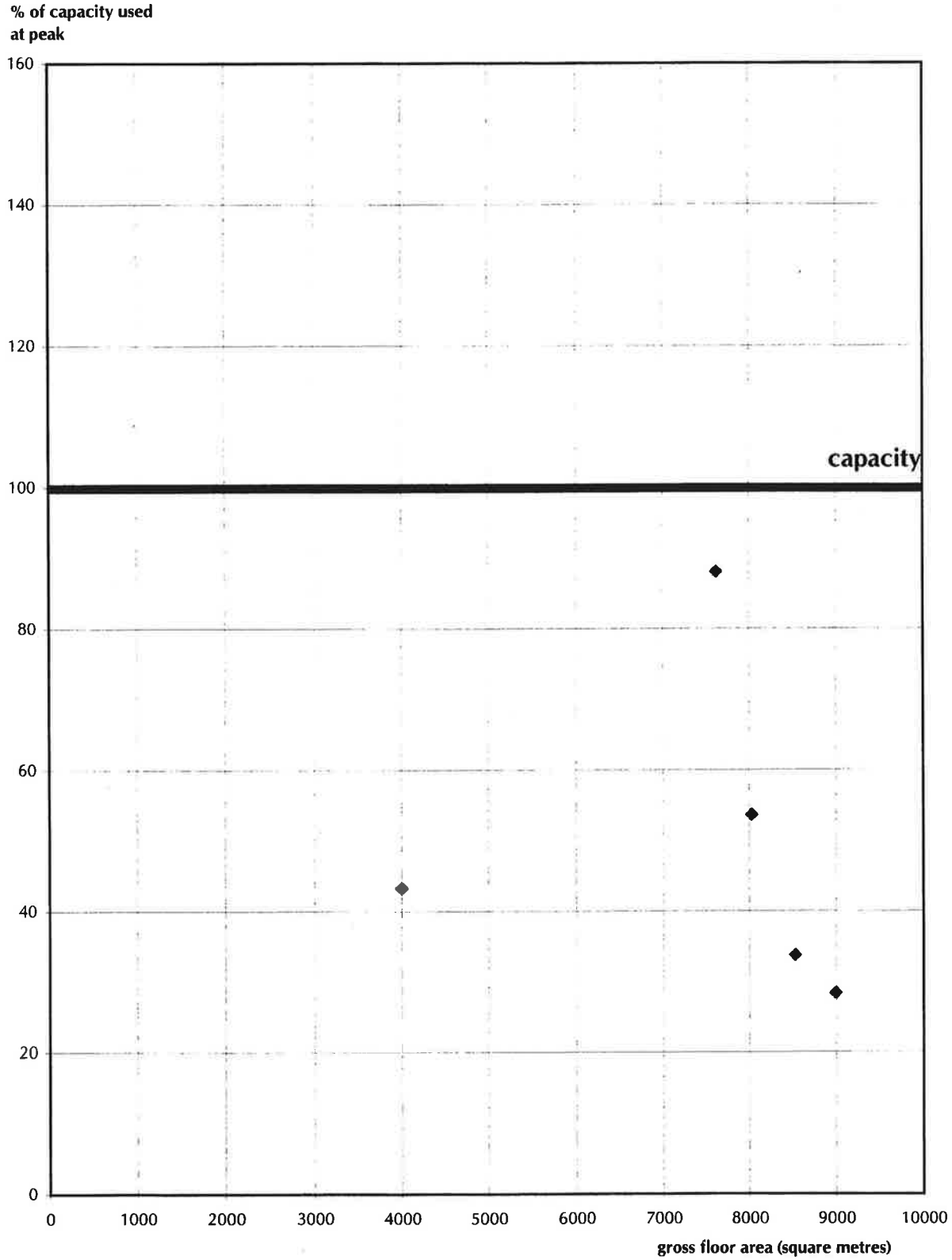


Figure 4.8
A1 Retail DIY Superstores (with garden centre) peak Saturday parking accumulation

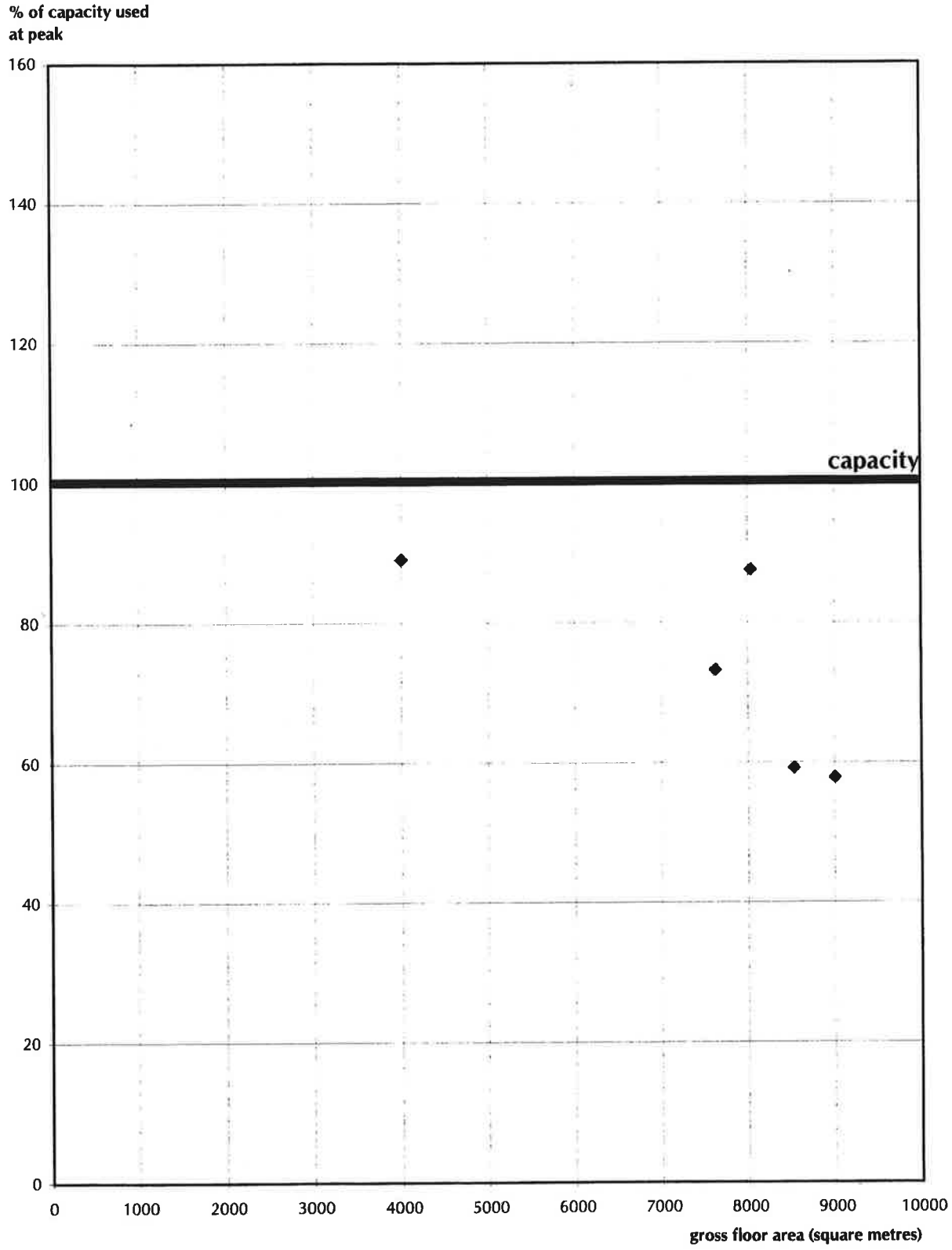


Figure 4.9
A1 Retail DIY Superstores (no garden centre) peak weekday parking accumulation

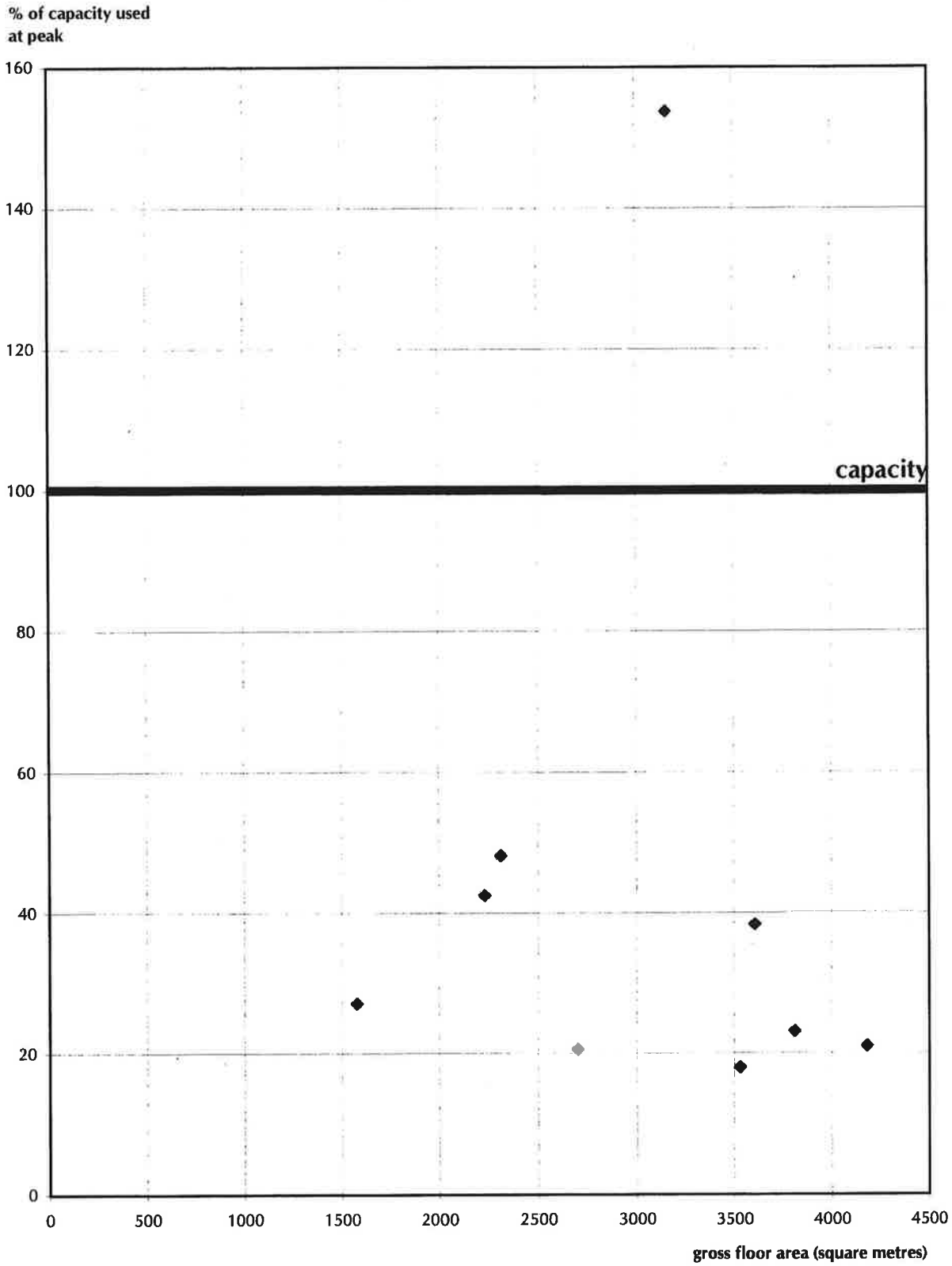


Figure 4.10
A1 Retail: DIY Superstores (no garden centre) peak Saturday parking accumulation

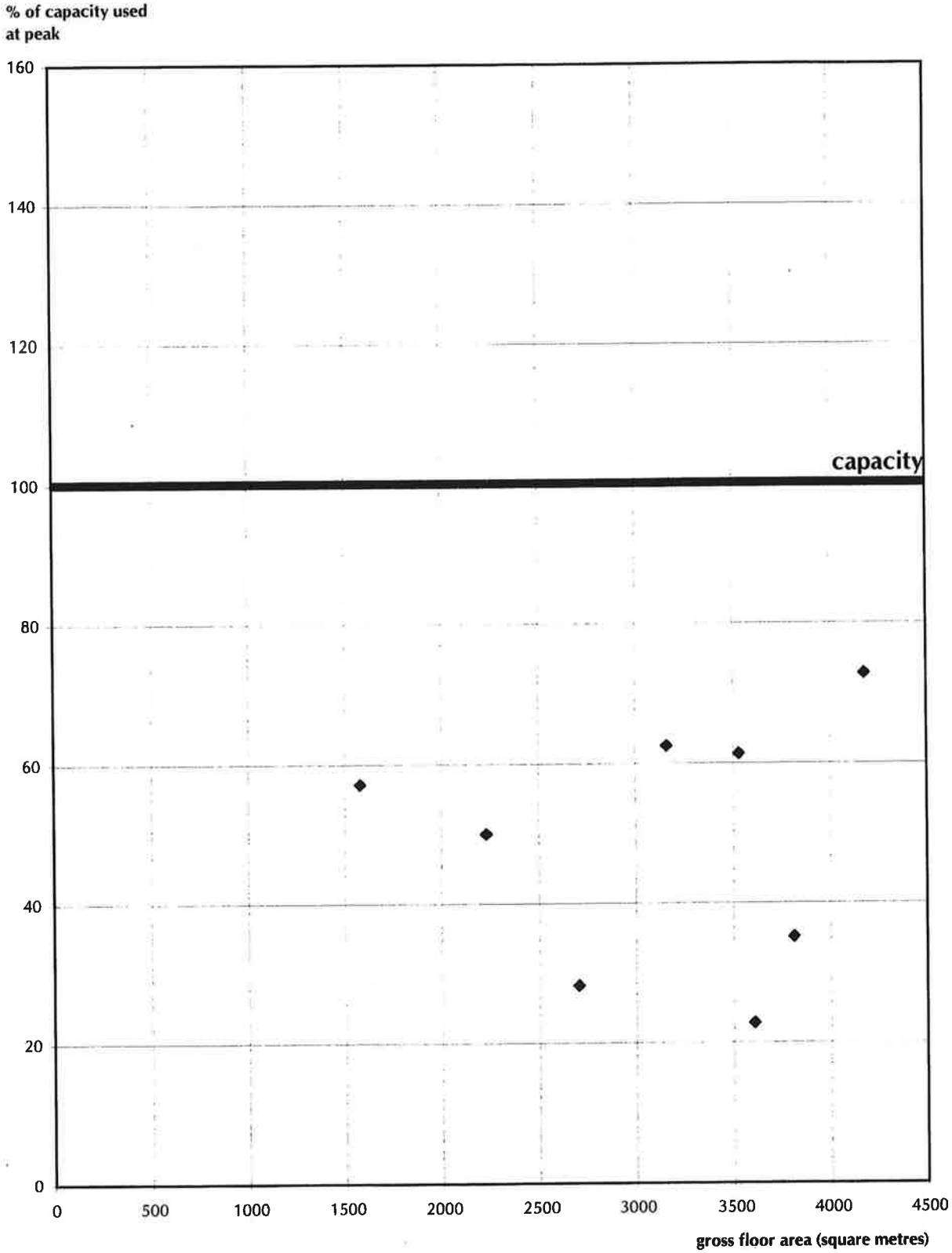


Figure 4.11
A2 Offices
peak weekday parking accumulation

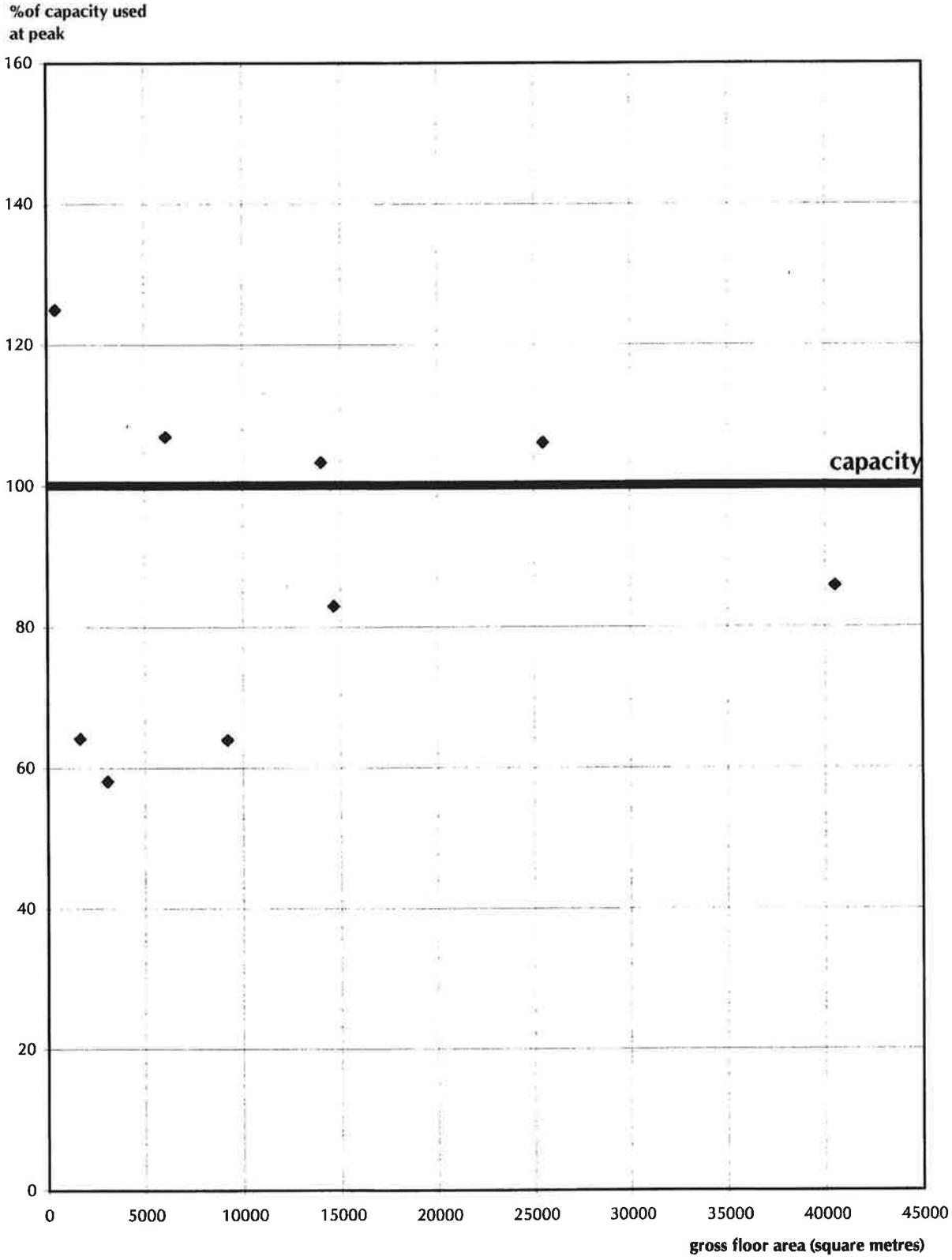


Figure 4.12
B1 Offices
peak weekday parking accumulation

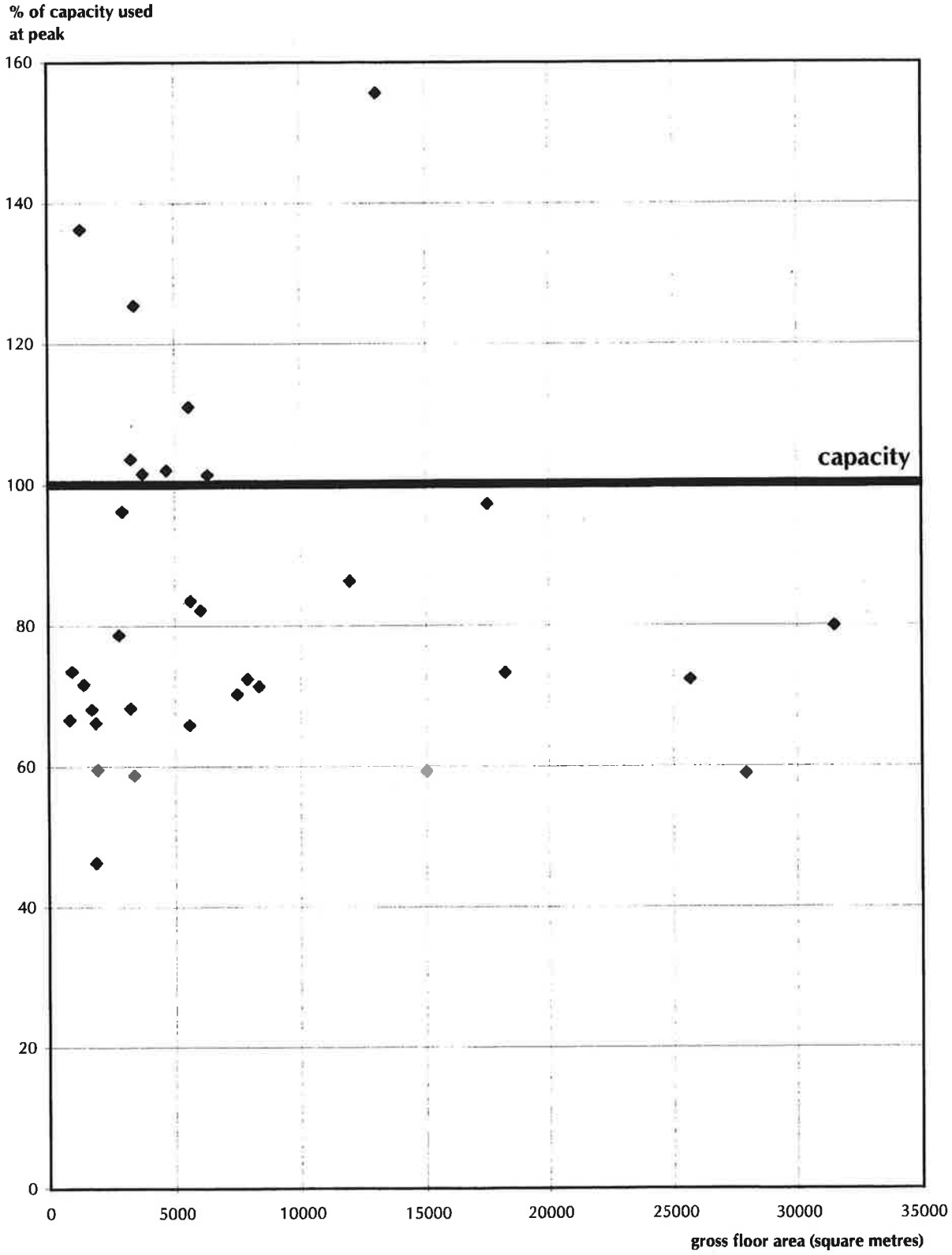


Figure 4.13
B1 Business Parks
peak weekday parking accumulation

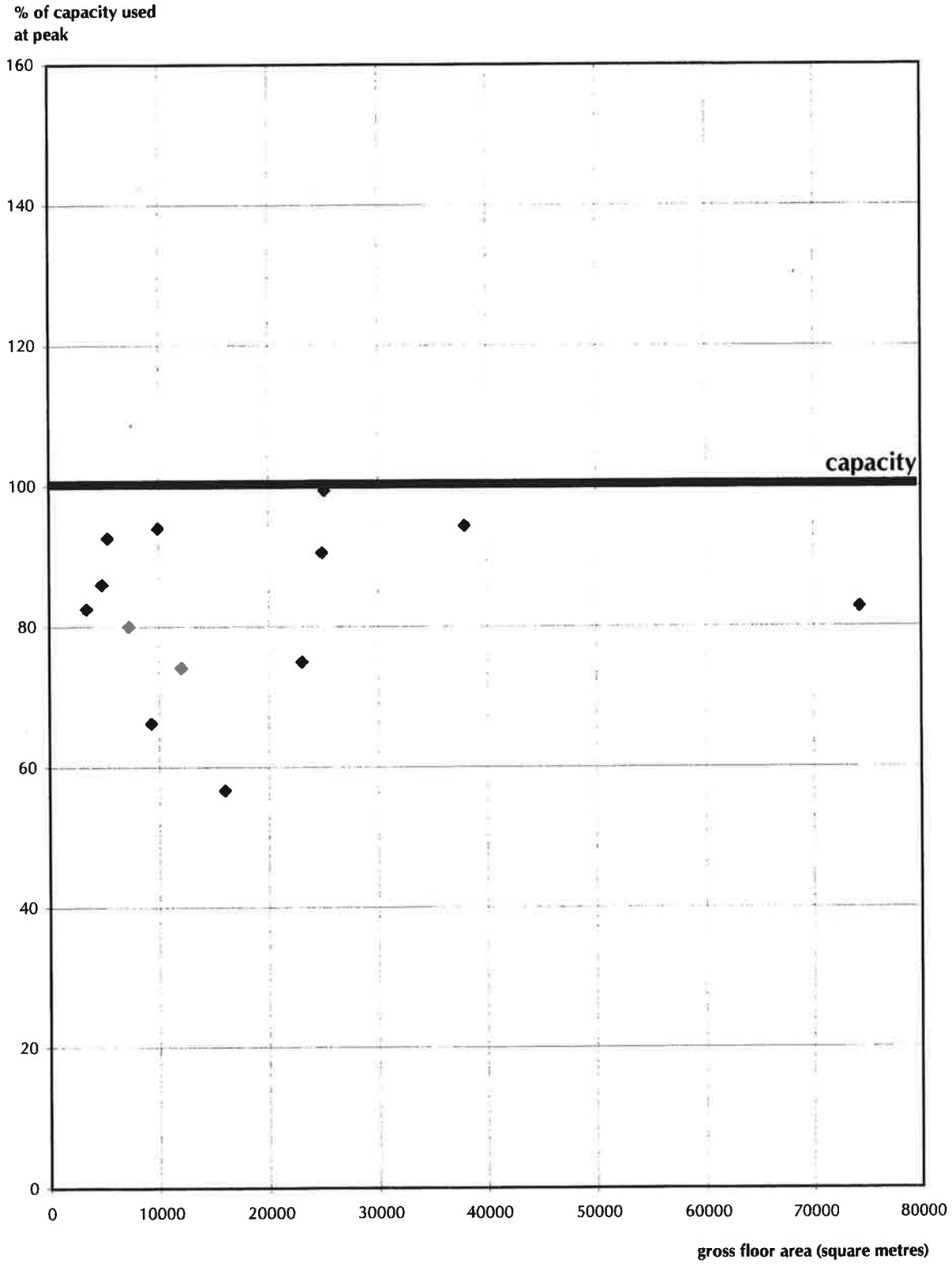


Figure 4.14
B2 Industry Industrial Estates and Units
peak weekday parking accumulation

