



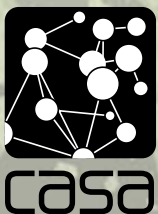
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**A State of the Art Review of
Geodemographics and their
Applicability to the Higher
Education Market**

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Applicability to the Higher Education Market.**

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Paralleling a shift from Fordist to Post Fordist methods of production, the importance of knowing who, and more importantly where your customers are has arisen as an integral part of the micro marketing machine. Goss (1995:132) discusses that this is “essential for companies to be able to plan both tactically and strategically with regards to customers’ needs and competitive threats”, and it is these core functions of the geodemographic information system that are of growing importance to the public sector. The Higher Education market in the UK is populated by a diverse range of institutions; distinctive by history, culture, courses offered and reputation. More students now attend these institutions than at any point in history, however there has been great debate over the extent to which this access is as available to students from “disadvantaged” backgrounds. This market consists of undifferentiated fee price across both course and institutions, currently set £1,125. Many institutions now face financial crisis because funding has not kept pace with increasing student numbers, and in process to address this deficit it has been proposed by the government to introduction of a variable student top up fee. If the Education Bill that contains this top up fee adjustment is passed through parliament it will shift the higher education sector towards a more conventional market model. Up to a capped level, and on the basis of their own pricing policies rather than government regulated values, higher education institutions would determine the level of fees charged to attend particular courses. Students would therefore have added to their selection criteria the cost of a particular course at an institution, and conversely the institution would have a strike price to attract targeted levels of students with given levels of attainments and probably also consistent with intended institutional profiles. Both types of current and future market models create underlying geodemographic structure that differentiates between courses and institutions. This paper sets to create a framework to investigate the applicability of geodemographic data tools and techniques (Geodemographics) within this rapidly developing higher education market, with particular emphasis on these issues of widening participation within a financially viable structure.

The Growth of Geodemographic in the Private Sector

Industrial activity during the 1940s-1960s was characterised by mass production of standardised goods. The Fordist production philosophy, named after Henry Ford of Ford Motors, is characterised by a well-known phrase, “you can have any colour as long as it’s black”, referring to the mass production of the Model T Ford. Since the 1960s Fordism has gradually been replaced with demand led flexible production systems. These Post-Fordist production methods create niche products for increasingly fragmented markets, and as such have ensured a requirement by the private sector for detailed information about who their customers are and where they are located. To replace uni-promotion of a mass marketing message, geodemographic micromarketing is focused on the behaviours that lead a customer to make a choice about which products they buy. There is already a great deal written about the historical development of the different geodemographic indicators (see Sleight, 1993 pp11) so this will not be covered in detail during this paper. However, Webber and Longley (2003:242) suggest that

commercial organisations “operate in a competitive and dynamic market where their own administrative records cover only a minority of the consumers in whom they are interested”, and therefore there is a growing need for larger external data sets, or to leverage greater value from those that already exist. In the past most firms used the decennial censuses to develop this “greater value”, however due to dissemination restrictions, infrequency of analysis, and complexity, high cost raw format census operations fell in popularity. Part of this fall can be attributed to the construction and demonstrated power of Geodemographic indicators. These created more detailed micromarketing information and provided the specialist data, tools and techniques to perform these analyses with relative simplicity.

