

'COMMUNITY AND NEIGHBOURHOOD SHOPPING CENTRES'

by

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COMMUNITY AND NEIGHBOURHOOD SHOPPING CENTRES

Being a study of the elements affecting the future function, size and location of shopping centres within the urban region, with special reference to new towns, their surrounding regions and the influence of private car-ownership on consumer shopping patterns.

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I N T R O D U C T I O N

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The effects of the private car on Britain's towns and cities which have derived their present structure from now outmoded forms of transport, is a topic which has recently been fully documented in the Buchanan Report (see Ref. A/26). Private car ownership makes possible a wider spacial range of personal activity and corresponding to this wider range, new communities larger in area are developing. With its speed and flexibility the private car is also changing the time-distance relationships existing between established community nodal points so that a new pattern of urban centres is evolving. As development takes place, old functional linkages between these existing centres are broken, and new ones sought, and the problem of determining what future structural patterns might arise involves not only the individual living within the communities themselves but also the whole range of economic, social and physical aspects of the urban environment.

This thesis reports on the candidate's investigations into the effects which increasing consumer mobility may have on the future size, location, and function of neighbourhood and community shopping centres. The investigations have been limited to those types of shopping centres which cater for a maximum population of approximately 100,000 to 200,000 persons and within this overall range, the community shopping centre is taken as being that centre which acts as the major focal service centre for the whole population, while the neighbourhood shopping centre is taken as being that centre which acts as one of a number of subordinate service centres to the community centre and which caters for a population ranging from approximately 1,000 to 15,000 persons.

The actual design of these shopping centres and some of the more detailed social and economic factors related

to the provision of shopping centres do not form part of this investigation except where these elements impinge directly on planning principles. The investigations have been further orientated towards the problems involved in the planning of new community shopping centres and their functional relationships with other shopping centres, both old and new, as distinct from the problems involved in the redevelopment and rehabilitation of existing shopping centres. In this way particular emphasis is focused upon the new towns of Britain and their shopping centres.

To facilitate this study the candidate's research has been based principally on the Lothians region survey area-- an area of some 80 odd square miles which surrounds Scotland's fourth new town at Livingston, (designated in 1962; for further details of the Lothians region survey area and the new town of Livingston, see Appendix 1.1). The approach adopted by the candidate has been an experimental one in that by the collection of sample data, shopping activity patterns and the locations of types of transactions are derived which may ultimately be used to define space use patterns.

As an extended introduction to the actual research work, Chapter 1 discusses some of the broader issues upon which the relationship between consumer and retailer, as expressed in the shopping centre, exist. This chapter concludes with a theoretical appreciation of the concepts involved in this relationship and a summary of current planning techniques used in determining the size of shopping centres.

As the ultimate service core of the Lothians region survey area will be the new town of Livingston and its shopping centre, the candidate undertook a comprehensive study

of the shopping facilities provided by the fifteen established new towns throughout the United Kingdom. The results of this work are shown in Chapter 2, and it is here that the relationship between new town shopping centres and their neighbourhood shopping centres is analysed.

In Chapters 3 and 4 an analysis is made of the results of various surveys made on the existing shopping facilities of the Lothians region and existing consumer shopping patterns. By analysing separately the shopping patterns of both car and non-car-owning families, the influence of car-ownership and other related variables on consumer shopping habits is outlined.

The results of the candidate's research are combined in Chapter 5 where an analysis is made of what might be the future shopping patterns of the Lothians region and in this way future changes in the functional relationship between various types of shopping centres caused by increasing consumer mobility are calculated. This analysis assesses the utility of the results achieved by the candidate's research and points to areas where further research may prove valuable. This assessment together with a general summary of the candidate's research findings forms the conclusion to this thesis.

CHAPTER 1.

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## DETERMINANTS AND ESTIMATION OF SHOPPING PROVISION

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In the central areas of all towns and cities, one group of activities often predominates. These are the retail and service trade shops and stores. These shops are a major traffic generator, they employ directly and indirectly about one out of every seven of the total labour force and through their commercial functions they capture about 50% of all consumer expenditure.

Today in Britain, the 'affluent society' is the current catch-cry and with increasing standards of living, family car ownership figures continue to rise. Now, most central areas throughout the country are suffering from traffic congestion and many centres already have plans for redevelopment. When redevelopment takes place it seems likely that more and more space must be devoted to traffic, roads and parking facilities, and if this is to be achieved, then some decentralization or subcentralization of the central area's functions must seemingly follow. Which functions should be relinquished and which ones retained? What will be the form of the 'new' central area and what will be the functional relationship between the new central area and the newly emphasised sub-central shopping facilities? How much and what type of shopping should be done in central areas and how much and what type should be done in non-central areas? These questions help form the titles of many current planning journal articles, (Refs. C/14, 16, 17, 19, 20, 28, etc.) and this emphasis on the future of the shopping centre is not misplaced. The successful redevelopment and survival of a town's shopping centre is vital to the success of its whole economic, social and physical environment.

This Chapter looks at the shopping centre and its two basic components--the retailer and the consumer--and investigates some of the more obvious trends and pressures current in all three fields in an attempt to define what part each aspect might play in determining the function, size, and location of future shopping centres.

SECTION 1.20            THE CONSUMER

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1.21 General

It is only in recent years that the patterns of consumer expenditure have changed considerably. The immediate post-war years and the lifting of rationing saw a series of swift changes in both the volume and type of consumer expenditure. The cause of this commercial revolution lies principally with the increasing number of middle class income earners. Increased standards of living for an increasing number of the population have shown themselves in new consumption patterns, such as the phenomenal growth of the gramophone record and television industries.

These increasing standards of living have also shown themselves through secondary influences, i.e., apart from increases in real incomes. Thus fewer working hours have meant increased leisure time and the growth of travel and recreational facilities. Higher standards of education, changing conceptions of social status, increased opportunities for women in employment, etc., have all led to more exacting demands being made of the distributive channels. In this way a whole series of social, psychological, educational and technological factors are causing major changes to occur in the structure and organisation of the retail trade.

It is important to analyse the reasons for these changes since ultimately they lead to structural alterations in the nature of shopping centre location and function. Some changes may be of a relatively short-term nature, while others may take decades to mature fully. The following sections each investigate a particular aspect bearing on consumer expenditure patterns and shopping habits.

## 1.22 Income and Expenditure

While consumer expenditure nearly doubled between 1952 and 1962 to reach a total of £18,452 million, in real terms (i.e., after discounting the effect of price changes), the increase was slightly less than one third. (see Table 1). What comes out of an analysis of consumer expenditure is not so much the importance of the increased amount spent each year since before the war (about 3% more each year in real terms) but rather the fact that this increase is spent by a much larger number of consumers than before the war. This increased number of consumers was also distributed over different layers of society from before the war so that the pre 1938 and traditional patterns of expenditure have undergone a considerable change. The redistribution of incomes is shown in Diagram 1.

Incomes in general were higher, but it is the significant increase in the number of incomes which is remarkable. Between 1938 and 1962 the number of incomes rose by 55% while the civilian working population rose by 33% during the corresponding period. (see Table 2). In other words, the population at work rose by 6.0 million while the estimated number of incomes rose by nearly 10.0 million. In 1962 therefore, there were about four million more incomes received than people employed, and this large increase in double incomes originates with the wage and salary earner.

The multiple income family structure together with the large increase in the number of all incomes in the medium-income group has brought tremendous pressure to bear on the existing distribution network. The number of incomes of between £50 and £250 per annum before the war is not known, but they totalled after tax, £2,709 million, against only £809 million in

ITEM	1948 PRICES		AT CURRENT 1962 PRICES						1952-1962	
	1938		1952		1957		1962		MONETARY INCREASE	OVERALL PERCENTAGE CHANGE ±%
	£ M	%	£ M	%	£ M	%	£ M	%		
ALL FOOD	2.196	25.6	3.198	29.8	4.435	30.7	5.152	28.0	+ 61	-1.8
DURABLE HOUSEHOLD GOODS	558	6.5	824	7.7	1.168	8.1	1.452	7.9	+ 76	+0.2
CLOTHING	938	11.0	1.097	10.2	1.439	9.9	1.723	9.4	+ 57	-0.8
PRIVATE MOTORING	279	3.3	260	2.4	580	4.0	1.093	5.9	+320	+3.5
TRAVEL	247	2.9	424	3.9	523	3.6	624	3.4	+47	-0.5
DRINKS & CIGARETTES	N.A.	-	1.600	15.0	1.888	13.0	2.365	12.8	+48	-2.2
ENTERTAINMENT	N.A.	-	225	2.1	249	1.7	280	1.5	+24	-0.6
OTHER	NA	-	3.079	28.9	4.162	29.0	5.763	31.1	+87	+0.2
TOTAL	9.564	100	10.707	100	14.444	100	18.452	100	+72	-

CHANGES IN SELECTED CONSUMER EXPENDITURE : 1938 -52-62. Source: Reference No A/19  
 N.A. = Not Available. TABLE No.1

1962. This is a reduction of 70% in value. The number of incomes in the £251 to £500, the £501 to £750, the £751 to £1,000, and the £1,001 to £2,000 brackets rose by 225%, 1650%, 4,300% and 2,345% respectively. Lumping these four medium-income groups together shows that the number of incomes after tax rose from 2,589,000 in 1938 to 22,180,000 in 1962. The number of medium income earners had therefore changed from about 15% of the total incomes in 1938 to almost 82% of the total incomes in 1962.

The high-income earners also increased their numbers substantially after suffering a heavy set back after the war. (See Diagram 1, figures for 1956) While both the number of high income earners and their real incomes after tax had increased appreciably, their share of the total incomes after tax had not changed from the 6.5% figure of the 1938s.

In this study of national income figures, the dual nature of the influences affecting the retail trade has been made clear. First, there has been a considerable change from a substantially poor society to a substantially medium-income society. Not only is there more money to spend, but there is also an entirely new class of people spending it. This aspect foreshadows the second, which is the changing spending habits of a newly enriched society.

Consumer expenditure as derived from the National Income and Expenditure Statistics, (Ref. C/47) is shown in Table 1. In the all important food expenditure group, while the 1957 spending on food rose by 5.1% on 1938 figures, the 1961 figures showed a slight but significant drop back to only a 2.4% increase on 1938 figures. Expenditure in durable household goods (not including car sales) also increased its share of total

EMPLOYMENT	1939		1948		1952		1957		1962		1939-1962 CHANGE ±%	
	Nº EMPLOYED (000s)	%	Nº EMPLOYED (000s)	%	Nº EMPLOYED (000s)	%	Nº EMPLOYED (000s)	%	Nº EMPLOYED (000s)	%	Nº EMPLOYED %	%
AGRICULTURE & MINING ETC	1.823	10.0	2.052	10.7	1.997	9.0	1.893	8.1	1.651	6.8	-9.4	-3.2
MANUFACTURING	6.815	37.8	8.137	37.7	8.626	39.0	9.271	39.9	8.885	37.2	+32.0	-0.6
SERVICE INDUSTRIES	2.785	15.5	3.558	16.5	3.566	16.1	3.621	15.6	3.695	15.4	+32.7	-0.1
DISTRIBUTION	6.604	36.7	7.800	36.1	7.940	35.9	8.460	36.4	9.764	40.6	+47.9	+3.9
TOTAL	18.027	100	21.569	100	22.119	100	23.245	100	23.995	100	+33.3	-

CHANGES IN U.K. EMPLOYMENT PATTERN : 1939 - 1962. Source: Reference Nº A/19  
TABLE Nº. 2

consumer expenditure from 6.5% in 1938 to 7.9% in 1961. The highest increase lies with expenditure on private motor vehicles and their upkeep, the 1961 figures show a 2.6% increase on the 1938 figure of 3.3% of the total consumer expenditure. Accompanying these increases there have been unfavourable decreases in some sectors of expenditure. The largest of these have occurred in the Clothing and Cigarettes/Spirits/Drink sectors where falls have been 1.6% and 2.5% respectively.

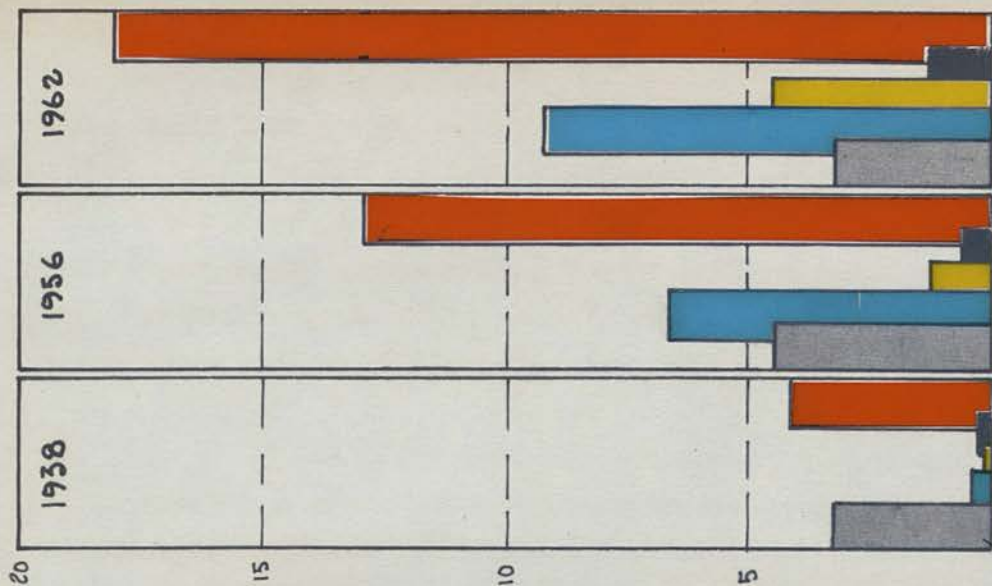
While consumer expenditure, its rate of increase, its durability and expansion potential are excellent guides to both consumer preference and disposable income, other factors must be taken into consideration if accurate forecasting of retailing trends is to be achieved. The following sections deal with some of these factors in detail.

### 1.23 Mobility

In 1962 in Britain there were approximately 6.5 million cars for a population of about 52.6 million. This is equivalent to one car to every 8 persons or about one car to every 2.5 households. The importance of the privately owned motor car to the national economy and its effect on transportation, employment and social patterns have all been made clear by the Buchanan Report. (Ref. A/26) Diagram 2 shows the rapid increase in both the number of vehicles and road transportation itself. In 1959 road travel represented 81% of all inland passenger travel and so far as inland goods transport was concerned, 72% by tonnage or 45% by milage also went by road. (Ref. A/26 para. 7).

Before considering the use of the private motor car for shopping purposes in more detail it is well to consider

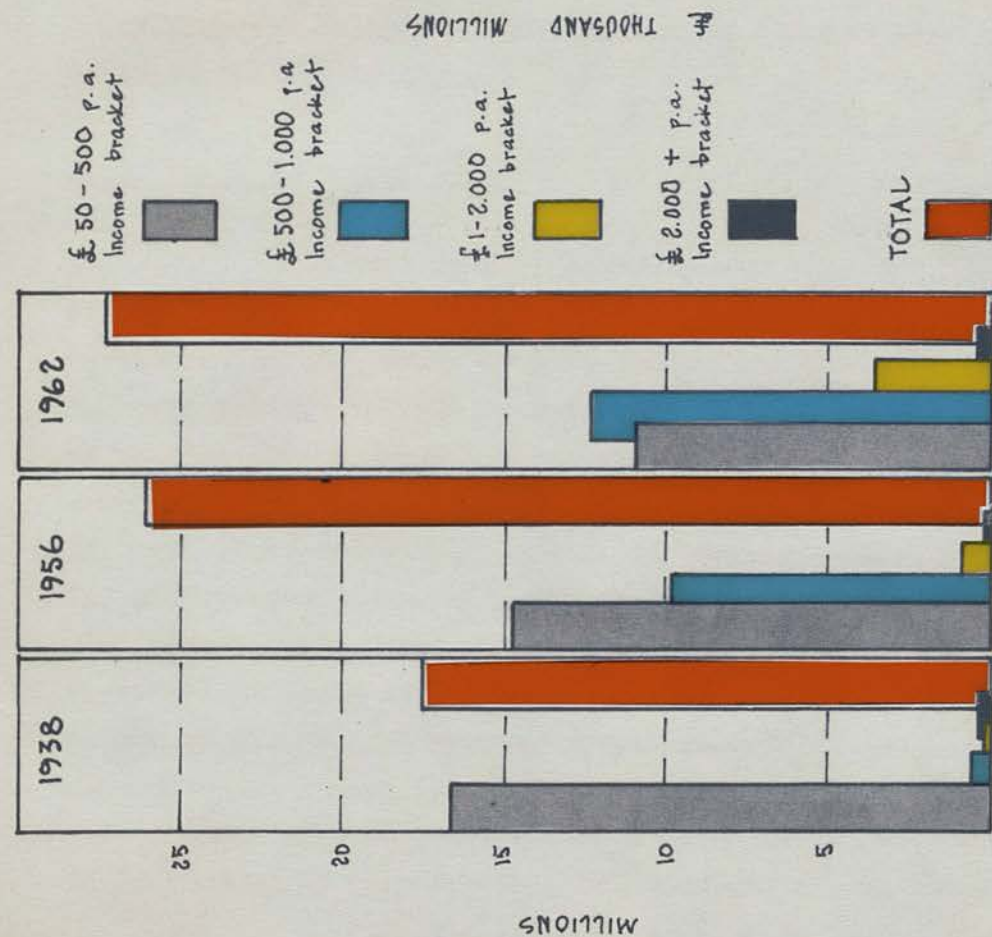




MONETARY VALUE OF INCOMES

THE GROWTH AND DISTRIBUTION OF INCOMES (AFTER TAX) 1938-1962

DIAGRAM NO 1



NUMBERS OF INCOMES

THE GROWTH AND DISTRIBUTION OF INCOMES (AFTER TAX) 1938-1962

Source: Reference C.A.T.

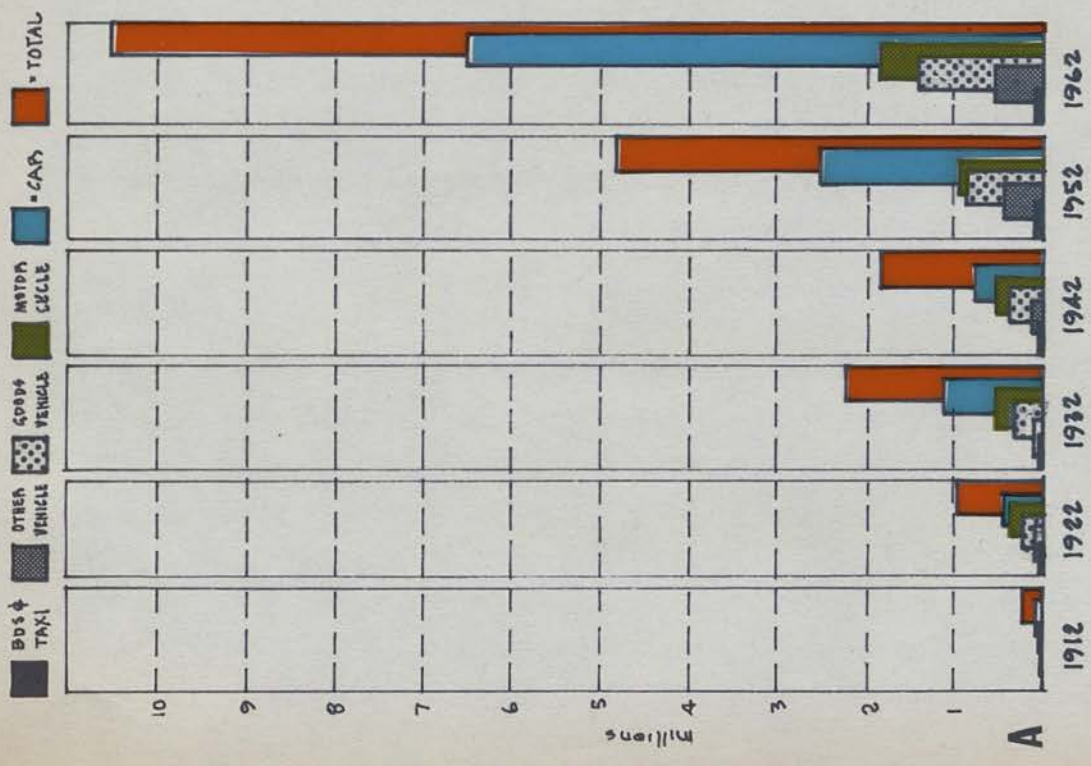
first the problem of growth in ownership of cars. Buchanan (Ref. A/26, para. 44) states:-

"The growth in the number of private cars would seem to depend primarily upon the growth of incomes, but it is also dependent upon the price of cars, insurance rates, taxation levels, and upon such factors as changes in shopping habits, the availability of garage space, the amount of frustration due to congestion, the existence of other cheap and convenient forms of transport, and the future patterns of recreation."

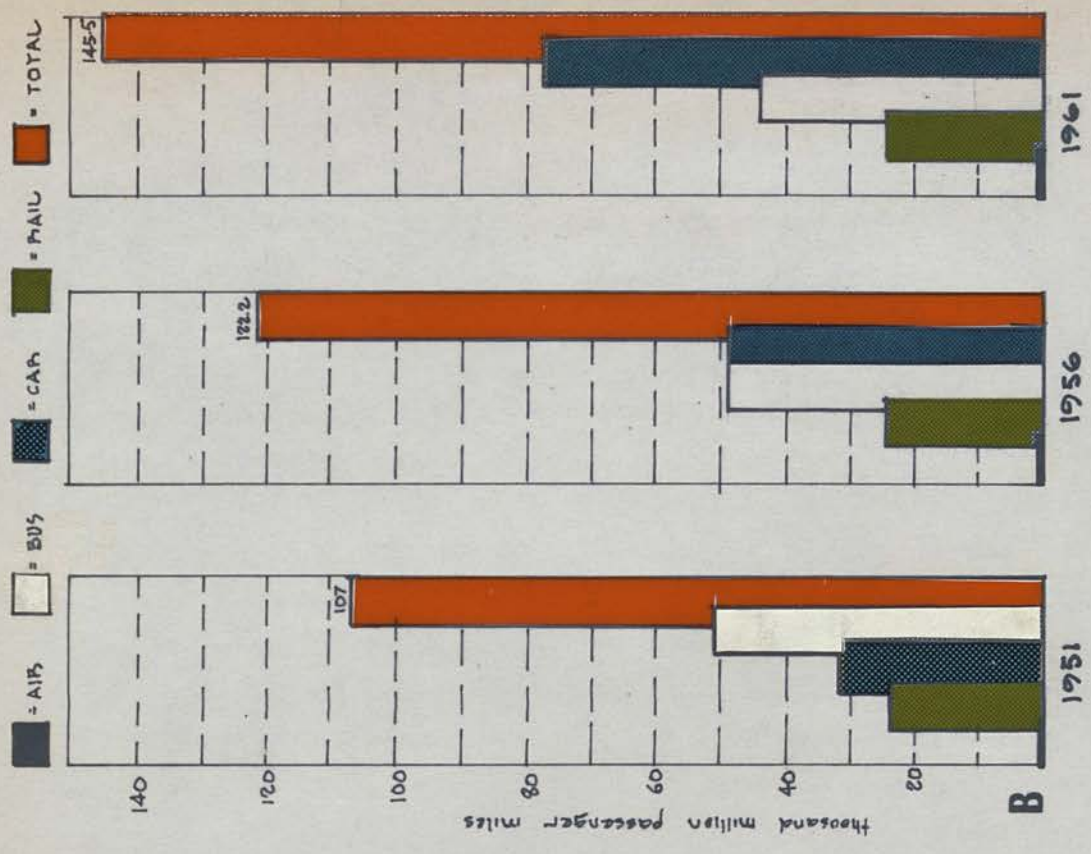
The factors deciding future car-ownership patterns are therefore numerous. Despite this several projections of present trends have been made and are now widely accepted as a basis for planning standards. It is estimated that while there were some  $10\frac{1}{2}$  million vehicles in Great Britain early in 1963, this number will grow to reach 18 million by 1970, 27 million by 1980, and 40 million by 2010. (Ref. A/26 para. 45). The number of cars likely to be on the roads for these years are, 12, 19, and 30 million respectively, so that nearly half the total increase is expected within the first ten years.

This anticipated growth in the number of vehicles is shown in Diagram 3, which is reproduced here from the Buchanan Report. Taking into account population growth it seems likely that Britain will attain a one car per family ownership level by about 1980.

If the foregoing estimates are accepted, what then will be the influence of the motor car on family shopping patterns? While the use of the private car for the journey to work has received a great deal of attention in recent years, its use for family shopping activities in Britain at least has received very little.



GROWTH OF NUMBERS AND TYPES OF VEHICLE IN GREAT BRITAIN 1912-1962. (FROM 'BASIC ROAD STATISTICS' (REF. NPA/26))



GROWTH OF PASSENGER TRAFFIC IN GREAT BRITAIN 1951-61 FROM 'PUBLIC ROAD PASSENGER TRANSPORT IN G.B. 1951-62. (REF. NPA/26)

DIAGRAM No 2

In both the Buchanan Report (Ref. A/26, para. 190-193) and the Cumbernauld Central Area Report, (Ref. A/22, page 56) the calculation of shopping trips, their frequency and the means of transport used, are all based on either American standards or unsubstantiated assumptions. Such a complete lack of basic data in this field is lamentable especially when in ten years time it seems likely that the nation will face the full impact of the 'motor-age' invasion.

Only recently in late 1964, did the Kent County Planning Department publish the results of a survey which it had carried out on the influence of car ownership on shopping habits. (Ref. C/35) A synopsis of the results of this survey is as follows:-

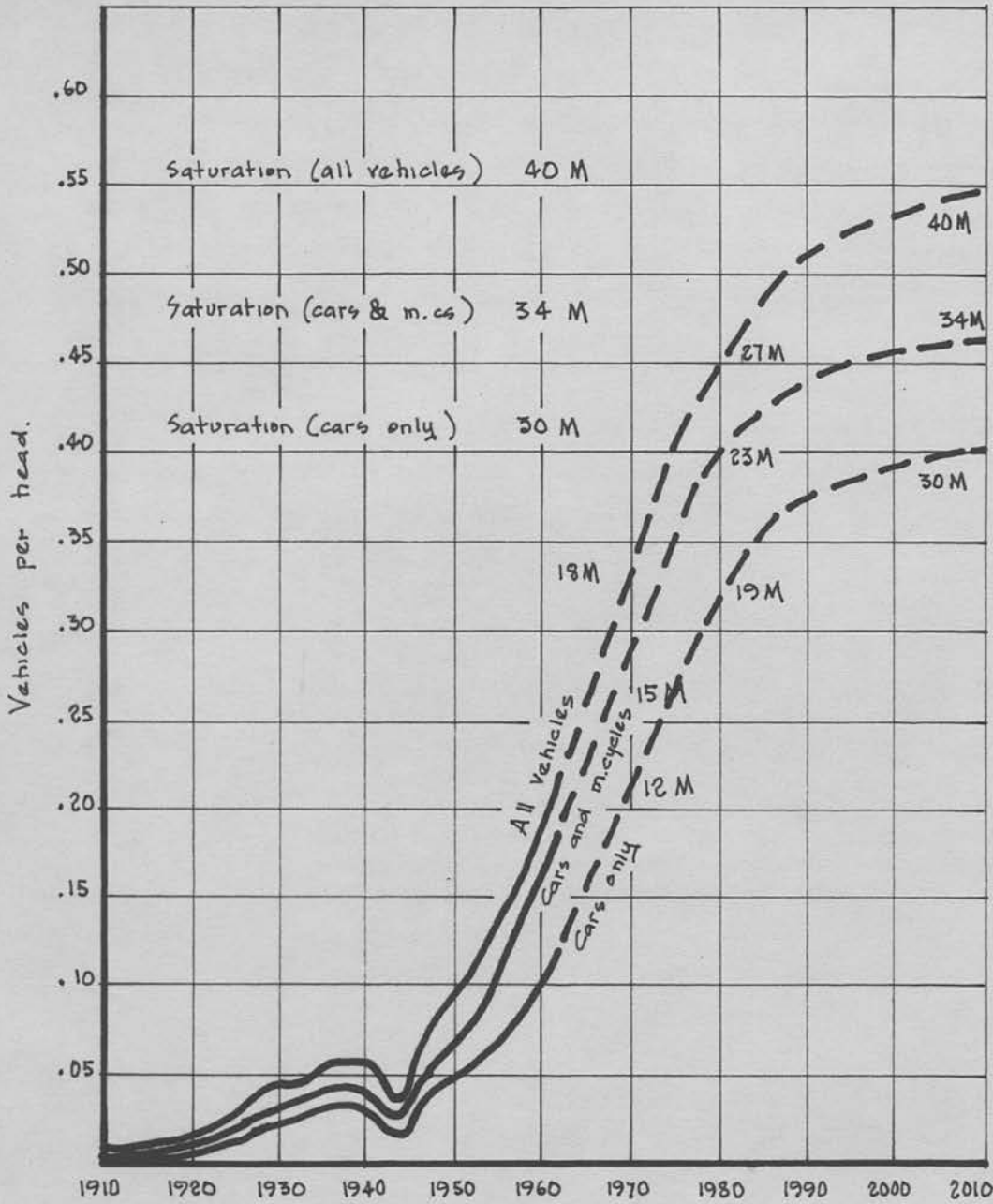
"Households with cars relied less on their local centres and travelled over greater distances and to a wider variety of centres than households without cars.

Among households with cars, there was a greater tendency for each household to use several centres than among households without cars.

These general contrasts between households with cars and households without cars were more pronounced in the higher income and status groups."

This data then, together with a critical appraisal of American experience must form the basis of deciding what influence the car will have on existing family shopping patterns and the design and location of the shopping centres which they will use.

Care must be exercised when analysing American experience for the development of their 'one-stop-shopping' type



**FUTURE GROWTH OF NUMBERS OF VEHICLES. U.K.**

These curves indicate the probable trend assuming no drastic reactionary measures are applied, and allowing for the future growth of population. Reproduced from Reference A.26. p.27.

DIAGRAM No 3

of regional shopping centres has been largely due to a phenomenal rate of suburban expansion as well as to increases in the number of privately owned cars and consumer purchasing power. In Britain, private home ownership and its correlated low density residential areas is not encouraged and the problems of vast urban sprawl are restricted by planning legislation. American standards in this sense can therefore be unrealistic.

What does seem certain, however, is that as car ownership increases, so will shopping by car increase, and as the Kent Survey has shown, this may lead to less reliance on the local type of shopping centre and greater reliance on the larger and more distant type of shopping centre. If this happens then it also seems likely that traffic congestion will result in the already overcrowded central areas throughout Britain. Where congestion and lack of parking facilities exist, the mobile shopper may tend to take his trade elsewhere, thereby causing a loss of trade in central areas.

If trade is to be maintained in these shopping centres, some redevelopment seems almost certain to result. The Buchanan Report has shown that the costs of this redevelopment can be high so that in many cases a compromise redevelopment scheme is likely to result. Some centres may decline, some centres may develop, all centres will probably need to change to some degree. The degree and direction of this change is a matter seemingly requiring the planners' urgent attention if the change from present to future is to be made with a minimum cost to the economic, social and physical environment.

#### 1.24 Social Aspects

A study of the historical development of the retail trade reveals its close connection with the social activities of the times. In mediaeval times the travelling fair brought with it not only goods for sale but also entertainment and festivity. In the Baroque era, with the absolute power of the monarchy firmly established, court fashions dictated styles of dress and behaviour. The economic function of shopping was expanded and the social function changed accordingly.

Examples of changes wrought in the retailing trade due to changing social habits of today are typified by the increasing number of electrical goods stores, motor repair shops, and the disappearance of leather goods and shoe repair shops. The disappearance of this latter outlet--the humble cobbler and his shop--carries with it something more subtle in meaning. Mechanisation of the shoe and boot trade has not increased the lasting quality of the finished article itself. The decline in the shoe-repairing trade is therefore indicative of a changing outlook in the British consumer--a move which Stacey and Wilson (Ref. A/19, p.117) have aptly termed, 'the move from a conserving to a consuming economy', and one which will be of considerable importance to the British economy in its effects.

Further sociologically based changes can be related to simple age structure changes in the nation. The birth rate soared immediately after the end of the Second World War, reaching a peak in 1947. This bulge in the population is at present 17 years old and has just left or is about to leave school and start earning and spending. This factor is of considerable importance to the clothing trade since persons between the

ages of 15 and 40 spend about twice as much on clothes as the average younger or older consumer. The importance of this aspect to a new town's shopping facilities will be readily appreciated since 'unbalanced' age structures are normal for at least the early stages of the new town's life. The high birth rate normally associated with new towns will also be felt as the first wave of residents born in the town reach maturity.

Education, social class structure and the increasing use of mass mediums of communications such as press, radio and T.V. for advertising purposes are further socially based and important factors in causing changes in the retail trade. Education on the part of the consumer brings with it a demand for higher standards in presentation, both in the form in which the finished product takes and in the way in which the retailer presents it. The now increasing demand for hygienic shop conditions and food presentation in this country may be one long overdue.

One further sociological aspect which will help to determine future shopping habits is the position of women in industry. In an article appearing in the Sunday Times (Ref. C/45) of February, 9th, 1964, it was pointed out that the Home Secretary had already approached the Retail Trade Organisations, seeking their views on an extension of shop trading hours. A representative of the National Union of Small Shopkeepers was quoted as saying:-

"In the battle against the supermarkets and chain stores, and especially if retail price maintenance is abolished, they (the small shopkeepers) may have to rely increasingly on the working up of evening and even Sunday Trade. If enough small shops stay open in the same district, I can foresee a revolution in shopping habits. Evening shopping could become not just an extra chore but a new kind of social occasion".



The demand for late closing hours springs essentially from the working woman. As an increasing number of women, especially the married women, are seeking employment (33% of all women worked in 1948, 37% of all women worked in 1962) the demand for late closing hours must increase.

Another important aspect of the mobile shoppers' travel patterns will be how they spend their leisure time. Once a week "family" type expeditions to a large regional shopping centre may tend to be combined with visits to nearby relatives, attendance at theatres and cinemas or a sporting function. A. M. Voorhees (Ref. C/27) has shown some relationships between recreational activities and family income and although the source of this data is not stated, it is shown in Diagram 4. It will be seen that while T.V. occupies a great deal of the recreational time of the lower income groups, the higher income groups are more likely to spend their leisure entertaining or visiting friends and participating in activities of social and educational organisations.

### 1.25 Conclusions

The previous sections have discussed in detail some of the major factors bearing on future consumer shopping habits. Just how urgent the problem is of assessing future shopping habits was commented on by Max Lock in a letter to the Editor of the Times of October 20th, 1962, (Ref. C/46) in which he stated that there were at that time over 400 schemes for town centre development being promoted and all of them were proposing additional shopping space. He went on to say:-

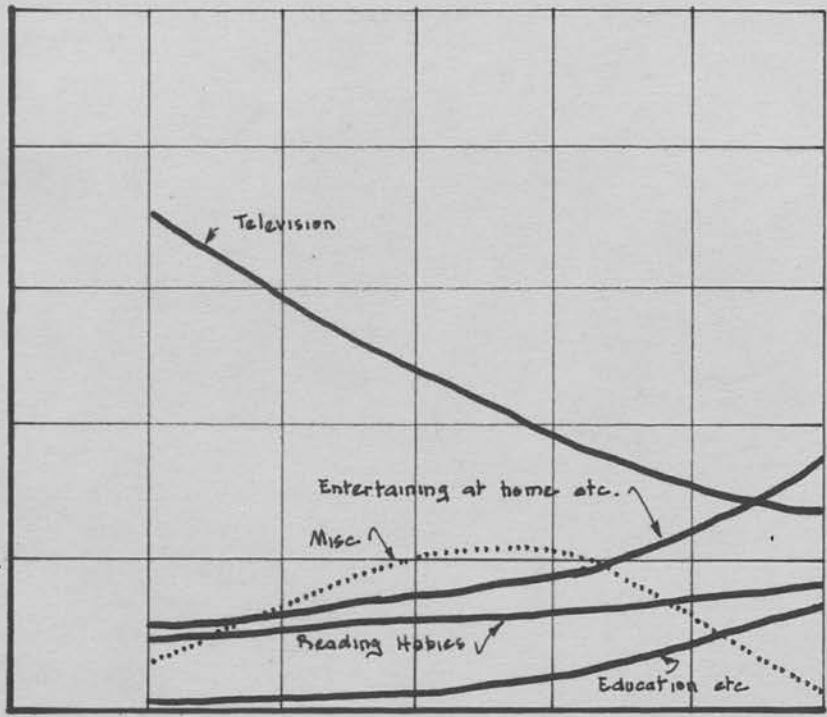
"It seems to me, therefore, of the utmost importance that a national survey should be undertaken forthwith--and continuously kept up to date--of shopping trends and needs. This should be done in time for the results to be applied to local problems before irreparable errors in town centre development are made."

The previous analysis of consumer expenditure and income has shown that not only is there more money to spend in real terms, but that there is also a much larger proportion of the population to spend it. The initial post-war boom in clothing sales has now been tempered although in real terms the amount spent each year will continue to increase. The same situation applies to food sales. The two most important changes in spending habits appear to be in the durable household goods and automobile trades, and substantial increases in spending may be expected here.

As real incomes continue to increase, a larger proportion of the working population will be placed in the car-owning income bracket. The mobility afforded by the car is likely to enable the shopper to visit a greater variety of centres than was possible before, and these centres are likely to be the large type of centres providing the durable type of goods range. The overall number of shopping trips is unlikely to increase as local shopping for essential goods will decrease in importance and frequency thus allowing a greater number of trips to be made to the regional or city centre.

Car-ownership may tend to open up a whole new field of social and recreational activities which will tend to decrease the local orientation of the populace. This may further emphasise the concentration on the large shopping and cultural centres at first, but this process may rapidly decline as congestion in the

Average hours spent per weekday per leisure activity as % of total hours spent per weekday in all leisure activities.



LEISURE ACTIVITIES RELATED TO FAMILY INCOME  
 Reproduced from Reference No C. 27. page 534.  
**PIAGRAM No 4**

old central areas results. These changes in consumer spending, mobility and social activities have already been taken up by the retail trade. Aggressive selling policies have been evolved to tap the newly enriched resources of the consumer and in the following Section, Section 1.30, these influences on the Retail Trade are discussed in detail.

1.31 General

A century ago retailing was mainly the province of the small shopkeeper. Artisans and craftsmen made their wares on the premises and sold them on the street-front. The success of their business depended upon their own skill for they were often in open competition with their neighbours. With the increased production brought about by industrialisation and new consumer demands brought about by increased real incomes, retailing techniques changed. The skills of the manufacturer replaced the skills of the craftsman-retailer so that the retailer became a relatively unskilled salesman. A large number of people were attracted into the retail trade with little or no previous experience, and the era of the small shopkeeper began. Converted front-parlour type shops lined the cities' main traffic arteries for mile after endless mile. The 'business' was a family business and often survived on low profit margins, low salaries and low overhead costs.

The development of the Department Store in the last quarter of the 19th Century was rapid, and at first it was thought that the small shopkeeper would be eliminated. This did not in fact happen and while no accurate statistical evidence is available, it seems that their numbers continued to rise. Again in the first half of the 20th Century, the growth of the Multiple and Co-operative stores was seen as the 'death-knoll' of the small retailer, yet still he survives.

Figures concerning the percentage of trade captured by these types of retailing outlets for the various retail trade categories are shown in Table 3. Unfortunately, it was not until

1950 that the first 'Census of Distribution and Other Services' was conducted by the Board of Trade, (Ref. A/30), so that statistical data before this date virtually does not exist. With the recent publication of the results of the 1961 Census of Distribution (Ref. A/32), however, it is possible to establish some idea of trends within the retail trade. Over the census period (1950-1961) the total number of retail outlets has decreased by about 1% or by some 5,825 shops. While Co-operative stores have increased their numbers by 3,852 shops over this period and Multiple stores have also increased in number by 13,350, the independent retailer and the small multiple type of shops have lost 23,027 shops or 4.6%. Despite the fact that the number of independent shopkeepers is decreasing, their share of the total retail trade turnover is still quite large. After discounting the turnover of large independents and chain stores from the 1961 turnover figures, it can be shown that their sales still account for 47% of total annual trade. Such is the present picture of the Retail Trade today. This gradual change from the small to the large type of retailer has its direct implication on planning since each type of retailer requires varying shop frontages, depths and servicing facilities. The following section deals with the various types of retailing organisations as they exist today and points to areas of likely change.

### 1.32 Retailing Shop Types

#### (a) The Small Shop

In Great Britain in 1961, 31% of retailers had an annual turnover of £5,000 or less and were responsible for only 5% of the total retail trade while employing some 10% of the total labour force engaged in retail distribution. In economic terms the operating efficiency of these units is not good. The survival of the small shop must therefore depend upon the two

factors of convenience and service, factors difficult to measure in economic terms.

Convenience is a factor which the planner has some measure of control over in the actual siting of shops. Service on the other hand is a factor entirely dependent upon the shopkeeper himself. It has a dual aspect of interest to planners for the service which the shopkeeper may provide can lie in the range of goods he provides and/or in the quality of customer service which he gives. The extent to which the small retailer can and will provide these services will ultimately determine his position in the distributive network.

While the distribution of these shops is fairly uniform over the whole range of retail goods, there is a marked tendency for them to specialise in the sale of clothing and fashion accessories. This is a trend likely to increase in the future, as a majority of the remaining small shops specialise in food sales, an area at present suffering from heavy competition with the new supermarkets. Newsagents and small shops providing a service such as chemists and radio and electrical repair shops are also likely to survive the squeeze between the trading stamp war of the supermarkets and the lifting of Resale Price Maintenance by the Government.

(b) The Department Store

In 1961 in Great Britain, there were 784 department stores. These few stores captured 6% of total retail sales and employed 7% of the total labour force engaged in retail distribution. Because department stores rely on a large pool of shoppers, the number of suitable locations throughout the country is strictly limited. Their number is not likely to increase rapidly therefore and will in fact probably be determined

by population increases in urban areas.

While the importance of department stores is negligible when measured by numbers, their strength lies in the proportion of sales for which they account. While they give the impression of selling everything, in actual sales turnover, they specialise in clothing and household goods. It has been estimated (Ref. A/19, page 42) that their sales account for 20-23% of total women's and girls' wear sales and 13-15% of all clothing and footwear sales. In the sections in which they specialise, they therefore control a significant share of consumer expenditure, particularly in view of the very small number of outlets.

Services to customers such as accounts, free home delivery of goods, parking facilities, and the acceptance of responsibility for the quality of goods sold are likely to ensure the continued slow increase of this type of shop. Recent trends have shown that where central area congestion becomes great, the department store is often forced to expand into the suburban areas in the form of Junior Department Stores (Ref. B/24, C/24)

(c) Multiple Shops

Excluding Co-operative store branches, in 1961 there were 67,299 units of multiple organisations owning more than ten shops. These outlets, only 11.5% of the total, accounted for 29% of all sales, and employed only 25% of the total retail trade labour force.

Working towards different objects from the department store, the multiple's policy has been one of increasing sales by holding a narrower range of goods in strategically



sited areas. Thus while the multiples were the first to take their shops out into the suburbs to the customers, they were in fact different customers from those of the department stores. The multiples therefore built up trade by catering for the relatively inflexible needs of the working classes where price and convenience were of foremost importance. This type of operation brought with it the economic advantages of bulk buying, supply, storage, and specialisation with its ensuing low operating and servicing costs.

In actual shop format, the multiple store may take a number of forms such as variety chain stores, (specialising in a wide variety of cheap products), supermarkets (self-service stores generally specialising in food-stuffs) and department stores (largely specialising in one line such as clothes and haberdashery or pharmaceutical goods and cosmetics).

Recent trends seem to indicate that the multiple stores are diversifying the class of stock handled and to some extent approaching department store standards. Figures shown in Table 3 show the increasing proportion of food, clothing, and general sales captured.

(d) Co-operative Stores

In Britain in 1961 there were 29,396 co-operative store branches or 5.1% of the total number of all shops. These shops accounted for 10.75% of all sales and employed only 7.75% of the total retail trade labour force. Over the 1950-1961 census period this shows an increase of 3,852 (15%) shops.

The Co-operative movement was first successful

in the retail trade in 1844 and since that date has seen an almost steady increase in its membership numbers. It has been estimated (Ref. A/19, p. 49) that the Co-operative societies are responsible for approximately one third of the nation's milk supply, one fifth of its groceries and provisions, and one sixth of its meat and coal. By 1958, membership had risen to 12.25 millions.

Specialisation in the provision of food has always been the backbone of co-operative trading. In recent years, however, many amalgamations between Societies have occurred and a fresh approach to retailing adopted. The most outstanding Co-operative pioneering effort in this country has been in the development of self-service shops. In more recent years too, the first Co-operative Department Stores have been opened. These trends are significant when from Table 3 it will be seen that during the 1950-1961 period, Co-operative sales in all but General and Other-non-food sectors have fallen.

(e) Other retailing outlets

(i) Mail Order Trading This form of trading originated in America and was largely due to the vast under-populated areas existing in America in the last half of the 19th Century. As these conditions did not apply in Great Britain, the emergence of the mail-order firm has been slow. The Board of Trade (see Journal, 31.5.63) has published figures concerning sales by mail order firms. These have grown from £45.8 million in 1950 to £276 million in 1961, an increase of 500%, as compared with a corresponding rise in total consumer expenditure of only 84%. At its present level this is equivalent to 3% of total retail sales.