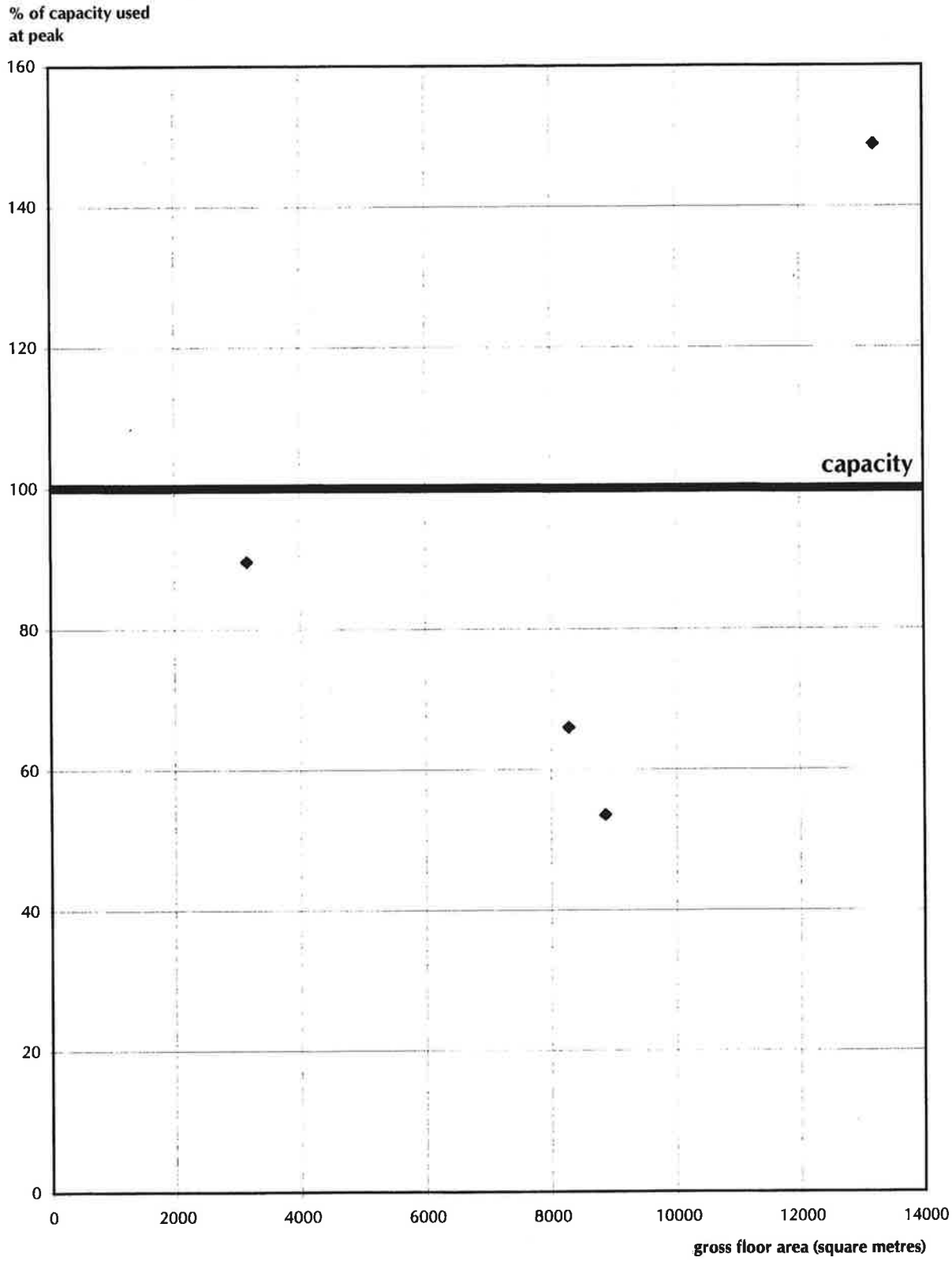


Figure 4.15
B8 Warehousing and distribution
peak weekday parking accumulation

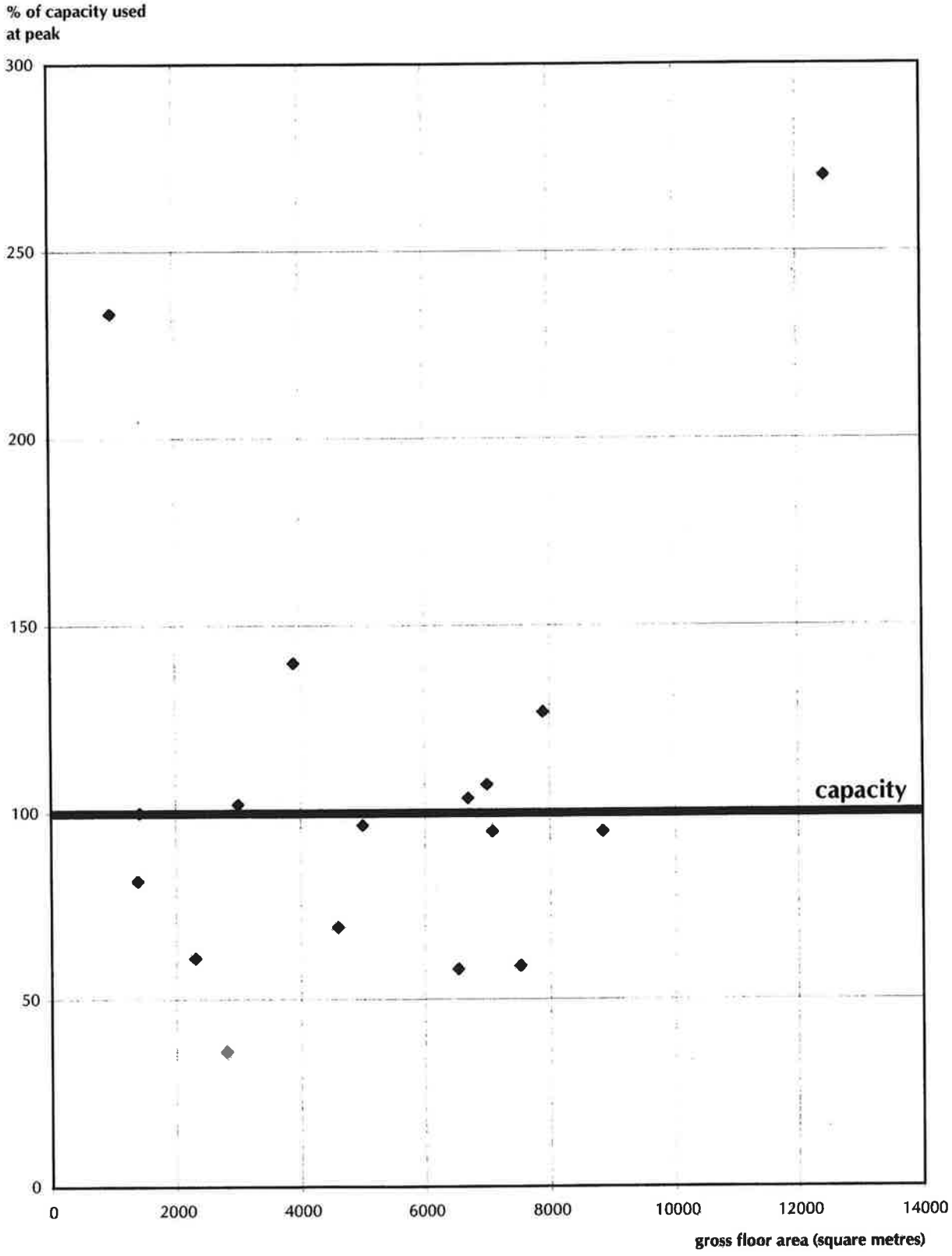


Figure 4.16
B8 Warehousing and Distribution
peak weekday parking accumulation

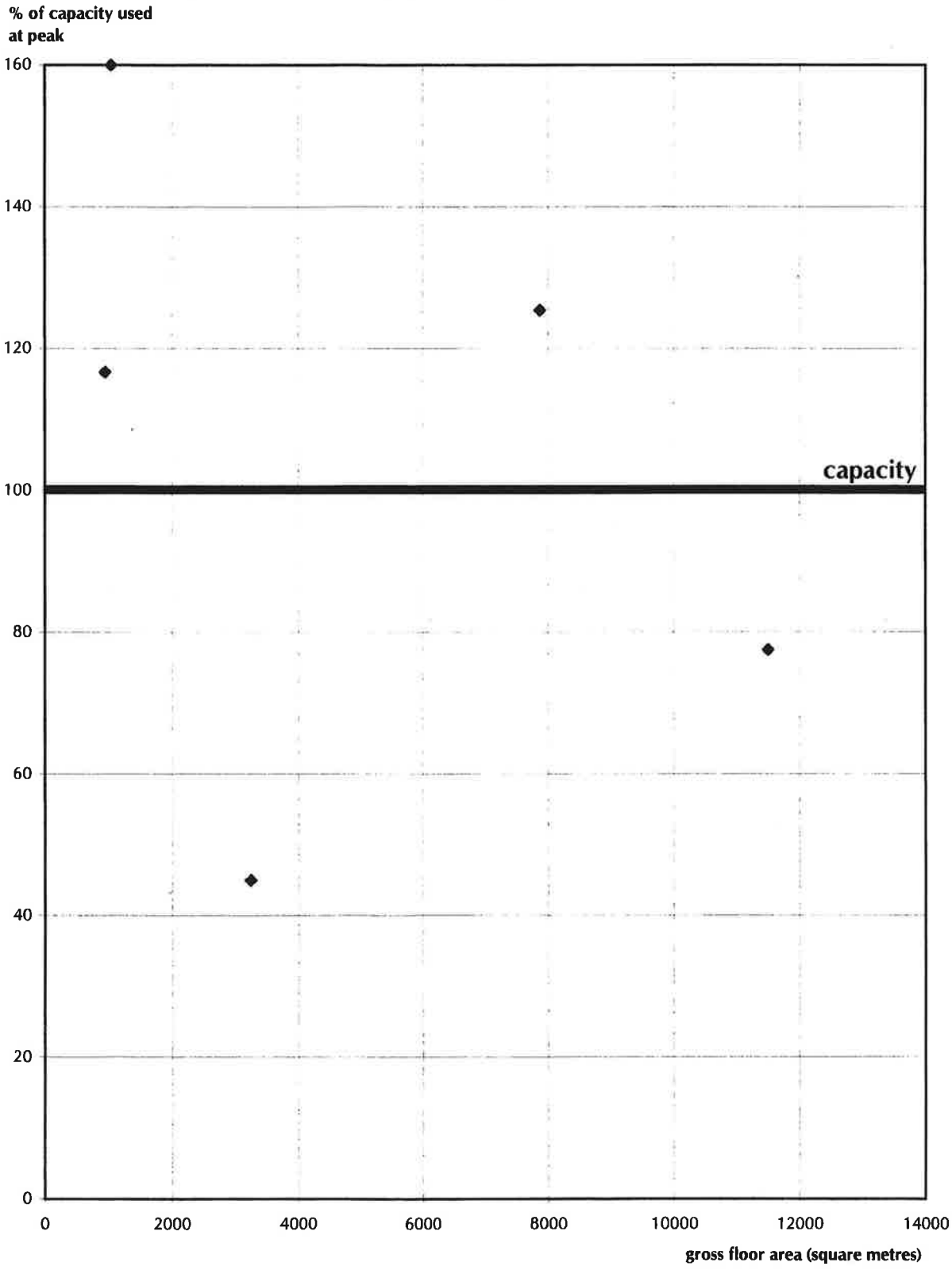


Figure 4.17
D2 Leisure Multiplex Cinemas
peak weekday parking accumulation

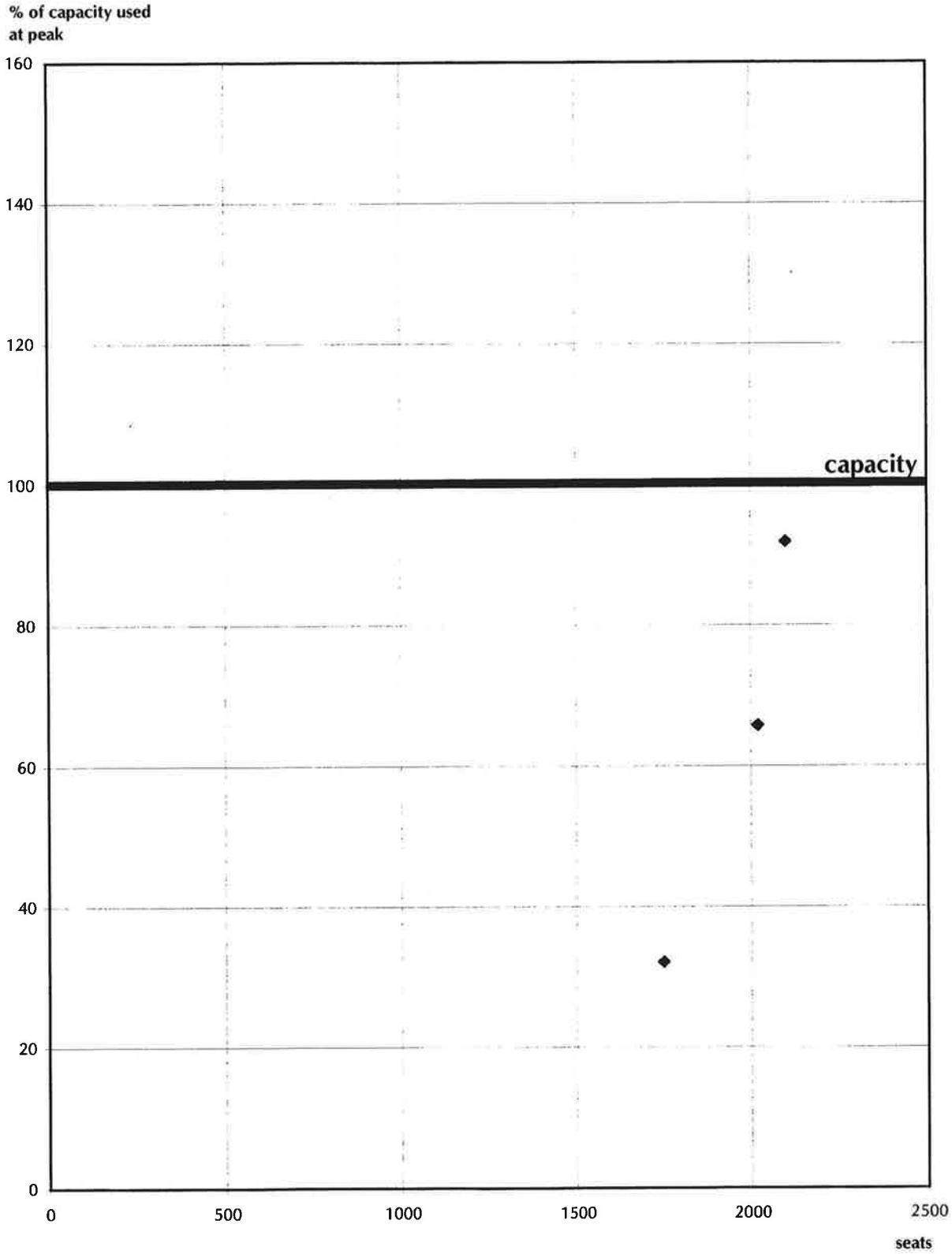


Figure 4.18
D2 Leisure Multiplex Cinemas
peak Saturday parking accumulation

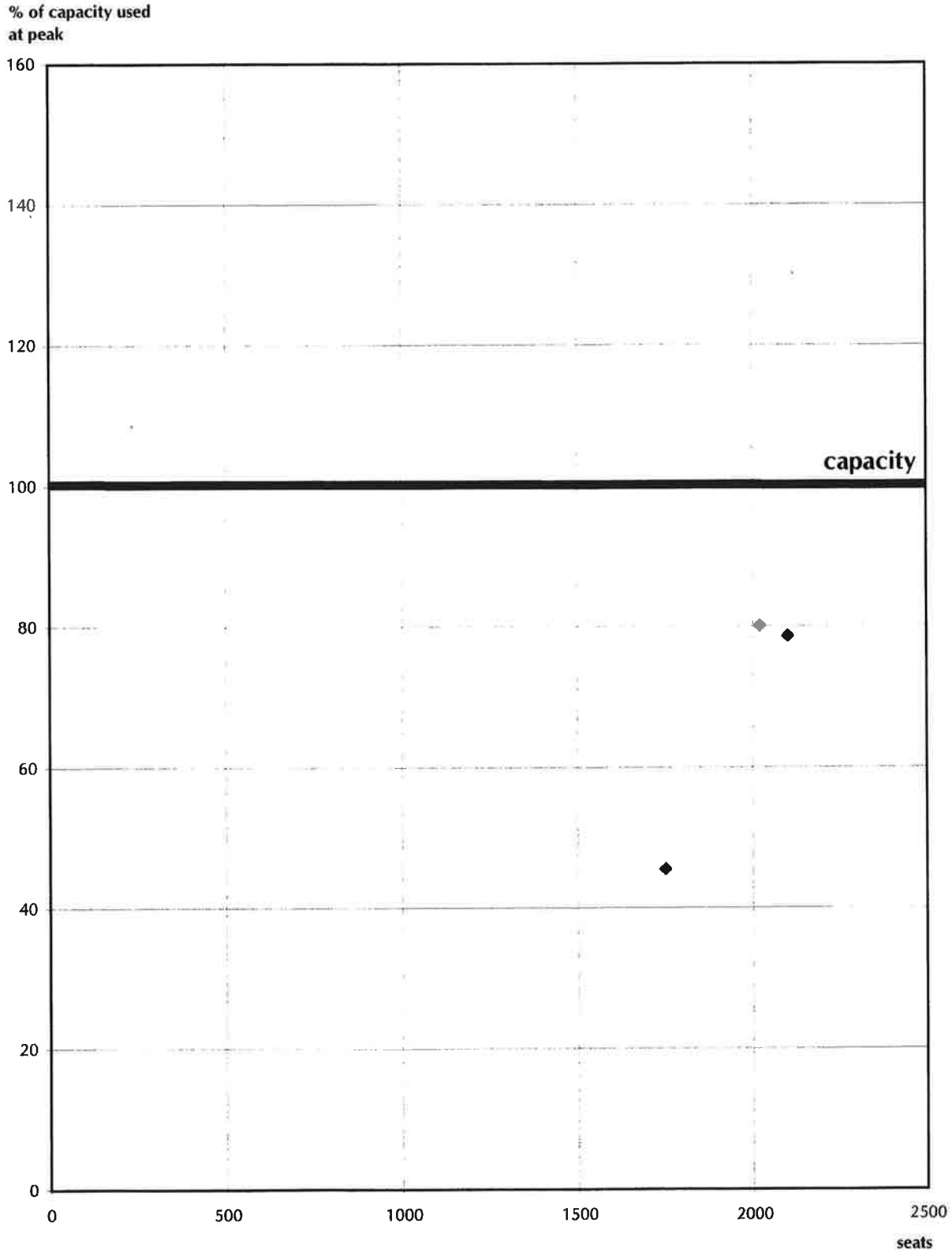


Figure 4.19
Comparison of supply and peak demand gross floor area per parking space Foodstores on weekdays

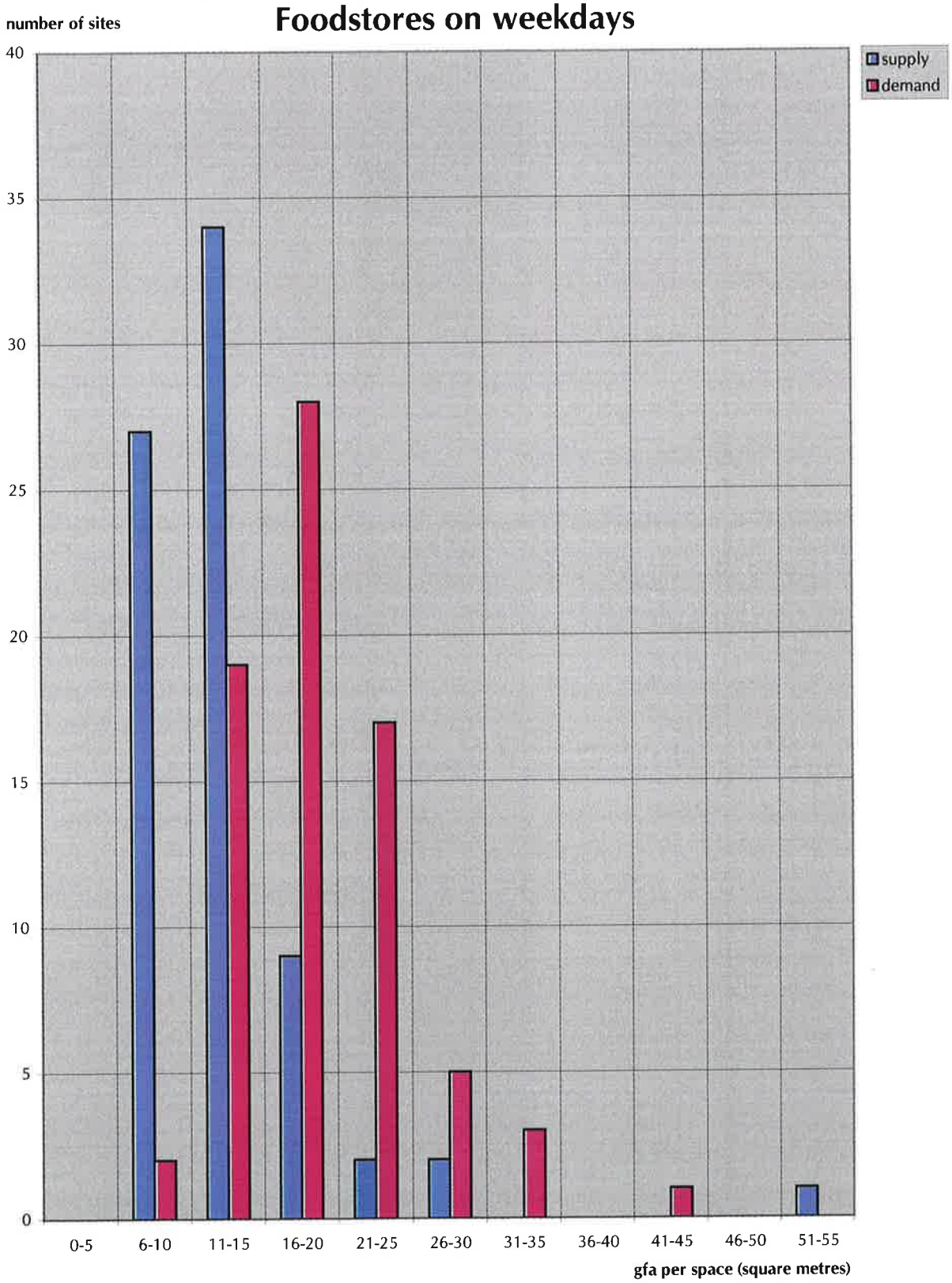


Figure 4.20
Comparison of supply and peak demand gross floor area per parking space Foodstores on Saturdays

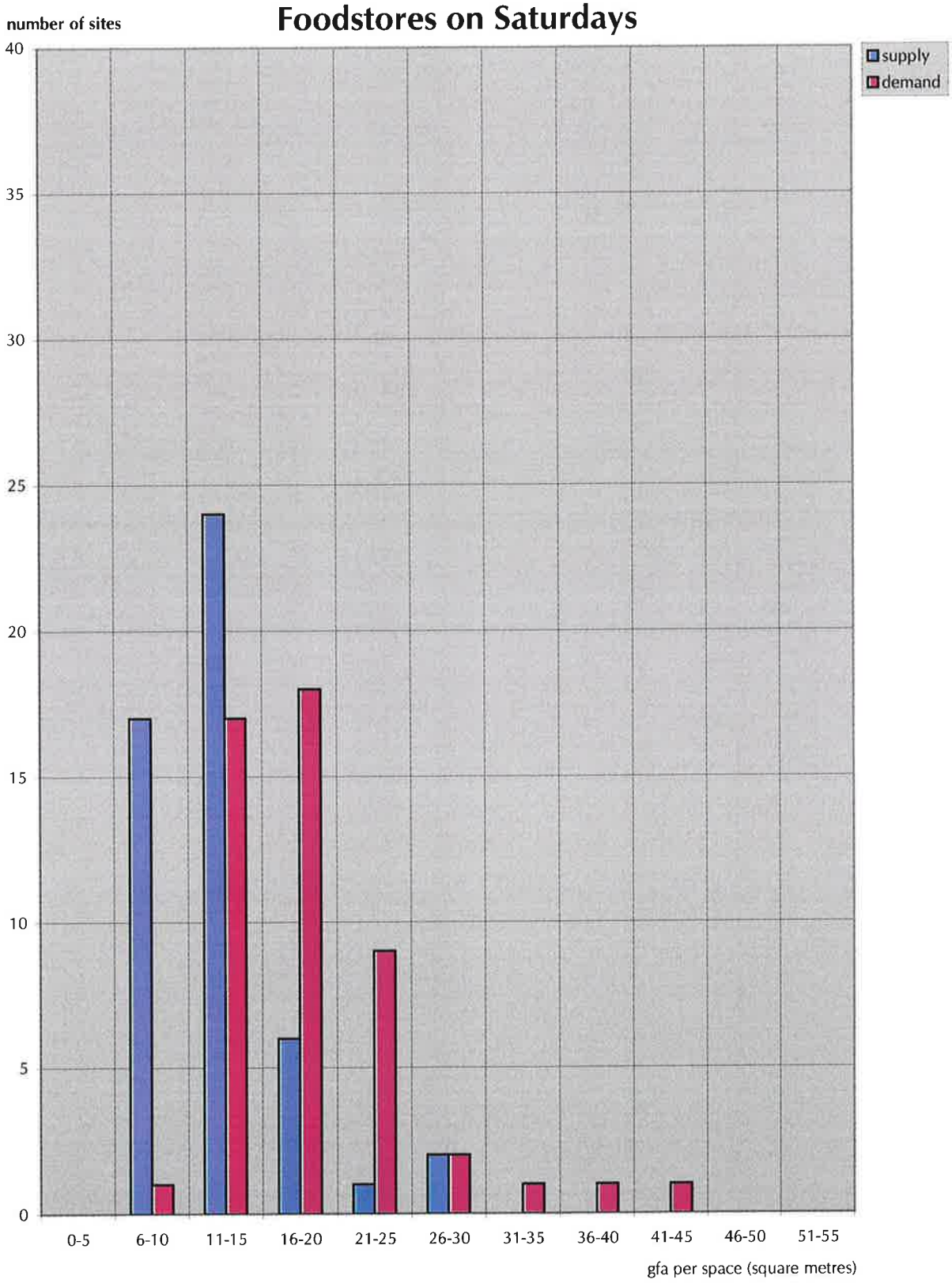
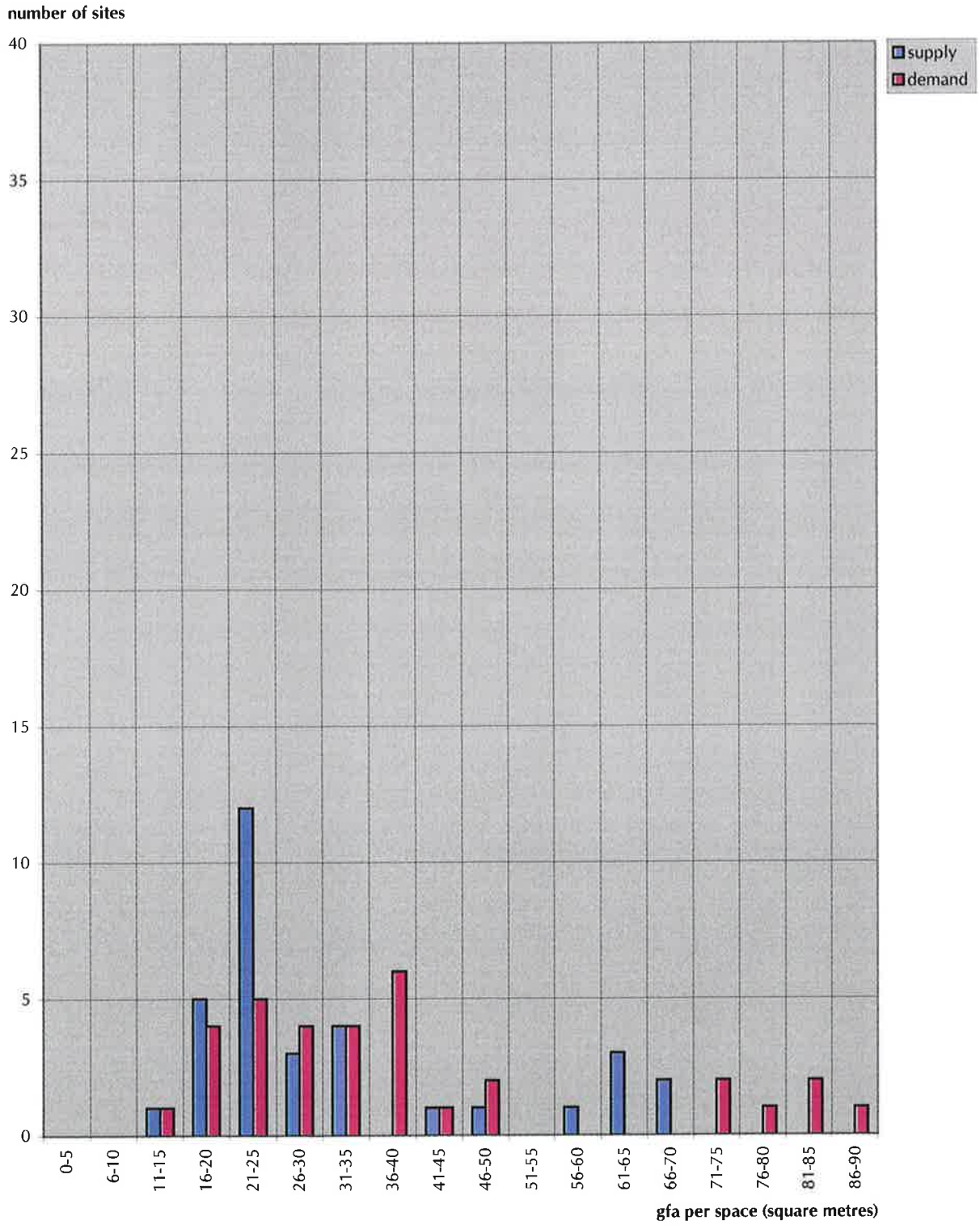


Figure 4.21
Comparison of supply and peak demand gross floor area per parking space B1 Offices on weekdays



5: Implications for good practice

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 non-food 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
- 85th 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 85th 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.

5.9 It appears generally inappropriate to determine parking provision by routinely using 85th 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 development-related traffic. Additional expenditure will be required to bolster accessibility by non-car modes of transport.

APPENDIX A

Time-series Data

Table A1	Household final consumption expenditure data ("consumer expenditure")																			
	(seasonally adjusted, ESA95 basis of calculation, constant 1995 prices)																			
	(source: Office for National Statistics)																			
		1960	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	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		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	47617	49035	50119	51947	55419	59711	60968
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											
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 Warehouse/Supercentre	81	83	94	95	101	104	106	116	132		
J. Sainsbury Plc	Homebase	83	84	91	92	103	109	111	84	94		
Wickes Plc	Wickes				149	142	157	168	174	193		
RMC Group Ltd	Great Mills/No Frills				59	64	83	76	77	85		
Focus Do It All Ltd	Do It All	40	33	33	56	55	56	60	72	74		
Electrical												
Dixons Group Plc	Dixons/Currys/PC World/Seeboard/others	477	468	510	529	514	540	585	629	605		
Kingfisher Plc	Comet/Norweb	376	388	383	431	433	386	422	466	451		
Scottish Power Plc	Scottish Power/Lifestyle Plus/others				400	450	342	389	428	396		
Furnture & Carpets												
MFI Furniture Gp Plc	MFI furniture Centre/Homeworks				96	104	181	176	186	189		
Stichting Ingka Found.	IKEA/Habitat				159	168	190	227	221	209		
Allied Carpets Gp Plc	Carpetland/Allied Carpets/General George						120	129	128	122		
DFS Furniture Co Plc	DFS/Northern Upholstery/The Dining Centre				326	341	308	340	388	377		
RPI		75.8	84.1	87.5	90.6	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 Warehouse/Supercentre	107	99	107	105	109	110	108	116	127		
J. Sainsbury Plc	Homebase	109	100	104	102	112	116	113	84	91		
Wickes Plc	Wickes				164	154	166	172	174	186		
RMC Group Ltd	Great Mills/No Frills				65	69	88	78	77	82		
Focus Do It All Ltd	Do It All	53	39	38	62	60	59	61	72	71		
Dixons Group Plc	Dixons/Currys/PC World/Seeboard/others	629	556	583	584	557	573	598	629	584		
Kingfisher Plc	Comet/Norweb	496	461	438	476	469	409	431	466	435		
Scottish Power Plc	Scottish Power/Lifestyle Plus/others				442	488	363	397	428	382		
MFI Furniture Gp Plc	MFI furniture Centre/Homeworks				106	113	192	180	186	182		
Stichting Ingka Found.	IKEA/Habitat				175	182	201	232	221	202		
Allied Carpets Gp Plc	Carpetland/Allied Carpets/General George						127	132	128	118		
DFS Furniture Co Plc	DFS/Northern Upholstery/The Dining Centre				360	369	327	347	388	364		

Table A3	Leading grocers: petrol forecourt developments								
Operation	at end-December								
	1990	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	98	125	136	153	168
ASDA	93	96	97	102	106	117	124	136	138
others	5	12	19	27	37	46	54	54	55
Somerfield	12	12	12	13	14	14	16	16	15
Wm. Morrison	24	27	34	40	50	59	59	62	62
Total	321	386	471	570	685	781	843	906	959

Table A4	Leading grocers: average outlet 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					9869	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

Table A5	Net margins of leading grocers									
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Tesco Plc	7.7	7.0	6.1	5.8	6.2	5.8	5.9
J Sainsbury Plc	8.7	9.2	8.3	8.7	7.8	6.5	6.8
Safeway Plc (Safeway stores)	7.5	8.1	7.2	7.0	6.9	7.0	5.9
ASDA Group Plc	4.3	4.5	4.3	4.7	5.2	5.3	5.3
Somerfield Plc (Kwik Save stores)	4.8	4.8	4.9	4.2	0.1	2.9	2.0
Somerfield Plc (excluding Kwik Save)	6.2	3.6	2.3	2.2	2.9	3.3	3.6
Wm Morrison Supermarkets Plc	5.6	6.4	6.4	6.5	6.1	6.2	6.6
Iceland Group Plc	5.2	5.3	5.5	5.4	5.3	3.9	2.8
John Lewis Partnership Plc (Waitrose stores)	3.6	2.8	2.1	1.9	3.5	4.4	4.2
Aldi Group Plc	1.8	2.3	3.6	2.7	2.1	2.0	2.2

Table A6	Sales (£) per square foot per annum ("sales density")																				
Company (ranked by total sales)	Operations	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Tesco Plc	Tesco/Metro/Express/Extra	224	242	251	277	313	363	403	456	501	552	596	657	666	758	782	817	888	950	1022
J. Sainsbury Plc	Sainsbury's	430	520	585	650	740	770	773	802	848	858	898	945	963	978	974	992	997	1004	1020
Safeway Plc (was Argyll Group Plc)	Safeway (excluding Presto)								491	486	516	582	608	608	600	609	667	675	711	708
ASDA Group Plc	ASDA/Dales	325	370	405	420	480	510	540	520	516	507	423	508	513	543	591	643	722	781	849
Kwik Save Group Plc	Kwik Save									290	311	381	381	357	502	493	457	458	430	426
Somerfield Plc	Somerfield/Food Giant	190	225	250	305	300	380	500	450	460					443	496	511	523	537	548
Wm. Morrison Supermarkets Plc	Morrisons									431	445	516	557	622	655	714	749	773	752	794
Iceland Group Plc	Iceland									266	311	315	357	378	401	405	400	396	394	427
John Lewis Partnership Plc	Waitrose														874	809	818	814	876	867
Aldi Gruppe	Aldi														521	468	507	510	473	437

Notes	
Tesco/Metro/Express/Extra	acquired Wm. Low 1994, ABF Irish grocers 1997
Sainsbury's	
Safeway (excluding Presto)	Lo-cost sold 1994, joint venture to develop 15 Wellworth stores in NI
ASDA/Dales	includes 7 Dales discount stores
Kwik Save	acquired Shoprite 1994, closure of 107 shops 1997, agreed merger with Somerfield 1998
Somerfield/Food Giant	sold Wellworth 1994, Gateway name phased out, agreed merger with Kwik Save 1998
Morrisons	
Iceland	
Waitrose	
Aldi	

	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Tesco/Metro/Express/Extra	224	242	251	277	313	363	403	456	501	552	596	657	666	758	782	817	888	950	1022
Sainsbury's	430	520	585	650	740	770	773	802	848	858	898	945	963	978	974	992	997	1004	1020
Safeway (excluding Presto)								491	486	516	582	608	608	600	609	667	675	711	708
ASDA/Dales	325	370	405	420	480	510	540	520	516	507	423	508	513	543	591	643	722	781	849
Kwik Save									290	311	381	381	357	502	493	457	458	430	426
Somerfield/Food Giant	190	225	250	305	300	380	500	450	460					443	496	511	523	537	548
Morrisons									431	445	516	557	622	655	714	749	773	752	794
Iceland									266	311	315	357	378	401	405	400	396	394	427
Waitrose														874	809	818	814	857	867
Aldi														521	468	507	510	473	437
RPI mid-year (September)	59.1	68.5	76.3	81.9	86.1	90.1	95.4	98.3	102.4	108.4	116.6	129.3	134.6	139.4	141.9	145.0	150.6	153.8	159.3
1996/97 = 100	38.4	44.5	49.6	53.3	56.0	58.6	62.0	63.9	66.6	70.5	75.8	84.1	87.5	90.6	92.3	94.3	97.9	100.0	103.6
	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Tesco/Metro/Express/Extra	583	543	506	520	559	620	650	713	752	783	786	781	761	836	848	867	907	950	987
Sainsbury's	1119	1168	1179	1221	1322	1314	1246	1255	1274	1217	1184	1124	1100	1079	1056	1052	1018	1004	985
Safeway (excluding Presto)								768	730	732	768	723	695	662	660	707	689	711	684
ASDA/Dales	846	831	816	789	857	871	871	814	775	719	558	604	586	599	641	682	737	781	820
Kwik Save									436	441	476	453	408	554	534	485	468	430	411
Somerfield/Food Giant	494	505	504	573	536	649	806	704	691					489	536	542	534	537	529
Morrisons									647	631	681	663	711	723	774	794	789	752	767
Iceland									400	441	415	425	432	442	439	424	404	394	412
Waitrose														964	877	866	831	876	837
Aldi														575	507	538	521	473	422

