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COMMUTING IN LONDON AND THE SOUTH EAST - SOME BACKGROUND TRENDS

by

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1. Introduction

The past two decades have seen some significant changes in the pattern of commuting to Central London. The total number of passengers entering Central London by all modes in the morning peak has dropped by some 20% (Fig.2). Yet private traffic has grown in absolute terms, to form some 20% of the total in 1983 compared with 14% in 1961. As a result, congestion has worsened and traffic speeds declined (Table 1). All public transport modes have declined in patronage, but for British Rail the decline has been concentrated within Greater London (Fig.3). From outside Greater London, traffic grew until the mid 1970's. Since then there has been a modest decline.

These changes are no doubt what most analysts would expect of a society of rising car ownership - decentralisation of jobs and homes, and increased use of car instead of public transport. But at a more detailed level, there are some surprises. For instance, despite the economic recession, the decline in morning peak trips to London by all modes appears to have slowed down in recent years. In this same period the longer distance rail market began a modest decline. At the same time, there have been considerable shifts in the pattern of commuting by County of origin (Table 2). The perod 1961-71 saw a straightforward decentralisation of the homes of Greater London workers, with the numbers in Greater London and Essex declining and everywhere else increasing. Between 1971 and 1981, the pattern has been very different. Commuting from Essex has resumed rapid growth, with an absolute increase exceeded only by the boom in commuting from Hertfordshire. Growth in the traditional commuter area of Surrey has been very slow, whilst from Buckinghamshire commuting has declined. These changes have led to a view that dormitory areas, like people, can go through a life cycle of growth, maturity and decline. Of course it should be remembered that a considerable proportion of these commuters, particularly from the adjacent counties, are only just crossing the Greater London boundaries and not proceeding to Inner London (Fig.4). From districts adjacent to Greater London this is particularly pronounced (Fig.5).

What are the reasons for these changes in patterns of commuting into Central London? Have we now reached the stage where the market has stabilised, or will commuting resume declining? Will the longer distance end of the commuter market continue to decline? Will the counties north east of London continue to take over the role of dormitories from counties south of the Thames?

These are very complicated issues, involving interactions between rising incomes, transport policy, planning and land-use policies and the job and housing markets. In this paper it is intended to examine what can be learned from a broad view of the developments using published data. Future papers will examine survey data on the decisions of individual commuters, and consider ways of modelling these interactions, following on from

work previously reported in the course of a preceding project (Johnson and Nash, 1983; Mackett, 1984).

In the next section, the changes in the location of population and jobs over the period and some of the factors which may have caused these changes are considered. Then trends in the labour market, in housing, in incomes and car ownership and in public transport fares and services are reviewed. Finally, developments in three towns at varying distances from Central London, which illustrate the sorts of changes that are taking place at the local level, are discussed.

The following text will refer to a number of subdivisions of London and the South East - Central London, Inner London, Outer London, Outer Metropolitan Area and Rest of the South East. These are illustrated and defined in Fig. 1, and in the Appendix of definitions.

2. Population and Jobs

Changes in commuting patterns reflect changes in relative locations of homes and jobs. The decline in commuting to Central London is almost identical to the decline in the number of jobs in the conurbation centre (Table 3). The proprtionate fall in employment in the two central boroughs has been greater than the fall in total employment in the conurbation (Table 4). Within Greater London as a whole there has been a considerably greater absolute fall in the number of jobs, with a corresponding rise in jobs in the rest of the South East. (Table 5). However, this has been closely matched by population movements and the trend in unemployment in Greater London is only slightly worse than that in the Rest of the South East.

This decentralisation of employment in Greater London is clearly shown in Figs. 6 and 7. For the period 1971-1981 the number of jobs in some outer boroughs rose by 10% whilst many central boroughs experienced decreases of the same order, even as much as 20% in some cases.

For the whole South-East (Figs. 8 and 9), population growth was greater further away from London (which itself declined steadily). Similarly employment generally expanded more rapidly away from London and the traditional commuter areas of Hertfordshire and Surrey.

Further evidence of the net outward movement of population is provided by the migration statistics in the Census. These give the numbers of persons who have moved between areas in the previous year. It is interesting to note that, whilst there was still net outward migration occurring in 1981, both it - and migration in general - appear to have slowed down dramatically since 1966 and 1971 (Fig. 10).

What sort of jobs has Greater London lost? Given the high property values in Central London, one would tend to expect that there, at least, it would be the more menial manufacturing and clerical jobs that would have moved out, with employment becoming more specialised in the quarternary (business services) and quinary (personal services) sectors (see appendix of definitions). Is the same true of Greater London as a whole? Table 5 suggests that the answer is yes. Although the trends are in the same direction in Greater London and the rest of the South East, the decline in the secondary sector and growth in quarternary and quinary have been much more pronounced in Greater London.

What sorts of forces have been at work to influence the location of homes and jobs in the South East? At least four sets of influences may have been at work:

1. An exogenous outward shift in jobs, as changes in the structure of employment and advances in information technology reduce the advantages of a central location. This would be accompanied by falling rents and wages in Central London compared with those elsewhere, and would tend to attract the population to follow the jobs, with similar effects on relative house prices and the location of new housing.

2. Exogenous changes in the housing market, resulting from slum clearance and demolition within Greater London, and the release of land for new housing outside, pushing people outwards. In this case, one might expect house prices in Greater London to rise relative to those elsewhere. If the outward movement of jobs is in pursuit of the labour force, similar changes in relative wages might be expected.

3. Rising income and car ownership may have led to a preference for more housespace and a better environment, and created the outward movement in that way. This would imply rising house prices outside Greater London relative to within, but with the opposite pattern of wage differentials as labour would become more readily available outside Greater London.

4. Changes in the transport system such as a rise in the price of commuting, and a shift in the attractiveness of the car relative to public transport might be expected to lead both population and jobs to shift out of Greater London, whilst at the same time longer distance commuting to Greater London would decline. Presumably, wages in Greater London would in this case rise to attract workers, whilst the net effect on house prices is uncertain.

These hypotheses are summarised in the table below, which shows changes in house prices and wages in G.L. relative to ROSE :

Hypothesis	Wages	House Prices
1	-	-
2	+	+
3	+	-
4	+	?

In reality it is likely that all four forces have been at work, with different relative strengths at different times, so that one would not expect to be able to reach unambiguous conclusions on the causes of the observed shifts in jobs and homes without a simultaneous model of the entire process. Nevertheless, it may prove instructive to examine in turn wage differentials and vacancies, house prices and new construction, incomes and car ownership and public transport services and fares.

3. The Labour Market

The main reason for examining labour market conditions is to look for evidence on whether population was 'pulled' outwards by employers seeking to attract labour to follow jobs, or whether jobs were following favourable trends in labour supply. The former case would suggest reducing wage differentials between Greater London and the Rest of the South East as the jobs move out; in the latter case, the differentials might be expected to increase.

Examination of the labour market provides no very clear evidence on which of these forces has been most significant (Fig. 11). There is the expected differential between Greater London and the Rest of the South East; the latter area is very little different from Great Britain as a whole. There is some sign that the differential narrowed in the 1970's but since 1979 it has widened again (Fig.12).

Evidence on vacancies is no more conclusive. Information on vacancies notified to Job Centres is presented in Fig 13. Whereas these only comprise about one-third of all vacancies, they do give some indication of relative trends. Although the absolute numbers vary enormously according to the state of the economy as a whole, the relative proportions in Greater London and the rest of the South East remain very similar.

4. Housing

The housing market similarly provides little indication of changes in relative prices between areas, despite the very large fluctuations occasioned mainly by changes in the mortgage rate (Fig. 14). There is the expected price differential which provides an incentive for commuters to locate outside the Greater London area and this incentive will have been greatest in periods

of high house prices. It is also likely that housing quality is better outside of Greater London.

Table 6 shows that people buying houses outside Greater London are far more likely to buy detached or semi-detached houses than those within Greater London who are more likely to buy flats or terraced houses. There is also evidence that buyers outside Greater London are marginally more likely to be of professional or managerial status and much more likely to have previously been owner occupiers. Many more of the loans within Greater London are to single people. (Table 7). In any event a much larger and faster growing proportion of the houses outside Greater London is owner-occupied (Table 8).

These differences may be associated with movement through the life-cycle, whereby young people buy a flat or older small property within London and then, at a later stage when they have a family and so need more space they buy a larger dwelling, more of which are available outside of London.

What is more dramatic is the change that has occurred in new house completions (Fig. 15). Whilst all areas have experienced a similar pattern of decline, recovery and then virtual disappearance of public housing completions, the patterns for private housing are very different. These have declined in all areas, but there was a massive collapse in new house building in the Rest of the South East in 1969-75 which coincides with the decline in the rate of outward movement of population and jobs. Whilst this could have been simply the response of the housing market to a change in demand, it may also represent a change in the attitudes of local authorities to new house building, particularly as dormitories for London.

5. Income, Expenditure and Car-Ownership

According to the Family Expenditure Survey, total weekly household income and expenditure are very similar within and outside Greater London, and have followed similar trends (Fig. 16). There are some interesting differences, however, in the relative proportion of expenditure allocated to housing and transport.

Commonsense suggests that persons who locate within Greater London spend a higher proportion of their income on housing but - because of higher density and the availability of good public transport - a smaller proportion on transport. This is generally true. However, a dramatic narrowing of the differentials in the late 1970's appears to have been followed by their re-emergence post-1980. The changes in transport expenditure may well have been caused by changes in the relative price of different forms of transport (Fig. 17). But it is interesting that these changes appear to have been offset by a fall in housing expenditure in Greater London but not elsewhere in the late 1970's.

Rising incomes have of course been accompanied by a dramatic rise in the proportion of employees living in car owning households (Table 9). Nevertheless, more than a quarter of Greater London workers still come from non-car owning households compared with 12% in the Outer Metropolitan Area. There are also far more multi-car owning households outside Greater London (Table 10). It is noticeable that members of car owning households are much less likely to use bus, tube, cycle or foot than are members of non car-owning households, but that the difference in rail use is very modest.

6. Public Transport Fares and Services

Fig. 17 shows trends in average revenue per passenger kilometre for LT rail, LT bus and BR (the BR figure is confined to season-tickets, the majority of which are sold to London and South East commuters. The overall rate of increase for BR as a whole is much lower, due to increased availability of reduced fares and railcards elsewhere on the system and for non-commuting journeys). Despite the fall in LT fares in 1983, the trend in fares is still in marked contrast to the trend in real petrol prices, which - despite the surges of 1974-5 and 1979-81 - finished the period no higher than in 1961. The rate of increase of public transport fares has accelerated markedly since 1974, particularly for BR. (Whilst this may be partly spurious, resulting from a shift in the market towards shorter distance commuters paying a higher rate per mile, there is a countering factor in that the more heavily discounted longer period season tickets were becoming more popular over this period (Table 11).

It is also interesting to note that the Hertfordshire area, which was experiencing the most rapid growth in commuting in the 1970's, underwent the most significant improvements in rail services over this period. Only a small number of towns in other areas for which High Speed Train services became available to commuters experienced a comparable improvement. The only electrification schemes completed in this period (other than for the Witham-Braintree branch line in Essex) were the Moorgate/Kings Cross - Hertford/Letchworth scheme (completed in 1976/7) and the Moorgate/St.Pancras - Bedford scheme (completed in 1982), both of which are predominantly in Herefordshire. The surge in commuting following completion of the first of these schemes has been well documented (Herefordshire County Council Transport Co-ordination Unit, 1980).

Finally, this section considers the rise in coach commuting following deregulation of coach services in 1980, and accelerating after the 1982 rail strikes. This offers a much cheaper way of commuting, with,for some commuters, the possibility of door-to-door service, although it is generally much slower than rail. By May 1984, some 300 commuter coaches were entering London in the morning peak (Dyer, Robbins and White, 1985). Assuming an average load of 37, this would amount to some 11,000 coach commuters - a small number when compared

with the 380,000 BR passengers entering Central London but more significant in certain areas (especially North Kent).

7. The New Employment Centres

Finally, as an illustration of some of these processes working at the local level, three towns of varying distances from Central London are considered - Watford (about 20 miles out), Reading (40 miles out) and Brighton (50 miles out). Comparing population changes (Table 12), Reading and Watford have expanded substantially, while Brighton has experienced a slight decline (although it may be that population directly outside the boundaries of Brighton has grown).

In terms of jobs, the patterns are very different (Table 13). Whilst the number of jobs in Reading has grown substantially, and in Brighton declined a little, the numbers employed in Watford have fallen by no less than 11% between 1971 and 1981. Evidence on the workplaces of residents is equally revealing. Along with the decline in the population of Brighton, both numbers of residents working in Brighton and in Greater London have declined; only the numbers employed elsewhere have grown. From Reading numbers working in the town itself have declined (this being more than compensated for by increased numbers commuting into Reading), but commuting to Greater London and elsewhere have increased rapidly. From Watford, the decline in numbers working in Watford has been replaced in part both by working in Greater London and elsewhere.