RETAIL TRADE GROUP (SEE IN APPENDIX No 81)	PERCENTAGE OF TOTAL RETAIL SALES PER GROUP											
	CO-OPERATIVES			LARGE MULTIPLES			SMALL MULTIPLES & INDEPENDENTS			TOTAL		
	1950	1957	1961	1950	1957	1961	1950	1957	1961	1950	1957	1961
A	23.0	23.0	20.5	20.0	22.0	26.5	57.0	55.0	53.0	24.5	26.5	26.2
B	15.0	15.5	13.5	16.5	18.0	22.5	68.5	66.5	64.0	20.0	20.5	20.3
C	0.5	0.6	0.7	11.0	11.5	12.0	88.5	87.9	87.3	10.0	9.25	9.0
D	6.0	4.9	4.3	32.0	40.0	46.5	62.0	55.1	49.2	18.5	15.0	15.0
E	0.4	0.3	0.3	17.3	19.0	22.8	82.3	80.7	76.9	10.5	11.0	11.5
F	2.8	3.1	3.3	22.8	24.4	25.7	74.4	72.5	71.0	7.75	7.75	7.5
G	11.0	12.0	12.0	35.0	42.0	44.7	54.0	46.0	43.3	8.75	10.0	10.5
TOTAL	11.5	11.9	10.7	21.8	24.8	29.0	66.7	63.3	60.3	100.0	100.0	100.0

CHANGES IN THE PERCENTAGE OF TURNOVER CAPTURED BY THE VARIOUS TYPES OF RETAIL TRADERS : 1950-57-61; Source: Reference No. A/32 TABLE No 3

Although several hundred mail-order businesses are registered, 91% of all sales were in the hands of 28 firms. Clothing predominated sales, accounting for over half the total sales made. Household goods made up a further  $\frac{1}{3}$  of total sales and an outstanding increase was reported in sales of radio and electrical goods.

(ii) Manufacturers' Direct Sales to the Public

In 1961 the value of these sales amounted to £144 million or 1.6% of total retail trade turnover for 1961. (Board of Trade Journal, 15.2.1963). The majority of these sales were made by door-to-door salesmen or agents and the range of goods covered is extensive. In 1950, sales made direct to the public by manufacturers totalled £70 million, so that in the 1950-1961 period sales have increased by 105%. This is at only a slightly higher rate of increase than consumer total expenditure for the same period.

(iii) Mobile Shops

In 1961 the sales turnover of mobile shops was £93.0 million, which represents an increase over 1950 sales figures of 935%. In 1950 there were 1,162 registered mobile shops, while in 1961, the number had grown to 11,700. (Board of Trade Journal 19.7.1963). The majority of these shops specialise in the sale of groceries and other food stuffs. Grocery, butchers, fishmongers and greengrocers, fruit and fruiterers van sales accounted for about 2.5% of total turnover in these trades, but for greengrocers and fruiterers, the van trade amounted to more than 5% of total trade turnover. Co-operative Societies have pioneered van trade and while in 1950 they owned the majority of mobile shops, in

1961 their numbers had fallen to 23% of the total number. The percentage of total van trade captured by Co-operative societies was 39% in 1961. Nearly 25% of total mobile shop trade turnover was concentrated in Scotland as compared with only 10% of all retail sales.

(iv) Automatic Vending

Sales from automatic vending machines rose from £2.3 million in 1957 to £4.1 million in 1961. Three firms accounted for over 75% of this total trade while in all only 26 machine operating firms were distinguished. (Board of Trade Journal 31.5.1963). The number of machines increased along the same lines as sales turnover, with 42,479 in 1957 and 73,019 in 1961. These figures are additional to those operated by retailers, the sales of which have been included in the census totals for retail trade. Confectionery was the principal commodity sold, although cigarettes and milk sales increased substantially. Dividing sales by numbers of machines gives an average sales per machine figure of £56 per year. While there has been a tremendous increase in both the number of machines and sales turnover, therefore, the importance of automatic vending on the total retail trade is still quite small.

1.33 Conclusions

The foregoing brief outline of the organisation and component parts of the retail distribution trade leads to only one conclusion. This is that the forces of increased consumer expenditure, competition, operational and running costs are forcing the retail trade towards greater efficiency. This efficiency must be obtained by reducing overhead costs and this can be

ITEM	CO-OPERATIVES			LARGE MULTIPLES			SMALL MULTIPLES & INDEPENDENTS			TOTAL		
	1950	1961	CHANGE % ±	1950	1961	CHANGE % ±	1950	1961	CHANGE % ±	1950	1961	CHANGE % ±
N° OF SHOPS	25.554	29.396	+ 15%	53.949	67.299	+ 24.5	503.639	480.612	- 4.6	583.132	577.307	- 1
N° OF EMPLOYED	182.097	195.144	+ 7.2	403.284	633.029	+ 57	1.436.144	1.695.911	+ 18	2.392.226	2.524.084	+ 5.5
TOTAL SALES (£.000s)	571.488	959.339	+ 68	1.098.000	2.580.000	+ 136	3.335.000	5.379.000	+ 61.5	5.000.130	8.918.860	+ 78
SALES/SHOP (£.000s)	22.4	32.6	+ 45	20.3	38.4	+ 89	6.6	11.2	+ 70	8.6	15.5	+ 80
SALES/EMPLOYEE (£.000s)	3.13	4.93	+ 58	2.71	4.08	+ 50	2.32	3.17	+ 37	2.09	3.53	+ 69
EMPLOYEES/SHOP	7.15	6.74	- 6	7.5	9.4	25	2.85	3.5	+ 23	4.1	4.28	+ 4.4.

CHANGES IN THE RETAIL TRADE STRUCTURE : 1950 - 1961  
Source : Reference N° A/32

TABLE No. 4

achieved by bulk buying of standardised items, central warehousing prepackaging and as far as possible, centralised shops and stores catering for large and uniform consumer demands. That these tactics have been tried and proven successful is illustrated in the substantial gains made in sales turnover by the multiple organisations (see Table 4). During the period 1950-1961, while average sales turnover increased by 78%, Multiple retailers were able to increase their sales for the same period by 136%.

This trend towards larger and more efficient stores situated at the centre of large population pools only tends to throw an added burden on the already congested central areas. This trend towards centralisation of facilities was also noted in the Cumbernauld Central Area Report (Ref. A/22, p. 10) where it stated:-

"If then the effect of delivery is linked with the standing order, the effect of the roundsman, and the use of the telephone, (G.P.O. test enquiry in 1936 revealed one third of calls made by residential subscribers were to retail shops) it will be seen that the distance between home and shop may matter less and less to the customer. Delivery in fact encourages greater centralisation with apparent advantages for the consumer. The frequency of shopping trips is reduced therefore the customer is enabled to shop further afield, since fewer purchases have to be carried home".

While many changes are imminent in both retailing methods and consumer shopping habits, it seems that the most urgent planning problem is one of defining the principles of shopping centre design, functions, and location, while at the same time evolving planning techniques whereby these centres are planned on at least a regional basis.

1.41 General

While the previous sections of this chapter have dealt with the fundamental components of the distribution framework--the consumer and the retailer--this section attempts to draw together these units so that they may be considered on the ground where they meet: the shopping centre.

It has been shown that there is an increasing number of consumers, they have more money to spend, a higher standard of living and if not now then probably in the near future, a car. Preliminary research has shown that these factors may mean that the local shopping centre will play a less important role than it does at the present time. The Retail Trade on the other hand, is already feeling the effects of these consumer pressures. The greater efficiency required is leading to the development of new types of shops and retailing organizations. The future position of the small independent retailer is once more being threatened and while the Multiple organizations capture an increasing amount of the total retail consumer expenditure, this is achieved only by means of central warehousing and distributing facilities. Both the consumer and the Retail Trade therefore would seem to be moving away from the localized shopping centre towards a larger and more centralized type of shopping centre.

The resultant system of distribution facilities will probably maintain some form of hierarchical ordering of shopping and service centres, so that no one size of centre at no one fixed location will be likely to cater for the whole range of consumer requirements. What does seem likely to evolve



however, is a new range of shopping centres wherein the demands of both retailing efficiency and consumer convenience can be fulfilled.

What function, what size and what locational requirements will this new range and type of shopping centres take? The answers to these questions and quite a few more are urgently required if planners are to shape the future growth patterns in a way flexible enough to allow for the maximum potential development within the economic, social and physical environment of our existing cities and towns.

In the following section a theory concerning the relationship between consumer and shopping centre is advanced. This is not original work done by the candidate, but represents instead, a rewriting of Guttenberg's theories of urban structure and urban growth so that they become specifically related to the candidate's own specific studies. (For Guttenberg's Theory, see Ref. D/14).

This theory of Guttenberg utilizes 'accessibility' as an organizing concept and is based on the objective of 'overcoming distance' between people and facilities. In this way a definition of urban structure is achieved. The weakness in this approach lies in the fact that transport efficiency, accessibility and time-distance are used by Guttenberg as the sole variables, although he himself acknowledges that these are not the only variables in the structure of society.

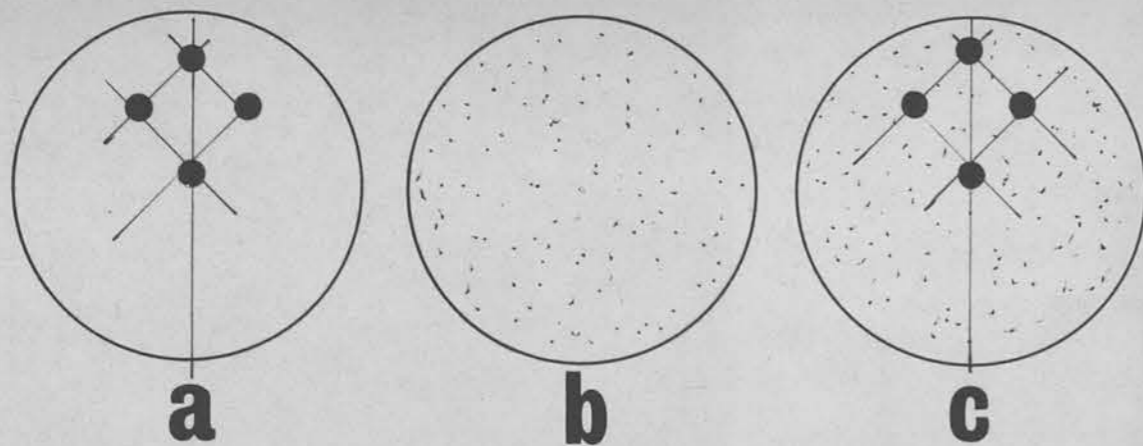
Despite this weakness, the presentation and rewriting of this theory at this juncture by the candidate does have some advantages. First, population expansion and growth is a contin-

uous phenomenon while adjustments in the retail trade to cater for this increase in population occur only gradually. As a result of this, a whole series of transitional relationships is established so that often the features of both the new and the old equilibriums are obscured. A simple statement of the fundamental elements involved in the relationship between consumer and retailer therefore has the advantage of removing some of these obscurities. Second, by stating this theoretical relationship in terms of transport efficiency, accessibility, etc., it does enable changes in the transport efficiency and their effects on this relationship to be evaluated.

#### 1.42 Theory of Shopping Centre Location and Function

To proceed with the theoretical analysis of the factors determining the functions and locations of shopping centres, it is first essential to define the elements of the structure itself. Thus assume for the purpose of this discourse that total distance may be defined as being the sum of all distances between each person and each shopping centre. Also assume that the object is to reduce total distance. To achieve this object, only two alternatives are open. People can be transported to shopping centres or shopping centres can be distributed to people. Each method applied in the extreme produces a distinctive kind of spacial pattern and environment.

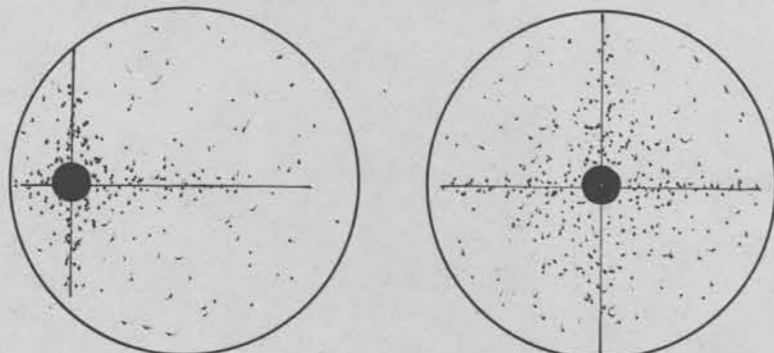
In Fig. A of Diagram 19, the function of transportation is to overcome the total distance between people and shopping facilities. In Fig. B, transportation has no function since total distance has been overcome by means of distribution. Actually neither transportation nor distribution can do the whole job, because not all people are mobile and not all shopping



**a**

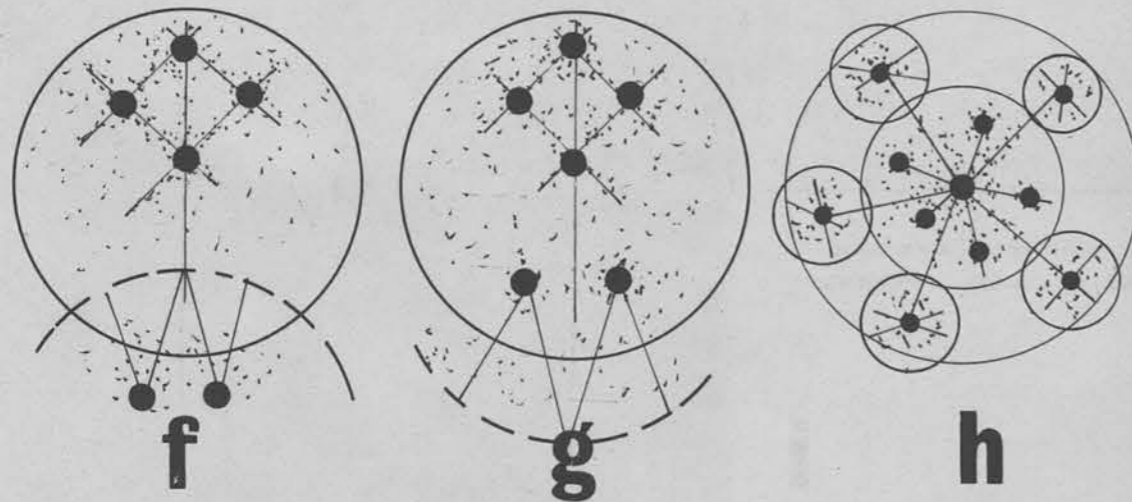
**b**

**c**



**d**

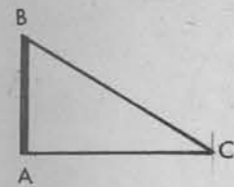
**e**



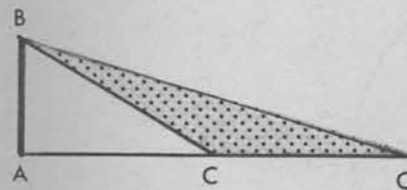
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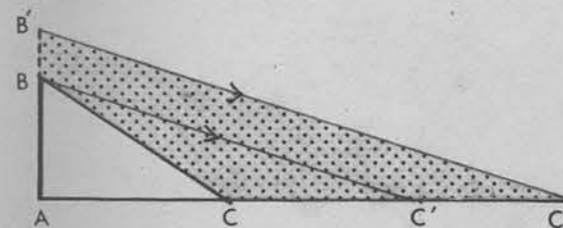


1. BASIC STRUCTURE



2. INCREASE IN TRANSPORT EFFICIENCY

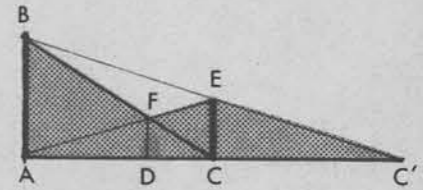
= New density gradient



4 INCREASE IN TRANSPORT EFFICIENCY WITH INCREASE IN CENTRE FUNCTIONS

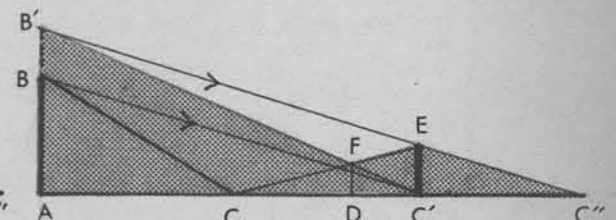
KEY

- A-B = Major shopping centre functions.
- A-C = Service radii = population served.
- B-C = Transport efficiency = density gradient.
- B-C' = Greater transport efficiency
- A-C' = Greater service population and radii.
- F-D = Point of equal attraction



3. SUBSIDIARY CENTRE C'E ESTABLISHED AND AS FOR 2.

= Resultant Density Gradient.



5 SUBSIDIARY CENTRE C'E ESTABLISHED AND AS FOR 4.

THEORY OF SHOPPING CENTRE LOCATION AND FUNCTION  
SEE THESIS TEXT.

DIAGRAM NO 19

facilities can be distributed. People may tend to be immobile because of their age (the young and the old) or because of their social role (as for housewives with young children). Some shopping facilities cannot be widely distributed because to function economically they must exist at a size which prevents indefinite multiplication, (i.e., Department Stores).

These constraints require the use of both transportation and distribution to overcome total distance between people and shopping facilities. Part of the distance must be overcome by means of local facilities. The remaining or residual distance must be overcome by means of the transportation system. In this way a combination of Figs. A and B gives a truer picture of the retail trade structure in the urban environment (see Fig. C)

So far, the major functional elements of the relationship between consumer and retailer have been identified and a meaning has been given to them in relation to a single objective. These major elements are the distributed facility in the form of the small local shopping centres; the undistributed facility in the form of the large community shopping centres; and the transportation element. In overcoming distance the local shopping centres and the transport element are complimentary in that theoretically the more local shopping centres there are, the less need there is for transportation. The inverse relationship also holds true. Practical limits to both concentration and distribution are set by immobile people and location-tied shopping facilities. Fig. C therefore shows the fundamental relationship that exists between people and shopping facilities. Certain shopping facilities can be distributed throughout the area in close proximity to their users while others can be distributed only in the sense of being made accessible through the

transportation system.

The first objective was to overcome total distance between people and shopping facilities. A second objective related to the first, is to reduce residual distance, that is, the distance remaining between people and shopping facilities after some shopping facilities have been distributed and localized.

Residual distance can be reduced by adjustments in the spacial form of the community. Form here is used to denote the way the elements of both people and shopping facilities are arranged on the ground. The effects of this arrangement on residual distance are shown in Figs. C, D, and E. In Fig. C it may be argued that there would be much movement back and forth between people and undistributed shopping facilities. If these undistributed facilities are consolidated at one point, it seems likely that the distance to be covered will decrease. (Fig. D) It will decrease even further if the consolidated facilities are put in the centre of population, (Fig. E). The present objective, namely to reduce residual distance, requires that one shopping centre within the community be privileged with respect to size and location. This situation exists today and is reflected in the location of the city's central shopping facilities at the centre of the transportation system with feeder routes radiating outwards from them.

Limits to both concentration and dispersion are set by immobile people and by shopping facilities which cannot be distributed. But not all persons are equally immobile and not all shopping facilities are fixed or concentrated to the same degree.

These facts therefore explain the hierarchical nature of the neighbourhood and community shopping centre structure; people can travel different distances to shopping centres and the shopping centres themselves have different service radii.

By bringing people and shopping centres together, three community structural elements are created. Of these, one, the local shopping centre, as the distributed facility, may become the focal point for local orientation of human activities. The community or regional shopping centre as the undistributed facility, together with the transportation element may become the basis for community or regional organization.

Just as the spacial form of the community can reduce or increase residual distance, so too can density of development. This element reflects the desirability of a location within the total environment, and may be related to value of location determined by accessibility. Normally, people will locate themselves where access to their needs is optimal, however due to the varying and composite nature of their needs, a compromise location often results. Density is however normally at a maximum when accessibility to one fixed function is high. (This may take the form of high density residential units near to the city centre, or at the sea side).

Where one place is supreme in terms of access (as say the city centre), every other place acquires a value which is some fraction of the value of the chief place, the amount depending upon how well it is able to substitute for the chief place. The ability of these subsidiary centres to substitute for the chief centre determines their value in the urban

structure and their density. The extent to which they can substitute for the chief place is in turn dependent upon their accessibility and the transport efficiency. Normally therefore as one moves away from the centre of a region, ease of access declines, and with this decline in accessibility, locational value and density also decline.

Having defined the major functional elements of the urban structure and shown that the physical forms and patterns which these elements take in relation to each other may be shown to be dependent upon transport efficiency, accessibility, etc., there remains only two further factors to be considered. First, what effect does growth have on existing urban structures, and second, if the basic component concerning the distribution and functional arrangement of these elements in space is taken as the transportation system and its efficiency, what might be the effects of a changing transport efficiency?

Growth involves an increase in size and an adjustment to size. Figs. F, G, and H of Diagram 19 illustrate some of the possible forms of growth. In 'F', a vacuum caused by excessive distance together with a new intensive development or growth outside the community, causes some parts of the community's areas to be served by these new centres outside the community. The degree to which these new centres will reorientate people's shopping patterns will depend upon the new centre's value as compared with the old centre's value. Value, as stated before, depends upon the extent to which the new centre can substitute for the old centre, and in more practical terms may be a function of say the social, recreational and administrative as well as the shopping centre facilities provided by the centres as well as their accessibility in terms of location and transport efficiency.

Alternatively as shown in 'G', new centres may rise within the existing community. In this case also, the old established centres may lose all or part of their trading supremacy but this loss must be weighed against the advantage to the community as a whole of retaining its custom and winning new consumers from beyond its existing boundaries. Older centres may also keep their importance by better transportation--transportation being, as has been shown, the functional equivalent of distributed facilities.

The British New Towns Policy and its principles of confinement of city growth by the establishment of satellite towns to cater for increases in population is represented in Fig. H of Diagram 19. To some extent this represents a combination of Figs. F and G and this combination gives rise to three important considerations. First, as the satellite towns are 'growth elements' of the parent community, by so being, they imply that the parent community centre will be called upon to act as a service centre for this increase in population. The extent to which this follows depends largely on the degree of self-sufficiency attained by the satellites, and this in turn will ultimately be a function of the relative population levels of both and the levels of accessibility between both in terms of distance and transport efficiency. In this way and secondly, while the satellite centre may syphon off some of the parent community's population growth and service functions (as shown in 'F'), depending upon the scale of growth, etc., the parent community's service centre will in fact grow in importance and hence increase its total sphere of influence, (as in 'G'). This is probably a fair summary of the existing situation in the south-east of England with specific reference to London and its eight satellite towns. (see also Ref. B/36). The third consideration is the



impact which these satellite towns have on the region onto which they are superimposed, and here, similar factors will determine the new levels of functional inter-relationship which will ultimately develop between the satellite towns and the towns in their immediate vicinity.

To summarize the problems thrown up by growth therefore, it may be said that irrespective of the form which it takes, (i.e., F, G, or H) adjustments throughout the whole service centre structure are implicit. In this way while the service functions of a satellite centre may cater for the majority of its residents' needs, unless that centre duplicates in full the services, facilities and accessibility functions of the parent community's service centre, then adjustments will be necessary in the parent community's service centre too. In a like manner, the establishment of a large new service centre within a satellite town will require adjustments in the surrounding district's towns and their service functions. The extent of these adjustments being functions of existing service population levels and the respective levels of accessibility to specific functions.

Turning now to a consideration of the effects of a change in transport efficiency, the various possibilities are shown in Figs. 'I' of Diagram 19. First, and as is shown in Fig. I, the basic relationships assumed to hold here between community centre, the size of the region, transport efficiency and density distribution are given. Here, the line AB represents the functional extent of facilities provided within the community centre, AC represents the service radius and hence population served, while the line BC represents transport efficiency and density of development likely to prevail within the population's

distribution. Now it may be assumed that an increase in transport efficiency will result in a flatter slope to the line BC, resulting in a territorially larger region being served by the existing centre. The notes and the following Figures in Diagram 19 illustrate the many possible variations which may follow this change in transport efficiency.

What will be seen from a study of these Figures, is that just as was shown in an analysis of 'growth' implications, changes in the level of transport efficiency also result in adjustments throughout the entire service centre functional structure. Depending upon the structural alternative chosen, will be the level of adjustment, so that some centres may increase their service function potential while others may lose their potential.

In this theoretical representation of the relationships existing between consumer, retailer and transport methods, complex functional relationships have been reduced to simple terms. In actual practice these abstract relationships cannot be expressed quite so simply since changes in community growth and transport efficiency do not occur overnight. Instead growth patterns, consumer mobility and retailing efficiency change slowly but constantly and the transitional relationships established are obscure and difficult to unravel.

This analysis however has underlined the fact that both population growth and changes in transportation methods and efficiency require adjustments to be made throughout the whole retail service structure of shopping centres. Determinants of the locational and functional levels of shopping centre provision were defined as being the consumer's immobility and the

retailer's inability to function economically below a certain level of service population. Throughout the following chapters of this thesis, a report is given of the candidate's research on the problem of establishing what increasing car ownership will mean in terms of consumer mobility and immobility, and how this might affect future shopping centre location, functions and size, while in the section immediately following a brief summary is given of the current techniques used by planners to determine shopping centre size.

#### 1.43 The Size of Shopping Centres

So far as British planning practice is concerned, W. Burns was perhaps the first to introduce American theories of shopping area analysis in 1959. (see Ref. A/2). Prior to this date the only standard available to planners was the 'one shop to 100-150' persons one, recommended by the Reith Report in 1946, (Ref. A/24). The method of calculation postulated by Burns involved an assessment of consumer expenditure (based on total town population) in the various retail trade groups; this was then divided by a figure for retailers' turnover/sq. ft., again for the same trade groups, so that the resultant figure was an area in units of sq. ft. which represented the 'estimated area' required for that retail trade group by that specific town population.

While this method was undoubtedly an advance on the New Towns Committee's Final Report working rule, it has two vital areas where large inaccuracies may creep in. First, in the assessment of consumer expenditure, based on average retail group sales turnover per head of population; and second in the average sales turnover/sq. ft. figures used for the various

retail groups. In the Cumbernauld 'Central Area Report' (Ref. A/22) in 1960 the basis of Burn's calculations was adapted in principle, although greater emphasis was given to the question of assessing consumer expenditure. In this case a sample of 100 towns was selected, each town purportedly bearing some relationship to the proposed town of Cumbernauld in both population, size and situation adjacent to a large conurbation. By using the Board of Trade's 1950 Census of Distribution results for each of these sample towns, correlation co-efficients were calculated between population and sales turnover for each retail trade group. In the overall result these calculations led to the conclusion that by reason of the proposed new town's size and proximity to Glasgow, it would lose 1/6th of its total sales turnover to the city of Glasgow. The 'Central Area Report' for Cumbernauld was, at the time of printing, the first attempt to calculate a new town's shopping facilities on a reasoned basis, and the method was eagerly adopted by other planning authorities (see Ref. No. C/9).

By 1962 the advantages of an economic appraisal of central area development proposals had become accepted. (see Ref. No. A/25). In 1963, however, planners involved in central area redevelopment schemes were becoming increasingly aware of the fact that unless such economic appraisals were carried out on the widest possible lines (i.e., a regional level, at least), Britain might soon find itself to be a country full of 'regional' centres, with no service villages left to support them. (see Ref. No. C/16 and C/46). In May, 1963, therefore, the County Planning Officer for Cambridgeshire (Ref. No. C/28) presented the first attempt to rationalize a whole region's shopping facilities and potentialities, specifically related to the redevelopment plans for Cambridgeshire. In the analysis of

the 1950 Census (Ref. No. A/30) data was used to define the service population for the various retail trade groups over the whole range of town size groups within the County. In this way the whole structure of the County's distribution framework was defined and certain observations could be made concerning the relationship between towns of certain population size and the shopping facilities which they provided. (see Dia. 5)

The Cambridgeshire Report was followed in 1964 by an even more elaborate analysis of the 'Retailing Centres in the Midlands' by G. M. Lomas (Ref. No. C/14). This report also contained some valuable criticisms of the Cumbernauld Central Area Report. In late 1963 a report was also published on an investigation of 'Shopping in the North West'. (Ref. No. D/21).

The development of the regional analysis of retail services is therefore a recent one. To date there are no fixed 'model analysis' methods and the evolution of a satisfactory model will take time. As is to be expected in the early years of developing analysis techniques, several methods must be tried and discarded before the most satisfactory one can be selected. What techniques are evolved must by the very nature of the retail trade itself, be completely flexible in application. No two regions are ever alike so that in the final analysis, individual circumstances should determine the techniques used and the type of results obtained.

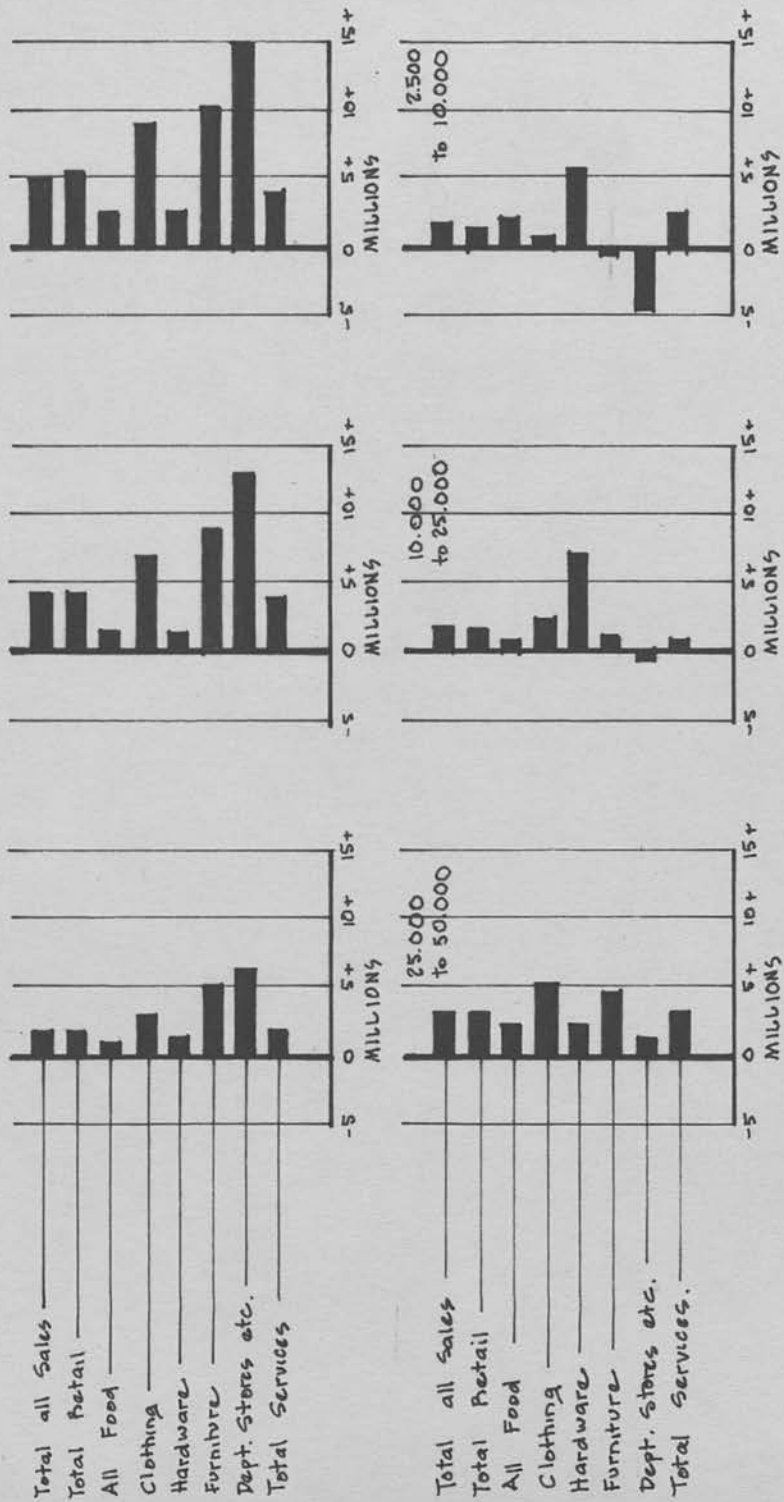
#### 1.44 Conclusions

Both the theoretical statement of the relationship between consumer and retailer and the brief analysis of current techniques used to determine shopping centre size show a leaning

Towns of  
250,000  
and over

50,000 - 100,000

100,000 - 250,000



POPULATION SERVED - MORE OR LESS THAN RESIDENT POPULATION

Retail and Service Trades. The proportion of Sales by Town Size Groups, England less the Conurbations. Derived from Census of Distribution, 1950. Reproduced from Reference C.28.

in one direction. The theoretical analysis of both growth and changes in the levels of transport efficiency led to the conclusion that irrespective of the forms which these changes take, adjustments throughout the whole retail and service trade structure are required. This aspect is further emphasised in the analysis of shopping centre size determination techniques, for it was shown that techniques being advanced are based on a broad 'regional' base which enables the whole community retail and service trade structure to be analysed.

It is now no longer sufficient to estimate the likely pool of consumers with respect to the design of one shopping centre only, for the consumer himself is not divisible and new customers to one shopping centre are lost customers to another. The mere provision of a new shop does not automatically 'create' new customers. This fact was not readily appreciated in the early years of the development of the American type of regional shopping centre, and many speculative developers were disappointed and more importantly economic resources and investment were wasted (Ref. C/28)

Both sections show that further research into the economic and functional structure of the retailer and the consumer's standards of living, social behavior patterns and mobility are necessary if the full implications of the changes now occurring in the distributive industry are to be appreciated and applied towards the derivation of new planning standards. '.

The analysis of consumer income and expenditure, mobility and social forces which help shape future shopping patterns all emphasised the scale of the forces now acting on the existing distribution network. These forces were created in the immediate post World War II era and even now have probably not yet reached their peak.

Already it has been shown that retailing methods and organization have been forced to adapt to the changing consumer demands in both quantity, range and type of goods. In an effort to first meet the increasing demand, sectors of the retail trade have had to adopt a new and more efficient method of distribution and this has been achieved by catering for a larger and more standardised pool of shoppers at locations privileged by their accessibility. The ability of the retailer to move further away from his client and so widen his service radius has been made possible by more efficient methods of communication and transportation.

Contrary to this move away from the inefficient corner shop type of retailing and to the tendency for concentration in the larger types of centres, is the rapid build-up of traffic congestion already being experienced by most British cities--a tendency which immediately suggests subcentralization of some of the large service centres' functions.

These questions of population expansion, growth, increasing consumer mobility and their effect on the relationship existing between consumer and retailer have been analysed in theoretical terms in the last section of this Chapter, and



this analysis together with a brief review of current techniques employed in determining shopping centre size, showed that irrespective of the type of growth planned and the change in transport efficiency, adjustments become necessary with the whole of the community retailing structure. In this way there is growing up an increasing acceptance on the part of both planner and developer, that whole regions must be subjected to analysis before making decisions concerning what might be the most desirable structural alternative to follow in relation to one particular scheme or centre.

Finally, it was stated that to date no fixed regional analysis techniques had been evolved. Probably much research and survey work is necessary before these techniques can be evolved. What is more important at this time however, would seem to be that the nature of both components and the whole of the distributive structure and its relationship with the consumer are made known in precise terms. Too often new formulae and techniques are advanced by which the 'size' of shopping centres may be assessed, and very few seem to be advanced with the realization that by delineating 'size', function also becomes fixed.

INTRODUCTION TO SURVEY WORK

The survey and analysis work which is reported on in the following four chapters has been related primarily to a study of the 'Lothians Region' in Scotland. This 'region' comprises an area of some 80 odd square miles surrounding Scotland's fourth designated new town at Livingston; the whole being part of the eastern sector of the central industrial belt and centred about fourteen miles to the west of Edinburgh. In Appendix 1.0, a summary of the conditions leading up to the designation of this new town is given and as is further explained in this Appendix, the Lothians Region itself has been made the subject of a separate yet co-ordinated regional survey and plan undertaken by planning consultants.

The consultants for the regional scheme were appointed in August of 1962 and were given a two year period to complete their brief. When the candidate arrived in the United Kingdom in October of that same year, after consultation with the Director of the Planning Research Unit, it was decided that the regional survey and plan being undertaken by the Unit (acting as joint consultant), would provide excellent opportunity and scope for the type of research which the candidate had in mind. Since that decision was taken the candidate has worked in co-operation with the Planning Research Unit following closely the progress of its work. Access was granted to all material, data, and maps, etc., collected by the Unit while on a reciprocal basis, any relevant material collected and assimilated by the candidate has been made available to the Unit.

In laying down the principle aspects of research for the candidate's own study of community and neighbourhood shopping centres, therefore, aspects were chosen which were relevant to the Lothians Regional Survey and plan. In this way, the three major surveys undertaken by the candidate and reported

on in the following sections, were evolved.

First, since the regional survey had at its heart a designated new town, a survey was made of all existing new towns in the United Kingdom to assess shopping patterns and shopping centres as evolved in this form of development. This survey and its results form the first section of survey work reported on in this thesis and is found in Chapter 2.

Second, since any plans for future commercial growth and development within the Lothians Region must be founded on a complete analysis of existing conditions, a survey was made of the existing regional shopping centres and their facilities. This survey and its results forms the second section of survey work reported on in this thesis and is found in Chapter 3.

Third, and as a follow-up to the previous survey of existing regional shopping facilities, a survey was made of how the existing regional population uses its shopping and social facilities. Emphasis in this survey was placed on the differences between facility usage as made by both car and non-car-owning families, so that a basis for estimating future changes in shopping habits could be established. This survey and its results forms the third section of survey work reported on in this thesis and is found in Chapter 4.

These three surveys are the work of the candidate. In Chapter 5, the results of the candidate's research work together with some of the draft recommendations and conclusions reached by the regional consultants, have been applied towards an estimation of what regional shopping facilities might consist of in the year 1985. The work of this last Chapter was undertaken principally to illustrate how research results might be applied to a practical problem.

CHAPTER 2.

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## SURVEY OF NEW TOWN SHOPPING FACILITIES

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Section 2.10 INTRODUCTION

When the findings of the Report on the Central Area ---Cumbernauld (Ref. No. A/22) were first made known to the planning profession in 1960, for perhaps the first time since the commencement of the British new towns policy a reasonable method of estimating the space required for retail and service trades in a new town was suggested. In the introduction to this report (page 5) the following paragraph may be found:

"At the outset it is necessary to answer the very obvious question that if fourteen other new towns are being built then would not their experience be sufficient to solve the problem. Unfortunately, it has not yet been possible to tap this experience in a comprehensive way. A Questionnaire designed to collate the experience of other new towns was in fact completed only by East Kilbride and Glenrothes. This lack of data together with the fact that all the other new towns contain a number of neighbourhood shopping centres makes the information available unreliable and not comparable to Cumbernauld. It is possible other new town experience, will provide in the future an interesting comparison with the method proposed in this report".

This section of the thesis reports on the candidate's own survey of new town shopping facilities. It attempts to establish what functional relationships exist between these two types of shopping centres, review these functions against their conditioning factors and to determine what trends might be expected to develop in the future as these governing factors themselves change.

### 2.21 Survey methods

Each of the fifteen new towns was visited during the last quarter of 1963 and the first quarter of 1964, and the results may be taken therefore as being indicative of the situation at the end of the year, 1963.

Data collected consisted of numbers and types of shops, as well as an estimate of sales area. Shops were classified in accordance with the Board of Trade's classification method (see Appendix 3.1). Sales area was taken as being space devoted to the sale of goods, including display areas, but not including storage or office areas. In addition to the seven retail trade groups defined by the Board of Trade, details were also collected for five other service trades (see Appendix 3.1).

To obtain this data, a map of each town was obtained from the Development Corporations and on this map was marked the location of each sub and central shopping area. Each centre was then visited in turn and the relevant details noted on the standard survey form (see Table 12). In all and apart from the fifteen town centres, 124 neighbourhood centres were visited. The total number of shops about which details were collected was 3,184.

### 2.22 Survey Results

Details of the survey results are shown in Appendices 2.1 - 2.15; here, each new town is treated separately and as well as showing the survey results for each town and neighbourhood centre (Tables 23-37 inclusive) maps are shown for each



town (Maps 15-29 inclusive) locating the various shopping centres and the general principles governing the towns development are discussed. The general results of the survey are shown in Table 5 and background data on each of the towns is shown in Table 6.

2.31 General

In presenting the results of the survey in a form suitable for analysis, the new towns have been listed in order of population as at 31.3.63. A further sub-division into three groups has been made, again based on population. Group 1 has six towns, each with a population for 1963 of between 10,000 and 25,000; group 2 has four towns, each with a 1963 population of between 30,000 and 50,000, while Group 3 has five towns, each with a 1963 population of between 50,000 and 70,000. This means of sub-division is essentially a crude one for it ignores such factors as original population, ultimate population size, and other economic, social and historical factors. This method of classification however, does enable some broad patterns to emerge which are of interest.

Table 6 sets out background information for each of the fifteen towns studied, shows them listed according to their populations and sub-divided into the three groups; it also gives the total sales area provided in each as derived from the survey, and shows how this area is apportioned between town and neighbourhood centres.

On the basis of this data, four major aspects of new town shopping provision have been investigated. First, by analysis of the kinds of shops provided by both town and neighbourhood centre, the complimentary nature of these two types of centres was made clear, and their scale of provision and distribution throughout the town were discussed. Next, each of the centre types was considered in turn and the specialised nature of each was explained. After establishing the patterns and scale

	TOWN CENTRE			NEIGHBOURHOODS			TOTAL SHOPS			G. TOTAL					
	New		Old	New		Old	New		Old	Old & New					
	No.	Area. ft <sup>2</sup>	No. Area. ft <sup>2</sup>	No.	Area. ft <sup>2</sup>	No.	Area. ft <sup>2</sup>	No.	Area. ft <sup>2</sup>	No.	Area. ft <sup>2</sup>				
NEW GROUP	H. HEMPSTEAD	150	124,400	0	nil	131	33,800	86	20,300	281	158,200	86	20,300	367	178,500
	HARLOW	140	150,000	0	nil	141	31,800	57	9,200	281	181,800	57	9,200	338	191,000
	BASILDON	146	173,000	0	nil	98	22,000	142	30,000	244	195,000	142	30,000	386	225,000
	CRAWLEY	144	212,600	76	25,300	134	32,300	22	3,900	278	244,900	98	29,200	376	274,100
	STEVENAGE	105	115,900	0	nil	136	34,500	120	43,000	241	150,400	120	43,000	361	193,400
NEW GROUP	CORBY	89	55,300	0	nil	104	36,300	70	17,400	193	91,600	70	17,400	263	109,000
	WELWYN G.C.	97	215,000	0	nil	47	20,200	0	nil	144	235,200	0	nil	144	235,200
	E. KILBRIDE	42	41,000	0	nil	57	22,600	58	25,500	99	63,600	58	25,500	157	89,100
	CUMBRAN	42	37,900	0	nil	50	10,700	142	25,500	92	48,600	142	25,500	234	74,100
	BRACKNELL	45	51,700	66	22,200	43	7,700	10	1,700	88	59,400	76	23,800	164	83,200
NEW GROUP	HATFIELD	56	32,500	22	7,500	32	10,500	40	7,000	88	43,000	62	14,500	151	57,500
	PETERLEE	26	8,300	0	nil	32	6,100	2	200	58	14,400	2	200	60	14,600
	GLENROTHES	27	18,400	0	nil	31	6,100	4	400	58	24,500	4	400	62	24,900
	N. AYCLIFFE	55	20,200	0	nil	19	3,800	0	nil	74	24,000	0	nil	74	24,000
	CUMBERNAULD	10	4,700	0	nil	4	2,200	34	5,800	14	6,900	34	5,800	48	12,700

NEW TOWN SHOPPING SURVEY - Showing general results.

TABLE No. 5

of provision and specialisation of the shopping centres, the third aspect studied was the relationship between sales area and sales turnover. By this means it was possible to define how the new town residents actually use these facilities so that a comparison could be drawn between theoretical shopping patterns and actual shopping patterns. The last point investigated was concerned with an evaluation of a new town's shop building and phasing programme. The following sections describe this world in detail.

### 2.32 Town and Neighbourhood Centres

The majority of new towns studied have followed the neighbourhood planning principles as laid down in the Reith and Dudley Reports (Ref. A23 and A24). While no 'ideal' sizes for neighbourhoods or neighbourhood centres were ever recommended and only primitive methods of estimating shopping provision were given at the time, the principle of subsidiary 'neighbourhood' shopping centres and sub-centres was established.

The theoretical basis of this concept was based on the frequency/convenience theory. Sub-centres were to serve daily needs, neighbourhood centres were to serve weekly needs, whilst the town centre itself was to provide the specialised type of shops which cater for infrequent needs. The neighbourhood concept and its strata type of shopping facilities therefore forms the basis of any discussion concerning shopping provision in the new towns.

One of the major determinants of the neighbourhood planning policy was the acceptance of a net residential density of about 35 persons per acre as being highly desirable. In theoretical land use terms this means that for an average new town population of say 70,000, something like 2,000 acres of land

GROUP No	Date of Designation	Population			Percentage complete by population	Total sales area for whole of town (Gtz)	% of area in Town Centre	% of area in Neighbourhood Centres
		At Designation	At 31.3.63	Ultimate				
GROUP No 5	H. Hempstead	21,000	62,800	80,000	79	178,500	70	30
	Harlow	4,500	60,900	80,000	76	191,000	79	21
	Basilston	25,000	59,000	106,000	56	225,000	77	23
	Crawley	10,000	58,160	70,000	83	274,000	86	14
	Stevenage	7,000	50,200	80,000	63	193,500	60	40
GROUP No 2	Corby	15,700	41,000	75,000	55	109,000	51	49
	Wolyn G.C.	18,500	37,100	50,000	74	235,000	91	9
	E. Kilbride	2,500	36,500	70,000	52	89,000	46	54
	Cumbran	12,000	32,150	55,000	59	74,000	51	49
	Bracknell	5,000	23,000	54,000	43	83,000	89	11
GROUP No 1	Hatfield	8,500	21,700	26,000	83	57,500	70	30
	Peterlee	200	14,500	30,000	48	14,500	57	43
	Glenrothes	1,150	14,385	32,000	45	25,000	74	26
	N. Lycliffa	60	14,000	20,000	70	24,000	84	16
	Cumbernould.	3,500	9,150	70,000	13	12,500	37	63

NEW TOWN SHOPPING SURVEY: Showing background information, sales area derived from survey and distribution of sales area between centres. TABLE No 6

must be devoted to residential use. Other prime land uses such as industry, open space and educational facilities, etc., would probably double this figure of 2,000 acres so that a total town area of some 4,000 acres or 6.25 square miles would be required. Assuming a circular town plan shape, this means that residents living near the periphery of the town would be about  $1\frac{1}{2}$  miles away from the geographical centre of the town. As  $1\frac{1}{2}$  miles is not a convenient walking distance, sub-centralised shopping facilities are needed.