APPENDIX B

Parking Accumulation Data

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GM-01-A-19	Trafford, Gtr Manchester	development zone	Asda		750	12	570	16		9290	76
GM-01-A-17	Ashton-under-Lyne, Gtr Manchester	town centre	Asda		618	15	643	14		9244	104
KC-01-A-16	Dover, Kent	suburban area	Tesco		640	14	555	16		8943	87
LC-01-A-15	Accrington, Lancashire	town centre	Asda		626	12	360	22		7757	58
DC-01-A-02	Bournemouth, Dorset	town centre	Asda		640	12	289	26		7432	45
LN-01-A-04	Stamford, Lincolnshire	edge-of-town	Morrisons		595	12	511	14		7017	86
DC-01-A-04	Poole, Dorset	freestanding	Sainsbury's		630	11	309	23		6977	49
GM-01-A-15	Bolton, Gtr Manchester	freestanding	Morrisons		688	10	415	17		6938	60
CB-01-A-02	Kendal, Cumbria	edge-of-town	Morrisons		684	10	460	15		6875	67
LN-01-A-03	Lincoln, Lincolnshire	commercial zone	Morrisons		600	11	478	14		6870	80
LC-01-A-14	Chorley, Lancashire	town centre	Morrisons		604	11	408	16		6594	68
DC-01-A-05	Bournemouth, Dorset	freestanding	Tesco		717	9	393	17		6503	55
ES-01-A-10	Eastbourne, East Sussex	suburban area	Tesco		652	10	388	17		6500	60
GM-01-A-18	Wigan, Gtr Manchester	town centre	Asda		700	9	576	11		6500	82
KC-01-A-14	Sevenoaks, Kent	suburban area	Sainsbury's		600	11	441	14		6317	74
GM-01-A-14	Bolton, Gtr Manchester	edge-of-town	Asda		580	11	290	21		6224	50
GL-01-A-07	Camden Town, Gtr London	town centre	Sainsbury's		292	21	388	16		6046	133
WS-01-A-05	Chichester, West Sussex	edge-of-town	Sainsbury's		639	9	471	12		5769	74
DC-01-A-07	Christchurch, Dorset	edge-of-town	Sainsbury's		589	10	384	15		5720	65
LC-01-A-09	Preston, Lancashire	edge-of-town	Sainsbury's		500	11	439	13		5704	88
HB-01-A-03	Hull, Humberside	neighbourhood centre	Safeway		550	10	460	12		5697	84
GS-01-A-01	Cheltenham, Gloucestershire	neighbourhood centre	Safeway		520	11	369	15		5687	71
MS-01-A-02	St Helens, Merseyside	town centre	Safeway		580	10	383	15		5687	66
ES-01-A-01	Brighton, East Sussex	neighbourhood centre	Sainsbury's		300	19	244	23		5601	81
LC-01-A-13	Preston, Lancashire	suburban area	Sainsbury's		575	10	341	16		5574	59
FA-01-A-01	Falkirk, Scotland	town centre	Asda		325	17	305	18		5483	94
MS-01-A-01	Southport, Merseyside	town centre	Safeway		480	11	460	12		5338	96
BC-01-A-03	Reading, Berkshire	freestanding	Safeway		620	9	290	18		5296	47
HW-01-A-01	Malvern, Hereford & Worcester	freestanding	Safeway		450	12	281	19		5217	62
LC-01-A-03	Rawtenstall, Lancashire	town centre	Asda		355	15	260	20		5202	73
HC-01-A-01	Fareham, Hampshire	edge-of-town	Sainsbury's		585	9	263	19		5030	45
GL-01-A-05	Kensington, Gtr London	freestanding	Sainsbury's		249	20	210	23		4869	84
GM-01-A-13	Rochdale, Gtr Manchester	town centre	Morrisons		400	12	128	38		4836	32
LC-01-A-10	Thornton, Lancashire	suburban area	Safeway		562	9	310	16		4831	55
SC-01-A-04	Reigate, Surrey	town centre	Safeway		420	11	387	12		4782	92
ES-01-A-06	Hove, East Sussex	neighbourhood centre	Co-op		350	13	218	21		4650	62
GL-01-A-11	Hatch End, Gtr London	suburban area	Safeway		396	12	181	26		4631	46

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
LN-01-A-01	Grantham, Lincolnshire	town centre	Safeway		483	9	259	17		4371	54
GL-01-A-10	Acton, Gtr London	town centre	Safeway		306	13	295	14		4125	96
GS-01-A-02	Tewkesbury, Gloucestershire	freestanding	Safeway		400	9	154	24		3707	39
KC-01-A-11	Tonbridge & Malling, Kent	town centre	Somerfield		179	17	156	19		2981	87
ES-01-A-04	Eastbourne, East Sussex	neighbourhood centre	Safeway		200	14	164	17		2787	82
LC-01-A-12	Preston, Lancashire	suburban area	E.H Booth		268	10	86	32		2733	32
LC-01-A-07	Blackpool, Lancashire	suburban area	E.H Booth		221	12	105	25		2601	48
GL-01-A-08	Ealing, Gtr London	not known	Waitrose		162	16	168	15		2596	104
SC-01-A-07	Frimley, Surrey	town centre	Somerfield		89	29	136	19		2592	153
ES-01-A-12	Hailsham, East Sussex	town centre	Somerfield		189	13	217	12		2522	115
SA-01-A-01	Troon, Scotland	town centre	Safeway		250	9	237	9		2168	95
LC-01-A-08	Lancaster, Lancashire	suburban area	E.H Booth		113	18	94	21		2010	83
GM-01-A-16	Salford, Gtr Manchester	neighbourhood centre	Netto		40	28	25	45		1115	63

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GM-01-A-16	Salford, Gtr Manchester	neighbourhood centre	Netto		40	28	32	35		1115	80

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GL-01-A-09	Neasden, Gtr London	freestanding	Tesco		1198	8	497	19		9290	41
GM-01-A-19	Trafford, Gtr Manchester	development zone	Asda		750	12	434	21		9290	58
GM-01-A-17	Ashton-under-Lyne, Gtr Manchester	town centre	Asda		618	15	582	16		9244	94
KC-01-A-16	Dover, Kent	suburban area	Tesco		640	14	330	27		8943	52
GM-01-A-04	Bury, Gtr Manchester	freestanding	Asda		640	13	330	26		8556	52
CW-01-A-01	St Austell, Cornwall	edge-of-town	Asda		700	12	437	20		8547	62
ES-01-A-03	Brighton, East Sussex	neighbourhood centre	Asda		780	10	396	21		8175	51
LC-01-A-15	Accrington, Lancashire	town centre	Asda		626	12	363	21		7757	58
DC-01-A-02	Bournemouth, Dorset	town centre	Asda		640	12	309	24		7432	48
LN-01-A-04	Stamford, Lincolnshire	edge-of-town	Morrisons		595	12	491	14		7017	83
DC-01-A-04	Poole, Dorset	freestanding	Sainsbury's		630	11	323	22		6977	51
GM-01-A-15	Bolton, Gtr Manchester	freestanding	Morrisons		688	10	362	19		6938	53
CB-01-A-02	Kendal, Cumbria	edge-of-town	Morrisons		684	10	326	21		6875	48
LN-01-A-03	Lincoln, Lincolnshire	commercial zone	Morrisons		600	11	489	14		6870	82
LC-01-A-14	Chorley, Lancashire	town centre	Morrisons		604	11	320	21		6594	53
DC-01-A-05	Bournemouth, Dorset	freestanding	Tesco		717	9	253	26		6503	35
ES-01-A-10	Eastbourne, East Sussex	suburban area	Tesco		652	10	356	18		6500	55
FI-01-A-04	Kirkcaldy, Scotland	edge-of-town	Asda		666	10	517	13		6500	78
GM-01-A-18	Wigan, Gtr Manchester	town centre	Asda		700	9	737	9		6500	105
KC-01-A-14	Sevenoaks, Kent	suburban area	Sainsbury's		600	11	343	18		6317	57
SC-01-A-05	Sunbury, Surrey	edge-of-town	Tesco		667	9	366	17		6266	55
GM-01-A-14	Bolton, Gtr Manchester	edge-of-town	Asda		580	11	312	20		6224	54
GL-01-A-07	Camden Town, Gtr London	town centre	Sainsbury's		292	21	291	21		6046	100
CW-01-A-02	Truro, Cornwall	neighbourhood centre	Tesco		400	14	326	18		5794	82
WS-01-A-05	Chichester, West Sussex	edge-of-town	Sainsbury's		639	9	428	13		5769	67
DC-01-A-07	Christchurch, Dorset	edge-of-town	Sainsbury's		589	10	432	13		5720	73
HB-01-A-03	Hull, Humberside	neighbourhood centre	Safeway		550	10	356	16		5697	65
GS-01-A-01	Cheltenham, Gloucestershire	neighbourhood centre	Safeway		520	11	358	16		5687	69
MS-01-A-02	St Helens, Merseyside	town centre	Safeway		580	10	395	14		5687	68
CB-01-A-01	Kendal, Cumbria	edge-of-town	Asda		567	10	243	23		5667	43
KC-01-A-13	Gillingham, Kent	commercial zone	Tesco		561	10	397	14		5611	71
ES-01-A-01	Brighton, East Sussex	neighbourhood centre	Sainsbury's		300	19	211	27		5601	70
LC-01-A-13	Preston, Lancashire	suburban area	Sainsbury's		575	10	342	16		5574	59
MS-01-A-01	Southport, Merseyside	town centre	Safeway		480	11	279	19		5338	58
BC-01-A-03	Reading, Berkshire	freestanding	Safeway		620	9	358	15		5296	58
HB-01-A-01	Grimsby, Humberside	town centre	Sainsbury's		475	11	487	11		5230	103
HW-01-A-01	Malvern, Hereford & Worcester	freestanding	Safeway		450	12	222	24		5217	49

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
CH-01-A-04	Warrington, Cheshire	town centre	Sainsbury's		470	11	355	15		5208	76
LC-01-A-03	Rawtenstall, Lancashire	town centre	Asda		355	15	236	22		5202	66
CW-01-A-04	Camborne, Cornwall	neighbourhood centre	Tesco		300	17	307	17		5110	102
HC-01-A-01	Fareham, Hampshire	edge-of-town	Sainsbury's		585	9	324	16		5030	55
DV-01-A-12	Exmouth, Devon	suburban area	Tesco		430	11	310	16		4900	72
GL-01-A-05	Kensington, Gtr London	freestanding	Sainsbury's		249	20	295	17		4869	118
LC-01-A-10	Thornton, Lancashire	suburban area	Safeway		562	9	315	15		4831	56
SC-01-A-04	Reigate, Surrey	town centre	Safeway		420	11	303	16		4782	72
LC-01-A-06	Lancaster, Lancashire	town centre	Sainsbury's		289	16	308	15		4699	107
ES-01-A-06	Hove, East Sussex	neighbourhood centre	Co-op		350	13	228	20		4650	65
GL-01-A-11	Hatch End, Gtr London	suburban area	Safeway		396	12	146	32		4631	37
CW-01-A-07	Newquay, Cornwall	edge-of-town	Safeway		504	9	264	17		4596	52
CW-01-A-03	Penzance, Cornwall	edge-of-town	Safeway		400	11	238	19		4413	60
CW-01-A-05	Redruth, Cornwall	edge-of-town	Safeway		400	11	177	25		4413	44
LN-01-A-01	Grantham, Lincolnshire	town centre	Safeway		483	9	177	25		4371	37
SC-01-A-06	Godalming, Surrey	edge-of-town	Sainsbury's		447	10	346	12		4320	77
DC-01-A-03	Blandford, Dorset	town centre	Gateway		82	52	103	41		4266	126
GL-01-A-10	Acton, Gtr London	town centre	Safeway		306	13	227	18		4125	74
HB-01-A-02	Bridlington, Humberside	edge-of-town	Tesco		350	11	155	24		3764	44
GM-01-A-05	Bolton, Gtr Manchester	neighbourhood centre	Safeway		350	11	375	10		3717	107
GS-01-A-02	Tewkesbury, Gloucestershire	freestanding	Safeway		400	9	154	24		3707	39
GL-01-A-04	Peckham, Gtr London	town centre	Safeway		205	16	194	17		3359	95
CW-01-A-06	Falmouth, Cornwall	edge-of-town	Leo's		350	9	212	15		3120	61
GL-01-A-02	Fulham, Gtr London	town centre	Safeway		225	13	148	20		3019	66
KC-01-A-11	Tonbridge & Malling, Kent	town centre	Somerfield		179	17	142	21		2981	79
ES-01-A-04	Eastbourne, East Sussex	neighbourhood centre	Safeway		200	14	187	15		2787	94
LC-01-A-12	Preston, Lancashire	suburban area	E.H Booth		268	10	89	31		2733	33
LC-01-A-07	Blackpool, Lancashire	suburban area	E.H Booth		221	12	96	27		2601	43
GL-01-A-08	Ealing, Gtr London	not known	Waitrose		162	16	157	17		2596	97
SC-01-A-07	Frimley, Surrey	town centre	Somerfield		89	29	149	17		2592	167
ES-01-A-12	Hailsham, East Sussex	town centre	Somerfield		189	13	205	12		2522	108
LC-01-A-04	Clitheroe, Lancashire	town centre	Tesco		113	20	152	15		2230	135
SA-01-A-01	Troon, Scotland	town centre	Safeway		250	9	155	14		2168	62
FI-01-A-03	St. Andrews, Scotland	suburban area	Safeway		150	14	125	17		2100	83
LC-01-A-08	Lancaster, Lancashire	suburban area	E.H Booth		113	18	96	21		2010	85
NF-01-A-02	East Dereham, Norfolk	commercial zone	Rainbow		200	8	136	12		1626	68
SL-01-A-01	Lanark, Scotland	town centre	Tesco		66	23	74	20		1496	112

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
WS-01-J-01	Shoreham by Sea, West Sussex	edge-of-town	Texas, Tesco, M&S		1750	13	573	39		22584	33
SL-01-J-01	East Kilbride, Scotland	not known	Halfords Texas, Sainsbury's etc		1205	17	369	54		20079	31
FI-01-J-01	Dunfermline, Scotland	edge-of-town	Asda, Currys etc		905	18	691	23		16000	76
SC-01-J-02	Weybridge, Surrey	commercial zone	Tesco, M&S		1300	9	639	18		11600	49
GM-01-J-07	Middleton, Gtr Manchester	suburban area	Heaton Mills		600	18	161	66		10684	27
KC-01-J-01	Crayford, Kent	town centre	Sainsbury's, Homebase		972	11	591	18		10436	61
GM-01-J-02	Tameside, Gtr Manchester	town centre	Do-It-All, Food Giant		492	14	349	20		6967	71

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GM-01-J-02	Tameside, Gtr Manchester	town centre	Do-It-All, Food Giant		492	14	375	19		6967	76

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GM-01-K-09	Tameside, Gtr Manchester	freestanding	Staples, Carpetworld, B&Q etc		1150	22	338	76		25714	29
SC-01-K-01	Guildford, Surrey	edge-of-town	not known		775	24	568	33		18677	73
LC-01-K-02	Blackburn, Lancashire	edge-of-town	Do-It-All, MFI, Currys etc		804	22	152	117		17837	19
DC-01-K-06	Poole, Dorset	freestanding	Courts, MFI, Texas, Comet, Homebase etc		852	20	416	42		17340	49
GM-01-K-02	Oldham, Gtr Manchester	freestanding	WH Smith, Do-It-All etc		616	27	65	260		16926	11
MS-01-K-01	Southport, Merseyside	edge-of-town	Halfords, Do-It-All, MFI etc		661	22	111	132		14642	17
GM-01-K-06	Ancoats, Gtr Manchester	town centre	Texas, Argos, Childrens' World etc		514	26	180	74		13299	35
DC-01-K-05	Poole, Dorset	freestanding	Magnet, Atlantis, Carpet Right etc		648	19	79	157		12387	12
LC-01-K-03	Lancaster, Lancashire	commercial zone	not known		472	22	74	138		10219	16
GM-01-K-05	Stockport, Gtr Manchester	town centre	MFI, Wickes, Halfords etc		366	27	157	63		9816	43
GM-01-K-03	Rochdale, Gtr Manchester	town centre	MFI, Comet, Halfords, Do-It-All		361	24	117	74		8687	32
WS-01-K-02	Bognor Regis, West Sussex	edge-of-town	B&Q, KwikFit, etc		336	24	70	115		8071	21
BC-01-K-03	Reading, Berkshire	commercial zone	Courts etc		330	23	208	37		7645	63
BC-01-K-02	Reading, Berkshire	industrial zone	Furniture City, Furniture Land, Maples		320	20	27	240		6470	8
LC-01-K-04	Preston, Lancashire	town centre	Homebase, Sports Max		326	19	164	38		6259	50
SC-01-K-04	Weybridge, Surrey	freestanding	Mothercare, Argos, Powerhouse		297	12	100	35		3460	34
RC-01-K-02	Pontypridd, Wales	edge-of-town	Allied Carpets, Poundstretcher		360	9	47	67		3146	13

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
SC-01-K-01	Guildford, Surrey	edge-of-town	not known		775	24	733	25		18677	95
LC-01-K-02	Blackburn, Lancashire	edge-of-town	Do-It-All, MFI, Currys etc		804	22	275	65		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	Southport, Merseyside	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	19	149	83		12387	23
LC-01-K-03	Lancaster, Lancashire	commercial zone	not known		472	22	150	68		10219	32
GM-01-K-05	Stockport, Gtr Manchester	town centre	MFI, Wickes, Halfords etc		366	27	259	38		9816	71
GM-01-K-03	Rochdale, Gtr Manchester	town centre	MFI, Comet, Halfords, Do-It-All		361	24	191	45		8687	53
WS-01-K-04	Sompting, West Sussex	freestanding	B7Q, Halfords		428	15	120	55		6555	28
LC-01-K-04	Preston, Lancashire	town centre	Homebase, Sports Max		326	19	171	37		6259	52
SC-01-K-04	Weybridge, Surrey	freestanding	Mothercare, Argos, Powerhouse		297	12	217	16		3460	73

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
HC-01-D-01	Southampton, Hampshire	industrial zone	B&Q		512	18	145	62		8993	28
LE-01-D-01	Leicester, Leicestershire	town centre	B&Q		424	20	143	60		8528	34
DC-01-D-02	Poole, Dorset	edge-of-town	B&Q		360	22	193	42		8027	54
HC-01-D-02	Havant, Hampshire	freestanding	B&Q		384	20	338	23		7618	88
SC-01-D-01	Leatherhead, Surrey	not known	B&Q		155	26	67	60		4000	43

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

site details:					parking supply:		parking demand:					
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.	
HC-01-D-01	Southampton, Hampshire	industrial zone	B&Q		512	18	296	30		8993	58	
LE-01-D-01	Leicester, Leicestershire	town centre	B&Q		424	20	251	34		8528	59	
DC-01-D-02	Poole, Dorset	edge-of-town	B&Q		360	22	315	25		8027	88	
HC-01-D-02	Havant, Hampshire	freestanding	B&Q		384	20	281	27		7618	73	
SC-01-D-01	Leatherhead, Surrey	not known	B&Q		155	26	138	29		4000	89	

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GM-01-E-01	Burnage, Gtr Manchester	suburban area	B&Q		200	21	42	100		4181	21
LC-01-E-01	Nelson, Lancashire	edge-of-town	B&Q		225	17	52	73		3809	23
ES-01-E-07	Worthing, West Sussex	commercial zone	Do-It-All		180	20	69	52		3605	38
CB-01-E-01	Kendal, Cumbria	edge-of-town	Great Mills		150	24	27	131		3530	18
SC-01-E-01	Reigate, Surrey	town centre	Texas		80	40	123	26		3160	154
LC-01-E-03	Preston, Lancashire	neighbourhood centre	Wickes		131	21	27	100		2702	21
FI-01-E-01	Kirkcaldy, Scotland	suburban area	B&Q		108	21	52	44		2313	48
LC-01-E-02	Rawtenstall, Lancashire	town centre	Do-It-All		120	19	51	44		2230	43
ES-01-E-04	Bexhill, East Sussex	edge-of-town	Do-It-All		70	23	19	83		1579	27

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
KC-01-E-05	Dartford, Kent	suburban area	Texas		136	31	99	42		4180	73
LC-01-E-01	Nelson, Lancashire	edge-of-town	B&Q		225	17	79	48		3809	35
ES-01-E-07	Worthing, West Sussex	commercial zone	Do-It-All		180	20	41	88		3605	23
CB-01-E-01	Kendal, Cumbria	edge-of-town	Great Mills		150	24	92	38		3530	61
SC-01-E-01	Reigate, Surrey	town centre	Texas		80	40	50	63		3160	63
LC-01-E-03	Preston, Lancashire	neighbourhood centre	Wickes		131	21	37	73		2702	28
LC-01-E-02	Rawtenstall, Lancashire	town centre	Do-It-All		120	19	60	37		2230	50
ES-01-E-04	Bexhill, East Sussex	edge-of-town	Do-It-All		70	23	40	39		1579	57

Table B11: A2 Offices (weekday parking demand)

		parking supply:		parking demand:				
company		parking	gfa per	maximum	gfa per max.		gfa (sq m)	% of supply
		spaces	space	parking	space used			utilised at
				accum.				max.
Barclays Bank HQ		1118	36	959	42		40500	86
First Data Resources		700	36	743	34		25469	106
Frizzell Insurance (Broking)		305	48	253	58		14643	83
Refuge Assurance Insurance		420	33	434	32		14000	103
Woolwich Admin Centre		300	31	192	48		9200	64
3 insurance companies		86	71	92	66		6080	107
Ernst & Young		179	17	104	29		3066	58
Halifax Building Society HQ		67	25	43	39		1663	64
Royal Life Financial Planning		8	53	10	43		427	125

Table B12: B1 Offices (weekday parking demand)

site details:					parking supply:		parking demand:				
site reference	site address	site location	company		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
AV-02-A-01	Bristol, Avon	edge-of-town	Gateway Corporate HQ		1000	32	799	39		31500	80
DC-02-A-07	Poole, Dorset	freestanding	GPT/Siemens		1253	22	739	38		27900	59
SC-02-A-08	Kingswood, Surrey	suburban area	Legal & General		1550	17	1121	23		25657	72
GM-02-A-04	Manchester, Gtr Manchester	edge-of-town	Manchester International Office Centre		850	21	623	29		18208	73
GM-02-A-06	Rochdale, Gtr Manchester	suburban area	Co-op HQ		515	34	501	35		17500	97
GM-02-A-03	Manchester, Gtr Manchester	edge-of-town	Seimens Northern HQ		600	25	356	42		15000	59
SR-02-A-01	Stirling, Scotland	town centre	Central Regional Council		370	35	576	23		13057	156
GM-02-A-01	Bolton, Gtr Manchester	industrial zone	Norweb		190	63	164	73		11958	86
FI-02-A-01	Dunfermline, Scotland	suburban area	British Sky Broadcasting		500	17	357	23		8361	71
EB-02-A-01	Edinburgh,Scotland	suburban area	Forestry Commission HQ		127	62	92	86		7897	72
GM-02-A-02	Stockport, Gtr Manchester	freestanding	Hewlett Packard		350	21	246	30		7491	70
WS-02-A-02	Worthing, West Sussex	freestanding	Southern Water		285	22	289	22		6325	101
GL-02-A-08	Ealing, Gtr London	industrial zone	NEC		90	67	74	82		6039	82
GL-02-A-09	Ealing, Gtr London	industrial zone	B. Elliott		85	66	71	79		5633	84
DC-02-A-01	Bournemouth, Dorset	edge-of-town	Wessex Fields		264	21	174	32		5585	66
SC-02-A-09	Claygate, Surrey	suburban area	CPC Foods Ltd		262	21	291	19		5574	111
GL-02-A-16	Ealing, Gtr London	town centre	London Borough of Ealing (BRETS)		97	48	99	47		4677	102
LC-02-A-03	Preston, Lancashire	development zone	DSS Offices		189	20	192	20		3750	102
GL-02-A-14	Ealing, Gtr London	commercial zone	TVSMS		110	31	138	25		3416	125
IW-02-A-01	Carisbrooke, Isle of Wight	edge-of-town	NFI Electronics Ltd		80	42	47	72		3391	59
DC-02-A-05	Poole, Dorset	town centre	Link House Publishing		109	30	113	29		3283	104
LC-02-A-04	Preston, Lancashire	development zone	Northern British Housing Association		142	23	97	34		3252	68
SC-02-A-07	West Ewell, Surrey	freestanding	Surrey County Council		186	16	179	16		2943	96
EB-02-A-02	Edinburgh,Scotland	edge-of-town	Wimpey		122	23	96	29		2787	79
DC-02-A-03	Poole, Dorset	town centre	HM Customs		84	23	50	39		1936	60
LC-02-A-05	Chorley, Lancashire	neighbourhood centre	Amec Civil Engineering		80	23	53	35		1859	66
EB-02-A-05	Edinburgh,Scotland	edge-of-town	Adobe House		82	23	38	49		1858	46
GL-02-A-15	Ealing, Gtr London	commercial zone	Chelsea House		157	11	107	16		1708	68
EB-02-A-04	Edinburgh,Scotland	edge-of-town	Scott House		53	26	38	37		1394	72
BD-02-A-02	Aspley Heath, Bedfordshire	freestanding	Shanks & McEwans		80	16	109	12		1296	136
EB-02-A-03	Edinburgh,Scotland	edge-of-town	Telford House		34	27	25	37		929	74
GL-02-A-12	Ealing, Gtr London	commercial zone	IT Lab		15	56	10	85		845	67
GL-02-A-11	Ealing, Gtr London	commercial zone	NEC UK HQ		7	61	12	36		427	171

Table B13: B1 Business Parks (weekday parking demand)

site details:					parking supply:		parking demand:					
site reference	site address	site location	company or business park name	gfa (sq m)	parking spaces	gfa per space	maximum parking accum.	gfa per max. space used			gfa (sq m)	% of supply utilised at max.
GL-02-B-06	Ealing, Gtr London	industrial zone	Glaxo Wellcome Medical Research	74284	1080	69	894	83			74284	83
BC-02-B-07	Reading, Berkshire	industrial zone	Digital Equipment Company Ltd	38000	1183	32	1116	34			38000	94
EB-02-B-01	Edinburgh, Scotland	edge-of-town	Business Park, Edinburgh	25060	623	40	619	40			25060	99
BC-02-B-06	Newbury, Berkshire	industrial zone	Sony UK Ltd	24866	190	131	172	145			24866	91
SC-02-B-02	Sheerwater, Woking, Berkshire	edge-of-town	Woking Business Park	23000	600	38	450	51			23000	75
SC-02-B-01	Leatherhead, Surrey	town centre	Mole Business Park	16000	700	23	397	40			16000	57
GM-02-B-01	Urmston, Gtr Manchester	freestanding	Carrington Business Park	12077	500	24	371	33			12077	74
BC-02-B-05	Bracknell, Berkshire	industrial zone	Communications Ltd	9940	368	27	346	29			9940	94
BC-02-B-08	Wokingham, Berkshire	freestanding	Hewlett Packard Ltd	9290	362	26	240	39			9290	66
HB-02-B-01	Scunthorpe, Humberside	suburban area	Citizen Manufacturing (UK) Ltd	7300	180	41	144	51			7300	80
EB-02-B-02	Edinburgh, Scotland	suburban area	Business Park, Edinburgh	5350	122	44	113	47			5350	93
GM-02-B-02	Stockport, Gtr Manchester	suburban area	The South Gate Centre	4823	200	24	172	28			4823	86
LC-02-B-02	Preston, Lancashire	development zone	Navigation Business Village	3450	126	27	104	33			3450	83

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	company or industrial estate name		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
HB-02-D-03	Scunthorpe, Humberside	edge-of-town	Ericssons Ltd		382	35	568	23		13200	149
SC-02-C-02	Weybridge, Surrey	freestanding	Taylor & Penton		168	53	90	98		8864	54
GM-02-D-01	Oldham, Gtr Manchester	edge-of-town	Acorn Centre		200	41	132	63		8285	66
EB-02-D-01	Edinburgh, Scotland	suburban area	Leith Industrial Estate		77	41	69	46		3154	90

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

site details:					parking supply:		parking demand:		
site reference	site address	site location	company	gfa (sq m)	parking spaces	gfa per space	maximum parking accum.	gfa per max. space used	% of supply utilised at max.
GL-02-F-01	Ealing, Gtr London	commercial zone	John Lewis Partnership	12463	80	156	216	58	270
GM-02-F-01	Wigan, Gtr Manchester	commercial zone	Asda Distribution Centre	8848	120	74	114	78	95
GL-02-F-11	Ealing, Gtr London	commercial zone	Glaxo	7900	41	193	52	152	127
GL-02-F-12	Ealing, Gtr London	commercial zone	Pioneer High Fidelity (GB) Ltd	7525	200	38	118	64	59
SC-02-F-01	Weybridge, Surrey	freestanding	Courage	7085	141	50	134	53	95
GL-02-F-05	Ealing, Gtr London	industrial zone	Entonia Wines	7000	40	175	43	163	108
GL-02-F-02	Ealing, Gtr London	industrial zone	Allport Freight Ltd	6700	26	258	27	248	104
BC-02-F-04	Reading, Berkshire	industrial zone	Jacobs Biscuits	6533	31	211	18	363	58
GL-02-F-03	Ealing, Gtr London	industrial zone	Carlsberg	5000	30	167	29	172	97
BC-02-F-03	Bracknell, Berkshire	industrial zone	Christian Salvesen	4590	72	64	50	92	69
GL-02-F-08	Ealing, Gtr London	industrial zone	Expandite Ltd	3900	20	195	28	139	140
GL-02-F-04	Ealing, Gtr London	industrial zone	Ingram Entertainment plc	3000	44	68	45	67	102
GI-02-F-10	Ealing, Gtr London	commercial zone	Holmes Valves	2787	25	111	9	310	36
SC-02-G-02	Weybridge, Surrey	freestanding	TNT Parcel Distribution	2304	152	15	93	25	61
GL-02-F-09	Ealing, Gtr London	commercial zone	Cables & Flexibles	1420	20	71	20	71	100
GL-02-F-07	Ealing, Gtr London	industrial zone	Oskar Lapp Ltd	1393	22	63	18	77	82
GL-02-F-06	Ealing, Gtr London	industrial zone	Grosfilex (UK) Ltd	1000	6	167	14	71	233

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	company		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GL-02-E-05	Ealing, Gtr London	commercial zone	Clothing Retailers		200	57	155	74		11495	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	45
GL-02-E-03	Ealing, Gtr London	commercial zone	Milupa		10	105	16	65		1045	160
GL-02-E-02	Ealing, Gtr London	commercial zone	Mecalux		6	158	7	136		950	117

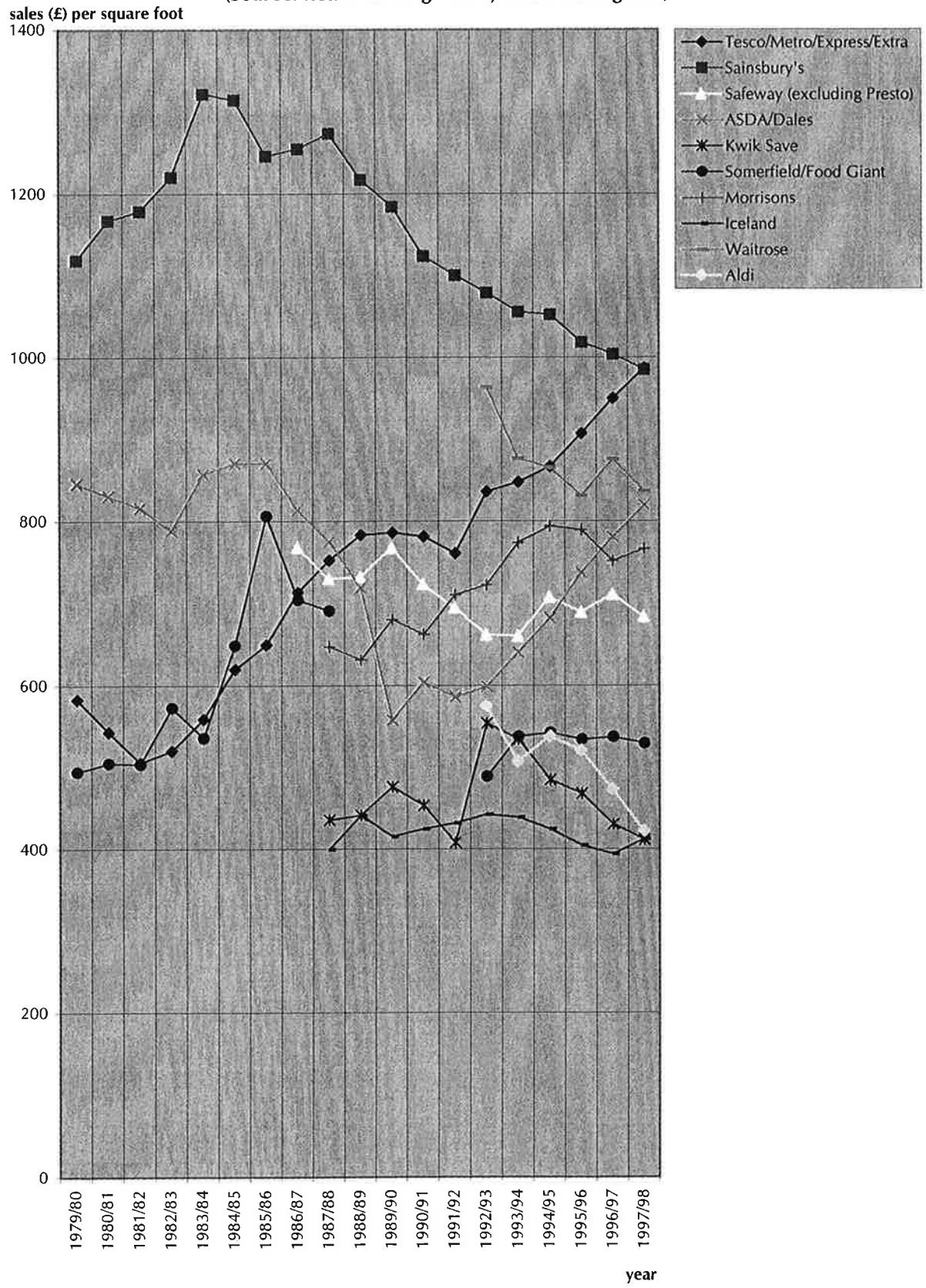
Table B17: D2 Leisure - Multiplex Cinemas (weekday parking demand)