The Growth of Geodemographics in the Public Sector

Government statistics traditionally have used data derived from the census, administrative records and sample surveys to allow them to meet the majority of their needs for services targeting local areas (Webber and Longley, 2003), and for this reason geodemographic analysis has to date been less prevalent within the public sector. However, there has been growing trends in health (see Aveyard *et al*, 2000; Tickle *et al*, 2000; Stafford and Marmot, 2003), crime (Massimo *et al*, 2001; Bowers and Hirschfield, 1999) and education (Tonks, 1999; Tonks and Farr, 1995) to explore and the use of GIS and geodemographic analysis to assist in policy and decision making at both the local and national level. These studies have developed in parallel to government initiatives to reform public services, indeed the recent initiative “Big Conversation” encourages discussion on replacing a one size fits all welfare system with one of ‘individual aspiration backed up by strong communities’ (Blair, 2003). This shift in focus to the individual is driving micro level data requirements, and to some extent mirrors those developments seen in the private sector. Another interpretation of these shifting interests seem to stem directly from government policies that have forced public sector organisations to operate either as, or more closely with the private sector. These convergences, combined with a push towards e-governance have resulted in traditionally private pursuits to be conducted within the public sphere as demonstrated by the supplementation of government Compulsory Competitive Tendering Policy with an idea of “best value” for the repeat purchase of public sector goods and services. This policy is supportive of public-private collaboration, and as the geodemographic industry has been shown to be a highly profitable in the private sector (Harris, 1998), its adoption in the public sector is a logical and progressive step forward. It can also be argued that the move into the public sector by the geodemographic industry is a reflection of a need to explore strategies that will extend their product lifecycle. The geodemographic industry will experience increasing competition as the 2001 census data is freely available to download, allowing end users the ability to create their own ‘value added’ systems. Prior to the 2001 census they could still do this but only by being tied into expensive licence agreements with a small number of census distributors who in turn licensed their data from the Office of National Statistics (ONS)/ Office of Population Censuses and Surveys (OPCS).

Geodemographics in HE and the Widening Participation Debate

Higher Education has been the focus of intense political debate surrounding issues of top up fees, widening participation, social justice, and whether a “higher education market” model is an appropriate funding structure. Debate over access to higher education has a long history extending back through successive higher education policies. In 1963 the Robbins report set out recommendations that courses of higher education should be made available to all those who were qualified by attainment to pursue them and who wished to do so. On these recommendations the government set up a binary line between traditional universities and a new type of institution called Polytechnic Colleges (Ainley, 1994). This binary divide lasted until the 1980s when the Conservative Government awarded independent degree-granting powers to the Polytechnic Colleges. The Dearing Report (1997) investigated how the purpose, shape, structure and funding of higher education should meet the needs of the United Kingdom for the following 20 years. This report highlighted a key problem that “there remain groups in the population who are underrepresented in Higher Education” including lower socio-economic groups and certain ethnic minorities. Increasing participation has almost certainly occurred, however the extent to which it has “widened” is debateable (Farr, 2002). UCAS statistics show that from 1996 to 2002, home applicants for full time degrees rose by 26% (UCAS, 2003a). However if the MOSAIC¹ lifestyle group indices of these applications are viewed it can be seen that representation is not even across all geodemographic segments. In the year 2000 the High Income Families group is over represented with an index of 200.36 (100 is average), whereas Council Flats are indexed at 49.17 and low rise council flats at 48.11 (UCAS, 2001). It is these inequalities that have raised questions surrounding social justice and discrimination within the system. Reid (1998) discusses that in the analysis of social class there are two interpretations of inequality: first, there is bias in the university selection process; and second, social class has an inhibitor effect on the perceived availability or benefits of Higher Education. The first of these interpretations was publicly highlighted in 2001 with the case of Laura Spence. Her rejection by Oxford on the basis that she “did not show potential” created a media circus that even involved the then Chancellor of the Exchequer who declared it “an absolute scandal”. The second of these interpretations relates to how middle class parents ‘invest all kinds of effort, including significant material resources in developing social capital’ (Walker, 2003:172), creating environments where socialisation processes can occur, and creating advantage or disadvantage under certain situations (Bourdieu & Passeron, 1977). Social capital may be defined as the advantage conferred over non-group members through interaction within a network of individuals, who often share similar beliefs or values, and that ultimately lead to greater group-wide economic or social gain. This is not dissimilar to the concept of cultural capital and the two concepts have often been interlinked. Social or cultural capital confers an individual benefit or disadvantage under certain social conditions, such as feeling 'comfortable' or enabling interaction with peers within a particular higher education institution. Table One illustrates how this might be apparent in comparing measured characteristics of two hypothetical students from different backgrounds.

Table One: Two example students

Student	School Type	Housing Type	Parents studied in HE	Parents Occupation
<i>a</i>	Public	Country Estate	Yes	Professional
<i>b</i>	State	High Rise Council Flats	No	Unskilled

It might be hypothesised that Student *a* may have advantage over Student *b* when applying for higher education for a number reasons, some which are detailed in Table Two.