In devising the practical means of application for this sub-centralized shopping centre theory, many variations can be observed in the British new towns. Crawley is probably the best example of the simple solution, for here (see Map 17) one neighbourhood shopping centre is provided for each neighbourhood unit, and these neighbourhood shopping centres function together with the town centre as the town's only shopping facilities. Harlow takes the process one stage further, and in addition to fairly large neighbourhood shopping centres, provides sub-centres in association with the neighbourhood units (See Map 18). At the farthest end of the scale, the three Scottish new towns of East Kilbride, Glenrothes, and Cumbernauld, each provides 'corner shops' scattered throughout the residential areas, sometimes in addition to the normal neighbourhood centre. The range of combinations possible with these four types of 'neighbourhood centres' is considerable and the type and range of centres chosen would seem to depend upon neighbourhood population, physical features, selected residential density, and proximity to town centre.

To determine more precisely the correlation between town and neighbourhood shopping centres in physical terms,

the percentage of sales area devoted to the sale of foods, non-foodstuff goods and service facilities has been shown for each town and centre type in Table No. 7. This table shows that the relationship between the two basic types of shopping centres is a changing one, determined principally by the ultimate population size of the town and its stage of development. Thus in the large and well-advanced towns (Group 3) it will be seen that an average of 75% of all sales area is situated in the town centre, while in the smaller and less advanced towns (Group 2), the distribution of sales area is more likely to be fifty-fifty. By comparing the percentage distribution of sales area between the three major shop types for both town and neighbourhood centre, the further aspect of specialization is made clear. Thus while in Group 3 towns, only an average of 11% of town centre sales area is devoted to the sale of foodstuffs, neighbourhood centres devoted on average 40% of their sales areas to food sales. These distribution figures vary corresponding to the town's stage of development. While, therefore, the complimentary nature of both these types of centres is fixed by theoretical and practical considerations, in practice, the relationship between the two types of centres is a complex one, varying throughout the years of the town's growth and development.

### 2.33 Specialization of Centre Types

Table 7 shows the percentage distribution of sales area between the three major categories of shops, viz., food, non-food; service, for both town and neighbourhood centres. These figures have been averaged for the three groups of towns and applied to average total sales areas so that the bar-area diagram shown in Diagram 6 can be derived.



	WHOLE TOWN			T.C. area as a % of TOWN		TOWN CENTRE			NEIGHBOURHOOD CENTRES			
	% of area			TOWN	% of area		TOWN	% of area		TOWN	% of area	
	Food	Non-food	Service		Food	Non-food		Service	Food		Non-food	Service
GROUP NO. 3	H. HEMPSTEAD	17	75	8	70	7	88	5	30	40	46	14
	HARLOW	13	80	7	79	6	89	5	21	40	44	16
	BASILDON	18	71	11	77	12	77	11	23	36	46	18
	CRAWLEY	14	79	7	86	7	87	6	14	52	32	16
	STEVENAGE	27	66	7	60	23	74	3	40	27	58	15
GROUP NO. 2	CORBY	30	60	10	51	27	66	7	49	32	57	11
	WELWYN G.C.	10	87	3	91	6	92	2	9	62	26	22
	E. KILBRIDE	33	61	6	46	19	78	3	54	45	46	9
	CWMBRAN	24	66	10	51	16	78	6	49	32	56	12
GROUP NO. 1	BRACKNELL	13	80	7	89	10	84	6	11	41	47	12
	HATFIELD	27	65	8	70	16	75	9	30	50	45	5
	PETERLEE	32	58	10	57	12	78	10	43	59	31	10
	GLENROTHES	28	65	7	74	20	78	2	26	50	29	21
	N. AYCLIFFE	45	49	6	84	42	50	8	16	63	37	—
	CUMBERNAULD	46	44	10	37	45	37	18	63	47	48	5

NEW TOWN SHOPPING — Town and neighbourhood centres. Showing percentage distribution of sales area. TABLE NO. 7

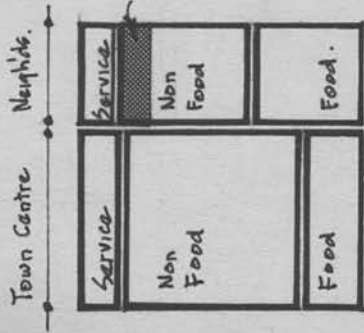


This diagram makes clear the changing relationship between town and neighbourhood centres as the town develops and the specialized nature of both. In the neighbourhood centres, food retail space provision never falls below about 40% of the total area and non-food retail space remains fairly constant at about 45% of the total area. In the town centres, on the other hand, food retail space declines in importance as the centres develop, until in the penultimate stage of development, it represents only about 10% of the town centre's total sales area. A point to note here is that in this stage, food sales area is almost equally divided between town and neighbourhood centres. The specialized nature of the town centres is shown by the increasing proportion of space allocated to non-food sales. This category is largely made up of clothing, household goods and general department stores.

These stores depend on a large population to function economically as the demands which they meet are relatively infrequent. The shops themselves are on average very much larger than neighbourhood shops selling the same type of goods, and are frequently owned by Multiple or Co-operative traders.

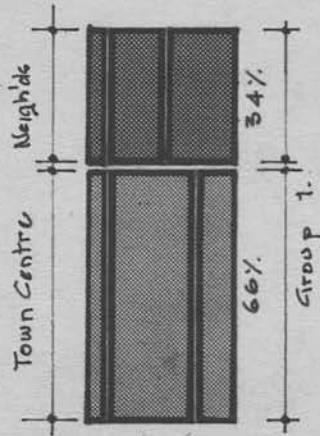
Neighbourhood centres on the other hand, specialize in food retailing stores. The almost fifty-fifty split between food and non-food stores in neighbourhood centres is caused by the provision of newsagents and chemists, with the addition of an occasional hardware and baby-wear shop. The population which these centres serve is therefore very much smaller than the town centre and the demands which they meet are frequent ones.

The specialization of both these types of centres therefore tends to follow closely the frequency/convenience theory.



Increase of area additional to prior stage is shown thus.

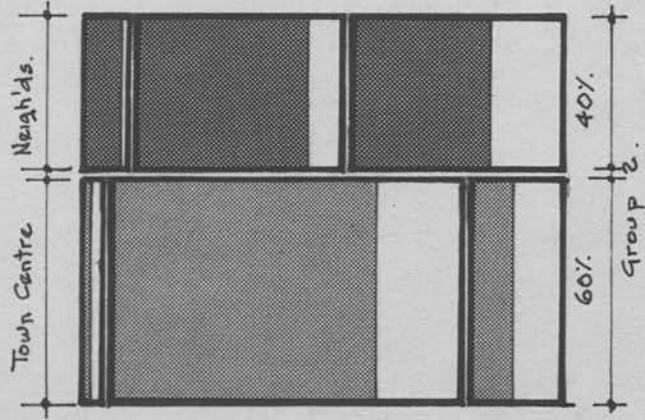
LEGEND.



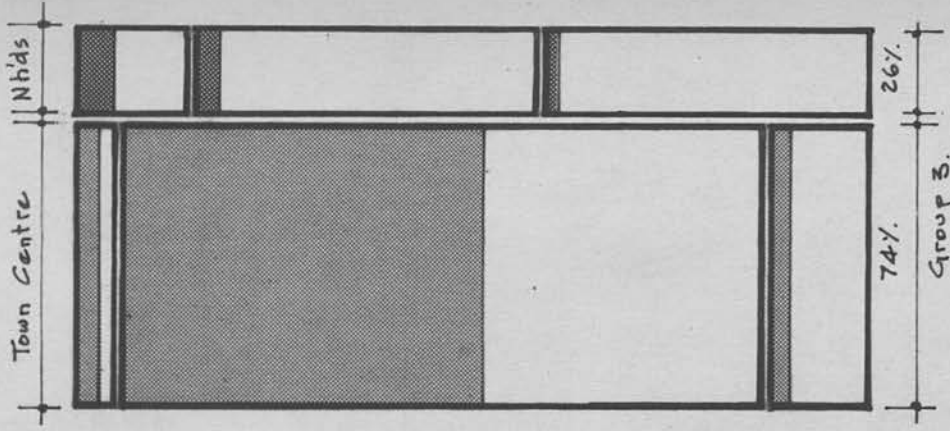
Average population: 16,000  
Average sales area: 36,000 ft<sup>2</sup>

**NEW TOWN SHOPPING SURVEY:**

Diagram showing shopping



Average population: 36,000  
Average sales area: 125,000 ft<sup>2</sup>



Average population: 58,000  
Average sales area: 210,000 ft<sup>2</sup>

for averages of three groups of towns

**DIAGRAM NO 6**

The following section investigates this theory from the practical point of view and by correlating sales area and sales turnover shows there new town residents shop for the various goods available.

#### 2.34 Sales area and Sales turnover

In order to assess just where the residents of the new towns do spend their money, an investigation was made of the recently published results of the 1961 Census of Distribution and Other Services, (Ref. A/32), and the results were compared with actual sales area distribution. The towns used in this analysis which is shown in Appendix 2.16, were Harlow, Crawley, and Hemel Hempstead, since for these towns the Census provides a breakdown of sales turnover for both the town as a whole as well as for the central area. The writer's survey areas were modified to relate them to the Census turnover figures which apply to the trading year of 1961.

It was found that proportionate distribution of sales areas did not necessarily agree with or indicate the true proportionate distribution of sales turnover. This is because turnover/sq. ft. figures vary considerably between town and neighbourhood centre shops. A contributory factor to this difference is the fact that town centre shops are on average considerably larger than their neighbourhood counterparts, and it has been shown (Ref. C/32) that in general, larger stores have a lower sales turnover/sq. ft. than do smaller shops selling the same type of product.

With the exception of Grocers, where it was found that town centre shops averaged a 60% to 70% higher turnover

figure than neighbourhood shops, all other varieties of neighbourhood shops had a higher turnover/sq. ft. figure than their town centre equivalents. The differences ranged from 7% up to 38% (see Table 38).

Sales turnover figures given by the Board of Trade in their Census Results, include both resident and regional shoppers. To assess the number of regional shoppers coming into a town as well as the number of townfolk who shop outside a town, would be an impossible task. What was done as a check on these figures therefore, was to compare the town's sales turnover per resident per trade, with similar average figures for the region as a whole, allowing for the fact that the Regional Figures published in the Census take into consideration an estimate for non-response while the individual town figures do not. In this way it was found that while there were differences between trade categories, both plus and minus, when rated with Regional figures, the overall result for each town indicated that during the year 1961, trade in these towns was fairly static. That is to say, sales made by regional shoppers in these towns more or less balanced the loss of trade due to the townfolk shopping outside the towns. On this basis then while not being strictly correct for each trade category, it can be assumed that the sales turnover figures do represent the spending of the townfolk within their towns alone.

Diagram 7-A shows the 1961 distribution of both sales turnover and sales area between town and neighbourhood centres for the average results as derived from the study of the three towns shown in Appendix 2.16. Diagram 7-B shows the probable 1963 distribution of both sales turnover and sales area between the two types of shopping centres for the same three towns as they existed

1961

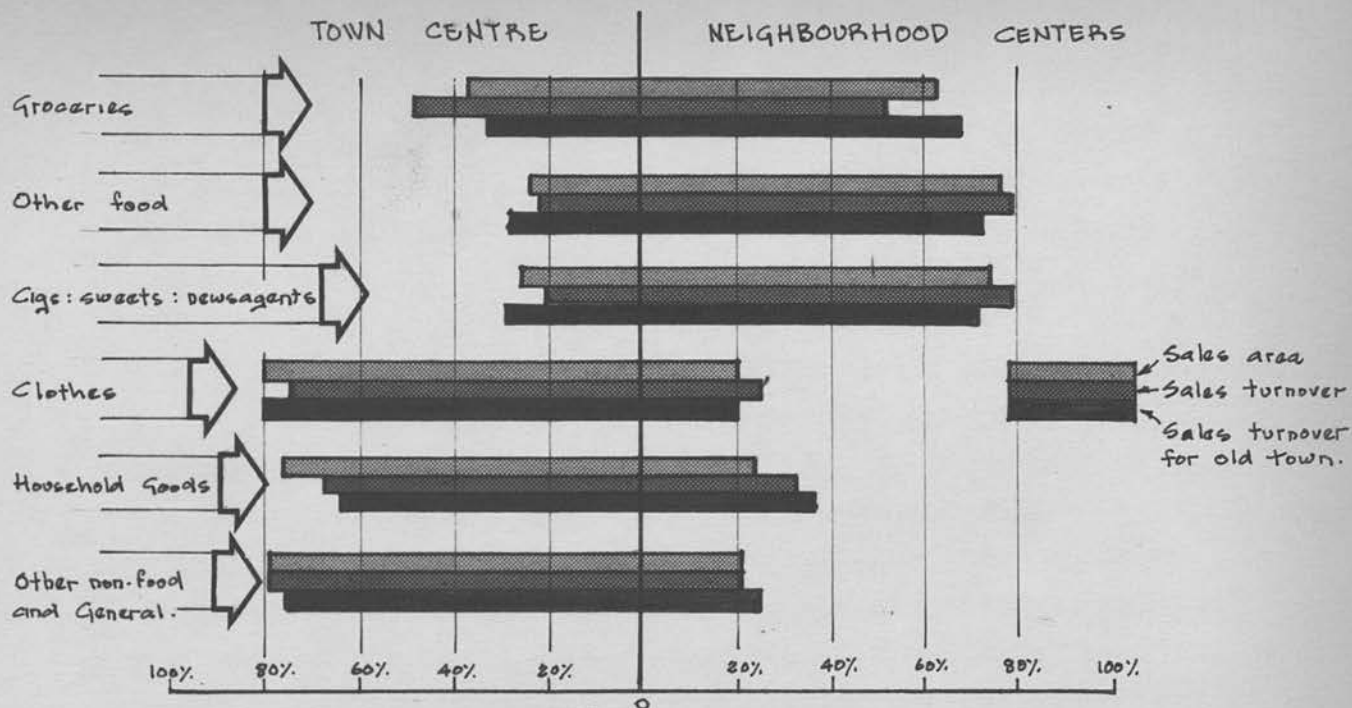
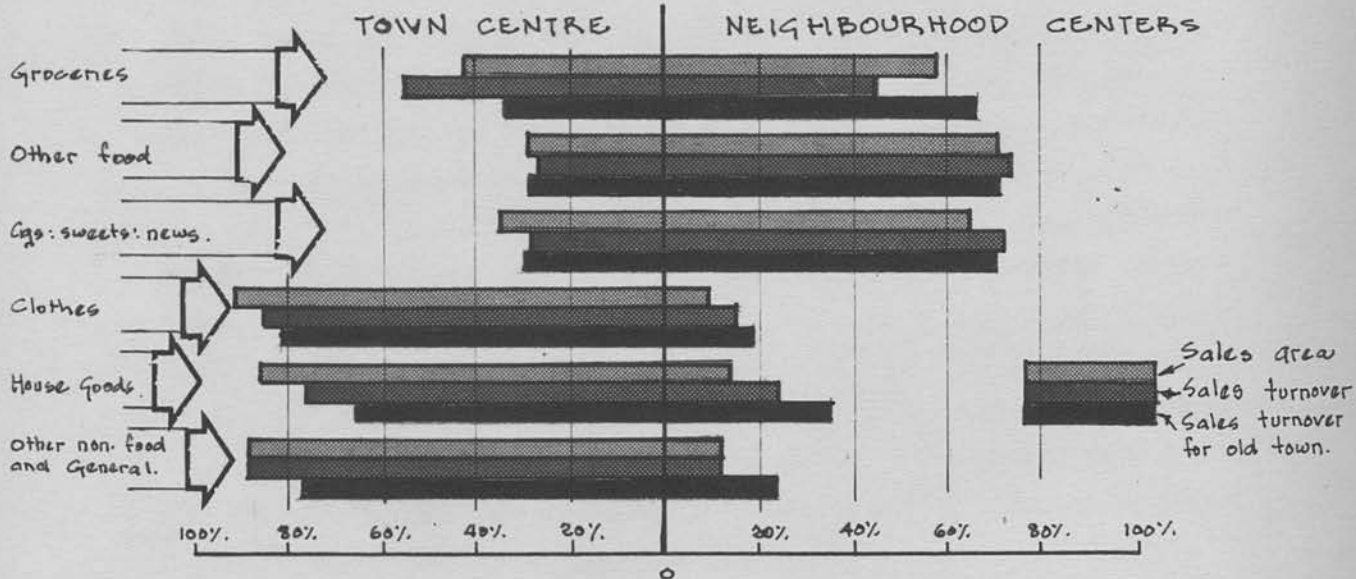


DIAGRAM N° 7.A

1963



NEW TOWN SHOPPING SURVEY:

DIAGRAM N° 7.B

Average distribution of sales area and sales turnover between Town and Neighbourhood Centres for towns of Harlow, Crawley and Hemel Hempstead, years 1961 and 1963.

in 1963. Diagram 7-B is based on the writer's 1963 survey results and on the assumption that the relationship between town and neighbourhood sales turnover/sq. ft. remained the same as it was in 1961. Also shown in Fig. 7-A is the Board of Trade's average turnover distribution figures for 'old' towns having populations of between 50,000 and 99,000 as shown in their article on 'Trade in Main Business Centres' (Ref. C/31).

Both diagrams show the specialization of the neighbourhood centres in the retail trade categories of food; other food; and cigarettes, sweets, and newspapers; as well as the specialization of the town centres in the remaining trade categories. What is of outstanding interest is the large proportion of grocery sales captured by the new town centres, especially when compared with the proportion captured by similar sized old towns. These diagrams show that in 1961, the town centres of Harlow, Crawley, and Hemel Hempstead captured on average about 48% of the town's total grocery sales, as compared with an average old town's percentage of 32%. As there is every reason to assume that there would be no great change in spending patterns in old towns for this size, this variance becomes even more marked when we see that in 1963 the three new town centres had probably increased their proportion of Grocery sales to 55%.

Defining reasons for this abnormal amount of grocery shopping is not a simple matter. The majority of food halls now established in new town centres are of the supermarket variety, organized by large Multiples or Co-operative Societies. These large stores depend on a considerable pool of shoppers and often attract custom by price concessions, dividends and trading coupons. All these points obviously have their attraction to the housewife, although contrary to these advantages is the disadvantage that

goods bought in the town centre must then be carried home. It can be assumed that these supermarkets and food halls in the grocery trade are also establishing themselves in old town centres, but points in favour of new town centres as preferable sites, must be ease of parking and probably better public transport systems, together with other less tangible factors such as the safety of new town pedestrian-vehicular segregation.

Because new town centres offer many advantages over old town centres, they have become more attractive to shoppers, even for what had previously been considered as 'convenience' goods and 'essentials'. This must mean that less shopping is being done in neighbourhood centres and that they in fact now depend for their custom less on convenience and more on personalised service, possibly coupled with home delivery. Census figures show that during the period 1950 to 1961, Multiple organizations increased their share of the grocery turnover from 20% to 26%, while Independent and Co-operative Societies shares fell by 4% and 2% respectively. During the same period, the average increase in turnover in monetary terms in the grocery trade was about 78%. Multiples increased their turnover by almost 140% and this was accompanied by only a 5% increase in the number of shops.

The trend is not likely to change therefore especially in the light of recent moves to abolish the Retail Price Maintenance Bill. In planning terms all this probably adds weight to the Centralized Town theory. It should be pointed out however, that even while new town centres are capturing an increasing amount of trade, and certainly more than their old town counterparts, the amount of trade still done through neighbourhood centres is far from negligible. In 1963, the neighbourhood centres in the towns of Harlow, Crawley and Hemel Hempstead

were capturing about 40% of the towns' total trade.

### 2.35 Phasing of Development

In Diagram 6 the shaded portions of the bars indicate the increase in shopping sales area additional to the prior stage and hence give a rough indication of the phases of development. This aspect is a major importance for it will be seen that in Group 3, practically all further additions to the town's total sales area occur in the town centre, and this increase is largely taken up by the non-food type of shop. A more detailed analysis has shown that this increase occurs mainly in clothing, household goods and department stores. When the size of this increase in area is compared with the remaining town centre area, it will be seen that this increase in fact doubles the total sales area of the town centre.

This large increase in town centre shopping area after a population of 40 to 50 thousand has been reached is a reflection of the specialized function which the town centre performs. The type of shop attracted to the town centre is dependent upon a large population and therefore finds it uneconomic to start business there before a certain level of population is reached. This pool of shoppers may be made up of both town residents as well as regional shoppers. The proportion of both is of marginal interest allowing for equal transport and convenience factors; it is the total number which is important.

The functional differences between town and neighbourhood centres, and its influence on the programming of shopping growth was recognized by the L.C.C. in its programming analysis of the central area study for Hook.



"A study of the programming requirements shows that by the year 15, when the population has reached 70,000 (70% complete).....only 62% of the central area retail shopping would be completed. This is because some of the larger elements of retail shopping department stores and shops with regional status needing large sites, would be unlikely to pay until a population of 100,000 was reached". (Ref. A/21)

It seems therefore, that new town planners are faced with a dual problem in the phasing of town centre shopping growth . First, the large stores will not come in until a certain population or 'shopping pool' is provided. This means that space must be left for them, and this space will in all probability not be taken up until a fairly late stage of the town's development.

The second aspect of this same problem is that until the large stores do come into the town, the town centre itself is left lacking in one of its most vital and specialized functions and therefore at least during the early stages of its development, the town lacks a balance in the variety and range of shopping facilities it provides for its residents.

2.41 Town Centres Generally

Considering that the chronological development of the new towns studied has been spread over a short period of time, a wide diversion in town centre planning concepts may be seen. One of the principal factors determining layout of centres is the degree to which pedestrian-vehicular segregation has been adopted.

Stevenage as the first of the new towns has complete pedestrian-vehicular segregation, although some towns which were designated later than Stevenage do not have this segregation. Some of the blame for this lack of pedestrian-vehicular segregation must lie with the retailers for their opposition to shops located only on pedestrian walks. It was not until 1963 that the Multiple Shops Federation published its booklet on 'The Planning of Shopping Centres' (Ref. A/28) in which for the first time a retailing association came down on the side of pedestrian shopping malls. The difficulties of the early new town planner can therefore be appreciated.

When a study is made of the town centres, two further interesting conclusions may be drawn. First when the majority of new town centres are completed, they will be surprisingly similar to the American out-of-town regional shopping centre. A tightly knit cluster of retail stores situated round pedestrian malls with extensive car parks surrounding the whole centre is the typical pattern. The marked difference between the British new town centres and their American counterparts is that the British centres are surrounded by a further ring of residentially zoned land.

Second, and this comes with closer inspection, a study of the British centre reveals that it is not nearly so compact or uniform in design or conception as the typical American centre. This slight degree of 'confusion' apparent in most British centres results initially from the differing functions for which it is designed. Social, cultural, administrative, residential, and educational facilities are all as often as not, present in the British centre. The objects of the two centres (i.e., British and American) are therefore somewhat different, and it would not have been unnatural for differing forms to have been evolved. What is surprising therefore, is that in the long run, these centres do end up very similar to their American counterparts.

The other half of the 'confusion' element found in British centres evolves both from the multiplicity of functional elements, each being the responsibility of a different body, and finally from the fact that these centres and their design concepts are evolved, programmed and constructed over the course of something like fifteen to twenty years. Both these obstacles are not encountered in American shopping centre design or construction.

While all these factors indicate that the design of a British new town centre is a highly complex matter and that the wide diversity of solutions so far found and tried is to be expected, with nearly 20 years of experience now past, the development of fundamental principles seems to have been extraordinarily slow in maturing. The following sections which review two new town centres are concerned primarily therefore with delineating and defining the principles which underlie each example's development.

## 2.42 Case Studies

### (A) Stevenage Town Centre

For a general description of the town's development the reader is referred to Appendix 2.7. On Map 21 it will be seen that the town centre is located well to the west of the town's residential area, almost immediately adjacent to the London railway line. This siting of the centre away from the geographical centre of the town was the subject of an objection made by the Stevenage Urban District Council at the Master Plan enquiry in October, 1949. (see Ref. A/13, p. 155). The economic advisors to the Development Corporation suggested that a 'pedestrian' shopping centre might be a hazardous scheme but the local population forced the Corporation to keep it 'pedestrian' (see Ref. A/15, p. 214). The initial planning stages for Stevenage's town centre therefore were not without interest.

Today, but for the Minister's request for an increased ultimate population of almost 130,000, the town centre would be virtually complete. The survey revealed that there were 105 shops in the town centre with a total sales area of 116,000 sq. ft. As will be seen from Map 1, which shows the town centre plan, the main shopping area is contained within a rectangular area measuring about 2,000 ft by 800 ft. or about 37 acres. Including non-commercial land uses, the total area is about 55 acres or 40 sq. ft. per person on the originally planned population of 60,000. Out of this 40 sq. ft. per person there is about 2 sq. ft. of actual shopping sales area for each person.

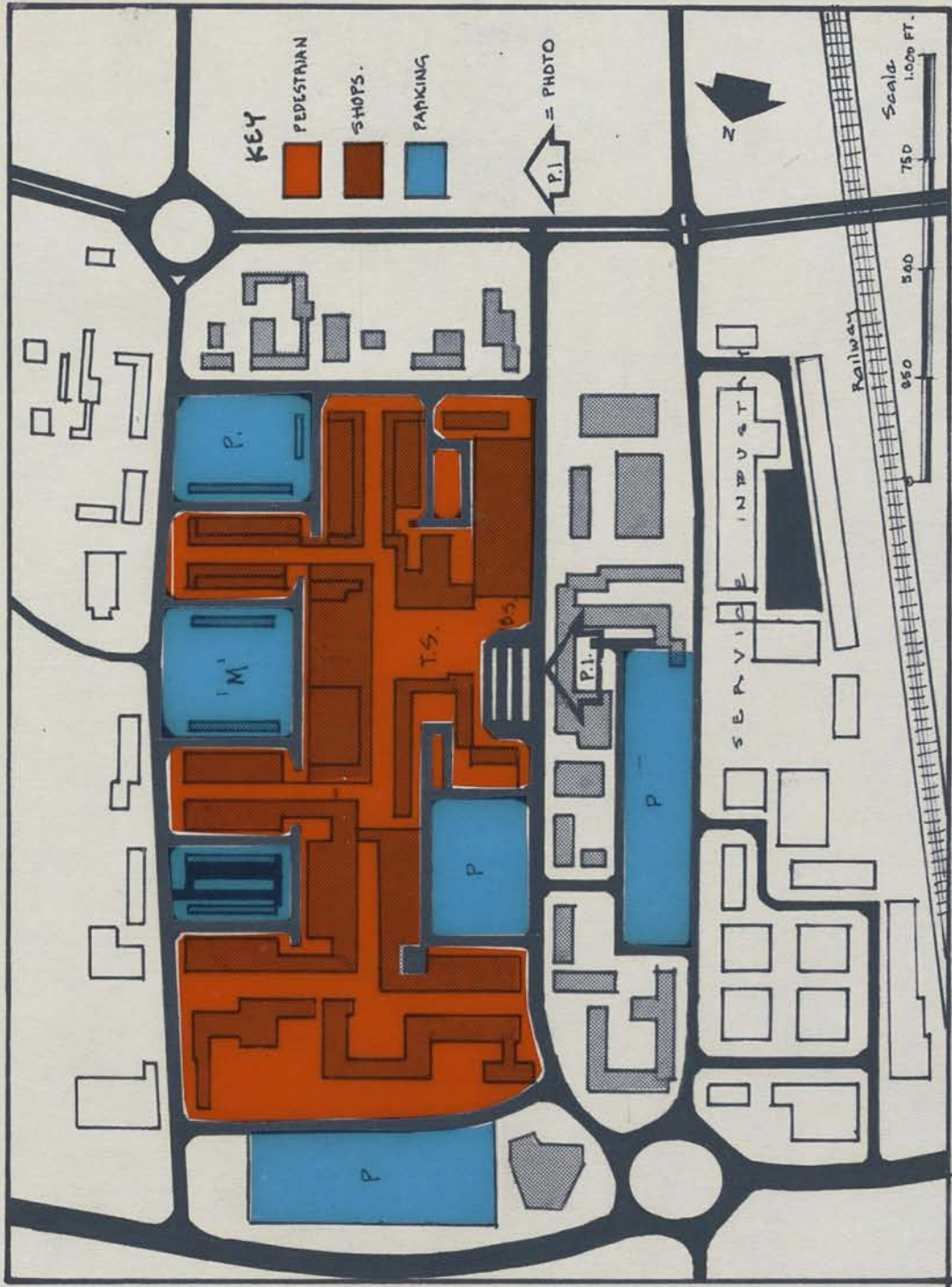
This centre, surrounded by a two-way ring road system, has at its heart a finely detailed town square about

80 yards square (marked 'T.S.' on Map 1--see also Illustration 1) The major stores are grouped around or near to the square which is itself immediately adjacent to the town bus station--marked 'B.S.' on map. These major stores were not completed until the end of 1958, just 12 years after the town's designation.

About 3,000 car parking spaces are in existence and these can be increased to 4,400 by constructing multi-level car parks on existing sites. Ultimately therefore there will be about one car parking space to every four resident families. (Based on 60,000 population and 3.25 persons per family). Customer car-parking functions independently from service access roads into the rear of the shops.

Criticisms of this type of plan which uses the ring-road principle are two-fold. First by the very presence of the ring-road, any sense of integration between the town centre and its surrounding residential areas is quite lost. To approach the town centre on foot from one of the residential districts, requires the visitor to run the 'Obstacle course' of the ring-road. Even assuming that future increases in ring-road traffic force pedestrian under or over-passes to be built, the ring road will remain for all time as a definite psychological barrier.

Second, and again springing from the presence of the ring-road, is the question of the town centre's future expansion potential. This is possibly an unfair criticism as satellite town theory is founded on the principle of growth limitation. Now, however, the Corporation's planners are faced with the problem of expanding their town centre to cater for an additional 70,000 people. The situation in this case is not as bad as it at first seems, for expansion in a northerly direction is possible.



NEW TOWNS SURVEY: MAP OF STEVENAGE TOWN CENTRE. Showing location of shops and pedestrian malls. MAP No 1



The northern arm of the ring road can be moved further north to allow for this, although expansion in this direction will result in an elongated form of centre possibly stretching over a good half mile in length.

One further criticism must be levelled at the town centre on the basis of its proximity to the industrial area. Morning and evening peak traffic flows resulting from journeys to work place an extra burden on the town centre's ring road which is already well laden with peak shopping traffic. In this case, the blame lies not so much with the siting of the town centre as with the siting of the industrial estate on this side of the town. This is a matter which it is believed will be rectified to some extent by the proposed town expansion and the siting of an additional eastern industrial estate. The moral remains however, and while the positioning of the town centre obviously gains by being near to the future railway station and existing motorway, the overall peak traffic flows should be borne in mind when the decision of town centre location is being taken.

In contrast to the following example (Cumbernauld) this type of centre, while being firmly tied to the ground, does remain flexible. To move from the parking areas into the shopping malls is an easy, quick and convenient movement, and the shopper is not often asked to change levels. The shopping centre is left free from public buildings, although these are grouped immediately adjacent to the centre itself. The continuation of shopping window displays is therefore uninterrupted.

(B) Cumbernauld Town Centre

For a general description of this town's development,

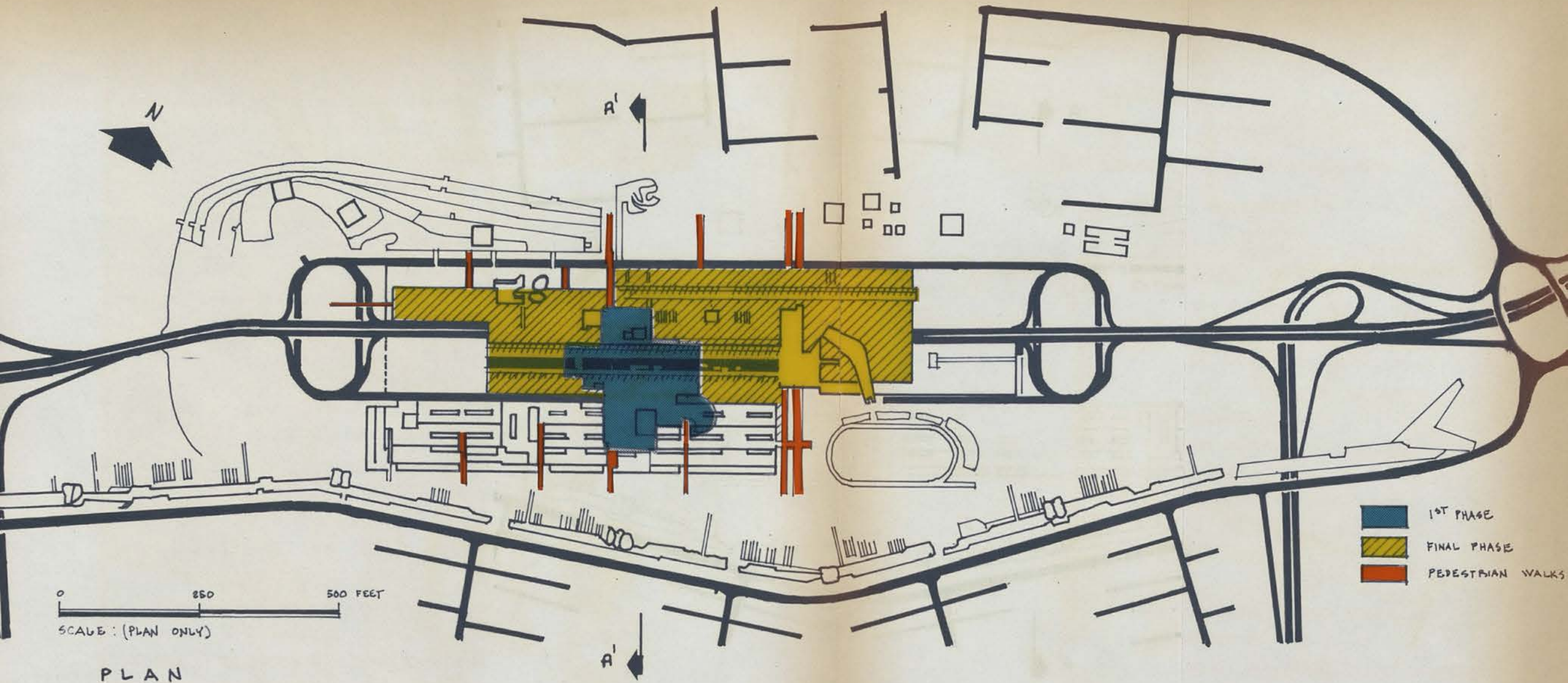


the reader is referred to Appendix 2.15. On Map 29, it will be seen that the town centre here is situated at the geographical centre of the town. Map 2 shows a detailed plan of the town centre itself.

Described most frequently now as the first Mark II British new town, the first phase of its town centre is now under construction some 9 years after the town's designation and will provide, when completed, an estimated  $\frac{1}{4}$  of total town centre shopping facilities. Out of a calculated total 411,000 sq. ft. of shop area, about 200,000 sq. ft. may be taken as being actual sales area. Catering for a total population of 72,000 persons this is equivalent to almost 3 sq. ft. per person. The total area for the town centre including office, educational, cultural, sports, public buildings and the shopping centre, is 66 acres. (Ref. A/15 p. 118). This is equivalent to 40 sq. ft. per resident person.

This town centre, together with the town's residential areas, is the first to be 'designed for the 'motor car age'. The centre is elevated above a central spine road (see Illustration 2) and traffic and parking takes place below the pedestrian shopping deck. Many additional decks are added to the main deck, the top-most one being devoted to penthouse apartments. All decks and the lower level parking and carriageways are interconnected by lifts, escalators and ramps for the pedestrian. Situated on top of a hill, access to the town centre for the majority of residents will be by pedestrian pathway system, as medium-high density housing enables a majority to live within easy walking distance.

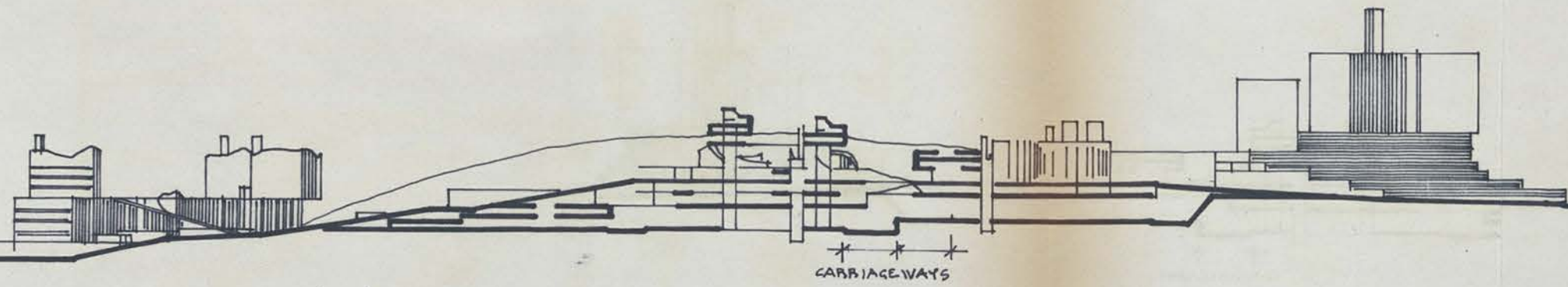
The design of the town's road system, and the



- 1<sup>ST</sup> PHASE
- FINAL PHASE
- PEDESTRIAN WALKS

0 250 500 FEET  
SCALE: (PLAN ONLY)

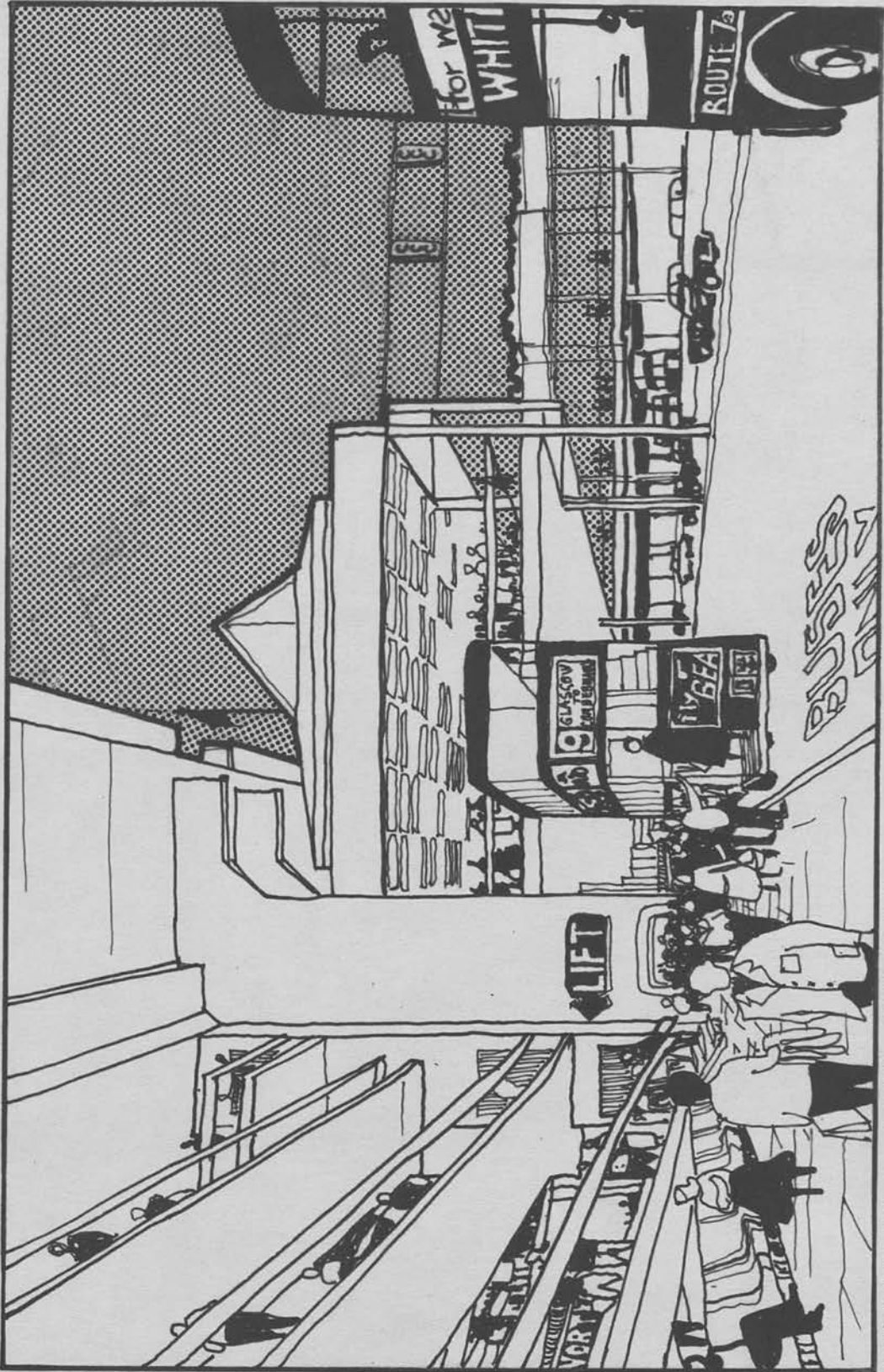
PLAN



SECTION A' A'  
(NOT TO SAME SCALE)

NEW TOWN SURVEY: PLAN AND SECTION THROUGH CUMBERNAULD CENTRAL AREA.

MAP NO 2



CUMBERNAULD TOWN CENTRE: An impression of the city centre bus stop. A continuous pedestrian ramp giving access to shopping decks is shown on the left. ILLUSTRATION No 2

central area was the subject of detailed research work and analysis. In theory, the plan advances a new concept of the centralized town, a theory yet to be fully tested. The neighbourhood unit idea has not been used here, although 20,000 of the town's residents live outside the central zone in what are termed satellite villages. The whole town therefore including the town centre, must be viewed as a bold experiment in times when bold ideas are desperately wanted.

To criticize the plan of the central area is unfortunately still criticism based solely on 'paper' ideas for it will not be possible to substantiate arguments until the first stage is completed and functioning. There are however two basic and fundamental aspects of this type of plan which warrant discussion. The first is concerned with the conceptual idea and theory of the centralized town itself, while the second deals only with the practical aspects of making this type of centre function.

It is not proposed to enter into any discussion of the sociological aspects related to either the neighbourhood or the centralized town concepts. Rather, of more interest here is to explore what in fact Cumbernauld's centralized town concept has meant in terms of shopping patterns and space allocation. The first point to note is that in its original form, the plan for Cumbernauld was to house only 50,000 persons. (Ref. B/34) As the ultimate population figure was pushed up to 72,000, three satellite villages were added to the plan, and with these villages were added sub-centralized shopping facilities. In the L.C.C.'s proposals for the new town of Hook (Ref. A/21) where the same centralized town concept was used, here too, satellite villages of low residential densities were proposed in the original plan, thus necessitating sub-centralized shopping facilities. Here,

however, some social justification was given in that it was felt desirable to have areas of low density housing. Reverting to Cumbernauld again, one is faced with the problem of a town trying to be 'centralized' yet at the same time still having satellite villages which to all intents and purposes are nothing more than neighbourhoods. The solution is not clear-cut therefore and shopping is not entirely centralized nor is it completely sub-centralized. An investigation of the proposed shopping floor space distribution shows that the central area of Cumbernauld will contain only 68% of the town's total sales floor area. (Ref. A/22). When this is compared with the average floor space distribution figures for other Mark I new towns, (see Table 6) it will be seen that if anything Cumbernauld tends to be less centralized than the earlier and neighbourhood unit designed towns. This is an extraordinary finding considering what it is that the Cumbernauld plan attempts to do.

Both the Hook and Cumbernauld planners adopted the principle of scattering 'corner shops' throughout the inner core of high density residential areas. Cumbernauld suggested one such shop to every 300 households; Hook suggested one to every 700 households. The concept of a centralized town with its central area catering for a large section of the shopping needs is therefore still very much open to doubt. At least, the proposals put forward to date do not seem to vary the town and sub-centralized shopping facilities distribution ratio away from that which is normally being practised in new towns Mark I.

From the analysis of new town shopping facilities undertaken in the previous section (Section 2.30) several practical problems arose which have special emphasis when applied to the Cumbernauld Central Area. Vital questions which must be

solved are concerned with the phasing of the central area building programme and the flexibility of the original design. In a compact design such as Cumbernauld, these two problems are very much interrelated and already it is believed that such problems are being experienced in the planning department of the Cumbernauld Development Corporation. Not only has it been difficult to allocate satisfactorily the first phase shopping floor space which is now being constructed, but difficulties are also being experienced in organizing a rational programme for the other social, educational and recreational facilities which will form part of the town centre. Retailers desiring space in the first phase require the possibility of expansion at a later date so that demands for siting at either end of the first phase where phases two and three will eventually commence, are high. The problem is further complicated by the number of levels involved. Rationalizing the programming of facilities to be provided by both private enterprise (i.e., 10 Pin Bowling and Dance Studios) and public authorities (i.e., schools, libraries, swimming pools, etc.) is difficult since public and private investment are not under the control of the Corporation. They are often forced, therefore, to accept whatever is offered at whatever time it is offered.