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	seats per space	maximum parking accum.	seats per max. space used		seats	% of supply utilised at max.
KC-07-A-01	Strood, Kent	edge-of-town	Virgin		590	4	542	4		2100	92
LC-07-A-02	Preston, Lancashire	development zone	UCI		686	3	451	4		2020	66
BU-07-A-01	High Wycombe, Buckinghamshire	edge-of-town	UCI		685	3	220	8		1748	32

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	seats per space	maximum parking accum.	seats per max. space used		seats	% of supply utilised at max.
KC-07-A-01	Strood, Kent	edge-of-town	Virgin		590	4	464	5		2100	79
LC-07-A-02	Preston, Lancashire	development zone	UCI		686	3	549	4		2020	80
BU-07-A-01	High Wycombe, Buckinghamshire	edge-of-town	UCI		685	3	312	6		1748	46

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



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 sub-set. 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

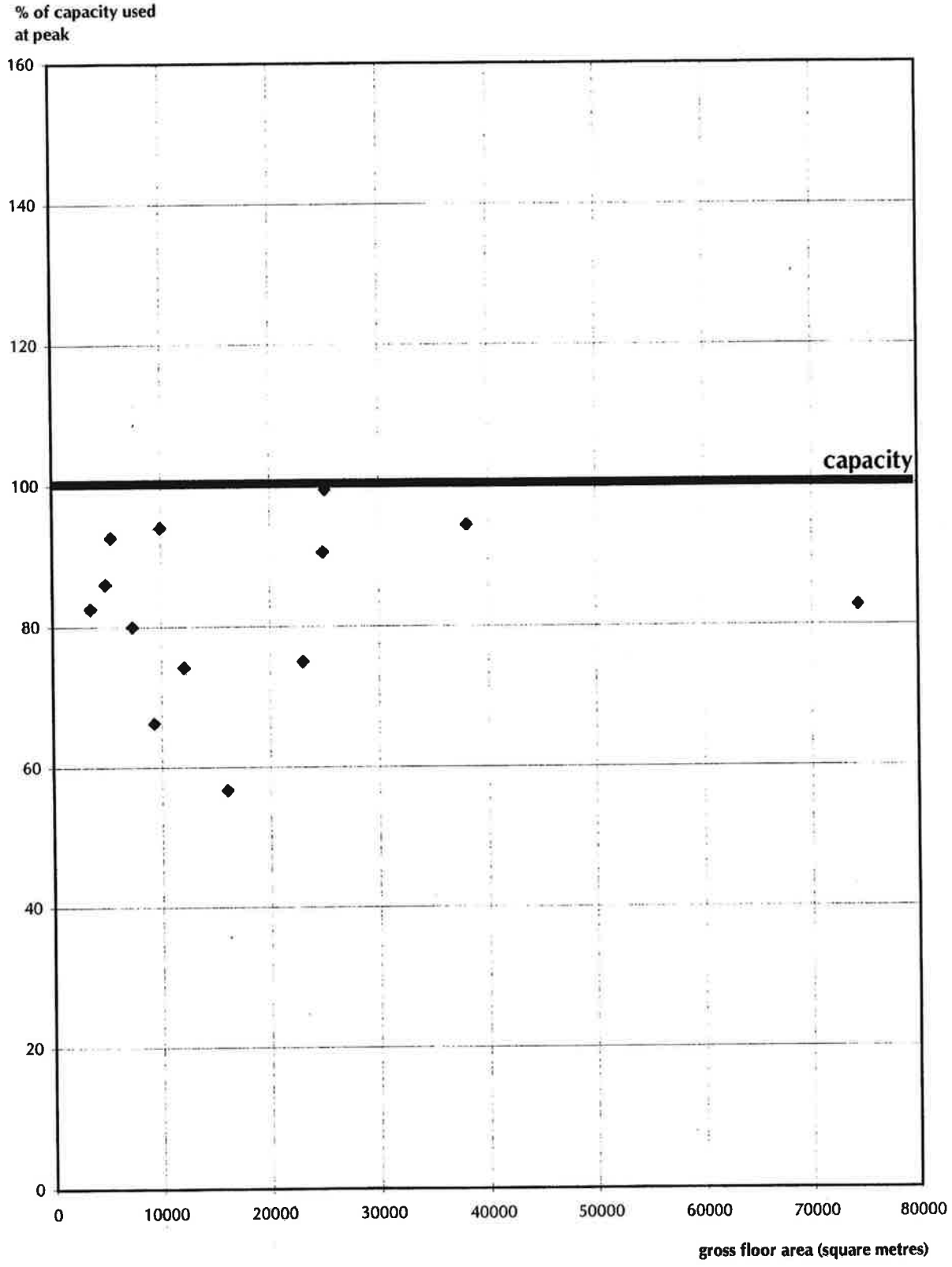


Figure 4.14
B2 Industry Industrial Estates and Units
peak weekday parking accumulation

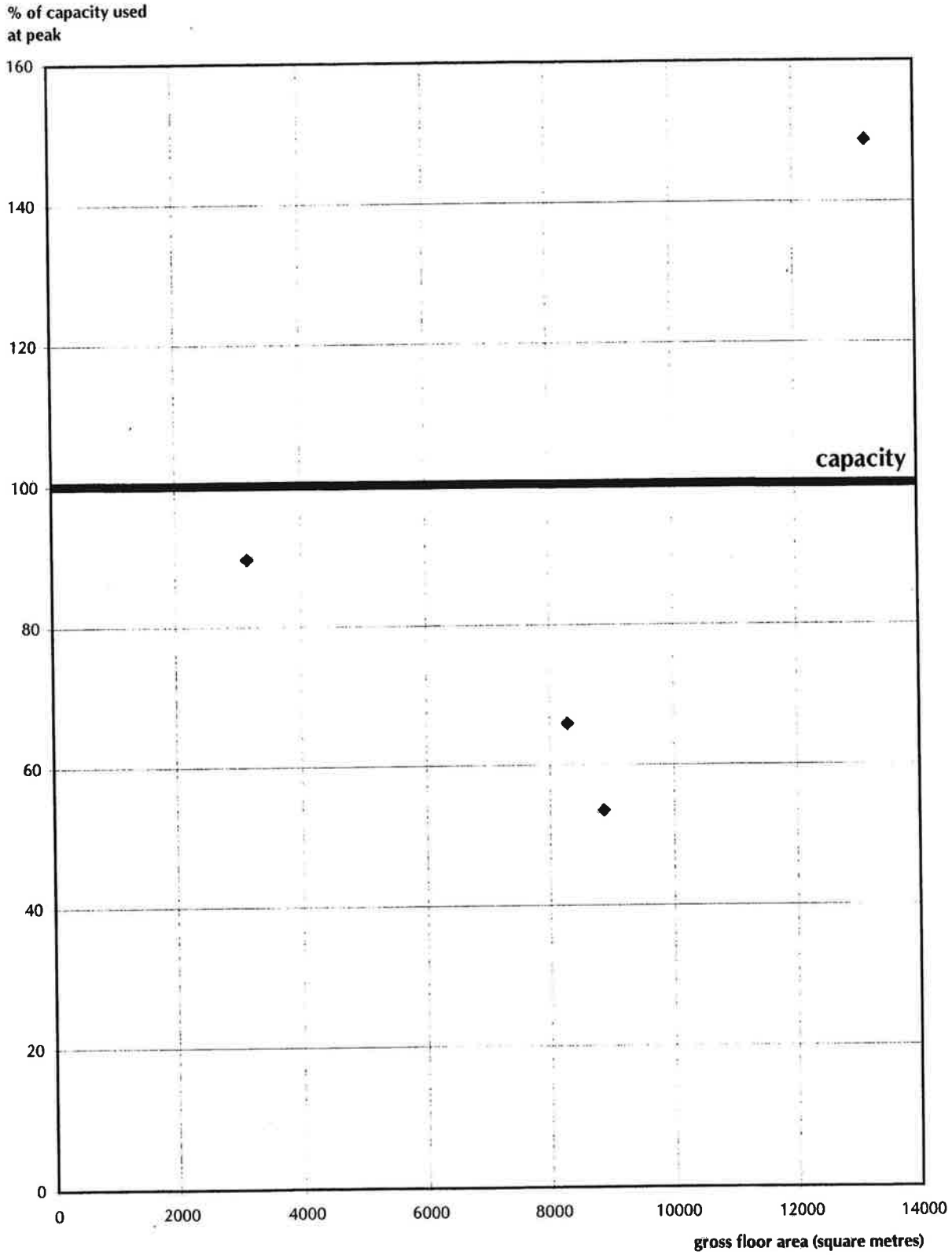


Figure 4.15
B8 Warehousing and distribution
peak weekday parking accumulation

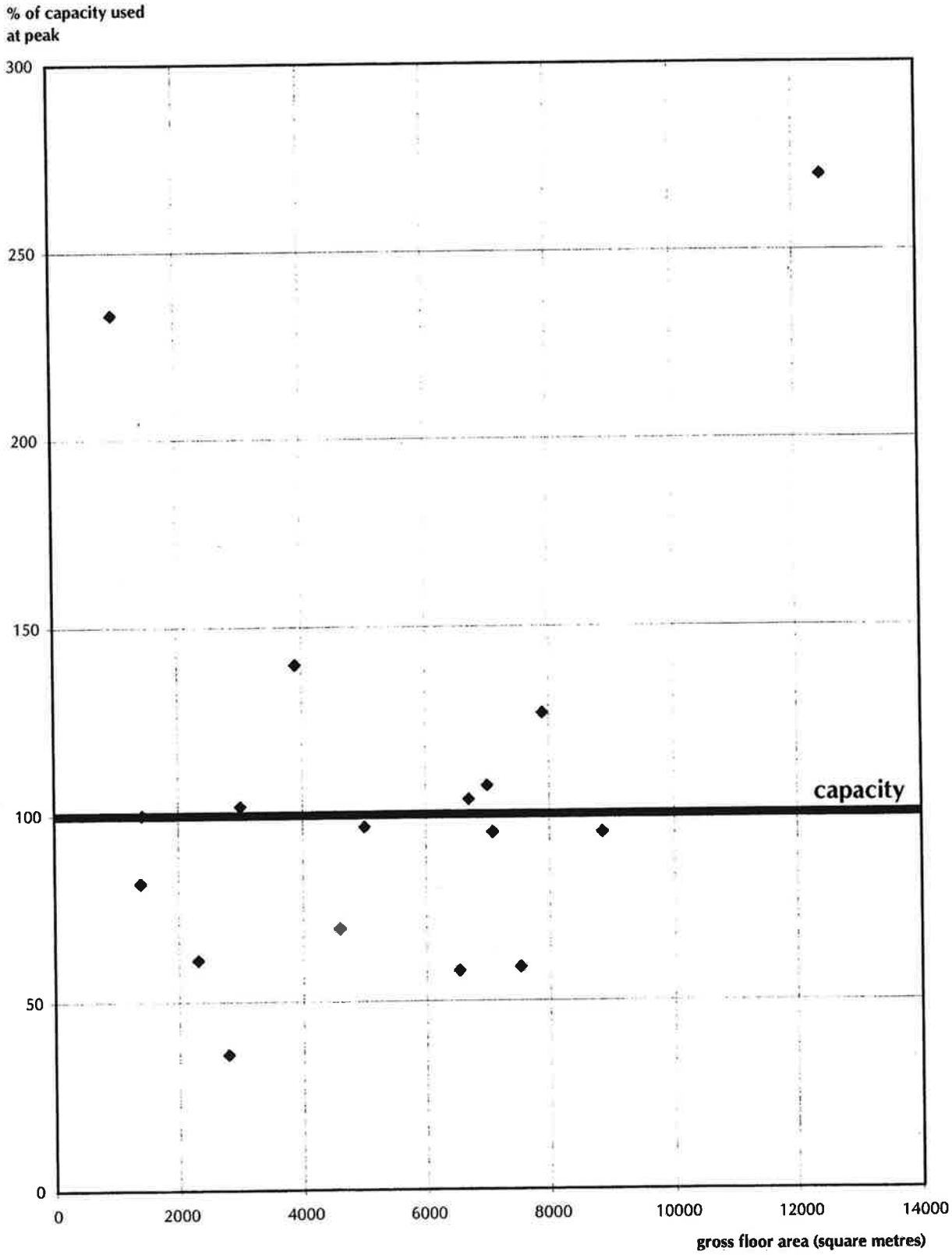


Figure 4.16
B8 Warehousing and Distribution
peak weekday parking accumulation

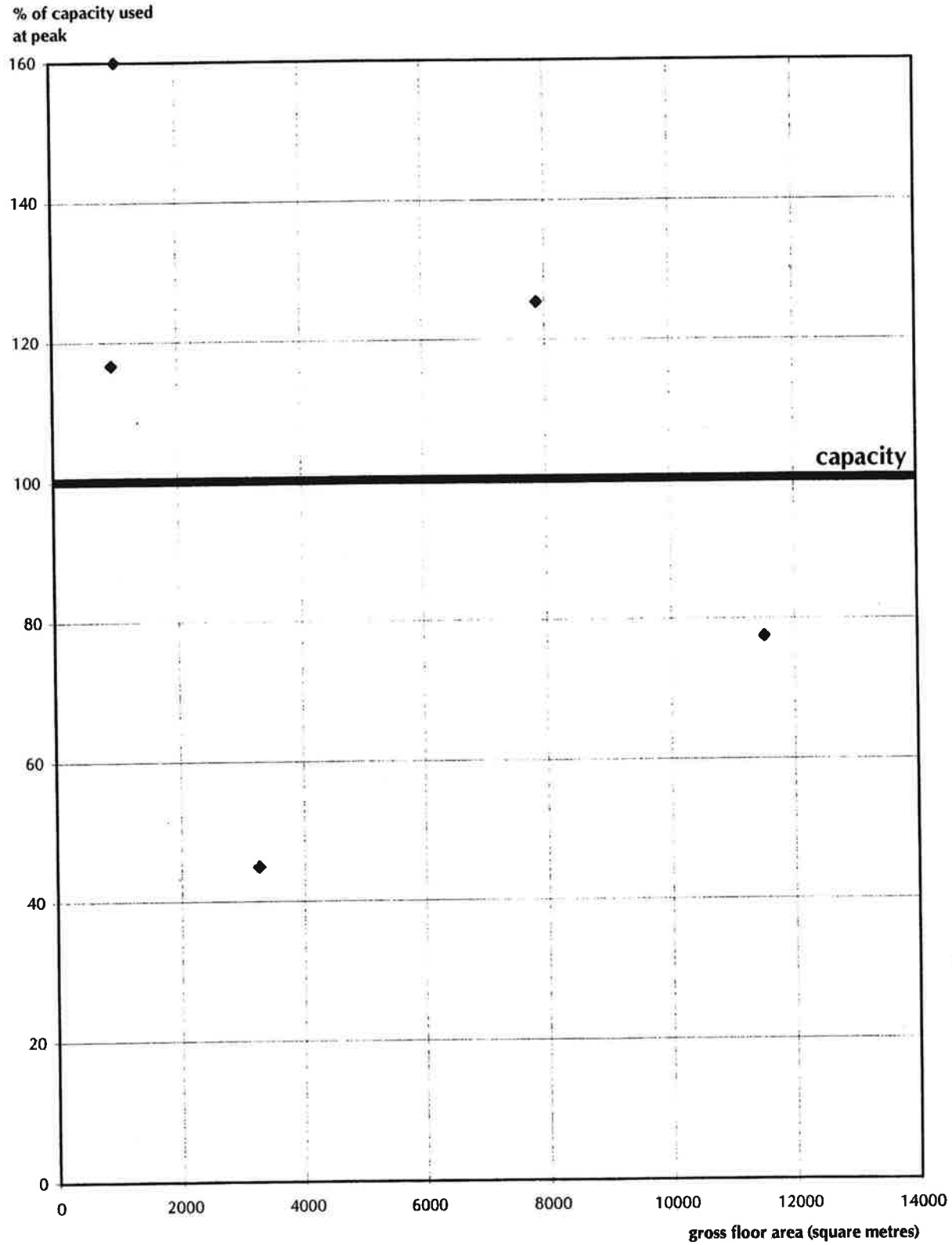


Figure 4.17
D2 Leisure Multiplex Cinemas
peak weekday parking accumulation

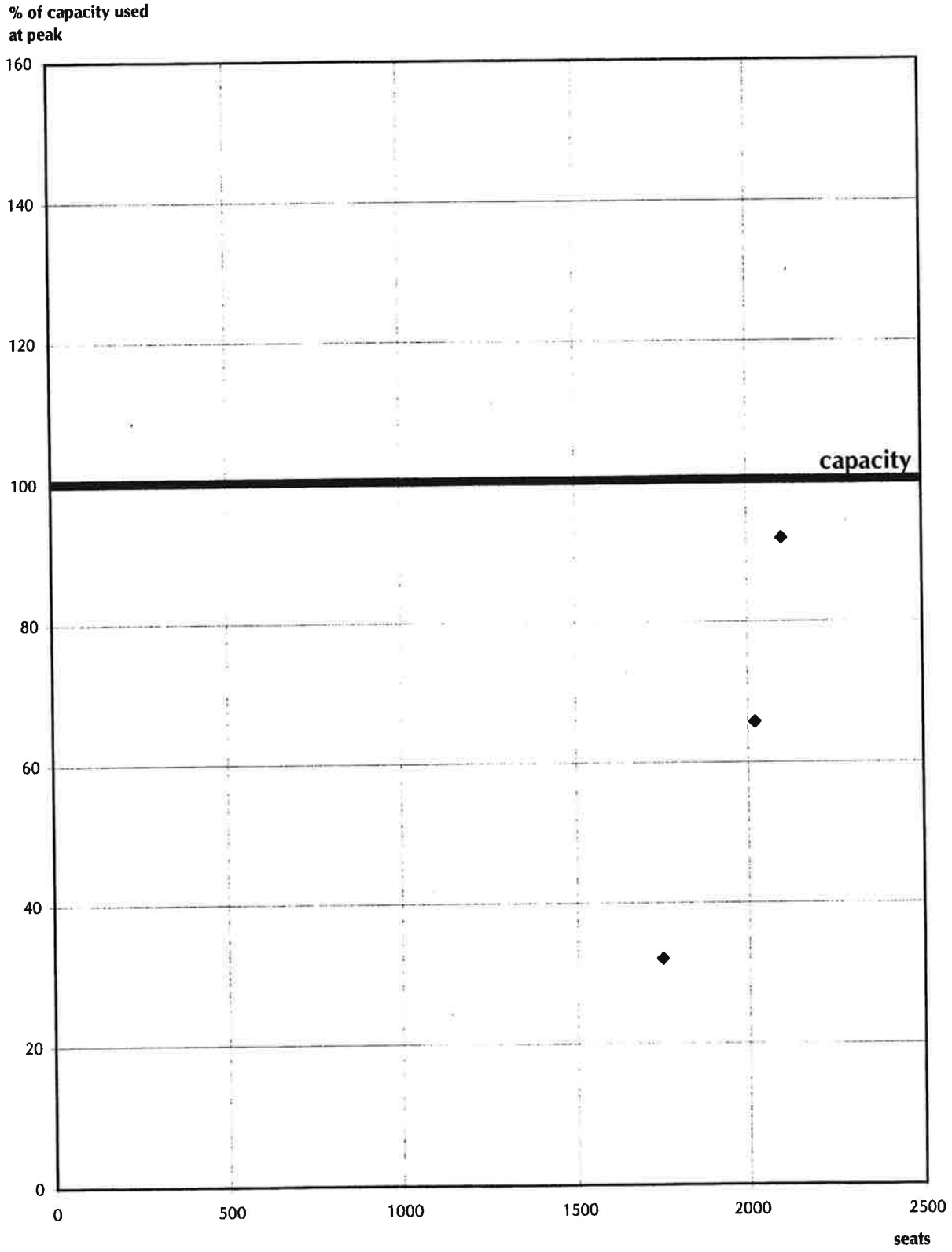


Figure 4.18
D2 Leisure Multiplex Cinemas
peak Saturday parking accumulation

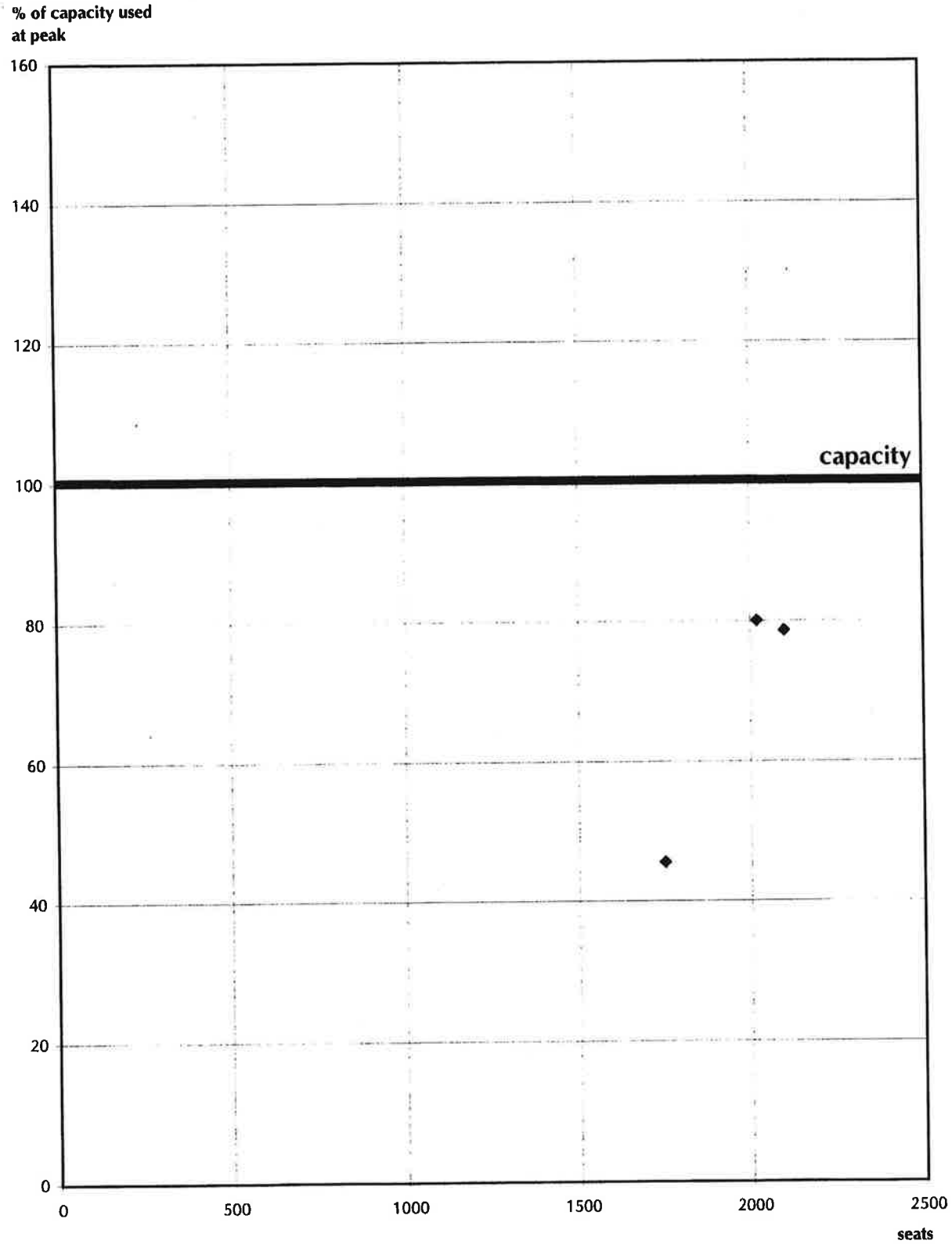


Figure 4.19
Comparison of supply and peak demand gross floor area per parking space Foodstores on weekdays

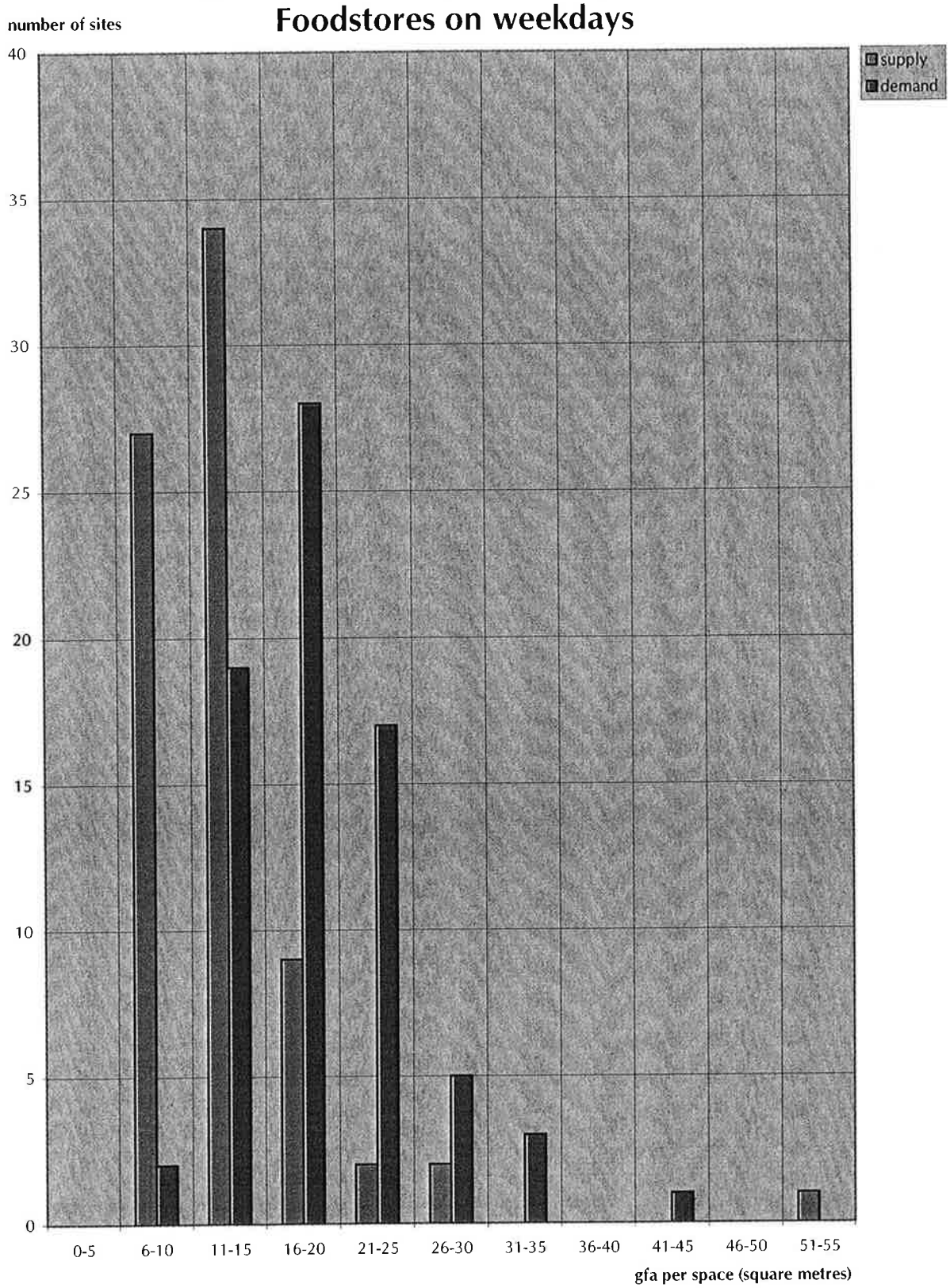


Figure 4.20
Comparison of supply and peak demand gross floor area per parking space Foodstores on Saturdays

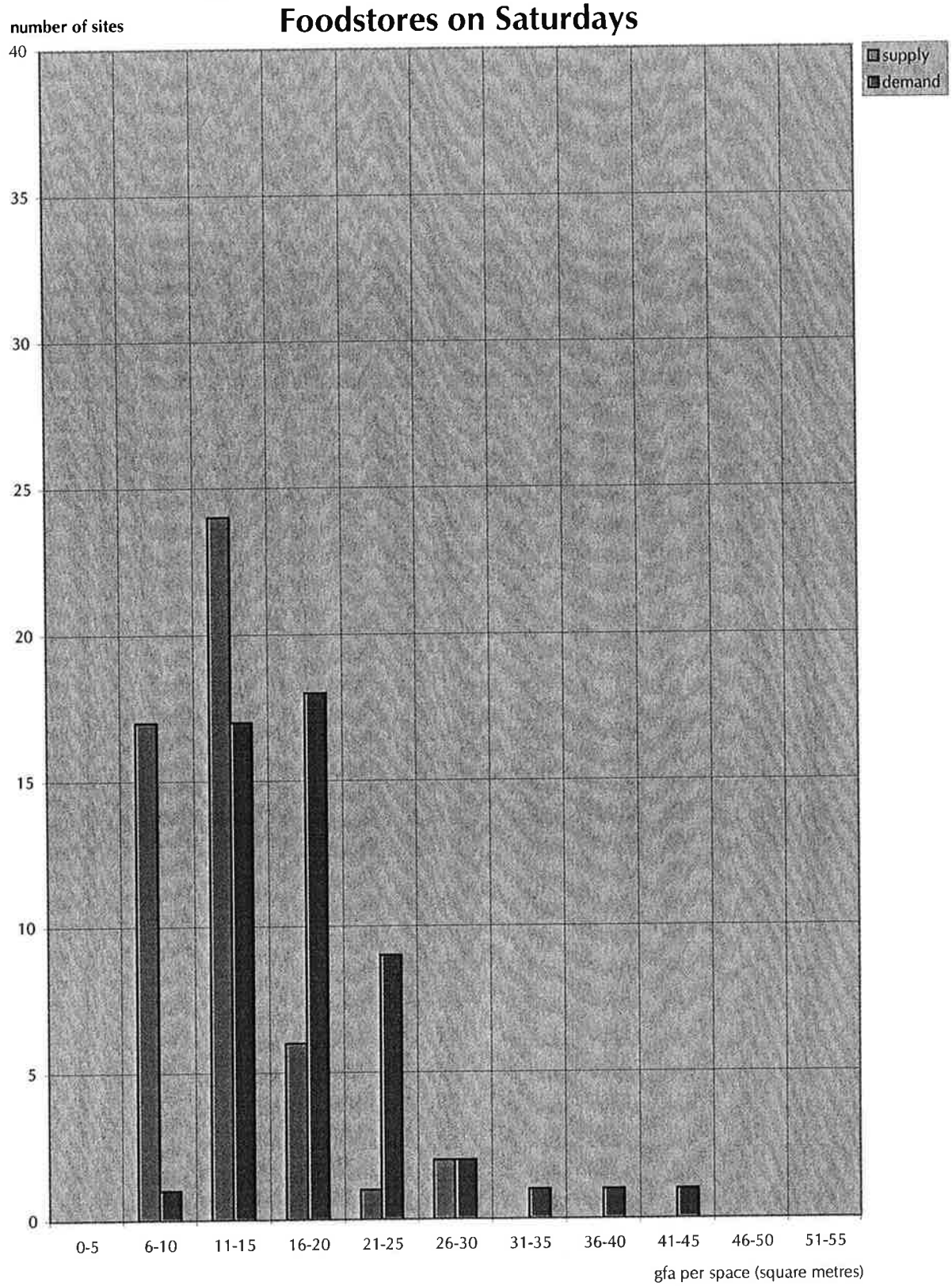
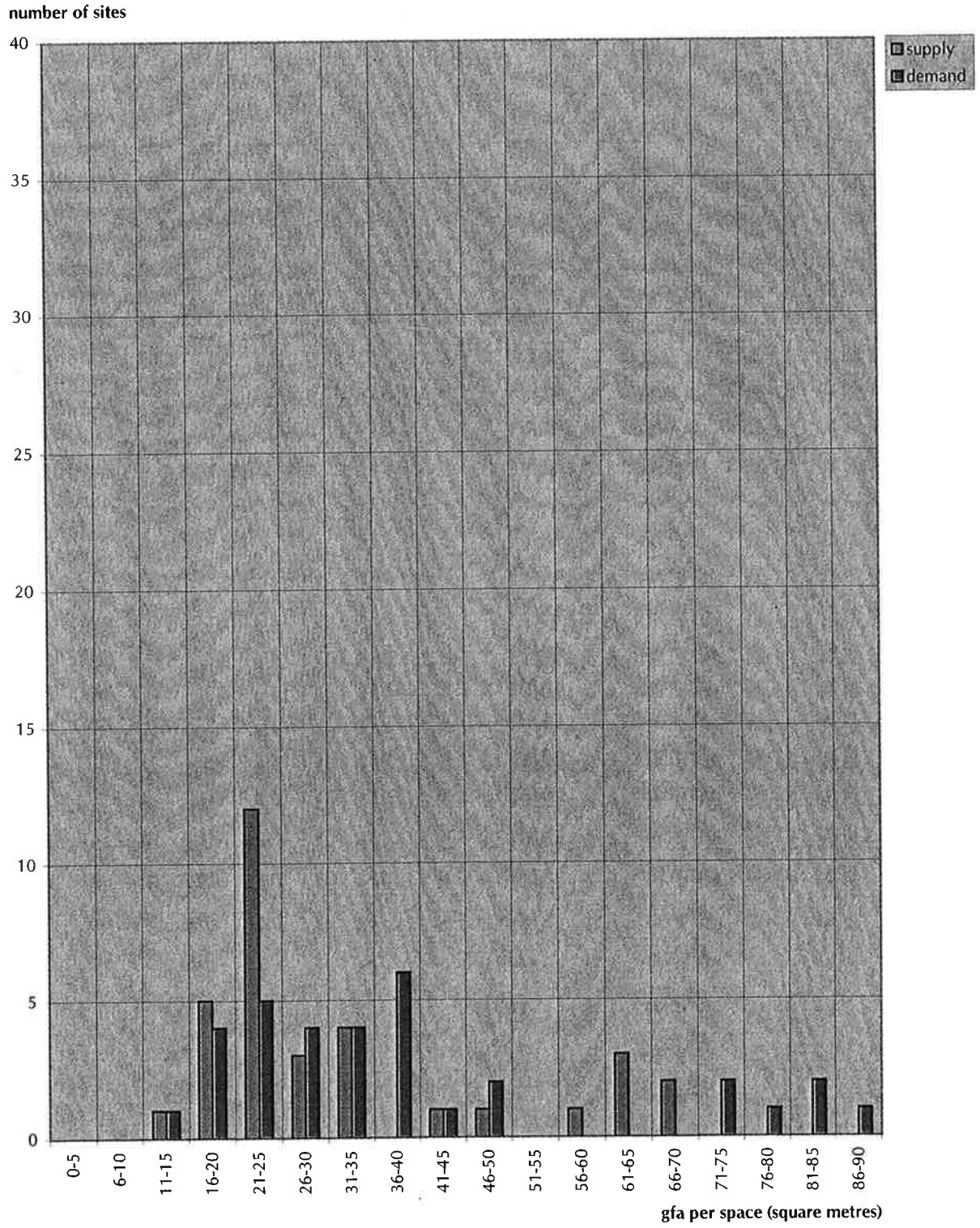


Figure 4.21
Comparison of supply and peak demand gross floor area per parking space B1 Offices on weekdays



5: Implications for good practice

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 non-food 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
- 85th 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 85th 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.