Do these differing case histories reflect the fact that Reading was particularly well placed to expand in the growing quarternary and quinary sectors of the economy? The figures in Tables 14 to 16 suggest otherwise. Brighton in fact is the town most heavily concentrated in these sectors; whilst Reading does have more employment in these sectors and less in manufacturing than does Watford, the differences are by no means overwhelming.

8. Conclusion

This paper has presented the results of an initial examination of aggregate data on trends in commuting in London and the South East. It has revealed a complex pattern of interactions. It is hard to avoid the conclusion that the relative stagnation of house prices and the rapid rise in rail fares in the mid 1970's have had a significant effect on patterns of commuting, leading to a marked slowing down in outward migration. But it may be that there have been totally independent sources of change, such as planning authorities attitudes to new housing and the general decline in mobility associated with economic recession. Views on these issues, and on further sources of data which would be worth examination, would be very much welcomed by the authors.

References

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Appendix of Definitions

Boundary Definitions

Greater London)
Counties)
Outer Metropolitan Area (O.M.A.)) See Fig. 1
Outer South-East (O.S.E.))
Rest of South-East - O.M.A. and O.S.E.

Inner London 1966, 1971 and 1981
Boroughs of: City of London
Camden
Hackney
Hammersmith
Haringey
Islington
Kensington and Chelsea
Lambeth
Lewisham
Newham
Southwark
Tower Hamlets
Wandsworth
Westminster

Central London - Conurbation Centre
covers an area of roughly 4 km radius from the city centre, containing the mainline London British Rail termini.
1981 Census definition - West End and city centre.

Employment Definitions

Definitions of Industrial Classes

1. Primary - Agriculture, Forestry, Fishing, Mining etc.
2. Secondary - Manufacturing Industry etc.
3. Tertiary - Construction, Transport, Energy Utilities etc.
4. Quaternary - Private and commercial services, Wholesale and Retail sales, Finance, Communications etc.
5. Quinary - Public and Personal Services, Administration, Welfare, Maintenance, Recreation etc.

Definitions of Occupation Orders

1. Knowledge-based - Professional, Technical, Crafts, Laboratory, etc.
2. Service-based - Management, Administration, clerical.
3. Goods-based - Engineering, Mining, Textiles, etc.

** Throughout the text, numbers and percentages may not cast due to rounding errors.

Table 1

Average Traffic Speeds, Greater London 1968-1980

Morning Peak (miles/h)

	1968-70	1971-73	1974-76	1977-79	1980-82
Central area	12.7	12.9	14.2	12.3	12.1
Central & Inner	13.9	13.6	15.0	13.0	13.1
Outer Areas	19.4	18.7	18.0	17.6	18.0
All Roads	18.1	17.7	17.9	16.9	17.5

Cordon and Screen Line Counts : Index 1972 = 100

All day, All areas

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Private Cars	100.0	100.9	101.8	102.8	105.6	109.0	112.4	114.7	115.9	118.0	119.9
Taxis	100.0	104.0	108.5	113.7	117.9	123.5	126.6	127.9	125.3	127.1	131.9
Light Goods	100.0	99.1	97.9	93.6	93.7	94.5	96.9	98.7	99.1	99.2	90.0
Buses and Coaches	100.0	96.9	93.8	94.3	93.2	92.7	90.5	88.9	88.9	89.4	90.0
All Vehicles Morning Peak	100.0	101.1	102.1	104.5	107.1	109.6	111.9	113.9	115.3	116.2	116.6
All Day											
Central London	100.0	100.4	100.9	102.1	103.3	105.1	107.2	107.6	107.6	109.4	110.8
Greater London	100.0	100.7	101.4	103.0	105.5	108.6	111.6	113.2	113.9	115.1	116.2

Source: GLC Traffic Monitoring Review, 1983.

Table 2

Journeys to Work in Greater London
by County of Origin

(Absolute Change in Brackets)

	1961	1971	1981
Greater London	419859	354054 (-65805)	296129 (-57925)
Bedfordshire	265	685 (+420)	1179 (+494)
Buckinghamshire	2621	3469 (+848)	3434 (-35)
Essex	13101	11568 (-1533)	13110 (+1542)
Hampshire	771	1412 (+641)	1788 (+376)
Hertfordshire	4880	7746 (+2866)	9374 (+1628)
Kent	4684	7510 (+2826)	8330 (+820)
Oxfordshire & Berkshire	1329	2391 (+1062)	3922 (+1531)
Surrey	6320	12567 (+6247)	12994 (+427)
East & West Sussex	2940	3173 (+233)	3298 (+125)

Source: 1961, 1971 and 1981 Census

NB: 1961: County of London and Middlesex are used as an approximation for Greater London.

Table 3

Employment and Population in South-East England (000)

	1961	1971	1981
Employment			
Greater London	4490	4086 (-9.0)	3600 (-11.9)
of which conurbation centre	1418	1250 (-11.8)	1078 (-13.9)
Rest of South East	3158	3900 (23.5)	3972 (1.8)
Population			
Greater London	7992	7475 (-6.5)	6709 (-10.2)
of which conurbation centre*	163	116 (-28.8)	86 (-25.9)
Rest of South East	7900**	9552 (20.9)	10210 (6.9)
Unemployment			
Greater London	-	79	264 (234.2)
Rest of South East	-	95	284 (198.9)

Figures in brackets represent the percentage change.

* is economically active population only.

** is an estimation.

Source: 1961, 1971, 1981 Census.
Employment Gazette.

Table 4

Total Employment in Central London Boroughs

	1951	1961	1966	1971	1981
City of London	337,486	390,570	360,600	340,760	299,210
City of Westminster	454,188	458,900	593,590	554,850	475,240
T o t a l	791,674	849,470	954,190	895,610	774,450
(% fall/rise)		(+7.3)	(+12.3)	(-6.1)	(-13.5)
Greater London	4,288,308	4,291,710	4,326,420	4,085,530	3,600,050
(% fall/rise)		(+0.1)	(+0.8)	(-5.6)	(-11.9)

Table 5

Industrial Structure : Greater London, Rest of South East
by Area of Workplace

Greater London

	1961	(%)	1966	(%)	1971	(%)	1981	(%)
Primary	15,350	(0.3)	10,910	(0.3)	9,940	(0.2)	6,190	(0.2)
Secondary	1,459,200	(32.5)	1,280,410	(29.6)	1,093,300	(26.8)	677,170	(18.8)
Tertiary	792,640	(17.7)	799,480	(18.5)	734,020	(18.0)	668,690	(18.6)
Quaternary	1,026,640	(22.9)	1,009,170	(23.3)	1,065,030	(26.1)	1,061,740	(29.5)
Quinary	1,173,900	(26.1)	1,203,850	(27.8)	1,129,950	(27.7)	1,150,770	(32.0)
Ill-Defined	22,300	(0.5)	22,600	(0.5)	51,650	(1.3)	29,670	(0.8)
Total	4,490,030	(100)	4,326,420	(100)	4,083,890	(100)	3,594,230	(100)

Rest of South East

Primary	160,550	(5.1)	145,050	(3.9)	125,090	(3.2)	96,070	(2.4)
Secondary	963,500	(30.5)	1,124,810	(30.3)	1,200,550	(30.8)	1,019,730	(25.7)
Tertiary	513,090	(16.2)	611,000	(16.4)	593,620	(15.2)	611,340	(15.4)
Quaternary	574,330	(18.2)	685,720	(18.5)	750,260	(19.2)	917,240	(23.1)
Quinary	934,630	(29.6)	1,136,030	(30.6)	1,201,770	(30.8)	1,302,060	(32.8)
Ill Defined	11,650	(0.4)	12,670	(0.3)	29,060	(0.7)	26,030	(0.7)
Total	3,157,750	(100)	3,715,280	(100)	3,900,350	(100)	3,972,470	

Central London - City of London & City of Westminster

Primary	209	(0.2)	250	(0.3)	291	(0.3)	135	(0.2)
Secondary	15,885	(18.7)	15,860	(16.5)	12,750	(14.2)	7,240	(9.3)
Tertiary	13,344	(15.7)	14,421	(15.0)	13,330	(14.8)	12,023	(15.5)
Quaternary	31,904	(37.6)	35,770	(37.2)	38,995	(43.4)	35,846	(46.3)
Quinary	23,295	(27.4)	29,465	(30.6)	23,824	(26.5)	21,913	(28.3)
Ill Defined	315	(0.4)	502	(0.5)	615	(0.7)	288	(0.4)
Total	84,952	(100)	96,266	(100)	89,805	(100)	77,445	(100)

Source: Census 1961, 1966, 1971, 1981

Table 6

Nationwide Building Society Loans by Dwelling Type (%)

	Detached	Semi-Detached	Terraced	Bungalow	Flat	Converted Flat	Average size (Sq ft)	Total
Greater London	5.8	23.2	36.1	1.6	18.7	14.6	931	100
O.M.A.	25.1	30.1	28.1	6.3	8.5	1.9	989	100
U.K.	21.0	29.2	29.3	9.2	8.1	3.2	998	100

Table 7

Characteristics of Nationwide Borrowers

	% Female	% Single	% Professional & Managerial	% Clerical and Jnr Managerial	% Skilled Manual	% Semi-Skilled Manual
Greater London	21.0	42.2	35.9	21.7	21.4	7.7
O.M.A.	12.1	28.8	39.1	16.9	24.7	6.5
U.K.	14.5	28.1	32.3	16.9	26.4	9.7

Previous Tenure

	% Owner-Occupier	% Private Rented	% Council Rented	% First-time Buyers	% Live with Family
Greater London	46.5	16.1	9.6	53.5	23.7
O.M.A.	65.2	7.5	7.2	34.8	17.6
U.K.	57.7	9.1	9.9	42.3	19.4

Source: Nationwide Building Society Bulletin Nov. 1984.

Table 8

Households by Tenure

	Greater London		O.M.A.		O.S.E.	
1966						
Owner occupied	1,011,570	(38.5)	815,530	(53.5)	715,160	(52.7)
Rented council, New Town	567,130	(21.6)	391,410	(25.7)	259,520	(19.1)
Other unfurnished	747,680	(28.5)	196,180	(12.9)	235,120	(17.3)
Other furnished	224,680	(8.6)	37,180	(2.4)	52,950	(3.9)
Other	73,190	(2.8)	85,400	(5.6)	93,820	(6.9)
Total	2,624,250	(100)	1,525,780	(100)	1,356,570	(100)
1971						
Owner occupied	1,070,860	(40.4)	970,850	(56.5)	870,975	(56.3)
Rented council, New Town	654,340	(24.9)	457,585	(26.6)	318,285	(20.6)
Other unfurnished	625,300	(23.4)	222,275	(12.9)	265,400	(17.2)
Other furnished	279,145	(10.5)	63,770	(3.7)	88,675	(5.7)
Other	17,170	(0.6)	2,915	(0.2)	2,925	(0.2)
Total	2,651,815	(100)	1,717,400	(100)	1,546,260	(100)
1981						
Owner occupied	1,218,595	(48.6)	1,203,719	(64.0)	1,087,857	(63.9)
Rented council, New Town	770,685	(30.7)	471,975	(25.1)	365,773	(21.5)
Other unfurnished	358,144	(14.3)	163,573	(8.7)	191,938	(11.3)
Other furnished	160,227	(6.4)	42,736	(2.3)	55,716	(3.3)
Other	-		-		-	
Total	2,507,656	(100)	1,882,003	(100)	1,701,284	(100)

[1981 - Other is distributed.]
[1981 - Assumes Rented House Association, Rented Business and Rented Employment are all unfurnished.]

