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PARTICIPATION IN HIGHER EDUCATION : A GEODEMOGRAPHIC PERSPECTIVE ON THE POTENTIAL FOR FURTHER EXPANSION IN STUDENT NUMBERS

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Abstract

Higher education in England has expanded rapidly in the last ten years with the result that currently more than 30 per cent of young people go on to university. Expansion is likely to continue following the recommendations of a national committee of inquiry (the Dearing Committee). The participation rate is known to vary substantially among social groups and between geographical areas. In this paper participation rate is calculated using a new measure, the Young Entrants Index (YEI), and establishes the extent of variation by region, gender and residential neighbourhood type. The Super Profiles geodemographic system is used to facilitate the latter. This is shown to be a powerful discriminator and to offer great potential as an alternative analytical approach to the conventional social class categories, based on parental occupation, that have formed the basis of most participation studies to date.

1. INTRODUCTION

In the last ten years or so, British higher education has undergone a major transformation in terms of student numbers. Historically, the university system has catered for only a small minority of young people and, as recently as 1989, just 16 per cent of school leavers went on to university (Robertson and Hillman, 1997). A change in government policy in the late 1980s led to a dramatic expansion in the university system with the result that by 1993 the national participation rate among young entrants (age participation index : API) had risen to more than 30 per cent. This expansion occurred much more rapidly than the government had intended with the result that a cap was placed on any further growth in publicly-funded full-time undergraduate student numbers. Among OECD countries, Britain's enrolment rates in universities are now among the highest, exceeded only by those of Canada and the United States (The Economist, 1997).

Expansion in higher education is now firmly back on the political agenda in the UK. The Terms of Reference of a National Committee of Inquiry into Higher Education (the Dearing Committee), set up in 1996, included a specific statement that:

> "there should be maximum participation in initial higher education by young and mature students and in lifetime learning by adults, having regard to the needs of individuals, the nation and the future labour market" (National Committee of Inquiry into Higher Education, Summary Report, 1997 p.5).

The Dearing Committee's final report concluded that higher education should resume its growth:

> "The UK must plan to match the participation rates of other advanced nations : not to do so would weaken the basis of national competitiveness." (National Committee of Inquiry into Higher Education, Summary Report, 1997 p.13-14).

The report did not set a target figure for future participation, suggesting that student and employer demand should be the main determinant of future growth. It did, however, make comparisons within the UK and drew attention to the relatively high participation rates in Scotland and Northern Ireland; in these countries as many as 45 per cent of young people enter university. The Dearing Committee indicated that it would

not be unrealistic to expect the national (UK) participation to rise to this level within the next twenty years.

This paper presents the results of an exploratory study designed to examine detailed socio-economic and regional differentials in participation. It has long been recognised that the characteristics of young entrants to higher education do not match those of the population as a whole. This is particularly true of social groups, but the problems of obtaining reliable data for students and the eligible population have hampered research in this area, making it difficult to draw firm conclusions.

The present study was commissioned by the Higher Education Funding Council for England (HEFCE). It employs a geodemographic system, Super Profiles, to analyse these differentials, assigning a geodemographic category to each postcoded student address.
A new participation index, the Young Entrant Index (YEI), closely related to the API, is constructed. The dataset assembled for the research covers the home address of all eligible students in England and Wales as well as an estimate of the 18 and 19 year old age cohorts. The former serves as the numerator in constructing the YEI, while the mean of the latter is used as the denominator.

The paper is organised into four main sections. In the next section a brief review is given of earlier studies examining variations in participation rates, principally in terms of variations by social groups. This approach has well-known drawbacks and this leads us to propose an alternative method of analysis based on geodemographics. Section 3 outlines the methodology of the study, defining the measures of participation to be employed, the geodemographic classifiers and the sources of data about students. In Section 4 the results of the study are presented, by region, gender and geodemographic group. An attempt is made to establish the relative contribution of geodemographic and non-geodemographic factors to regional variations in the YEI. In a final section conclusions are drawn and proposals are made for extending the present study to include the analysis of change in participation rates over time.

2. VARIATIONS IN PARTICIPATION RATES

2.1 Analysis by Social Group

The assignment of individuals and groups to social classes and socio-economic groups is based on an assessment of occupation (OPCS, 1990; 1991). Two such classifications are widely used in Great Britain: Social Class (SC) based on Occupation and Socio-Economic Groups (SEGs). A consistent finding of work on higher education participation by social group is that SC I and II (professional and non-manual groups, are equivalent) are over-represented at the expense of SC III to V (mainly manual groups, or equivalent) sometimes to a significant degree. Egerton and Halsey (1993) took three cohorts (born 1936-1945, 1946-1995 and 1956-1965), constructed from General Household Survey data, to form a sample of 25,000 divided into Goldthorpe-Hope (GH) classes I, II and III (broadly, I is socially privileged). They showed that exposure to higher education rose from 17 per cent to 28 per cent of the cohort from the first to last cohort for GH I, whereas for GH III the rise was from 2 per cent to 5 per cent. Noting that previous work had shown no reduction in differences in participation between social groups in this century, the researchers conclude that social groups inequalities will be perpetuated.

Burnhill et al (1990) used a comprehensive survey of Scottish school leavers to examine the effects of social class on participation. The probability of attaining the minimum qualifications for higher education entrance was fitted to a model, and found to be largely a function of social class and level of parental education. However, the progression from minimum entrance qualifications to entering higher education was found to be much less dependent on social class.

A social group bias was acknowledged in past projections of higher education students. In 1984 the Royal Statistical Society's Working Party on the Projections of Student Numbers in Higher Education considered several projection models (Royal Statistical Society, 1985). All included social group either explicitly or implicitly. The Working Party recommended that calculations should take account of social group in projecting participation. The Department of Education and Science (1986) published projections of higher education students in 1986. The methodology employed modelled the Social Class composition of the 18 year old population so that different attainment rates (for

minimum higher education entrance qualifications) could be applied for each class. These assumed a range of attainment spanning from 50 per cent of OC80 1 (professional and managerial) to under 5 per cent for OC80 V (unskilled).

2.2 Justification for a Geodemographic Approach

The assignment of individuals to social groups on the basis of their occupational background has the advantage of treating people at an individual or household level and allows ready comparison with other sources of data.

However, occupation-based systems suffer from a number of drawbacks:

a. Individuals are not completely characterised by their occupations, so a particular social group may represent people with widely differing circumstances.
b. Collecting sufficiently detailed occupational information is time consuming and expensive. These difficulties limit the availability of social group data (for both students and the population).
c. Some degree of self-assessment of occupational type or status is generally involved.
d. Assignment of supplied job descriptions to occupational code (and in turn Social Class) is sometimes ambiguous (particularly when the nature of occupations is changing) and requires the supervision of a skilled person.
e. Individuals who do not have an occupation (such as the unemployed and students) are difficult to classify.
f. The aggregation of occupation types to groups represents a preconceived idea of social structure.

To avoid these shortcomings this paper employs a geodemographic approach which classifies micro-areas rather than individuals. The characteristics of households can be inferred to some extent from the nature of their immediate residential neighbourhood (the system uses micro-areas of around 150 households known as enumeration districts (EDs)). The strength of this relationship will depend on the degree of homogeneity of the neighbourhood. If the households in an ED share similar circumstances then the ED characteristics are probably a good reflection of individual households. In heterogeneous areas the match between ED and household may be less successful. Generally,

households in an ED do have many circumstances in common, which is why geodemographic classifiers are useful.

The advantages of using this approach to investigate participation in higher education are:

a. The classifications formed are based on a consideration of many characteristics rather than just one (occupation).
b. The classification obtained is largely empirical and objective.
c. Collection of geographic information (typically for postcodes) is easy, precise and relatively cheap and, in many instances, already forms part of existing national data sources.
d. The classifications formed can be richly described by the many social variables available.