Table Two: Examples of Social and Cultural Capital

Social Process	Examples
<i>Cultural Capital</i>	<ul style="list-style-type: none"> • Student <i>b</i> does not have parents who have attended higher education and as such has little knowledge of what it entails. • Student <i>b</i> does not attend a school with people who have aspirations for higher education (Social Capital) and through socialisation processes with peers believes it is either unattainable or not suitable for people from her/his background.
<i>Social Capital</i>	<ul style="list-style-type: none"> • Student <i>a</i> may receive informed advice on how best to complete a UCAS application form as she/he has attends a school where this is a common formality. She/he may also receive 'coaching' in how to deal with the interview process at elite institutions. • The social norm for the housing estate where student <i>b</i> lives is to be sceptical or negative towards the benefits of higher education. The school environment does not successfully counteract this prevailing view.

Although the examples in Table Two have been separated into Cultural and Social Capital the boundary between them is often burred through interaction, as social capital cannot accrue without Cultural Capital and vice versa.

If universities have tools to examine and profile the students who apply to their institutions, measures can be implemented to ensure that routes of entry are fairer, recruitment strategies are tailored to institutional needs, and outreach programmes can be deployed to maximum effect. This geodemographic tool already exists in the form of the Applicant Postcode Tracking Service (UCAS, 2003b), which allows institutions to map applicants and their attributed MOSAIC profiles at various geographies for the UK. This tool allows other basic geographical analysis such as grouping data by a

selection radius and profiling aggregations of these applicants. This tool is of great advantage to institutions that wish to demonstrate and action widening participation strategies. However there are several important caveats. Firstly, the tool is based on applications only, and as such there are no data for potential students who simply do not apply, or who do not apply through UCAS. Secondly, the tools do not include students who leave the application system without a place, either not securing one from an institution or withdrawing from the scheme before acceptance. A possible solution to these problems is being demonstrated through the work of Experian, suppliers of MOSAIC, who are currently working with various higher education data warehouses to develop a pilot educational MOSAIC as a way of examining aggregate geodemographic profiles across England. Possible applications for educational geodemographic indicators are broad and could encompass a number of key policy areas. For example, there is much debate currently surrounding how student potential is measured, and the extent that A-levels are a good proxy for degree performance (Universities UK, 2003). Using educational geodemographic indicators, socio-economic influences on student performance could be investigated, and with this information institutions could be advised on how benefit accrued by belonging to a particular group might be factored into the offer making process. This application can be illustrated by two simplified examples. Firstly, student x from a poor performing school and LEA, whose catchment predominately consists of lower socio-economic groups achieves BBC at A-Level in the same subjects as student y who receives ABB grades and attends a leading independent school, the students of which all come from families in the highest socio economic groups. Although on UCAS tariff scores student y outperformed student x , it may well be that student x performed top of the upper quartile of students for both his/her school and LEA, where as student y performed in the lowest quartile. These examples have a caveat that other factors external to school type and performance can affect individual attainment and may also affect the ways in which this apparent “cultural capital” is generated. For example student x could have had private tutoring at home that advantaged his/her position over other students from the same school. Where an institution is unaware of these relative performance indicators, and also the ways in which socio-economic factors influence an applicant’s development and attainment, discrimination can occur as decisions are based on partial information. However, if this information were known these activities could be considered methods of social engineering that attempt to accommodate the failures of state education and social policy. As such when examining these influences with educational geodemographic indicators, it is important to seek to accommodate such considerations, as a key aim should be to effectively extend participation to those segments in society that are currently disadvantaged by internal and external social or cultural values. However, incorporating these ideas into what is inherently a tiered applications system will not be without controversy. Those schools that have always sent their pupils to particular universities will resist measures that would result in these patterns changing. Pauline Davis of the Girls Schools Association suggests “it will be difficult, if not impossible, for many of our students to demonstrate exceptional performance in context since the pupils who attend our schools achieve such high standards” (BBC, 2003). This echoes the sentiments of the Headmasters and Headmistresses Conference² that represents the views of 240 leading public schools. It produced an investigation in 2002 that showed how in the worst case 80% of their pupils were being rejected