5.9 It appears generally inappropriate to determine parking provision by routinely using 85th 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 development-related traffic. Additional expenditure will be required to bolster accessibility by non-car modes of transport.

APPENDIX A

Time-series Data

Table A1	Household final consumption expenditure data ("consumer expenditure")																		
	(seasonally adjusted, ESA95 basis of calculation, constant 1995 prices)																		
	(source: Office for National Statistics)																		
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	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		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	60968
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											
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 Warehouse/Supercentre	81	83	94	95	101	104	106	116	132		
J. Sainsbury Plc	Homebase	83	84	91	92	103	109	111	84	94		
Wickes Plc	Wickes				149	142	157	168	174	193		
RMC Group Ltd	Great Mills/No Frills				59	64	83	76	77	85		
Focus Do It All Ltd	Do It All	40	33	33	56	55	56	60	72	74		
Electrical												
Dixons Group Plc	Dixons/Currys/PC World/Seeboard/others	477	468	510	529	514	540	585	629	605		
Kingfisher Plc	Comet/Norweb	376	388	383	431	433	386	422	466	451		
Scottish Power Plc	Scottish Power/Lifestyle Plus/others				400	450	342	389	428	396		
Furnture & Carpets												
MFI Furniture Gp Plc	MFI furniture Centre/Homeworks				96	104	181	176	186	189		
Stichting Ingka Found.	IKEA/Habitat				159	168	190	227	221	209		
Allied Carpets Gp Plc	Carpetland/Allied Carpets/General George						120	129	128	122		
DFS Furniture Co Plc	DFS/Northern Upholstery/The Dining Centre				326	341	308	340	388	377		
RPI		75.8	84.1	87.5	90.6	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 Warehouse/Supercentre	107	99	107	105	109	110	108	116	127		
J. Sainsbury Plc	Homebase	109	100	104	102	112	116	113	84	91		
Wickes Plc	Wickes				164	154	166	172	174	186		
RMC Group Ltd	Great Mills/No Frills				65	69	88	78	77	82		
Focus Do It All Ltd	Do It All	53	39	38	62	60	59	61	72	71		
Dixons Group Plc	Dixons/Currys/PC World/Seeboard/others	629	556	583	584	557	573	598	629	584		
Kingfisher Plc	Comet/Norweb	496	461	438	476	469	409	431	466	435		
Scottish Power Plc	Scottish Power/Lifestyle Plus/others				442	488	363	397	428	382		
MFI Furniture Gp Plc	MFI furniture Centre/Homeworks				106	113	192	180	186	182		
Stichting Ingka Found.	IKEA/Habitat				175	182	201	232	221	202		
Allied Carpets Gp Plc	Carpetland/Allied Carpets/General George						127	132	128	118		
DFS Furniture Co Plc	DFS/Northern Upholstery/The Dining Centre				360	369	327	347	388	364		

Table A3	Leading grocers: petrol forecourt developments								
Operation	at end-December								
	1990	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	98	125	136	153	168
ASDA	93	96	97	102	106	117	124	136	138
others	5	12	19	27	37	46	54	54	55
Somerfield	12	12	12	13	14	14	16	16	15
Wm. Morrison	24	27	34	40	50	59	59	62	62
Total	321	386	471	570	685	781	843	906	959

Table A5	Net margins of leading grocers									
				1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
Tesco Plc				7.7	7.0	6.1	5.8	6.2	5.8	5.9
J Sainsbury Plc				8.7	9.2	8.3	8.7	7.8	6.5	6.8
Safeway Plc (Safeway stores)				7.5	8.1	7.2	7.0	6.9	7.0	5.9
ASDA Group Plc				4.3	4.5	4.3	4.7	5.2	5.3	5.3
Somerfield Plc (Kwik Save stores)				4.8	4.8	4.9	4.2	0.1	2.9	2.0
Somerfield Plc (excluding Kwik Save)				6.2	3.6	2.3	2.2	2.9	3.3	3.6
Wm Morrison Supermarkets Plc				5.6	6.4	6.4	6.5	6.1	6.2	6.6
Iceland Group Plc				5.2	5.3	5.5	5.4	5.3	3.9	2.8
John Lewis Partnership Plc (Waitrose stores)				3.6	2.8	2.1	1.9	3.5	4.4	4.2
Aldi Group Plc				1.8	2.3	3.6	2.7	2.1	2.0	2.2

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GL-01-A-09	Neasden, Gtr London	freestanding	Tesco		1198	8	497	19		9290	41
GM-01-A-19	Trafford, Gtr Manchester	development zone	Asda		750	12	434	21		9290	58
GM-01-A-17	Ashton-under-Lyne, Gtr Manchester	town centre	Asda		618	15	582	16		9244	94
KC-01-A-16	Dover, Kent	suburban area	Tesco		640	14	330	27		8943	52
GM-01-A-04	Bury, Gtr Manchester	freestanding	Asda		640	13	330	26		8556	52
CW-01-A-01	St Austell, Cornwall	edge-of-town	Asda		700	12	437	20		8547	62
ES-01-A-03	Brighton, East Sussex	neighbourhood centre	Asda		780	10	396	21		8175	51
LC-01-A-15	Accrington, Lancashire	town centre	Asda		626	12	363	21		7757	58
DC-01-A-02	Bournemouth, Dorset	town centre	Asda		640	12	309	24		7432	48
LN-01-A-04	Stamford, Lincolnshire	edge-of-town	Morrisons		595	12	491	14		7017	83
DC-01-A-04	Poole, Dorset	freestanding	Sainsbury's		630	11	323	22		6977	51
GM-01-A-15	Bolton, Gtr Manchester	freestanding	Morrisons		688	10	362	19		6938	53
CB-01-A-02	Kendal, Cumbria	edge-of-town	Morrisons		684	10	326	21		6875	48
LN-01-A-03	Lincoln, Lincolnshire	commercial zone	Morrisons		600	11	489	14		6870	82
LC-01-A-14	Chorley, Lancashire	town centre	Morrisons		604	11	320	21		6594	53
DC-01-A-05	Bournemouth, Dorset	freestanding	Tesco		717	9	253	26		6503	35
ES-01-A-10	Eastbourne, East Sussex	suburban area	Tesco		652	10	356	18		6500	55
FI-01-A-04	Kirkcaldy, Scotland	edge-of-town	Asda		666	10	517	13		6500	78
GM-01-A-18	Wigan, Gtr Manchester	town centre	Asda		700	9	737	9		6500	105
KC-01-A-14	Sevenoaks, Kent	suburban area	Sainsbury's		600	11	343	18		6317	57
SC-01-A-05	Sunbury, Surrey	edge-of-town	Tesco		667	9	366	17		6266	55
GM-01-A-14	Bolton, Gtr Manchester	edge-of-town	Asda		580	11	312	20		6224	54
GL-01-A-07	Camden Town, Gtr London	town centre	Sainsbury's		292	21	291	21		6046	100
CW-01-A-02	Truro, Cornwall	neighbourhood centre	Tesco		400	14	326	18		5794	82
WS-01-A-05	Chichester, West Sussex	edge-of-town	Sainsbury's		639	9	428	13		5769	67
DC-01-A-07	Christchurch, Dorset	edge-of-town	Sainsbury's		589	10	432	13		5720	73
HB-01-A-03	Hull, Humberside	neighbourhood centre	Safeway		550	10	356	16		5697	65
GS-01-A-01	Cheltenham, Gloucestershire	neighbourhood centre	Safeway		520	11	358	16		5687	69
MS-01-A-02	St Helens, Merseyside	town centre	Safeway		580	10	395	14		5687	68
CB-01-A-01	Kendal, Cumbria	edge-of-town	Asda		567	10	243	23		5667	43
KC-01-A-13	Gillingham, Kent	commercial zone	Tesco		561	10	397	14		5611	71
ES-01-A-01	Brighton, East Sussex	neighbourhood centre	Sainsbury's		300	19	211	27		5601	70
LC-01-A-13	Preston, Lancashire	suburban area	Sainsbury's		575	10	342	16		5574	59
MS-01-A-01	Southport, Merseyside	town centre	Safeway		480	11	279	19		5338	58
BC-01-A-03	Reading, Berkshire	freestanding	Safeway		620	9	358	15		5296	58
HB-01-A-01	Grimsby, Humberside	town centre	Sainsbury's		475	11	487	11		5230	103
HW-01-A-01	Malvern, Hereford & Worcester	freestanding	Safeway		450	12	222	24		5217	49

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
CH-01-A-04	Warrington, Cheshire	town centre	Sainsbury's		470	11	355	15		5208	76
LC-01-A-03	Rawtenstall, Lancashire	town centre	Asda		355	15	236	22		5202	66
CW-01-A-04	Camborne, Cornwall	neighbourhood centre	Tesco		300	17	307	17		5110	102
HC-01-A-01	Fareham, Hampshire	edge-of-town	Sainsbury's		585	9	324	16		5030	55
DV-01-A-12	Exmouth, Devon	suburban area	Tesco		430	11	310	16		4900	72
GL-01-A-05	Kensington, Gtr London	freestanding	Sainsbury's		249	20	295	17		4869	118
LC-01-A-10	Thornton, Lancashire	suburban area	Safeway		562	9	315	15		4831	56
SC-01-A-04	Reigate, Surrey	town centre	Safeway		420	11	303	16		4782	72
LC-01-A-06	Lancaster, Lancashire	town centre	Sainsbury's		289	16	308	15		4699	107
ES-01-A-06	Hove, East Sussex	neighbourhood centre	Co-op		350	13	228	20		4650	65
GL-01-A-11	Hatch End, Gtr London	suburban area	Safeway		396	12	146	32		4631	37
CW-01-A-07	Newquay, Cornwall	edge-of-town	Safeway		504	9	264	17		4596	52
CW-01-A-03	Penzance, Cornwall	edge-of-town	Safeway		400	11	238	19		4413	60
CW-01-A-05	Redruth, Cornwall	edge-of-town	Safeway		400	11	177	25		4413	44
LN-01-A-01	Grantham, Lincolnshire	town centre	Safeway		483	9	177	25		4371	37
SC-01-A-06	Godalming, Surrey	edge-of-town	Sainsbury's		447	10	346	12		4320	77
DC-01-A-03	Blandford, Dorset	town centre	Gateway		82	52	103	41		4266	126
GL-01-A-10	Acton, Gtr London	town centre	Safeway		306	13	227	18		4125	74
HB-01-A-02	Bridlington, Humberside	edge-of-town	Tesco		350	11	155	24		3764	44
GM-01-A-05	Bolton, Gtr Manchester	neighbourhood centre	Safeway		350	11	375	10		3717	107
GS-01-A-02	Tewkesbury, Gloucestershire	freestanding	Safeway		400	9	154	24		3707	39
GL-01-A-04	Peckham, Gtr London	town centre	Safeway		205	16	194	17		3359	95
CW-01-A-06	Falmouth, Cornwall	edge-of-town	Leo's		350	9	212	15		3120	61
GL-01-A-02	Fulham, Gtr London	town centre	Safeway		225	13	148	20		3019	66
KC-01-A-11	Tonbridge & Malling, Kent	town centre	Somerfield		179	17	142	21		2981	79
ES-01-A-04	Eastbourne, East Sussex	neighbourhood centre	Safeway		200	14	187	15		2787	94
LC-01-A-12	Preston, Lancashire	suburban area	E.H Booth		268	10	89	31		2733	33
LC-01-A-07	Blackpool, Lancashire	suburban area	E.H Booth		221	12	96	27		2601	43
GL-01-A-08	Ealing, Gtr London	not known	Waitrose		162	16	157	17		2596	97
SC-01-A-07	Frimley, Surrey	town centre	Somerfield		89	29	149	17		2592	167
ES-01-A-12	Hailsham, East Sussex	town centre	Somerfield		189	13	205	12		2522	108
LC-01-A-04	Clitheroe, Lancashire	town centre	Tesco		113	20	152	15		2230	135
SA-01-A-01	Troon, Scotland	town centre	Safeway		250	9	155	14		2168	62
FI-01-A-03	St. Andrews, Scotland	suburban area	Safeway		150	14	125	17		2100	83
LC-01-A-08	Lancaster, Lancashire	suburban area	E.H Booth		113	18	96	21		2010	85
NF-01-A-02	East Dereham, Norfolk	commercial zone	Rainbow		200	8	136	12		1626	68
SL-01-A-01	Lanark, Scotland	town centre	Tesco		66	23	74	20		1496	112

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GM-01-A-16	Salford, Gtr Manchester	neighbourhood centre	Netto		40	28	32	35		1115	80

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GM-01-A-19	Trafford, Gtr Manchester	development zone	Asda		750	12	570	16		9290	76
GM-01-A-17	Ashton-under-Lyne, Gtr Manchester	town centre	Asda		618	15	643	14		9244	104
KC-01-A-16	Dover, Kent	suburban area	Tesco		640	14	555	16		8943	87
LC-01-A-15	Accrington, Lancashire	town centre	Asda		626	12	360	22		7757	58
DC-01-A-02	Bournemouth, Dorset	town centre	Asda		640	12	289	26		7432	45
LN-01-A-04	Stamford, Lincolnshire	edge-of-town	Morrisons		595	12	511	14		7017	86
DC-01-A-04	Poole, Dorset	freestanding	Sainsbury's		630	11	309	23		6977	49
GM-01-A-15	Bolton, Gtr Manchester	freestanding	Morrisons		688	10	415	17		6938	60
CB-01-A-02	Kendal, Cumbria	edge-of-town	Morrisons		684	10	460	15		6875	67
LN-01-A-03	Lincoln, Lincolnshire	commercial zone	Morrisons		600	11	478	14		6870	80
LC-01-A-14	Chorley, Lancashire	town centre	Morrisons		604	11	408	16		6594	68
DC-01-A-05	Bournemouth, Dorset	freestanding	Tesco		717	9	393	17		6503	55
ES-01-A-10	Eastbourne, East Sussex	suburban area	Tesco		652	10	388	17		6500	60
GM-01-A-18	Wigan, Gtr Manchester	town centre	Asda		700	9	576	11		6500	82
KC-01-A-14	Sevenoaks, Kent	suburban area	Sainsbury's		600	11	441	14		6317	74
GM-01-A-14	Bolton, Gtr Manchester	edge-of-town	Asda		580	11	290	21		6224	50
GL-01-A-07	Camden Town, Gtr London	town centre	Sainsbury's		292	21	388	16		6046	133
WS-01-A-05	Chichester, West Sussex	edge-of-town	Sainsbury's		639	9	471	12		5769	74
DC-01-A-07	Christchurch, Dorset	edge-of-town	Sainsbury's		589	10	384	15		5720	65
LC-01-A-09	Preston, Lancashire	edge-of-town	Sainsbury's		500	11	439	13		5704	88
HB-01-A-03	Hull, Humberside	neighbourhood centre	Safeway		550	10	460	12		5697	84
GS-01-A-01	Cheltenham, Gloucestershire	neighbourhood centre	Safeway		520	11	369	15		5687	71
MS-01-A-02	St Helens, Merseyside	town centre	Safeway		580	10	383	15		5687	66
ES-01-A-01	Brighton, East Sussex	neighbourhood centre	Sainsbury's		300	19	244	23		5601	81
LC-01-A-13	Preston, Lancashire	suburban area	Sainsbury's		575	10	341	16		5574	59
FA-01-A-01	Falkirk, Scotland	town centre	Asda		325	17	305	18		5483	94
MS-01-A-01	Southport, Merseyside	town centre	Safeway		480	11	460	12		5338	96
BC-01-A-03	Reading, Berkshire	freestanding	Safeway		620	9	290	18		5296	47
HW-01-A-01	Malvern, Hereford & Worcester	freestanding	Safeway		450	12	281	19		5217	62
LC-01-A-03	Rawtenstall, Lancashire	town centre	Asda		355	15	260	20		5202	73
HC-01-A-01	Fareham, Hampshire	edge-of-town	Sainsbury's		585	9	263	19		5030	45
GL-01-A-05	Kensington, Gtr London	freestanding	Sainsbury's		249	20	210	23		4869	84
GM-01-A-13	Rochdale, Gtr Manchester	town centre	Morrisons		400	12	128	38		4836	32
LC-01-A-10	Thornton, Lancashire	suburban area	Safeway		562	9	310	16		4831	55
SC-01-A-04	Reigate, Surrey	town centre	Safeway		420	11	387	12		4782	92
ES-01-A-06	Hove, East Sussex	neighbourhood centre	Co-op		350	13	218	21		4650	62
GL-01-A-11	Hatch End, Gtr London	suburban area	Safeway		396	12	181	26		4631	46

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
LN-01-A-01	Grantham, Lincolnshire	town centre	Safeway		483	9	259	17		4371	54
GL-01-A-10	Acton, Gtr London	town centre	Safeway		306	13	295	14		4125	96
GS-01-A-02	Tewkesbury, Gloucestershire	freestanding	Safeway		400	9	154	24		3707	39
KC-01-A-11	Tonbridge & Malling, Kent	town centre	Somerfield		179	17	156	19		2981	87
ES-01-A-04	Eastbourne, East Sussex	neighbourhood centre	Safeway		200	14	164	17		2787	82
LC-01-A-12	Preston, Lancashire	suburban area	E.H Booth		268	10	86	32		2733	32
LC-01-A-07	Blackpool, Lancashire	suburban area	E.H Booth		221	12	105	25		2601	48
GL-01-A-08	Ealing, Gtr London	not known	Waitrose		162	16	168	15		2596	104
SC-01-A-07	Frimley, Surrey	town centre	Somerfield		89	29	136	19		2592	153
ES-01-A-12	Hailsham, East Sussex	town centre	Somerfield		189	13	217	12		2522	115
SA-01-A-01	Troon, Scotland	town centre	Safeway		250	9	237	9		2168	95
LC-01-A-08	Lancaster, Lancashire	suburban area	E.H Booth		113	18	94	21		2010	83
GM-01-A-16	Salford, Gtr Manchester	neighbourhood centre	Netto		40	28	25	45		1115	63

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
WS-01-J-01	Shoreham by Sea, West Sussex	edge-of-town	Texas, Tesco, M&S		1750	13	573	39		22584	33
SL-01-J-01	East Kilbride, Scotland	not known	Halfords Texas, Sainsbury's etc		1205	17	369	54		20079	31
FI-01-J-01	Dunfermline, Scotland	edge-of-town	Asda, Currys etc		905	18	691	23		16000	76
SC-01-J-02	Weybridge, Surrey	commercial zone	Tesco, M&S		1300	9	639	18		11600	49
GM-01-J-07	Middleton, Gtr Manchester	suburban area	Heaton Mills		600	18	161	66		10684	27
KC-01-J-01	Crayford, Kent	town centre	Sainsbury's, Homebase		972	11	591	18		10436	61
GM-01-J-02	Tameside, Gtr Manchester	town centre	Do-It-All, Food Giant		492	14	349	20		6967	71

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GM-01-K-09	Tameside, Gtr Manchester	freestanding	Staples, Carpetworld, B&Q etc		1150	22	338	76		25714	29
SC-01-K-01	Guildford, Surrey	edge-of-town	not known		775	24	568	33		18677	73
LC-01-K-02	Blackburn, Lancashire	edge-of-town	Do-It-All, MFI, Currys etc		804	22	152	117		17837	19
DC-01-K-06	Poole, Dorset	freestanding	Courts, MFI, Texas, Comet, Homebase etc		852	20	416	42		17340	49
GM-01-K-02	Oldham, Gtr Manchester	freestanding	WH Smith, Do-It-All etc		616	27	65	260		16926	11
MS-01-K-01	Southport, Merseyside	edge-of-town	Halfords, Do-It-All, MFI etc		661	22	111	132		14642	17
GM-01-K-06	Ancoats, Gtr Manchester	town centre	Texas, Argos, Childrens' World etc		514	26	180	74		13299	35
DC-01-K-05	Poole, Dorset	freestanding	Magnet, Atlantis, Carpet Right etc		648	19	79	157		12387	12
LC-01-K-03	Lancaster, Lancashire	commercial zone	not known		472	22	74	138		10219	16
GM-01-K-05	Stockport, Gtr Manchester	town centre	MFI, Wickes, Halfords etc		366	27	157	63		9816	43
GM-01-K-03	Rochdale, Gtr Manchester	town centre	MFI, Comet, Halfords, Do-It-All		361	24	117	74		8687	32
WS-01-K-02	Bognor Regis, West Sussex	edge-of-town	B&Q, KwikFit, etc		336	24	70	115		8071	21
BC-01-K-03	Reading, Berkshire	commercial zone	Courts etc		330	23	208	37		7645	63
BC-01-K-02	Reading, Berkshire	industrial zone	Furniture City, Furniture Land, Maples		320	20	27	240		6470	8
LC-01-K-04	Preston, Lancashire	town centre	Homebase, Sports Max		326	19	164	38		6259	50
SC-01-K-04	Weybridge, Surrey	freestanding	Mothercare, Argos, Powerhouse		297	12	100	35		3460	34
RC-01-K-02	Pontypridd, Wales	edge-of-town	Allied Carpets, Poundstretcher		360	9	47	67		3146	13

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
SC-01-K-01	Guildford, Surrey	edge-of-town	not known		775	24	733	25		18677	95
LC-01-K-02	Blackburn, Lancashire	edge-of-town	Do-It-All, MFI, Currys etc		804	22	275	65		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	Southport, Merseyside	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	19	149	83		12387	23
LC-01-K-03	Lancaster, Lancashire	commercial zone	not known		472	22	150	68		10219	32
GM-01-K-05	Stockport, Gtr Manchester	town centre	MFI, Wickes, Halfords etc		366	27	259	38		9816	71
GM-01-K-03	Rochdale, Gtr Manchester	town centre	MFI, Comet, Halfords, Do-It-All		361	24	191	45		8687	53
WS-01-K-04	Sompting, West Sussex	freestanding	B7Q, Halfords		428	15	120	55		6555	28
LC-01-K-04	Preston, Lancashire	town centre	Homebase, Sports Max		326	19	171	37		6259	52
SC-01-K-04	Weybridge, Surrey	freestanding	Mothercare, Argos, Powerhouse		297	12	217	16		3460	73

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
HC-01-D-01	Southampton, Hampshire	industrial zone	B&Q		512	18	145	62		8993	28
LE-01-D-01	Leicester, Leicestershire	town centre	B&Q		424	20	143	60		8528	34
DC-01-D-02	Poole, Dorset	edge-of-town	B&Q		360	22	193	42		8027	54
HC-01-D-02	Havant, Hampshire	freestanding	B&Q		384	20	338	23		7618	88
SC-01-D-01	Leatherhead, Surrey	not known	B&Q		155	26	67	60		4000	43

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

site details:					parking supply:		parking demand:					
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.	
HC-01-D-01	Southampton, Hampshire	industrial zone	B&Q		512	18	296	30		8993	58	
LE-01-D-01	Leicester, Leicestershire	town centre	B&Q		424	20	251	34		8528	59	
DC-01-D-02	Poole, Dorset	edge-of-town	B&Q		360	22	315	25		8027	88	
HC-01-D-02	Havant, Hampshire	freestanding	B&Q		384	20	281	27		7618	73	
SC-01-D-01	Leatherhead, Surrey	not known	B&Q		155	26	138	29		4000	89	

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GM-01-E-01	Burnage, Gtr Manchester	suburban area	B&Q		200	21	42	100		4181	21
LC-01-E-01	Nelson, Lancashire	edge-of-town	B&Q		225	17	52	73		3809	23
ES-01-E-07	Worthing, West Sussex	commercial zone	Do-It-All		180	20	69	52		3605	38
CB-01-E-01	Kendal, Cumbria	edge-of-town	Great Mills		150	24	27	131		3530	18
SC-01-E-01	Reigate, Surrey	town centre	Texas		80	40	123	26		3160	154
LC-01-E-03	Preston, Lancashire	neighbourhood centre	Wickes		131	21	27	100		2702	21
FI-01-E-01	Kirkcaldy, Scotland	suburban area	B&Q		108	21	52	44		2313	48
LC-01-E-02	Rawtenstall, Lancashire	town centre	Do-It-All		120	19	51	44		2230	43
ES-01-E-04	Bexhill, East Sussex	edge-of-town	Do-It-All		70	23	19	83		1579	27

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
KC-01-E-05	Dartford, Kent	suburban area	Texas		136	31	99	42		4180	73
LC-01-E-01	Nelson, Lancashire	edge-of-town	B&Q		225	17	79	48		3809	35
ES-01-E-07	Worthing, West Sussex	commercial zone	Do-It-All		180	20	41	88		3605	23
CB-01-E-01	Kendal, Cumbria	edge-of-town	Great Mills		150	24	92	38		3530	61
SC-01-E-01	Reigate, Surrey	town centre	Texas		80	40	50	63		3160	63
LC-01-E-03	Preston, Lancashire	neighbourhood centre	Wickes		131	21	37	73		2702	28
LC-01-E-02	Rawtenstall, Lancashire	town centre	Do-It-All		120	19	60	37		2230	50
ES-01-E-04	Bexhill, East Sussex	edge-of-town	Do-It-All		70	23	40	39		1579	57

Table B11: A2 Offices (weekday parking demand)

		parking supply:		parking demand:				
company		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
Barclays Bank HQ		1118	36	959	42		40500	86
First Data Resources		700	36	743	34		25469	106
Frizzell Insurance (Broking)		305	48	253	58		14643	83
Refuge Assurance Insurance		420	33	434	32		14000	103
Woolwich Admin Centre		300	31	192	48		9200	64
3 insurance companies		86	71	92	66		6080	107
Ernst & Young		179	17	104	29		3066	58
Halifax Building Society HQ		67	25	43	39		1663	64
Royal Life Financial Planning		8	53	10	43		427	125

Table B12: B1 Offices (weekday parking demand)

site details:					parking supply:		parking demand:				
site reference	site address	site location	company		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
AV-02-A-01	Bristol, Avon	edge-of-town	Gateway Corporate HQ		1000	32	799	39		31500	80
DC-02-A-07	Poole, Dorset	freestanding	GPT/Siemens		1253	22	739	38		27900	59
SC-02-A-08	Kingswood, Surrey	suburban area	Legal & General		1550	17	1121	23		25657	72
GM-02-A-04	Manchester, Gtr Manchester	edge-of-town	Manchester International Office Centre		850	21	623	29		18208	73
GM-02-A-06	Rochdale, Gtr Manchester	suburban area	Co-op HQ		515	34	501	35		17500	97
GM-02-A-03	Manchester, Gtr Manchester	edge-of-town	Seimens Northern HQ		600	25	356	42		15000	59
SR-02-A-01	Stirling, Scotland	town centre	Central Regional Council		370	35	576	23		13057	156
GM-02-A-01	Bolton, Gtr Manchester	industrial zone	Norweb		190	63	164	73		11958	86
FI-02-A-01	Dunfermline, Scotland	suburban area	British Sky Broadcasting		500	17	357	23		8361	71
EB-02-A-01	Edinburgh,Scotland	suburban area	Forestry Commission HQ		127	62	92	86		7897	72
GM-02-A-02	Stockport, Gtr Manchester	freestanding	Hewlett Packard		350	21	246	30		7491	70
WS-02-A-02	Worthing, West Sussex	freestanding	Southern Water		285	22	289	22		6325	101
GL-02-A-08	Ealing, Gtr London	industrial zone	NEC		90	67	74	82		6039	82
GL-02-A-09	Ealing, Gtr London	industrial zone	B. Elliott		85	66	71	79		5633	84
DC-02-A-01	Bournemouth, Dorset	edge-of-town	Wessex Fields		264	21	174	32		5585	66
SC-02-A-09	Claygate, Surrey	suburban area	CPC Foods Ltd		262	21	291	19		5574	111
GL-02-A-16	Ealing, Gtr London	town centre	London Borough of Ealing (BRETS)		97	48	99	47		4677	102
LC-02-A-03	Preston, Lancashire	development zone	DSS Offices		189	20	192	20		3750	102
GL-02-A-14	Ealing, Gtr London	commercial zone	TVSMS		110	31	138	25		3416	125
IW-02-A-01	Carisbrooke, Isle of Wight	edge-of-town	NFI Electronics Ltd		80	42	47	72		3391	59
DC-02-A-05	Poole, Dorset	town centre	Link House Publishing		109	30	113	29		3283	104
LC-02-A-04	Preston, Lancashire	development zone	Northern British Housing Association		142	23	97	34		3252	68
SC-02-A-07	West Ewell, Surrey	freestanding	Surrey County Council		186	16	179	16		2943	96
EB-02-A-02	Edinburgh,Scotland	edge-of-town	Wimpey		122	23	96	29		2787	79
DC-02-A-03	Poole, Dorset	town centre	HM Customs		84	23	50	39		1936	60
LC-02-A-05	Chorley, Lancashire	neighbourhood centre	Amec Civil Engineering		80	23	53	35		1859	66
EB-02-A-05	Edinburgh,Scotland	edge-of-town	Adobe House		82	23	38	49		1858	46
GL-02-A-15	Ealing, Gtr London	commercial zone	Chelsea House		157	11	107	16		1708	68
EB-02-A-04	Edinburgh,Scotland	edge-of-town	Scott House		53	26	38	37		1394	72
BD-02-A-02	Aspley Heath, Bedfordshire	freestanding	Shanks & McEwans		80	16	109	12		1296	136
EB-02-A-03	Edinburgh,Scotland	edge-of-town	Telford House		34	27	25	37		929	74
GL-02-A-12	Ealing, Gtr London	commercial zone	IT Lab		15	56	10	85		845	67
GL-02-A-11	Ealing, Gtr London	commercial zone	NEC UK HQ		7	61	12	36		427	171