The present study is the first extensive analysis of student participation rates using a geodemographic classifier. An earlier study by Tonks and Farr (1994) provided an effective demonstration of the potential of the approach by examining the numbers of university applications and acceptances processed by the central admissions services (now combined as UCAS), and comparing these figures with the numbers of young people in the 15-24 age cohort. The present research uses more refined data both in relation to student numbers and in measuring the eligible population from which these students are drawn. It is to these measures of participation that we shall now turn.

3. METHODOLOGY

3.1 Measures of Participation in Higher Education: the API and YEI

The Age Participation Index (API) is an estimate of the proportion of young people entering higher education.

$$\text{API} = \frac{\text{(number of young entrants)}}{\text{(eligible population)}} \times 100$$

In practice this becomes:

$$\text{API} = \frac{\text{(entrants aged under 21)}}{\text{(mean of 18 and 19 year olds)}} \times 100$$

Appendix 1 provides a fuller definition.

The API has evolved into a key education statistic, used both to examine trends and plan future higher education provision. The level of the Great Britain API grew steadily from around 12 in 1979 to 17 by 1989. Over the following years it rose sharply to reach the current figure of around 30 (see Figure 1).

For the purposes of this research, a new statistic, analogous to the API, was defined - the Young Entrant Index (YEI). The API itself was not considered to be suitable for the following reasons:

a. It is defined for the United Kingdom as a whole.
b. It includes higher education students in further education institutions for whom no postcode information was available.
c. It is a historic statistic which, for continuity, has had to incorporate complex and arbitrary criteria.

The YEI differs slightly from the API in respect of the students it includes. The YEI counts full-time undergraduate level new entrants (aged under 21 years) to higher education institutions in the United Kingdom. The denominator of the YEI is the same as that for the API (the mean of the number of 18 and 19 year olds). The YEI is fully defined in Appendix 1.

3.2 Geodemographic Classifiers

Geodemographic classifiers attempt to characterise people by where they live. During the past two decades much academic and commercial effort has been spent on developing increasingly sophisticated classifiers (Batey and Brown, 1995). Most of the systems today are based on the 1991 census data by enumeration district (ED, typically 150 households) which is in turn referenced by the United Kingdom postcode system. Several geodemographic classifiers are available offering broadly similar services. This research uses the CDMS Super Profiles system developed at the University of Liverpool by the present authors.

Construction of the Super Profiles Classification

The development of the Super Profiles Classification is fully described in Brown and Batey (1994a). A brief outline is given here. For 120 census variables (85 with 100 per cent coverage of households, 35 with 10 per cent coverage) from the 1991 Census information was extracted at the enumeration district (ED) level (output area, OA in Scotland). The mean size of English and Welsh EDs is 180 households (around 450 people), in Scotland the mean size of the OAs is 53 households (around 130 people). Small EDs and OAs (less than 100 households) were found to exhibit different characteristics from the more populous districts. To avoid forcing together areas that are different, these small areas and the Scottish OAs were treated separately.

The extracted variables were examined to find the extent of their variation across districts. Those which showed useful variation (79 in total) were selected for analysis. Principal component analysis was applied to establish eleven dimensions of the data which could explain most of the observed variation (72 per cent explained by the first six components, with 25 per cent by the first component). Separate cluster analyses were carried out for each of the three data sets (large English EDs, small English EDs and Scottish OAs) and the results were brought together to give a total of 590 clusters. Some areas had a large proportion of difficult-to-classify cases (for example, large institutions). These were excluded from the process and appear as an extra unclassified group at each level of the classification. The proportion of EDs that were unclassified is small, ranging between 1 and 2 per cent depending on the region.

After the initial clustering stage extra layers of information were added. Information from the Electoral Roll (seven variables, mainly periods of residence), commercial trading data (home shopping organisation) and the Target Group Index (TGI, produced by the British Market Research Bureau) were added to the existing classification. The TGI is derived from a regular survey of around 24,000 respondents, concerned mainly with patterns consumption and preferences. The variation of these variables across the 590 clusters was examined in a similar way to the census variables. Only five variables (three Electoral Roll, two trading data and no TGI variables) were considered suitable for cluster analysis. The other variables were retained in the classification as descriptor variables.

Cluster analysis was repeated to reduce the 590 clusters to 160 second-level clusters. The final stage of aggregation took these second-level clusters to Subgroup Areas (40) and then Lifestyle Neighbourhoods (10). This process involved both clustering and experimentation to find stable groupings, paying particular attention to creating useful Lifestyle Neighbourhood categories.

3.3 YEI Students: Data Sources

Eligible Students

United Kingdom higher education institutions are required to supply information on their students to the Higher Education Statistics Agency (HESA). These returns are collated into a student record which, for each student, contains enough information to determine whether the student is eligible for the participation count. For each student a postcode is recorded. For nearly all full-time students this postcode is collected by the Universities and Colleges Admissions Service (UCAS) when the student enters the application process (85 per cent of applications for entry in 1994 were received by December 15 1993), and can be assumed to be the parental address for most entrants under 21 years of age. See Appendix 1 for further information about the criteria used to define eligible students.

Postcode data for students matching the YEI definition were derived from the July HESA student record for the academic year 1994-95.

Eligible Population

To estimate the extent of participation in higher education for a particular subset of the population, the number of potential entrants must be estimated. This quantity is known as the eligible population. For the YEI (as for the API) the eligible population is taken as the mean number of 18 and 19 year olds. In this research, we required the number of 18 and 19 year olds for each ED. This precluded the use of official population estimates such as those provided by the Government Actuary's Department as they are not available for small enough geographical areas. For the purposes of this research a simple estimate was made from the 1991 Census Small Area Statistics. The basis upon which this estimate was made is outlined in Appendix 1.

4. RESULTS OF THE ANALYSIS

Calculation of the YEI for England as a whole produces results which show that the numbers of male and female students are remarkably similar, with YEIs of approximately 30-31 per cent. Values for the YEI were also obtained for every combination of Subgroup Area, gender and region. These results can now be examined in detail.

4.1 Analysis by Region

The geographical regions used in this project are those defined by the UK Government for its Regional Offices. Figure 2 shows the proportion of the English YEI eligible population in each region. Most of the regions hold between 9 and 12 per cent (50,000 to 65,000) of the English total. The exceptions are Merseyside and the North East (3 per cent and 6 per cent respectively), which are small, and the South East (16 per cent) which is markedly more populous than the other regions.

The number of eligible people and YEI students in each region are shown in Figure 2. YEI for each region is shown in Figure 3 (with the male and female YEIs for each region superimposed). The YEI ranges from 25 per cent (North East) to 36 per cent (London). In most regions the female YEI is slightly higher than the male YEI.

4.2 Analysis by Geodemographic Group

The Lifestyle Neighbourhood and Subgroup Area classifications are presented in Tables 1 and 2. There are 10 Lifestyle Neighbourhoods (labelled A-J) and 40 Subgroup Areas (numbered 1 to 40 and prefixed by a letter). Each Lifestyle Neighbourhood is an aggregate of between three and seven Subgroup Areas. The first letter of the Subgroup Area code indicates the Lifestyle Neighbourhood of which it is a component. The number of a Subgroup Area is the position in a descending rank of estimated median income (see the Technical Annex for details). Similarly, the Lifestyle Neighbourhoods are ranked A to J in descending order of estimated income.

The division of the English eligible population into Lifestyle Neighbourhoods is shown in Figure 4. The Lifestyle Neighbourhoods are comparable in size of population to the

regions: most Lifestyle Neighbourhoods have been 8 and 12 per cent of the English eligible population. Lifestyle Neighbourhood F (mainly rural areas) and Lifestyle Neighbourhood G (areas with a high proportion of senior citizens) are notably small, totalling less than 7 per cent of the eligible population. Lifestyle Neighbourhoods C and D (characterised by mature non-manual couples and young families respectively) are large, together accounting for over 30 per cent of the eligible population.

