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# Which are the most suitable contextual indicators for use in widening participation to HE?

**Stephen Gorard**
**Vikki Boliver**
**Nadia Siddiqui**
**Pallavi Banerjee**
**Rebecca Morris**

Which are the most suitable contextual indicators for use in widening participation to HE?

Stephen Gorard, Vikki Boliver, Nadia Siddiqui, Pallavi Banerjee and Rebecca Morris
Durham University
s.a.c.gorard@durham.ac.uk

## Abstract

UK universities are increasingly making decisions about undergraduate admissions with reference to various contextual indicators which are intended to identify whether or not an applicant comes from a disadvantaged family, neighbourhood or school environment. However, the indicators used are often chosen because they are readily available, without much consideration of the possible alternatives and their comparative quality. This paper is part of a larger scoping review of existing research literature used to compile a list of potential contextual indicators, and assess these with respect to their quality, availability, and their relationship to outcomes in UK higher education. A search was made of relevant electronic databases, yielding around 120,000 reports initially, and 28 categories of indicators. Each indicator was assessed on the basis of existing evidence concerning its relevance, reach, availability, accuracy, reliability, and completeness – and in terms of whether its use might inadvertently create a different kind of injustice or lower the student outcomes for HEIs.

Many possible indicators are not readily available, or not accurate enough for use in policy and practice. In general, indicators concerning individual circumstances are more relevant than area-based or school characteristics. As expected, there is no ideal single indicator. And it is not clear that combining indicators leads to the advantages rather than the deficits of all. Here we list the best available.

There are some indicators for very small categories that can be used relatively un-problematically as long as the data can be made available at time of candidate selection, and these include being a recent refugee or asylum-seeker and having spent time living in care. However, neither of these is a solution to the more general issue of contextualised admissions. School type attended (private or state-funded) could also be used relatively safely, but requires clear definition, could lead to inadvertent injustice, and might not be necessary if good individual data on relative advantage is available instead. The category of mature applicant is also relatively unproblematic, but it is not clear that simply being older than traditional age is a disadvantage. The two most general indicators, most suitable for use, are considered to be eligibility for (or receipt of) free school meals, and having a disability or special educational need. However, like school type, both need care and some adjustment from how they are currently used or recorded. FSM should be based on a more refined measure than the usual yes/no threshold – and based on our secondary analyses reported elsewhere we propose the number of years an applicant has been known to be FSM-eligible. The range of recorded disabilities is now so great that again a simple yes/no flag is not appropriate. Instead, we will conduct more detailed work on how to use the disaggregated sub-categories in the most appropriate manner.

## Introduction

This paper outlines the idea of widening participation and previous approaches before explaining the logic of contextualised admissions, preparatory to our new review of the evidence on indicators available for contextualised admissions.

*Widening participation*

The home countries of the UK, member states of the EU, and many countries worldwide have concerns about the stratified nature of the student body in first-time undergraduate higher education (Triventi 2011). Students from less advantaged social and economic backgrounds are under-represented in UK higher education institutions (HEIs), especially in the UK's most selective universities and in some subjects leading to professions (Connor et al. 2001, Sutton Trust 2004, BIS 2011, Broecke 2015, Boliver 2015a, 2015b). Some comparative studies suggest the situation is more pronounced in the UK than other developed countries (Jerrim and Vignoles 2015). These patterns of unequal participation have improved since the 1960s (Gorard et al. 2007), but they still exist despite two major waves of higher education (HE) expansion in the 1960s and 1990s (Adnett et al. 2011, Boliver 2011). This has led to a number of attempts to 'widen participation' for the kinds of students currently under-represented in HE. And this has led to some widening of participation overall in HE, but still less so in the 'top' universities (Harrison 2011), and in demand areas like STEM subjects (Smith and White 2011). In fact, while disadvantaged students are just as likely to continue in education or training after the age of 18 as their peers, they are slightly less likely to continue to higher education (DfE 2016), and this includes some of the top attaining disadvantaged students (Sutton Trust 2008).

The basic problem is that access to HE is largely predicated on prior attainment, which is itself stratified in terms of the same variables and sub-groups (Gorard et al. 2007, Vignoles and Powdthavee 2009). Under-representation is not necessarily of potential students with identical prior qualifications (Broecke and Hamed 2008). Rather, students from less advantaged backgrounds are under-represented at least partly because their prior qualifications are lower on average. Even in the 'Russell Group' universities, which include most of those considered the most prestigious in the UK, rates of attendance have been found to be similar for different socioeconomic groups with ostensibly the same levels of prior attainment, at least in some studies (Chowdry et al. 2013), but less so in others (Zimdars et al. 2009, Noden et al. 2014). Their students are disproportionately from fee-paying schools, selective schools, and higher social class backgrounds largely because of their high prior average qualification levels.