without interview on certain courses in Russell Group Institutions³, claiming that this was a result of positive discrimination policies in these universities (Guardian, 2002). Grimson and Dobson (2002) agree, arguing that numerous universities have introduced schemes to increase the total number of state school students without increasing the total number of students, therefore squeezing applications from independent schools. However, these criticisms ignore evidence to suggest that independent school pupils gain lower degree scores than their state educated equivalents due to the degree of teacher led “coaching” as opposed to independent learning they received before entering higher education (BBC, 2002). Furthermore, a discussion paper published by the Admissions to Higher Education Review Group (AHERG) suggests that “school type tends to distort the predictive or signalling ability of prior attainment” and that “school performance may also affect the predictive ability of prior attainment” (AHERG, 2003:45). This does raise an interesting question to whether school type is a direct or indirect indicator of social capital formation. If school type is considered a direct indicator of social capital formation then attendance leads to a greater advantage when applying for higher education, given that this is a usual and supported course of progression for individuals within these groups. This may occur by being offered better advice when applying. This also could be a self-replicating phenomenon, reinforcing itself with each successive generation attending higher education, assuming in this model (social capital) that the perceived socioeconomic benefits outweigh the cost. If school attended is used as an indirect indicator of social capital formation it may be that the applicant would have made attempts to enter higher education independent of whether they attended a particular school type. The school may only reinforce the decision or confer better chances of application success rates. Therefore a key point of investigation has to be into the nuances of these measures and attempts to generalise their importance through statistical interaction modelling. Also, evidence would indicate that some institutions are looking to develop new tools or data in order to choose between a growing pool of apparently qualified candidates. Hackett (2003) discusses how Cambridge is the first university to ask for the module breakdowns of applicants’ A-Level results and that Nottingham is setting aptitude tests for Medicine and Law.

Geodemographic applications more akin to the private sector may become increasingly important if higher education adopts a variable fee structure. However, the role and type of applications that develop will be limited by the extent to which the government adopts this model. Phoenix (2003) contends, “the traditional bilateral relationship between HE and the state is rapidly becoming a multilateral relationship between HE and various external funding bodies”. These external funding bodies refer to industry, overseas recruitment and student fees, all of which are adopted in differing mixes to form our current hybrid state-market controlled higher education system. Proponents argue that institutional ability to charge variable fees combined with decentralised funding sources will create, in a more traditional sense, a market led higher education system that will allow higher education institutions to better determine their future (Smithers, 2002). However, there are those who believe that universities are not yet ready to adopt this model, and that our current market-state hybrid system is the worst of both worlds. Scott (2002) identifies several key problems with the introduction of variable fees, discussing that traditional universities such as the Russell group may be inclined to

push up fees not to satisfy market conditions but to protect their own university brand. These universities may not wish to be seen to charge bargain prices as it may reflect on the perceived quality of their products or courses. It is further argued that a positive effect of this could be for universities that currently are at the bottom end of the market as they may be able to undercut the market leaders possibly through offering reduced fees or attendance incentives, therefore creating new market share. The middle market, made up of the bottom end of the old institutions and the top of the new may be in constant flux. Scott (2002) proposes that some institutions will provide niche courses while others will combine to reinforce their brand. Certain bodies may also begin to offer financial incentives to study selected subjects. For example, if the top up fees are introduced the Institute of Physics has promised to create bursaries of £1000 for a quota of students being accepted onto Physics degrees as means of encouraging more students into the discipline. Also, Middlesex University has recently announced plans to introduce £1000 bursaries to students who gain places with at least 3 B grades at A-Level or equivalent (Macleod, 2003). This supports the case that some institutions are starting to operate more market led recruitment strategies where well qualified students can trade good A Levels for cheaper admission, the activities of which will demand greater market intelligence about competitor institutions, their customers' characteristics and, crucially, where they live and are educated. Although a growth area in public policy, there has been relatively little research to date on the specific exploitation of geodemographic techniques, data and tools within the higher education context. Two notable exceptions are Tonks (1999) and Tonks and Farr (1995), who examine the applicability of the language and tools of marketing within a higher education context. Geodemographic analysis can and will play a key role for institutions to gather this essential profiling information, applying tools and techniques more accustomed with those utilised by the private sector to target products and services at specific market segments.