The numbers of the eligible populations and YEI students for each Lifestyle Neighbourhood are shown in Figure 4. The YEI for each Lifestyle Neighbourhood is shown in Figure 5 (with the male and female rates overlaid). Between the Lifestyle Neighbourhoods, the YEI ranges from 10 per cent to nearly 60 per cent. The chart suggests a decrease in the YEI from Lifestyle Neighbourhood A to Lifestyle Neighbourhood J. Lifestyle Neighbourhoods D, E and F appear to counter this general trend but this may be misleading, given the small differences in income between middle ranking Lifestyle Neighbourhoods and the aggregate nature of the Lifestyle Neighbourhoods.

Lifestyle Neighbourhood F is characterised by rural areas, and when ranked by the income measure this reduces its apparent affluence relative to urban areas. When ranked by wealth related census variables Lifestyle Neighbourhood F comes out rather better, being second only to Lifestyle Neighbourhood A in affluence. Lifestyle Neighbourhood D is notable in being very large (17 per cent of eligible population, seven Subgroup Areas) and is strongly defined by a 'lifestage' element (in particular, young families) rather than affluence. This means that the YEI for Lifestyle Neighbourhood D is an aggregate of very different Subgroup Area YEIs. If the seven Subgroup Areas forming Lifestyle Neighbourhood D are split according to median income two 'sub-Lifestyle Neighbourhoods' are obtained. D(i) comprises D01, D08 and D09 (4.6 per cent of the eligible population) and has a YEI of over 40 per cent. D(ii) comprises D13, D15, D27 and D28 (12.5 per cent of the eligible population) and has a YEI of 20 per cent. The income figures for the sub-lifestyles would place D(i) between A and B and D(ii) between F and G.

A link between affluence measured by median income and the YEI is also suggested by Figure 6 in which the YEI is plotted against the estimated median income for each of the 40 Subgroup Areas. The median income measure of affluence (see Appendix 2) has a characteristic of being extremely flat in the middle range (the 10 Subgroup Areas D13 to G32 all fall within a £1000 range of income). Despite this limitation (which contributes to the spread of YEI values in the middle income areas) Figure 5 suggests a trend of rising YEI for rising income.

4.3 Analysis by Gender

An initial analysis showed that, although there are slightly more male than female YEI students, the female YEI is higher (because the female eligible population is smaller). The YEI for English women is 31.2 per cent and for English men 30.2 per cent, a relative difference of 3 per cent. The participation by gender is fairly even for all the geodemographic groups and, for this reason, men and women have been combined in most of the analyses.

Figure 7 shows the distribution of gender YEIs as a proportion of the person YEI. For each of 400 analysis cells (created by the 40 Subgroup Areas in each of the 10 regions) the gender YEIs were expressed as a proportion of person YEI. For example, if a particular cell has a male YEI of 45 per cent and an overall person YEI of 50 per cent then the male YEI is recorded as being 90 per cent of the person YEI. A small number of analysis cells were disregarded because they had an extremely low eligible population (less than 30 individuals). Note that the plot in Figure 7 is not exactly symmetrical about the 100 per cent point as the numbers of males and females in the eligible population are not equal.

Generally higher YEIs for women are indicated by the female plot in Figure 7 being displaced to the right relative to the male plot. Of the male students, 35 per cent have a YEI 97 per cent or less of the person YEI, 48 per cent have a YEI within 3 per cent of the person YEI and 17 per cent have a YEI more than 103 per cent of the person YEI.

For the female students the proportions are 14 per cent (97 per cent or less of person YEI), 46 per cent (within 3 per cent of person YEI) and 40 per cent (more than 103 per cent of person YEI).

A small number of cases have extreme gender YEI differences. The most notable consists of nearly 500 students from an eligible population of 2,500, where the male YEI is 23 per cent and the female YEI 13 per cent. This cell is Subgroup Area E29 in Yorkshire and Humberside. The index table (Brown and Batey, 1994b) for the Subgroup Areas reveals that E29 has between 10 and 12 times the 1991 Census national average of people of Indo-Pakistani origin. This unusual predominance of male students over females is consistent with findings in the HEFCE report (1996) which notes that "Men are particularly dominant [in participation in higher education] amongst the Bangladeshi and Pakistani groups".

4.4 Possible Geodemographic Component to Regional Variations in the YEI

The results illustrated by Figure 4 show that the YEI for geographical regions ranges between 26 and 36 per cent. However the variation between Lifestyle Neighbourhoods (of comparable size to the regions) is much larger, from 10 to nearly 60 per cent (see Figure 5). This suggests that some of the observed regional variation can be explained by the differing proportions of neighbourhood types found in the regions. To investigate this effect, a new student count and YEI were calculated on the basis of each region having the same distribution of eligible population between neighbourhood types as that of England as a whole.

The population of each region was standardised to the mean English Subgroup Areas proportions. For each region the adjusted number of persons in each Subgroup Area was calculated by taking the English proportion of that Subgroup Area of the region's total eligible population. The observed YEI for each Subgroup Area was then applied to the adjusted population to obtain the adjusted number of YEI students. The YEI students were summed across all the Subgroup Areas to find the new total of YEI students and the new YEI. In a few cases the number of persons in a region Subgroup Area was less than 30. This was taken as a threshold figure for reliability: below 30 the observed YEI

was considered unreliable and the mean English rate for that Subgroup Area was substituted.

Applying this procedure reduces the range of values of the YEI from 26 - 36 per cent to 27 - 33 per cent as shown in Figure 8. In only one region (Eastern) is the adjusted YEI further from the English value than the observed YEI. The rank order of YEI by region is significantly altered. This suggests that at least part of the observed variation in YEI between regions could be accounted for by the differing proportions of Subgroup Areas.

Figures 9 and 10 summarise the main geographical variations in the YEI, by Lifestyle Neighbourhood. The maps show clearly the general decline in the participation rate, across all regions, as one moves from more affluent to less affluent Lifestyle Neighbourhoods. They also exhibit interesting inter-regional differentials which indicate that the chances of attending university vary from one part of the country to another even within the same type of residential area. In some regions (e.g. the North East) where the overall YEI (see Figure 3) is relatively low, that amongst those living in the most affluent residential areas is high, and vice versa. The maps also show that the regional distribution of YEIs in the least affluent residential areas conform more closely to the overall pattern of YEIs.

5. CONCLUSIONS

Several points are clear from this study. Among the factors investigated (gender, region and geodemographic group), the most important in determining whether a young person enters higher education is geodemographic group. The three lowest represented Lifestyle Neighbourhoods (H, I and J) account for 30 per cent of the English eligible population and have a YEI of 14 per cent, less than half the English mean. These areas are characterised by low income, high unemployment and a high proportion of manual workers. The two highest represented Lifestyle Neighbourhoods (A and B) make up 23 per cent of the English eligible population and have an YEI of 51 per cent, two thirds higher than the English mean and over three times higher than the lowest represented Lifestyle Neighbourhoods. These areas are characterised by high income, affluent lifestyles and a high proportion of non-manual workers.

More detailed analysis of the results suggests that there is a positive correlation between participation in higher education and affluence measured by income estimates.

The results obtained for the YEI are likely to be true of the API. This suggests that the current value of the API of around 30 per cent should not be viewed as a natural maximum but as a composite of very different rates.

Previous work implies that the variation of participation in higher education by social group is closely related to educational achievement up to 18 years of age (Burnhill et al 1990; Pearson et al 1989). If the educational attainment of currently poorly performing groups improved, then their rate of participation in higher education would be likely to increase. Figure 11 illustrates the number of extra English YEI entrants who would have entered higher education in 1994 if a certain minimum YEI is applied to the eligible population at the Subgroup Area level. If all 40 Subgroup Areas had a minimum YEI of 30 per cent than the number of YEI entrants would increase by 35,000 to 204,000 (a 20 per cent increase) taking the YEI for England to 37 per cent.