Source: Census

Table 9

Car Ownership and Means of Transport to Work

Greater London Households (%)

	Persons Employed	Train	Bus	Car	Tube	MC	Pedal	Foot	Home	Other	Not Stated	
No Car	1,868,060	18.7	36.9	2.5	9.3	2.7	5.3	20.3	2.2	1.0	1.0	
Cars	1,990,230	14.7	16.7	39.4	5.3	1.7	2.6	12.1	4.0	2.8	0.7	1966
No Car	1,481,870	29.4	37.3	2.8	-	1.4	3.2	21.1	-	2.3	2.5	
Cars	2,082,440	20.6	15.5	44.2	-	0.9	1.6	12.6	-	3.7	0.9	1971
No Car	821,270	12.3	32.6	4.6	19.5	2.4	3.6	20.0	1.9	3.0	-	
Cars	2,209,530	10.2	10.9	49.5	10.2	2.0	1.9	10.2	3.1	2.1	-	1981

O.M.A. Households

No Car	717,510	10.8	30.0	6.0	0.3	5.5	16.9	24.8	2.6	2.4	0.7	
Cars	1,498,660	10.6	12.1	47.5	-	2.2	6.0	12.6	4.9	3.3	0.5	1966
No Car	560,840	11.7	29.9	7.9	-	3.6	11.5	31.0	-	2.9	2.0	
Cars	1,798,530	11.5	9.8	55.0	-	1.2	3.3	13.9	-	4.3	0.9	1971
No Car	292,230	12.1	23.7	12.5	0.9	5.4	10.4	30.3	1.8	2.8	-	
Cars	2,149,490	9.4	5.8	63.2	0.8	2.5	2.9	10.6	3.1	1.7	-	1981

No Car = Household with no car
Cars = Household with access to cars

Source: Census

Table 10

Car Ownership by Area

	Greater London			Rose			England and Wales		
	1966	1971	1981	1966	1971	1981	1966	1971	1981
No. Households	2,624,250	2,651,815	2,507,656	-	3,154,814	3,583,287	15,359,680	16,509,905	17,706,492
Household No Car	58.1	53.7	44.7	-	38.6	29.7	54.4	48.2	38.5
Household One Car	36.1	38.5	41.7	-	48.8	48.4	39.3	42.8	45.6
Household Two + Cars	5.8	7.8	13.6	-	12.6	21.9	6.4	9.0	15.9
Total Cars	1,268,880	1,409,225	1,777,946	-	-	-	8,115,630	10,292,650	14,120,263

Source: Census 1966, 1971, 1981

Table 11

BR Southern Region Season Ticket by Duration

	1972	1975	1977	1978	1979	1980	1981
All Holders	316,834	321,888	328,290	305,055	312,248	328,939	308,694
Annual Season Ticket	64,788	110,928	133,235	123,754	136,971	155,028	154,096
Monthly Season Ticket	111,960	76,714	77,407	63,214	63,767	58,736	51,797

Source: BR Southern Region Data

Table 12

Population Changes

	1951	1961	1971	1981	
Greater London	8,196,807	7,992,443	7,452,346	6,713,165	
Brighton	158,068	163,159	161,351	147,336	
Watford	73,130	75,622	78,465	93,322	
Reading	114,196	119,937	132,939	-	(Old)
		126,797	139,799	133,540	(New)

Source: Census

NB: Reading affected by boundary changes in 1973 and 1977.

Table 13

Employment Patterns in Case Study Towns

	1951	1961	1971	1981
Brighton				
Total working in the town	65,108	72,420	74,070	69,950
Residents working in the town	51,558	55,340	52,160	45,030
Non-residents working in the town	13,550	17,330	21,840	24,780
Residents working elsewhere	13,369	16,110	15,760	15,350
Residents working in Greater London	2,789	3,450	3,150	2,810
Reading				
Total working in the town	52,706	59,750	73,330	80,870
Residents working in the town	43,290	44,750	46,810	44,720
Non-residents working in the town	9,416	15,380	26,440	36,150
Residents working elsewhere	8,318	11,450	13,560	16,410
Residents working in Greater London	1,377	1,650	2,170	3,170
Watford				
Total working in the town	38,852	46,680	47,330	42,120
Residents working in the town	24,724	27,500	23,970	19,540
Non-residents working in the town	14,128	19,280	23,310	22,580
Residents working elsewhere	10,353	11,290	13,100	15,130
Residents working in Greater London	5,112	4,890	5,360	7,030
Greater London				
Total working in the city	4,288,308	4,490,030	4,083,890	3,594,230
Residents working in the city	4,045,777	4,198,590	3,540,540	2,971,040
Non-residents working in the city	242,531	401,860	538,740	629,010
Residents working elsewhere	70,994	88,650	107,940	111,470

NB: For 1951 and 1961 the counties of London and Middlesex are used as an approximation for Greater London.

Source: Census.

Table 14

Industry Orders by Area of Workplace

	1951	1961	1971	1981
Brighton				
Primary	0.7	0.4	0.1	0.2
Secondary	23.1	21.4	19.8	15.2
Tertiary	20.6	21.2	18.8	16.8
Quaternary	24.5	26.1	27.5	30.4
Quinary	31.0	30.7	32.6	36.3
Inadequately Described	0.2	0.2	1.1	1.1
Total	100	100	100	100
Number	65,108	72,420	74,070	69,950

Occupation Orders by Area of Residence

	1951	1961	1971	1981
Brighton				
Knowledge	7.1	8.5	12.0	15.0
Service	58.2	56.0	55.0	57.6
Goods	34.7	34.6	29.2	22.8
Inadequately Described	-	0.9	3.7	4.5
Total	100	100	100	100
Number	57,209	74,260	72,410	67,100

Source: Census

Table 15

Industry Orders by Area of Workplace

	1951	1961	1971	1981
Reading				
Primary	1.2	1.0	0.3	0.2
Secondary	32.3	26.2	23.8	21.5
Tertiary	18.4	20.6	19.1	18.0
Quaternary	26.3	25.4	25.1	29.8
Quinary	21.8	26.4	30.9	29.9
Inadequately Described	0.1	0.3	0.7	0.6
Total	100	100	100	100
Number	52,706	59,750	73,330	80,870

Occupation Orders by Area of Residence

	1951	1961	1971	1981
Reading				
Knowledge	6.8	9.9	12.6	16.2
Service	55.3	51.8	51.7	54.5
Goods	37.9	37.1	32.9	26.6
Inadequately Described	-	1.1	2.7	2.7
Total	100	100	100	100
Number	52,604	57,640	62,870	65,580

Source: Census

Table 16

Industry Orders by Area of Workplace

	1951	1961	1971	1981
Watford				
Primary	0.3	0.2	0.1	0.3
Secondary	45.3	46.5	38.7	26.9
Tertiary	17.0	13.2	14.5	16.7
Quaternary	16.8	19.5	23.3	28.1
Quinary	20.5	20.1	22.6	27.0
Inadequately Described	0.1	0.4	0.8	1.0
Total	100	100	100	100
Number	38,852	46,680	47,330	42,120

Occupation Orders by Area of Residence

	1951	1961	1971	1981
Watford				
Knowledge	7.5	10.5	13.1	15.8
Service	51.0	48.2	51.9	53.9
Goods	41.4	38.4	32.4	27.2
Inadequately Described	-	2.9	2.6	3.1
Total	100	100	100	100
Number	35,530	39,320	38,370	36,970

Source: Census

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FIGURE 1

The South Region and Main Sub-divisions

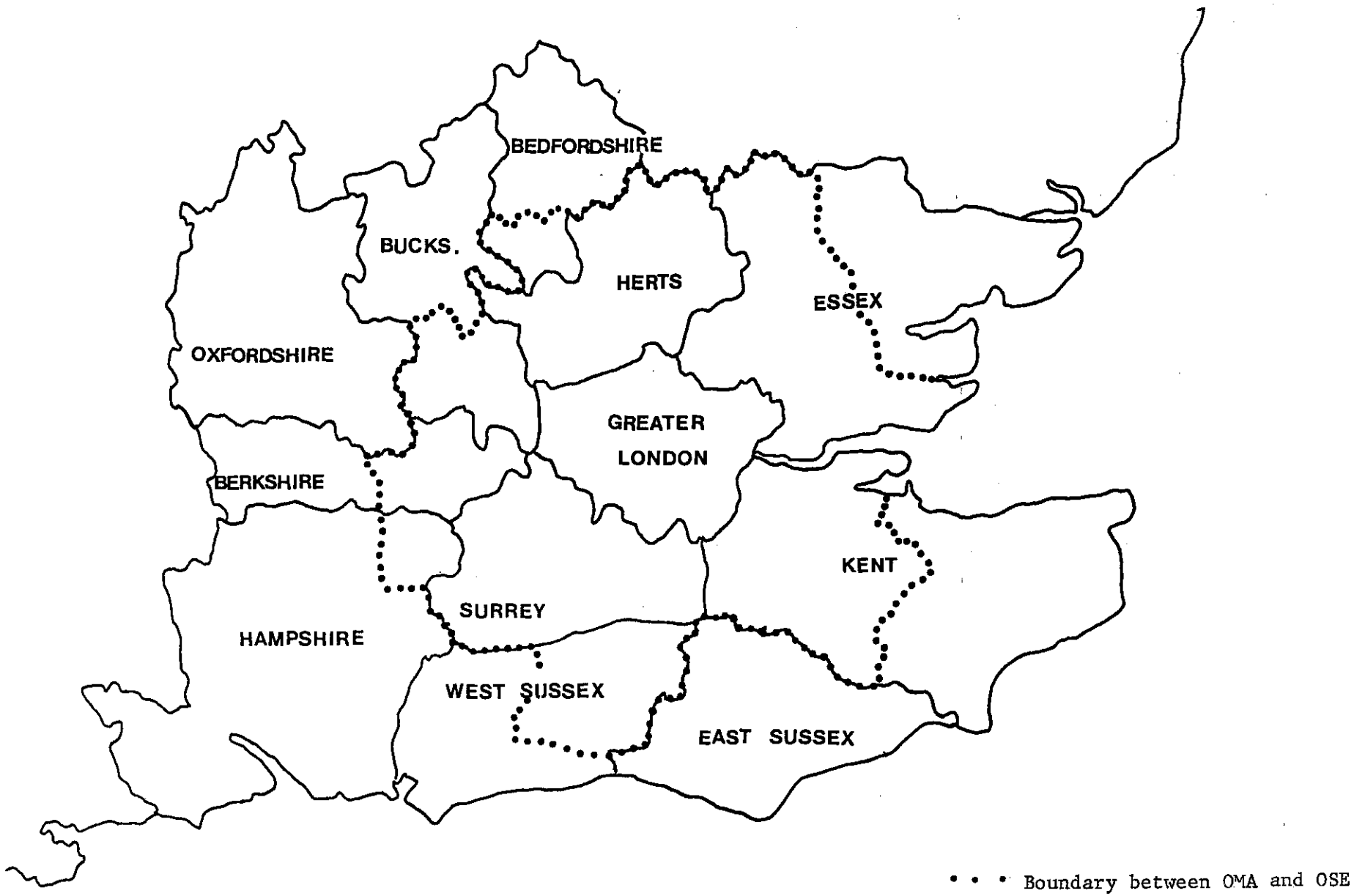
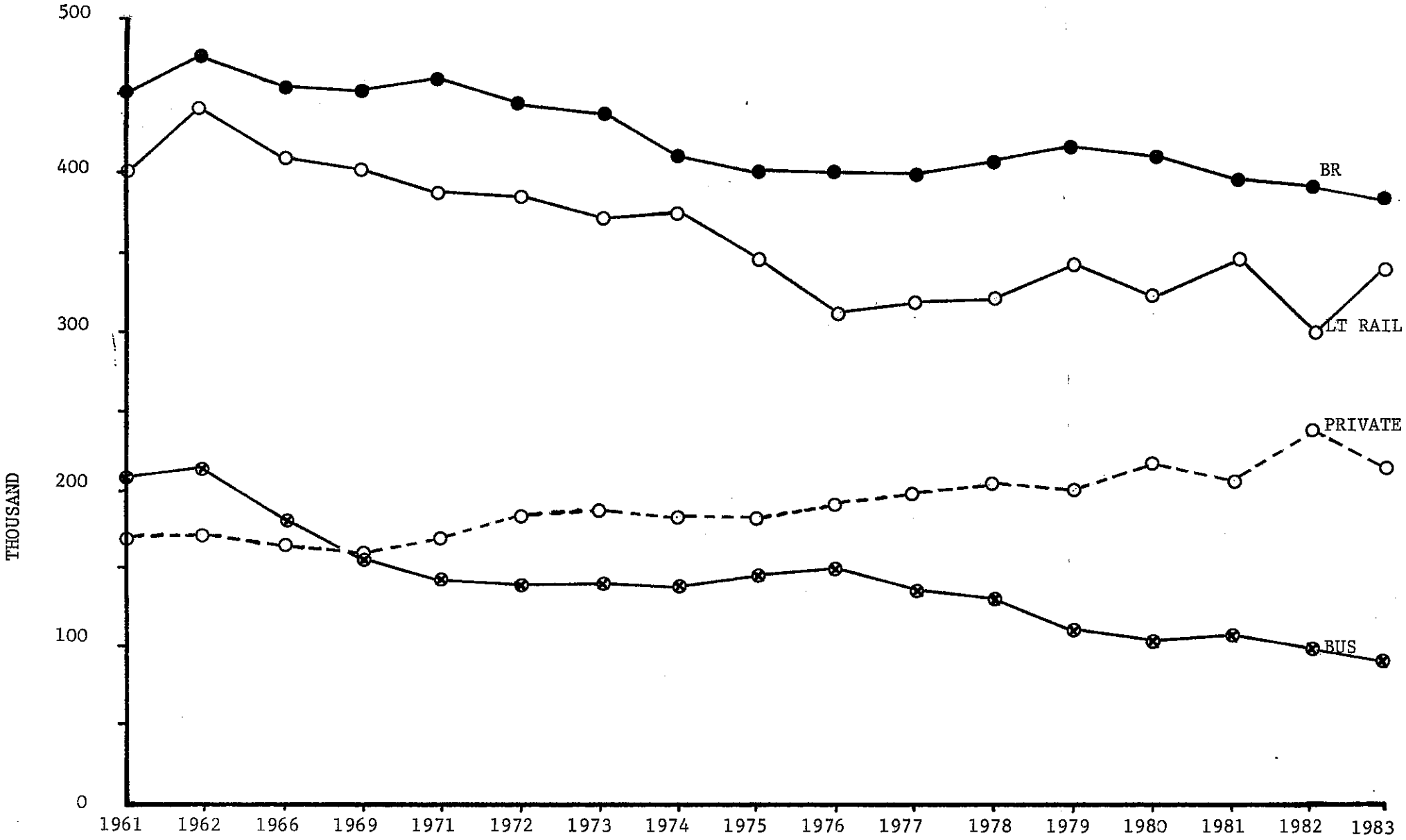