The Potential Applicability of Geodemographic Analysis in Higher Education

Geodemographic Analysis conventionally has been used to examine both incremental purchases (such as newspaper readership) and discrete consumption (such as propensity to consume holidays) of private goods, highlighting the suitability of geodemographic indicators to investigate aspects of higher education. Research is needed to ascertain the robustness of these methodologies and to explore non-conventional applications such as the influence of social processes as indicators of application success or rejection. There are also some general caveats to the use of geodemographic indicators. Geodemographic information systems inherently commit ecological fallacy (see Openshaw, 1984) through predicting individual behaviour from indicators pertaining to areal aggregations. Tranmer and Steel (1998) contend that these aggregation effects occur because individuals who live in close proximity to one another tend to exhibit similar characteristics or within area homogeneity. The strength of this association depends on the exact area of aggregation being studied (Martin, 1991). Archer *et al* (2003) describe individual classification alternatives to these aggregate measures including the National Statistics Socio Economic Classification, the Market Research Society Profile, and the Registrar General's Classification. These classify individual people according to their occupational category, which immediately causes concern when assigning these variables to students applying for

higher education. Before the age of 21, UCAS assigns occupational categories based on applicants' parental occupation, whereas after the age of 21 these are assigned on applicant occupation. Archer *et al* (2003) further argues that conventional occupational classifications are also problematic because of the fluidity of jobs in a modern society. Longley and Webber (2003) suggest that there are locational effects that arise out of geographical proximity which complement the effects of social similarity that occur in geodemographic clustering. For example, car ownership as a measure of wealth could be misleading if analysis were to focus upon a metropolitan area where people used other forms of transport such as trains or tubes. There are also difficulties when converting between different census geographies, and at each level varying degrees of error is introduced. Also the Modifiable Areal Unit Problem (MAUP) occurs when the mean attribute values of geographical areas changes depending on the number of areas into which a population is divided (Tranmer and Steel, 1998) or when spatial boundaries are moved or modified. Separately or together these scale and zoning effects form the MAUP.

Questions have been raised as to the philosophical rigidity underpinning the use of geodemographic techniques, tools and data in the analysis of social processes and stratification, often citing references to Harvey (1973), that these techniques develop knowledge that purports to be true but in actuality hides the truth of reality. Sui (1998:662) discusses that these 'instrumental approaches generally take an atomistic ontological position in which the social position of the researcher is independent of the knowledge that he or she produces'; suggesting empirical investigations are not sufficient to represent the complexity or dynamics of real world social processes. Geodemographic information systems have also been criticised as they threaten privacy in two key ways. Goss (1995) describes how a database can discriminate even if the use of the data is legitimate. In the context of higher education these effects could be particularly acute as the consequences of mis-specifying disadvantage in terms of educational services is more serious, and particularly so if life chances are being apportioned. It is therefore essential if these indicators are adopted, that analysis be conducted into whether they will resolve or compound these issues. Goss's (1995) second privacy concern is when data gathered for one purpose is transferred to another context without permission. "Off the Shelf" geodemographic indicators are constructed with legally available data without infringement of this aspect of the Data Protection Act, thus negating this second concern. However, when these indicators are appended to other data such as university application successes, extra caution must be taken to ensure these laws are adhered to. Finally, when using either geodemographic or socio-economic indicators it is important to ensure that the context of the investigation is understood in order that erroneous interpretations are avoided. For example, in an investigation into higher education participation using the MOSAIC geodemographic classification, an area classified as Urban Bohemia may be assumed to have less prevalent higher education participation rates due to the restriction created by occupants lower incomes (assuming that this was identified as a key variable for lower participation). In reality there may be other variables in these areas such as the types of employment, and it is these that may affect the weighting or importance that is placed on higher education and attitudes to social capital formation, therefore resulting in increased or decreased participation rates. The resulting human capital unlikely to be a simple function

of income alone and it is more likely accrue through a combination of socio-economic processes not limited to salary or industry type. Therefore, idealistically, it would be best never to view these geodemographic indicators in isolation and always to consider the broader context, however it is wholly likely that due to extra finance involved in mixed-methodology studies a level of discrimination of this sort is inevitable.

This paper has shown how higher education is struggling to meet financial requirements, maintain quality while ensuring 'fair' access and participation. Government legislation has progressively tried to balance this with current policies pushing towards the creation of a higher education market place. Geodemographic analysis has been slow to develop within public policy, and in particular within higher education sector, both as a pure marketing tool and also non-traditionally, such as to help create systems of more fair access. However, it is recommended that more research needs to be conducted into the applicability of using these techniques to examine higher education social processes and stratification. Geodemographic analysis also should not be applied without several caveats regarding the safe and ethical use of its data, by doing so ensure that erroneous or unethical interpretations are minimised. The broader point should also be considered that, as with all GIS, geodemographic information systems must be efficient, effective and safe to use (Longley *et al*, 1999). This paper supports the adoption of geodemographic analysis within this framework, seeing that the benefits that its application offer far outweigh any costs incurred.