The present study is exploratory and therefore should not be seen as a comprehensive analysis of all aspects of variation in participation rates. It has examined cross-sectional data from the mid-1990s in relation to full-time young entrants to higher education. More work remains to be done on mature and part-time students, to establish whether their pattern of participation matches that of young full-time students. It might also be interesting to examine whether students in different subject areas or institutions come from comparable backgrounds, or whether here too there is substantial variation in participation by region, gender or residential neighbourhood type.

Given that the Dearing Committee has recommended a further expansion in student numbers, it is particularly important that this study is followed up by regular monitoring exercises that enable the YEI to be tracked over time. Some initial monitoring work is currently underway. Data are being assembled for three subsequent years : 1995-96, 1996-97 and 1997-98. For this purpose HEFCE has supplied postcoded records of the number of Young Entrants for each of the three years, with separate counts of males and females. The denominator will be based on electoral roll records which specify date of

birth and gender of young people reaching the voting age of 18. Counts are available from a commercial supplier, Equifax, by ED. This level of spatial disaggregation provides considerable flexibility in deriving YEI statistics for other geographies at higher levels of aggregation.

The annual counts, processed by ED, will enable a number of different measures of change to be calculated, both from year to year and over a longer timescale. It will be possible, for example, to estimate the differential change between years in terms of absolute and percentage change in numbers by Target Market or Lifestyle, by region. Such rates of change by region can also be translated into indices which compare the regional rate with the overall national rate of change in participation; a region matching the national average would be set to 100. In this way it should be possible to establish which regions (and which Lifestyle Neighbourhood or Subgroup Area) are leading or lagging behind national growth rates.

A variant on this form of change analysis would indicate the period of time over which a region (or geodemographic category) could be expected to take to enable it to match, or converge with, either the national average YEI or, more usefully, a specified target rate of participation, such as 35 per cent. Such a measure could be termed the 'implied convergence time' for the region (or geodemographic category), given the current rate of change in the YEI.

Finally, it is worth noting that the Dearing Committee has explicitly endorsed the area-based approach to examining participation rates. One of its recommendations urges the higher-education funding bodies "to consider financing, over the next two or three years, pilot projects which allocate additional funds to institutions which enrol *students from particularly disadvantaged localities"* (National Committee of Inquiry into Higher Education : Summary Report, 1997, p.42, Recommendation 4). This paper has gone some way towards indicating how such a recommendation might be put into effect.

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Appendix 1

Age Participation Index

Students eligible for the numerator of the Great Britain API are defined as home (United Kingdom) domiciled students aged under 21 years on 31 December of the year of entry, entering a course of full-time undergraduate level higher education for the first time in Great Britain. Note this includes United Kingdom students attending institutions in Great Britain (therefore excluding, for example, English students attending higher education courses in Northern Ireland), counts full-time entrants only and includes higher education undertaken in further education colleges. Students from the Channel Islands and the Isle of Man are counted for the numerator of the GB API but their population is not included in the denominator.

In recent times API student information was obtained from separate statistical records:

a. The Universities Statistical Records (USR), for the former Universities Funding Council funded universities.

b. The Further Education Statistical Record (FESR), for the former Polytechnics and Colleges Funding Council funded institutions.

c. The FESR analogues run by the Welsh and Scottish Offices.

The differences in data definitions between these records introduced complications. For institutions formerly recorded in the USR, the census date for the student count is 31 December and courses less than 9 months long are excluded. For institutions recorded on the FESR, the census date is 1 November. Additionally for former PCFC-funded institutions the number of students not on initial teacher training courses are reduced by 13 per cent (this being an estimate of the number of those students who have already been exposed to higher education).

The eligible population is taken as the mean of 18 year olds and 19 year olds on 31 December of the year of entry. This information is derived from Government population estimates.

YEI: Eligible Students

The present study investigates students who entered higher education (in higher education institutions) for the first time in the academic year 199495. HESA provides two student records for this academic year, relating to information collected in the autumn and summer. To obtain the numerator for the YEI students were selected from the July student record for 1994-95 in a manner similar, but not identical, to the DfEE API definition. Students were selected for the YEI count if they satisfied all the following criteria:

* home student (not Channel Islands or Isle of Man)

* under 21 years of age at 31 December 1994

* full-time course only

* undergraduate level

* new entrant (this was defined using a HESA flag variable that marks students in their first year who do not have higher education qualifications on entry)

* entering institution on or before 1 December 1994

* attending United Kingdom higher education institutions

Note that these criteria differ from those used in the GB API. The main differences are that Northern Ireland higher education institutions are included for the YEI and higher education students in further education establishments, and those from the Channel Islands and Isle of Man, are excluded.

Students attending Northern Ireland institutions were included because it was thought that excluding them would not affect all regions equally. This would then make it difficult to establish whether there was any regional variation in participation.

The correction for students changing courses (a deduction of 13 per cent from the number of non-initial teacher training students in institutions formerly funded by the PCFC) has been replaced by using the new entrant flag. It is not certain that the 13 per cent adjustment is still an accurate reflection of numbers changing course in the former PCFC institutions. Previous work has suggested that participation by the manual social groups is relatively low, and also that the students from these groups are concentrated in former PCFC funded institutions. By not applying the deduction the study probably gives an optimistic estimate of the number of students from these groups.

A small proportion of higher education is provided by the further education sector. These students have been excluded from this study because postcode information was not readily available for them.

YEI: Estimating the Eligible Population

The calculations to provide the denominator for the YEI should provide figures close to those used by the API, though approximations have been made (mainly because of the requirement to have population estimates by age for each enumeration district).

The project makes use of data from the Small Area Statistics. At the enumeration district level this is tabulated as a count of 15 year olds and a count of 16/17 year olds. For this project a simple estimate of the 16 year olds was obtained by taking half the 16/17 year old count. The resulting estimate of 15 year olds and 16 year olds is taken to be the same as the number of 18 year olds and 19 year olds at the 31 December 1994 (the eligible population for the YEI statistic). The necessity to obtain census data at the enumeration district level introduces two significant approximations which are described in the following paragraphs.

The number of live births in England fell each year from 685,000 in 1973 to 550,000 in 1976. By taking half the 16 and 17 year old count in 1991 as an approximation to the number of 16 year olds will exaggerate this number (as there are fewer 16 year olds than 17 year olds in reality because of the falling number of births).

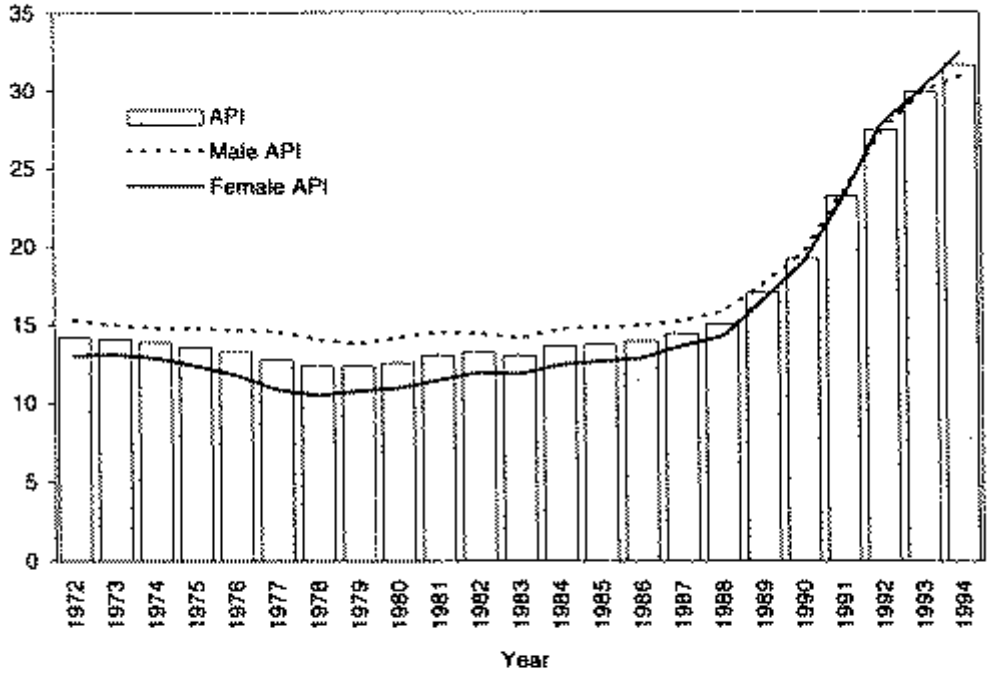
The API statistic measures age at 31 December in the year of entry. The ages recorded in the Small Area Statistics are those at the census date (21 April 1991). Therefore, for entry in 1994, the API statistic (and the YEI) counts students born between 1 January 1975 and 31 December 1976. By using the census dates the project will be estimating those born between 22 April 1974 and 21 April 1976, a cohort 8 months older than the intended one. This will act to inflate the estimates of 18 and 19 year olds in 1994 because of the falling number of births.