FIGURE 2

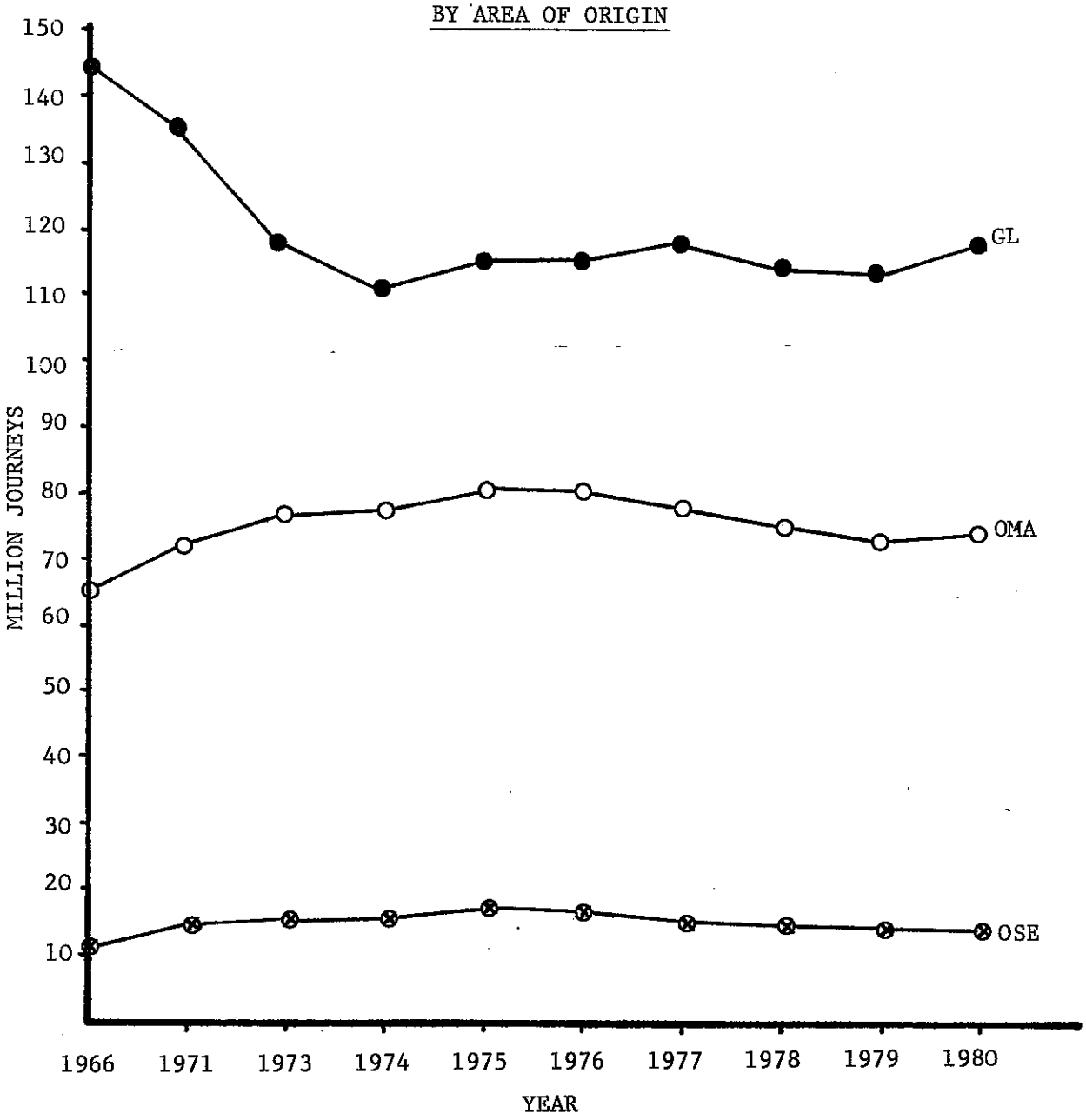
AVERAGE DAILY NUMBER OF PASSENGERS ENTERING CENTRAL LONDON (7-10am)



SOURCE: BRITISH RAILWAYS BOARD
LONDON TRANSPORT EXECUTIVE
GREATER LONDON COUNCIL

FIGURE 3

BR COMMUTER JOURNEYS TO CENTRAL LONDON BY AREA OF ORIGIN

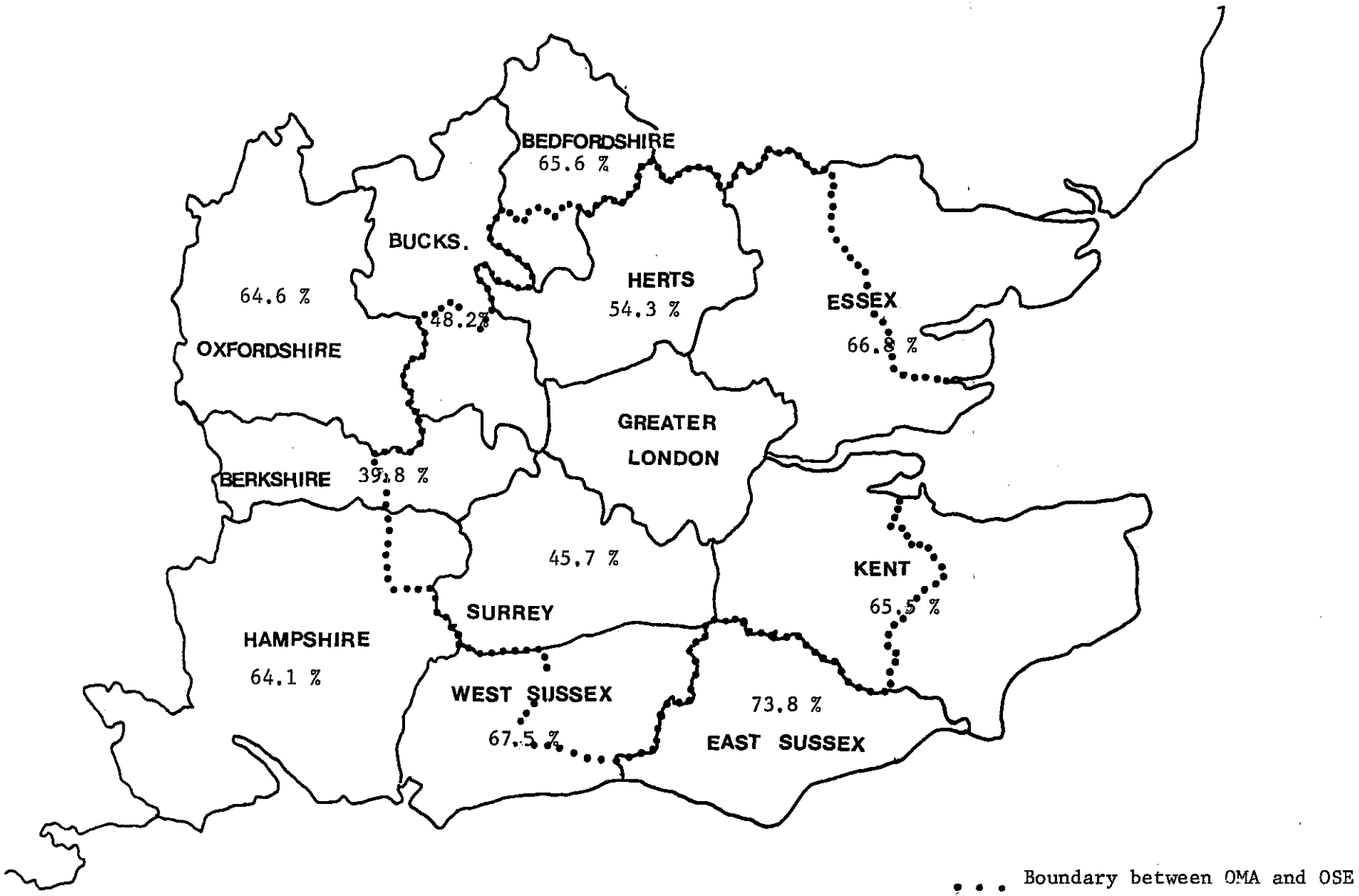


SOURCE:

TRANSPORT STATISTICS GREAT BRITAIN 1971-1981

FIGURE 4 The South Region and Main Sub-Divisions

1981 - % of commuters to Greater London travelling to Inner London by County of Origin