All these problems are of course not insoluble but they must add greatly to the task. The simple solution to a great many of these problems would lie in the rapid construction of the town centre and indeed the whole town itself, thereby cutting out phasing programmes altogether. The construction of a new town of say 70,000 persons, complete with all facilities, within a construction period of 5 to 7 years is surely not beyond the technological means now available. Such a task would and should be preceded by a planning and design stage of at least the same period of time. The recent moves towards regional planning

in Scotland, presently being backed up by an investigation into the reorganization of local government structure, is a first step. In this way it is possible to envisage future new town planning not as an isolated adjunct to a metropolitan redevelopment programme but rather as the focal points for whole new 'growth regions'.

#### 2.43 Neighbourhood Centres

In all, about 127 neighbourhood centres containing over 1800 shops were defined within the 15 new towns studied. This is about 8 or 9 centres to each town or about 1 centre to each 4,650 persons housed or further, about 1 shop to every 290 persons housed. In each town, neighbourhood centres may vary considerably or they may be relatively uniform as in the case of Crawley. The size of centre is largely controlled by the population it supports and its proximity to them and to other centres.

In any attempt to classify centres, lines of demarcation between one type of centre and the next must be fairly arbitrarily chosen. By plotting the number of shops in each centre however, there does seem to be some order in dividing neighbourhood centres into 4 or 5 'orders' as follows:

1st order:	1 shop only = 500 sq. ft.- 2,500 sq. ft.
2nd order:	1 to 7 shops (average 5) = 500 sq. ft. - 2,500 sq. ft.
3rd order:	8 to 17 shops (average 10) = 1,500 sq. ft. - 3,000 sq. ft.
4th order:	18 to 29 shops (average 22) = 3,000 sq. ft. - 10,000 sq. ft.
5th order:	30 and over (average 56) = 10,000 sq. ft. plus

For further details of 2nd, 3rd, and 4th order centres, see Table 8.

1st Order: This is the true 'corner shop', but nowadays is tending to become a mini-market or small supermarket specializing mainly in groceries, and also selling probably a limited range of bread, meat, vegetables and household goods and haberdashery. A modern self-service store generally and in most cases run by a Co-operative or a Multiple agency. Easily associated with population 'wards' and probably capable of serving the needs of from 500 to 2,000 people depending on size. This ranges from about 500 sq. ft. up to 2,500 sq. ft. of sales area. This type is the sort of shop the Hook and Cumbernauld plans envisaged and it is becoming increasingly popular with other new towns.

2nd Order: Details as shown in Table 8. This type of neighbourhood centre accounted for about 30% of the 127 new town neighbourhood centres studied. In essence it is probably equivalent to a 1st Order or a 1 shop centre where this one shop is a mini-market. It does not serve a large population, provides little scope for shoppers' choice, but has the possible advantage of being easily fitted into neighbourhood plans. It is probably being replaced by the 1st Order centres now, but might still be useful in high density developments close to town centres.

3rd Order: Details as shown in Table 8. This type of neighbourhood centre accounted for about 37% of the 127 new town neighbourhoods studied. This is about the smallest neighbourhood centre possible which can be associated successfully with a public house. It is large enough to be used as a focus for the neighbourhood, and almost provides a full range of shop types. It would cater for from 3,000 to 6,000 people at most and



Order of Neighbourhood.	Retail Trade Groups							Services as noted.	Total shops in centre	Comments
	A	B	C	D	E	F	G			
2 <sup>nd</sup> Order Centre ( 1-7 shops)	1	1	1	*	*	*	nil	1 off	5	1. The 'B' shop is usually a butcher or bakers. 2. 1 off out of D, E, F but generally a chemist or household goods shop. 3. Service is probably a pub, hairdresser or garage.
3 <sup>rd</sup> Order Centre (8-17 shops)	2	3	1	*	1	1	nil	1 pub. *	10	* 10th shop would be a Clothes shop (D) or a Hairdressers, or a Garage.
4 <sup>th</sup> Order Centre (18-30 shops)	3 or 4*	5	2	2	2	2	nil	1 pub 1 restaurant 1 garage 1 hairdresser 1 dry cleaner 1 shoe repair *	22	* Either a grocery or a shoe repair shop. 2. Restaurant is likely to be a fish shop. 3. Dry cleaner or Laundry.

NEW TOWN SHOPPING SURVEY: Showing details of shops etc contained in the various Orders of Centres. See also Section 2.43

is a useful sort of centre for small neighbourhoods and may be used to advantage in association with other corner shops.

4th Order: Details as shown in Table 8. This type of neighbourhood centre accounted for about 20% of centres studied. This is the largest type of centre providing a full range and choice of facilities to the shopper. It will undoubtedly be the focus of the neighbourhood and may if anything be a little large in the extent of traffic it may generate. It is probably best associated with a good town road and bus service. In terms of population serviced it might range from 5,000 to say 8,000 persons. Centres of this variety tend to operate in a neighbourhood bereft of any corner shops.

5th Order: Of the 15 new towns studied, only 10 centres with over 30 shops were found and these were in 8 towns. Of the 10 centres, 8 were old village centres established prior to the new town's designation. The two new centres with over 30 shops were Harlow's 'Stow' and Hemel Hempstead's 'Queen's Square'.

These large centres tend to be 'district' centres and follow on the principle of a very large neighbourhood centre being used in conjunction with 3 or 4 other smaller centres, in all a population of 12,000 or more being catered for. The size of both the old and new centres can lead to uneconomic competition with the town centre, although in some cases a tendency has been observed whereby the old centres have become highly specialized in the type of retailers which they provide. Thus clothing boutiques and delicatessans in the old centres may become popular due to low shop rentals and in this sense the old centres may play a very important role in providing a balance of shopping facilities for the new town.

On the other hand while these centres are undoubtedly useful in the early years of the new town, if not planned to form part of the new town centre, they may tend to establish bi-polar groups within the town itself. Crawley has successfully integrated its new town centre with the old; Stevenage has not; Hemel Hempstead's half-hearted attempt at integration has led to a very ugly and over-long shopping street stretching between the new and the old.

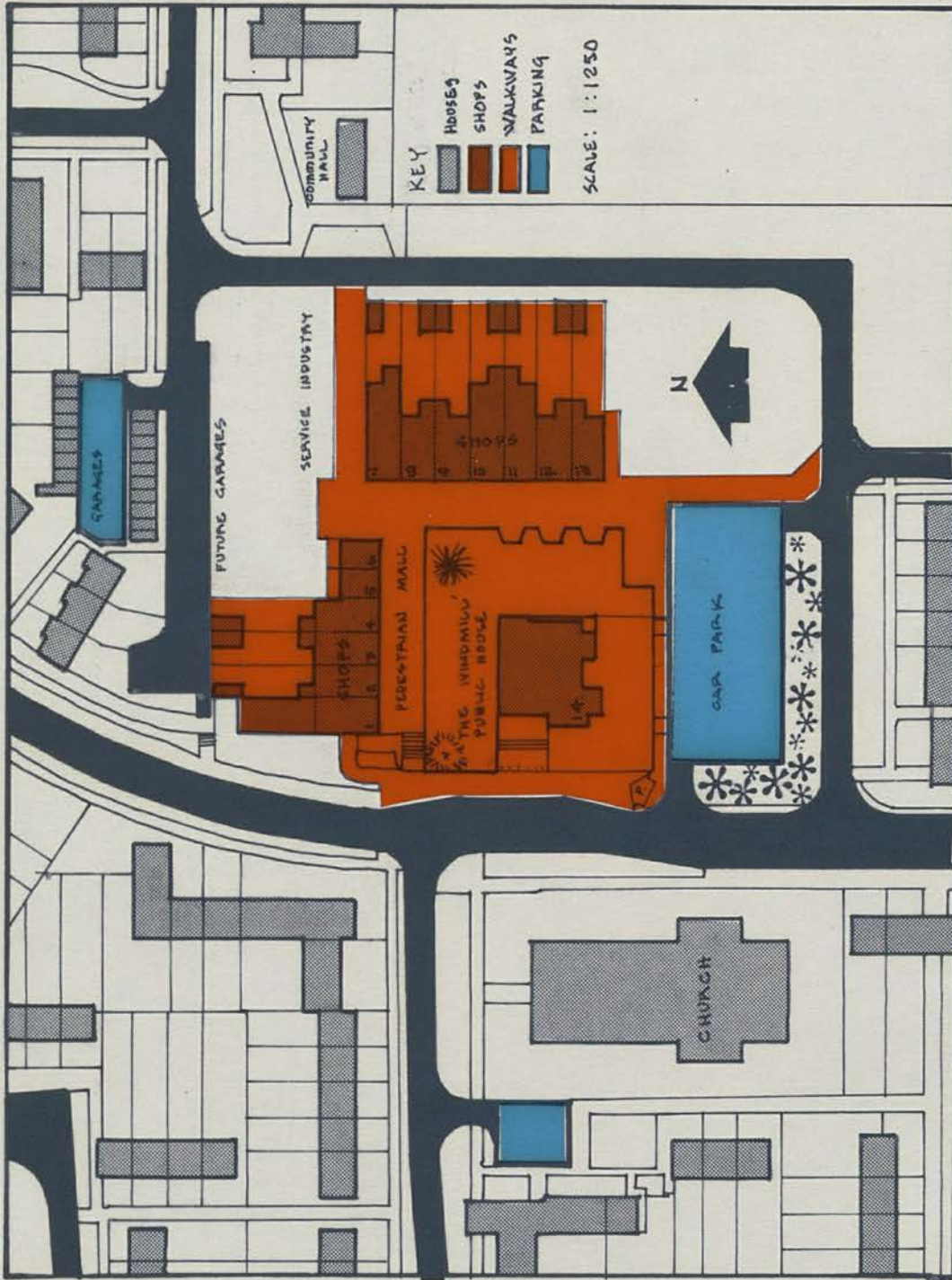
#### 2.44 Case Studies

##### (A) Crawley: Gossops Green Neighbourhood Centre

This centre (Centre No. 11 on Map 17) is situated about  $1\frac{1}{2}$  miles west of the town centre and serves a neighbourhood population of about 4,600. It has thirteen shops and one public house and the total sales area is 4,700 sq. ft. or about 1 sq. ft. per person served.

This is an excellent example of a 3rd Order neighbourhood centre (see Table 8) as defined in the previous section. It occupies about 2.5 acres including car parking and service industry area, and this is equivalent to about 25 sq. ft. per person served.

Situated on a main town road and bus route, the site slopes down from east to west and this slope is made use of in the design by lifting the shopping mall up a few feet from the main road. (see Illustration 3, taken from P.1 on Map 3). A large church opposite helps focus attention towards the centre and the set back and elevated shopping court itself provides interesting street architecture.



NEW TOWNS SURVEY : CRAWLEY NEW TOWN: GOSSOPS GREEN NEIGHBOURHOOD  
 MAP No 3  
 CENTRE



MINI MARKET

THE  
WINDMILL

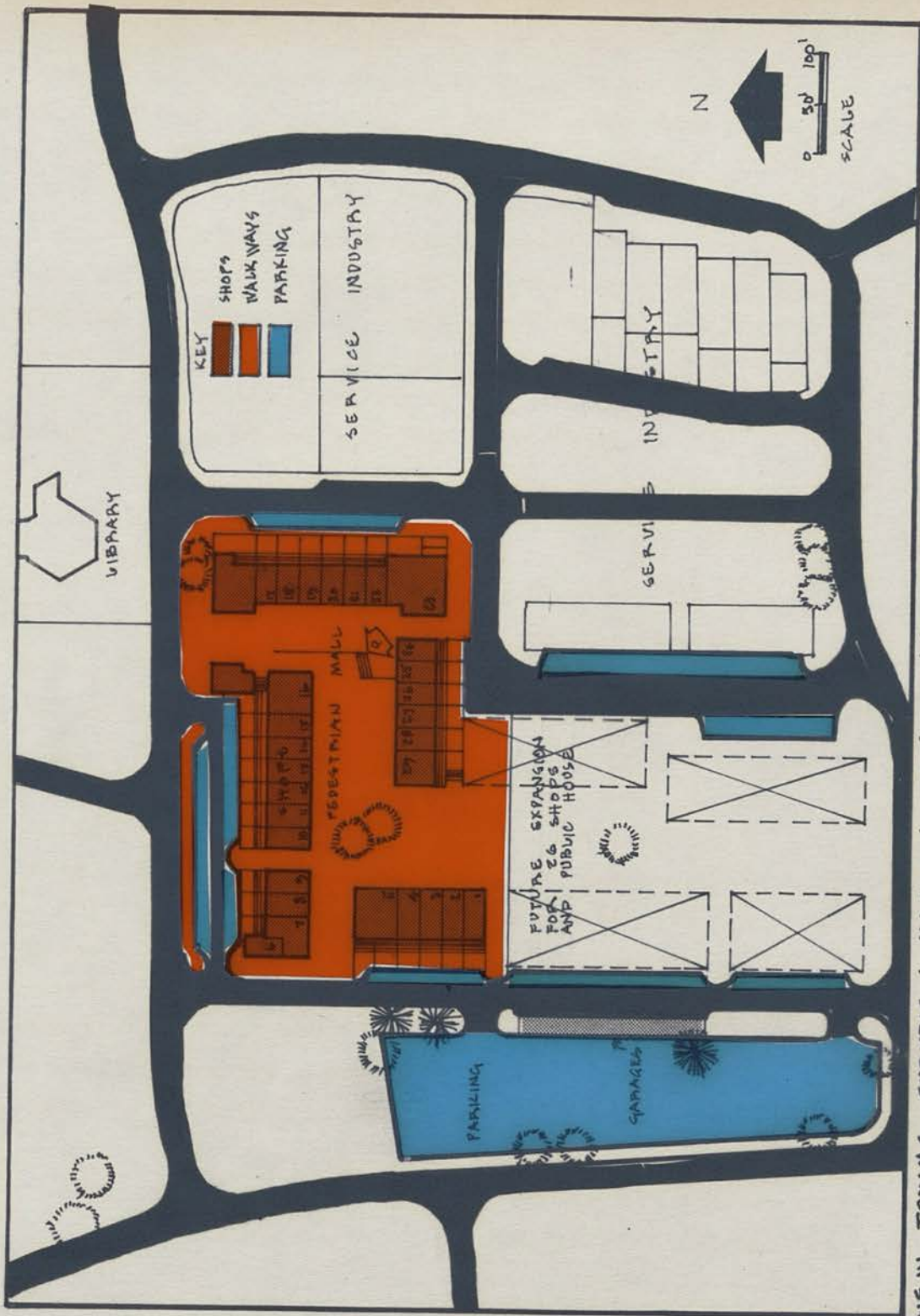


Parking for about 30 cars is provided to the south of the public house (see Map 3) access to which is gained from either the main road or a narrow service road which encircles the centre. Provision is made for future small service industries and it is believed that the land immediately to the east of the car park is zoned for old-people's houses. Above the shops themselves are a further two stories of dwellings which are generally leased by the shopkeepers. These dwellings are set forward so that an arcade is formed to give some protection from wind and rain. A well designed pathway system winds its way through the housing areas to connect them with the centre.

(B) Harlow: Bush Fair Shopping Centre

This centre (Centre No. 10 on Map 18) is situated about  $1\frac{1}{2}$  miles south-east of the town centre and together with a sub-centre, serves a population of about 14,000 persons. It has 27 shops, one restaurant and one public house. The total sales area is 7,750 sq. ft. or about  $\frac{1}{2}$  sq. ft. per person serviced. As the neighbourhood of Tye Green which it serves is not yet fully completed, and the centre itself is planned for a further 26 shops, the ultimate development of both will probably result in a sales area figure of 1 sq. ft. per person. In its present form, this centre is an excellent example of a 4th Order neighbourhood centre as defined in the previous section. (see Table 8) It occupies about 13 acres of land, including land zoned for future expansion, car parks and extensive service industry areas and this is equivalent to about 40 sq. ft. per person served.

Situated on the side of a hill falling from east to west across the site, the centre incorporates this natural fall into the design by changing levels. (see Illustration 4,



NEW TOWNS SURVEY : HARLOW NEW TOWN: TYE GREEN NEIGHBOURHOOD MAP NO 4



DEWHEST

DEWHEST

BOOTH

URS...



marked P.1 on Map 4).

Parking for about 175 cars is provided on the western and low side of the centre, although anything up to a further 50 cars may be successfully parked at kerb-side places around the centre's periphery. The main road connecting this residential neighbourhood to the town centre passes to the east of the centre on the top of the hill. Above the shops are a further three stories of bachelor flats and residences for shopkeepers. A concrete cantilevered awning affords some measure of protection from wind and rain. The pedestrian mall itself is very wide---about 75 ft. and the overall effect is rather drab. Service access to shops is from the main peripheral road for the most part, which means that the shops present their back yards to the street and the housing areas. Customers can, and do, quite often park their cars in the service area bays.

The failure of the overall design of this centre springs from the fact that it was designed to be too large. Originally it was to provide 55 shops; it is doubtful if the remaining 26 will ever be built.

The survey and analysis of new towns' shopping facilities yielded information on a number of major aspects of shopping provision. First, it was found that in well-developed new towns with populations of over 50,000 and where the town has been developed in accordance with the neighbourhood planning concept, neighbourhood shopping in terms of floor space allocation, approached 25% to 30% of the town's total shopping floor area provision. As many of the towns studied are still not yet complete, it seems likely that this proportionate distribution of sales area will gradually change as the town approaches completion until a final ratio of approximately 80:20 or 85:15 is reached.

Trends in shopping habits appear to favour the centralized town concept, although very few neighbourhood centres visited showed signs of economic depression, and their percentage of the town's total sales turnover is still large. There is a tendency for neighbourhood centres to be small and compact units. Almost 70% of all new town neighbourhood centres have less than seventeen retail and service shops. Accompanying the growth of supermarkets in the town centre, there are signs to indicate that the battle for trade is being carried on in the neighbourhoods by a new form of smaller-sized 'Mini-market'. Many of these are often run by Multiple and Co-operative Societies. In many cases the range of goods sold by these shops is sufficient not to warrant the provision of other small shops, so that a form of 'one-shop' neighbourhood centre is developing.

While the study of trade figures has shown that with the possible exception of the larger type of neighbourhood centres, these existing neighbourhood centres are successful

commercial propositions, a large measure of this success must be attributed to the planning standards adopted. With the increasing acceptance of higher residential density standards together with increasing personal mobility however, it would seem that in future, if neighbourhood centres are provided at all, they will be much smaller and probably more scattered than their present counterparts. The personalized service and convenience of having goods delivered to the home by local shops may ensure their provision in most new towns, at least for the immediate future. As consumer mobility continues to increase however, the old frequency/convenience criterion will be reduced to a minimum.

By an analysis of the 1961 Census of Distribution figures for turnover in the new towns it was shown that sales area figures in themselves are not a sufficiently accurate means of gauging sales distribution as there exists a marked sales per square foot turnover differential between both town and neighbourhood centre shops. In terms of sales distribution therefore, while neighbourhood centres may capture only 25% of the town's total sales floor area, they capture as much as 40% of the town's total annual trade.

Concerning the functional relationship between the two types of centres, while it was found that both town and neighbourhood centres are highly specialized units of a different yet complimentary nature, the full character of the town centre does not develop until a late stage in the town's growth. This late stage development of the specialized qualities of the town centre has direct implications on both the phasing programme and the town centre design. During the early years of a new town's growth when the more specialized functions of the town centre are non-existent, residents are likely to establish their trade

in other more well-developed centres. This may prove to be a habit difficult to break, although in the long run, the new town should regain this valuable trade.

In more important physical terms, the new town planner is faced with the problem of leaving large gaps in the town centre to cater for the late arrival of the more specialized traders. This problem can be overcome by commencing the lineal development of the town centre at its centre, as has been done at Cumbernauld. The danger here lies in the possibility that in its ultimate form, the town centre may have a somewhat 'weak heart', consisting entirely of the early, small and relatively unspecialized variety of shops. In some American Regional Shopping Centres, two large department stores or other 'shopping magnets' are located at either end of the central pedestrian mall to ensure an even distribution of pedestrian traffic past the display windows of the central and smaller shops. The successful application of this technique to British New Town centres depends largely on the designer's ability to ensure that this location of shopping magnets is actually achieved both in physical and psychological terms which the shopper can readily appreciate.

As was suggested in the discussion of the Cumbernauld Centre Area (Section 2.42-B) one solution to this problem may lie in the speeding up of the whole town's construction period so that town and centre are completed within say seven years. In this way the chances of locating shops and pedestrians in the correct sequence would be greatly improved. A further aspect in this sphere needing investigation is the effect of a sometimes indiscriminate mixing of community facilities with shops as sometimes happens in British new town centres. This can be a problem of great magnitude in a town centre such as is planned

for Cumberland. It would appear that where these two functions are clearly separated, there may be scope for the speedier completion of the town's shopping facilities, a completion which in itself would be likely to result in a more uniform, dignified and successful commercial town core.

Irrespective of these more detailed design considerations, if the earliest possible attraction of the large stores is to be achieved, planners should be prepared to look at the question of shopping provision on a more regional basis; where possible ensuring that every facility is provided for the regional shopper in the way of transport, roads, parking and good design standards. Depending upon regional conditions, this does not imply that the new town should attempt to draw trade away from existing centres, for in all cases it should be possible to reach a compromise situation where both new town centre and existing regional centres function together, each providing facilities according to their natural population orders or hierarchy. The new town centre might well become, under these circumstances, a completely new Regional Centre, providing facilities which hitherto had been impossible to provide. The preparation of a fully documented report on the sales potential of both new town and its region coupled with the phasing of the new town's development, would also be a considerable aid to the Corporation's Estate Leasing Department in its quest for the large retailer.

CHAPTER 3.

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## LOTHIANS REGION-SURVEY OF EXISTING SHOPPING FACILITIES

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The Lothians Region survey area and its towns and villages owe much of their character to the region's location within Scotland's central industrial belt stretching between Glasgow and Edinburgh. This locational factor has emphasised the strong east-west lines of communications and transport which pass directly through the region, and while some of the land is still being used for agricultural purposes, it is the extractive and mining industries principally which have determined the location of the region's settlements.

In this way the majority of the regional settlements are closely associated with their corresponding mines and pitheads. (Coal, fire-clay, and oil bearing shale). As old mines have been exhausted and new ones opened up in a different locality, sometimes the intimate human and physical relationship between mine and town has been broken, although in landscape terms, this physical relationship often still exists in the form of a disfiguring shale or coal slag heap or 'bing', immediately adjacent to the town itself. Towns which have lost their mines or industrial function have retained their residential and associated service facilities either by becoming a commuter community or by importing some measure of secondary industry. As the importance of mining declines throughout the region, (Whitburn's Polkemet Colliery is the only A Grade coal mine remaining in the region), a new industrial basis must be found for the settlements if they are to continue to act as viable communities.

It was with these facts in mind that the Secretary of State for Scotland designated a new town at Livingston and implemented at the same time a regional rehabilitation survey



	TOWN NAME	1963 POPULATION	C.O.S.	N° RETAIL TRADE SHOPS							SERVICE	
				A	B	C	D	E	F	G	H	J
1	BATHGATE	13,500	.165	17	17	14	26	32	11	12	23	6
2	BROXBURN-UPHALL	10,200	.073	18	17	11	12	12	7	8	18	5
3	ARMADALE	8,600	.153	21	10	10	9	8	2	3	12	9
4	WHITBURN	6,000	.175	7	10	4	8	7	4	3	8	6
5	FAULDHOUSE	5,400	.128	9	3	7	6	4	5	11	8	3
6	WEST CALDER	3,200	.143	8	6	5	4	4	8	2	9	4
7	HARTHILL	5,000	.210	5	3	2	3	1	3	7	9	4
8	EAST & MID CALDER	3,600	.123	8	2	4	3	1	2	4	6	2
9	BLACKBURN	9,000	.173	4	4	2	2	2	3	3	6	4
10	STONEYPURN	2,850	.383	5	.	2	.	1	1	5	4	.
11	WINCHBURGH	2,700	.243	5	2	2	1	.	2	1	3	.
12	KIRKLISTON	2,700	.288	4	.	2	.	1	2	1	2	1
13	POLBETH	1,450	.213	3	.	1	2	1	.	1	3	1
14	PUMPHERSTON	500	.455	3	.	.	.	.	1	2	2	1
15	ADDINGALL	1,940	.498	4	.	.	.	.	1	2	1	1
16	LIVINGSTON STATION	1,500	.400	1	.	1	.	1	1	3	1	.
17	SEAFIELD	1,000	.493	2	.	2	.	.	.	1	1	.
18	LONGBRIDGE	740	.678	.	.	.	.	.	.	3	2	.
19	NEWBRIDGE	650	.515	1	.	1	.	.	.	.	1	.
20	KIRKNEWTON	500	.510	1	.	.	.	.	1	2	1	.
21	DECHMONT	360	.745	.	1	1	.	.	1	.	.	.
22	UPHALL STATION	800	.758	2	.	.	.	.	1	.	.	.
23	BATHO STATION	350	.830	3	.	.	.	.	.	.	.	.
24	LIVINGSTON	165	.480	.	.	.	.	.	1	1	1	.
25	BELLS QUARRY	150	.605	1	.	.	.	.	1	.	1	.
26	BREICH	110	.833	.	.	.	.	.	1	2	.	.
27	EAST WHITBURN	740	.678	2	.	.	.	.	.	.	1	.
28	WHITESIDE	1,000	.758	1	.	.	.	.	.	.	.	.
29	OAKBANK	100	.910	.	.	1	.	.	.	.	.	.
30	WILKIESTON	300	.930	1	.	.	.	.	.	.	.	.
TOTALS		85,105		136	75	72	76	75	59	77	123	47
AVERAGES & PERCENTAGES.				17%	9 1/4%	9%	9 1/2%	9 1/4%	7 1/4%	9 1/2%	15 1/4%	5 1/2%

LOTHIANS REGION: SURVEY OF EXISTING SHOPPING FACILITIES: su  
areas, organisation and physical condition of shops.



and plan for the surrounding region itself. (see Appendix 1.1). The establishment of a new town and more particularly the effect which this new town has on its surrounding region is a subject which has received little study in the country to date. (see Ref. C/16), and following upon the main lines of the candidate's research work as outlined in the Introduction to this thesis, this Chapter is devoted to a study of the present service functions of the Lothians Region and its towns and settlements.

### 3.21 Survey Methods

The survey of existing shopping facilities within the Lothians Region was undertaken during the first half of 1963. Each town and settlement was visited and details of its shopping facilities were recorded on the survey form. At the same time the location of these facilities was noted on a 1:2500 scale map of the settlement. A copy of the standard survey form is shown in Table 12.

In classifying shops according to the various trades, the Board of Trade's Standard Classification of Retail and Service Trades was used. This classification system is shown in Appendix 3.1, where it will be seen that there are seven major types of retail traders listed and a further five types of service trades.

Throughout the survey, details of four physical aspects were recorded. These included, shop frontage in feet, estimated sales area of the shop, the number of storeys of the building in which the shop was situated and finally, an estimation and grading according to the physical condition of the shop itself. Both shop frontage and sales area were estimated by eye, and sales area was taken as being that area devoted to the sale and display of goods and therefore not including storage and office space. The physical condition of the shop was assessed according to the follow scale.

Grade 1: Shops which were erected within the last 5 to 10 years and which were generally speaking in first class

order. Alternatively, some shops which had been erected for some years, but which had had extensive modification carried out within the past 5 to 10 years. General cleanliness and customer attraction were expected.

Grade 2: Older shops which, while not necessarily having had recent extensive modifications were still maintained in good physical condition. General cleanliness, good appearance and shops which were originally built as shops were thus included in this group. They did not offer the latest and best in architectural design to their customers, however they provided an adequate and useful level of service and appearance.

Grade 3: Shops which had been let fall into a state of disrepair, houses which had been converted unsuccessfully into shops, tin sheds and other buildings used as shops of a temporary nature, were classified under this section. In general most shops in this class offered unclean, cramped and unattractive facilities to their customers. In some cases, these shops were run as a 'sideline' using family labour to subsist.

In its original form the survey form called for classification of shop ownership and organization into five groups, i.e., Independent, Multiple, Department, Co-operative, and Variety Chain Stores. This was later simplified down to three groups, namely, Independent; Multiple; and Co-Operative; the Department and Variety Chain stores both being grouped in with the Multiple Group unless they were Co-operatively owned, in which case they were grouped under Co-operative.

Also on the original survey form, details were required of whether or not the shop was of a 'lock-up' variety

or whether or not there was a dwelling attached. After a short time, this information was not collected as its value was doubtful due to the difficulty experienced in site determination of this aspect.

### 3.22 Survey Results

Altogether, the survey yielded information concerning a total of 800 shops situated in 30 different towns and settlements. Map 8 shows the location of these 30 towns and settlements while Table 9 sets out background details for each settlement concerning population and the number of shops, shop organization and shop condition as well as their total sales area in square feet. Table 10 gives the detailed survey results on number, type and sales area of shops within these 30 settlements. In both Tables 9 and 10, towns have been listed in order of total number of shops provided.

3.31 General

The sphere of influence of any town is determined by the functions which that town performs and as the functions themselves may vary, so too will the spheres of influence. Because the functions of towns may vary and because these functions can be approached from so many angles, there is often some degree of inconsistency in the basis of classification techniques.

It is commonly accepted nowadays however, that irrespective of the type of employment offered within a region (i.e., whether it be agriculturally or industrially based), each nucleated settlement of that region is in a varying degree a centre of services and organization for its surrounding area. In this way it becomes possible to classify towns and settlements according to their 'service' functions.

Within this general term of 'service functions' there exist many aspects which may be used either separately or collectively as a basis for classification techniques. Thus, F. H. W. Green has defined urban hinterlands in England by an analysis of bus services (Ref. C/8) and Flemming and Green have used an analysis of the retail trade to determine the relationship between towns and their hinterland populations in Scotland. (Ref. C/6). The value of these studies is twofold. First, by defining types of both urban and rural centres, it is possible to compare the physical, economic and social environments created within each type of centre so that the advantages of one form over another may be clearly defined. Second, by studying the composite nature of the region and the various types

of centres which make up that region, both the internal functional relationships between region and its surrounding territory may also be clearly defined. The definition of these functional linkages between town and region and the establishment of physical, economic and social environmental standards related to these functional linkages is of prime importance in planning for future growth.

In the following section, the results of the survey of the Lothians Region's existing shopping facilities have been used in an attempt to classify the various regional towns into their hierarchical order. By this means the inter-related nature of their functions as service centres within the region is explained and the functions of the region as a whole in relation to its surrounding territory is also set forth.

### 3.32 Review of Classification Techniques.

#### (A) Number of Shops

In Table 9, where the overall results of the survey are shown, towns have been listed in order according to the total number of shops provided. Within the thirty centres listed there is a considerable range between the town providing the highest number of shops and the town providing the lowest number. Bathgate heads the list with 171 shops and a total sales area of 120,000 sq. ft. The next town, Broxburn-Uphall, while having a total number of 119 shops, has only 19,000 sq. ft. of sales area. Following these two towns are ranged an eleven further towns, each having between 13 and 95 shops with a sales area ranging from 2,000 sq. ft. up to 17,000 sq. ft. The remaining seventeen towns each have not more than 9 shops and at most a



sales area of 1,700 sq. ft. Classification of towns into any strict hierarchical order by using the total number of shops alone would therefore seem to be impossible. Bathgate has 6 times the sales floor area of Broxburn-Uphall, its nearest rival, although it has only about  $1\frac{1}{2}$  times the number of shops. An inspection of the population levels of these towns also reveals that while populations tend to descend in numerical order along with the number of shops, this is not always the case. (i.e., Blackburn-Town No. 9--with a population of 9,000 persons and only 33 shops does not follow rank order). This brings to light the 'growth' aspect of population in relation to shopping provision, for Blackburn has seen a considerable growth in population in recent years as a result of an 'overspill agreement' signed with the Glasgow City Corporation. As shop provision does not always follow population movements and as population in itself is an important consideration in determining town functions, the method of using 'number of shops' as a classification technique has been rejected as being too inaccurate.

#### (B) Coefficients of Specialization

The next technique used while still being related to 'number of shops', also takes into consideration the type of goods sold by shops. This method uses 'coefficients of specialization', a technique normally applied by geographers on employment data and analysis, and has been used previously to measure the retail specialization of central business districts by R. B. Reynolds, (See Ref. C/19), although in Reynold's case, actual sales turnover of trade groups was used to measure specialization rather than simple data on the number of shop types.

The coefficient of specialization may be interpreted

here as the proportion of the various retail and service trade shops within a centre that would have to be relocated elsewhere within the region in order to maintain the average regional percentage distribution of shop types within that centre.

At the foot of Table 9, the total number of shops in each retail and service trade group are shown, together with the percentage of the total number of regional shops which this sub-total represents. By comparing each town's percentage distribution of shops with these regional figures, coefficients of specialization for each centre were calculated (see Appendix 3.2). These coefficients are shown in column 4 of Table 9. As the coefficient approaches zero, so does that centre's shopping facilities more closely approach the average distribution of shopping facilities within the region; as the coefficient approaches unity, so does that centre's shopping facilities become more typical of the average distribution of regional shops. The range of coefficients recorded is considerable as might be expected.

Two factors emerged from this study. First, and as can be seen from Table 9, Bathgate with its large number of shops and large sales floor area, does not have the lowest coefficient, although there is a reasonable explanation for this phenomenon; Bathgate is in fact the regional centre, and as such provides a range of specialized shopping facilities not found elsewhere in the region. This degree of specialization in the facilities which it offers makes it atypical when compared with other regional towns, and it is this fact which caused its coefficient not to be the lowest recorded.

The second aspect to emerge was the fact that the

coefficient of retail specialization based on numbers of shop types did not necessarily agree with or follow the rank ordering of centres based solely on numbers of shops, i.e., the case of Bathgate. Thus while specialization coefficients based on numbers of shop types may give some indication of the various centres' functions, irregularities may creep into these calculations due to a variation in actual sales area of shops.

Despite these possible irregularities, the coefficients derived for the various centres were used as a basis for a preliminary classification into hierarchical order. Towns with a coefficient of 0.2 or less were accepted as being service villages, while towns with coefficient of more than 0.2 were classified as sub-service villages. This classification gives the region nine service villages, or eight if Bathgate is counted as being 'regional centre'. These eight service villages all have a population in excess of 3,200 persons. To check the possible accuracy of this classification, two check analyses were made on regional bus services and regional educational facilities.

### (C) Bus Transport and Educational Facilities

An analysis of Scottish Omnibus' Timetable for services within the region was made, taking the total number of buses passing in each direction per road per normal week day. The results of this analysis are shown in the form of a 'flow' diagram on Map 6, while the method of determining the daily flow of buses is shown in Appendix 3.3.

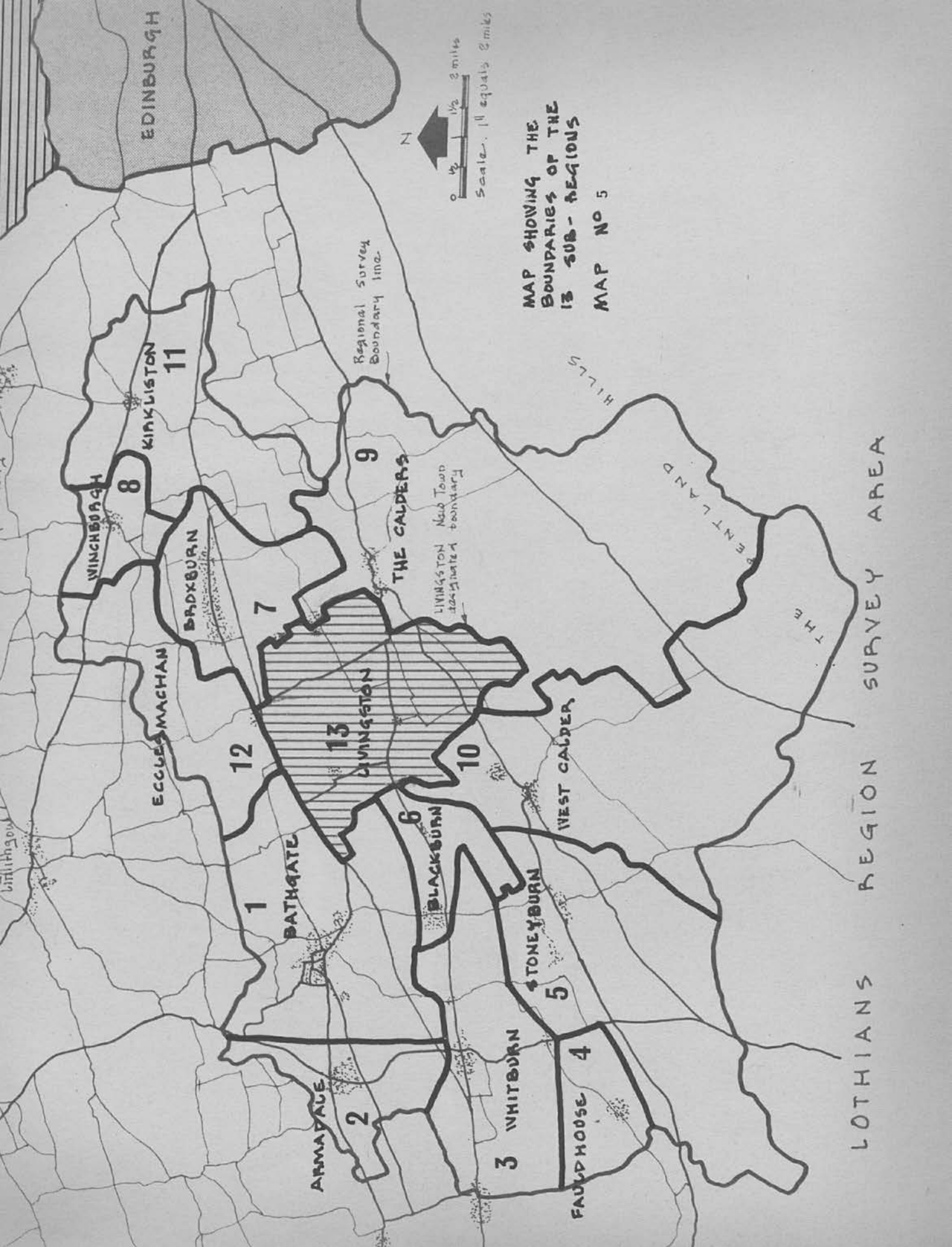
The bus traffic flow diagram which resulted from this analysis illustrates the region's position within the central

belt of Scotland. First and foremost, a pattern of three 'fingers' radiate out from Edinburgh towards the west across the region. The northernmost route proceeds via Linlithgow to Falkirk, Stirling and all towns north. The other two routes proceed almost due west across the region to Glasgow. The region is thereby divided between and dependent upon these two large cities.

A main local centre for bus transport is located within the region at Bathgate and from here feeder services radiate out over the region. One further subsidiary centre emerges--Broxburn-Uphall. The services from both these towns serve the northern section of the region and act as feeder services to the three main east-west routes mentioned previously. From this pattern it seems likely that Bathgate acts as a regional centre for the western sector of the region, while Broxburn-Uphall serves in like manner for the eastern sector of the region.

As a further check to this analysis of bus traffic, education facilities have been plotted on Map 7 to show how the various towns act as educational centres for the region.

There are only five senior secondary schools within the region, three of these being sited at Bathgate while the remainder are at Broxburn-Uphall and West Calder. Six other centres within the region provide junior Secondary School accommodation. There are no Roman Catholic senior secondary schools, and only three centres Bathgate, Broxburn-Uphall and West Calder, provide Roman Catholic Junior Secondary School facilities. Adult educational facilities are provided at these centres and in the near future it is intended to complete a Technical College at Bathgate. Once again Bathgate and Broxburn-Uphall emerge as important centres of the region, while with the



MAP SHOWING THE BOUNDARIES OF THE 13 SUB-REGIONS  
 MAP NO 5

LOTHIANS REGION SURVEY AREA

EDINBURGH

N

0 1/2 2 miles  
 Scale: 1 inch equals 2 miles

Regional Survey Boundary line.

LIVINGSTON New Town townshipped boundary

HILLS

PENTLAND

THE

KINKLISTON 11

WINCHBURGH 8

BRAXBURN 7

9

THE CALDERS

ECCLES MACHAN

12

LIVINGSTON 13

10

WEST CALDER

1

BATHGATE

6

BLACKBURN

5

STONEYCROFT

ARMADALE

2

3

WHITBURN

4

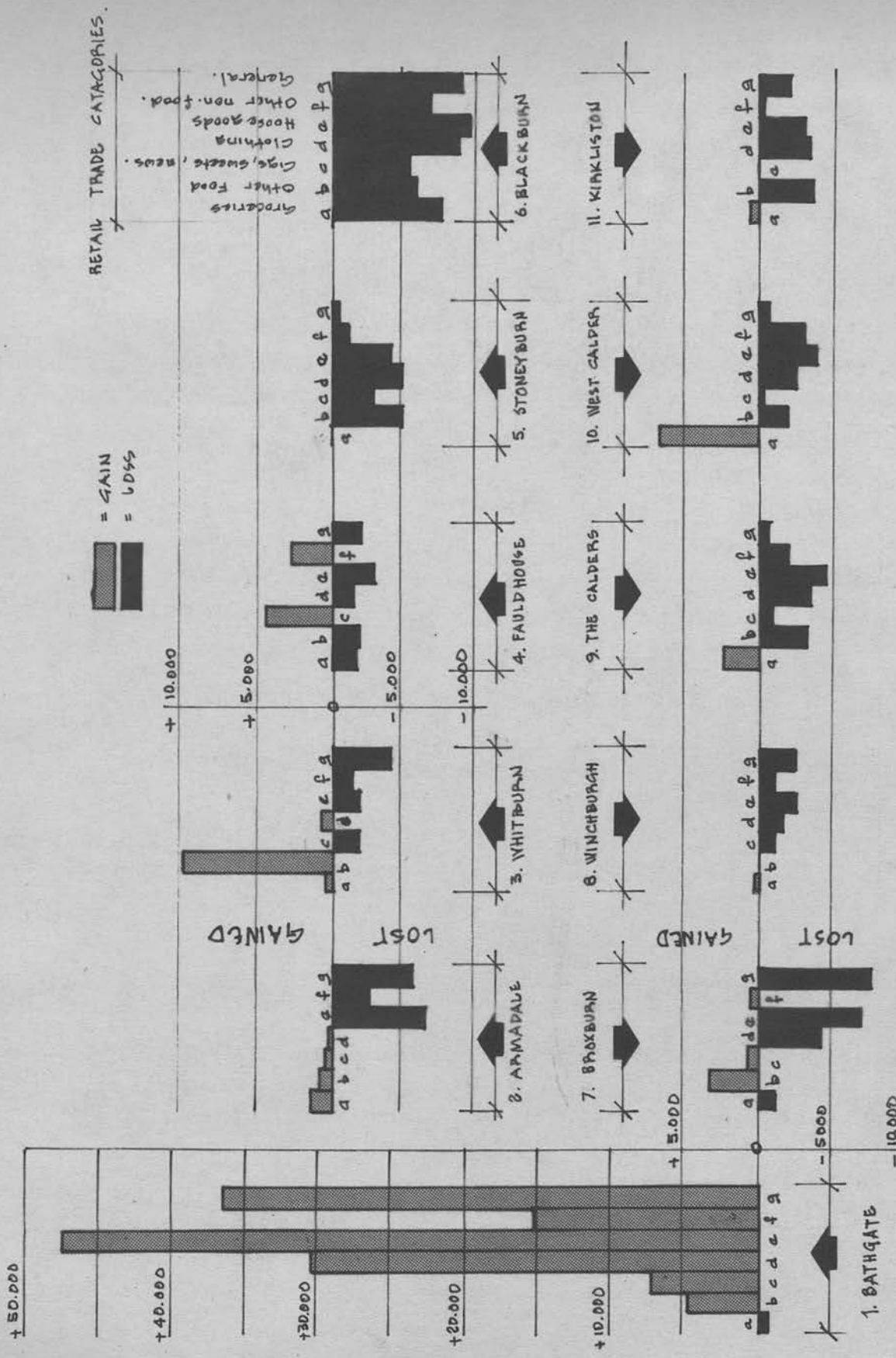
FAULDHOUSE

exception of Blackburn and Harthill, all towns previously classified as service villages provide some form of secondary school facilities.

#### (D) Sales Area

As a final analysis of the regional character of the towns surveyed, an investigation was made into the distribution of shopping sales floor area per trade group for each of the major town groups. For the purposes of this analysis the region was divided into thirteen sub-regions, with all sub-regions except two, having a service village as their centre. The two sub-regions without service villages are those of 'Livingston' and 'Ecclesmachan' (see Map 5). Livingston has been excluded from the calculations since it contains no service village and because it will become the new town of Livingston itself, while the sub-region of Ecclesmachan has been excluded as it contains no shopping facilities or service villages.

In essence the sales area analysis follows closely the lines of the coefficient of specialization type of analysis. Sales areas for trade groups were summed for the total of the 11 sub-regions as were those sub-region's populations. In this way, it was possible to derive a figure for average regional sales area per trade group per person. This figure was then multiplied by the population living in each region so that a theoretical trade group sales area was calculated for each sub-region. This theoretical sales area was then compared with the actual provision of sales area within each sub-region and the difference and sign noted. By dividing this figure by the region's average sales area per trade per person figure, a population figure was derived, and depending upon the sign, this was



LOTHIANS REGION: SURVEY OF EXISTING SHOPPING FACILITIES: Showing shopping population (in thousands) gained or lost by the various sub-regions. See notes to Tables.  
 DIAGRAM NO 15

equivalent to (i) a theoretical additional population served by the sub-region's shopping facilities or (ii) a theoretical loss of shopping population to other sub-regions. The calculations for this analysis are shown in Appendix 3.4 and Diagram 15 shows the results.

The accuracy of this type of analysis depends upon the accuracy of two assumptions. First that the regional facilities cater solely for the regional population and that they satisfy 100% of the regional population's needs. Second, that all shops within trade groups have an equal sales turnover per square foot throughout the region. While these two assumptions would hardly ever apply in practice the merit of the analysis lies not so much in its accuracy but rather on the general picture which it gives of the total regional shopping pattern.