Approximate calculations using annual birth totals for England (and assuming a constant decline in the number of births) suggest that together these two approximations will act to inflate the estimate of 18 and 19 year olds used in this project by around 6 per cent.

The inflation of the estimate is probably partly offset by not accounting for the growth normally observed in English cohorts as they age from 15 year olds to 19 year olds (due mainly to inward migration). This is typically 2,500 a year (amounting to almost 10,000, around 2 per cent, over the ageing period). Additionally, the exclusion of the 1-2 per cent of areas not covered by the classification system will act to deflate the English total population estimate (but will not affect the value of the YEI because the student counts are affected in the same way).

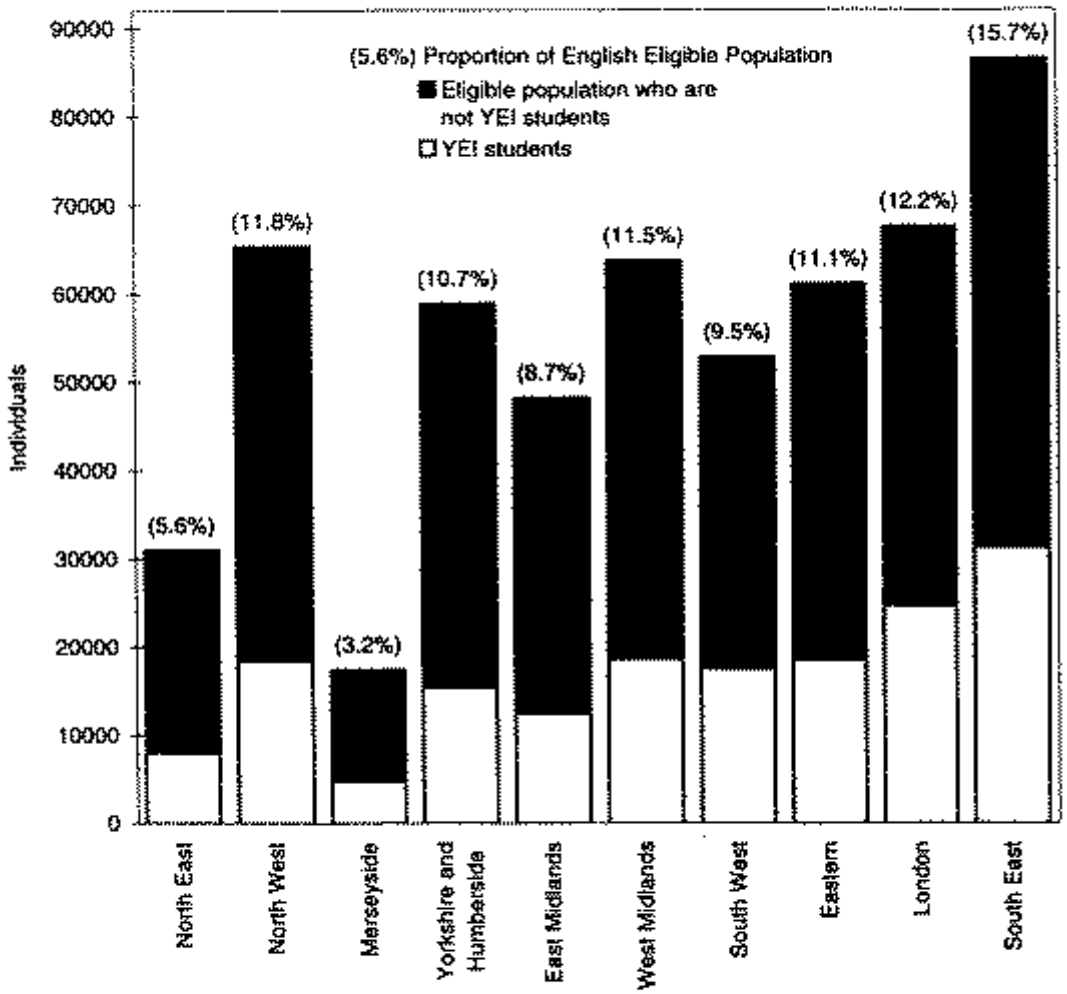
Figures and Tables

Figure 1 Age Participation Index for Great Britain 1972-94



Source: Department for Education and Employment (DfEE).
Notes:
(a) 1994 figures are provisional.
(b) Due to minor changes in definition, data from 1980 onwards are not strictly comparable with earlier years.

Figure 2 Eligible Students and Weighted Students by Region



Source: HEFCE/URPERRL (Liverpool) research project.

Notes:

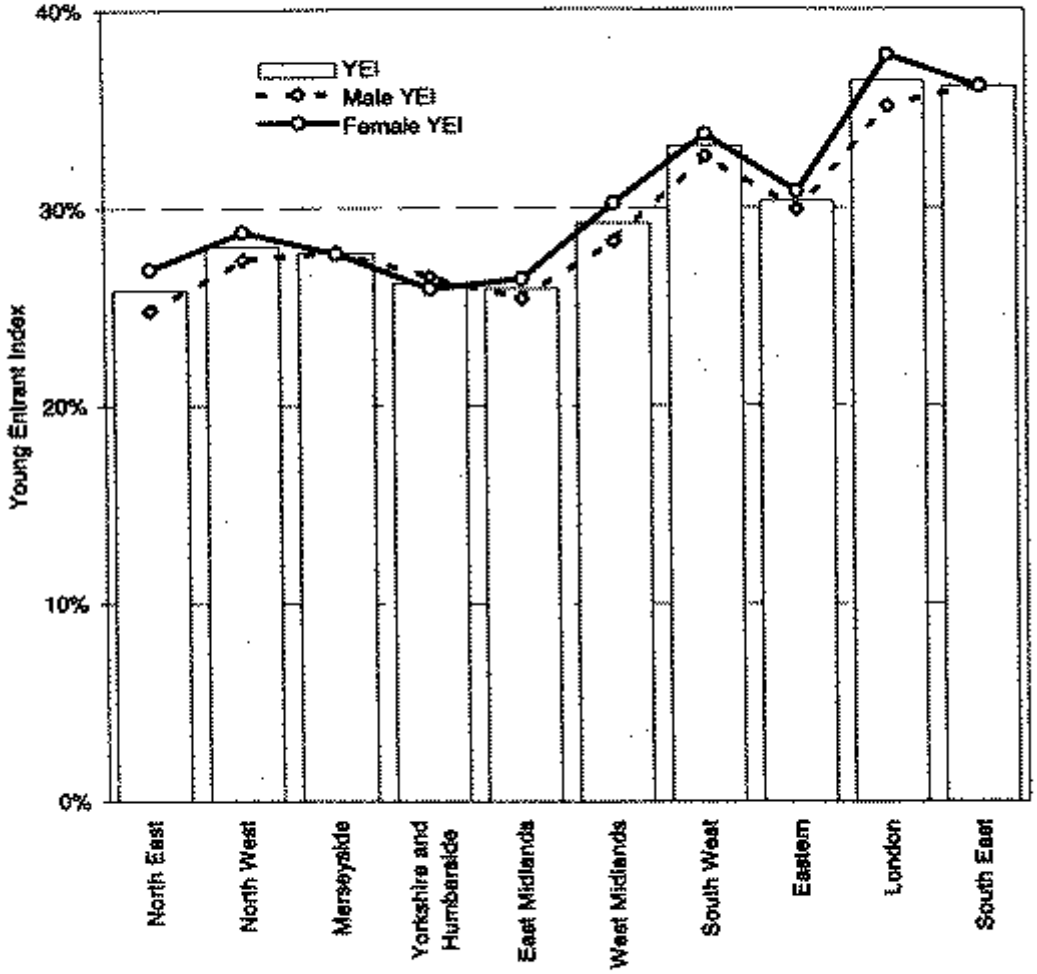
(a) Men and women combined.