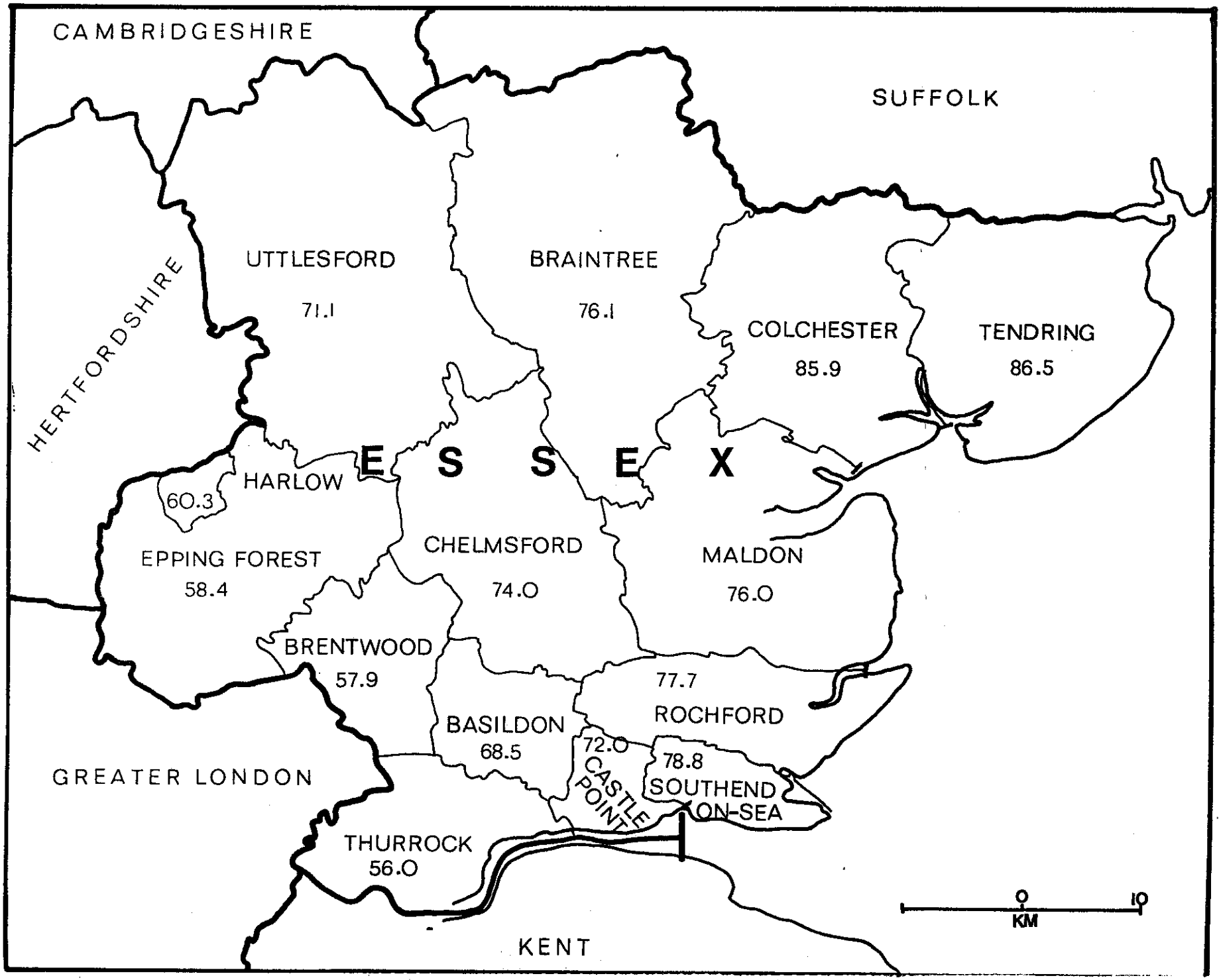


SOURCE : CENSUS

FIGURE 5

MAP OF ESSEX DISTRICTS SHOWING PERCENTAGE OF COMMUTERS TO GREATER LONDON WHO WORK IN INNER LONDON

SOURCE: 1981 CENSUS



LONDON BOROUGHS

FIGURE 6

PERCENTAGE CHANGE IN EMPLOYMENT
1966-71

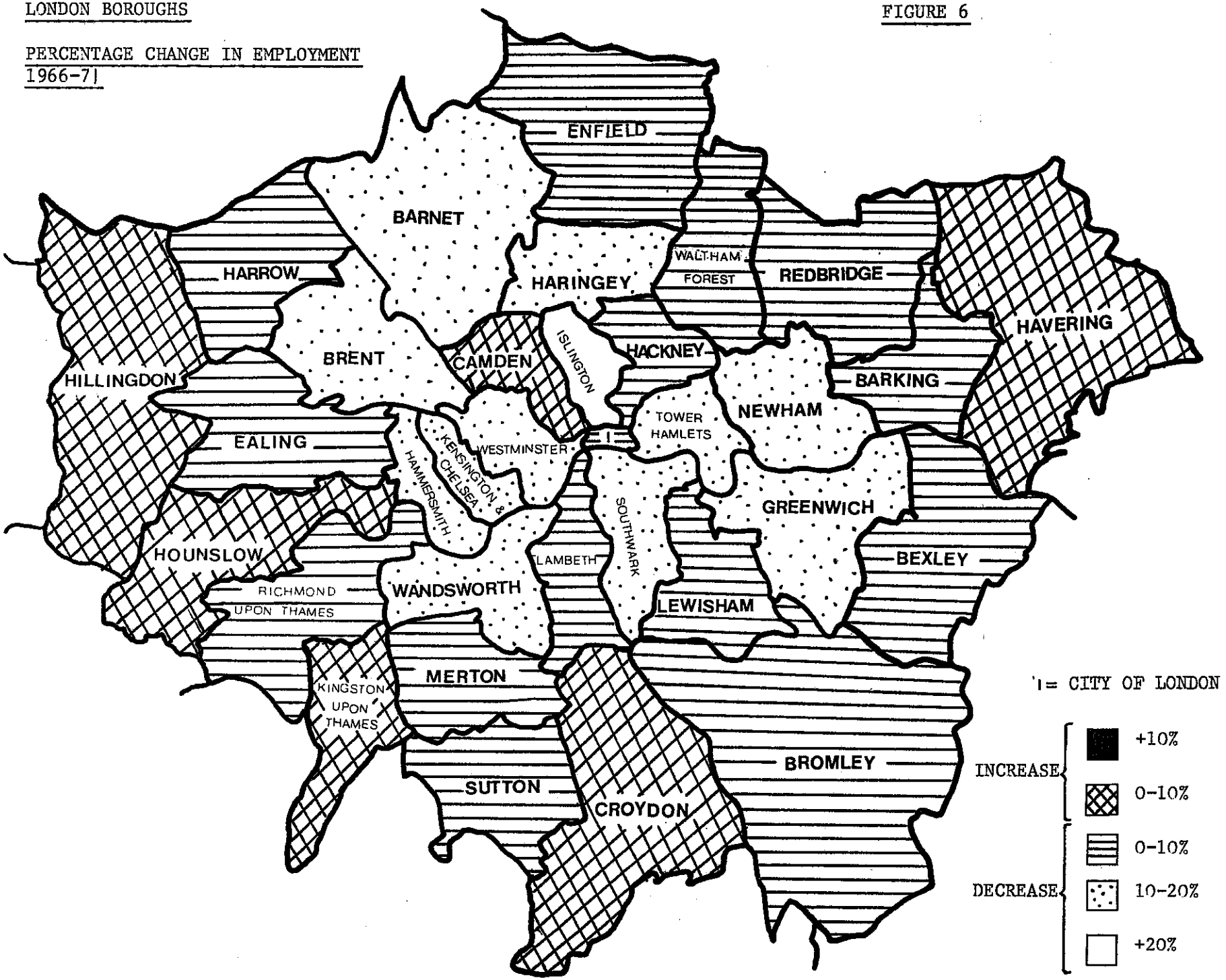


FIGURE 7

LONDON BOROUGHS

PERCENTAGE CHANGE IN EMPLOYMENT
1971-81

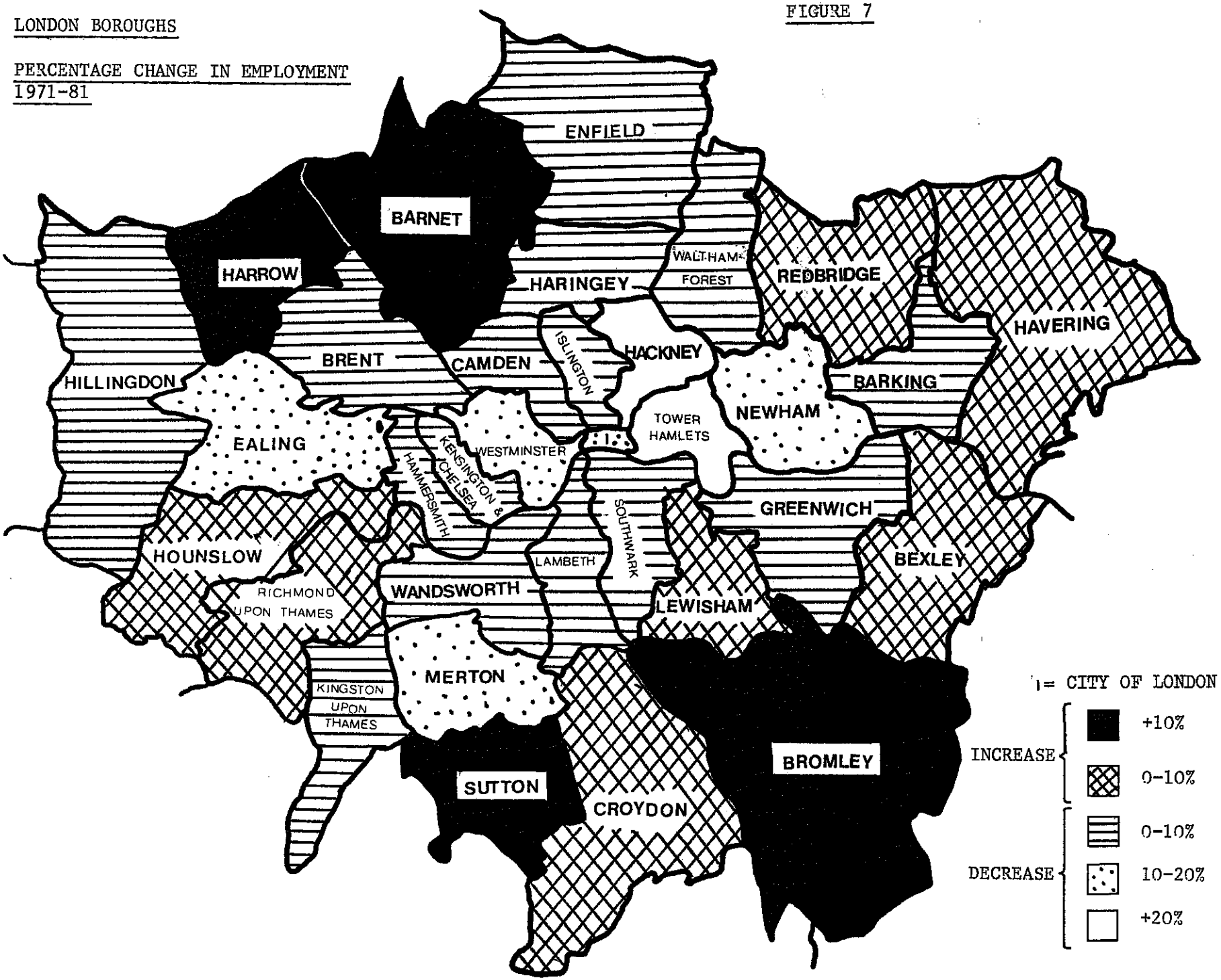
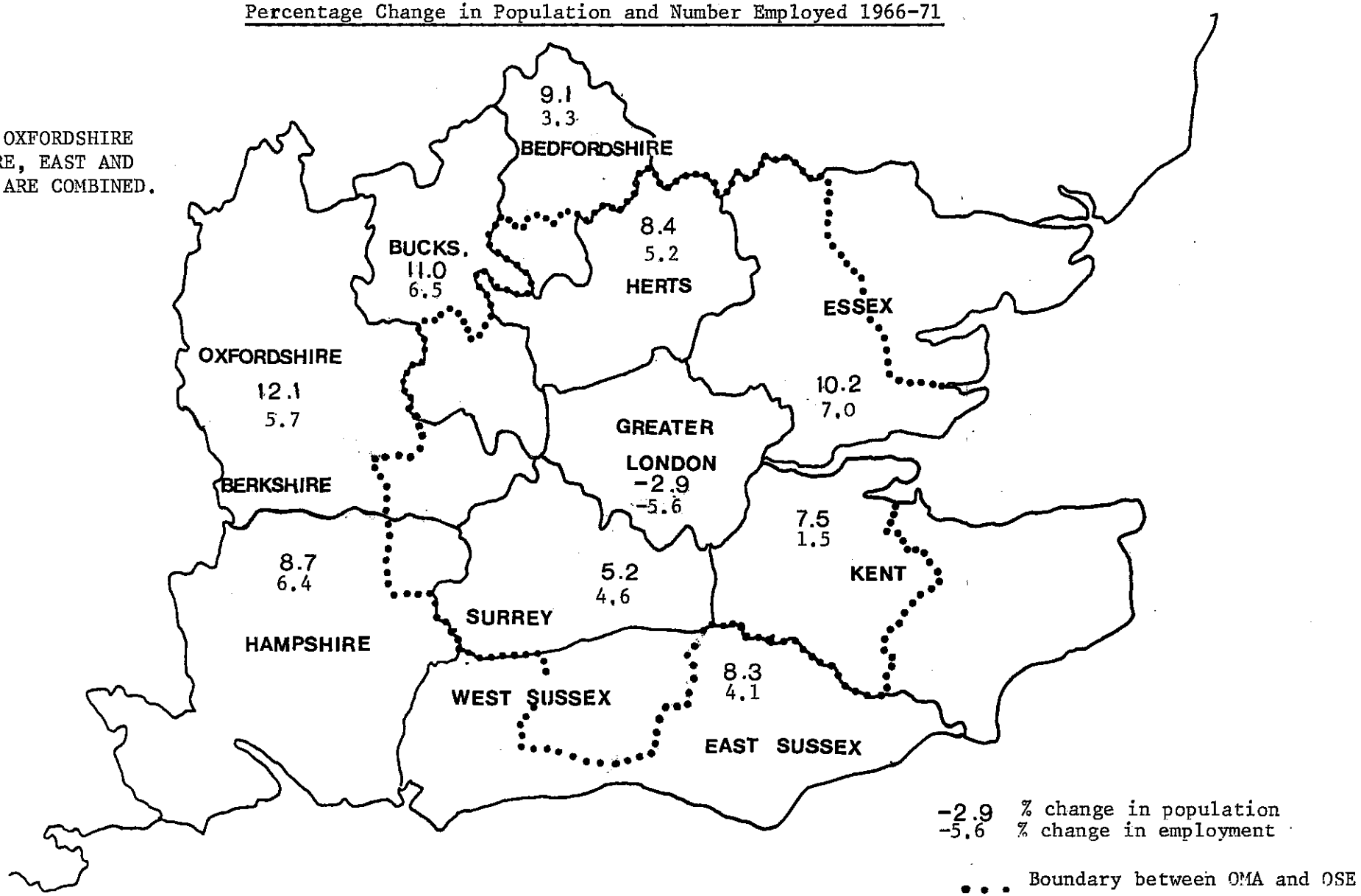


FIGURE 8

The South Region and Main Sub-Divisions

Percentage Change in Population and Number Employed 1966-71

FIGURES FOR OXFORDSHIRE AND BERKSHIRE, EAST AND WEST SUSSEX ARE COMBINED.