### 3.33 The Centres Classified

In the previous sub-section, the results of the existing shopping facility survey of the Lothians region were used in three ways to attempt to derive a classification system for the various towns of the region. It was shown that 'numbers of shops' was not a satisfactory way to grade shopping centres, for while some general indications are given by these figures more detailed sub-divisions into town types is not possible. By using the 'coefficient of specialization' method and by using numbers of types of shops in the various centres, results were again not conclusive. While it seemed that towns with a coefficient of 0.2 or less were major centres, the figure of 0.2 was arbitrarily chosen and town populations and total sales area of towns needed to be taken into consideration to enable this figure to be selected. The third method, using sales area





EDINBURGH



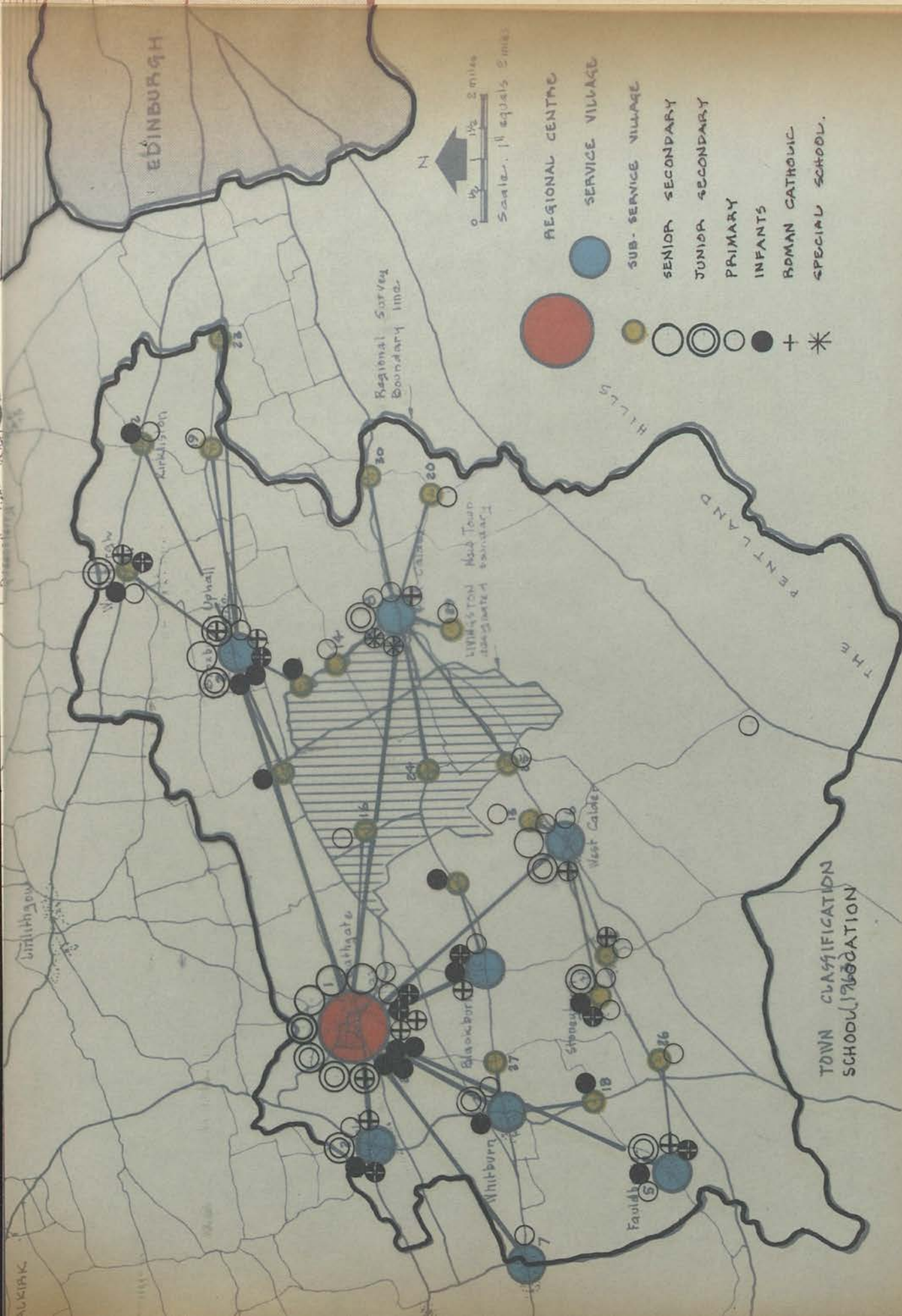
- REGIONAL CENTRE
- SERVICE VILLAGE
- SUB-SERVICE VILLAGE
- SENIOR SECONDARY
- JUNIOR SECONDARY
- PRIMARY
- INFANTS
- ROMAN CATHOLIC
- SPECIAL SCHOOL.

100 BUSES PER DAY

MAP No 6-7-8

LOTHIANS REGION SURVEY AREA

TOWN CLASSIFICATION  
SCHOOL EDUCATION  
BUS TRAFFIC FLOW MAP



EDINBURGH



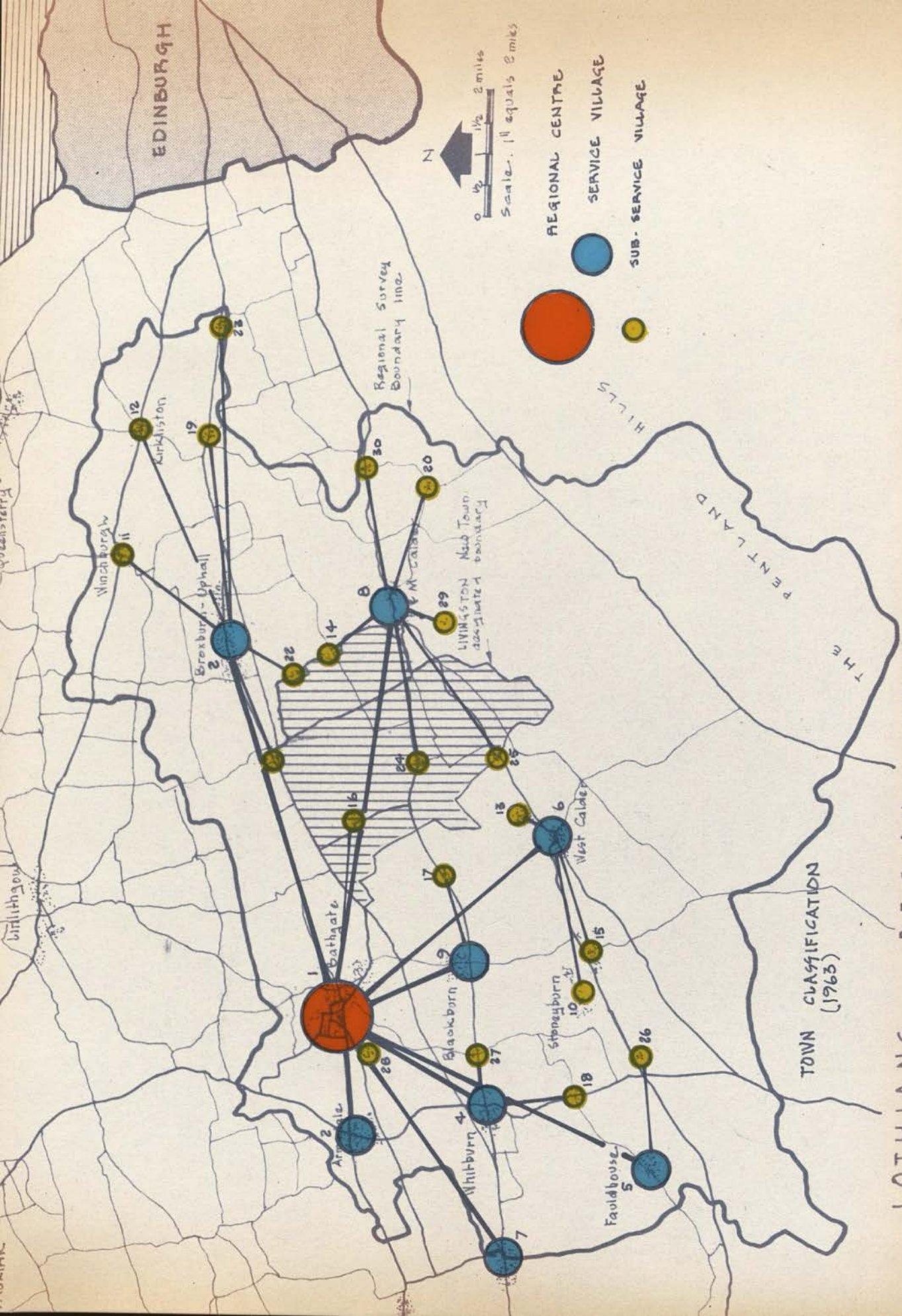
- REGIONAL CENTRE
- SERVICE VILLAGE
- SUB-SERVICE VILLAGE
- SENIOR SECONDARY
- JUNIOR SECONDARY
- PRIMARY
- INFANTS
- ROMAN CATHOLIC
- SPECIAL SCHOOL.

MAP NO. 7.8

LOTHIANS REGION SURVEY AREA

TOWN CLASSIFICATION  
SCHOOL PROVISION

THE PENTLANDS



EDINBURGH

0 1/2 1 1 1/2 2 miles  
Scale: 14 equals 2 miles

REGIONAL CENTRE  
SERVICE VILLAGE  
SUB-SERVICE VILLAGE

MAP NO 8

SURVEY AREA

REGION

LOTHIANS

TOWN CLASSIFICATION (1963)

THE PENTLANDS HILLS

Regional Survey Boundary line

LIVINGSTON New Town designated boundary

West Calder

Winchburgh

Kirkliston

Brexburn-Uphall

Bathgate

Blackburn

Stoneyburn

Fauldhouse

Whitburn

Altrincham

distribution was by far the most conclusive. Two major factors emerged from this last analysis. First was the dominance of Bathgate over the region as regional centre, while second was the fact that the majority of the other 10 sub-regions, while being largely dependent upon Bathgate for Household Goods shops and General Department Stores, were none the less capable of supporting their own population for the necessity type of retail shopping.

In support of these findings, existing bus services and education facilities were analysed and the following conclusions were drawn concerning the classification of towns and their hierarchical order within the region studied.

First there is one regional centre in the form of Bathgate. Complimentary to this major centre are seven service villages in the form of Armadale, Whitburn, Blackburn, Fauldhouse, West Calder, Broxburn-Uphall, and Mid and East Calder. Supplementary to these seven service villages are a further 21 sub-service villages. This classification of centres is shown on Map 8. Note that Harthill has been excluded from the following calculations as only a small portion of this town is actually inside the survey area boundary.

### 3.34 Specialization of Centre Types

In order to investigate retail specialization of the various types of centres, the three different varieties have been grouped together and average figures shown in Table 11 for number of shops, percentage distribution of sales area per retail category, total sales area, shop size, and population. This Table shows that the three types of centres vary in the retailing

	RETAIL TRADE CATEGORIES								OTHER DATA					
	A Groceries	B Other Food	C Cigs, news, sweets	D Clothing	E Household	F Other non-food	G General	TOTAL A-G	Average population	% of Total regional retail sales area	Persons/shop	% Traders Independent	% Traders Multiple	% Traders Coop.
REGIONAL CENTRE	17	17	14	26	32	11	12	129	14,500	53%	113	76%	19%	5%
	280	210	210	535	1,380	350	3,450	890						
	4,750	3,600	3,000	13,850	44,200	3,875	41,400	114,670						
	4	3	3	12	38	4	36	100						
SERVICE CENTRE	10	8	6	6	5	4	5	44	6,600	36%	150	84%	10%	6%
	230	175	150	250	350	225	430	250						
	2,300	1,500	900	1,550	1,800	900	2,150	11,100						
	21	14	8	14	16	8	19	100						
3-SERVICE CENTRE	2		1			1	1	5	1,000	11%	200	79%	10%	11%
	200		100			100	400	200						
	400		100			100	400	1,000						
	40		10			10	40	100						

LOTHIANS REGION: SURVEY OF EXISTING SHOPPING FACILITIES: Showing average distribution of shop types, sales area, etc. between types of centres. TABLE No II

facilities which they provide and these differences are discussed in the following sections.

(A) Regional Centre (1 off-Bathgate)

Food retailing floor space occupies only 7% of the total retail sales area in this centre while other non-food retailing groups occupy the remaining 93%. As shown in Table 43, while the percentage figure for food retailing is low, it is adequate to serve the 'necessity' demands of the town's residents. The distinguishing feature of the regional centre is therefore its specialization in the other non-food type of retail categories, or more specifically in the Clothing, Household Goods, Other Non-food and general department store groups. Other factors which distinguish it are a higher average sales area per shop together with a relatively low figure for persons per shop (i.e., 113 persons per shop). In the organization and ownership of shops in this centre, multiple traders own a higher proportion of shops than in other types of centres.

(B) Service Villages (7 off)

Food retailing space occupies 35% of the total retail sales area in this type of centre. Calculations in Table 43 show that on the whole this is adequate to serve the 'necessity' needs of the dependent population. The average population for the seven towns studied was 6,600 persons and for these people there is an average of about one shop to every 150 persons. Shop size is smaller than in the regional centre and in the organization and ownership of the shops themselves, the independent trader holds a strong position. The functions of the service village emerge then as being those of providing an easily accessible and full range of retailing facilities with a sufficient number of shops to allow for comparison and competition

while at the same time, being not large enough to cater for the large durable goods type of shop.

(C) Sub-service villages (21 off)

Food retailing floor space in these centres, occupies at least 38% of the total retailing floor space, for as is shown in Table 11, general stores occupy a further 40% of retail sales area. As most small general stores in these centres sell food it is likely that anything up to 55% of all retailing floor space in these centres might be devoted to the sale of food. The average population of these villages is about 1000 and for this population there is about one shop to every 200 persons. These centres are small in themselves and serve only a small population. They specialize mostly in food retailing, although quite often the 'general store' will provide a simple range of basic household and clothing items.

3.35 The Regional Framework

The results of the foregoing analysis of retail and service functions of the towns of the Lothians region may be summarised here as follows:

(i) In 1963 the region had a population of almost 80,000 persons and contained within its survey area boundaries an area of some 80 square miles. This results in an average density of some 1,000 persons per square mile or some 16 persons per acre.

(ii) As the principal industrial basis of the region has been the extractive mining industry, the majority of

regional residents live in settlements varying in size from one or two hundred persons up to the largest town of Bathgate with a population of about 14,000 persons. These settlements have been located principally in relation to their coal mines and in the past have served as residential and service adjuncts to the mining industry. As the coal mining deposits have been exhausted in some areas, fire-clay and shale-oil mining has taken over, while in other areas the loss of coal mining has meant that the towns have lost all industrial potential and residents have been forced to travel out to find new employment. One or two towns such as Bathgate and Broxburn-Uphall have over the years, established secondary industries and due to their accessibility to the A8, now the major east-west road route through the region, have increased in size.

(iii) Because of its central location, its early development of secondary industries and the establishment of train and bus services serving both town and region, Bathgate has grown to become the major regional service centre, particularly in respect to the towns in the western sector of the region. Bathgate's own population accounted for 18% of the total regional population in 1963.

(iv) In conjunction with Bathgate as regional centre, there are seven service villages in the region, each with an average population size of 6,500 persons and therefore as a group accounting for 57% of the region's total population.

(v) Dependent upon these service villages, there are a further twenty-~~one~~ sub-service villages, each with an average population size of about 1,000 persons and thereby accounting for the remaining 25% of the regions population.



(vi) While the population is therefore distributed between these three types of centres in the ratio of 18:57:25, the distribution of retail and service trade sales floor area has been shown to be in the ratio of 53:36:11 for the respective types of centres.

In order to investigate the region's relationship with its surrounding districts, an analysis was made of the 1961 retail trade turnover figures for the region as derived from Ref. A/32. This analysis is shown fully in Appendix 3.5. The results indicate that in 1961 the region as a whole lost about 28% of its total annual trade to centres outside the region. Estimates were made in the analysis for what might be the percentage loss per retail trade group, and to check these estimates and the 'dependent shopping populations' calculated for the various regional centres as shown in Table 43, calculations were made using these estimates for Bathgate's turnover. In this way both estimated percentage regional loss per trade and dependent shopping populations calculations were found to be correct to within  $\pm 10\%$ . This overall analysis shows that while Bathgate acts as a regional centre for a large section of the population, the range of goods and services provided by this centre is not sufficient to stop a total regional trade loss of 28% of trade.

The distribution pattern of regional trade itself, (i.e., in terms of annual turnover) follows a somewhat similar pattern to that of the retail floor space distribution in that emphasis is again focused on Bathgate as regional centre. Thus Bathgate captures 25% of gross regional trade even though it has only 18% of the total regional population. The service and sub-service villages capture 47% of gross regional trade while they have 82% of the total regional population, the remaining

28% of gross regional trade is lost to centres outside the region.

The fact that Bathgate captures 25% of gross regional trade while having 53% of the gross regional shopping sales floor area shows also that Bathgate's shops have an average turnover/sq. ft. much lower than the other service centres, for here, these centres capture 47% of gross regional trade with 47% of gross regional shopping sales area. These figures do not indicate that shop 'efficiency' in Bathgate is lower than elsewhere in the region (except in 'absolute' terms) but that Bathgate's shops are of a particular variety and size which have only a relatively low turnover/sq. ft. figure. (i.e., the large furniture and household goods stores.)

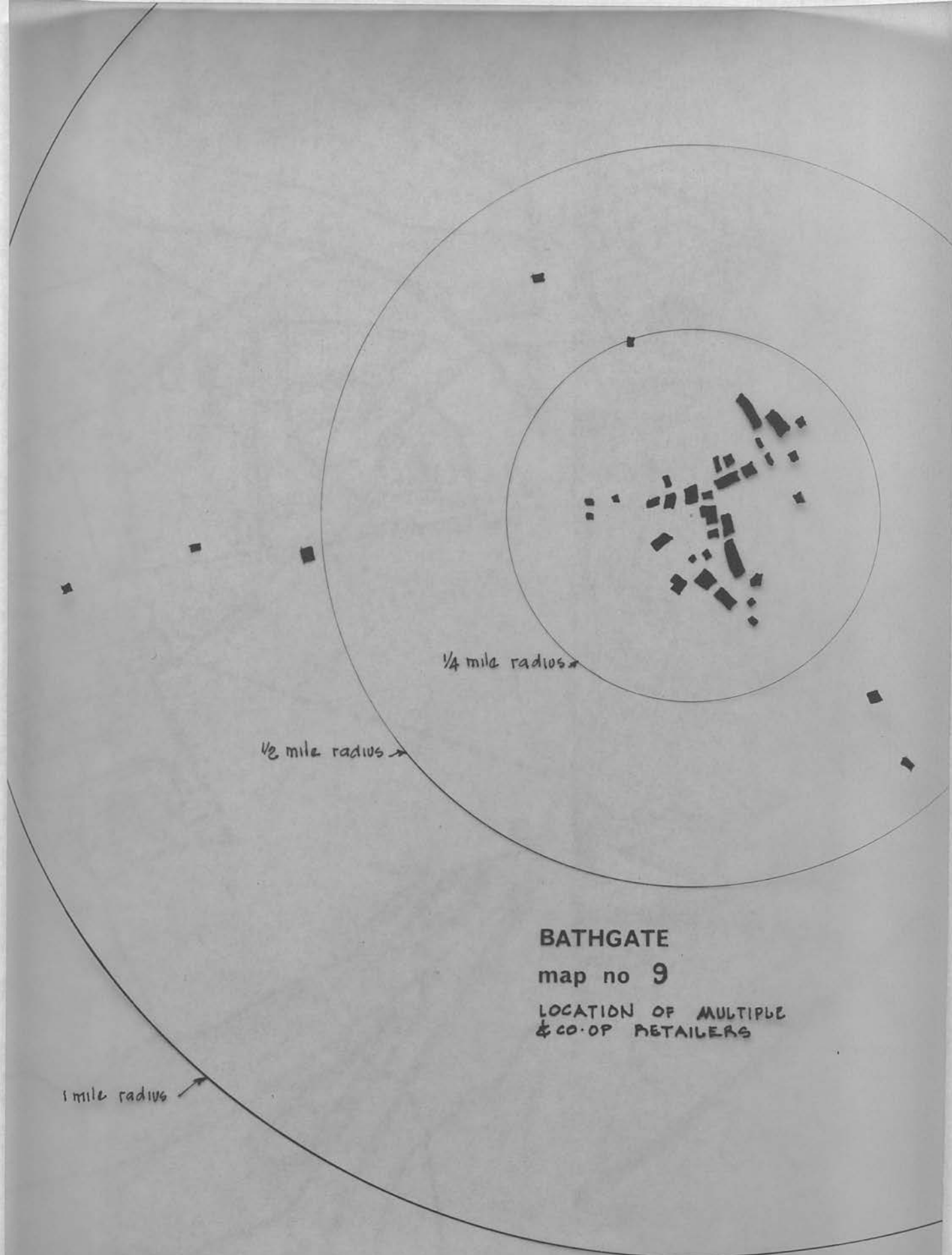
3.41 A Regional Centre (Bathgate)General

Situated on the lower slopes of the Bathgate and Torphichen Hills, the town of Bathgate is the largest of the small Burghs within the survey area. Its growth and prosperity are due to intense industrial development over the last 100 years with particular emphasis on the heavy industries of coal mining and steel founding and latterly with the introduction of the new British Motor Corporation plant close by. Bathgate forms a commercial and social centre for the region, exerting considerable influence over its smaller neighbouring towns of Armadale, Whitburn, and Blackburn.

Bathgate is  $7\frac{1}{2}$  miles south of Linlithgow, 17 miles west of Edinburgh and 25 miles east of Glasgow. An extensive coal field underlies the western part of the town and mining subsidence has occurred here. Over the past century there has been intensive coal mining in the south-west part of the town and this has dictated the lines of urban development and contributed through subsidence to the disruption of natural drainage of the area.

Layout:

The general layout of the town is shown on Map 10. Essentially, Bathgate is a linear town, development being largely dictated by the steepness of the contours to the north and north-east and by the low-lying marshy land to the south-west (in mediaeval times the site of a large Loch).



**BATHGATE**

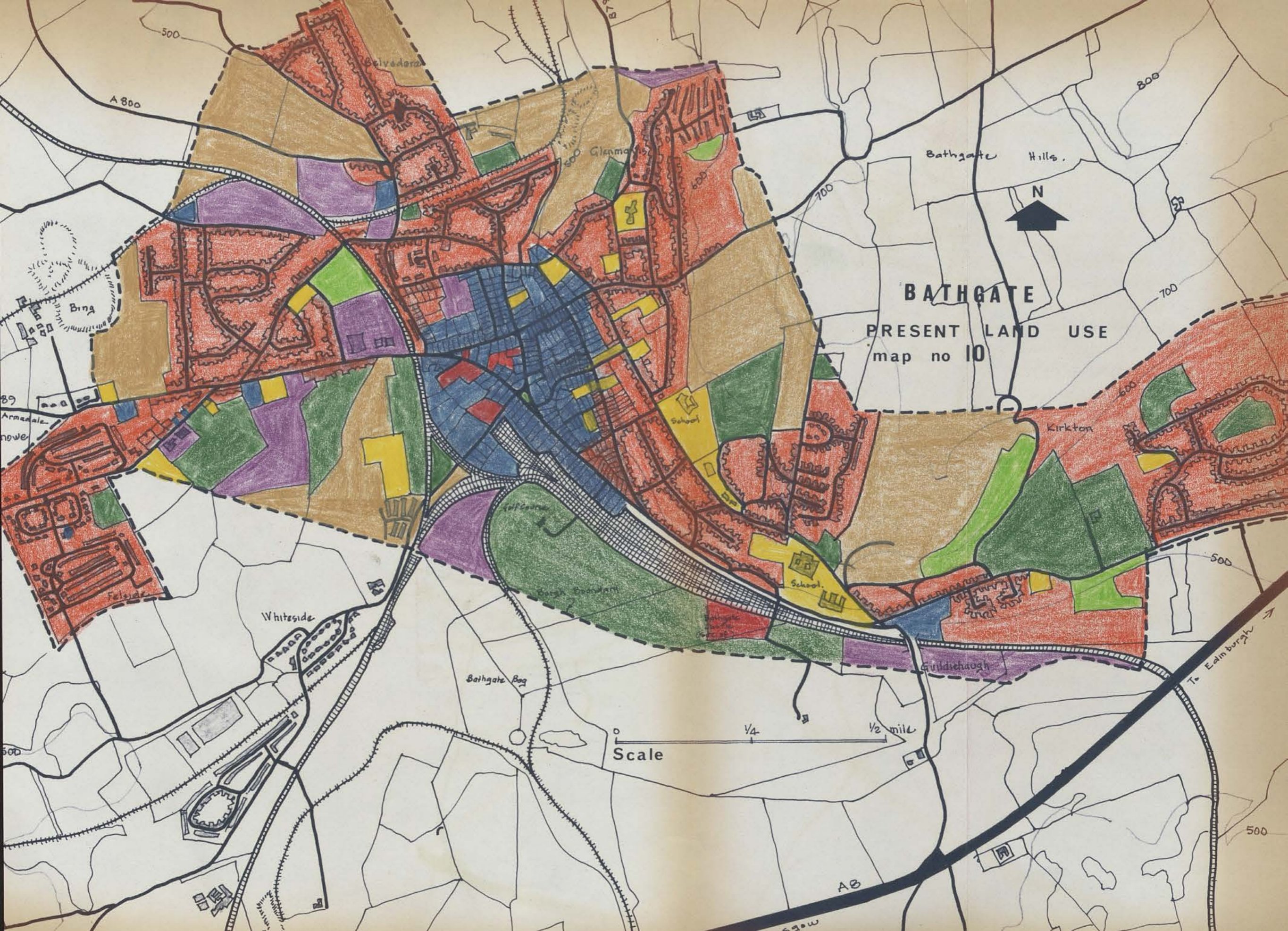
map no 9

LOCATION OF MULTIPLE  
& CO-OP RETAILERS

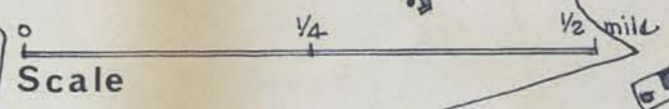
1 mile radius →

1/2 mile radius →

1/4 mile radius →



**BATHGATE**  
**PRESENT LAND USE**  
map no 10



500  
A 800  
500  
Glenmore  
600  
700  
800  
Bathgate Hills  
N  
700  
Kirkton  
500  
Whiteside  
Bathgate Bog  
Guldiehaugh  
A 8  
500



MATHGATE CO-OPERATIVE SOCIETY INROAD

J. M. MANLY & CO. LTD

KEE



The town lies between the 450 ft. and 650 ft. contours which rise in unbroken succession to the Knock and Benerie (1023 ft.) the highest point in the Bathgate Hills. The principal shopping and commercial area is situated near the main traffic artery, Road A89 (Bathgate to Airdrie), which originates at the Edinburgh-Glasgow Trunk road, A8, on the extreme east of the built up area of the town. On the flatter ground south and west of Road A89 are situated the principal industries, while the predominantly residential areas lie to the north and north-east of this road running up the hill.

#### Type of Shops:

The general area of commercial development is shown on Map 10. The most intensive development occurs within a circle radius  $\frac{1}{4}$  mile as is shown. There is some scattered development in the outlying residential areas of the town, but this is generally sub-standard both in quality and quantity. The triangular block of land bounded by George Street, North and South Bridge Streets, virtually forms the 'town centre', and it is from these streets that the town's local and district bus services radiate. As Bathgate is the major centre for the region, it is within a  $\frac{1}{2}$  mile circle centred on the town, that we find the multiple, chain and department stores of the region. In overlay Map 9 to Map 10 the multiple, chain, department and Co-operative shops are shown separately from the independent traders. While a fair intermingling of trader types is apparent, when the floor area figures for each is compared, the dominance of the large retailer is clear. Of a total of some 121,000 sq. ft. of shopping area for the whole town, the independent trader shares only 35% of this figure. Multiple chain and department stores carry some 43%, while Co-operative stores have a 22% share in floor area.

LOTHIANS REGION:  
SURVEY OF EXISTING SHOPPING FACILITIES

LOCALITY: Dathuake  
DATE: 25.4.1963

SHOP NO	RETAIL TYPE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
PHYSICAL	FRONTAGE (FT)	120	15	15	15	30	15	15	30	50	15	90	20	20	120	100	20	60	50	50	25	20
	SALES AREA (FT <sup>2</sup> )	-	100	100	150	350	150	150	350	250	100	900	300	300	900	100	400	400	400	3,000	2,000	300
	STOREYS	2	3	3	3	3	3	3	3	2	2	2	2	2	3	2	2	2	1	2	2	3
	PHYSICAL CONDITION	2	2	1	2	1	2	2	2	2	3	3	2	2	2	3	2	1	2	1	1	2
ORGANISATION & OWNERSHIP	INDEPENDENT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	MULTIPLE											✓										✓
	DEPARTMENT																					
	CO.OP																					
TYPE	CHAIN STORE																					
	LOCK-UP																					
COMMENTS	PNEUING	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		as Bat	2 MURROW	GRHAM	RNS	RDS	J	Z	S			RES					RS	XTRP	HEDEL	TON		NE

LOTHIANS REGION: SURVEY OF EXISTING SHOPPING FACILITIES: Showing typical completed survey form used on survey: TABUE NO 12



The majority of these large shops are 'general' stores, while most other multiples specialize in Clothing and Household Goods. The town is essentially a clothing and household goods centre for the whole region, with a slight accent on specialized food shops.

#### Physical Condition:

Similar to all towns within the region, Bathgate's shops vary from good to very bad in physical condition. The mixture of land uses keeps the general tone of the centre low. Within the  $\frac{1}{2}$  mile circle shown on the map, sheer concentration of retail and service facilities has forced land prices upwards so that the small independent trader has and is being forced to move out. As this cycle takes place, these old shops are being replaced by new ones.

#### Size of shops:

Bathgate as regional centre holds the largest of stores, with a maximum shop size of approximately 16,000 sq. ft. Survey figures show that Bathgate's shops provide little over half the total shopping area within the region, its nearest rival, Broxburn-Uphall, being only 1/7th its size.

#### Location of Shops:

The principal business centre is well defined in the very heart of the town with a tendency to expand into the older outworn residential areas immediately adjoining the town centre. A substantial amount of new and improved commercial development has taken place in the town centre in the last decade emphasising

Bathgate's importance as the principal centre for the region (see Illustration 5). The majority of service trades are also located in the centre of the town and this combined concentration of business activities, which has developed alongside major traffic roads, has resulted in a build-up of traffic problems.

The development of further shopping sub-centres in the more remote housing areas would help to relieve congestion in the town centre and would be a convenience to the housewife living in these areas. The formation or improvement of rear service facilities in the town centre, and the provision of car parking facilities, would also make a major contribution to the solution of the traffic problems of the town.

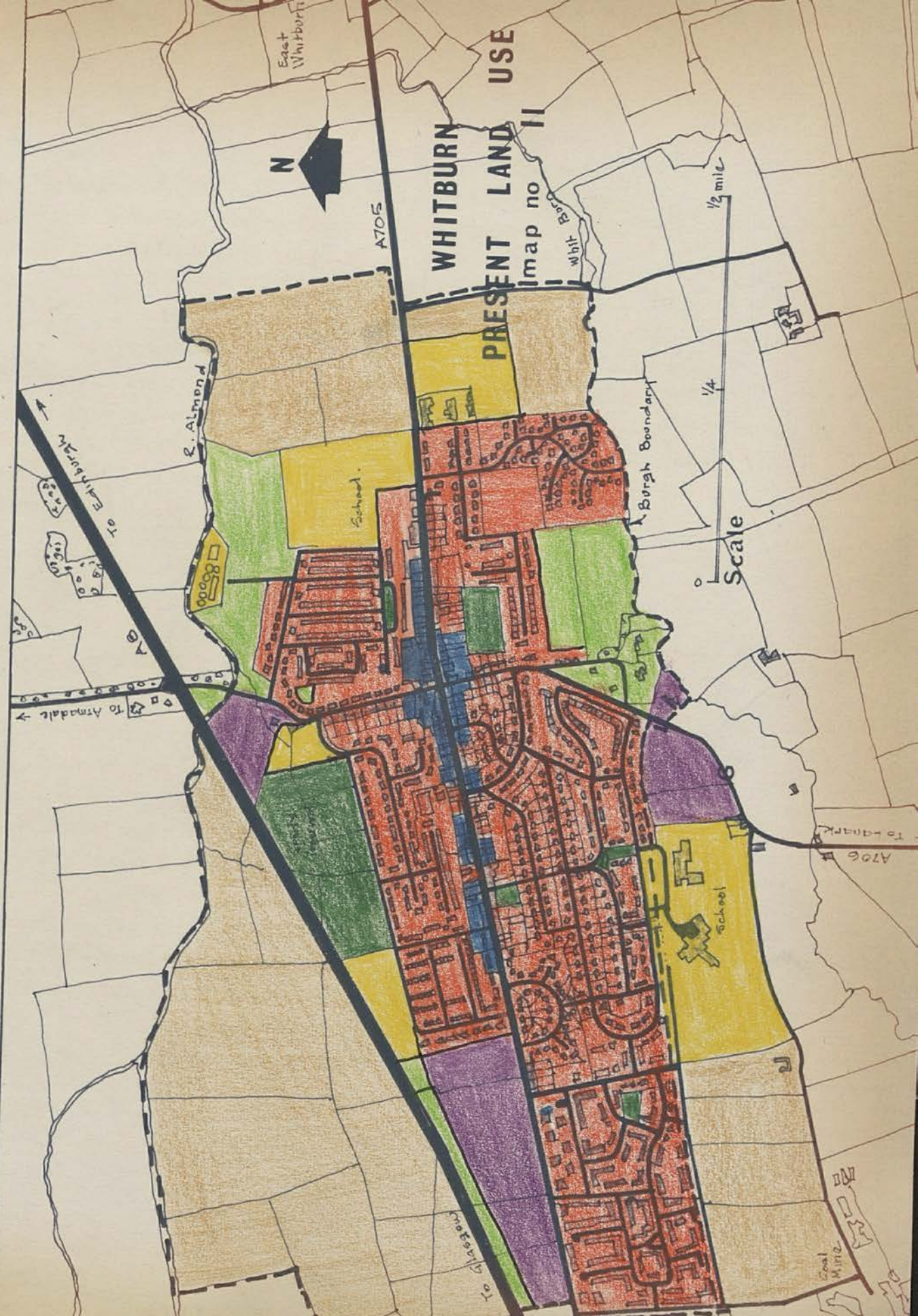
#### Summary:

The topography of the area and the effects of mining operations have prevented the compact development of the town-- the most recent residential development area at Boghall being well over a mile from the main centre. The town can be divided into seven residential districts, including the landward community of Whiteside/Birniehill, and few of these offer a full range of community facilities necessary to obtain maximum convenience for the inhabitants. Efforts should be concentrated on developing an even balance of community facilities within these districts. The traffic problems of the town centre must be solved if successful expansion of the town is to take place. Note that Table 10 sets forth the shopping survey results obtained.

### 3.42 A Service Village (Whitburn)

#### General

Whitburn is situated midway between Edinburgh and





Glasgow, and adjacent to the A8 trunk road which connects the two cities. It lies on the north sloping face of the Almond Valley between the 550 and 650 ft. contour lines, which affords the town fine views of the Bathgate Hills to the north.

The town has very devinite boundaries---both surface features and underground mineral workings. The northern boundary of the town is formed by the A8 trunk road and the river Almond. This boundary will be strengthened by the proposed motorway which will be on the north bank of the river Almond. To the south of the town the land rises fairly steeply to a high ridge and at the 650 contour the well-wooded farmland gives place to extensive peat moorland. It is felt that the 650 ft contour line forms the southern boundary of the town. This boundary is strengthened by the siting of the Polkemmet Colliery, which is on the 700 ft. contour to the south-west of the town and generates heavy smoke which drifts east along the contour. The western boundary is formed by the line of the A8 joining the 650 ft. contour. To the east is medium agricultural land astride the A705 to East Whitburn.

The river Almond flows from west to east along the northern boundary of the town and at this stage of its course it is approximately 25 ft. wide. The town sewerage works are on the banks of the stream and the works empty into the stream itself. While there are many fine tree belts on the outskirts of the town, there is a complete absence of trees in the town itself. This, together with the grey harling used on most houses, gives the town a very hard and depressed character.

#### Layout:

The general layout of the town is shown on Map 11.

Essentially, the town is composed of four well-defined community areas divided by the crossing of the A705 and A706 in the middle of the town. There appears to be no community nodes within the four areas, people pass from the housing areas onto the main street where there is a heavy pedestrian flow. The main street is used as a casual meeting ground for the residents including school children on their way home from school, despite the fact that it was the 'long way round' for them. (see Illustration 6).

#### Type of Shops:

Shops are mainly confined to the main street running east-west through the centre of the town, the most intensive development being near the cross-roads, at the town centre. Of the 66 total retail and service shops found in the town, 58 of these are independently owned and organized, four are run by a Co-operative Society and the remaining four are run by Multiple organizations. Whitburn functions as a service centre for its residents and the surrounding districts by providing a good range of shopping facilities. Due to the lineal development of the shopping centre, however, together with the heavy traffic passing along the main street a poor shopping environment results to the detriment of any future retail development.

#### Physical Condition

Only about one shop in four was classified as being in first class condition. A further one shop in four was classified as being totally inadequate and unfit for the function it performs, while the remaining two out of four shops were classified as being in medium condition. This generally poor condition of shops together with mixed land use provides a very unattractive setting for commercial development.

### Size of Shops

As a service village, the size of shops provided is generally small---200 to 300 sq. ft. being the normal size. There are one or two stores with sales areas of up to 1,000 sq. ft. but this is the maximum size of shop provided. A number of shops in converted 'front parlours' are very small, in most cases not providing more than 50 to 100 sq. ft. of sales area.

### Location of Shops

Almost without exception, the shops and service trades within the town are located in the Old Town on either side of the East and West Main Street. Throughout the four housing 'groups' there is a total lack of corner shops, excepting in the north-eastern group where there is one single grocery shop, and this is not too far removed from the town centre. It is situated on a pedestrian path leading to the town centre, and seems to be doing a good trade. The main town shops are on the north side of West Main Street, and the south side of East Main Street, scattered along  $\frac{1}{4}$  mile length of a street which is used by heavy vehicular traffic. This development along the main street frontage is typical throughout the region.

### Summary

The extent of Whitburn's growth potential is severely handicapped by extensive coal mining workings immediately adjacent to the present Burgh boundaries. An overspill agreement signed with the Glasgow Corporation has brought a new housing estate development to the south western quarter of the town. With a 1963 population of 8,800 persons, it is likely that future developments will not allow the town to expand beyond 10,000 persons.

Any redevelopment scheme for the rehabilitation of Whitburn's shopping facilities must solve three problems. First, while existing retail and service development is poor in character it still provides an essential service. In 1961 the annual retail trade turnover was £615,000. Any plans for redeveloping these facilities should therefore aim at providing immediate alternative accommodation to retailers. The second and perhaps most important determinant for any redevelopment scheme will be the approach adopted in rerouting the main street. The possibility of through traffic must be excluded in any such scheme and the servicing of shops at the rear of premises must be planned for. Third, some thought must be given to relocating a few shops in the four residential quadrants. This would help provide a focal point for each of the housing groups, at the same time making shopping for essentials a more convenient process.

### 3.43 A Sub-service Village (Kirknewton)

#### Introduction:

Kirknewton lies about  $2\frac{1}{2}$  miles east of Mid Calder and about 10 miles E.S.E. of Edinburgh between the two roads, A70 and A71. To the north of the town lies the main Edinburgh-Glasgow railway line which serves the town at a station about one mile west of the town centre. The town's development follows a linear pattern, housing being strung out along the main road which passes through the town from east to west. See Map 12. While a large portion of the housing is post World War I, the old stone shop buildings in the town centre form a solid core to the town. These buildings date from about 1850; the majority of buildings are on a south facing slope which runs down into a burn below the road. To the south of the township itself lies Kirknewton House a large estate set in fine woodland surroundings. As the



0  
Scale

1/4 mile

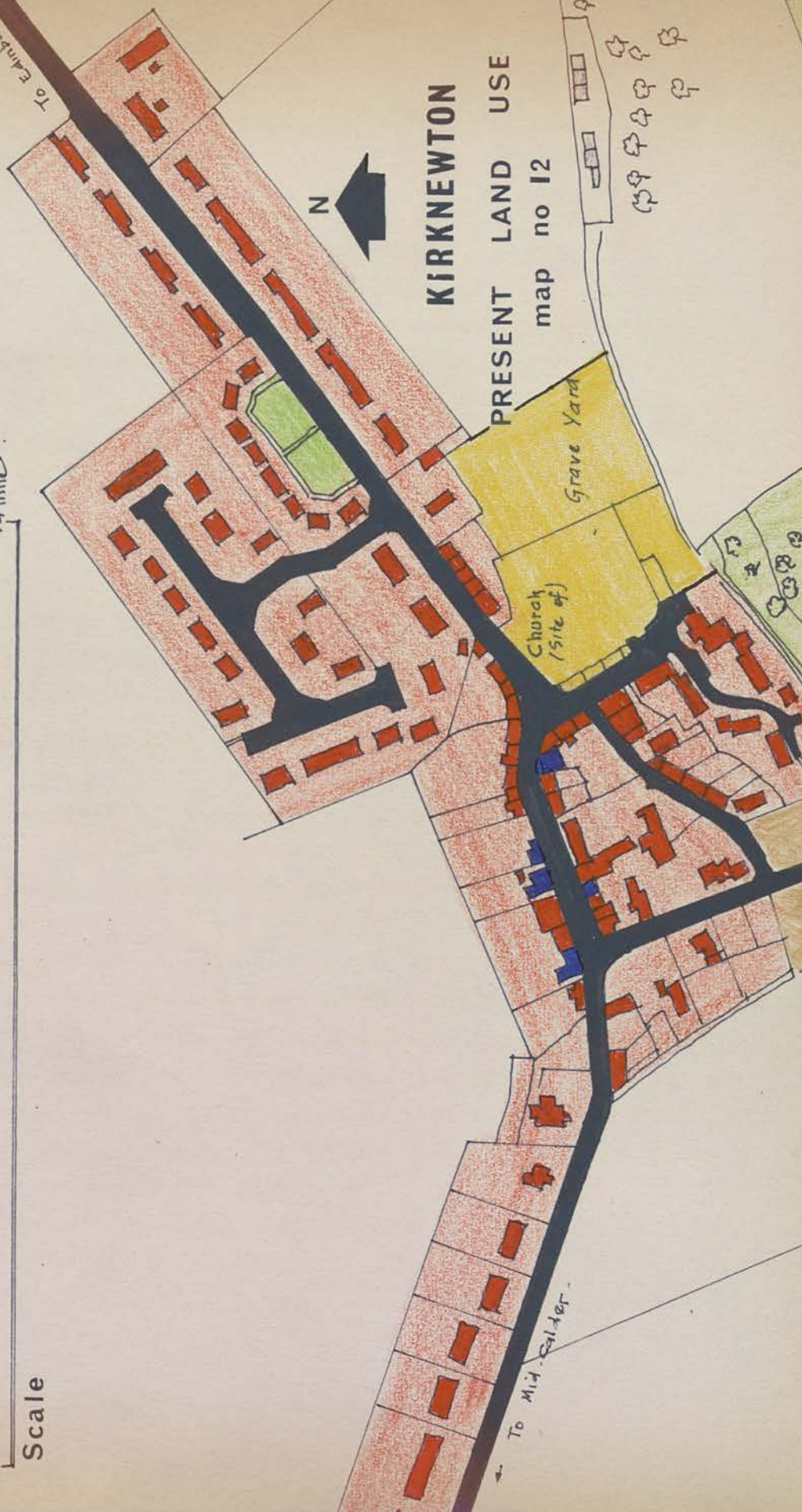
To Edinburgh

To Mid-Caldor



# KIRKNEWTON

PRESENT LAND USE  
map no I2



Grave Yard

Church  
(Site of)



TSC 844

GA

main town road is not a main traffic artery, there is little through traffic passing. To the north of the town lies a United States Air Force Residential Base Unit, surrounded by barbed wire.

### Shops

Kirknewton has one grocery store, one fancy goods shop, two general stores and one Inn. One of the general stores is run in conjunction with a small post office. All shops are independently owned and run and all have been classified as being third class physical condition properties since all shops are operated from converted houses.

### Summary

The ultimate life of this village would seem to depend upon a number of factors. First, the adjacent United States Air Force Residential Base unit, while not being integrated with or dependent upon the township of Kirknewton in any way, by its mere presence adds to the need to maintain services such as electricity, water supply and sewerage to the township. Second, and in line with Mid Lothian County Planning Office's recommendations, (Ref. B/32) its policy in relation to Kirknewton is one of 'in-filling' the existing residential areas so that as far as possible some sort of viable community is maintained. In any event, the ultimate population of this township is not likely to exceed 1,000 persons so that the existing shopping facilities are probably adequate and capable of serving the township for the rest of its life. Apart from the removal of certain local eyesores and perhaps a 'face-lift' for the buildings lining the town's main road, (see Illustration 7), little is necessary to maintain or improve upon this township's service facilities.

The collection of data on the existing shopping facilities of the Lothians regional survey area was a lengthy and time-consuming process involving as it did, many survey trips into the region. The collection of information resulting from this survey was found to be useful for two reasons. First and adopting the practical and long-term point of view, the data collected forms a basic part of survey data essential when making proposals concerning the future growth, development and rehabilitation of the region's service villages.

Second, and more important to the candidate's own research theme, the data collected made it possible to analyse and delineate the region's internal and established hierarchy of towns and their service functions. Various methods were used to determine this hierarchical order and the towns service functions before a satisfactory technique based on the candidate's survey data was evolved. This technique involves an analysis of the distribution of retail trade group shop sales floor area throughout the region and by relating this to town population figures, ultimately determines a value for 'dependent shopping population' for each service centre per retail trade group.