(b) Population estimates for December 1994 (see Technical Annex).

(c) YEI English students for academic year 1994-95.

(d) Figures in brackets refer to proportion of the English eligible population in that region.

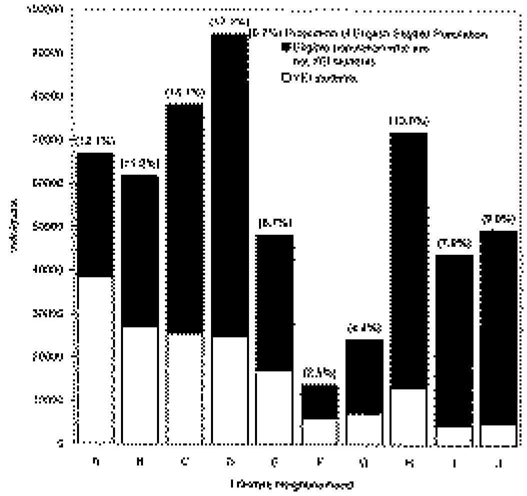
Figure 3 Youth Entrant Index by Region



Source: HEFCE/URPERRL (Liverpool) research project.

Notes:
(a) YEI English students for academic year 1994-95.

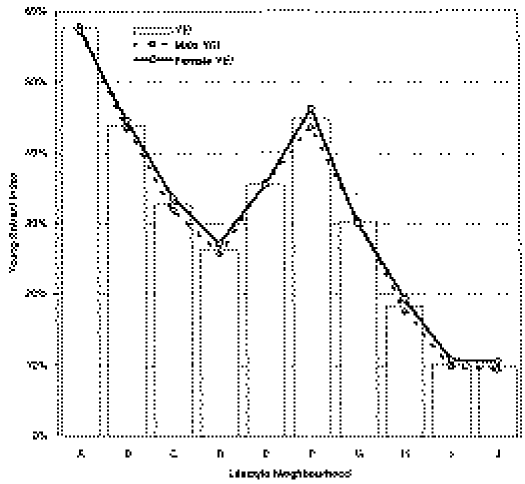
Figure 4 YEI Eligible Population and Weighted Students by Lifestyle Neighbourhood



Source: [illegible] (Liverpool) research project

Notes.
(a) Men and women combined.
(b) Population estimate for December 1994 (see Technical Annex)
(c) YEI English students for academic year 1994-95.

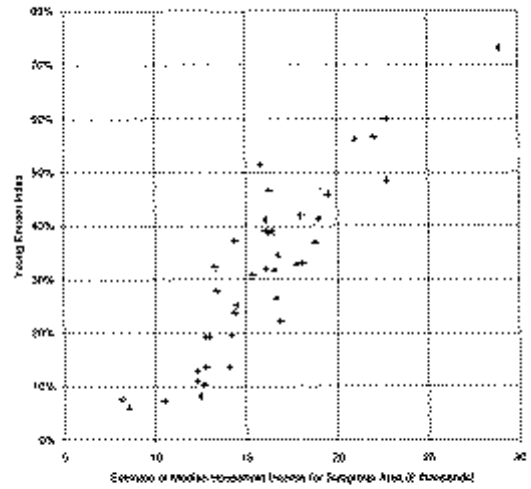
Figure 5 YEI by Lifestyle Neighbourhood



Source: [illegible] (Liverpool) research project

Notes.
(a) YEI English students for academic year 1994-95
(b) English domiciled students only.

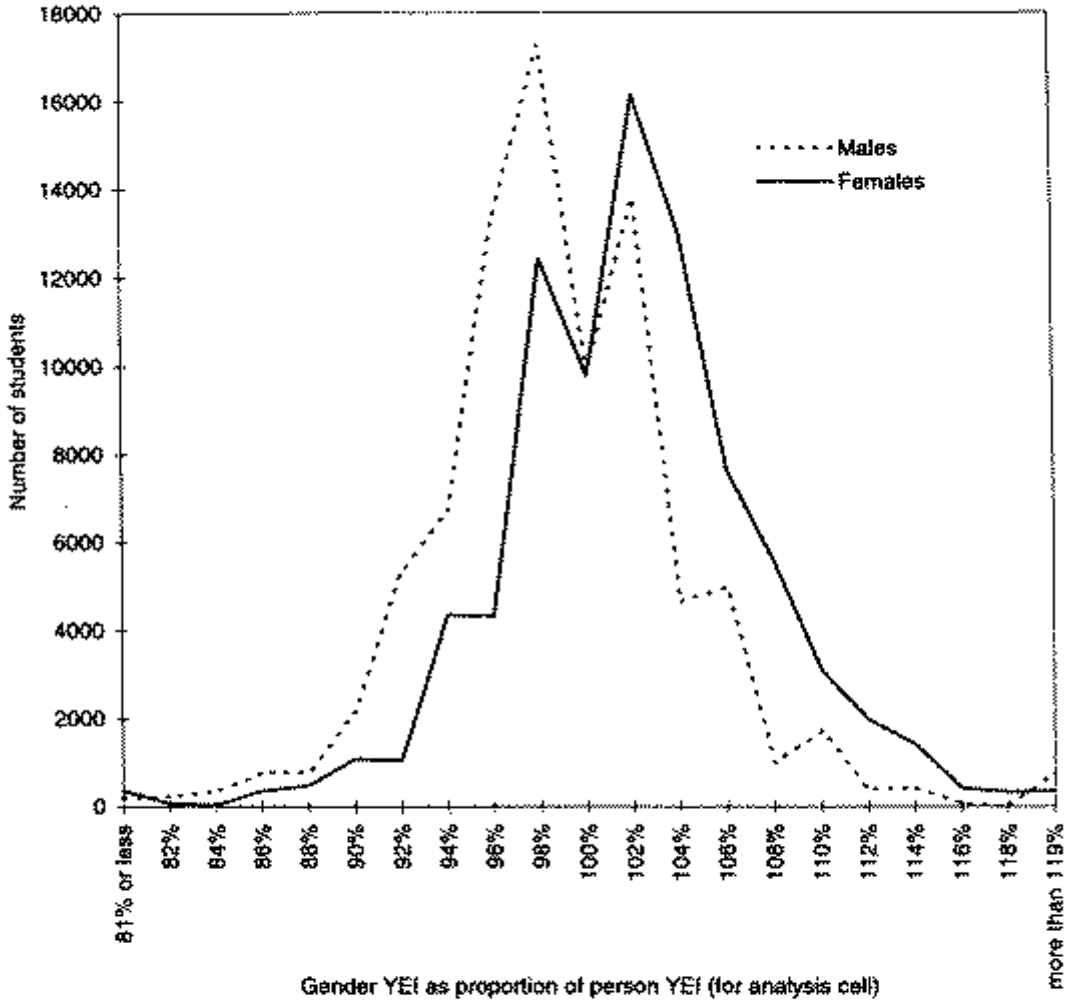
Figure 6 YEI by Estimated Household Income of Subgroup Area



Source: AEF/CCURP/ERC (Liverpool) research project.

Notes:
(a) YEI England-systems for academic year 1994-95.
(b) Income estimates are for Great Britain population (see Technical Annex).
(c) The data for this chart are tabulated in Table 10.