The two main strategies for widening participation in higher education have previously been outreach work by higher education providers to encourage young people from disadvantaged backgrounds to apply to university, and efforts within the secondary and further education sectors to improve the pre-university academic attainment of pupils from disadvantaged backgrounds in order to increase the pool eligible for university admission. However, research has shown that many young people express a desire to go to university, including those from disadvantaged backgrounds, suggesting that limited aspirations play only a small role in the uneven social composition of university entrants (Kintrea et al. 2011, Gorard et al. 2011). A much more significant role is played by the seeming intractability of social disparities in school achievement – in 2014/15, just 41% of young people living in Scotland's most deprived areas (SIMD20) achieved one or more passes at Highers level or equivalent (SCQF level 6) compared to 80% of young people from the least deprived areas, for example (Scottish Government 2016, p.12).

*Contextualised admissions*

Partly in recognition of this persistent socioeconomic gap in school achievement, a third promising widening participation strategy is now being widely promoted – the use by universities of contextual data about prospective students' socioeconomic and educational circumstances to inform admission decision-making. Context – in the sense of the levels of disadvantage and challenges faced by pupils – has long been established as important in studies of school performance and improvement from a social justice perspective (Gorard 2000, Thrupp and Lupton 2006). Economically disadvantaged students face contextual challenges that necessitate additional efforts and resources not required by

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others, including money, time, knowledge, courage, sacrifice, and taking risks (Drotos and Cilesiz 2016).

The use of contextual data to inform undergraduate admissions decision-making in the UK has been advocated widely (Panel on Fair Access to the Professions 2009, Department for Business, Innovation and Skills 2011, Cabinet Office 2011, Social Mobility and Child Poverty Commission 2014, Supporting Professionalism in Admissions 2014, Office for Fair Access 2015).

> 'Contextualised admissions' is about using a range of factors and data, including comparative school and socio-economic data, to establish „relative" achievement of potential applicants. The concept is that, if the academic achievement of an individual is put into context, relative to the overall attainment level of the school at which the individual attended, HEIs may be able to identify the individual's real potential to achieve (Mullen 2011, p.3).

Contextualised admissions rest on acceptance of the principle articulated in the Schwartz Report that "equal examination grades do not necessarily represent equal potential" (Schwartz 2004, p.5) and that "it is fair and appropriate to consider contextual factors as well as formal educational achievement, given the variation in learners' opportunities and circumstances" (p.6). See also Universities UK (2003). Contextualised admissions were pioneered in Scotland in the 1990s and currently all Scottish higher education institutions use some form of contextual data to inform admissions decision-making in some manner, including prioritising applicants from under-represented groups for standard offers and/or adjusting entry requirements (Universities Scotland 2016). Across the wider UK higher education sector, more than a third of universities currently take into account the socioeconomic context of applicants' attainment when deciding whom to shortlist, interview, make standard or reduced offers to, or accept at confirmation as 'near-misses' (Moore et al. 2013), and most universities state that they plan to use contextual data in the future (Supporting Professionalism in Admissions 2013). Scottish higher education institutions are routinely using the Scottish Index of Multiple Deprivation (SIMD), and individual HEIs are using other factors as well such as those from state-schools, looked after backgrounds, mature entrants and pupils from low-income backgrounds or those who are the first in their family to go to university (Universities Scotland 2013).

In its final report published in March 2016, the Commission on Widening Access emphasised the necessity of contextualised admissions if these goals are to be realised. Echoing the Schwartz report, the CoWA report highlighted "compelling evidence that the school attainment of disadvantaged learners often does not reflect their full potential" (CoWA 2016, p.10) which means that currently "the applicant pool is being unnecessarily, and unfairly, limited by an over reliance on school attainment as the primary measure of academic ability" (CoWA 2016, p.36). The CoWA report goes further to state that, in the last ten years, "in many cases [university] entry requirements have risen well beyond what is required to succeed in degree level study" (CoWA 2016, p.10) as universities have sought to reduce the burden of rising numbers of applications to fixed numbers of course places.