References:

- Ainley, P. (1994) *Degrees of Difference, Higher Education in the 1990s*. London: Lawrence And Wishart.
- Archer, L., Hutchings, M., Ross, A. (2003) *Higher Education and Social Class: Issues of Exclusion and Inclusion*. London: Routledge.
- Aveyard, P., Manaseki, S., Chambers, J. (2000) Does the Multidimensional Nature of Super Profiles Help District Health Authorities Understand the way Social Capital Affects Health? *Journal Of Public Health Medicine*. 22, 317-323.
- BBC. (2002) *Fee Paying Pupils get the Worst Degrees* [on-line]. Available from: <http://www.news.bbc.co.uk/1/hi/education/2252523.stm> (accessed 28th November 2003) London: BBC.
- Blair, T. (2003) *Big Conversation* [on-line]. Available from: <http://www.bigconversation.org.uk/index.php?id=684> (accessed 1st January 2004) London: Labour Government.
- Bourdieu, P., Passeron, J.C. (1977) *Reproduction in Education, Society And Culture*. London: Sage.
- Bowers, K., Hirschfield, A. (1999) Exploring Links Between Crime and Disadvantage in North-West England: An Analysis Using Geographical Information Systems. *International Journal Of Geographical Information Systems*. 13 (2), 159-184.
- Dearing, R. (1997) *The Dearing Report*. Norwich: HMSO.
- Farr, M. (2002) *Extending Participation in Higher Education - An Investigation into Applicant Choice Using Postcode Analysis*. Ph.D. Thesis. Lancaster University.
- Goss, J. (1995) Marketing the New Marketing. The Strategic Discourse of Geodemographic Information Systems. In J.Pickles (eds) *Ground Truth*, pp 130-170. New York: Guildford Press.
- Grimson, J., Dobson, J. (2002) So Which One is Privileged? *The Sunday Times*, Oct 6th 2002.
- Guardian. (2002) *University Admissions Favours the Poor* [on-line]. Available from: <http://www.education.guardian.co.uk/higher/news/story0,9830,802329,00.html> (accessed 11th November 2002) London: Guardian.
- Harris, R. (1998) *Considering (Mis-) Representation in Geodemographics and Lifestyles* [on-line]. Available from: http://www.geocomputation.org/1998/82/gc_82.htm (accessed 30th October 2003). Bristol: School Of Geographical Sciences.
- Hacket, G. (2003) Cambridge asks to see A-Level Marks. *The Sunday Times*, Aug 17th 2003.
- Harvey, D. (1973) *Social Justice and the City*. London: Arnold.