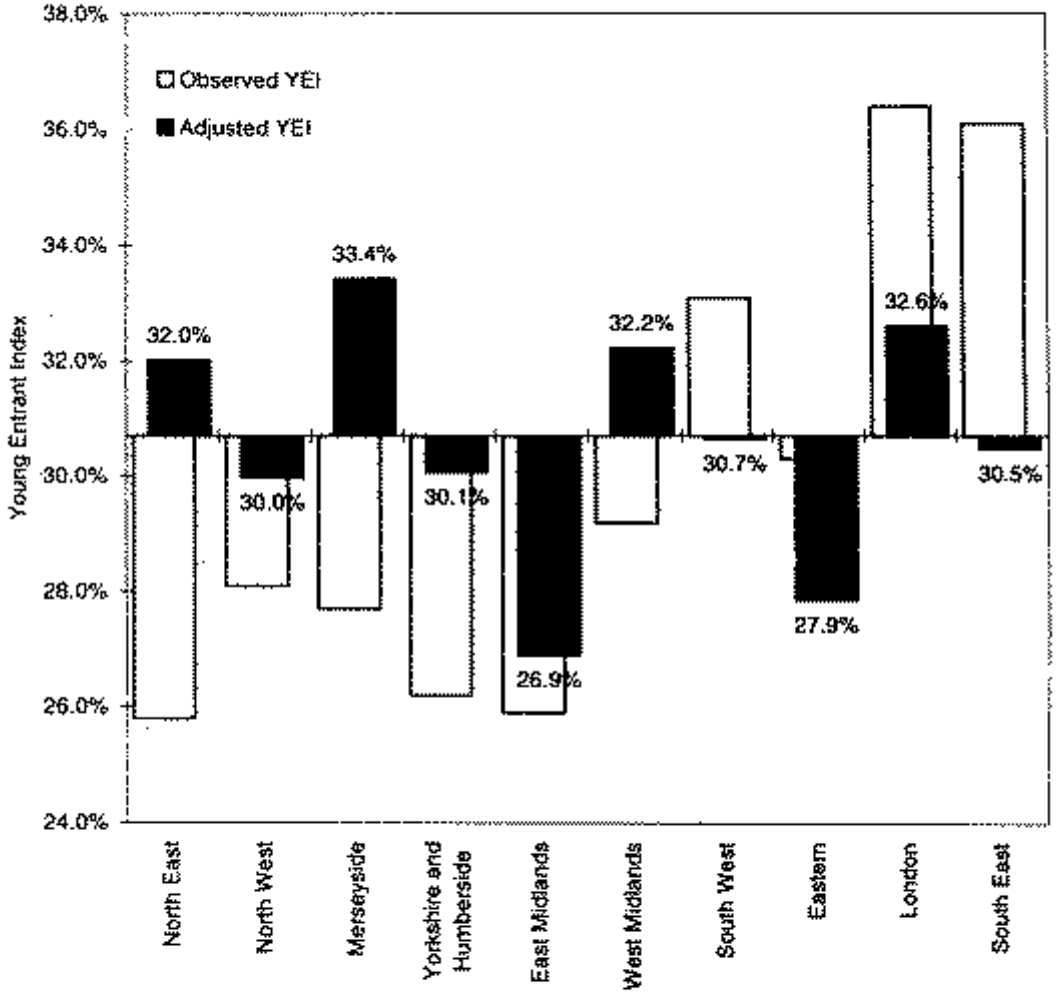
Figure 7 Distribution of Gender YEI Ratios



Source: HEFCE/URPERRL (Liverpool) research project.

Notes:
(a) There are 400 analysis cells (40 Subgroup Areas x 10 regions).
(b) Gender YEI ratio is divided at 2 per cent intervals.

Figure 8 Observed and Adjusted YEI by Region



Source: HEFCE/URPERRL (Liverpool) research project.

Notes:

(a) Region axis intercepts YEI axis at the English YEI mean.

(b) Adjusted YEI is calculated by standardising the proportions of Subgroup Areas in the region to the English mean.

Figure 9 Higher Education Participation Rates by Super Profile Lifestyle Neighbourhoods by Region : Males

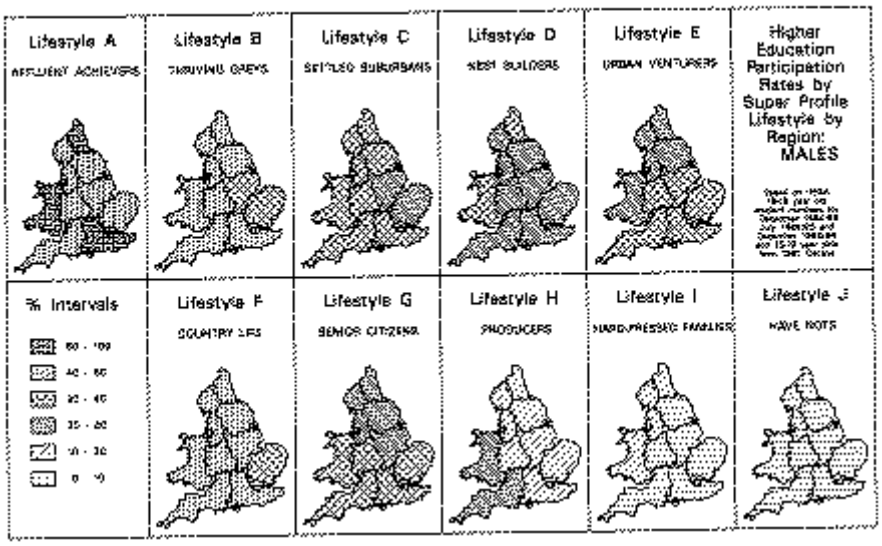


Figure 10 Higher Education Participation Rates by Super Profile Lifestyle Neighbourhoods by Region : Females