In all, and by this means, three types of service centres were distinguished; first, Bathgate as regional centre with a population of about 14,000 persons; second, a further seven 'service villages' each having an average population of some 6,500 persons; and finally a further 21 'sub-service villages' each having an approximate average population of some 1,000 persons.

The different types of shopping facilities provided by each of the centre types was investigated and it was shown that while most service villages and sub-service villages provide adequate day-to-day types of shopping facilities for their dependent population, they rely heavily on their regional centre at Bathgate to provide the more durable type of goods shopping. An analysis of regional trading figures for 1961 showed that despite the build-up of shopping facilities at Bathgate, the region as a whole lost 28% of its gross trade to centres outside the region-- probably to Edinburgh and Glasgow.

An assessment of the influence which the new town of Livingston will have on the service functions of these existing regional communities is undertaken in Chapter 5 of this thesis. What does seem to follow from this present analysis of survey data however, is that communities with a population of about 6 to 8,000 persons are apparently only able to maintain for themselves a limited degree of self-sufficiency, even when separated from other similar communities by one or two miles. In this way, the shopping facilities which they are able to support are restricted to the more essential and day-to-day type of facilities. Further research is necessary before the relationship between regional service villages and their regional centre, and also the relationship between region and adjacent districts can be reduced to simple terms. It would seem at this stage, that these functional relationships must depend primarily upon relative population distribution and density as well as the accessibility factors expressed in terms of distance between centres, means of transport available and the existing level of transport efficiency.

CHAPTER 4.

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LOTHIANS REGION-FACILITY USE SURVEY

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In Chapter 1, where a general theory concerning the functions and locational determinants of shopping centres was set down, one of the major factors ultimately deciding the location and functions of shopping centres was stated as being the level and degree of 'consumer mobility'. Where accessibility to shopping and service centres alters due to a change in consumer mobility, it was also shown that the functions of these service centres are likely to change.

In Chapter 2, where an analysis was made of the shopping facilities provided in the British New Towns, one aspect thrown up by the study was the fact that these new town centres are attracting a great deal of trade normally classified as 'essential' goods trade and which is also normally associated with the neighbourhood or local type of shopping centre. With the knowledge that car ownership is increasing rapidly in Great Britain, these facts would seem to indicate that already these particular types of shopping centres are undergoing changes in what has been considered to be their normal functions.

In Chapter 3, and as a preparatory stage preceding an analysis of what might be the effects of superimposing the new town of Livingston on the Lothians region and its existing service centres, the region's existing shopping facilities were analysed and the functional relationships existing between the various types of service centres were defined.

In this Chapter and following on from these previous points, the results of a postal questionnaire survey conducted within the Lothians region survey area are analysed. This survey



had two aims; first, it hoped to establish what were the existing shopping patterns within the survey area and what influence the various major regional and ex-regional shopping centres had over the survey area itself. In this way it was hoped to define 'standards' in shopping trip frequency and distribution so that these might be applied towards determining the future shopping patterns of the region when it would include the new town of Livingston. Second, by correlating car owning respondent's shopping patterns with such factors as their age, sex and family structure it was hoped to establish what effect car ownership would have on some of the existing limitations to consumer mobility. The following sections describe this survey and its results in detail.

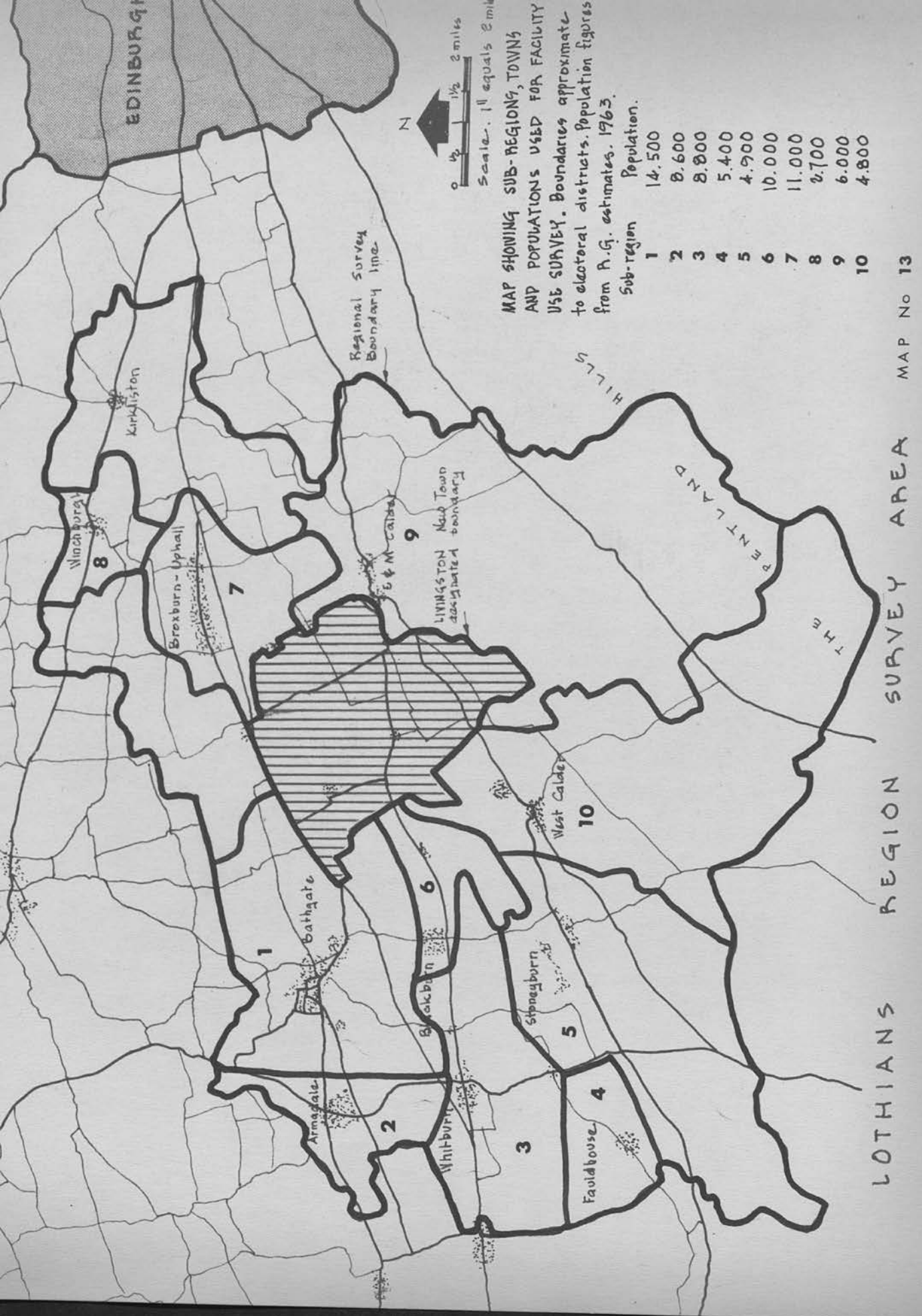
4.21 The Sample Selected

The population of the Lothians region in 1963 was about 80,000 persons or about 23,000 families. In designing the questionnaire, (see Appendix 4.2) it was decided to limit the investigation to persons over the age of 21 years. In this way, names taken from the District Electoral Rolls could be grouped into families and each member over the age of 21 years would be requested to complete one form.

In selecting the sample, the region was divided into 10 sub-regions each containing one of the region's service centres, (see Map 13). Sample size selected from each of the sub-regions was varied according to the overall population contained within that sub-region. The panel of names and addresses was selected by taking every 30th name and dwelling unit from the most recent County Electoral Rolls, using only street addresses falling within the sub-region's service centre or village. Beside each selected name and address the number of persons living at that address eligible to vote and therefore over the age of 21 years, was noted.

The corresponding number of forms was then placed in the outgoing envelope together with a copy of the standard 'introductory letter', explaining the survey briefly to the recipient. In each case a return-addressed stamped envelope accompanied each letter. Copies of both questionnaire and introductory letter are shown in Appendix 4.2.

In the final sample selected some 1,986 forms were



EDINBURGH



MAP SHOWING SUB-REGIONS, TOWNS AND POPULATIONS USED FOR FACILITY USE SURVEY. Boundaries approximate to electoral districts. Population figures from A.G. estimates, 1963.

Sub-region	Population
1	14,500
2	8,600
3	8,800
4	5,400
5	4,900
6	10,000
7	11,000
8	2,700
9	6,000
10	4,800

LOTHIANS REGION SURVEY AREA MAP No 13

Winchburgh  
Kirkliston  
Brexburn - Uphall  
Bathgate  
Whitburn  
Armagale  
Breakburn  
Stoneyburn  
Fauldhouse  
West Calder  
LIVINGSTON New Town designated boundary  
E & M Calder  
PENTLANDS HILLS  
THE PENTLANDS

Regional Survey Boundary line

sent to 855 families living within the ten selected regional towns. This represents an approximate sample size of 4%.

#### 4.22 The Return Received

A 35% level of response was received so that a total of 320 families returned some 692 forms. In its final form therefore, the survey represents a 1.4% returned sample level of families, and a 1.3% returned sample of residents over the age of 21 years. Table 13 shows details of the sub-regions' populations, sample numbers selected, returns from the sample and overall percentage received, while Table 14 gives the actual number of respondents classified according to town, sex and age groups.

#### 4.23 Comparison with Standard Figures

The percentage returns vary from each of the villages as shown in Table 13. The lowest return was from Armadale (30.5%) and the highest return was from Stoneyburn, (45%). In Table 15 comparative figures are given for selected characteristics of both the regional returns and the Regional or Scottish average figures. In general terms these figures indicate that the returns from the survey are fairly representative of the average regional population. Some slight differences do occur in the age and sex structure of the regional returns however, and the returns show a slightly higher than average proportion of males, a higher proportion of people in the 30 to 44 year old age bracket with correspondingly lower than average figures for the youngest and oldest age groups.

	ESTIMATED 1963 POPULATION	PERCENTAGE OF TOTAL REGIONAL POPULATION	NUMBER OF FORMS SENT	PERCENTAGE OF TOTAL NUMBER OF FORMS	NUMBER OF FORMS RECEIVED BACK	PERCENTAGE OF THOSE SENT	RECEIVED AS A PERCENTAGE OF ADULT POPULATION	MULTIPLYING 'FACTOR' TO CONVERT TO PRESENT ADULT POP.
1.	BATHGATE	19	374	19.0	125	33.5	1.32	76
2.	ARMADALE	11	216	11.0	66	30.5	1.19	84
3	WHITBURN	12	150	7.5	49	33.0	0.86	116
4	FAULDHODSE	7	187	9.5	60	32.0	1.71	58
5	STONEY BURN	6	55	2.5	25	45.0	0.79	127
6	BUACKBURN	13	194	10.0	61	31.5	0.94	106
7	BROXBURN-UPHALL	14	330	16.5	116	35.0	1.62	62
8	WINCHBURGH	4	148	7.5	51	34.5	0.90	35
9	EAST & MID CALDER	8	191	9.5	82	43.0	2.10	48
10	WEST CALDER	6	141	7.0	57	40.0	1.83	55
	TOTALS / AVERAGES	100%	1,986	100.0	692	35.0	1.40	-

LOTHIANS REGION: FACILITY USE SURVEY: TABLE SHOWING DISTRIBUTION OF POPULATION, FORMS AND RESULTS ACHIEVED FOR VARIOUS TOWNS. TABLE No 13

	AGE 21-29		AGE 30-44		AGE 45-59		AGE 60+		TOTAL		GRAND TOTAL
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
1	12	9	18	22	21	18	12	13	63	60	125
2	6	4	16	13	8	9	5	5	35	31	66
3	7	6	12	9	3	5	4	3	26	23	49
4	2	4	15	14	5	8	6	6	28	32	60
5	3	1	3	3	4	3	4	4	14	11	25
6	5	6	19	15	7	7	1	1	32	29	61
7	17	20	17	12	18	14	8	10	60	56	116
8	8	5	5	5	10	11	4	3	27	24	51
9	8	3	11	13	17	15	8	7	44	38	82
10	4	3	7	8	10	9	10	6	31	26	57
TOTALS		72	61	123	113	103	99	62	360	332	692
GROUP TOTALS		133		236		202		120		692	

LOTHIANS REGION: FACILITY USE SURVEY: TABLE SHOWING AGE AND SEX CHARACTERISTICS FOR SURVEY RESULTS TABLE NO 14

Characteristics	Regional Sample Returned	National (N) or Regional (R) Averages
% of adult pop. aged 21-29 years	19%	22% (R)
% of adult pop. aged 30-44 years	34%	29% (R)
% of adult pop. aged 45-59 years	29%	29% (R)
% of adult pop. aged 60 years and over	18%	20% (R)
% of adult pop. males	52%	49.5% (R)
% of adult pop. working males	85%	86% (N)
% of adult pop. working females	18%	26% (N)
% of adult pop. professionally occupied	6%	7.3% (N)
Total occupied as % of total population	53%	59% (N)
% Unemployed of total population	1.3%*	3% (N)
One car to every ( ) families	2.4	2.5 (R)

\*Note: 2% of sample returned failed to answer question on  
Employment.

LOTHIANS REGION: Selected characteristics for the region compared  
with sample returned from survey. Table 15.

4.31 General

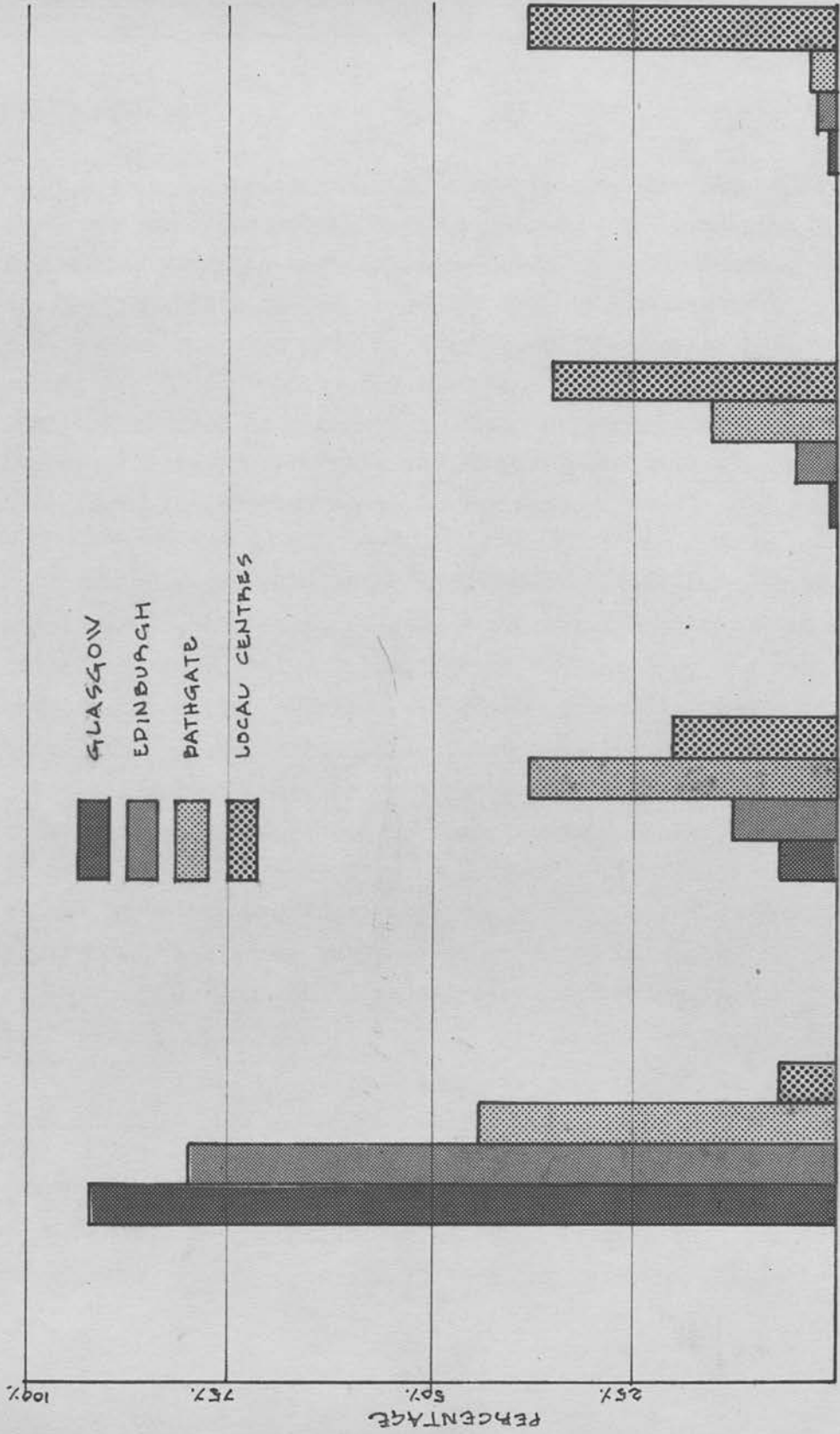
Respondents were asked to give details concerning their shopping activities in four places, namely, Glasgow, Edinburgh, Bathgate and their own local shopping centre. Frequency of shopping and means of transport used were also taken into consideration. The response to these questions was of a high standard. Crude results obtained from the questionnaires returned were transferred onto manually operated punch cards and the first stage refining of this data for shopping activities is shown in Appendix 4.1 in Tables 46 to 56 inclusive.

The results of this survey have been analysed in two ways. First, the region has been processed as a whole in order to define the relative importance of the two shopping centres outside the region--Glasgow and Edinburgh--while at the same time considering the relationship between these external centres and the internal shopping centres in the form of Bathgate and each individual centre. Second, a more detailed analysis was made of housewives shopping patterns showing what effects the factors of age, mobility and family structure have on their shopping patterns. This later analysis is reported on in Section 4.40, while this Section considers only the regional shopping patterns as a whole.

4.32 The Regional Shopping Patterns

As Table 13 shows, the percentage of completed forms received from each town as compared with that town's 1963 population, varied from a 2.9% level of returned sample to a





LOTHIANS REGION: FACILITY USE SURVEY: FREQUENCY OF SHOPPING TRIPS TO THE VARIOUS CENTRES EXPRESSED AS A PERCENTAGE OF TOTAL TRIPS.

DIAGRAM N° 8

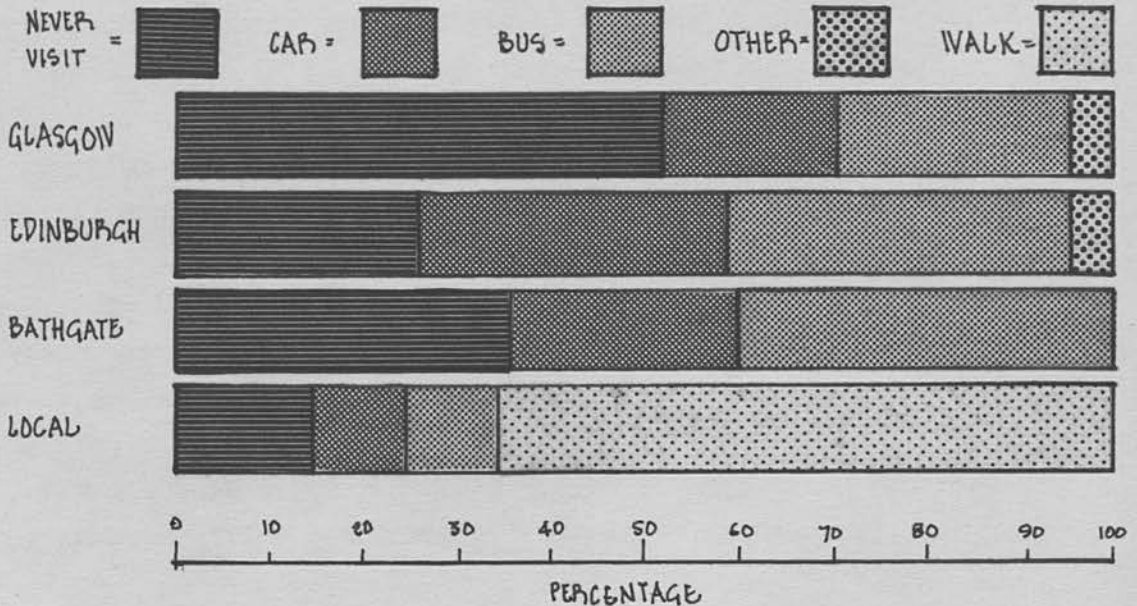
0.79% level. In order to construct shopping patterns which would closely resemble the present population's patterns of shopping, it was necessary to modify the crude results of the survey by means of a 'variance factor' as shown in Table 13. Multiplying survey results for each town by its 'variance factor' brings the sample results up to a 100% population level. By means of these factors therefore, and the crude results shown in Tables 46 to 56 inclusive, it was then possible to derive shopping patterns for the four types of shopping centres nominated in the questionnaire. Both frequency of shopping trips and the method of transport used were taken into consideration, so that the total number of trips to each centre per year was calculated. This total annual figure was then divided by 365 to reduce it to 'average daily shopping flows', and in Diagrams 10, 11, and 12, these shopping patterns are shown. The results of these calculations have been summarised in Table 16 and shown in bar-diagram form in Diagram 13.

Before proceeding to a discussion of the influence of the various centres on the regional shopping activities, it is well to bear one or two additional factors in mind. First, the questionnaire asked for information concerning only four shopping centres. The survey results do not therefore show any shopping trips from one regional town to another (excluding Bathgate) or to other non-regional centres other than those nominated. It is likely that residents of East and Mid Calder and perhaps Winchburgh, look to Broxburn-Uphall as their regional shopping centre. Due to the wide variety of combinations open however and due to the necessity of maintaining the questionnaire in as simple a form as possible, it was not feasible to attempt to cover all such trips in this survey. The influence of these other shopping trips however seems likely to be marginal.

CENTRE	BY CAR	BY BUS	OTHER	WALK	TOTAL
GLASGOW	380	480	140	—	1.000
EDINBURGH	1.215	1.320	165	—	2.700
BATHGATE	1.025	1.675	—	—	2.700
LOCAL	1.450	1.750	—	11.400	14.600
TOTALS	4.070	5.225	305	11.400	21.000
PERCENTAGE	19%	25%	1%	55%	100%

LOTHIANS REGION: FACILITY USE SURVEY: NUMBER OF TRIPS PER DAY TO VARIOUS CENTRES, BY TRANSPORT USED

TABLE N° 16



LOTHIANS REGION: FACILITY USE SURVEY: PERCENTAGE DISTRIBUTION OF TRANSPORT USED TO VISIT THE VARIOUS CENTRES AND ALSO PERCENTAGE WHO NEVER VISIT

DIAGRAM N° 9

Second, no information was collected concerning mobile shop trading and other forms of postal shopping, etc. At the time of formulating the questionnaire it was difficult to see how the importance of this type of shopping could be brought out in a survey such as the one carried out. Mobile shops are particularly important in Scottish retail trading patterns however and future surveys should seek quantitative information on this aspect.

Third, the tables and diagrams reporting on the survey results are likely to be misleading in regard to 'average' daily shopping trips, more especially in relation to non-regional shopping at Glasgow and Edinburgh. These trips are more likely to be undertaken on a Saturday, so too for Bathgate to a certain extent, so that average daily flows shown on the diagrams might well occur not evenly spread out over the whole of the week, but instead would tend to aggregate instead on one or two particular days of the week such as Saturday or Market or early closing day. Thus while these diagrams indicate the relative probable quantum of shopping trips made to the various centres, they do not indicate probable traffic flow patterns.

Fourth, the survey was carried out during April and May of 1964, and therefore indicates what might be the normal Springtime shopping trips. During the winter months it is possible for this region to be under heavy snowfalls, so that shopping trips would tend to be kept to a minimum.

Lastly, while the number and frequency of shopping trips to some extent indicates the nature and value of goods purchased, they are not by any means a completely accurate guide to these matters. Trade in terms of money spent and also the type

of goods that this money is spent on, has been investigated in another section of this thesis. (see Chapter 3 and Appendix 3.5). Future surveys on shopping habits might well investigate these aspects in greater detail.

#### 4.33 The Regional Influences

Table 16 shows that on an 'average' day there could be some 21,000 shopping trips made in the region; seventeen percent of these are made to Glasgow and Edinburgh and are therefore outside the region, and thirteen percent to Bathgate as Regional Centre. The remaining 70% of shopping trips are made to local centres. If Bathgate's own local shopping is added to its regionally attracted shopping, then it might be said that Bathgate attracts almost 30% of all shopping trips. The remaining 53% of local trips is captured then by nine other regional towns, each averaging about 6% of the total daily trips. Bathgate's dominance of the region is therefore substantiated, and the wide range of facilities available there is immediately justified.

Fifty-five percent of all shopping trips are carried out on foot and this represents 78% of all local shopping trips. Nineteen percent of all shopping trips are made by car, 25% by bus and 1% by other means. Frequency of shopping trips is shown in Diagram 8, and it will be seen that the greater the distance, the less frequent are the visits and vice versa. The only exception to this rule being Bathgate, where it will be seen that a large proportion of its shopping is done on a weekly basis, thereby further emphasising its role as regional centre.

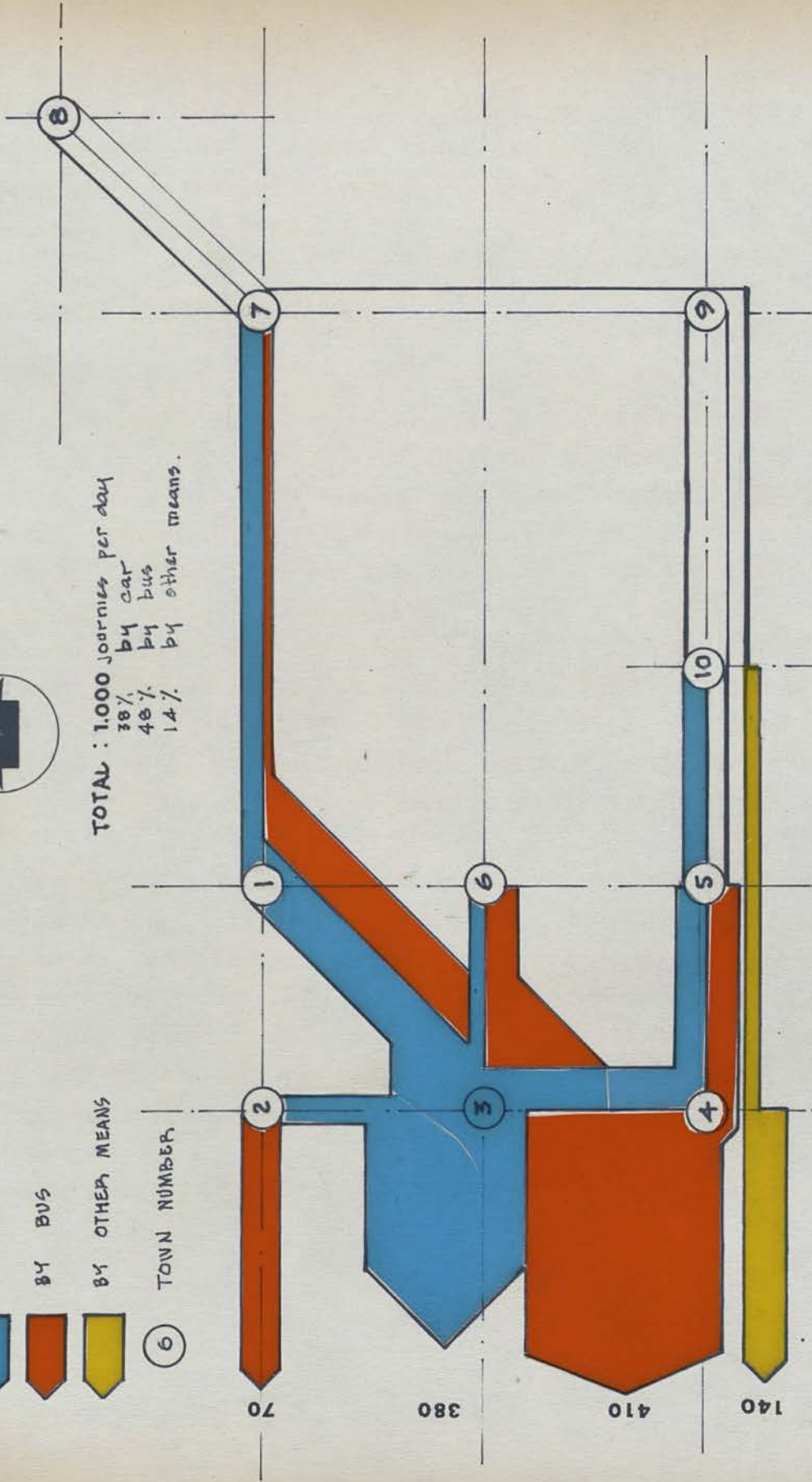
LEDGEND



⑥ TOWN NUMBER



TOTAL : 1.000 Journeys per day  
 38% by car  
 48% by bus  
 14% by other means.



LOTHIANS REGION : DIAGRAM SHOWING SHOPPING VISITS TO GLASGOW PER DAY : 1964  
 DIAGRAM N° 10

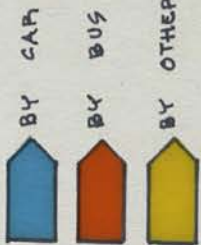
(a) Influence of Glasgow

While Glasgow attracts only 4% of all shopping trips, it does attract 27% of all ex-regional shopping trips. On average, 53% of all respondents said they never visited Glasgow to shop. Ninety-two percent of all trips to Glasgow are made on a 'once a month or less' basis, 7% on a weekly basis, and only 1% more frequently than that. When compared with Edinburgh's figures, it will be seen that only 38% of Glasgow trips are made by car as against 45% for Edinburgh. This is possibly due to some extent to the extra distance involved and to the parking problems experienced in Glasgow. Bus trips to Glasgow account for 48% of the total and other means of transport for the remaining 14% of trips. In this case, 'other means' in most cases means trips made by train as there is a passenger train service to Glasgow and Edinburgh passing through the southern section of the region. This service is scheduled for closure in the near future.

Concerning the influence which car-ownership or its accessibility has on trips to Glasgow, the results indicate that whereas 46% of adults who have access to a car never visit Glasgow, 59% of adults who do not have access to a car never visit. Car ownership, therefore, has an appreciable bearing on whether or not a visit to Glasgow is undertaken. In both cases there is no marked differences in the frequency of visits, so that although car ownership might mean the difference between visiting Glasgow and not visiting Glasgow, it does not indicate that more frequent trips are made. In fact, if anything, the reverse is true.

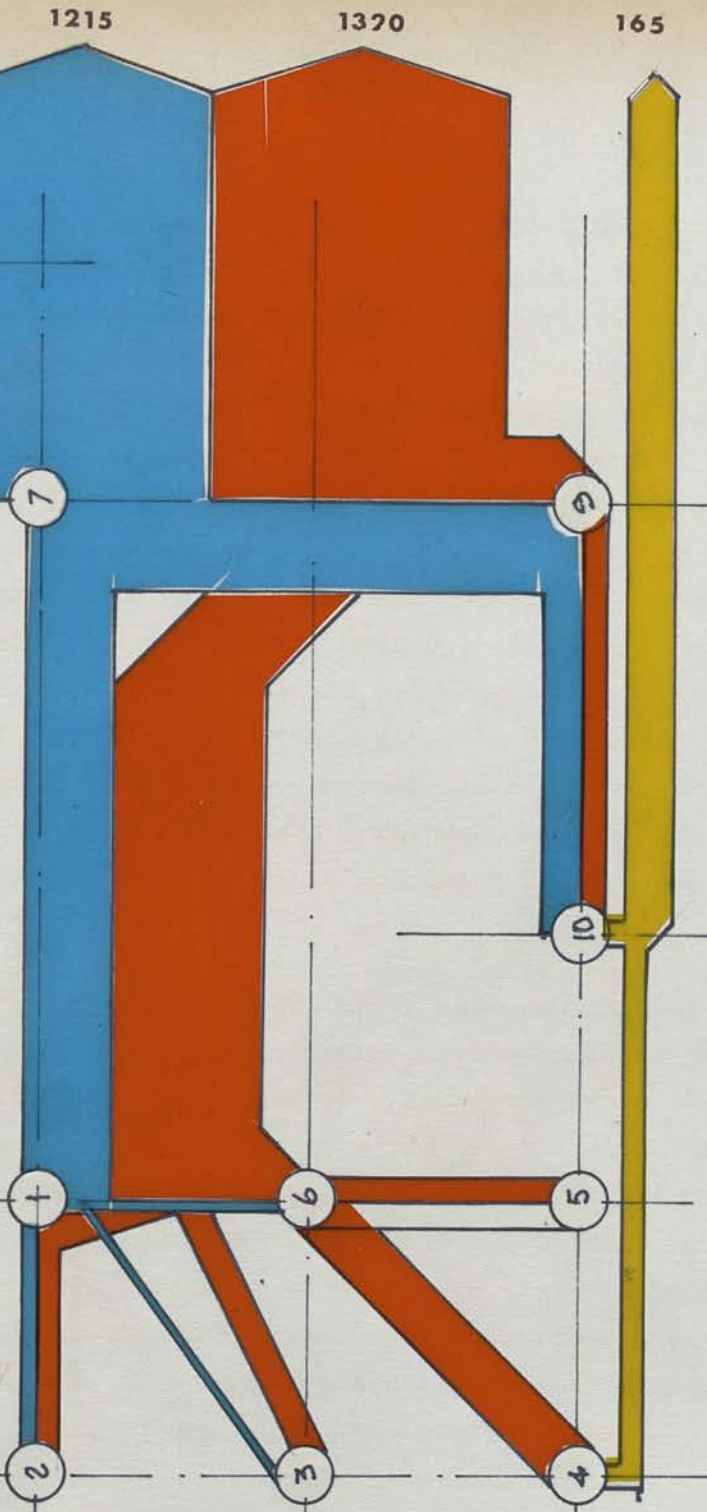
(b) Influence of Edinburgh

Edinburgh attracts over 70% of ex-regional shopping



TOTAL: 2,700 journeys per day  
45% by car  
49% by bus  
6% by other means.

TOWN NUMBER



LOTHIANS REGION : DIAGRAM SHOWING SHOPPING VISITS TO EDINBURGH PER DAY: 1964  
DIAGRAM N° 11



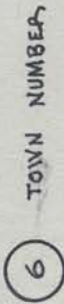
trips and this is no doubt due to its proximity more than to its fully diversified range of goods offered for sale. On average, 26% of all respondents said they never visited Edinburgh to shop. Of those who did make shopping trips, 80% visited Edinburgh once a month or less, 13% once a week, and 7% more frequently than that. Transport by bus accounted for 50% of all trips, by car 45% and 'other means' the remaining 5%. Here again, 'other means' of transport can be taken as meaning in the majority of cases, travel by train.

Car ownership has its effect on shopping trips to Edinburgh, for while 18% of respondents who had access to a car, stated that they never visited Edinburgh to shop, 32% of respondents without access to a car said they never shopped in Edinburgh. This point is also brought out in the frequency distribution of shopping trips. Eighty-eight percent of non-car-owning families visited Edinburgh once a month or less and only 12% once a week or more frequently. On the other hand, 69% of car owning families visited once a month or less, and 31% visited once a week or more frequently. Edinburgh therefore has a considerable influence on the region as a major shopping centre, attracting as it does the car owning family much more so than the non-car-owning family.

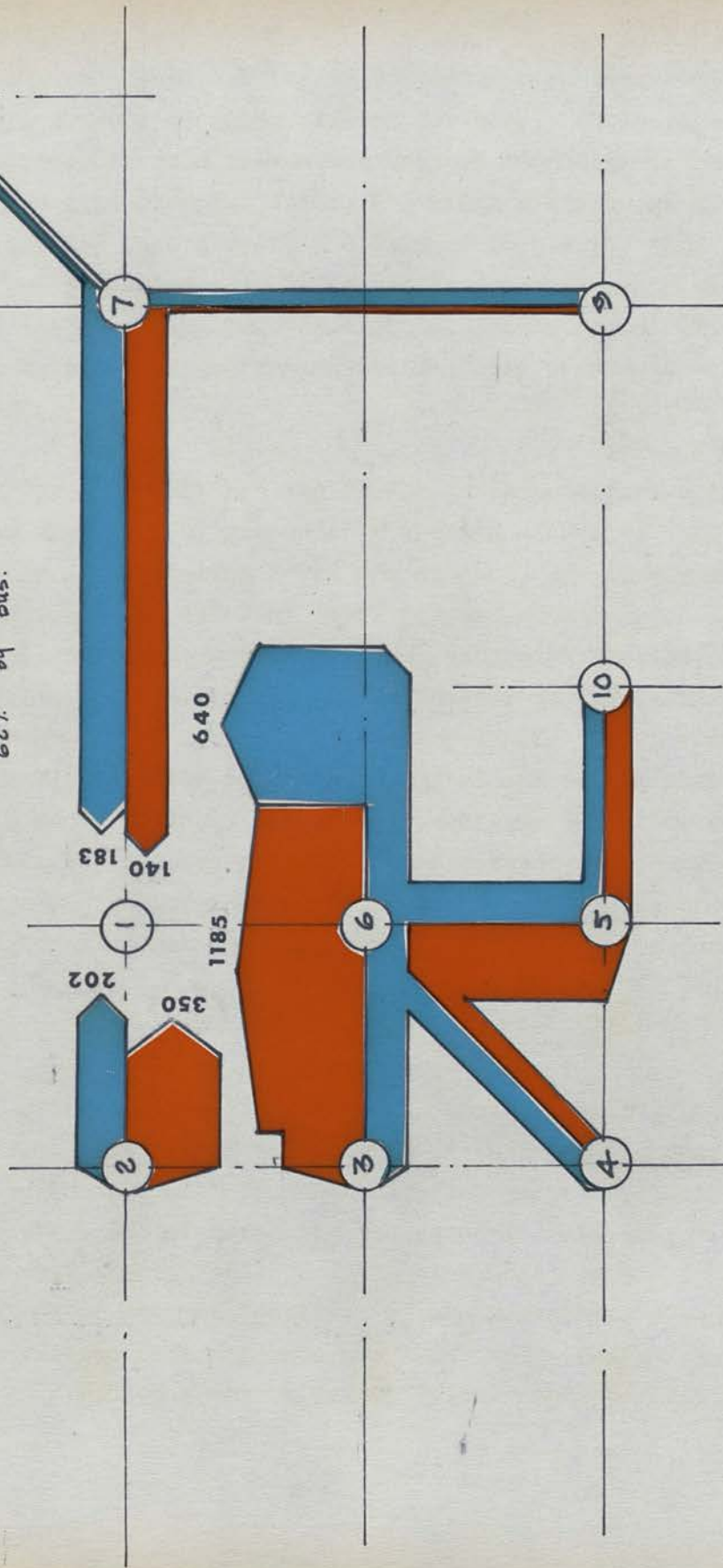
### (c) Influence of Bathgate

Bathgate attracts almost 30% of the region's total shopping trips. About 55% of these trips are made by its own residents, the remaining 45% by residents from other regional towns. On average, 36% of non-Bathgate residents said they never shopped in Bathgate, while only 3% of Bathgate's residents said that they never shopped locally. Of the regionally attracted shoppers, 56% visited Bathgate once a week or more, the remaining 44% visiting only once a month or less. Thirty-eight percent of

LEGEND



TOTAL : 2.700 Journees per day  
 38% by car  
 62% by bus.



LOTHIANS REGION : DIAGRAM SHOWING SHOPPING VISITS TO BATHGATE PER DAY : 1964  
 DIAGRAM No 12

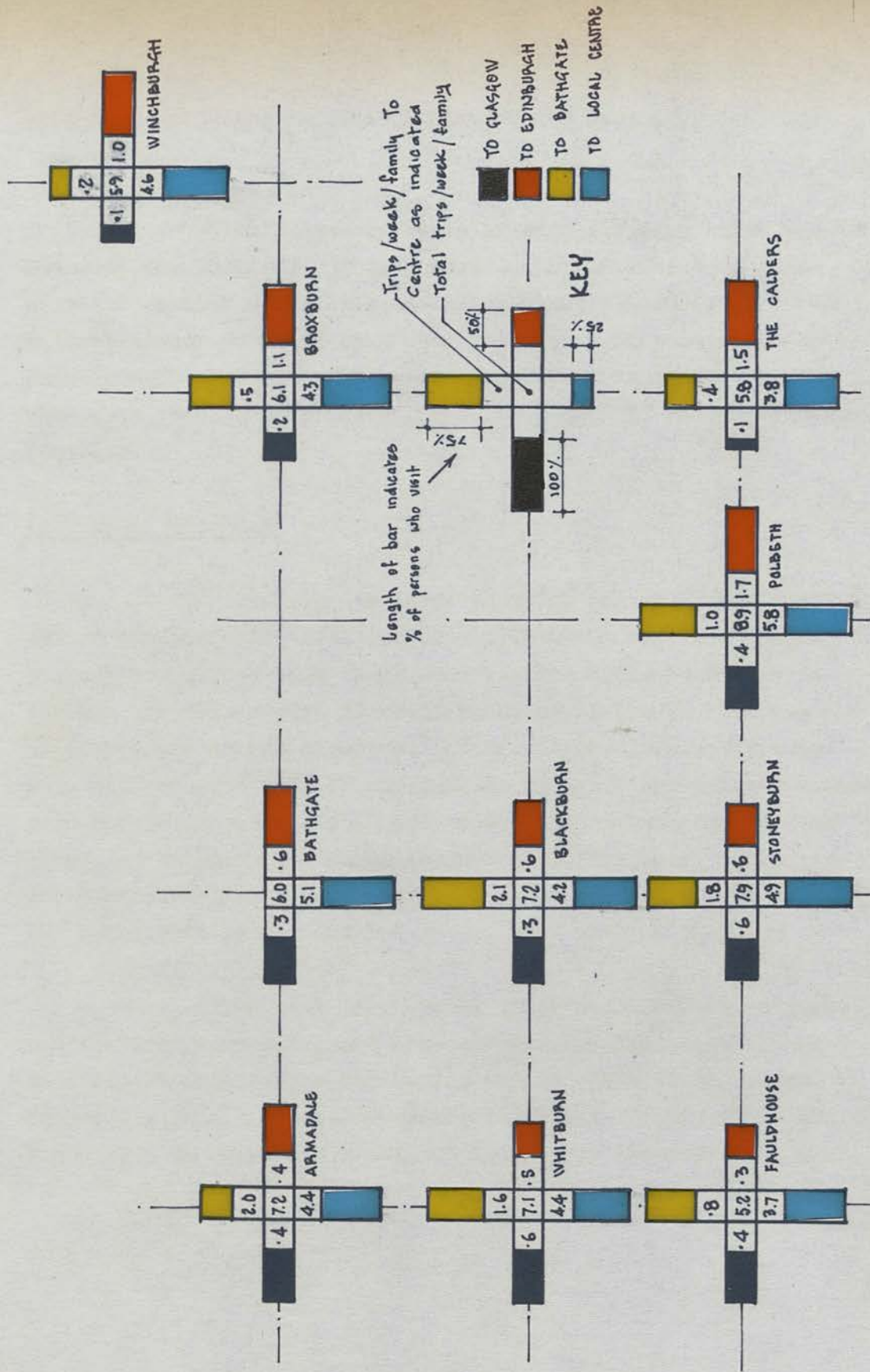
shoppers used a car to visit Bathgate, the remainder used bus transport.

Family car-ownership affects shopping trips to Bathgate for while 27% of respondents who had access to a car stated that they never shopped in Bathgate, 43% of respondents without access to a car said that they never shopped in Bathgate. Figures also show that car-owning families tend to use Bathgate more as a 'once a week' shopping centre, than do the non-car-owning families.

#### (d) Local Shopping

Trips made to local shopping centres accounted for 70% of the region's total shopping trips. On average, 15% of respondents stated that they never visited their local centre to shop and this figure is mostly made up of people over the age of 60 years. As was expected, 78% of all local shopping trips were made on foot, 10% by car and 12% by bus. Bus and car transport become increasingly important where the town concerned is large, as at Bathgate and Broxburn-Uphall, for here, walking to local shops only accounted for some 55% of trips, the remaining 45% being done by car and bus.

Frequency of shopping trips does not vary a great deal between car-owning and non-car-owning families, although to some slight extent, the car-owning family tends to shop less frequently than the non-car-owning families. It was found that almost 75% of respondents shopped locally at least twice a week.



LOTHIANS REGION: FACILITY USE SURVEY: SHOWING PERCENTAGE WHO VISIT THE VARIOUS CENTRES AND THE NUMBER OF VISITS PER WEEK PER FAMILY FOR EACH TOWN SAMPLED. DIAGRAM NO 13

#### 4.34 Regional Shopping Frequency

In Diagram 13, for each town is shown the percentage of people who visit the various centres, together with the number of visits per week per family. Local shopping was the most frequent form of shopping. Figures vary considerably from town to town, the range being between 3.74 trips per week per family to 5.75 trips per week per family. Diagram 8 shows that about 70% of all local shopping is done on at least a twice a week basis.

Frequency of shopping trips to Bathgate also varies greatly from town to town, and this is probably an indication of the transport difficulties experienced by residents of the more remote towns. Shoppers in Blackburn (Town No. 6) travel to Bathgate most frequently, making on average about 2.1 trips per week per family. Shoppers from Broxburn-Uphall and East and Mid Calder (Towns No. 7 and 9) travel least frequently of all, making on average about one trip per fortnight per family. As the percentage of residents who visit Bathgate (and other centres also) falls off with distance, so also does frequency of shopping trips. Diagram 8 shows that almost 40% of shopping trips to Bathgate are made on a 'once a week' basis.

The attraction of Edinburgh falls off markedly in the western towns of the region. Families from Armadale (Town No. 2) make an average of about 0.43 trips per week per family while families from West Calder make about 1.74 trips per week per family. Over 75% of all reported shopping trips to Edinburgh were made on a once a month basis.