Table B13: B1 Business Parks (weekday parking demand)

site details:					parking supply:		parking demand:					
site reference	site address	site location	company or business park name	gfa (sq m)	parking spaces	gfa per space	maximum parking accum.	gfa per max. space used			gfa (sq m)	% of supply utilised at max.
GL-02-B-06	Ealing, Gtr London	industrial zone	Glaxo Wellcome Medical Research	74284	1080	69	894	83			74284	83
BC-02-B-07	Reading, Berkshire	industrial zone	Digital Equipment Company Ltd	38000	1183	32	1116	34			38000	94
EB-02-B-01	Edinburgh, Scotland	edge-of-town	Business Park, Edinburgh	25060	623	40	619	40			25060	99
BC-02-B-06	Newbury, Berkshire	industrial zone	Sony UK Ltd	24866	190	131	172	145			24866	91
SC-02-B-02	Sheerwater, Woking, Berkshire	edge-of-town	Woking Business Park	23000	600	38	450	51			23000	75
SC-02-B-01	Leatherhead, Surrey	town centre	Mole Business Park	16000	700	23	397	40			16000	57
GM-02-B-01	Urmston, Gtr Manchester	freestanding	Carrington Business Park	12077	500	24	371	33			12077	74
BC-02-B-05	Bracknell, Berkshire	industrial zone	Communications Ltd	9940	368	27	346	29			9940	94
BC-02-B-08	Wokingham, Berkshire	freestanding	Hewlett Packard Ltd	9290	362	26	240	39			9290	66
HB-02-B-01	Scunthorpe, Humberside	suburban area	Citizen Manufacturing (UK) Ltd	7300	180	41	144	51			7300	80
EB-02-B-02	Edinburgh, Scotland	suburban area	Business Park, Edinburgh	5350	122	44	113	47			5350	93
GM-02-B-02	Stockport, Gtr Manchester	suburban area	The South Gate Centre	4823	200	24	172	28			4823	86
LC-02-B-02	Preston, Lancashire	development zone	Navigation Business Village	3450	126	27	104	33			3450	83

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	company or industrial estate name		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
HB-02-D-03	Scunthorpe, Humberside	edge-of-town	Ericssons Ltd		382	35	568	23		13200	149
SC-02-C-02	Weybridge, Surrey	freestanding	Taylor & Penton		168	53	90	98		8864	54
GM-02-D-01	Oldham, Gtr Manchester	edge-of-town	Acorn Centre		200	41	132	63		8285	66
EB-02-D-01	Edinburgh, Scotland	suburban area	Leith Industrial Estate		77	41	69	46		3154	90

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

site details:					parking supply:		parking demand:		
site reference	site address	site location	company	gfa (sq m)	parking spaces	gfa per space	maximum parking accum.	gfa per max. space used	% of supply utilised at max.
GL-02-F-01	Ealing, Gtr London	commercial zone	John Lewis Partnership	12463	80	156	216	58	270
GM-02-F-01	Wigan, Gtr Manchester	commercial zone	Asda Distribution Centre	8848	120	74	114	78	95
GL-02-F-11	Ealing, Gtr London	commercial zone	Glaxo	7900	41	193	52	152	127
GL-02-F-12	Ealing, Gtr London	commercial zone	Pioneer High Fidelity (GB) Ltd	7525	200	38	118	64	59
SC-02-F-01	Weybridge, Surrey	freestanding	Courage	7085	141	50	134	53	95
GL-02-F-05	Ealing, Gtr London	industrial zone	Entonia Wines	7000	40	175	43	163	108
GL-02-F-02	Ealing, Gtr London	industrial zone	Allport Freight Ltd	6700	26	258	27	248	104
BC-02-F-04	Reading, Berkshire	industrial zone	Jacobs Biscuits	6533	31	211	18	363	58
GL-02-F-03	Ealing, Gtr London	industrial zone	Carlsberg	5000	30	167	29	172	97
BC-02-F-03	Bracknell, Berkshire	industrial zone	Christian Salvesen	4590	72	64	50	92	69
GL-02-F-08	Ealing, Gtr London	industrial zone	Expandite Ltd	3900	20	195	28	139	140
GL-02-F-04	Ealing, Gtr London	industrial zone	Ingram Entertainment plc	3000	44	68	45	67	102
GI-02-F-10	Ealing, Gtr London	commercial zone	Holmes Valves	2787	25	111	9	310	36
SC-02-G-02	Weybridge, Surrey	freestanding	TNT Parcel Distribution	2304	152	15	93	25	61
GL-02-F-09	Ealing, Gtr London	commercial zone	Cables & Flexibles	1420	20	71	20	71	100
GL-02-F-07	Ealing, Gtr London	industrial zone	Oskar Lapp Ltd	1393	22	63	18	77	82
GL-02-F-06	Ealing, Gtr London	industrial zone	Grosfilex (UK) Ltd	1000	6	167	14	71	233

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	company		parking spaces	gfa per space	maximum parking accum.	gfa per max. space used		gfa (sq m)	% of supply utilised at max.
GL-02-E-05	Ealing, Gtr London	commercial zone	Clothing Retailers		200	57	155	74		11495	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	45
GL-02-E-03	Ealing, Gtr London	commercial zone	Milupa		10	105	16	65		1045	160
GL-02-E-02	Ealing, Gtr London	commercial zone	Mecalux		6	158	7	136		950	117

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	seats per space	maximum parking accum.	seats per max. space used		seats	% of supply utilised at max.
KC-07-A-01	Strood, Kent	edge-of-town	Virgin		590	4	542	4		2100	92
LC-07-A-02	Preston, Lancashire	development zone	UCI		686	3	451	4		2020	66
BU-07-A-01	High Wycombe, Buckinghamshire	edge-of-town	UCI		685	3	220	8		1748	32

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

site details:					parking supply:		parking demand:				
site reference	site address	site location	operator		parking spaces	seats per space	maximum parking accum.	seats per max. space used		seats	% of supply utilised at max.
KC-07-A-01	Strood, Kent	edge-of-town	Virgin		590	4	464	5		2100	79
LC-07-A-02	Preston, Lancashire	development zone	UCI		686	3	549	4		2020	80
BU-07-A-01	High Wycombe, Buckinghamshire	edge-of-town	UCI		685	3	312	6		1748	46

APPENDIX A

Time-series Data

APPENDIX A

Time-series Data

APPENDIX A

Time-series Data

APPENDIX B

Parking Accumulation Data

JMP CONSULTANTS LTD Consulting Civil, Structural & Transportation Engineers

APPENDIX B

Parking Accumulation Data

APPENDIX B

Parking Accumulation Data

APPENDIX A

Time-series Data

APPENDIX B

Parking Accumulation Data

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

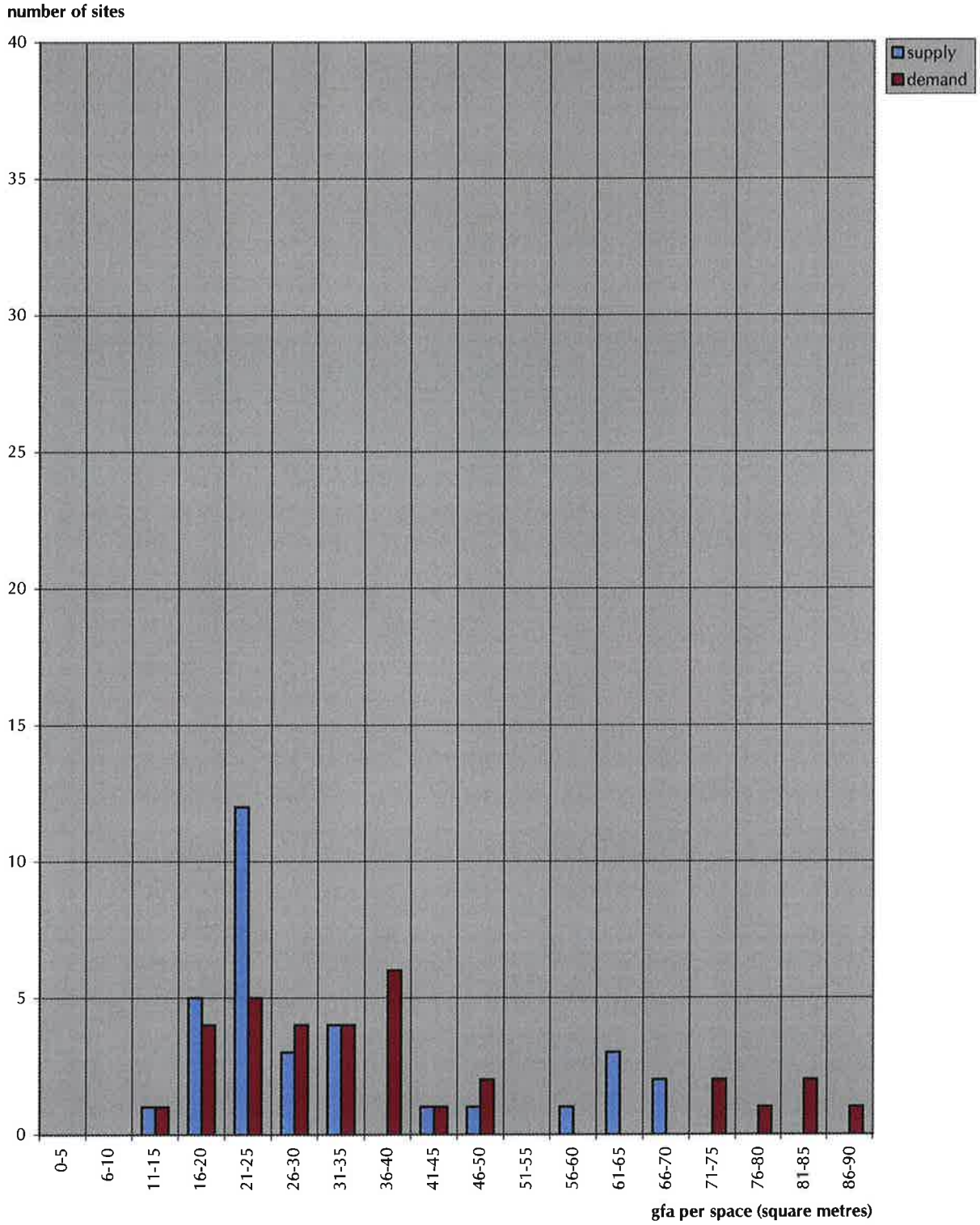


Figure 4.20
Comparison of supply and peak demand gross floor area per parking space Foodstores on Saturdays

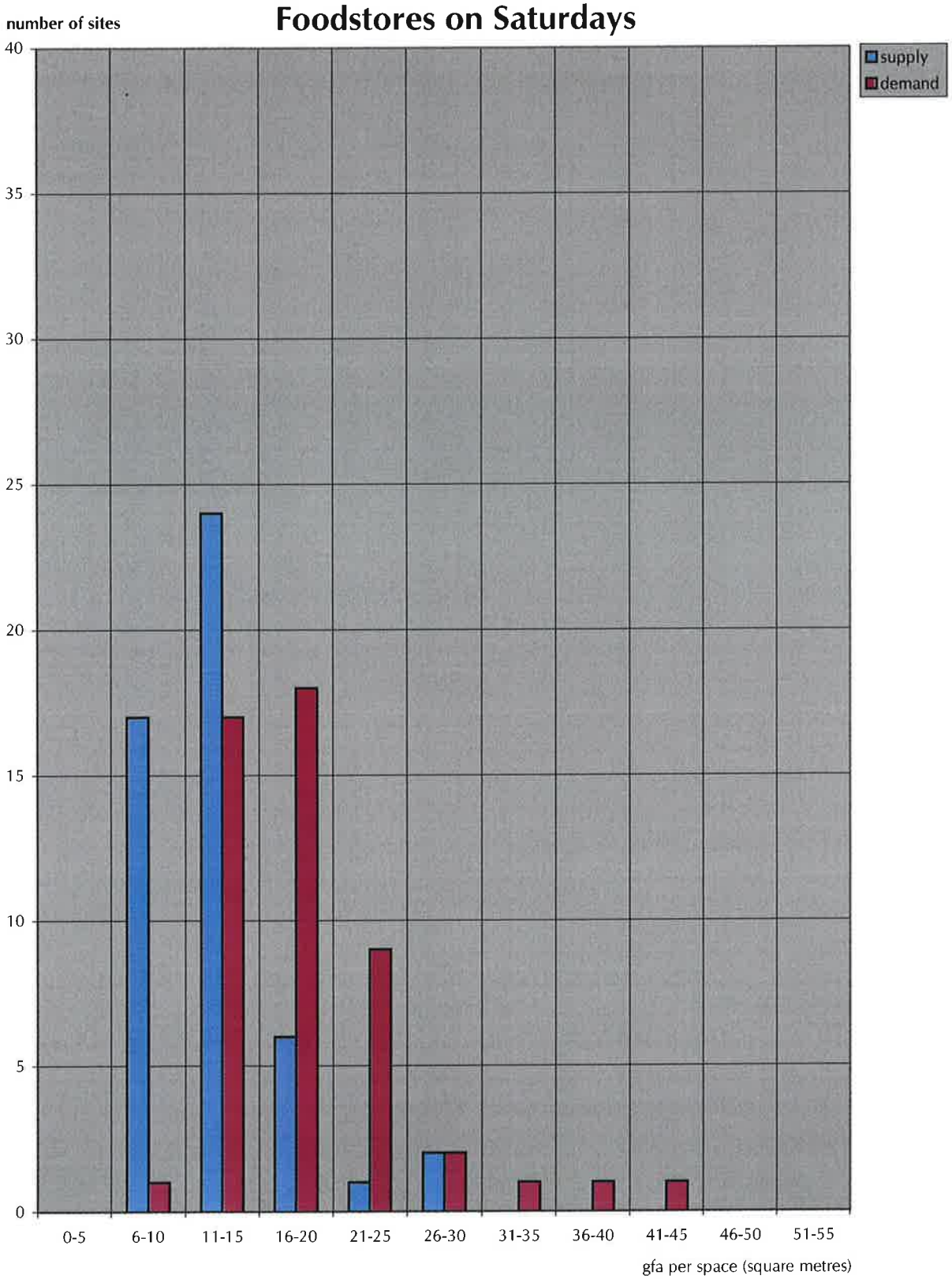


Figure 3.3
Time-series analysis of trip rates by location (foodstores)

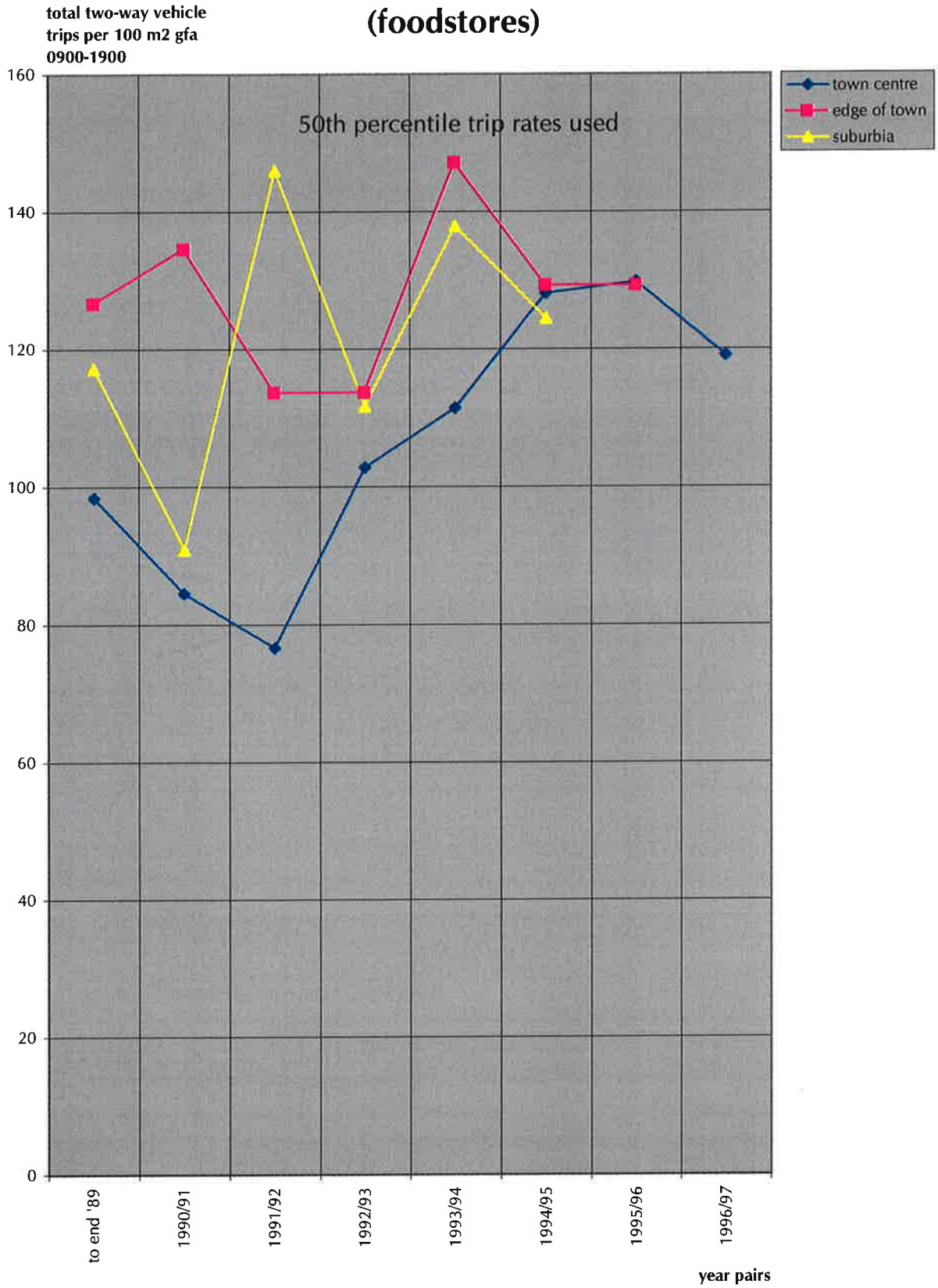


Figure 3.2
Time-series analysis of trip rates by region (foodstores)

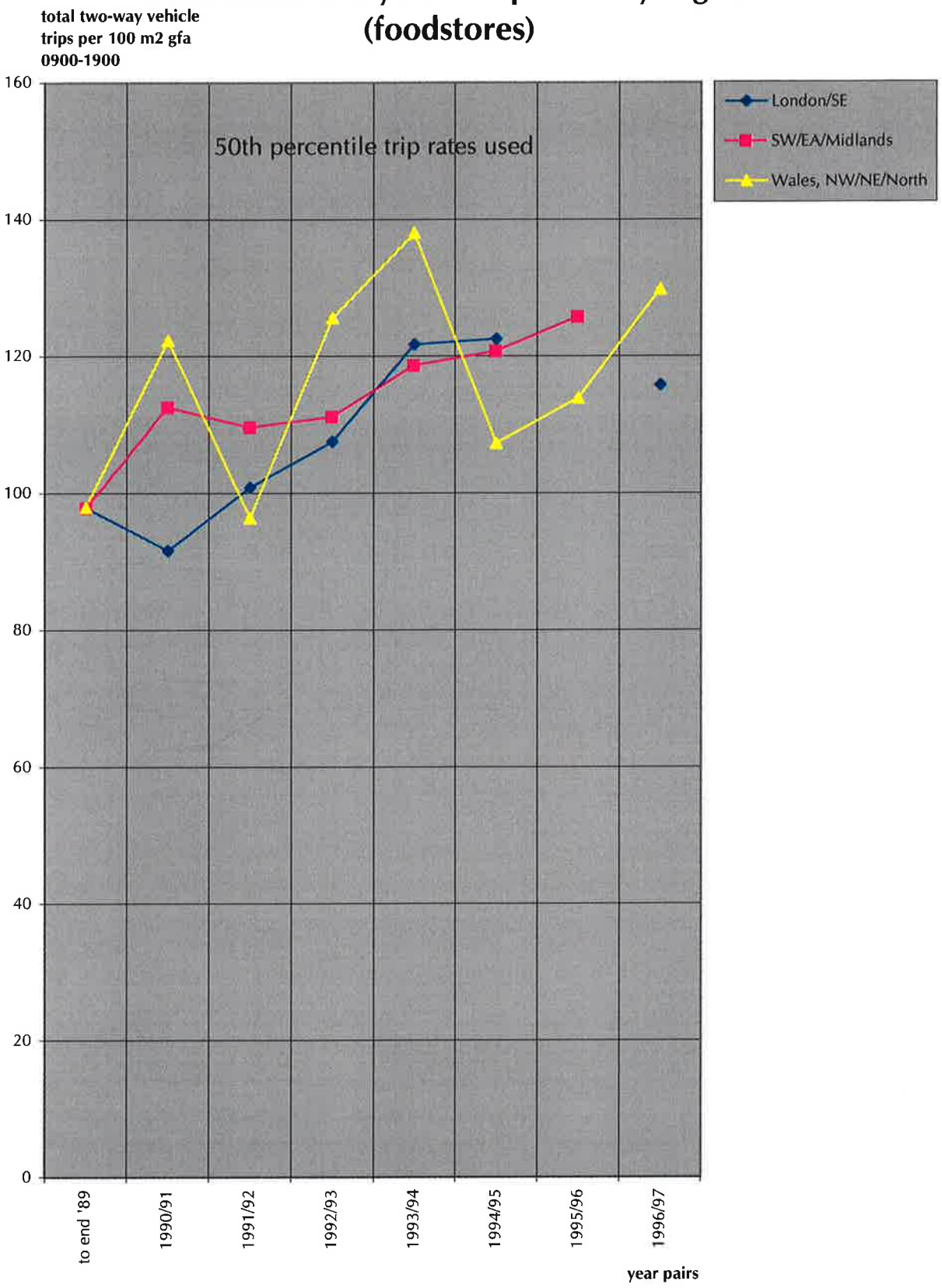


Figure 3.1
Time-series analysis of trip rates

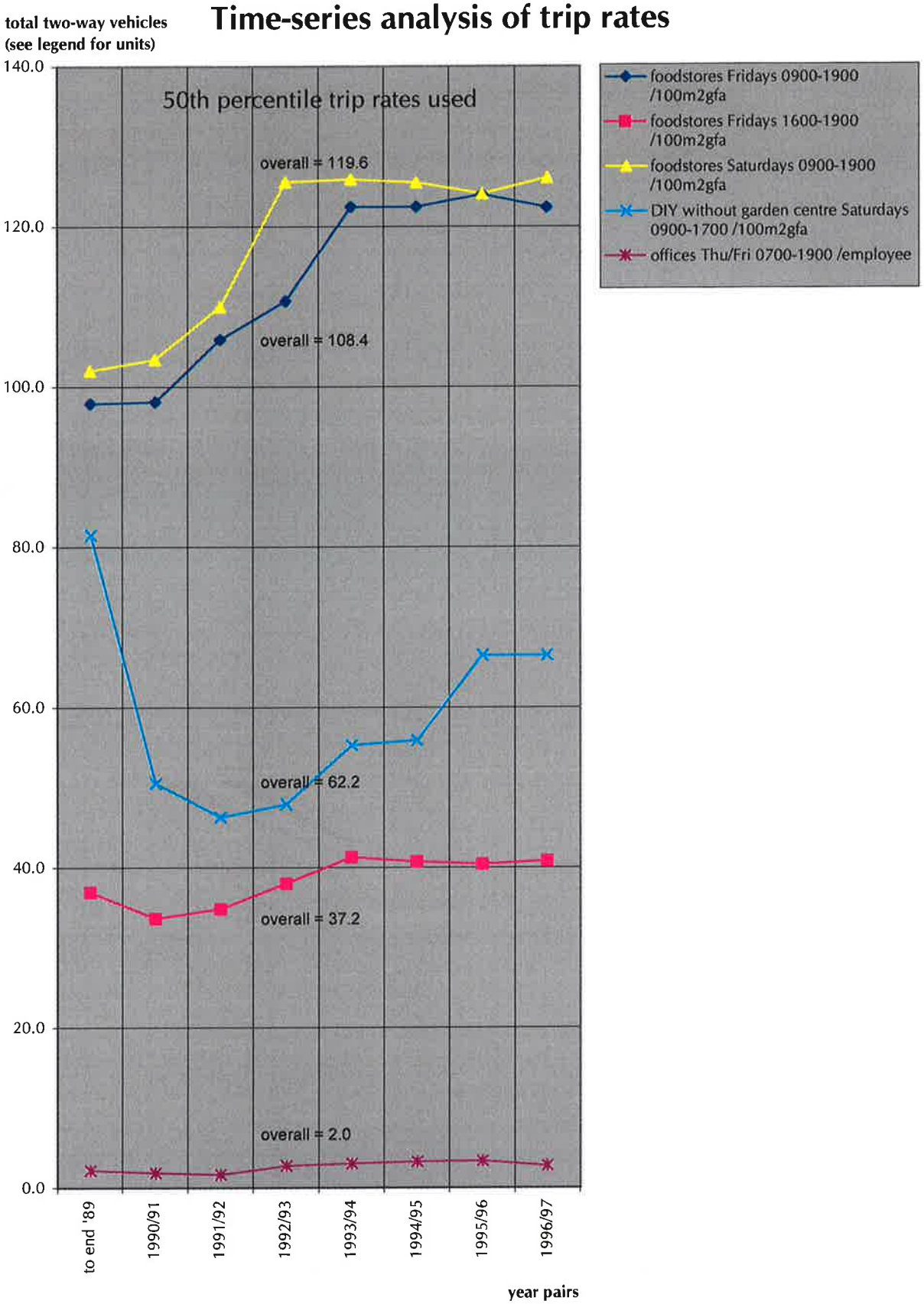


Figure 2.6(b)
Sales density for leading grocers at 1996/97 prices
(Source: Retail Rankings 1999, Retail Intelligence)

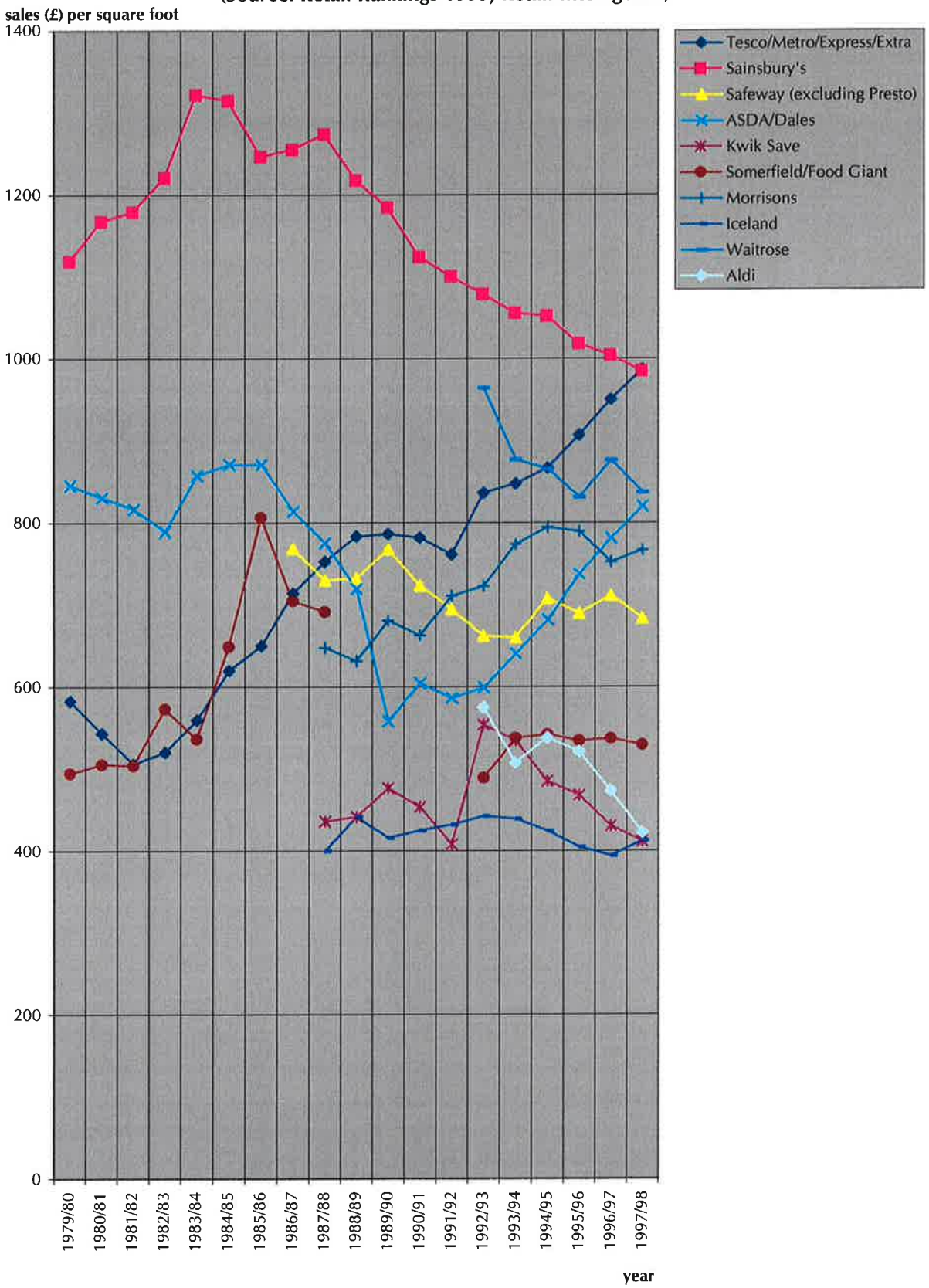


Figure 2.6(a)
Sales density for leading grocers at current prices
(Source: Retail Rankings 1999, Retail Intelligence)

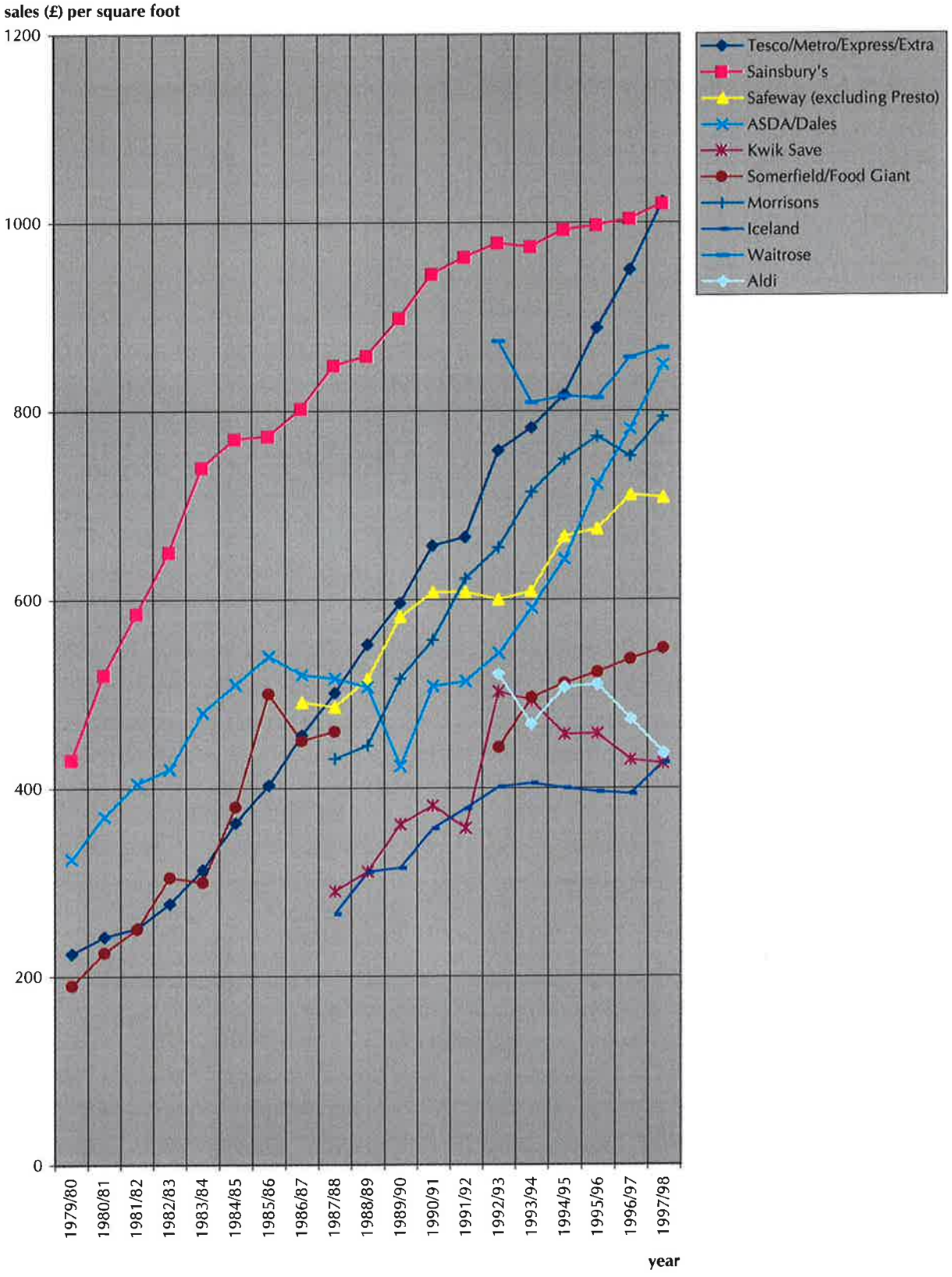


Figure 2.5
Net margins of leading grocers
(Source: Retail Rankings 1999, Retail Intelligence)