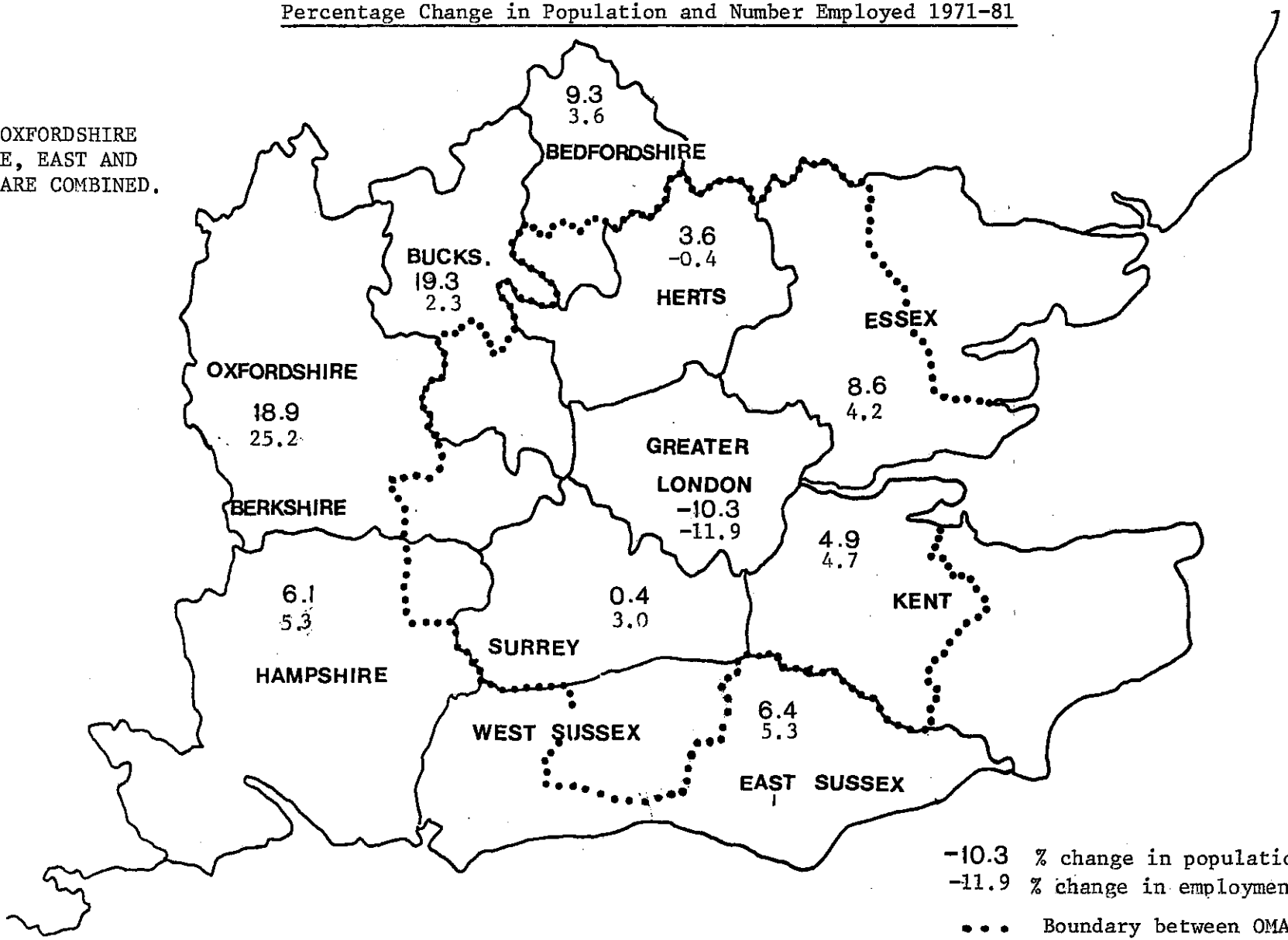
SOURCE : CENSUS

FIGURE 9

The South Region and Main Sub-Divisions

Percentage Change in Population and Number Employed 1971-81

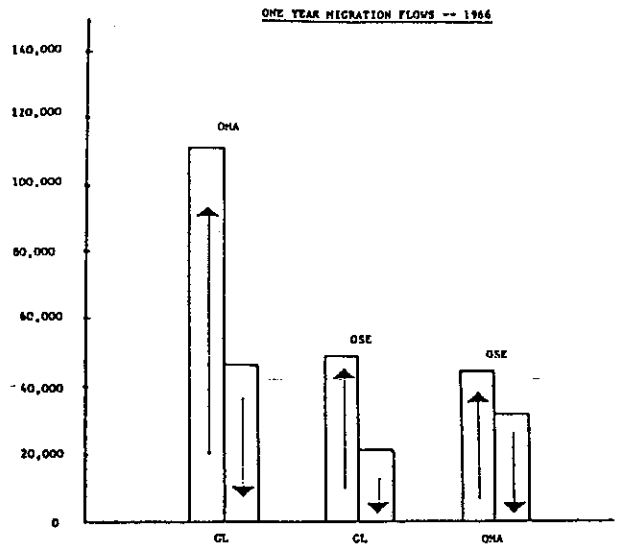
FIGURES FOR OXFORDSHIRE AND BERKSHIRE, EAST AND WEST SUSSEX ARE COMBINED.

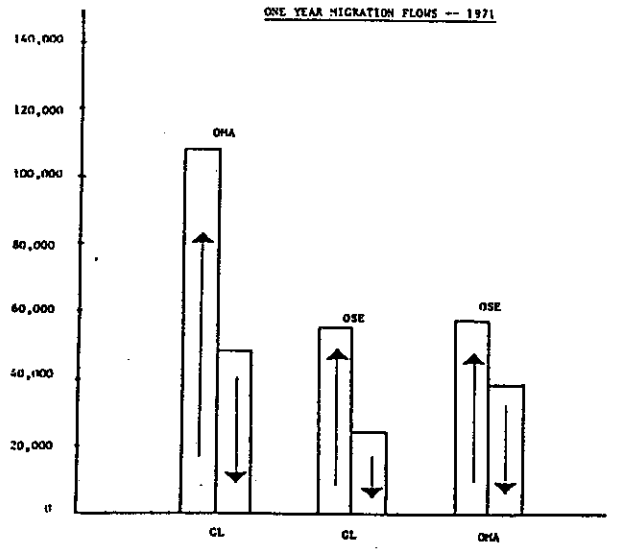


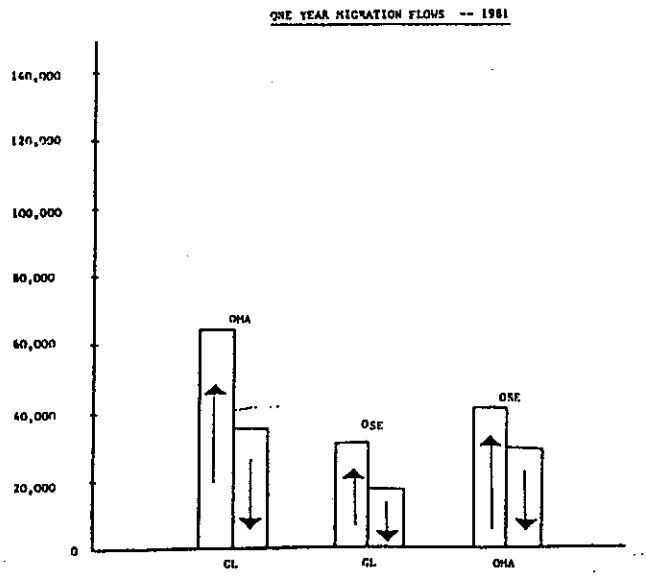
SOURCE : CENSUS

N.B. Figures for Hampshire and Bucks adjusted to allow for 1974 boundary changes.

FIGURE 10 MIGRATION PATTERNS IN SOUTH EAST ENGLAND 1966-1981







SOURCE : CENSUS

FIGURE 11

REAL PRICE INDICES OF MALE WAGE RATES AND AVERAGE HOUSE PRICES

(DEFLATED BY R.P.I.)

SOURCE: NEW EARNINGS SURVEY

LOCAL HOUSING STATISTICS

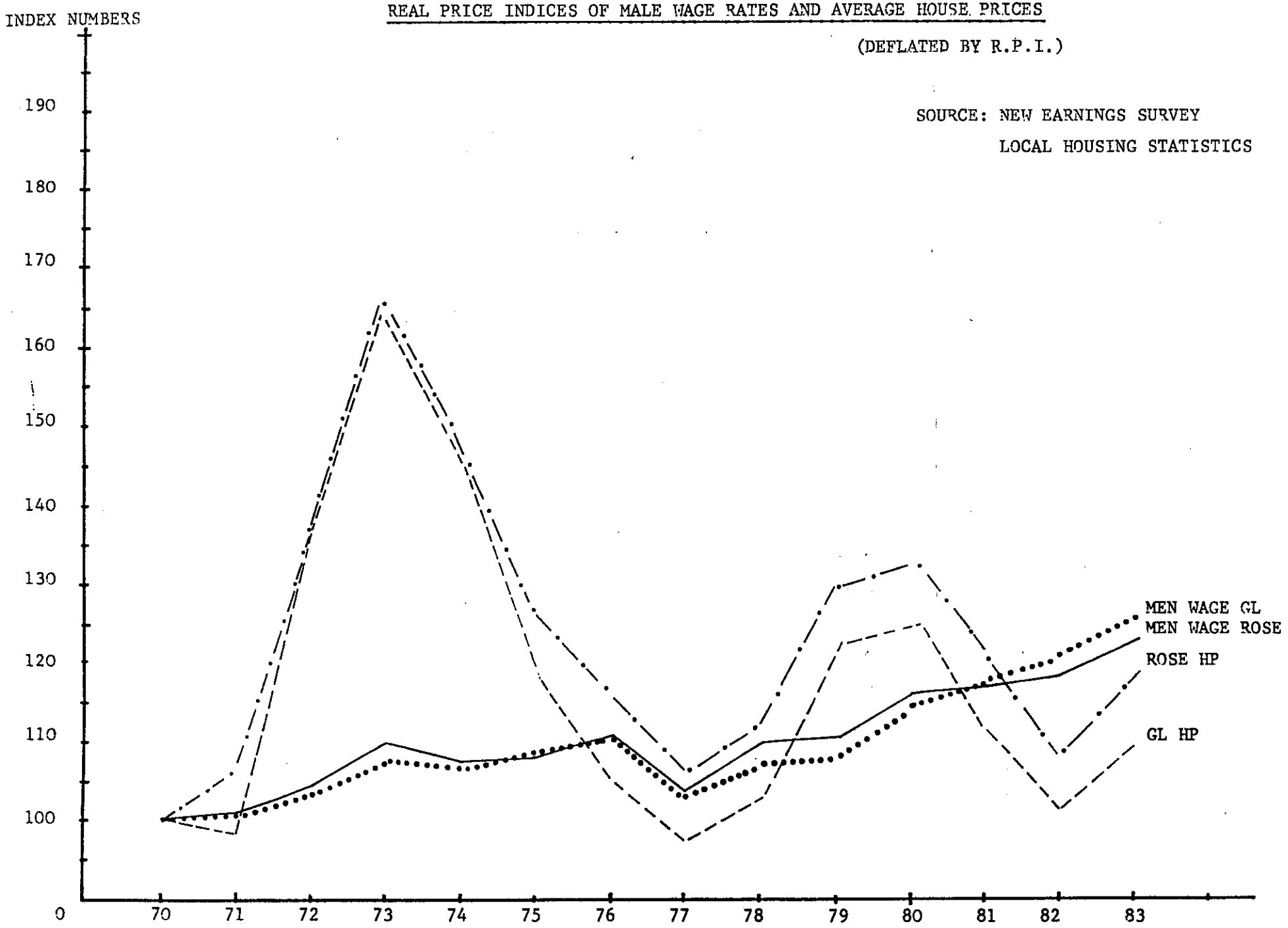
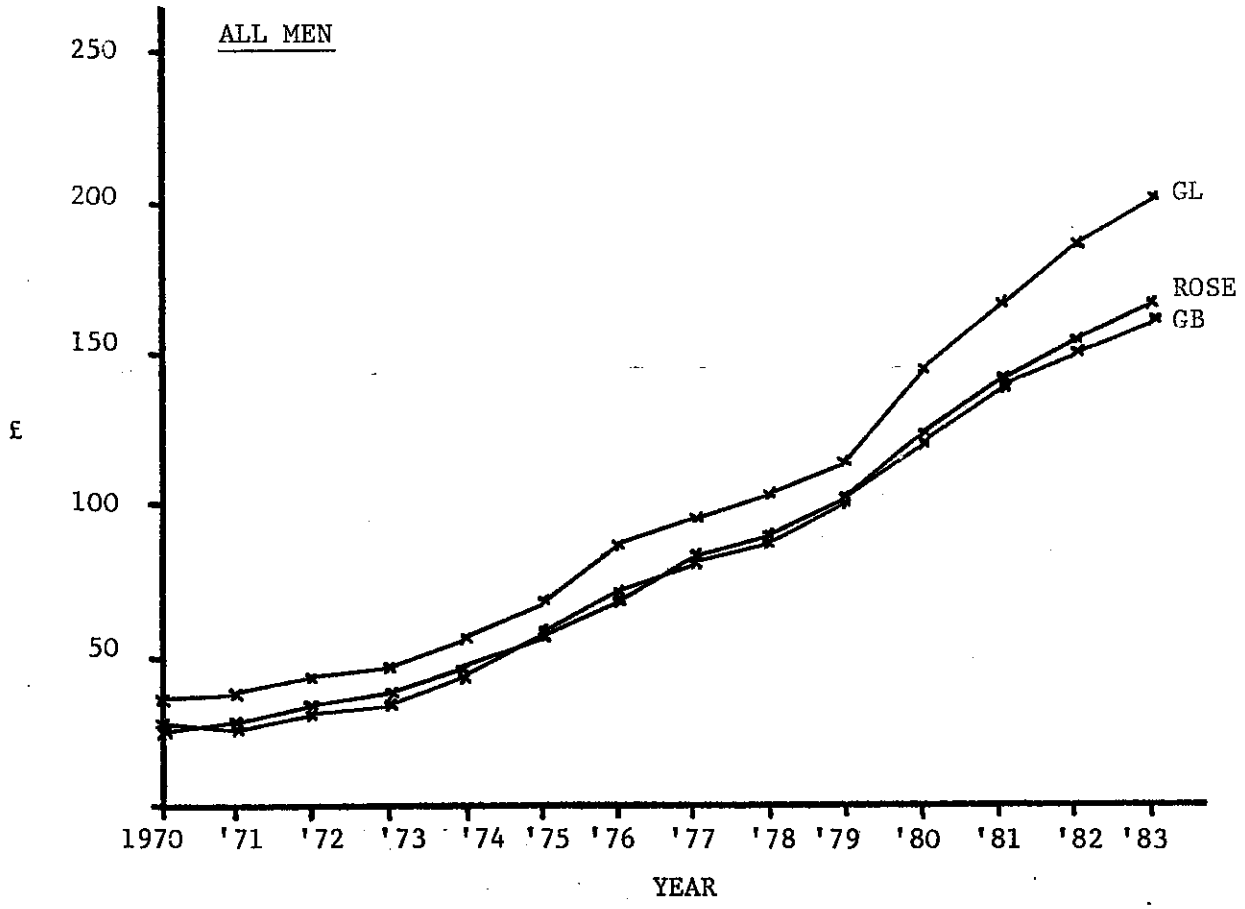