Glasgow has a similar but reversed pattern to that of Edinburgh. Attraction falls off correspondingly in the eastern

regional towns. Differences in shopping frequency are equally marked which is somewhat surprising considering the greater distance involved. Families from Winchburgh (Town No. 8) make an average of about 0.1 trips per week per family to Glasgow, while families from Stoneyburn (Town No. 5) make an average of 0.6 trips per week per family to Glasgow. Families who shop frequently in Glasgow generally live in the south western sector of the region which is served at present by a passenger train service to both Glasgow and Edinburgh. A line drawn between Armadale and Stoneyburn would seem to divide the region at the point of 'equal attraction' between these two large shopping centres. Towns to the west of this line favour Glasgow, while towns to the east of it tend to favour Edinburgh.

In the centre of each town diagram shown in Diagram 13 is shown the average number of shopping trips per week per family made and reported by residents of these towns. There is a considerable divergence from the regional average of 6.5 shopping trips per week per family throughout these towns and without further research it is difficult to attribute these differences to any one particular reason. One might expect that the number of shopping trips per week per family would be related most strongly to the range of shopping facilities provided locally and the relationship between these facilities and other regionally located facilities in terms of accessibility and attractiveness related to the range and type of facilities offered. Under these circumstances, one might expect that residents of Bathgate would tend to make fewer shopping trips per week due to the large range of facilities easily accessible to them, while residents of the small and outlying villages would tend to make more frequent shopping trips per week due to the lack of shopping facilities in their own local centres. This relationship does not seem to hold true however, (see figures for Fauldhouse, The Calder and Winchburgh) so that other determinants must affect the number and frequency of shopping trips made. Some of these possible determinants are studied in Section 4.40 of this thesis.

#### 4.35 Regional Shopping Transport Patterns

Table 16 sets out transport facilities used to make shopping trips to and from the various centres; it will be seen that only 55% of shopping trips are made on foot, despite the fact that 78% of shopping trips to local centres are made on foot. Of the remaining total shopping trips not made on foot, 19% are made by car, 25% by bus and 1% by other means of transport.

Utilization of a car for shopping trips varies from accounting for only 10% of local shopping trips to 45% of all trips reported to Edinburgh. Bus transport accounts for only 12% of local shopping trips and ranges up to 62% of all shopping trips reported to Bathgate. Other means of transport, principally train, but including some allowances for bicycles and motor bicycles, reaches a maximum utilization point for shopping trips to Glasgow capturing some 14% of total trips. These figures tend to indicate that there is an optimum shopping distance for each type of transport. Thus one might conclude that for walking,  $\frac{1}{2}$  to  $1\frac{1}{2}$  miles would be a comfortable optimum distance; for shopping trips by bus, say 5 to 10 miles; shopping trips by car, say 10 to 20 miles, and for shopping trips by train, perhaps 25 to 50 miles. There would be a good deal of overlapping in these figures, but they might indicate what is presently considered to be the reasonable optimum distance for shopping and transport used.

4.41 General

In order to examine more closely the influence that car ownership might have on shopping patterns, a detailed investigation was made of the shopping habits of housewives, for both families owning and not owning a car. Along with car-ownership as the major variant, other aspects such as age and family structure were also investigated. In all, there were 265 housewives employed solely in domestic duties, a further 32 take some part or full-time employment outside the home, but these have been treated separately in a later section (Section 4.44).

As throughout the remainder of this section, reference will be made to the differences between car and non car-owning housewives, (i.e., a housewife is considered car-owning if she belongs to a family in which a car is owned), Table 17 sets out pertinent details for these two groups. While both groups are fairly well distributed between regional towns, there are some slight differences in family and age structure. As the following sections investigate these aspects in great detail however, these initial divergencies have not been allowed to bias the final conclusions.



Characteristics	Car Owning	Non-car Owning
% aged 21-29.....	17	15
% aged 30-44.....	33	33
% aged 45-59.....	32	30
% aged 60 plus.....	18	22
% with children 1 month and older.....	34	29
% with children 6 years and older.....	10	16
% with children 12 years and older.....	15	20
% with no dependent children.....	41	35
% who hold driver's licences.....	15	2
% living in Eastern regional towns (7.8.9)	38	35

LOTHIANS REGION: FACILITY USE SURVEY: Details of car and non-car owning Housewives as derived from postal questionnaire sample. Table No. 17

#### 4.42 The Influence of Age on Housewives' Shopping Patterns

Respondents were asked to give details of ages falling within four broad categories, i.e., 21-29 years, 30-44 years, 45-59 years, and 60 years and over. By grouping the two major categories of housewives into these four age groups, the results as shown in Table 19 and Diagram 14 were derived. The Table shows the percentage of housewives who reported that they did not shop at the various centres as well as showing the average number of shopping trips made per year, for those that did shop at the various centres.

The total average number of shopping trips per year made by housewives does not vary a great deal. The average number of shopping trips was found to be 223, and the range recorded was between 208 and 239 trips per year. The number of trips made to the various centres does however vary considerably between both age groups and type of housewife, as does the

	NON CAR OWNING		CAR OWNING		TOTAL		CAR'S PER FAMILY
	Nº FAMILIES	PERSONS	Nº FAMILIES	PERSONS	Nº FAMILIES	PERSONS	
1 BATHGATE	34	75	22	50	56	125	1: 2.54
2 ARMADADE	17	38	13	28	30	66	1: 2.30
3 WHITBURN	15	30	8	19	23	49	1: 2.88
4 FAULDHOUSE	20	39	10	21	30	60	1: 3.00
5 STONEYBURN	9	19	3	6	11	25	1: 3.80
6 BLACKBURN	19	38	11	23	30	61	1: 2.72
7 BROXBURN - UPHALL	28	62	26	54	54	116	1: 2.12
8 WINCHEBURGH	18	36	7	15	25	51	1: 3.57
9 EAST & MID CALDER	19	41	18	41	37	82	1: 2.05
10 WEST CAUDER	9	20	15	37	24	57	1: 1.60
TOTALS	187	398	133	294	320	692	1: 2.4

LOTHIANS REGION: FACILITY USE SURVEY : TABLE SHOWING SURVEY RESULTS FOR CAR OWNERSHIP IN VARIOUS TOWNS  
 TABLE Nº 18

percentage figures for housewives who reported that they did not shop.

(a) Age Group 21-29 Years

In the case of all except local shopping, a higher percentage of these car-owning housewives reported shopping in the various centres. These differences are especially marked for shopping in Glasgow and Edinburgh, although not significant for shopping in Bathgate. For local shopping, both types of housewife reported that they all shopped there.

It was found that for all centres, non-car-owning housewives shopped more frequently than car-owning housewives. These differences are made clear in Diagram 14. In comparison, with other age groups, the young housewife shops slightly more frequently in Glasgow and Bathgate and less frequently in Edinburgh and locally.

Car-owning housewives averaged 214 shopping trips per year as against 235 trips per year by non-car-owning housewives. As Table 17 shows that a higher percentage of the young car-owning housewives have young children, this could be the explanation for the difference. This aspect is investigated in a later section (Section 4.43.).

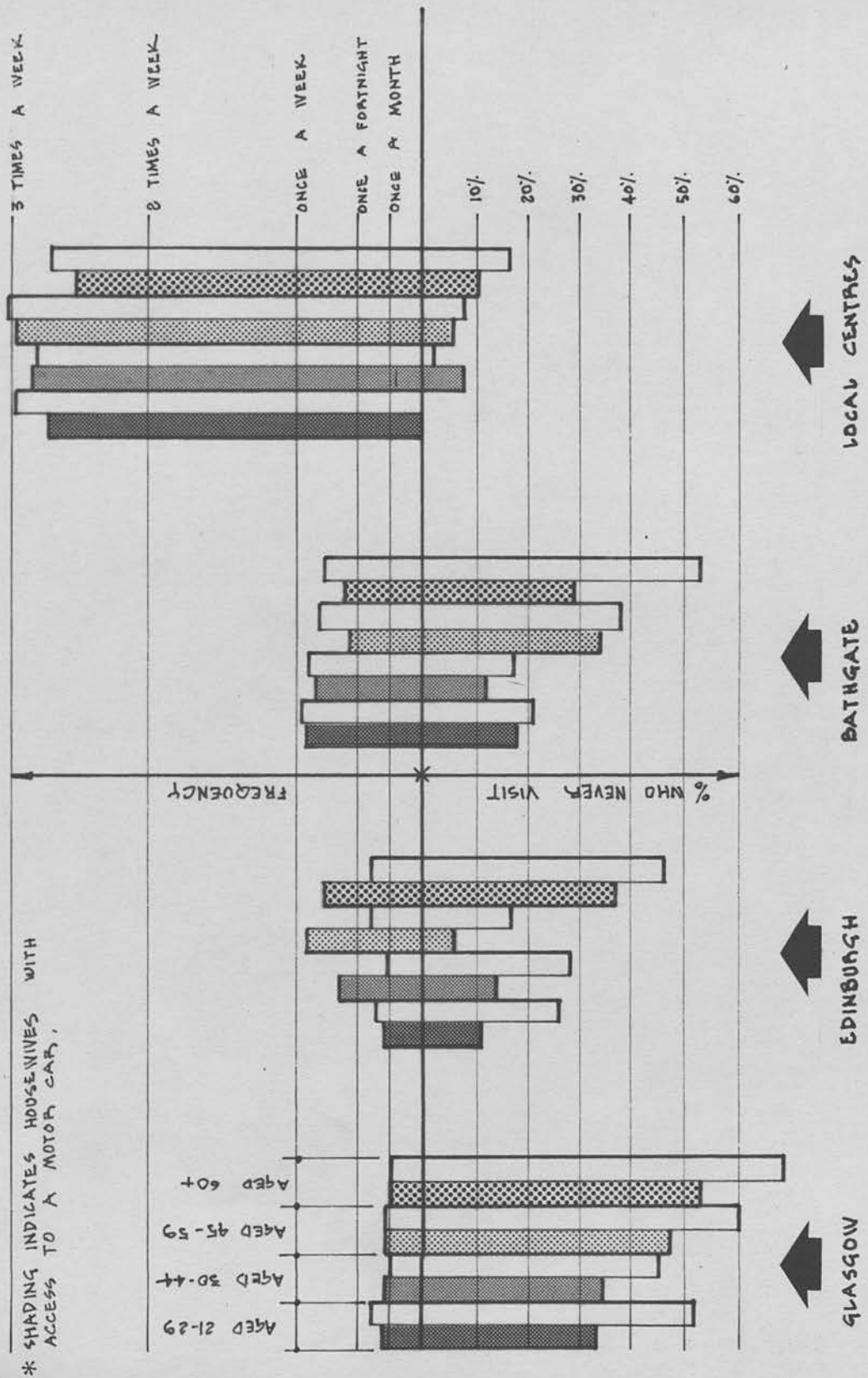
(b) Age Group 30-44 years

As with the young housewife, this group also showed that a higher percentage of car-owning housewives shop in the various centres, still with the exception of local shopping. Again the differences are especially marked for shopping in Glasgow

	AGE: 21-29 yrs				AGE: 30-44 yrs				AGE: 45-59 yrs				AGE: 60+ yrs			
	Car		No Car		Car		No Car		Car		No Car		Car		No Car	
	PERCENTAGE WHO NEVER VISIT	NO TRIPS PER YEAR	PERCENTAGE WHO NEVER VISIT	NO TRIPS PER YEAR	PERCENTAGE WHO NEVER VISIT	NO TRIPS PER YEAR	PERCENTAGE WHO NEVER VISIT	NO TRIPS PER YEAR	PERCENTAGE WHO NEVER VISIT	NO TRIPS PER YEAR	PERCENTAGE WHO NEVER VISIT	NO TRIPS PER YEAR	PERCENTAGE WHO NEVER VISIT	NO TRIPS PER YEAR	PERCENTAGE WHO NEVER VISIT	NO TRIPS PER YEAR
TO GLASGOW	33	15	52	19	34	14	45	12	47	14	60	14	53	12	69	12
TO EDINBURGH	11	14	26	17	14	31	20	13	6	44	17	19	37	37	46	18
TO BATHGATE	18	43	21	45	12	41	17	43	34	27	30	38	29	29	53	37
TO UDDAU CENTRE	0	142	0	154	8	148	2	147	6	154	8	157	10	131	17	141
TOTALS		214		235		234		215		239		228		209		208

LOTHIAN'S REGION: FACILITY USE SURVEY: Showing the influence of age on housewives' shopping patterns. Percentage who never visit and trips per year for those that do visit.

TABLE No 19



LOTHIANS REGION: FACILITY USE SURVEY: FREQUENCY OF SHOPPING TRIPS AND PERCENTAGE OF HOUSEWIVES WHO NEVER SHOP ACCORDING TO AGE AND CAR OWNERSHIP. DIAGRAM No 14

and Edinburgh and less significant for shopping in Bathgate. For local shopping, only 2% of non-car-owning housewives reported that they did not shop while 8% of car-owning housewives reported that they did not shop here.

Differences between frequency of shopping visits are not greatly marked with the exception of shopping in Edinburgh. Here the car-owning housewife reported shopping only once every 28 days. Car owning housewives averaged 234 shopping trips per year as against 215 trips per year by non-car-owning housewives, and the fact that a higher percentage of non-car-owning housewives have children in the 6-11 years old age group might account for this differences (see Table 17).

#### (c) Age Group 45-59 Years

In all cases, a higher percentage of non-car-owning housewives reported that they did not shop in the various centres. Differences between number of shopping trips per year to the various centres differ significantly only in the cases of shopping at Edinburgh and Bathgate. The car-owning housewife favours Edinburgh while the non-car-owning housewife favours Bathgate.

The car-owning housewife averages more shopping trips per year than the non-car-owning housewife and in fact for both types of housewife, this age group shops more frequently than any other age group.

#### (d) Age Group 60 Plus

In all cases, a higher percentage of non-car-owning housewives reported that they did not shop at the various centres.

Number of shopping trips per year was the same in both groups for shopping in Glasgow, while the car-owning housewife favoured shopping in Edinburgh and the non-car-owning housewife favoured shopping in Bathgate and locally. Both groups made less shopping trips per year than younger housewives, although the elderly housewife still shopped more frequently in Edinburgh than the very young housewife.

(e) Summary

Car ownership in practically all cases, means that a greater number of housewives will travel to more distant and larger shopping centres at the expense of shopping trips to local centres. Elderly housewives shop less frequently than younger housewives, and so too the young housewife tends to shop less frequently than the middle-aged housewife. This is possibly due to increased family responsibilities for the young housewife in the form of very young children. In all cases, as age increases, more and more housewives reported that they did not shop at the various centres. The young housewife favours shopping in Glasgow and Bathgate, and in part this may be due to the young Glasgow 'overspill' families living in Blackburn and Whitburn.

Mature car owning housewives (aged 30 plus years) show a very marked tendency to shop frequently in Edinburgh and this has its equal and opposite counterpart in the mature non-car owning housewife who favours shopping in Bathgate.

4.43 The Influence of Family Structure on Housewives' Shopping Patterns

(a) General

Respondents were asked to give details of dependent

children still living at home and under the age of 21 years. Children's ages were divided into three groups, i.e., 0-5 years, 6-11 years and 12-20 years. In order to simplify the task of processing this data, housewives were divided into four sub-categories consisting of those who had children or a child in one or more of the three children's age groups, the fourth sub-category consisting of housewives with no dependent children. Such a classification does follow more or less the age grouping of housewives as carried out in the previous section. It does, however, allow certain distinctions to be drawn between mothers with and without children which are of interest.

Table 17 shows the percentage of housewives represented in each sub-category. It will be seen that the age and family structure is different for both major groups. Thirty-four percent of car-owning housewives have children aged 1 month and older while only 29% of non-car-owning housewives have children in this age group. This might be accounted for by the fact that there is a slightly higher proportion of young car-owning housewives than there is non-car-owning housewives.

Both these conditions are likely to be more indicative of the social class composition of the two groups, rather than to any bias in the sample selected or returned. Table 17 also shows that a smaller percentage of car-owning housewives have children in the two remaining child age groups, and that a higher percentage also have no dependent children at all.

To some extent, the fact that a greater percentage of car-owning housewives have young children is contrary to the normally held belief that the presence of young children makes



	CHILDREN 1 mth and older				CHILDREN 6 yrs and older				CHILDREN 12 yrs and older				No children,			
	Car		No Car		Car		No Car		Car		No Car		Car		No Car	
	% WHO NEVER VISIT	No TRIPS PER YEAR	% WHO NEVER VISIT	No TRIPS PER YEAR	% WHO NEVER VISIT	No TRIPS PER YEAR	% WHO NEVER VISIT	No TRIPS PER YEAR	% WHO NEVER VISIT	No TRIPS PER YEAR	% WHO NEVER VISIT	No TRIPS PER YEAR	% WHO NEVER VISIT	No TRIPS PER YEAR	% WHO NEVER VISIT	No TRIPS PER YEAR
TO GLASGOW	23	14	43	15	54	12	64	12	38	16	61	15	62	14	59	12
TO EDINBURGH	17	23	26	14	9	24	20	12	6	42	26	20	18	42	36	20
TO BATHGATE	15	46	15	40	9	37	28	48	23	28	39	39	31	21	45	30
TO LOCAL CENTRE	6	140	0	150	9	140	4	163	6	173	10	150	7	147	12	151
TOTALS		223		219		213		235		259		224		224		213

LOTHIANS REGION: FACILITY USE SURVEY; showing the influence of children on housewives' shopping patterns. Percentage of housewives who never visit and trips per year for those that do. TABLE No 20

it financially more difficult for young couples to afford a car. This factor is probably related to other variables such as comparative family sizes, religion, social class and educational standards, however, the scope of this work has not permitted an investigation of all these factors. The following sections discuss the influence that family structure and development has on housewives' shopping patterns. Table 20 sets out figures for the percentage of housewives who reported never shopping at the various centres as well as giving the average number of trips per year made to the various centres by those housewives that reported visiting them.

(b) Housewives with Children Aged 1 Month and Older

Both car and non-car-owning housewives make about the same number of shopping trips per year, although the distribution of these trips between the various centres varies considerably. The car-owning housewife favours shopping in Edinburgh and Bathgate, while the non-car-owning housewife favours local shopping. This is an indication that the mobility offered by car ownership tends to direct shopping to larger and more distant centres. This point is further substantiated when it is seen that a higher proportion of car-owning housewives shop in Glasgow and Edinburgh and also that 6% of these housewives stated that they never shopped locally.

Compared with housewives with older children, many more housewives with young children visit all the various centres. They also tend to shop more frequently at Glasgow and Bathgate and less frequently at Edinburgh and their own local centres than do other housewives.

(c) Housewives with Children Aged 6 Years and Over

The non-car-owning housewife in this group makes more shopping trips per year than her car-owning counterpart and tends to shop more frequently at both Bathgate and her local centre. A high percentage of both groups never visit Glasgow during this stage of their family development and even those who do visit, tend to visit less frequently than housewives with both younger and older children. The car-owning housewife is especially drawn to Edinburgh during this phase of family development and is subsequently less attracted to her own local centre.

(d) Housewives with Children Aged 12 Years and Older

The car-owning housewife in this group makes many more shopping trips per year than the non-car-owning housewife and these excess trips are made to Edinburgh and her local centre. The non car-owning housewife shops more frequently in Bathgate on the other hand, although still quite a high percentage never visit this centre. Taken as a group, housewives in this stage of family development shop more frequently than housewives in other stages of family development although this is largely due to the increased freedom and mobility of the car-owning housewife of the group.

(e) Housewives with no Dependent Children

A large proportion of housewives in this stage of family development are elderly and therefore apparently not quite so willing or able to travel far to shop. When compared with all other housewives, a very high proportion of this group reported never shopping at all. This is especially the case for shopping in Glasgow and Bathgate and not quite so marked for shopping

in Edinburgh and locally. The car-owning housewife shops much more frequently in Edinburgh while again her non-car-owning counterpart shops more frequently in Bathgate. Some elderly housewives wrote comments on the questionnaire to say that they did all their shopping from passing 'mobile shops'. This important aspect should be taken up in further studies.

(f) Summary

In Section 4.42, where housewives' shopping patterns were related to age groups, it was found that both the young and the elderly housewife tended to shop less frequently than other housewives. This section has shown that family structure and development is probably the cause of these variances. Housewives with young children are generally themselves young, and while this means that they are therefore willing to and in fact do travel far and wide on shopping expeditions, the presence of their young children restricts the frequency of these expeditions considerably. This restriction can be offset however, if the housewife is a member of a car-owning family as is shown in Table 20.

The middle-aged housewife with children over the age of 12 years emerges then as the housewife to make the greatest number of shopping trips per year. Probably due to her age however, a good proportion (about 40%) find long distance shopping unrewarding and so never venture out. The housewife who has no dependent children is normally getting on in years and therefore, even though she now has less family responsibilities, she tends to shop much less frequently.

#### 4.44 Note on the Working Housewife

In all, 32 housewives reported taking full or part-time employment outside their homes. Sixteen of these came from car-owning families and 16 from non-car-owning families. The data presented by these 32 housewives was processed, but unfortunately, due to both the small number of the sample and the lack of more precise information, no conclusive evidence could be found on their shopping patterns other than the fact that a considerable portion of their shopping was done in the town where they worked.

#### 4.45 Shopping Loyalties of the Housewife

Throughout the earlier sections of this chapter it has been shown that a greater percentage of car-owning housewives shop in each of the various shopping centres, than do non-car-owning housewives. This section examines the distribution of both types of housewives according to the number of centres which they visit. Data on this aspect was taken from the punch cards and is shown in Table 21.

This Table shows that almost 50% of all car-owning housewives, each visit the four nominated shopping centres, while only 32% of non-car-owning housewives visit the same four centres. Approximately the same proportions of both groups of housewives each visit Edinburgh, Bathgate and locally, so that it is at the other end of the scale that this basic difference is made up for. Here it will be seen that only 9% of car-owning housewives visit only locally and Bathgate, whereas 17% of non-car-owning housewives visit these centres only. On this basis it seems that the motor car enables the housewife to divide her shopping

CAR-OWNING HOUSEWIVES					NON-CAR-OWNING HOUSEWIVES				
N° who visit Glasgow	N° who visit Edinburgh	N° who visit Bathgate	N° who visit locally	Percentage of total housewives	N° who visit Glasgow	N° who visit Edinburgh	N° who visit Bathgate	N° who visit locally	Percentage of total housewives
52	52	52	52	49%	50	50	50	50	52%
	24	24	24	22%		39	39	39	25%
		6	6	6%		13	13	13	8%
			4	3%				14	9%
3	3		3	20%	6	6		6	23%
2		2	2		12	12		12	
1			1		1			1	
1			1		1	1		1	
1	1		1		11	11		11	
	8		8						
	3								
		2							
Nil never visit any centre					5 never visit any centre				
60	91	87	100	TOTALS	69	107	115	146	TOTALS
56%	85%	81%	94%	PERCENTAGE	44%	68%	73%	92%	PERCENTAGE

LOTHIANS REGION : FACILITY USE SURVEY : Housewives shopping loyalties. Showing the number of housewives who visit one centre in conjunction with other centres. TABLE No 21

loyalties among a larger number of centres and over a more widely spread area.

#### 4.46 Transport used by the Shopping Housewife

Table 22 sets out the percentage distribution of shopping trips according to the means of transport used, for both types of housewives. At the bottom of the table where total figures are given for each group and for each type of transport, it will be seen that the car-owning housewife makes 46% of her trips by both car and bus while the non-car-owning housewife makes 45% of her trips by bus alone. On these figures, and at the moment disallowing for the fact that trips are not evenly distributed between centres for each type of housewife, it could be argued that family car-ownership is likely to reduce bus travel by 67%. In terms of total transport figures, excluding walking trips and trips made by 'other' means, it can be said that with the present family car ownership figure of one car to every 2.4 families, bus transport captures 68% of the total available traffic. If the figures derived from the survey were to apply to future conditions where family car ownership is likely to be one car for every family, then this would mean that bus transport would possibly only capture 36% of total available traffic--a loss of almost 50%.

For shopping at local centres, both types of housewife make 76% of trips on foot. For all shopping trips to local centres not made on foot, bus transport at the moment captures 70% of the available traffic. Assuming a one car per family ownership ratio, then this figure might drop to 42% of available traffic--a loss of 40% for bus transport.

	CAR-OWNING HOUSEWIFE	NON-CAR-OWNING HOUSEWIFE
TO GLASGOW	BY CAR 65%	BY CAR -
	BY BUS 22%	BY BUS 76%
	BY OTHER 13%	BY OTHER 24%
TO EDINBURGH	BY CAR 68%	BY CAR -
	BY BUS 30%	BY BUS 90%
	BY OTHER 2%	BY OTHER 10%
TO BATHGATE	BY CAR 66%	BY CAR 4%
	BY BUS 34%	BY BUS 96%
LOCALLY	BY CAR 14%	BY CAR -
	BY BUS 10%	BY BUS 24%
	BY WALK 76%	BY WALK 76%
TOTALS. FOR ALL SHOPPING TRIPS	BY CAR 30%	BY CAR 0.5%
	BY BUS 16%	BY BUS 45%
	BY OTHER 1%	BY OTHER 1.5%
	BY WALK 53%	BY WALK 53%
	100%	100%

LOTHIANS REGION: FACILITY USE SURVEY: Housewives shopping transport.  
 Showing percentages according to transport means & Totals.  
 TABLE NO 22



For shopping trips to Bathgate, cars as a means of transport are used for 60% of all journeys by car-owning housewives. This means that for all shopping trips to Bathgate, transport by bus at present captures 75% of all available traffic. Under these circumstances, bus traffic under a one car per family ownership ratio, could drop down to only 33% of total trips or a loss of 56%.

For shopping trips to Glasgow and Edinburgh, cars as a means of transport are used for about 65% of all journeys by car-owning housewives. These housewives prefer and choose to travel by car, despite the fact that only 1 housewife in every 7 holds a driving licence. Shopping under these conditions becomes a 'family' affair, with at least one other member of the household accompanying the housewife, and this probably means a Saturday shopping trip so that the other member of the family can be there to drive.

In terms of shopping traffic therefore, even though the housewife herself may not drive, family car ownership means that a great deal of the housewives' non-local shopping at least is done by car. Survey results show that while 25% of car-owning housewives never shop by car, 43% shop by car at one or two centres and the remaining 32% shop by car at at least 3 centres and sometimes 4 centres.

The data collected by the postal questionnaire was used to construct regional shopping patterns and it was found that the attraction of the three shopping centres about which the respondents were questioned, i.e., Glasgow, Edinburgh and Bathgate, was roughly equivalent to a ratio of 1:2:2 respectively. This accords closely with the figures which would be obtained by applying Reilly's Law of Retail Gravitation, where both distance and population are taken into consideration.

The region's 'average adult family' was found to make 6.5 shopping trips per week and these were distributed as follows: to the ex-regional centres of Glasgow and Edinburgh--1.1 trips per week per family; to the regional shopping centre of Bathgate--0.85 trips per week per family; and to their own local shopping centres--4.55 trips per week per family. In this way, 70% of all shopping trips were found to be locally orientated, while only 30% of shopping trips were found to be non-locally orientated. (See footnote).

Households owning cars were found to travel greater distances to shop at larger regional types of shopping centres than did the corresponding non-car owning families. Correlated to this greater mobility of the car owning families, it was also found that they tended to use several shopping centres much more so than did the non-car-owning families. This reliance on the

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Footnote: Buchanan in calculating frequency of shopping trips in Leeds, (see Ref. A/26, para. 191), assumes 3.0 trips per week per family to local shopping centres, and 1.0 trips per week per family to the city centre with an additional varying number of shopping trips to the city centre being made according to proximity. An additional 2.5 trips per week per family from the nearby residential areas, dropping down to 0.33 trips per week per family for the more distant localities. This gives a range of values of from 6.5 trips per week per family down to 4.33 trips per week per family.

more distant regional shopping centres by the car owning families resulted in their visiting more local regional centres less frequently, although as far as shopping at their own 'local' centre was concerned, car ownership did not result in less frequent shopping trips being made when compared with non-car-owning families. (see Diagram 14). In this way car owning families tended to look upon Edinburgh as being their regional or 'once a week' type of shopping centre, while families not owning cars tended to look upon Bathgate as their regional shopping centre.

A detailed investigation of the shopping habits of housewives, revealed that both age and family structure effect their shopping patterns. When the car owning housewife was compared with the non-car-owning housewife, however, in all cases it was found that the middle-aged housewife tends to shop more frequently than both the younger and more elderly housewives due to her lack of family responsibilities in the home. Young housewives were more willing to travel greater distances to shop than older housewives, although in most cases family responsibilities in the form of young children restricted their ability to travel.

This investigation of housewives' shopping habits also showed that the car owning housewife makes a very high proportion of her non-local shopping trips by car, even though a very high proportion of these housewives do not hold a driving licence. This implies that these shopping trips are made in the company of another member of the family who acts as driver, so that it may be reasoned that the non-local shopping trips made by car owning families tend to become 'family' affairs and may well be coupled with other social or recreational activities. This is an aspect which requires further research.

The analysis of transport used for shopping trips showed that in the car owning family about 16% of all shopping trips were made by bus and 30% by car, as compared with a corresponding percentage of 46% of total shopping trips by bus for non car owning families. These figures indicate what future changes might occur in shopping transport patterns and raise the issue of the degree to which the family car will be used for shopping purposes. For the car owning family and for all shopping trips made by motorised transport (i.e., both bus and car) these figures show that the family car will be used for only 65% of the total possible trips, and that buses will be used for the remaining 35% of trips (see footnote). While these figures indicate that in future, when car ownership increases, there will still be a demand for bus and other means of public transport for shopping trips, they also show that bus transportation may stand to lose as much as 50% of its potential passengers.

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Footnote: Buchanan in calculating distribution of shopping trip transport, (See Ref. A/26, para. 193) assumed that for journeys into the central area of Leeds for shopping purposes, the car would be used for 64% of the total trips while public transport would cater for the remainder. For shopping trips to local neighbourhood shopping centres, Buchanan also assumed that 71% of trips would be made by car, 22% by public transport, and 7% on foot.

CHAPTER 5.

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## LOTHIANS REGION-ANALYSIS

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## 5.10 INTRODUCTION

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In this chapter the results of work reported on in the preceding chapters is brought together and applied in an analysis of the future retail trade structure and its shopping centres within the Lothians region. The data collected on new town shopping facilities is used as a basis for determining the distribution of shops and trade within the new town of Livingston, while the results of the survey on the region's present shopping patterns and retail trade structure are used to determine future patterns both in relation to the region's existing shopping centres and the new town of Livingston itself.

As a basis for the analysis, the candidate has adopted in principle the preliminary recommendations of the Regional Planning Consultants, (see Appendix 1.1), on such matters as ultimate population levels, population distribution, employment patterns, car-ownership levels, age and family structure, etc., and this background information is shown in Section 5.20. The analysis itself rests heavily on consumer shopping patterns and takes into consideration anticipated changes in the factors which govern them such as car ownership levels, age and family structure, etc.

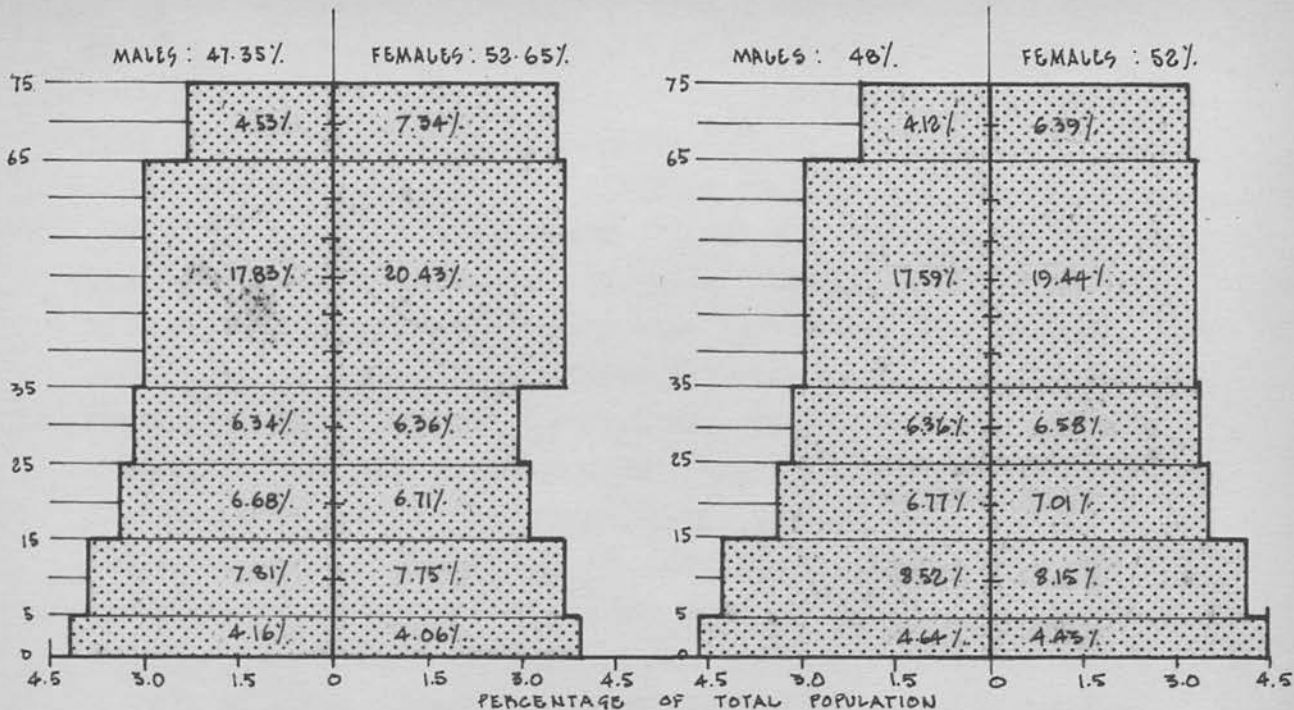
The results of the analysis are essentially of academic interest for the value of the work lies not so much in the accurate determination of future shopping floor space requirements within the various regional towns but rather in the extent to which the research results may be used to make such determinations possible. By applying research results in a practical 'case study' it is possible thereby to gauge not only their usefulness in such analysis techniques but also to determine where further research work is essential.

5.21 Population Characteristics

In 1961, (Census year), there were about 76,700 persons resident in the Lothians Region survey area. The structure of the area's population at that time is shown in Diagram 16 and also shown in this diagram are the comparative age structures for both Scotland and the United Kingdom. The population of the survey area is younger than the Scottish average population as is indicated by the broader base to the survey area's histogram, indicating more children, and the narrower apex, indicating fewer elderly people. This younger population is probably the result of inter-war migration resulting in fewer people being present to reach old age in the survey area now. This youthful age structure is also reflected in the birth and death rates. The two Counties which make up the survey area had an average birth rate per 1,000 persons of 21.2 as compared with Scotland's rate of only 20.4, while their average death rate per 1,000 persons was only 9.7 as compared with Scotland's average figure of 11.7.

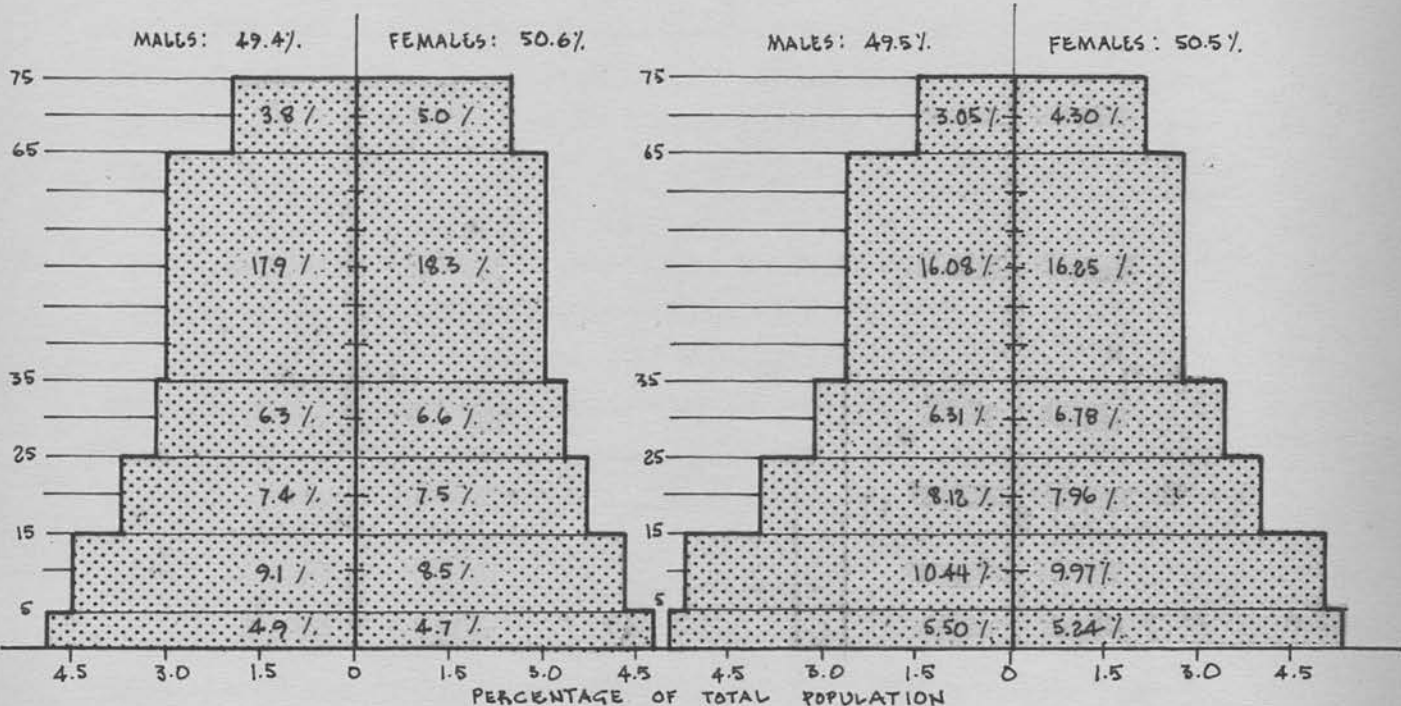
Within the survey area, there were differences between age structure and average household size for most towns and settlements, although the town of Armadale had population characteristics closely approximating to the survey area's average figures. The towns of Blackburn, Fauldhouse and Whitburn were generally speaking younger still than the regional average; while Bathgate and the Calder had a proportionate deficiency in the 15-25 age groups and higher percentages in the 25-35 and under 5 age groups than was present in the total area's population; the towns of Broxburn, Winchburgh, West Calder and Stoney-





UNITED KINGDOM : 1961

SCOTLAND : 1961



LOTHIANS REGION : 1961

LOTHIANS REGION : 1985  
(PROJECTED)

LOTHIANS REGION : SHOWING POPULATION HISTOGRAMS FOR U.K, SCOTLAND AND REGION : See Notes to Tables. **DIAGRAM N°16**

burn were generally older than the area's average. These variations were also reflected in the average household size figures which ranged from 3.89 persons per household in Blackburn to 3.22 persons per household in Broxburn. The average figure for the whole survey area in 1961 was 3.39 persons per household.

Projection of existing population statistics to the year 1985 together with planning consultant's policy decisions concerning additional immigrant population to be housed within the area have resulted in the following population target figures:-

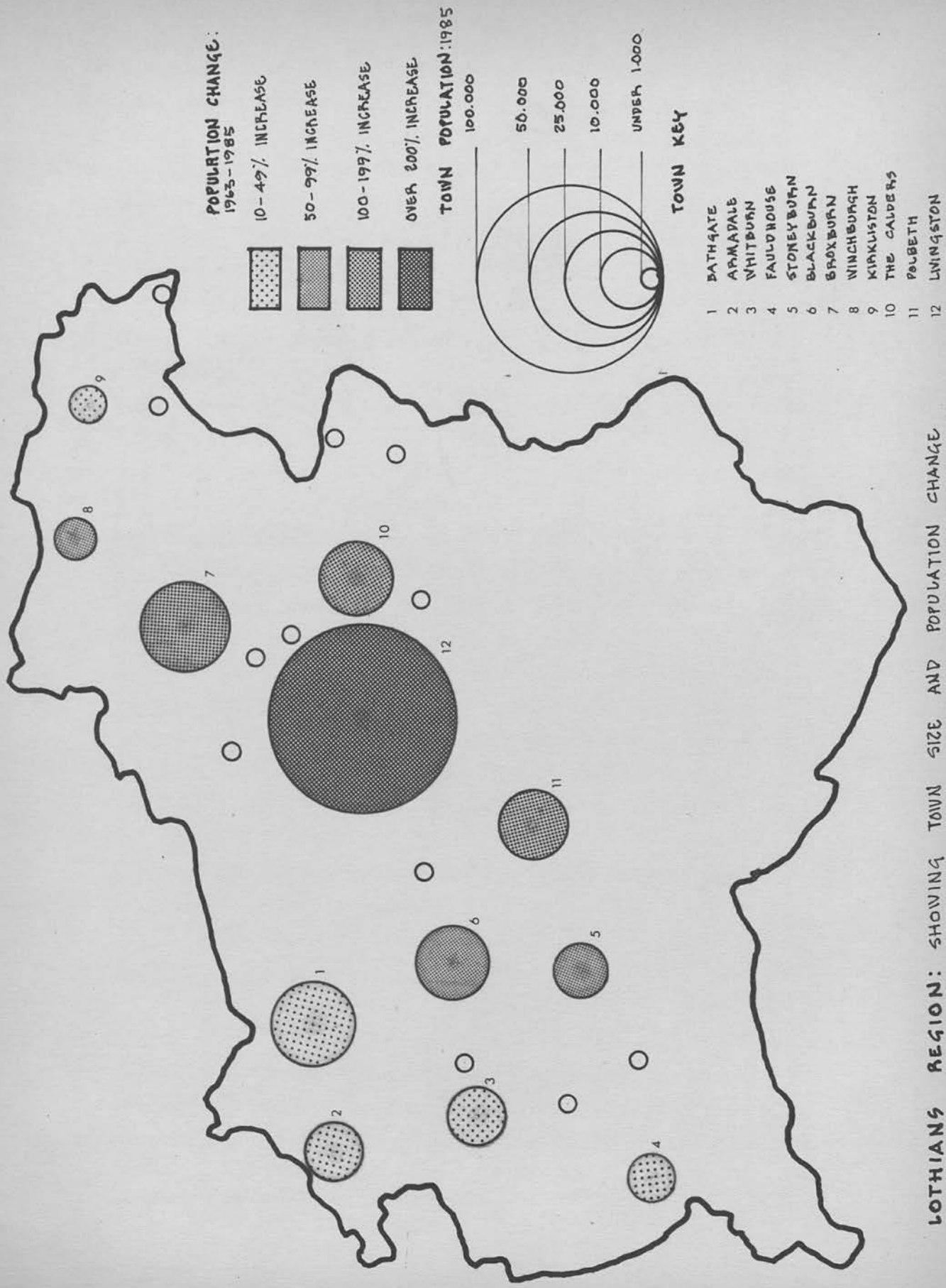
- (i) Natural increase of the area's present population is to be retained within the area so that by 1985 the 1961 population of 76,700 will have grown to 110,000.
- (ii) The number of immigrants capable of being housed within the area in addition to new town population has been fixed at 20,000.
- (iii) The population of the new town of Livingston will be 100,000 by 1985.

On this basis, the total population within the survey area by 1985 will be 230,000 and will have at that time a natural increase of its own of about 3,500 persons per year. This figure of 230,000 represents a total increase of just over 150,000 persons on the original 1961 population or an increase of 194%. The change in the area's existing shopping facilities will therefore be a large one and in so far as shopping patterns are determined by population characteristics, the 1985 shopping patterns of the area will be considerably influenced by the

	POPULATION 1963	POPULATION 1963 - 1970	POPULATION 1970 - 1975	POPULATION 1975 - 1980	POPULATION 1980 - 1985	PERCENTAGE CHANGE 1963 - 1985
BATHGATE	14,500	19,000	20,000	20,000	20,000	+ 38%
ARMADALE	8,600	9,200	9,800	10,000	10,000	+ 16%
WHITBURN	8,800	10,000	10,000	10,000	10,000	+ 14%
FAULPHOUSE	5,400	6,000	6,000	6,000	6,000	+ 11%
STONEYBURN	4,900	5,400	6,100	6,500	8,000	+ 63%
BLACKBURN	10,000	10,700	11,800	14,200	15,000	+ 50%
BROXBURN - UPHALL	11,000	13,100	18,500	19,500	22,000	+ 100%
WINCHBURGH	2,700	3,300	3,500	4,400	5,000	+ 85%
KIRKLISTON	2,500	2,900	3,000	3,200	3,500	+ 40%
THE CALDERS	6,000	9,500	12,000	13,800	15,000	+ 150%
POLBETH	4,800	8,200	10,900	12,200	13,000	+ 170%
LIVINGSTON NEW TOWN	2,100	21,700	42,000	70,700	102,500	+ 20,500%
TOTAL	81,300	119,000	153,600	190,500	230,000	+ 183%
% INCREASE ON PREVIOUS STAGE	-	+ 46.5%	+ 29.0%	+ 24.0%	+ 20.5%	-

LOTHIANS REGION : SHOWING POPULATION INCREASES PROPOSED BY REGIONAL CONSULTANTS.

TABLE NO 60



LOTHIANS REGION: SHOWING TOWN SIZE AND POPULATION CHANGE PROPOSED FOR 1985. **PIAGRAM NO 17**

population characteristics of the immigrant population.

The 1985 age structure of the area has been calculated by the planning consultants and the conclusions reached are shown in histogram form in Diagram 16. Note that for the purposes of these histograms, everyone over the age of 65 years was assumed to be under the age of 75 years and further, since the age ranges shown are unequal, the percentage of population in each range is plotted as the average in each of the 5 yearly age groups within the range. The percentages in each sex and age group are written in the histograms.