- Sleight, P. (1993) *Targeting Customers. How to use Lifestyle Data in your Business*. Henley-On-Thames: NTC Publications Limited.
- Tranmer, M., and Steel, D.G. (1998) Using Census Data to Investigate the Cause of the Ecological Fallacy. *Environment and Planning A*. 30, 817-831.
- Longley, P.A., Webber, R. (2003) Geodemographic Analysis of Similarity and Proximity: Their Roles in the Understanding of the Geography of Need. In P.A. Longley and M. Batty (eds) *Advanced Spatial Analysis: The CASA Book of GIS*, pp 233-266. Redlands: ESRI Press.
- Longley, P., Goodchild, M., Maguire, M., Rhind, D. (1999) *Geographical Information Systems: Management and Applications*. New York: Wiley.
- Macleod, D. (2003) *Middlesex University Offers £1000 a Year Scholarship to B-Grade Applicants* [on-line]. Available from: <http://education.guardian.co.uk/students/tuitionfees/story/0,12757,1073340,00.html> London: Guardian.
- Martin, D. (1991) *Geographic Information Systems and their Socioeconomic Applications*. London: Routledge.
- Massimo, C., Haining, R., Signoretta, P. (2001) Modelling High-Intensity Crime Areas in English Cities. *Urban Studies*. 38(11), 1921-1941.
- Openshaw, S. (1984) Ecological Fallacies and the Analysis of Areal Census Data. *Environment and Planning A*. 16(1), 17-31.
- Openshaw, S., Duke-Williams, O., Rees, P. (1997) Measuring Confidentiality and Risk in Census Data. *Working Paper of University of Leeds School of Geography*. 97(8), 1-28.
- Simpson, L., Yu, A., Avenall, D., Abbott, D., Noble, M. (2001) *Updated UK Area Master Files: Full Report of Research Activities and Results*. Manchester: Manchester University.
- Smithers, A. (2002) Privatisation gets Public Study Centre. *Times Higher Education Supplement*. 5th April 2002.
- Sui, D.Z. (1998) Deconstructing Virtual Cities: From Reality to Hyperreality. *Urban Geography*. 19(7), 657-676.
- Tonks, D., Farr, M. (1995) Market Segments for Higher Education: Using Geodemographics. *Market Intelligence & Planning*. 13(4), 24-33.
- Tonks, D. (1999) Access to UK Higher Education, 1991-98: Using Geodemographics. *Widening Participation and Lifelong Learning*. 17(1), 26-36.
- Phoenix, D. (2003) Government Policy and Higher Education. *Journal Of Biological Education*. 37 (3), 108-109.
- Reid, I. (1998) *Class in Britain*. Malden: Blackwell.

Scott, P. (2002) *Trouble Ahead* [on-line]. Available from:
<http://www.education.guardian.co.uk/print/0,3858,4516621-101350,00.html> (accessed 28th November 2003)
London: Guardian.

Stafford, M., Marmot, M. (2003) Neighbourhood Deprivation and Health: Does it Affect us all Equally?
International Journal of Epidemiology 32(3), 357-366.

Tickle, M., Moulding, G., Milsom, K., Blinkhorn, A. (2000) Socioeconomic and Geographical Influences on
Primary Dental Care Preferences in a Population Of Young Children. *British Dental Journal* 188(10), 559-562.

UCAS. (2001) *Statistical Bulletin on Widening Participation*. Cheltenham: UCAS.

UCAS. (2003a) *Derived Statistics Tables* [on-line]. Available from: <http://www.ucas.com/figures/enq/> (accessed
10th November 2003) Cheltenham: UCAS.

UCAS. (2003b) *Applicant Postcode Tracking* [on-line]. Available from:
<http://www.ucas.ac.uk/figures/fps/tracking.html> (accessed 11th November 2003) Cheltenham: UCAS.

Universities UK. (2003) *Fair Enough?* London: Universities UK.

Walker, M. (2003) Framing Social Justice in Education: What Does the Capabilities Approach Offer? *British
Journal Of Educational Studies*. 51(2), 168-187.

Notes:

- 1: MOSAIC is a geodemographic classification tool produced by Experian ltd.
2. The Headmasters and Mistresses Conference UK members are:

Abingdon School	Bradford Grammar School	Cranleigh School
Ackworth School	Brentwood School	Culford School
Aldenham School	Brighton College	Dame Allan's Schools
Alley's School	Bristol Cathedral School	Dauntsey's School
Ampleforth College	Bristol Grammar School	Dean Close School
Ardingly College	Bromsgrove School	Denstone College
Arnold School	Bryanston School	Dollar Academy
Ashville College	Bury Grammar School	Downside School
Bablake School	Campbell College	Dulwich College
Bancroft's School	Canford School	High School of Dundee
Bangor Grammar School	Caterham School	Durham School
Barnard Castle School	Charterhouse	Eastbourne College
Batley Grammar School	Cheadle Hulme School	The Edinburgh Academy
Bedales School	Cheltenham College	Elizabeth College
Bedford School	Chetham's School of Music	Ellesmere College
Bedford Modern School	Chigwell School	Eltham College
Belfast Royal Academy	Christ College	Emanuel School
Berkhamsted Collegiate School	Christ's Hospital	Epsom College
Birkdale School	Churcher's College	Eton College
Birkenhead School	City of London Freemen's School	Exeter School
Bishop's Stortford College	City of London School	Felsted School
Bloxham School	Clifton College	Fettes College
Blundell's School	Clongowes Wood College	Forest School
Bolton School	Coleraine Academical Institution	Framlingham College
Bootham School	Colfe's School	Frensham Heights School
Bradfield College	Colston's Collegiate School	George Heriot's School