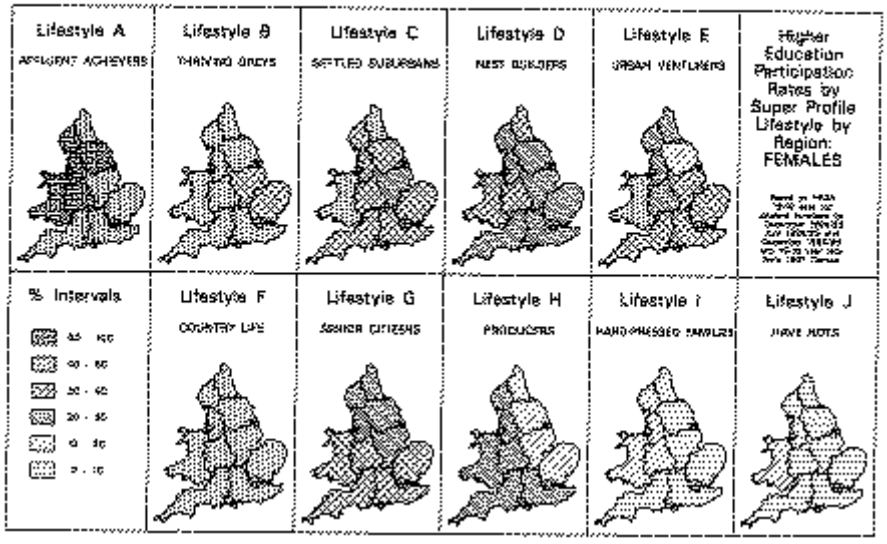
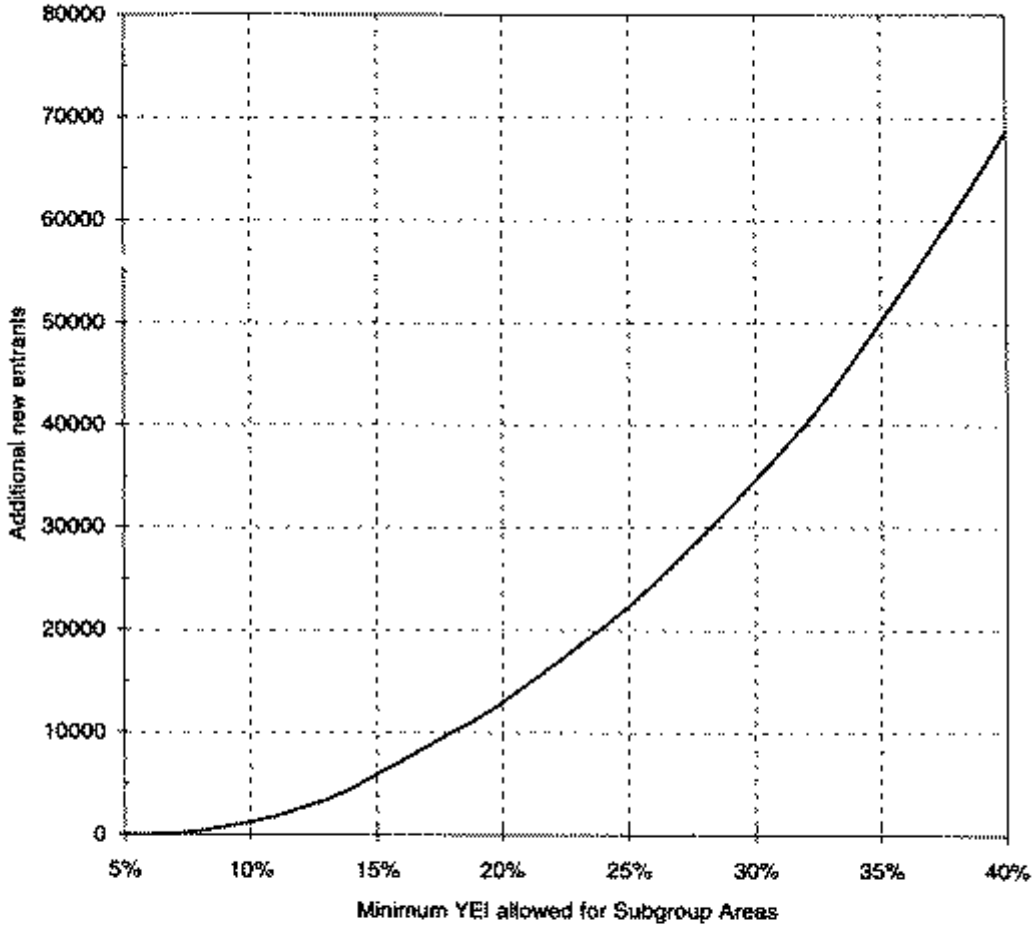


Figure 11 Potential Extra English Young Entrants of Subgroup Areas Subjected to a Minimum YEI



Source: HEFCE/URPERRL (Liverpool) research project.

Notes:

(a) The minimum YEI is applied to all Subgroup Areas with a YEI below that value.

(b) YEI English students for academic year 1994-95.

(c) Calculated at English Subgroup Area level.

(d) Availability of higher education places assumed to be unrestricted.

(e) The distribution of the eligible population by Subgroup Area may change in future years.

(f) The actual number of English YEI entrants in 1994-95 was 169,000.

Table 1 Selected Characteristics of Lifestyle Neighbourhoods

Lifestyle Neighbourhood	Selected characteristics of neighbourhood	Example Local Authority District or London Borough with a high proportion of this Lifestyle Neighbourhood	Median household income
A	High income managers and professionals	Chiltern, Buckinghamshire	22.4
B	Affluent older people	Norwich, Norfolk	17.9
C	Suburban non-manual worker families	Bexley, Outer London	17.3
D	Young families	Bracknell, Berkshire	16.1
E	Young people in multi-racial city areas	Hammersmith, Inner London	16.0
F	Rural areas	Eden, Cumbria	15.5
G	Retired people in modest accommodation	Worthing, West Sussex	14.7
H	Middle aged manual workers	Ashfield, Nottinghamshire	13.4
I	Younger manual worker families in council homes	Barking and Dagenham, Outer London	12.5
J	People with low qualifications, high unemployment	Hackney, Inner London	10.7

Source: Super Profiles Technical Notes (URPERRL: Liverpool)
Notes:
(a) *Example district is typically the English district with the highest proportion of the Lifestyle Neighbourhood (unless lower ranked district is more familiar).*
(b) *The Lifestyle Neighbourhood does not necessarily represent a majority of the population in the example district.*
(c) *For details on income estimates see Technical Annex.*

Table 2 Super Profile Subgroup Areas by Lifestyle Neighbourhood

Subgroup Area	Notable characteristics of Subgroup Area	Percentage of GB households	Estimated median household income	Surrogate affluence rank (ranked)
A01	Very high income professionals in exclusive areas	2.5	39.0	1
A04	Mature families with large detached properties in 'stockbroker belts'	4.1	32.0	2
A06	Mature families in select suburban properties	2.6	26.9	[illegible]
B05	Highly qualified professionals in rented housing	1.5	21.0	[illegible]
B07	Affluent ageing couples, many in purchased property	3.1	19.0	4
B12	Older professionals in retirement areas	3.0	17.3	19
B11	Comfortably well-off older owner occupiers	1.6	15.3	5
B16	Affluent ageing couples in rural areas	2.4	15.3	3
C11	White collar families in owner occupied suburban semis	7.0	17.8	26
C14	Mature white collar couples established in suburban semis	1.9	16.8	15
C10	White collar couples in mixed suburban housing	2.7	16.6	17
D07	Mortgaged commuting professionals, with children, in detached properties	1.5	27.7	6
D08	Double income young families in select properties	1.9	24.8	10
D09	Military families	0.3	18.1	16
D13	Young families in small semis and terraces	1.5	16.9	14
D15	Young white collar families in semis	2.7	15.7	7
D27	Young blue and white collar families in semis and terraces	5.5	14.2	23
D28	Young families in terraces - many council	3.8	14.1	20
E03	High income, young professionals, many renting (mainly Greater London)	1.1	22.7	30
E13	Young professionals in multi-racial areas (mainly Greater London)	2.8	19.0	24
E20	Young white collar couples buying properties	1.4	18.1	34
E21	Young families buying terraces in multi-racial areas	1.7	16.1	30
E27	Young families renting terrace accommodation in multi-racial areas	2.7	13.4	36
E30	Young white collar singles, renting city centre accommodation	0.8	13.3	22
F19	Prosperous farming communities	2.1	16.3	10
F20	Small holders and rural workers (mainly in Scotland)	3.1	14.4	8
G22	Retired white collar workers in owner occupied flats	2.5	16.1	37
G23	Older residents and young transient people, many on [illegible] income	7.4	15.4	17
G20	Old and young buying terraces and flats	2.4	14.4	21
G32	Retired blue collar workers in council flats (mainly in Scotland)	1.6	12.6	25
H24	Older white collar owner-occupiers in semis	6.7	14.5	19
H33	Older workers, established in semis and terraces	4.8	12.4	35
H36	Older and retired blue collar workers in small council properties	4.3	12.3	28
I34	Blue collar families in council properties	3.7	12.7	27
I35	Young blue collar families in council terraces	0.8	12.5	31
I37	Manufacturing workers in [illegible] housing	2.6	12.1	32
J31	Council tenants in inner-city areas - high unemployment	2.7	11.6	31
J38	Blue collar families in council properties - high unemployment	4.2	15.5	38
J39	Young families, many single parents - high unemployment	1.5	8.5	40
J40	Young singles and pensioners in council flats - high unemployment	1.5	8.2	39

Source: URPERRL (Liverpool)
Notes:
(a) First character of Subgroup Area indicates parent Lifestyle Neighbourhood.
(b) Last two characters of Subgroup Area indicates income rank position.
(c) Percentage of Households refers to Great Britain, as does [illegible] Census.
(d) Income estimates are £ thousands per year (see Technical Annex).