The basic structure of the area's population in 1985 will be very similar to that of the region's 1961 population with an even profile and the percentage in each age group lower than the next youngest. It will be however, even more younger than the 1961 population, and very much younger than the United Kingdom average in that year. The estimated average household size in the region for 1985 is 3.25 persons per household. The proposed distribution of the total regional population in 1985 is shown in Table 60. Here the intermediate and ultimate population sizes for the region's towns are given over four equal periods of 5 years each. These figures have been used as a basis for the calculation of future shopping patterns set out in the Appendices to this Chapter.

#### 5.22 Employment Characteristics

The present and future employment structure of the region is a factor of major importance since changes in this sphere will affect consumer income and expenditure patterns. Figures for the employment structure of the region in 1957 are

shown in Table 59, together with comparative figures for Scotland and Great Britain in 1962. Two major factors emerge; first, is the dominance of the primary industries in the region and second the very low percentage of working population. In 1957, only 25% of the total regional labour force consisted of females, compared with a Scottish average for the same year of 35%.

By 1964 some major changes had already taken place within the region's employment structure. First, and dating from 1951, there was a large-scale rundown of employment in the coal and shale oil mining industry while second, and to some extent offsetting this decline, the British Motor Corporation factory was established near Bathgate in 1951. By the end of 1963 this factory was employing some 4,400 workers. By 1962, the total regional labour force had increased to approximately 28,500 workers or nearly 38% of the total regional population, while a similar increase was seen in the female labour force, so that in 1962 their numbers had increased to 8,535 or 27% of the total labour force.

Industry	1957 Region	1962	
		Scotland	Great Britain
Primary	36%	8.2%	5.7%
Manufacturing	28%	34.4%	38.8%
Service	36%	57.4%	55.5%
Total	100%	100%	100%
% Total Pop.	35%	42%	47%

LOTHIANS REGION: Showing regional distribution of labour force as compared with national figures. TABLE No. 59

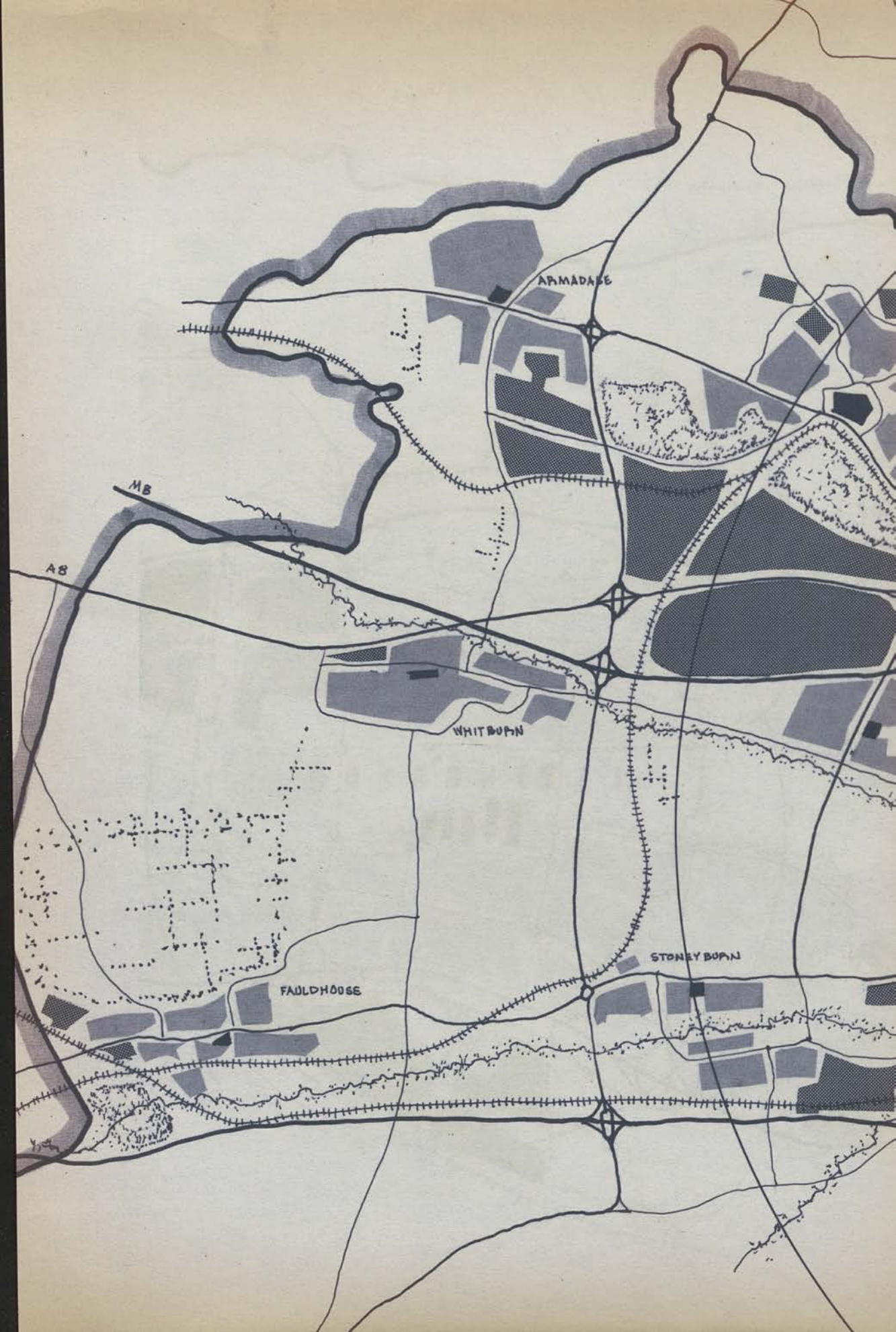
In estimating future changes in the region's labour force, both the designation of the New Town of Livingston and the designation of the region itself as a 'Growth Area' (see

Appendix No. 1.1), will cause considerable changes to occur. Previous 'new town' experience has shown that employment distribution is likely to favour the manufacturing industries rather than service industries, although in the case of Livingston, the establishment of a large regional hospital in the Central Area will do much to maintain an even distribution of employment opportunities. The proximity of Edinburgh as a major service centre will however, probably dominate the regional structure in this field. The establishment of the British Motor Corporation factory, the Cameron Iron works in Livingston, and other anticipated employment generators, over the next few years will radically change the present employment structure of the region. By 1985 therefore, it can be expected that say 46% of the regional population will be in some form of employment, and so far as the balance between industries, it is suggested by the Regional Consultants that this might be in the order of 5%, 55% and 45% for primary, manufacturing, and service industries respectively.

With younger than average families and increased employment opportunities, there is every likelihood that by 1985 the regional residents will be enjoying the benefits of the full national standard of living.

### 5.23 Transport

The plans for road development affecting the region are shown on Map 32. Briefly, the Edinburgh-Glasgow road, A8, is being replaced by a motorway (M8) which will have two lane dual carriageways west of Newbridge and three lane dual carriageways between Newbridge and Edinburgh. At Newbridge, it will be joined by the Edinburgh-Stirling Motorway (M9), which is being



ARMADALE

WHITBURN

FAULDHOUSE

STONEYBURN

MB

A8



built to replace the present A9. At a later date it is proposed to bring the old A8 up to two-lane dual carriageway standards, so as to provide an adequate route through the region for local traffic, and also to convert the A71 and A705 between Edinburgh and Livingston via Mid Calder to dual carriageways. A link is to be provided from near Newbridge to the Forth Road Bridge to give access to Fife. Access to the South will be by proposed motorway which is to link the A74, Glasgow-Carlisle road near Stonehouse with the Glasgow-Stirling road near Mollinsburn and which will intersect M8 near Baillieston. Other planned regional road improvements are shown on the map, and as most of the major works are intended to be carried out or at least started by 1970, the new road system should keep pace with the anticipated increasing demands made of them.

In connection with public transportation, the early scheduled closure to passenger traffic of the railway line passing through the south of the region, will leave the region to be served wholly by omnibus transport. The existing omnibus services within the region have been discussed in Section 3.32 of Chapter 3 (see also Appendix 3.3), and the intensity of services is shown on Map 6.

The existence of these services and their gradual expansion as the new town population builds up will do much to maintain a reasonable level of public transportation use within the region. Past experience with bus transport in other new towns has shown that the difficulties occur mostly in the early years of the town's development. This is because traffic generated in the first few years is too small to make the provision of bus services an economic proposition (see Ref. C/1). Much can be done to overcome these early difficulties by prior

consideration of the bus operator's problems. Peak-hour loads are uneconomic if paying journeys are one way only and so wherever possible an equal distribution of traffic generators is desirable (see Ref. A/21, page 88).

The relative car-ownership figures for the two Counties which make up the region are shown in Table 61. West Lothian's figure of 69 cars per 1000 population in 1961 is very much lower than the British average of 117 cars per 1000, and while still lower than the Scottish average of 86 cars per 1000, is increasing rapidly. Mid Lothian's figures are equal to those of the Scottish average.

Will vehicle density in the New Town and the region catch up with the National level by 1985? Certain factors suggest that it may. The rate of growth of vehicle density in the area at present is above average. The Road Research Laboratory (Ref. B/20) found a general tendency for areas where the density of private cars was below average to have above-average rates of growth, and this may be expected to continue. If the recommendations are accepted that the New Town should have a fair proportion of service and professional and other higher income groups in its population, that will lead to a higher level of car ownership,

Place	Number of Cars Registered 1961	Cars per 1,000 Population 1961
England	5,238,080	121
Scotland	446,270	86
Mid Lothian	9,550	85
West Lothian	6,400	69

LOTHIANS REGION: Showing Car Ownership figures for 1961. Source, See Ref. B/27. TABLE No. 61.

as will also be the case if there is an overspill of commuting population from Edinburgh.

A great deal will depend on planning decisions as to road layout and provision of garages and other storage space and of parking facilities in the New Town, and also on how far steps are taken to provide cheap, convenient and frequent public transport facilities. Nevertheless in the early days of the town, while population is still small and development scattered, public transport services are unlikely to be adequate by the city standards to which incomers from Glasgow and Edinburgh are used, so that there will be encouragement to buy and use private cars.

As against this must be set the fact that a large proportion of the incomers will be Glasgow overspill. Glasgow has a very low density of cars in relation to population, with only 51 cars per 1,000 in 1961, or 44 per cent of the Great Britain figure, and the overspill, being associated with redevelopment of the older areas of the city, will affect mainly people in the lower-income groups from the tenement areas. As against this, the rate of growth of vehicle density in Glasgow was high, being 11 per cent per year in 1951-61 for cars and  $7\frac{1}{2}$  per cent for all vehicles. Moreover there will both be more room to keep cars in Livingston than among the Glasgow tenements, and also more need of them, because of poorer public transport facilities.

In view of these arguments, it seems likely that by 1985, the region, including the new town, may have caught up to the extent that it will have about 80 per cent of the total cars suggested by the Buchanan Report, (see Diagram 3), or 80% of 0.36 cars per head, and assuming a 1985 regional popula-

tion of 230,000, this equals 66,600 cars, or approximately one car to every family. This figure has therefore been used in the following analysis of future shopping transport patterns, although for the purposes of allowing for the two and three car family which will exist in the region by 1985, it has been accepted that in actual fact, only 80% of the region's 1985 families will own one or more cars.

#### 5.24 The Regional Consultant's Proposals

The 'brief' given to the regional planning consultants is shown in Appendix 1.1. The problem confronting the consultants (in physical planning terms) rapidly resolved itself into one of determining how the existing regional towns and villages might be rehabilitated (expanded and 'rounded off') while at the same time determining how each, in terms of its location and size, could be linked together with the new town of Livingston to form a new 'regional community', where interaction between both new town and existing towns would be assured and lead to mutual dependence and prosperity.

Perhaps the most important decision taken by the Consultants in determining what form the new region would take, was that of limiting each town's growth both in terms of population and physical extent. In this way while some of the smaller villages have been expanded and joined together to form larger and more viable communities, (i.e., the case of Stoneyburn and Addiwell), the majority of existing towns have been planned to maintain their existing physical and social characteristics, while at the same time and due to the proposed new regional communications network and the industrial zoning policy, each has been co-ordinated and integrated within the overall regional

framework which has the new town at its centre.

The Draft Master Plan for the region as at 16. 9.64, is shown on Map 32. The structural members of the plan are the lines of communication and onto these are fixed both residential and industrial land uses, with an adequate intermingling of open space between both. The 1985 target population figures shown in Table 60, indicate that only three of the region's existing towns have a planned population expansion programme exceeding 100% of their present population. These towns are Broxburn, The Calder and Polbeth, including West Calder. Of these three towns, all of which are situated immediately adjacent to the new town itself, only Broxburn exceeds a figure of 20,000 population by 1985. By this time, therefore, the region will have two towns of 20,000 or more, five towns of between 10 to 15,000, and four large villages of between 3,500 and 8,000 persons. Of the twenty-one sub-service villages existing in 1963, (see Map 8) only twelve will remain in 1985, the others being coalesced with other centres to form new townships. It is likely that the remaining twelve sub-service villages will be phased out of existence, their useful life ultimately depending upon the age and condition of existing property.

The new regional hierarchy of service centres in 1985, will therefore consist of Livingston as major regional centre, and surrounded by its tributary neighbourhood centres, one ordinary regional centre in the form of Bathgate, ten service villages, six large (Broxburn, The Calder, New Polbeth, Blackburn, Whitburn and Armadale) and four small (Winchburgh, Kirkliston, Fauldhouse and Stoneyburn), and twelve sub-service centres.

The existing functions of the various centres will change due to the superimposition of the major regional centre at Livingston, and the changes envisaged are as follows:

(i) Bathgate, the regional centre in 1963, will by 1985 become a secondary centre to Livingston. Because of the importance of this town to the region as it exists today, and also due to the important role which Bathgate may play in the early years of the new town development, the extent of facilities provided by Bathgate is likely to continue to be justifiable although it is not anticipated that any increase in facilities or functions will occur. The extent to which Bathgate may vie with the new town centre for trade is discussed in a later section of this Chapter,

(ii) Three existing service villages will be considerably expanded, i.e., Broxburn, The Calders and New Polbeth) but as these centres are immediately adjacent to the new town, their functions will not develop beyond providing for the normal and every-day type of shopping facilities.

(iii) The above three centres, together with the other seven service villages will all undergo changes in the type of facilities and services offered, due to the presence of the new town centre, and the increased mobility of shoppers in 1985. Whereas in 1963, these service villages provided a good range of household goods and clothing shops, by 1985, it is likely that they will tend to become more specialized in the provision of essential foodstuffs, etc., and virtually become outlying 'neighbourhood' centres of the new town.

The 1985 planned population figures for each town, together with an indication of the degree of change in population is shown in Diagram 17.

5.31 General

In Chapter 1 the relationship between consumer and retailer was discussed and some trends which might lead to changes in the form which this relationship takes, were pointed out. In certain aspects, especially the retail trade itself, lack of sufficient statistical data over long enough periods of time, makes any projection of these trends a hazardous task. Emphasizing this point is the fact that the Board of Trade's Census of Distribution and Other Services covers only part of the total distributive framework and such items as public houses, service stations and car sales showrooms are omitted. All these facilities and many more form part of the 'normal' shopping centre and space must be allocated for them.

With respect to the consumer, however, the specific investigations undertaken by the candidate and reported on in Chapters 2, 3 and 4 have enabled some conclusions to be drawn which are relevant to this problem and which may form the basis for determining future shopping patterns. In the analysis and calculations for the Lothians region which follows, it is the consumer, therefore, upon whom these calculations rest. To this end, the Scottish average retail sales turnover per person per year figure of £168 for 1961 has been adopted as a standard for the calculations for 1985 trade, and in the same way, the distribution of trade between the various types of retailers and trade groups as existing in 1961 has also been adopted as a standard. In this way future changes in consumer expenditure patterns as reflected in future censi may be applied to the calculations without bias.

### 5.32 Calculations and analysis

These calculations for the future retail trading patterns of the Lothians region and its towns are based principally upon the data collected and colated in Chapter 4 of this thesis. That is to say, they are based principally upon consumer shopping patterns. The study of the existing regional shopping patterns gave information on the differences in shopping patterns between car and non car owning families, and the calculations which follow are based on the assumption that the shopping patterns of existing car owning families living within the region indicate what will be the future shopping patterns for an increasing majority of the regional population.

The accuracy of such an assumption when such vast changes seem likely to occur within the region under study is naturally open to doubt. Existing family shopping patterns involving the use of a car are likely to be dependent upon family structure, social class, accessibility of the various regional shopping centres in terms of road traffic conditions, time and distance involved for the journey, extent of parking facilities offered, etc., and all these factors are about to be changed radically. Within the limits of information available and the general scope of this analysis, however, where possible these variations have been taken into consideration.

The calculations themselves are shown in Appendices 5.1 -- 5.6 inclusive and the following sets out in general terms only the various steps in the analysis.

The first stage of the analysis (shown in Appendix 5.1) sets out to determine the 1985 shopping patterns for the



	1963 SURVEY RESULTS								PROPOSED 1985 (BASED ON 80:20 RATIO OF CAR TO NON-CAR OWNERS & 1963 FIGURES)			
	CAR-OWNING				NON-CAR-OWNING							
	CAR	BUS	OTHER	WALK	CAR	BUS	OTHER	WALK	CAR	BUS	OTHER	WALK
GLASGOW	75%	25%	-	-	3%	97%	-	-	63%	37%	-	-
EDINBURGH	73%	27%	-	-	3%	97%	-	-	65%	35%	-	-
BATHGATE	78%	22%	-	-	3.5%	96.5%	-	-	65%	35%	-	-
LIVINGSTON	-	-	-	-	-	-	-	-	65%	35%	-	-
LOCAL	24%	8%	-	68%	-	16%	-	84%	19%	10%	-	71%

LOTHIANS REGION: SHOWING 1985 PERCENTAGE DISTRIBUTION OF SHOPPING TRIPS BETWEEN TYPES OF TRANSPORT AS PERIVED FROM 1963 SURVEY RESULTS, (SEE NOTES) TABLE NO 62

	CAR	BUS	WALK	TOTAL	PERCENTAGE
GLASGOW	2.750	1.620	-	4.370	7%
EDINBURGH	3.730	2.010	-	5.740	9.5%
BATHGATE	2.250	1.220	660	4.130	7%
LIVINGSTON	6.310	3.860	870	11.040	18%
LOCAL	6.760	3.540	25.100	35.400	58.5%
TOTAL	21.800	12.250	26.630	60.680	100%
PERCENTAGE	36%	20%	44%	100%	

LOTHIANS REGION: 1985: SHOWING AVERAGE DAILY SHOPPING TRIPS TO VARIOUS CENTRES AND TRANSPORT USED. BASED ON TABLES NOS 62 & 69.  
TABLE NO 63

region in terms of shopping 'trips' made to various types of centres. These calculations take into consideration the proposed population levels proposed by the Regional Consultants and their distribution between the various regional towns. The standard unit of trip measurement chosen was the 'shopping trip per family per week' unit and in deriving the distribution of these trips both in frequency and in destination, the results of the survey reported on in Chapter 4 of this thesis were used. The Appendix (5.1) describes the work in detail. In the calculations shown, allowances are made for the change anticipated in family structure and car ownership levels, and in determining the ultimate distribution of shopping trips certain assumptions had to be made concerning the distribution of trips between Bathgate and the new town centre at Livingston, since Livingston was not in existence at the time of the candidate's survey and hence no survey data could be colated on this aspect. Further assumptions had to be made concerning what influence the new town centre would have in attracting trade away from the major service centres of Glasgow and Edinburgh. The summary results of this work are shown in Tables 62 and 63.

The second stage on the analysis was to determine what proportion of regional trade would be lost to centres outside the region in 1985. As has been shown previously, (Appendix 3.5) in 1963 the region lost 28% of its total retail trade to centres outside the region. G. M. Lomas (Ref. C/14) has shown that towns of 40,000 town and hinterland population gain trade from surrounding and smaller towns. In this respect it may be assumed that by 1985, the new town of Livingston with a town population of 100,000 and a regional population of a possible 130,000 persons, will gain trade and not lose it. This statement refers however to the 'town's' trade and not to the

'region's', so that it is impossible to say from this that the region in 1985 will not lose trade. The candidate's assessment of regional trade loss is shown in Appendix 5.2 and is based on the shopping trip distribution patterns calculated in the previous stage of the analysis, with the additional use of a 'trip value'. By comparing 1963 ex-regional shopping trip numbers with trade lost, it was possible to derive a value for these trips and by a similar investigation of 'regional' shopping trip numbers and trade, a value was also determined for 'regional' shopping trips as well. By using these trip values in conjunction with the previously calculated shopping trip distribution patterns it was possible to deduce that the 1985 regional retail trade loss might be in the order of 19% of total regional retail trade. Here again, however, certain assumptions have to be made concerning loss of trip values occasioned by anticipated central area congestion in Edinburgh and Glasgow.

Phase three of the analysis investigates the 'Net regional trade' distribution and is shown in Appendix 5.3. By using the shopping trip distribution values together with actual shopping trip distribution according to destination, it is concluded that whereas in 1961 the region's small service centres (i.e., all towns excepting Bathgate), captured 60% of gross regional retail trade, in 1985, it seems likely that these centres will capture only 48% of gross regional retail trade. The functions of these centres therefore change, and while in 1961-63 they were substantially self-sufficient, in 1985 they will become self-sufficient only in the sense that they will provide basic 'essential' goods such as foodstuffs, etc.

Phase four of the analysis takes the trade distribution figures as derived from the previous sections and estimates

the percentage of retail trade group trade provided for by each of the centre types and within the region as a whole. This work is shown in detail in Appendix 5.4.

Phase five of the analysis deals with the regional shopping trip transport patterns and by using the conclusions reached in Chapter 4 of this thesis concerning transport used for shopping trips according to destination and family car ownership, together with the 1985 calculated distribution of shopping trips, determines what might be the future levels of transport used in 1985. The results of this analysis are shown in Table 63 which makes an interesting comparison with Table 16, where the 1963 levels of transport used for shopping trips are shown.

As a final stage to the analysis, a detailed investigation is made concerning (i) the ultimate and four phased development of Bathgate's shopping facilities, and (ii) the ultimate and four phased development of Livingston's shopping facilities. These calculations are shown and discussed in detail in Appendix 5.6, while in the following section (5.33) the general results of the whole regional analysis are discussed.

### 5.33 General Results

In Appendices 5.1 and 5.2, anticipated changes in the average regional age and family composition, family car ownership and shopping trip patterns were used to determine what might be the 1985 net regional trade figure. These calculations involved assumptions on both the changing distribution of shopping trips due to the increased regional shopping facilities at Livingston, and the changing monetary value of shopping trips

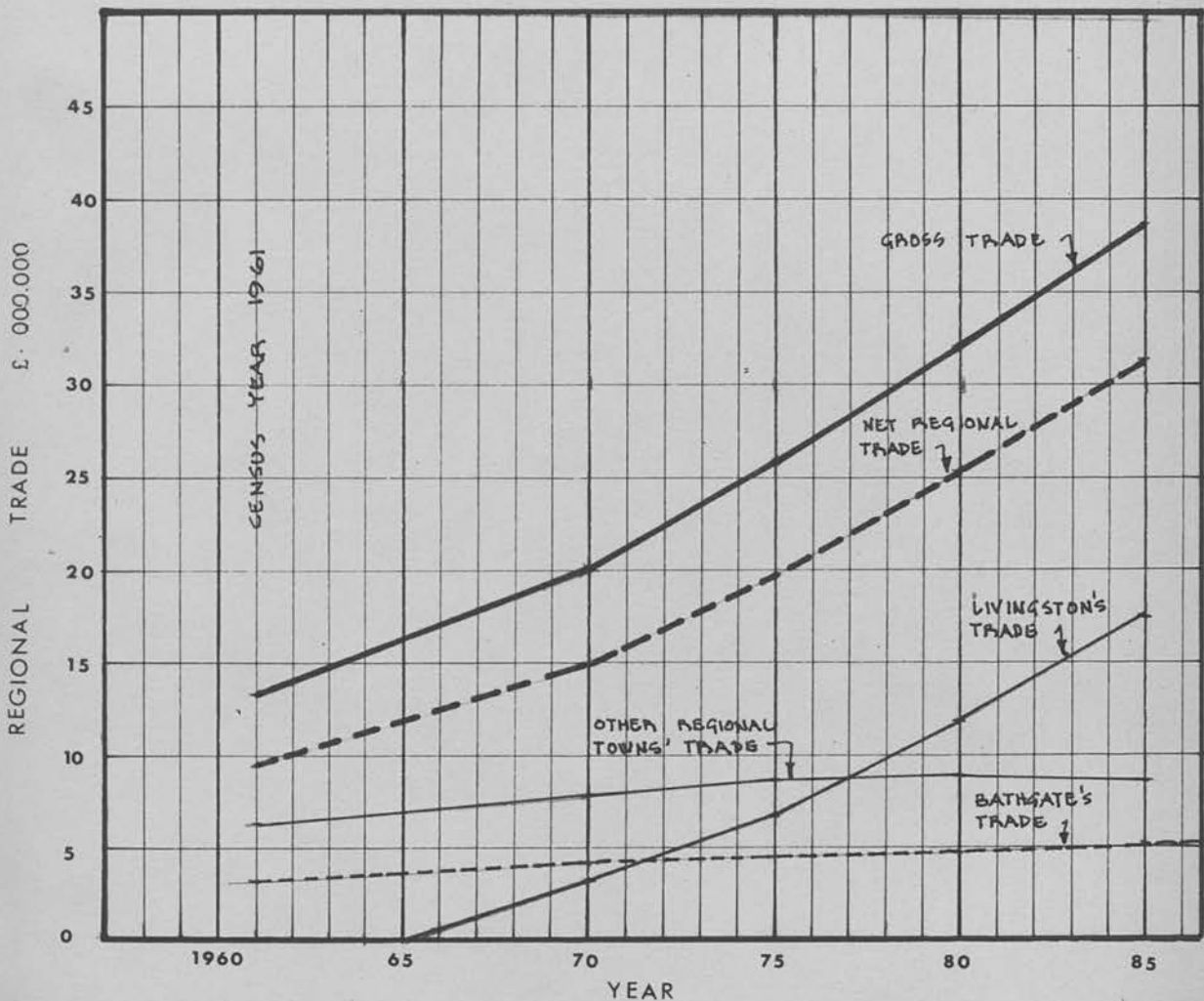
made outside the region to the two major centres of Glasgow and Edinburgh. It was concluded that whereas in 1961-63 the region lost 28% of gross retail trade to centres outside the region, in 1985 this loss may well fall to only 19% of gross retail trade.

With a total regional population of 230,000 in 1985 it is possible to think of the region as one large 'city', equivalent in size to say Dundee or Aberdeen and almost half the size of Edinburgh itself. In its location almost midway between Edinburgh and Glasgow however it seems unlikely that the new town centre would be capable of attracting a much larger service population than has already been allotted to it within the boundaries of the regional survey area. To some extent, however, some trade may possibly be attracted from the outer western suburbs of Edinburgh. This would depend not only on the accessibility of the new town shopping centre in terms of travel time and parking facilities provided, but also on the extent to which Edinburgh residents were encouraged to find employment within the new town or its region. Further research is necessary on this aspect of overall regional trade loss therefore, and the suggested 19% level might well be a maximum or 'safe' estimation.

The distribution of net regional trade within the region and its towns is shown in Table 64 and Diagram 18, and as indicated, the growth of trade occasioned by the increase in population is considerable. Several major changes in the functional organization of the region's existing retail structure occur. First, and due to the changing family structure and consumer mobility, much greater emphasis will be placed on the regional centres of Bathgate and Livingston, and this is accompanied by a corresponding decline in village and local

YEAR	1961		1970		1975		1980		1985	
TRADE	£.000	%	£.000	%	£.000	%	£.000	%	£.000	%
LIVINGSTON	—	—	3.015	15	6.658	26	11.820	38	17.510	46
BATHGATE	3.293	26	4.057	21	4.459	17	4.825	15	5.086	13
OTHER TOWNS	6.251	46	7.853	39	8.583	33	8.855	27	8.644	22
TOTAL REGION	9.544	72	14.925	75	19.700	76	25.500	80	31.240	81
EX-REGIONAL	3.711	28	5.075	25	6.100	24	6.500	20	7.370	19
GROSS TRADE	13.255	100	20.000	100	25.800	100	32.000	100	38.610	100

LOTHIANS REGION: SHOWING CHANGING DISTRIBUTION OF REGIONAL TRADE  
TABLE NO 64



LOTHIANS REGION: SHOWING CHANGING DISTRIBUTION OF REGIONAL TRADE  
DIAGRAM NO 18

shopping. There are two major aspects to this point. First, concentration of shopping facilities in the regional centres of Bathgate and Livingston is a matter contingent upon greater retailing efficiency as has been previously discussed in Chapter 1. Second, by interpolation of existing regional car owning families' shopping patterns, it was shown in Appendix No. 5.1, that the higher car ownership level in the region by 1985 will in itself tend to concentrate shopping in the larger type of regional centres. Thus while in 1963 the region consisted of a series of fairly self-sufficient villages with one ordinary regional centre in the form of Bathgate, the calculated regional structure for 1985 is considerably different. These self-sufficient villages have become much less self-sufficient, especially in regard to other than non-essential types of shopping facilities. Table 64 shows that whereas in 1961-63, Bathgate captured 25% of gross regional trade, and the remaining towns and villages some 46% of gross regional trade, in 1985, the calculations suggest that Bathgate's share will drop to 13% of gross regional trade, Livingston New Town will capture 45.5% of gross regional trade and the remaining towns and villages only 22.5% of gross regional trade.

In Appendix 5.6, the detailed calculations for the New Town of Livingston are shown and the results indicate that by 1985 a total retail sales floor area of approximately 300,000 sq. ft. will be required for the town centre. This is equivalent to 3 sq. ft. per town resident and compares well with the 2 sq. ft. per town resident for Stevenage, and the proposed 3 sq. ft. per town resident for Cumbernauld. The stage by stage development is also shown in these calculations and they indicate that for the town centre, four increasingly larger building phases will be required. That is to say, the calculated four

phase development of the town centre's shopping facilities is not made up of four equal additions, each equal to  $\frac{1}{4}$  of the total floor area. By the time the town's population has reached 70% of its ultimate target, something like 66% of the town centre's ultimate shopping facilities will be provided. Other new town experience has shown that this gap may tend to be even larger. With the Consultant's plan for the region as a whole however, it is possible that further expansion in the region's existing shopping facilities will be deliberately curtailed so that the early specialization of the new town centre's shopping facilities may proceed.

The development proposals for Bathgate which the calculations suggest are shown fully in Appendix No. 5.6. In terms of actual sales floor area, there is likely to be little change in Bathgate's facilities, although in terms of type of facilities offered, many changes seem imminent. First, and only partly due to Bathgate's increased population, there will be a demand for more 'food' shops, and a decline in 'household goods' shops. The calculations are based on turnover figures for modern shops, and it seems likely that at present Bathgate's shops have a much lower turnover per sq. ft. figure than the ones used in the calculation. Greater efficiency will be required therefore if no expansion is planned on existing floor areas, and this will be a joint matter concerning both the retailer in his store organization and sales methods as well as the planning authorities in providing functional service facilities to the shops, in the form of more efficient goods delivery access and more customer car parking facilities.

The future provision of shopping facilities within the region's existing small service centres and other small towns



has not been investigated in detail, however as the calculations have been based on an anticipated build-up in 'regional' shopping as against 'local' shopping, an ultimate reduction in both the number of existing shops as well as the range and type of goods sold in these shops can be expected in these centres. Redevelopment of these smaller towns and their shopping centres is more a matter of urban rehabilitation than rather than an expansion of existing facilities, so that any proposals for new shops in these centres needs to be considered in conjunction with associated projects for the rehabilitation of the existing shopping centre.

The regional shopping transport patterns evolved by the calculations for 1985 are shown in detail in Appendix No. 5.5 and shows that the number of shopping trips will increase parallel to the increase in population. The percentage of shopping trips made by car seems likely to change from the 19% level in 1963 up to a 36% level in 1985 and this would be accompanied by corresponding decreases in both bus and foot traffic. Trips to Glasgow may increase their percentage of total trips from 4 per cent in 1963 to 7 per cent in 1985 due to both the increased mobility of shoppers at that time, and also to the large number of Glasgow overspill families housed in the new town who it is assumed will still carry with them an allegiance to that city. Both Edinburgh and Bathgate orientated shopping trips tend to fall off in percentage of total trips, and this may be attributed to the attraction of the facilities offered by the new town centre at Livingston. As local trade decreases, so too does local shopping trips, and whereas these trips accounted for 70% of all shopping trips in 1963, it seems likely that in 1985, they will account for only 58% of total shopping trips.

#### 5.40 Conclusions

The results of the analysis of the future shopping facilities and their distribution with the Lothians region have been given in the preceding section, Section 5.33. In this section, it is proposed to assess the analysis technique used by the candidate, the value of the results obtained and possible areas for further research.

The basic principle underlying previous analysis techniques has been the estimation of consumer expenditure in monetary terms, followed by an estimation of retailers' turnover per square foot of shop area. Calculated consumer expenditure divided by retailers' turnover per square foot gives the estimated amount of shopping floor space required. The candidate's analysis followed this principle in the conversion from consumer expenditure to shopping sales area by using estimated values for retailers' turnover per square foot, so that the basic difference in the candidate's method of analysis lies in the refinements in assessing consumer expenditure. In addition, the analysis of the Lothians region involved the determination of the distribution of trade between a number of shopping centres of different types, while previous analyses have been concerned primarily with only one shopping centre.

Normally the estimation of consumer expenditure and the distribution of trade between two 'equal' shopping centres would be determined by the consumers' time-distance location in respect to these centres. If both centres offered the same facilities, the consumer would tend to use that centre which was more accessible to him. Where centres offer varying facilities however, the situation becomes more difficult and the spheres

of influence of each centre must be assessed for each type of facility provided. As yet, insufficient statistical data on the retail trade makes the assessment of 'customers per shop' and 'average sales per customer' type of data impossible. In lieu of this approach, consumer expenditure is frequently divided into 'convenience' and durable' goods, and the assumption is made that convenience goods are purchased locally, while durable goods are purchased at the not-so-local type of shopping centres which cater for a larger range of consumer wants and provide a selection of goods for comparative shopping.

The candidate's research into the shopping habits of both new town residents (See Chapter 2, Section 2.34) and residents of the Lothians region (See Chapter 4, Section 4.5) has shown that there is an increasing tendency for consumers to purchase a considerable proportion of their so-called convenience goods at the larger types of shopping centres rather than in the strictly local shopping centres. The convenience of the mobile shopper is not the convenience of the immobile shopper therefore, and the former is increasingly assessing his convenience in terms of his ability to 'one-stop-shop' and carry the purchases home in the family car.

Not all consumers are equally mobile however so that local and convenience goods shopping seems likely to prevail on a reducing scale in proportion to the increases in consumer mobility. If this trend is accepted, then clearly the subdivision of consumer expenditure into convenience and durable goods on the basis that this indicates the locality of shopping centre chosen for each category, is no longer acceptable. Time-distance therefore is not the only determinant of shopping patterns and consumer expenditure.

How far then does the candidate's research into consumer shopping habits overcome the problem of assessing the distribution of consumer expenditure? First, and as was done in the analysis of the Lothians region, allowances can be made for age and family composition structural differences with the population being studied. Second, allowances can be made in the analysis for the changing degrees of consumer mobility in terms of increasing car-ownership levels. So far as the changing nature in the distribution of convenience and durable goods shopping between the various types of shopping centres is concerned, as shown in Appendix 5.4, estimates for this can be derived by an analysis of existing 'regionally attracted trade' to specific shopping centres.

These calculations and the analysis technique are perhaps cumbersome, complex and open to many inaccuracies, but at the present stage they would seem to be the most accurate means available for the assessment of regional trade distribution. The plausibility of the results achieved indicates the possible accuracy of the technique itself.

Attention should be drawn to the fact that the calculations do not include any allowances for mobile shop trade. These traders hold a particularly strong position in Scotland and research is needed on this aspect to ascertain the precise role which these traders play, particularly during the early years of a new town development. The principal assumptions made throughout the calculations were with respect to the regional trade lost to shopping centres outside the region. Further research is needed on this subject, with particular attention being directed to the shopping loyalties of the immigrant population.

Finally, in questioning the validity of this analysis and its accuracy, attention is drawn to the analysis of Harlow's town centre land use pattern as shown in Appendix 2.17. The results show that commercial buildings occupy about  $12\frac{1}{2}$  acres out of a total of 76 acres, or about 16% of the total town centre land available. On these figures and assuming a flexible plan form, it would seem that estimations of commercial land useage do not need to be highly accurate for small variations in the amount of land occupied by commercial premises would have little or no effect upon the overall size of the town centre itself. Considerable increases in the area of shopping floor space would imply increases in parking space allocation, service roads and areas given over to pedestrian access, etc., but these increases would have to be of a fairly high order before this would happen. Further research is needed to establish the relationship between commercial land use and other land users in new town centres. The candidate's research has shown that a few town centres have central areas provided on a basis of 40 square feet per resident person, with about 2 or 3 square feet of this allocated to shopping sales floor space.

C O N C L U S I O N S

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Each preceding Chapter of this thesis has included its own conclusions so that what it is intended to present here is a brief summary of the principal findings of the candidate's research. These findings are presented in the form of summary sentences followed by brief explanatory notes and references to the relevant sections of the text. Following upon these, a brief indication is given of how these results may influence the future relationship between neighbourhood and community shopping centres and how the effects of changing consumer shopping patterns may tend to alter the future size, functions and locations of these shopping centres. It is concluded that in order to assess what the future functional relationships might be between these types of shopping centres, new analysis techniques need to be evolved and here suggestions are made for further research. .

#### THE INFLUENCE OF CAR-OWNERSHIP ON CONSUMER SHOPPING HABITS.

- (1) Car-ownership does not increase the number of housewives' shopping trips per week over and above those normally made by non-car-owning housewives.

This point has several interesting aspects. Since many car-owning housewives make a large proportion of their non-local shopping trips by car and while at the same time a large proportion of these car-owning housewives do not drive themselves, this implies that at least one other 'driving' member of the household accompanies the housewife on these shopping trips. Thus while the number of shopping trips per week does not increase with car-ownership, the number of persons who go shopping does.

(See Footnote 1, over).

(2) Car-ownership alters the distribution of family shopping trips between the various types of shopping centres.

This point is illustrated in Diagram 14 and this diagram shows that car-owning housewives living in the Lothians region, look upon Edinburgh as their once-a-week shopping centre, while non-car-owning housewives look upon Bathgate as their once-a-week shopping centre. In this sense therefore, car-ownership increases the distance which housewives travel to shop and it is by this means that it becomes possible for them to select the larger types of shopping centre. This change in destination is important as is explained by point 3.

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Footnote 1 In the London Traffic Survey, Volume 1 (See Ref. B/37, page 159, para 9.47), it was stated that 'car-owning households in Greater London generate 6.8 person journeys per day by motorized forms of transport, compared with only 3.0 for non-car-owning households.' The basic unit chosen for this survey was the 'person journey', so that while car-owning households generate more person journeys than non-car-owning households, as a number of these car-owning household person journeys may be made to one destination in company with other members of the household, the actual number of 'family trips' may not be so different. It is important that this point should be clearly understood, since the higher rate of 'person journeys' for car-owning families might be wrongly interpreted to mean that the car-owning family actually buys more than the non-car-owning family or that the former shops more frequently than the latter. With particular emphasis on shopping trips, these figures indicate, as do those of the candidate, that in the car-owning family, an increased number of persons accompany 'the shopper' to the shopping centre. This fact influences the social aspects of shopping and also the future pedestrian density within shopping centres, although in terms of car-parking space and road traffic requirements, it has little or no effect whatsoever.



(3) Car-ownership alters the distribution of consumer expenditure

Research into the trade distribution between new town neighbourhood and town centre shopping centres has shown that an increasing amount of foodstuffs are being bought in the town centres. As foodstuffs are normally classified as 'convenience' goods, this means that convenience shopping is moving away from the small local centre into the larger type of not-so-local shopping centre. The study of the Lothians region's shopping patterns also indicated that car-owning families look to Edinburgh as their once-a-week shopping centre and it is reasonable to assume that on these shopping trips the car-owning housewife utilizes the family car to carry home some portion of her convenience goods shopping. In this way car ownership alters the distribution of consumer expenditure away from the normal.

(4) Car-ownership increases the number of shopping centres visited

This point is illustrated in Table 21 and Diagram 14, and these show that for the housewives studied in the Lothians region, a very much larger percentage of car-owning housewives reported visiting all the shopping centres nominated in the survey questionnaire than was the case for non-car-owning housewives. In this respect, car-ownership enables the housewife to spread her trade over a larger number of centres than is possible for the non-car-owning housewife.

(5) Car-ownership alters the social aspect of shopping trips

From conclusion 1 and footnote 1, it will be seen that the once-a-week shopping trip in the car-owning family develops into a family shopping expedition, with at least one other member of the household being present. Shopping under these

circumstances may be divided between those members of the family present, or members of the family may help with purchases made by other members of the family by offering advice, opinions, or simply by carrying items purchased. These 'family outings' may also be combined with other social or recreational outings such as a visit to the cinema, relatives or a football match. The main point here is that by visiting this larger type of shopping centre, maximum accessibility is provided to a maximum number of activities. Where the family car is the means of transport adopted, this maximum accessibility is open to all members of the family without increasing the initial trip cost (as would be the case if the journey was made by public transport) and without increasing the demands being made on public roads and parking space.

(6) Car-ownership increases the number of shopping trips made by car.

This is a very simple observation to make but it is important not to underestimate the extent to which the family car is used for shopping purposes. This aspect is of particular importance in assessing road traffic patterns and future traffic volumes in town centres as well as in the estimation of customer car-parking spaces. The figures shown in Table 22 indicate the extent to which the family car is used for shopping trips to various types of shopping centres. While a very small percentage of local shopping trips are made by car, figures indicate that for all non-local shopping centres, transport by car will probably account for 65% of all car-owning families' shopping trips. Figures shown in this Table are also useful for estimating the probable future loss in omnibus passenger traffic.

- (7) Car-ownership renders some of the existing 'immobile' members of the community, less immobile in their shopping habits.

The candidate's research has shown, (see Sections 4.42 and 4.43 in Chapter 4), that in the case of both elderly persons and young mothers with young children, car-ownership makes a considerable difference in their ability to shop at the various centres as compared with elderly people and young mothers with young children who are not car-owning. In all cases a higher percentage of the car-owning sections reported shopping in the various centres nominated in the questionnaire.

THE INFLUENCE OF THE MOBILE CONSUMER'S SHOPPING PATTERNS ON THE FUTURE FUNCTIONS AND LOCATION OF SHOPPING CENTRES

(1) In so far as car-ownership increases consumer mobility, research results indicate that an increasing amount of consumer expenditure will be spent in the larger and not-so-local type of shopping centre which offers a full range of shopping and other associated facilities.

(2) In so far as not all consumers are equally mobile, even assuming a one car per family ownership level, some shopping facilities will need to be distributed at the local level in close proximity to their service population. As car-ownership increases the mobility of most sections of the community however, the provision of these local facilities will be reduced in scale.

(3) In so far as increasing consumer expenditure is coupled with increasing consumer mobility, the need for greater efficiency in the retailing and distribution trade industries will probably

be achieved by a greater concentration of shopping facilities in shopping centres which cater for a service population of at least 100,000 persons--resident and hinterland population combined. The upper limit of this service population figure may be in the region of 250,000 persons.

(4) In determining the influences which bear on the problem of assessing the future function and location of shopping centres, this study has revealed that changes in consumer mobility, retailing efficiency and population distribution (in terms of growth) all lead to changes in the whole community retailing structure. (see Section 1.40 in Chapter 1). As the candidate chose to centre his studies principally on new town shopping centres, it became clear that the relationship between new town shopping facilities and the shopping facilities already existing in surrounding regional towns also needed to be studied. The following two sections therefore each deal in turn with the various new town shopping centre functional relationships.

(5) In the analysis of new town shopping facilities reported on in Chapter 2, it was found that while the towns and their shopping facilities had been designed on the 'neighbourhood principle' so that neighbourhood shopping centres were provided to cater for the convenience and local goods shopping of the residents, in actual fact, a great deal of this convenience shopping was being done in the new town centre itself. In future therefore, the provision of neighbourhood shopping facilities can be on a greatly reduced scale.

(6) In the analysis of the future functional relationships between the new town centre at Livingston and the various surrounding existing shopping centres reported on in Chapter 5, it was

concluded that where these existing shopping centres are small in relation to the new town itself, and where car-ownership will continue to increase, then the new town centre will capture a large portion of the trade of these existing centres. In this way, these existing shopping centres become virtual neighbourhood centres to the new town.

FUTURE TECHNIQUES FOR DETERMINING THE SIZE, FUNCTIONS, AND LOCATIONS OF SHOPPING CENTRES AND FURTHER RESEARCH

- (1) As was shown in Chapter 5, increasing consumer mobility and the changing patterns of consumer expenditure render past methods of calculating sales area on a division of consumer expenditure into 'convenience' and 'durable' goods centres out of date.
- (2) New analysis techniques need to be developed which enable whole regions to be analysed and which are also capable of taking into account and measuring the influences of increasing consumer mobility and increasing retailing efficiency.
- (3) The candidate has advanced a possible analysis technique, although as yet this method seems complicated and in some detail aspects still relies on certain basic assumptions. Further research is necessary therefore to establish less cumbersome analysis methods and to limit the need for these assumptions by providing factual data.
- (4) In connection with these calculations which set out to determine the distribution of shopping floor space, and hence the functions and distribution of shopping facilities, it should be reiterated that these methods stem largely from American practice. Here, the calculation of shopping floor space and its associated car-parking

facilities is an end in itself, whereas in British practice and especially in relation to new town shopping centres, the provision of shopping floor space and associated car-parking facilities is only part of the problem. Further studies should therefore be directed to establishing what functional relationships exist between the shopping facilities of central areas and the other associated public buildings and central area land uses.