George Watson's College	Merchant Taylors' School (Crosby)	St. John's School
Giggleswick School	Merchant Taylors' School	St. Lawrence College
The Glasgow Academy	Merchiston Castle School	St. Mary's College
The High School of Glasgow	Methodist College (Belfast)	St. Paul's School
Glenalmond College	Millfield	St. Peter's School
The Grange School	Mill Hill School	Sedbergh School
Gresham's School	Monkton Combe School	Sevenoaks School
The Haberdashers' Aske's Boys' School	Monmouth School	Sherborne School
Haileybury	Morrison's Academy	Shiplake College
Hampton School	Mount St Mary's College	Shrewsbury School
Harrow School	Newcastle-under-Lyme School	Silcoates School
Hereford Cathedral School	New College, Worcester (RNIB)	Solihull School
Highgate School	Norwich School	The Stamford Endowed Schools
Hulme Grammar School	Nottingham High School	Stewart's Melville College
Hurstpierpoint College	Oakham School	Stockport Grammar School
Hutchesons' Grammar School	The Oratory School	Stonyhurst College
Hymers College	Oundle School	Stowe School
Ipswich School	Pangbourne College	Strathallan School
The John Lyon School	The Perse School	Sutton Valence School
Kelly College	Plymouth College	Taunton School
Kelvinside Academy	Pocklington School	Tettenhall College
Kent College	Portora Royal School	Tonbridge School
Kimbolton School	The Portsmouth Grammar School	Trent College
King Edward VII & Queen Mary School	Prior Park College	Trinity School
King Edward VI School	Queen Elizabeth's Grammar School	Truro School
King Edward's School (Bath)	Queen Elizabeth Grammar School	University College School
King Edward's School (Birmingham)	Queen Elizabeth's Hospital	Uppingham School
King Edward's School (Witley)	Queen's College	Victoria College
King Henry VIII School	Radley College	Warwick School
King William's College	Ratcliffe College	Wellingborough School
King's College (Taunton)	Reading Blue Coat School	Wellington College
King's College School	Reed's School	Wellington School
King's School (Bruton)	Reigate Grammar School	Wells Cathedral School
King's School (Canterbury)	Rendcomb College	West Buckland School
King's School (Chester)	Repton School	Westminster School
King's School (Ely)	Robert Gordon's College	Whitgift School
King's School (Gloucester)	Rossall School	William Hulme's Grammar School
King's School (Macclesfield)	Rougemont School	Winchester College
King's School (Rochester)	Royal Belfast Academical Institution	Wisbech Grammar School
King's School (Tynemouth)	Royal Grammar School (Guildford)	Wolverhampton Grammar School
King's School (Worcester)	Royal Grammar School (Newcastle)	Woodbridge School
Kingston Grammar School	Royal Grammar School (Worcester)	Woodhouse Grove School
Kingswood School	The Royal Hospital School	Worksop College
Kirkham Grammar School	Rugby School	Worth School
Lancing College	Rydal Penrhos	Wrekin College
Latymer Upper School	Ryde School	Wycliffe College
Leeds Grammar School	St. Albans School	Yarm School
Leicester Grammar School	St. Aloysius' College	
Leighton Park School	St. Bede's College	
The Leys School	St. Bees School	
Liverpool College	St. Benedict's School	
Llandoverly College	St. Columba's School	
Lomond School	St. Columba's College	
Lord Wandsworth College	St. Columba's College (St. Albans)	
Loretto School	St. Dunstan's College	
Loughborough Grammar School	St. Edmund's College	
Magdalen College School	St. Edmund's School	
Malvern College	St. Edward's School	
Manchester Grammar School	St. George's College (Weybridge)	
Marlborough College		

3. The Russell Group Institutions are:

The University of Bristol

The University of Birmingham

The University of Cambridge

Cardiff University

The University of Edinburgh

The University of Glasgow

Imperial College of Science, Technology & Medicine

King's College London

The University of Leeds

The University of Liverpool

London School of Economics and Political Science

University of Manchester

The University of Newcastle

The University of Nottingham

The University of Oxford

The University of Sheffield

The University of Southampton

University College London

The University of Warwick