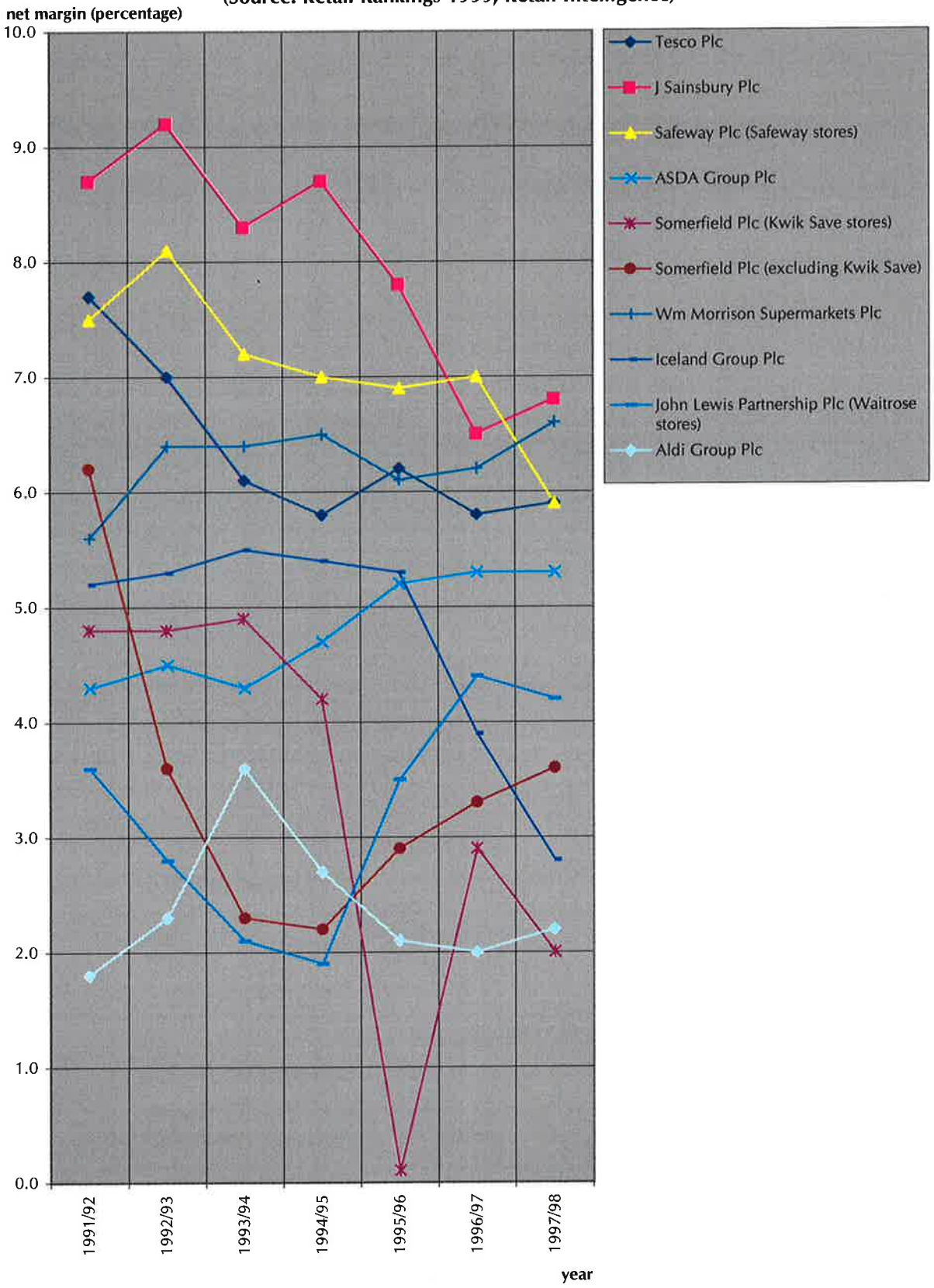


Figure 2.4
Average outlet size of leading grocers

(Source: Retail Rankings 1999, Retail Intelligence)

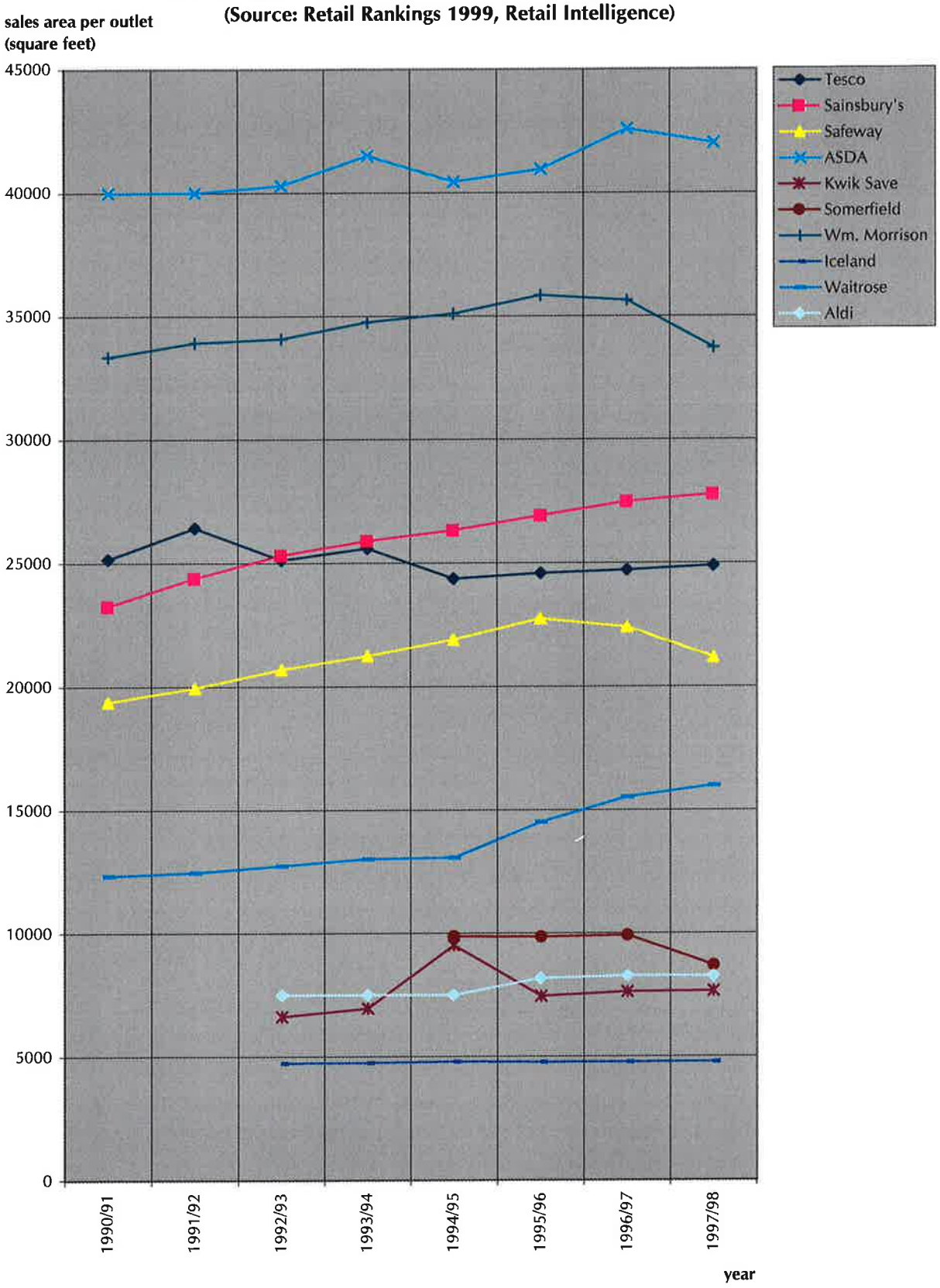


Figure 2.3
Petrol forecourt developments at leading grocers
(Source: Retail Rankings 1999, Retail Intelligence)

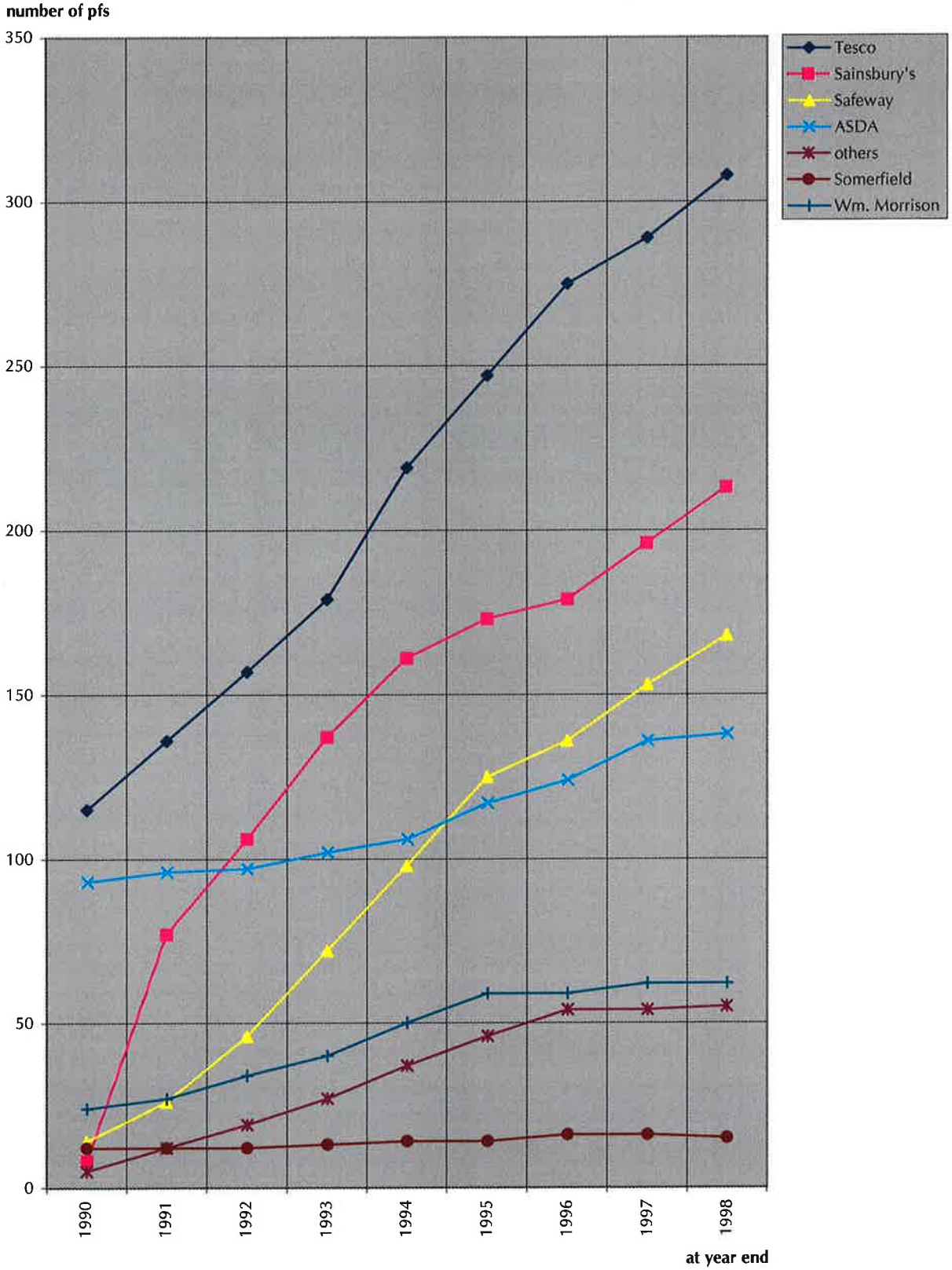


Figure 2.2
Sales density for leading non-food retailers at constant prices

(Source: Retail Rankings 1999, Retail Intelligence)

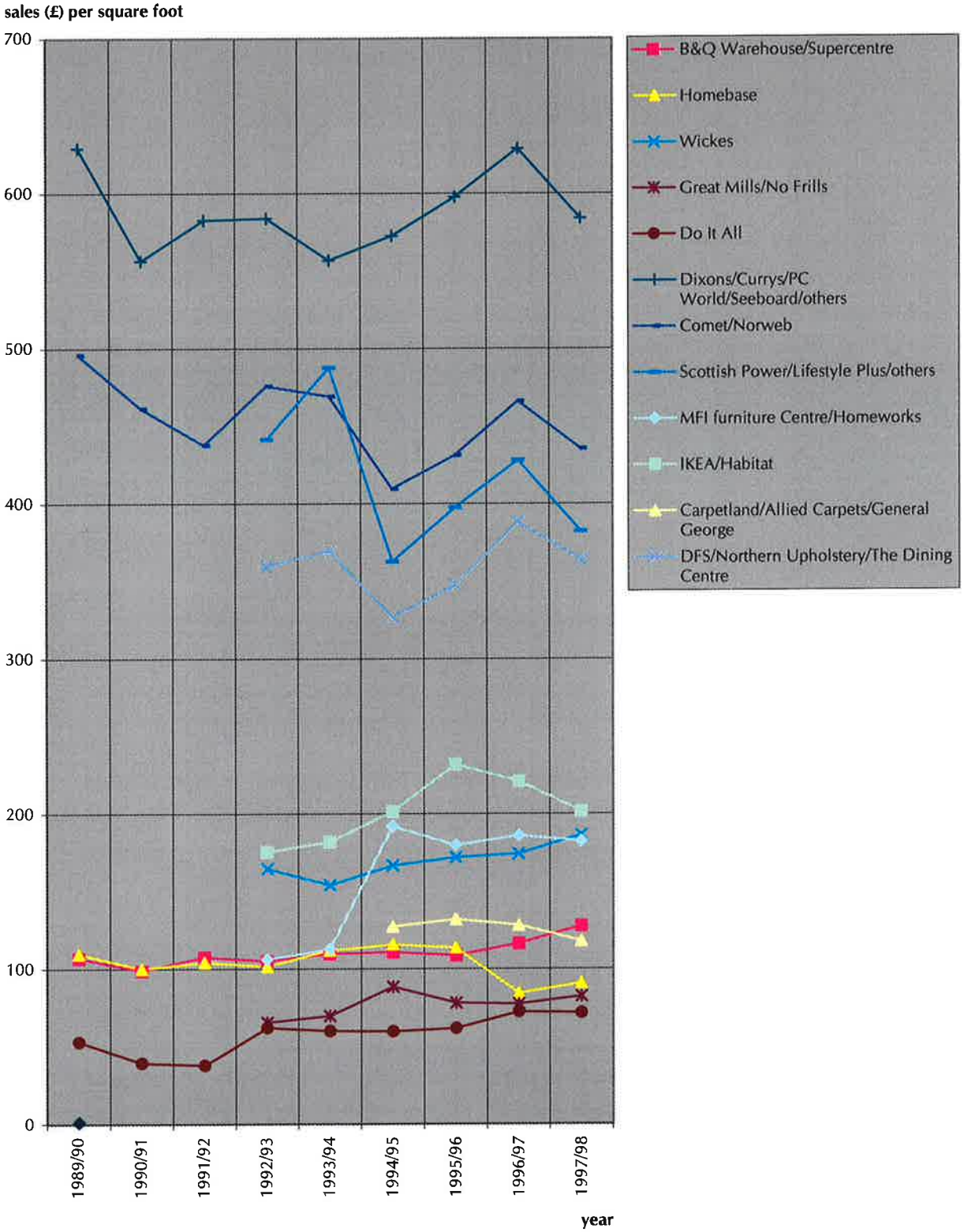


Figure 2.1
Consumer expenditure at 1995 prices: selected items

(Source: Office for National Statistics)

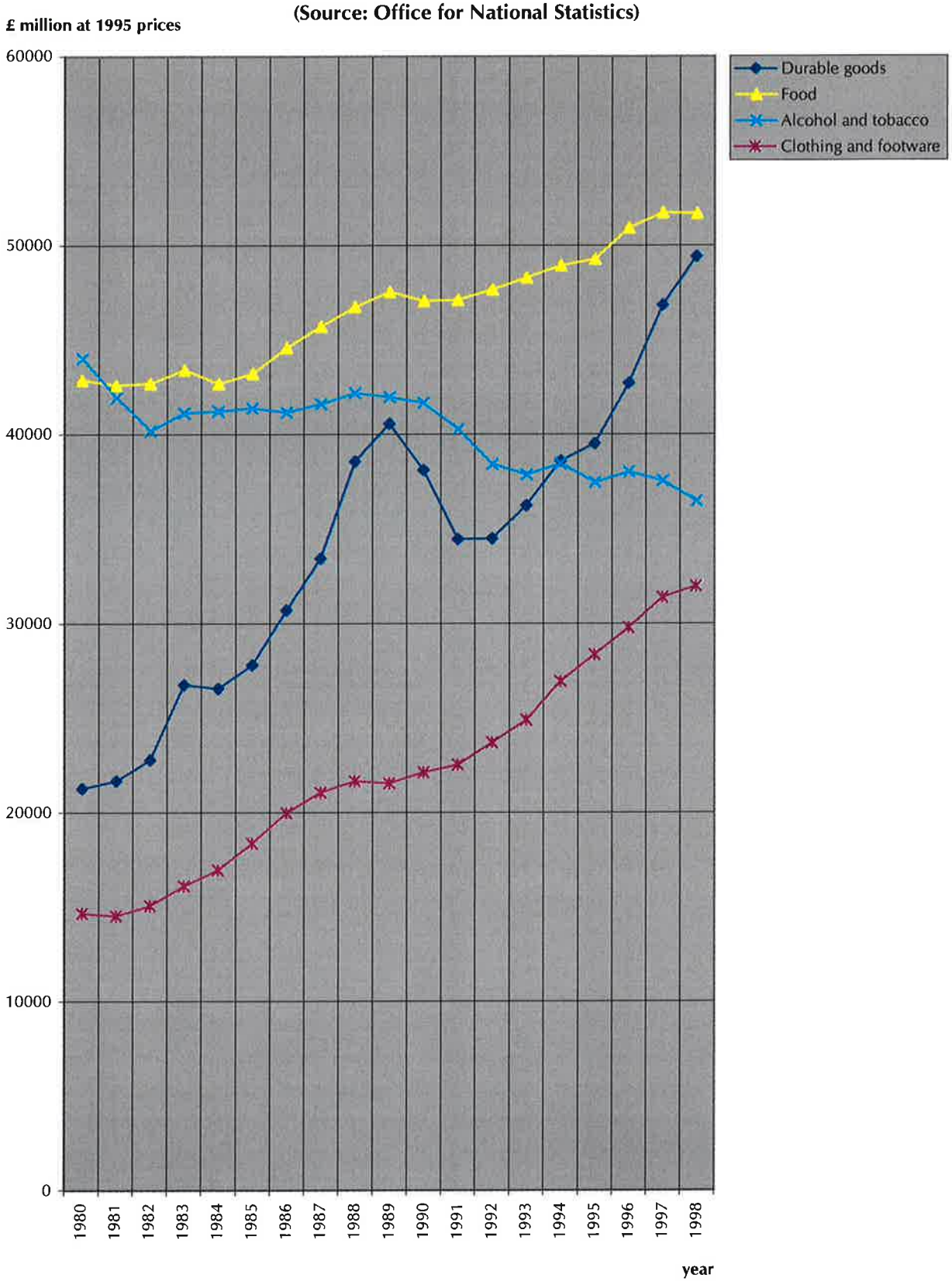


Figure 4.21
Comparison of supply and peak demand gross floor area per parking space B1 Offices on weekdays

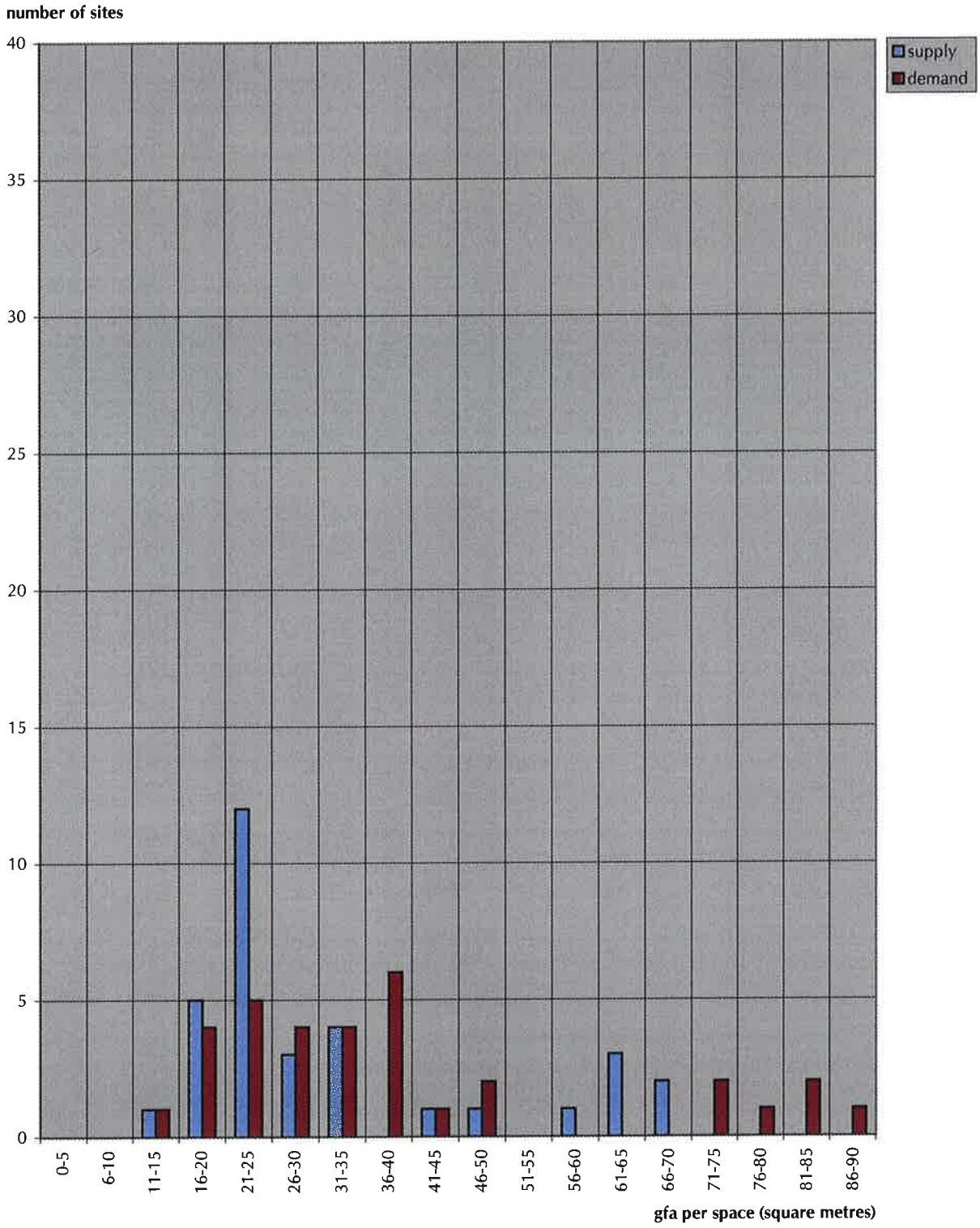


Figure 4.20
Comparison of supply and peak demand gross floor area per parking space Foodstores on Saturdays

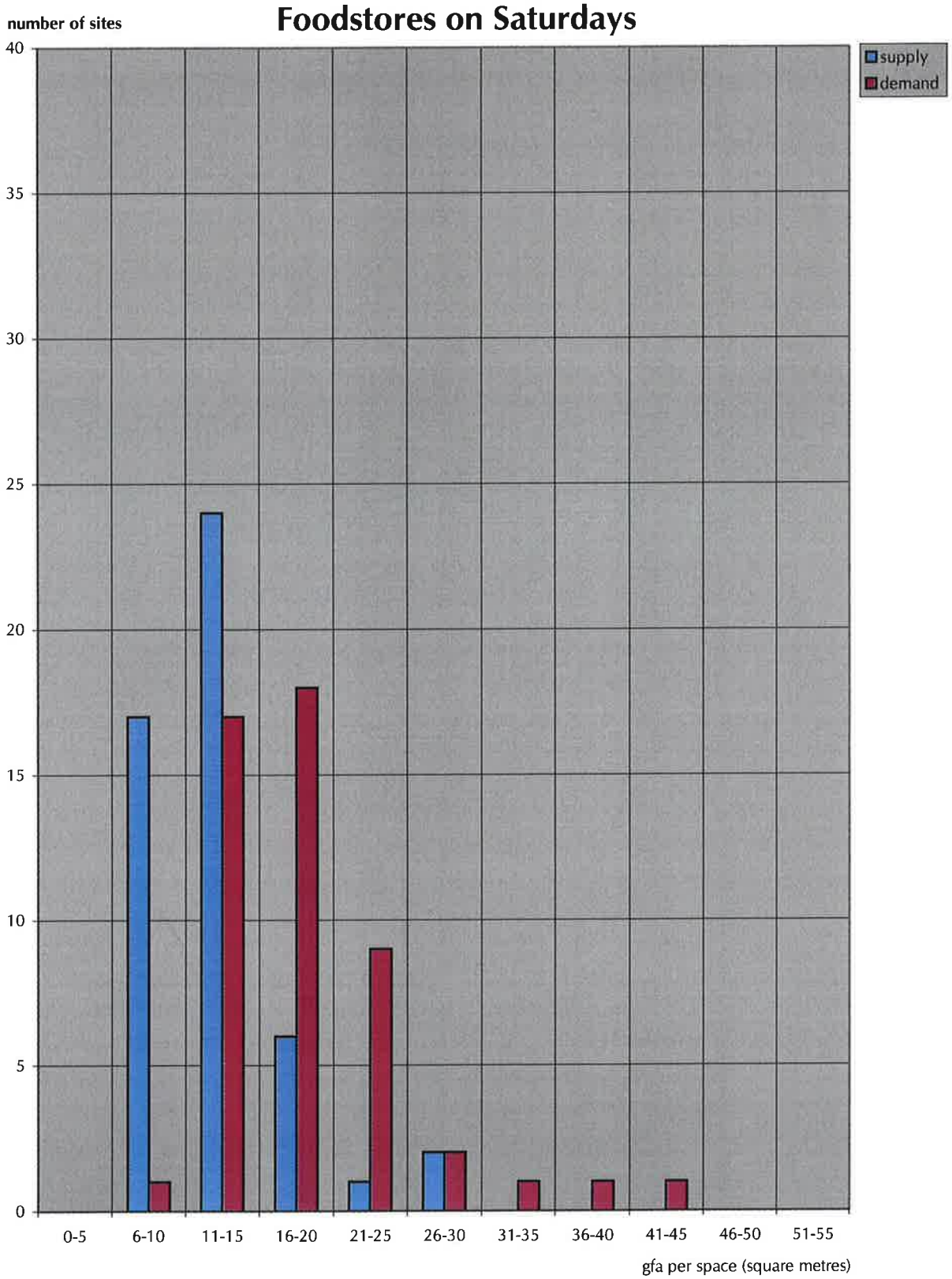


Figure 4.19
Comparison of supply and peak demand gross floor area per parking space Foodstores on weekdays

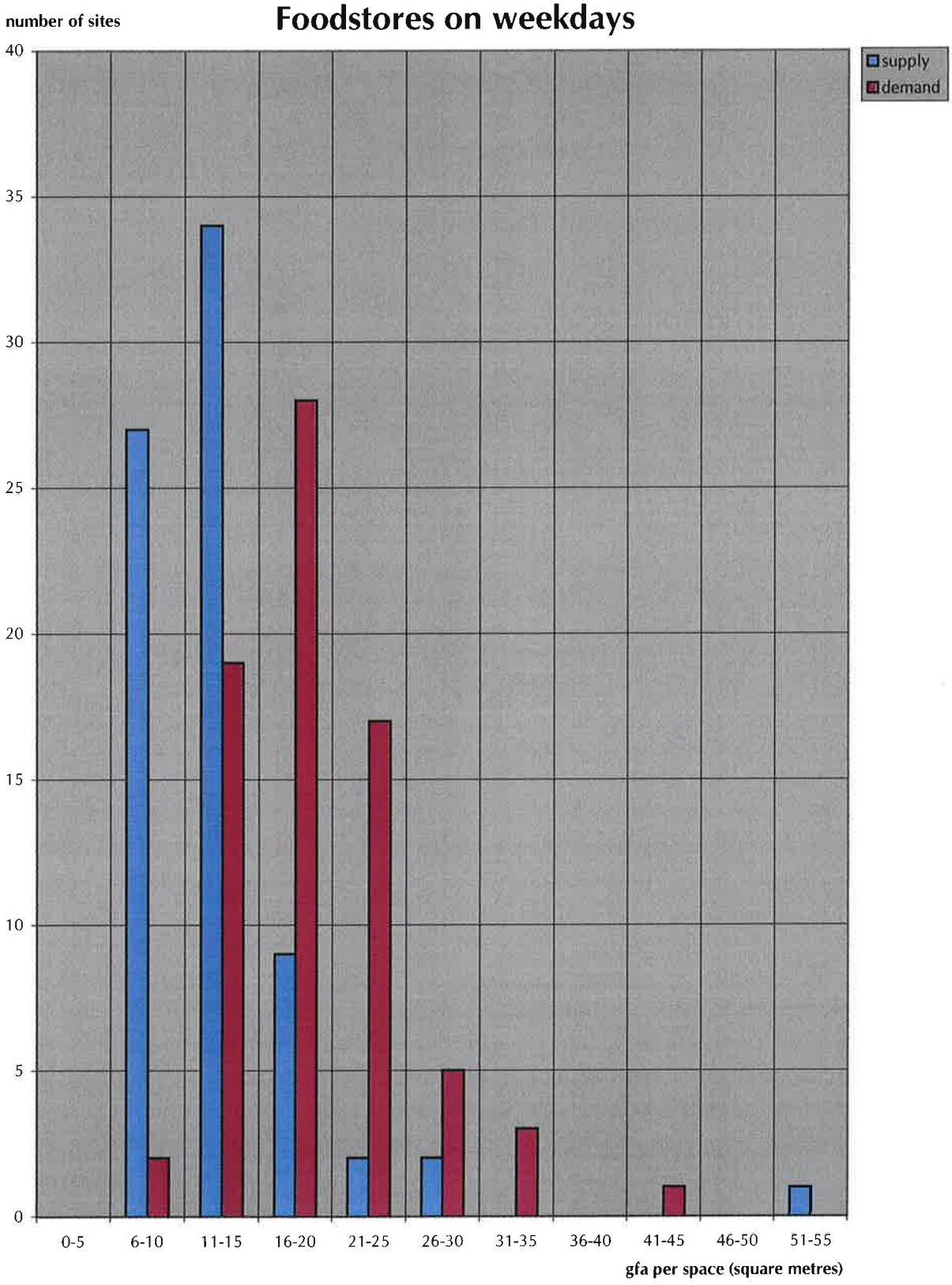


Figure 3.3
Time-series analysis of trip rates by location (foodstores)