FIGURE 12

OCCUPATIONS : WEEKLY EARNINGS

SOURCE:
NEW EARNINGS SURVEY



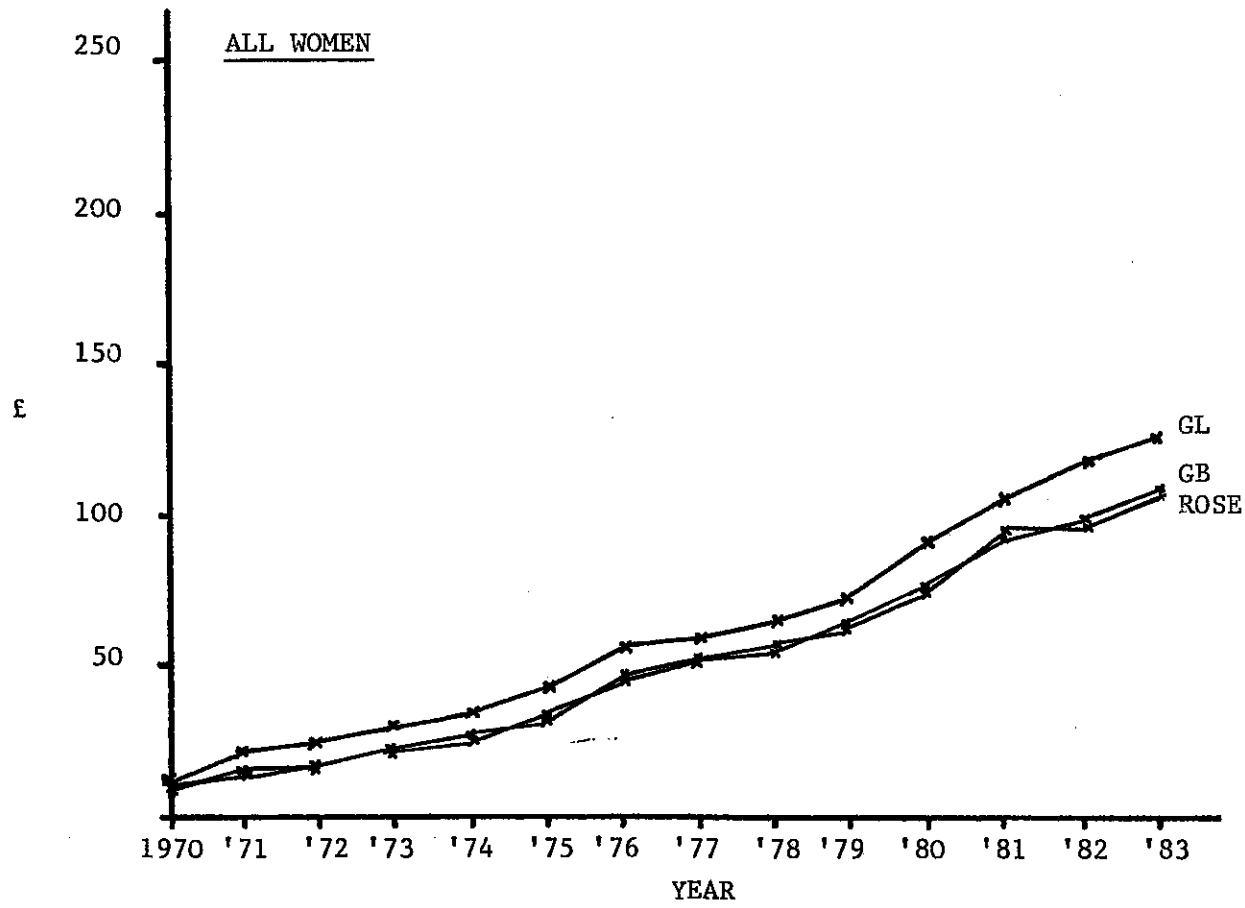
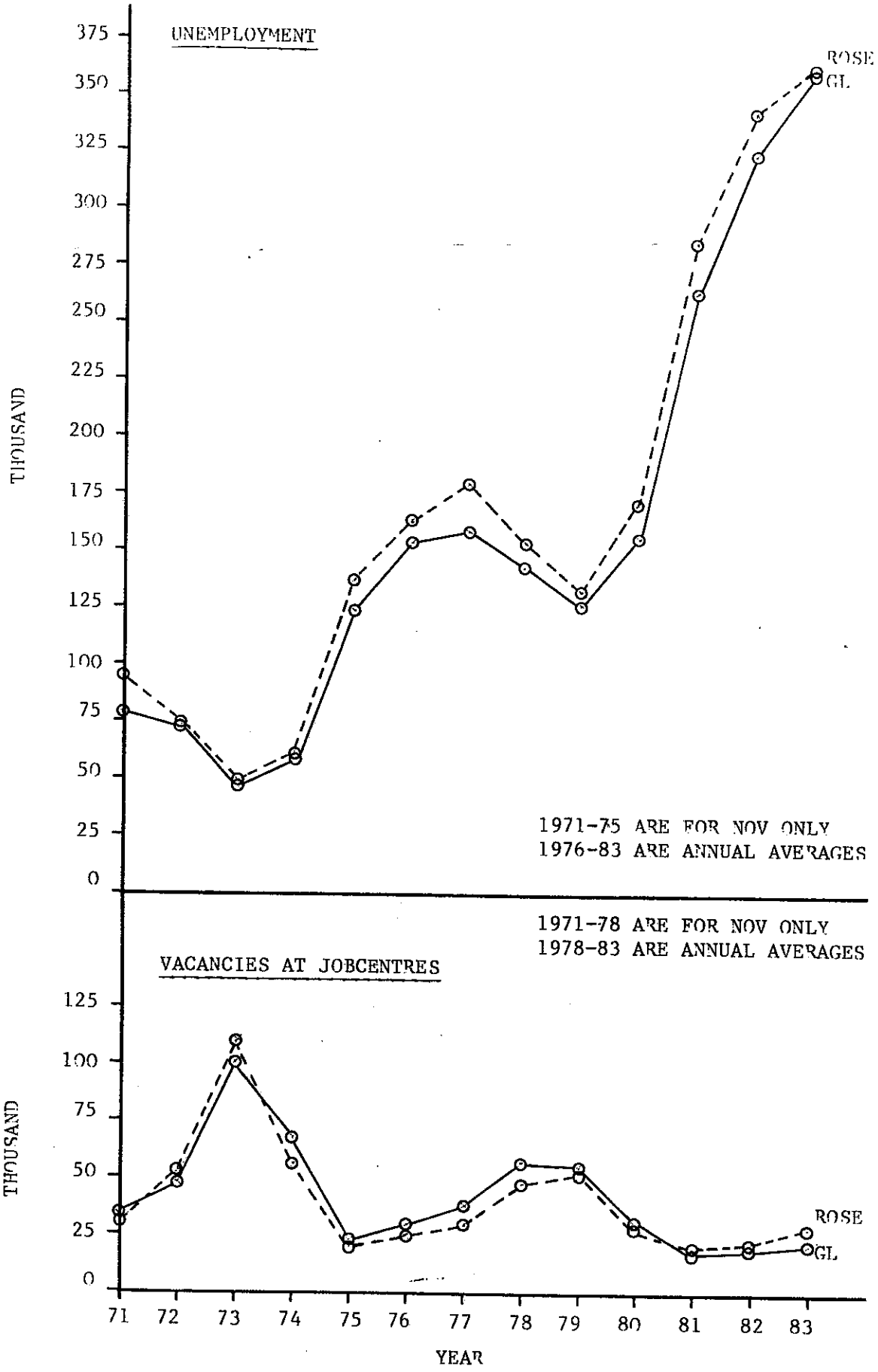


FIGURE 13 UNEMPLOYMENT AND VACANCIES



SOURCE: EMPLOYMENT GAZETTE

FIGURE 14

Figures are for fourth quarter of the year apart from 1984 which is for third quarter.