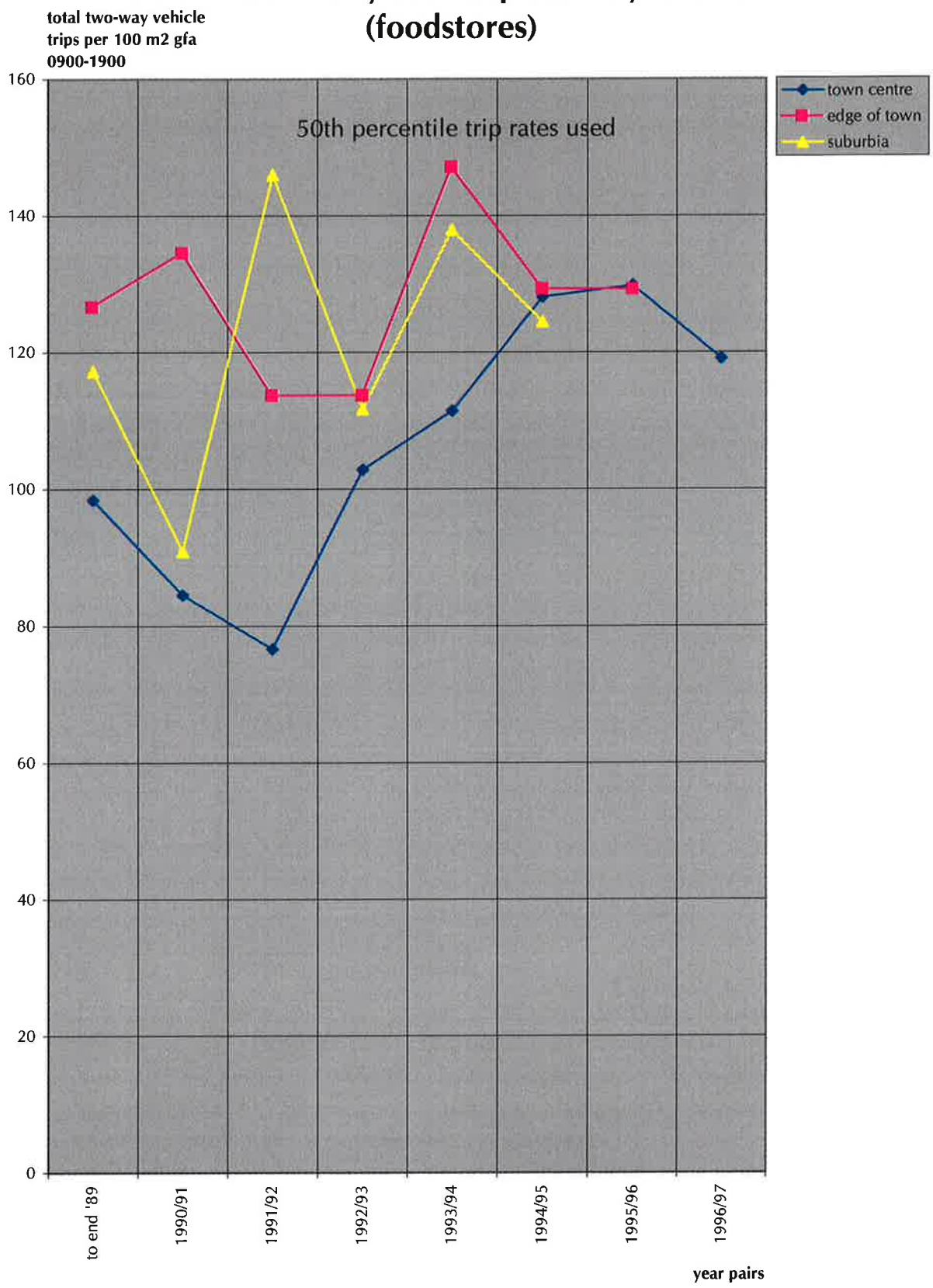
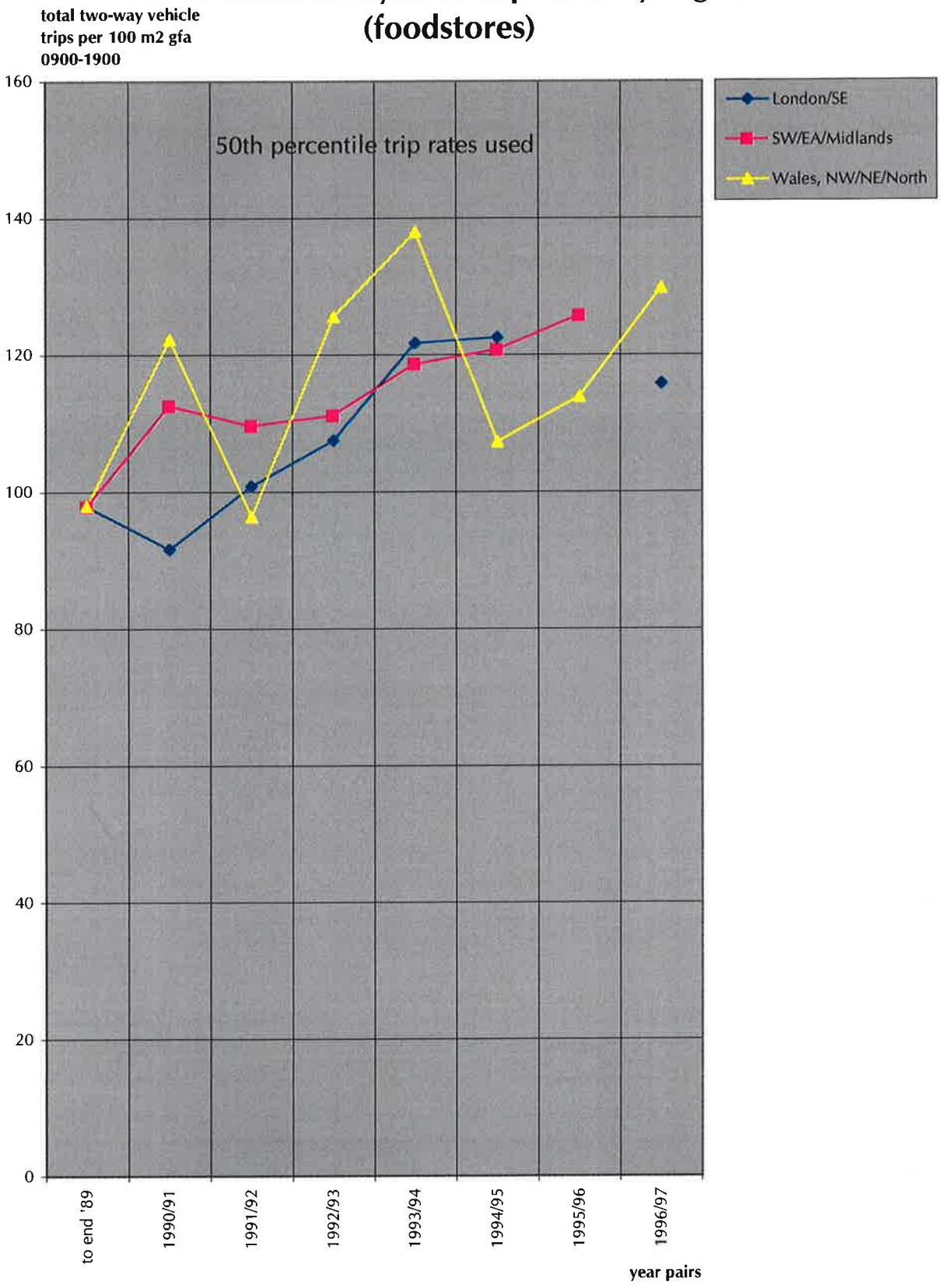


Figure 3.2
Time-series analysis of trip rates by region (foodstores)



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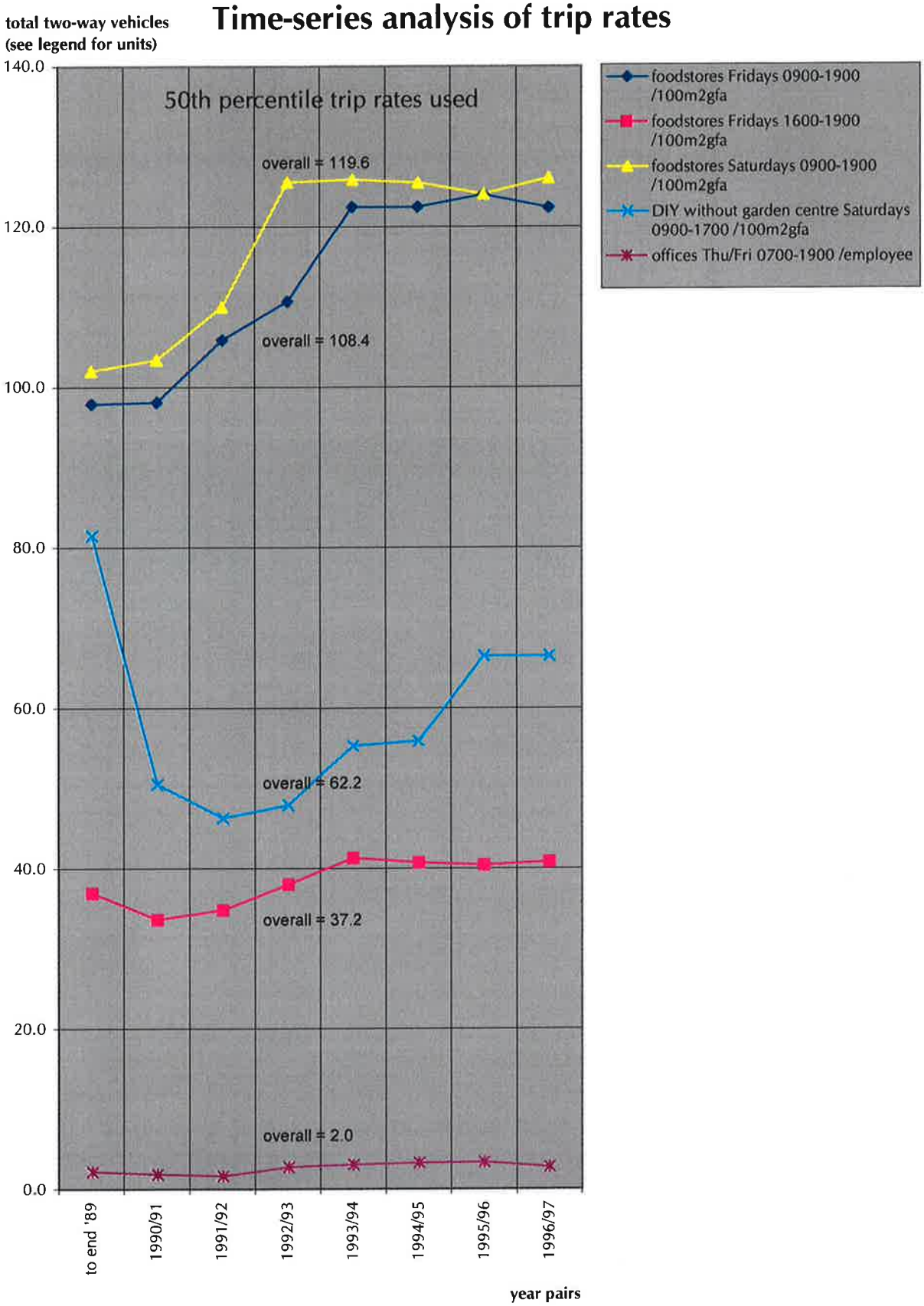

Figure 2.6(b)
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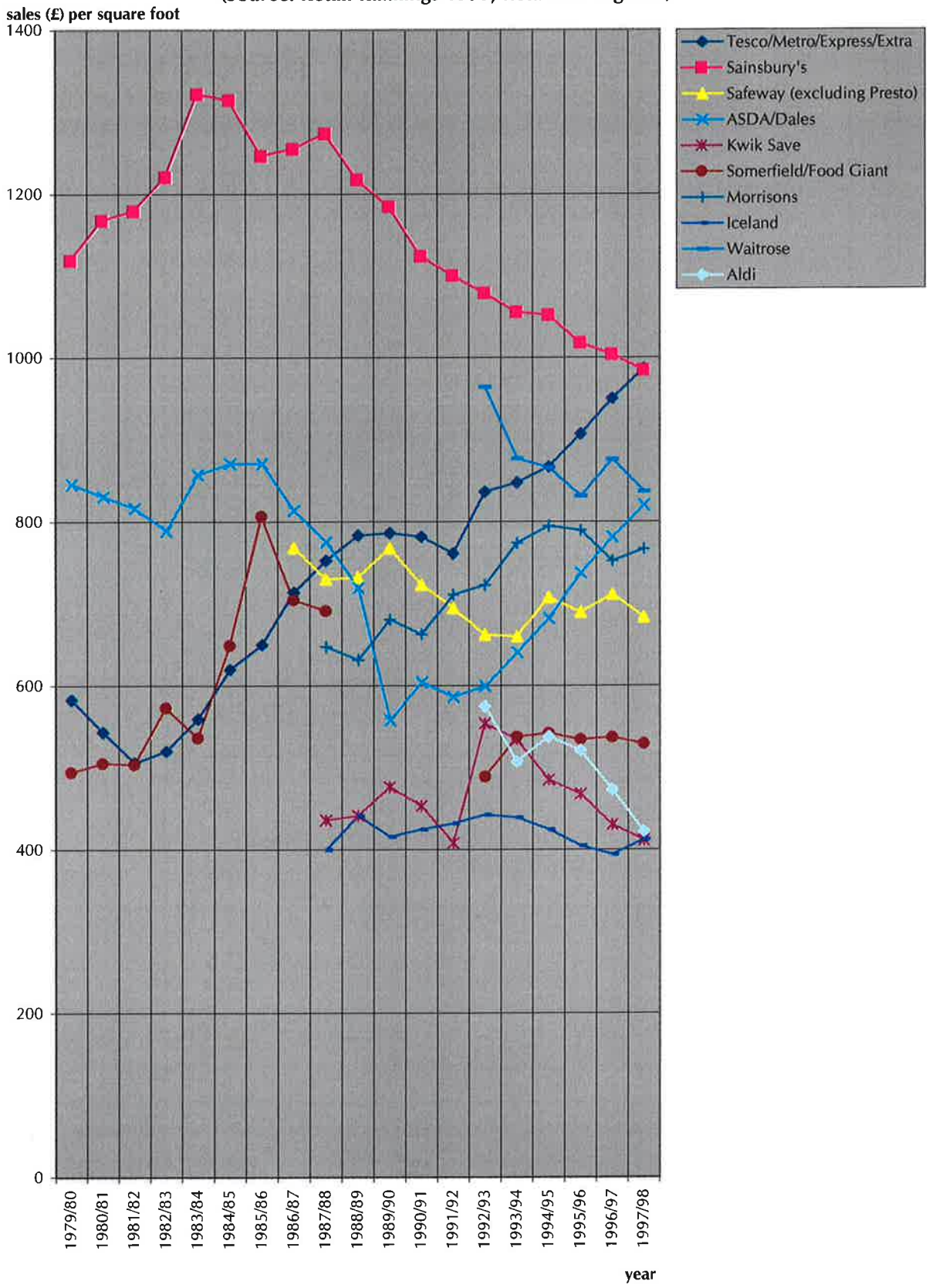

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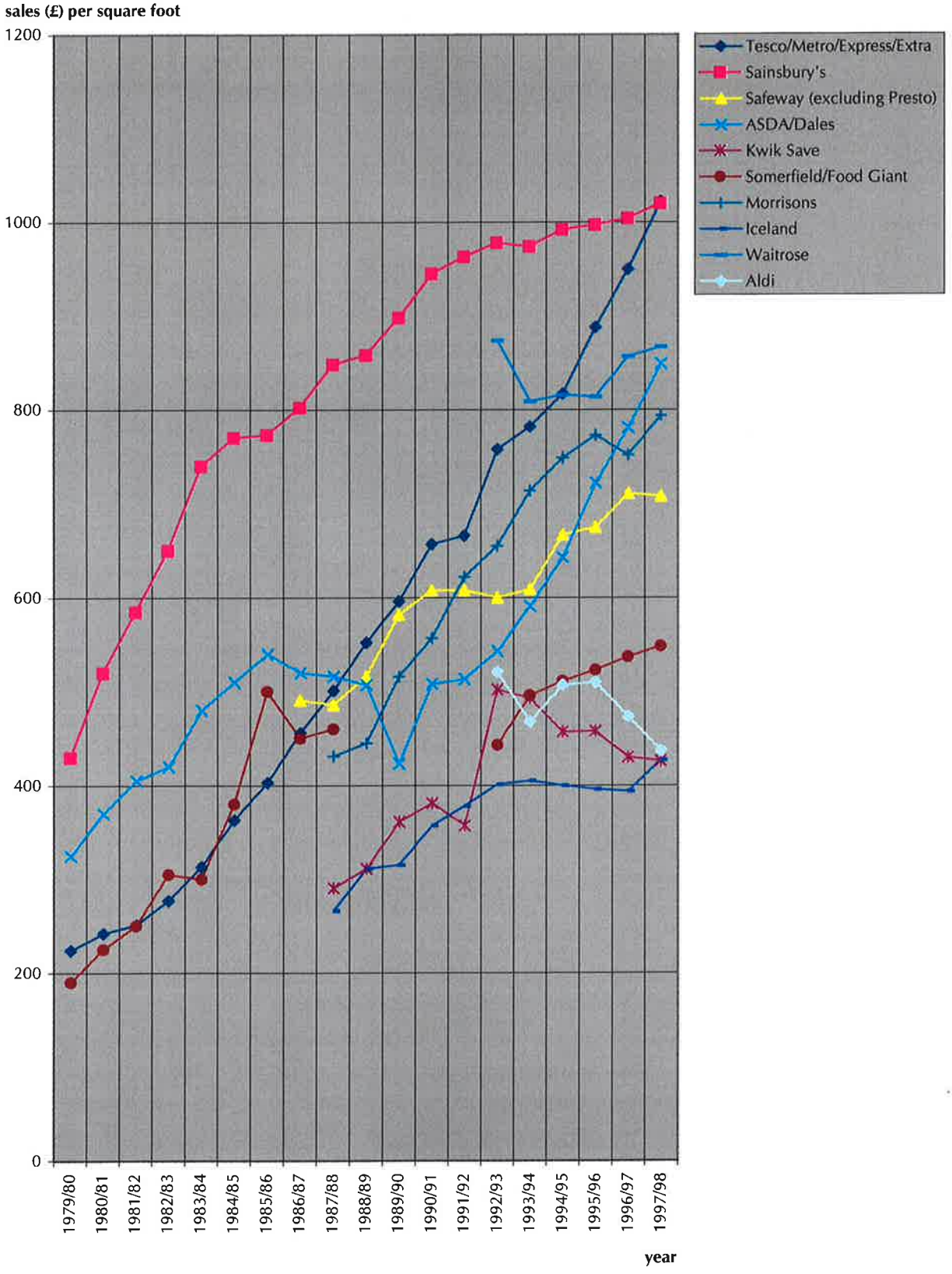

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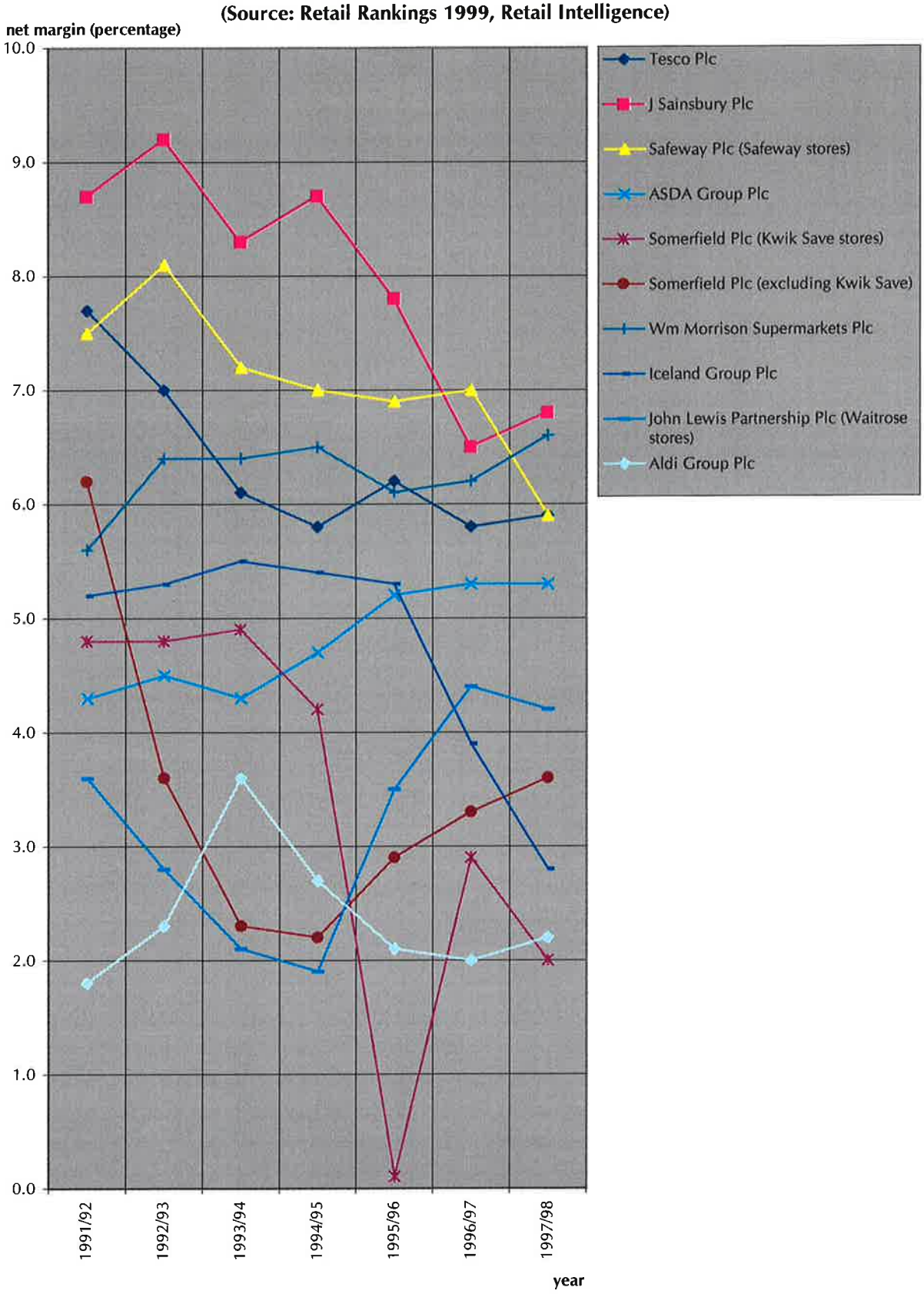

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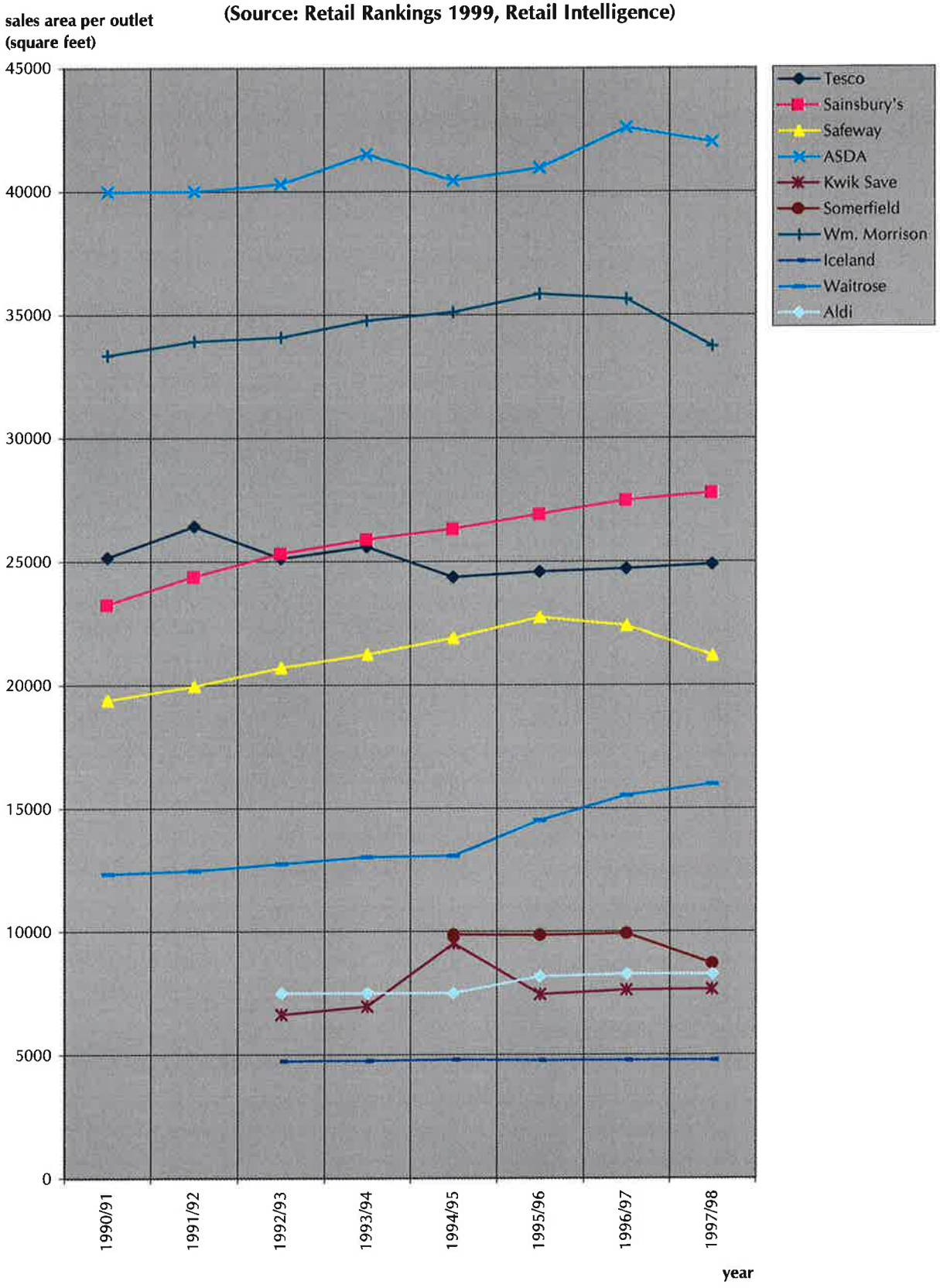

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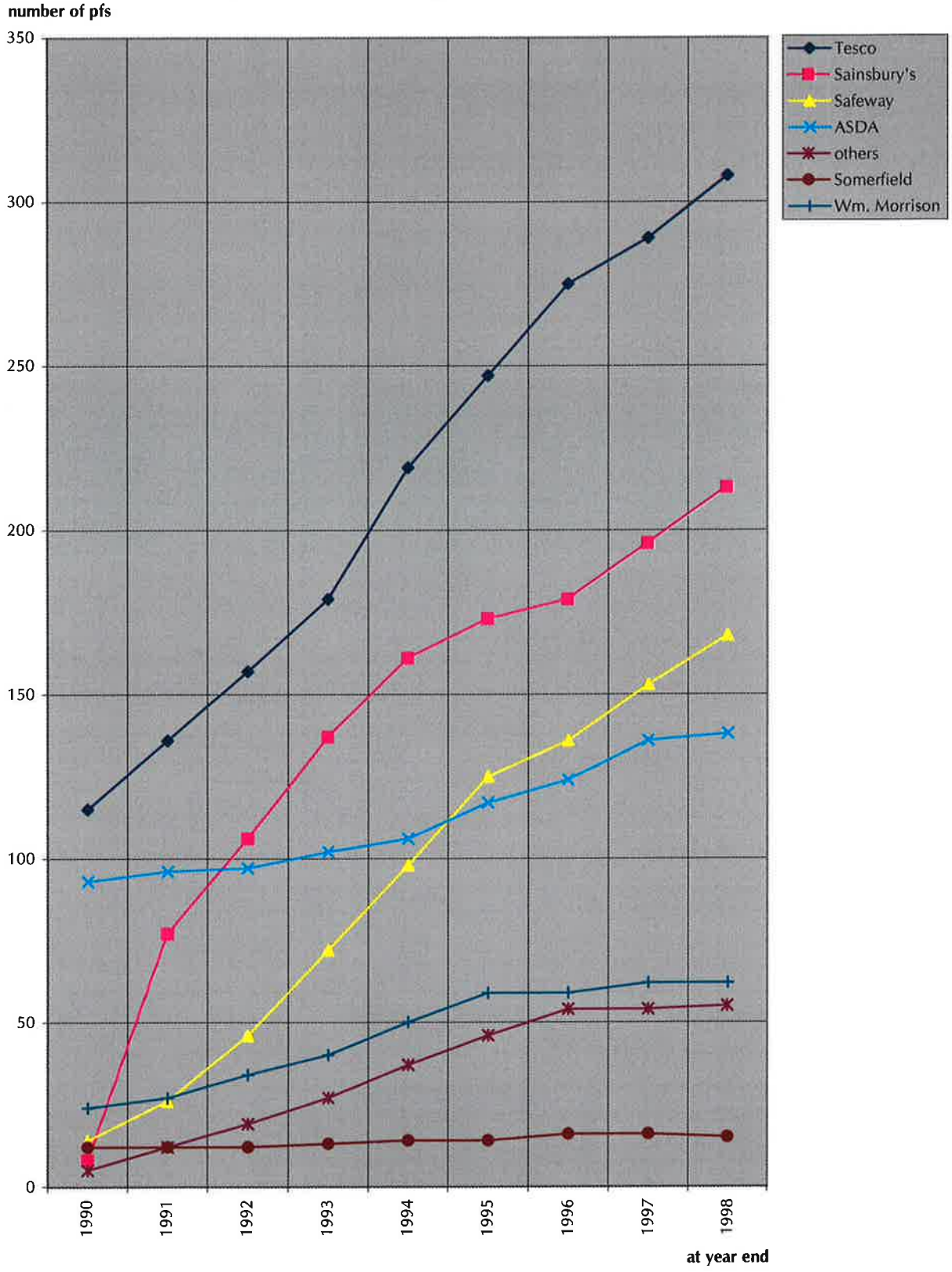

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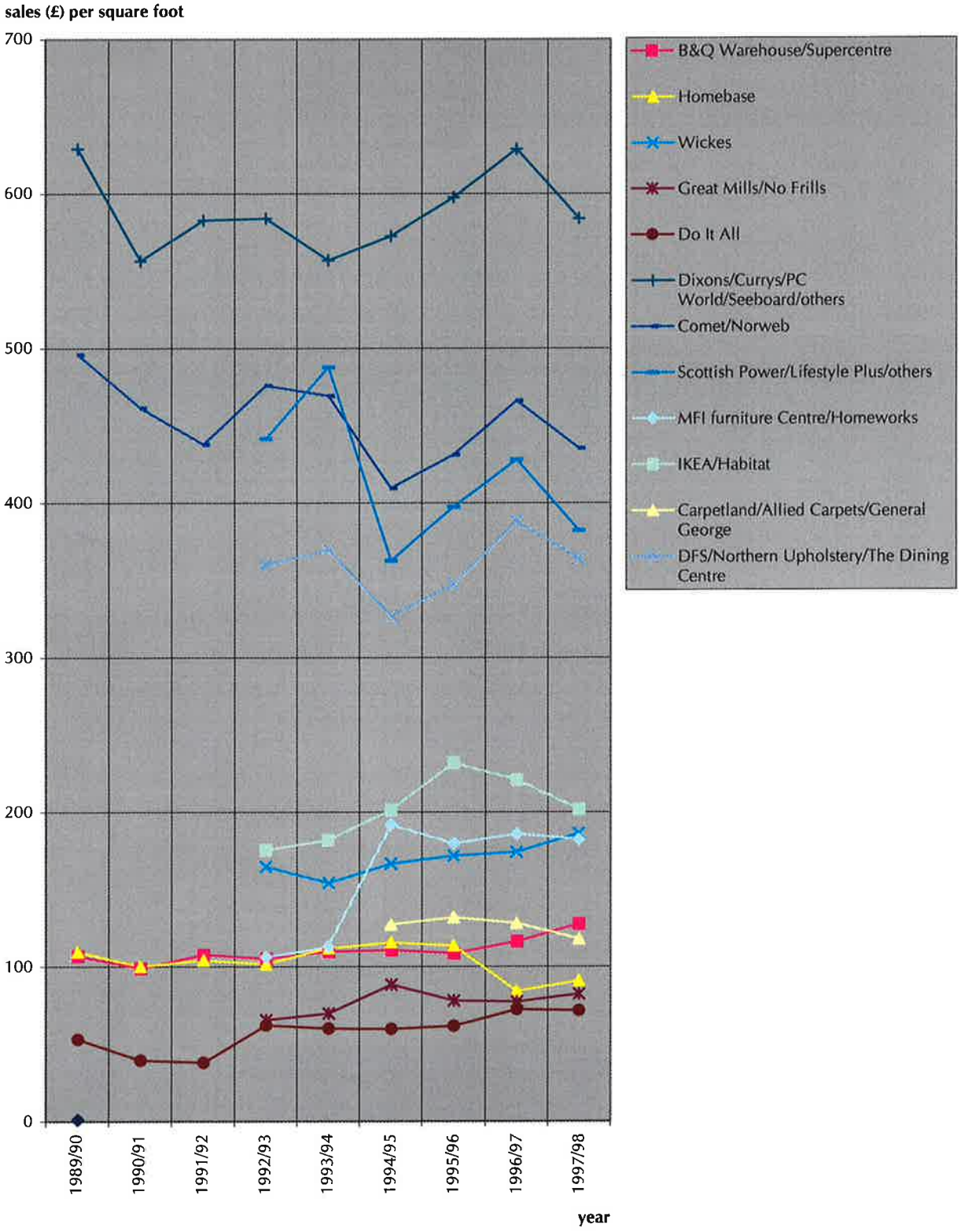

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