HOUSE PRICES BY TYPE (£) (AT 1980 PRICES) SOURCE: NATIONWIDE BUILDING SOCIETY

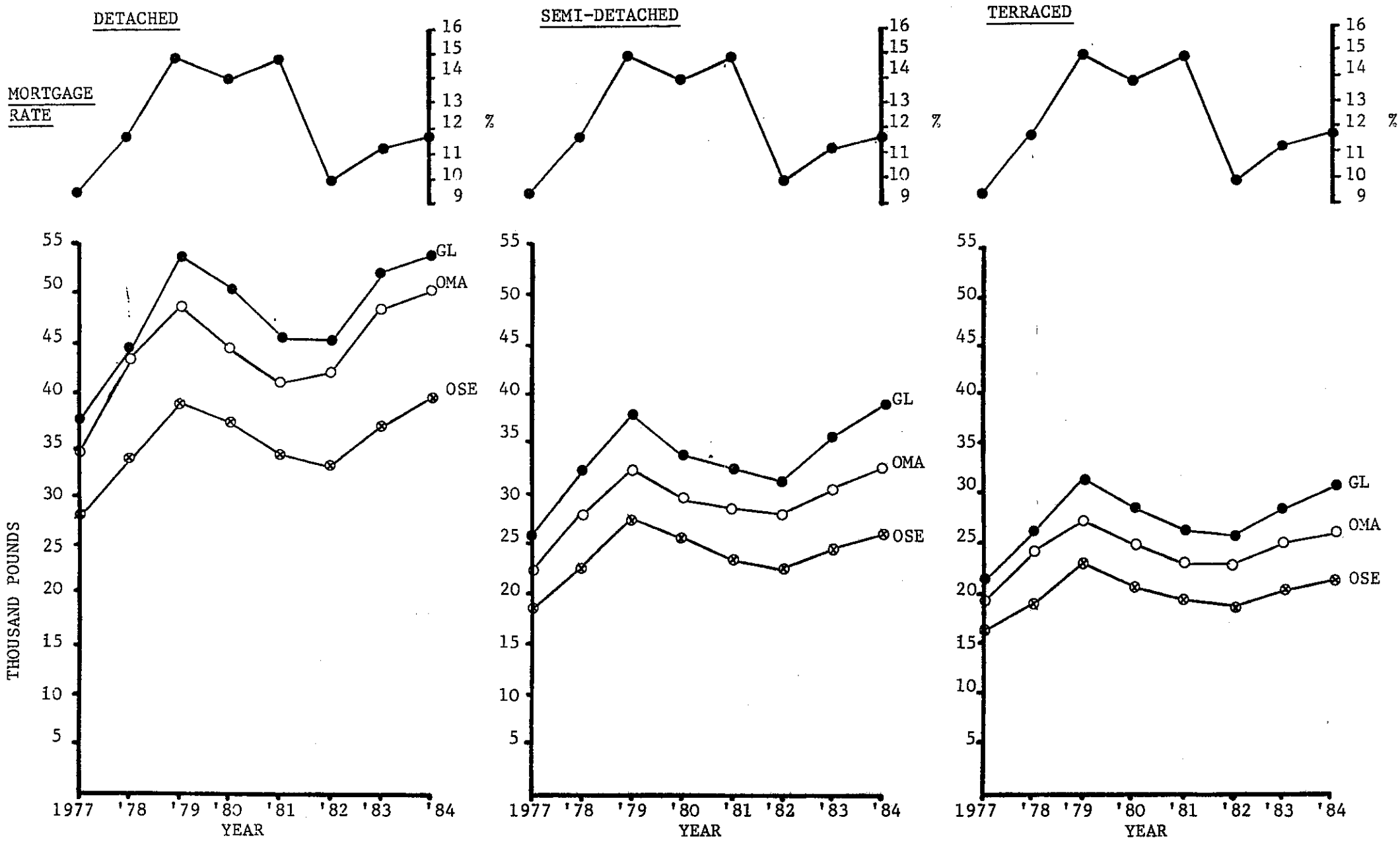
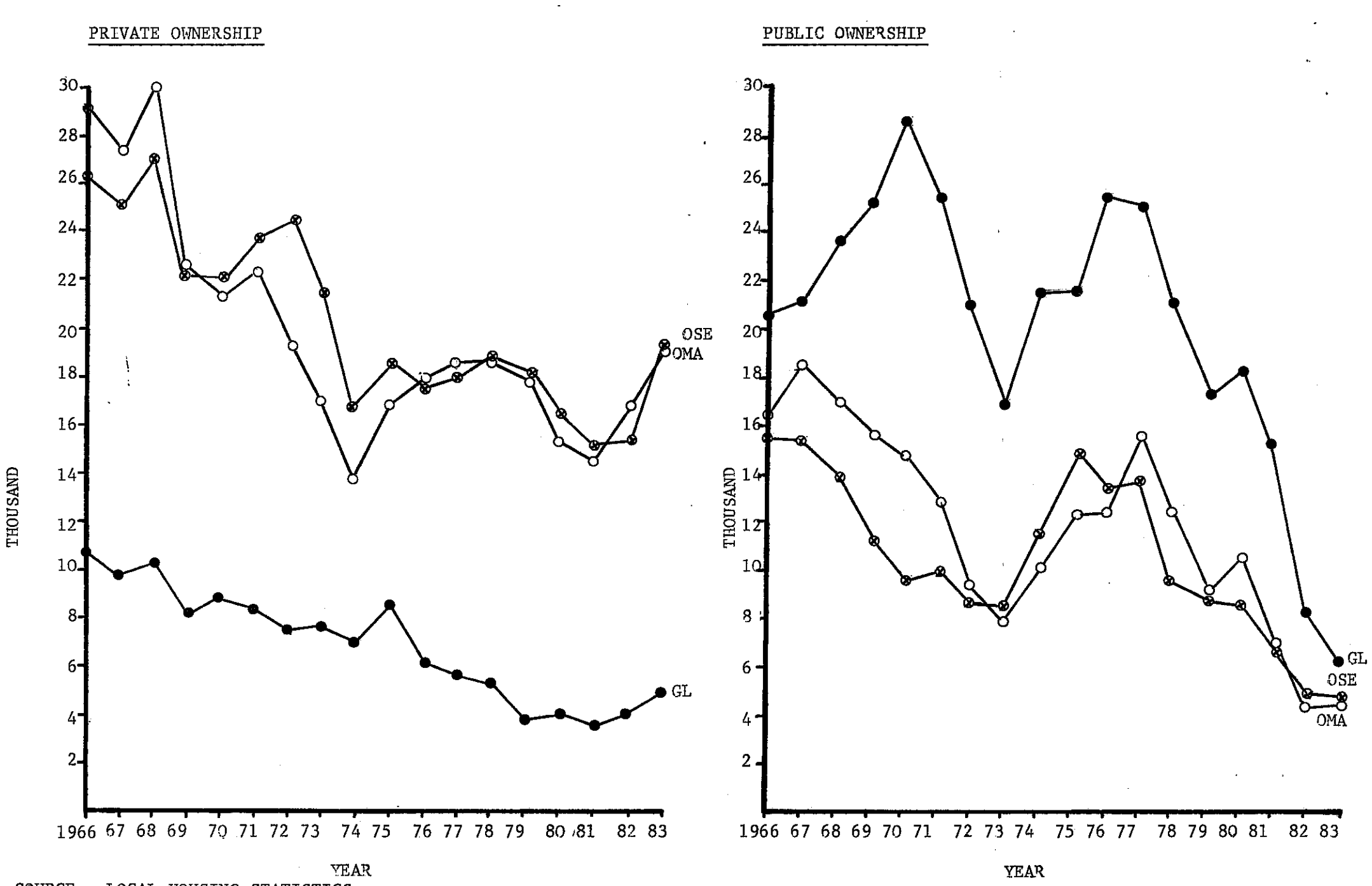


FIGURE 15

NEW DWELLINGS COMPLETED BY OWNERSHIP



SOURCE : LOCAL HOUSING STATISTICS
HOUSING AND CONSTRUCTION STATISTICS

FIGURE 16

FAMILY EXPENDITURE SURVEY

AVERAGE WEEKLY HOUSEHOLD EXPENDITURE

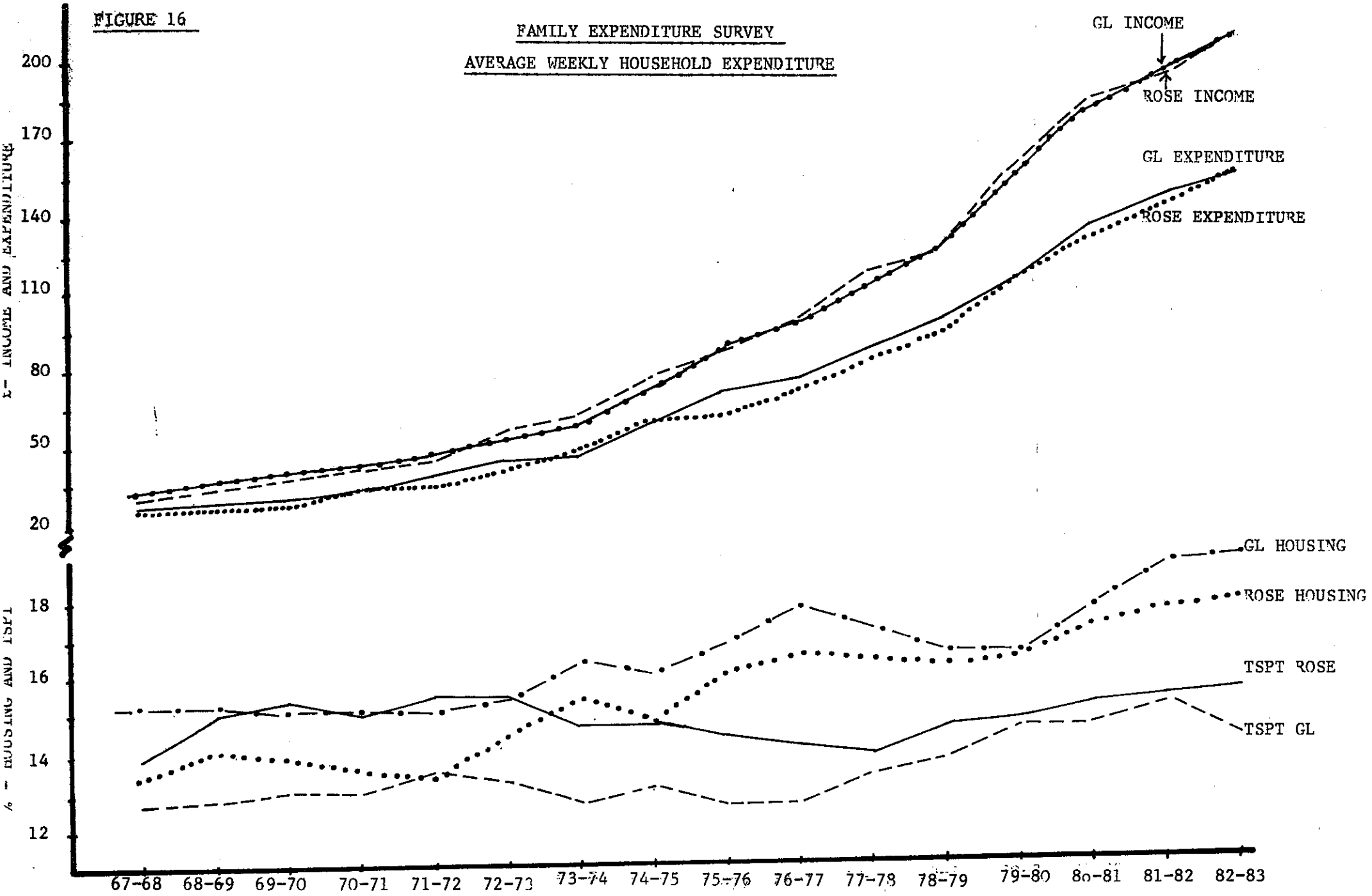
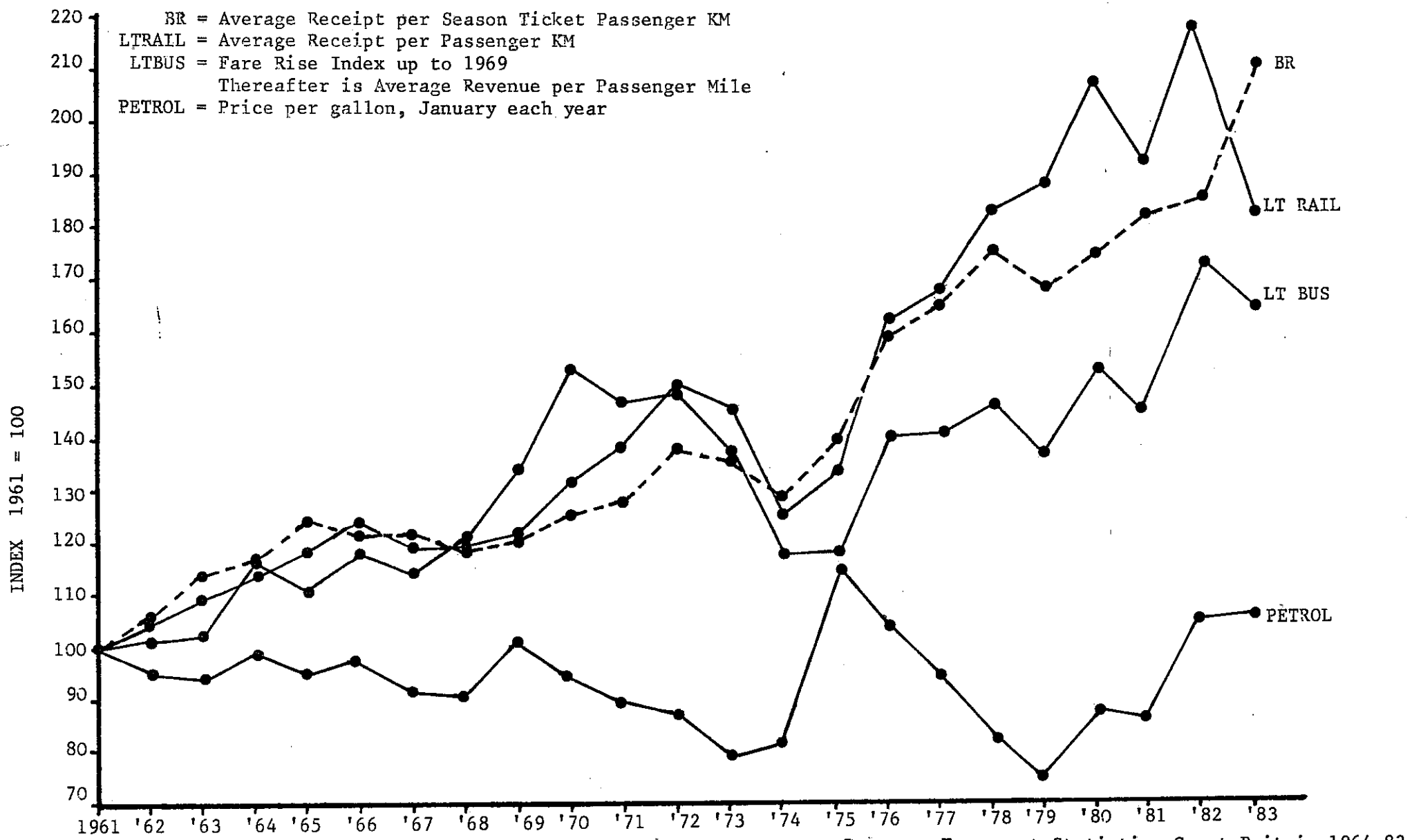


FIGURE 17

TRANSPORT FARE INDICES: REAL TERMS (Deflated by the Retail Price Index)



Sources : Transport Statistics Great Britain 1964-83
British Parliamentary Papers 1960-61
London Transport Reports
ESSO Petroleum Company