In response, the Commission on Widening Access has recommended that:

> By 2019 all universities should set access thresholds for all degree programmes against which learners from the most deprived backgrounds should be assessed. These access thresholds should be separate to standard entrance requirements and set as ambitiously as possible, at a level which accurately reflects the minimum academic standard and subject knowledge necessary to successfully complete a degree programme (CoWA 2016, p.15).

Contextualised admissions policies are considered by many to be intrinsically fairer, and to represent a potentially powerful means of addressing the persistent under-representation of HE students from less advantaged backgrounds. They are a kind of positive discrimination within the current setup

(Clayton 2012). There are some indications that non-traditional students can perform as well in HE as more traditional applicants (McClements 2005), but the impact of CA has not yet been rigorously evaluated. The indicators of context used are often chosen because they are readily available, without much consideration of the possible alternatives and their comparative quality. In order to be effective, the indicators must be accurate, appropriate and complete, and policies for their use must demonstrably widen participation without unduly compromising student achievement (SPA 2010, Bridger et al. 2012). It would also be better if the approach was relatively uniform across the sector, which involves a more collective effort than currently (Social Mobility and Child Poverty Commission 2012, 2013). This paper offers a scoping review of the quality of available indicators for judging context, and the existing evidence base on how contextually-identified students perform in higher education.

There is some evidence from US affirmative action programmes that including disadvantage in assessing a student application for college works – in the sense that it leads to a more diverse student body than using academic achievement alone (Young and Johnson 2004). However, such WP attempts are perhaps inevitably most effective in the least competitive colleges (Horn et al. 2003). Such programmes have also been legally challenged as unfair at time of admission by which time it is too late (McLachlan 2005). In many respects, the older outreach and early intervention combination is both legally fairer and perhaps more effective. The problem is that students move through the phases of education becoming more socially stratified with every choice or transition, including the option to drop out of education entirely (Lucas 2001, Gorard and See 2009). So, those considering HE are *very* stratified in comparison to their original cohort, but actually not nearly as stratified in terms of each other. Of this group, those who participate are very similar in many respects to those who do not. The big difference is with the 60% or so of the original cohort for whom HE is not an option. True WP would include them as well.

Government guidance on the use of contextual data in undergraduate admissions has stressed the need for policies and practices to be "fair, transparent, and evidence-based" (BIS 2011, OFFA 2013 p.22, SFC 2015). However, according to Supporting Professionalism in Admissions their case studies with selected universities have shown that the universities involved currently declare their WP policy and also the indicators they may use, but that any specific approach or protocol adopted during the selection process and applicant interviews remains undeclared (SPA 2015). The process of selection on contextual indicators is largely dependent on "tutors' professional judgment". Few universities seem to reference research evidence to support their contextual admissions policies, and the existing evidence base is generally anyway weak, piecemeal and complex, as we illustrate in later sections of this paper. The ideal is to identify those *individuals* who appear to have lower grades in the prior qualifications due largely to earlier disadvantage. How is this possible? Where contextualised admissions have been piloted in the UK there has also been some success (e.g. Allison 2013), and there have been some imaginative schemes (e.g. Oxford University 2016). However, we found no studies with an appropriate causal design or where such programmes had been robustly evaluated.

Clearly a programme of research is needed to answer three fundamental questions regarding the use of contextual data in undergraduate admissions. First and foremost, research is needed to examine the extent to which different individual-level, neighbourhood-level, and school-level contextual indicators are correlated and to identify which ones represent the most valid and reliable measures of the socioeconomic circumstances of individuals.

Second, much more systematic work needs to be done to determine how well different contextual indicators, singly and in combination, predict success at degree level for comparatively disadvantaged students. It will be important to determine which contextual indicators identify students who are likely to perform as well as or better than comparably qualified peers from more advantaged environments, and who may therefore warrant prioritisation for admission over more advantaged applicants with

comparable or higher grades. But it will also be important to establish which contextual indicators are associated with poorer performance at degree level relative to comparably qualified peers from more advantaged environments so that additional support can be given to such students to enable them to realise their potential fully. It will, of course, be important to explore how these patterns vary by degree subject area and academic entry requirements.

Third, we need to establish how much impact different contextual admissions policies can be expected to have on the goal of widening participation in higher education, for the sector as a whole and for particular institutions and academic disciplines. As part of this, it will be important to establish robust ways of measuring the actual impact of particular contextual admissions strategies on the socioeconomic make-up of the student body, so that universities can better evidence the success of their contextual admissions policies at widening participation without compromising student achievement.

Our study, of which this review forms part, is therefore intended to:

1. Establish which contextual indicators, singly and in combination, constitute the most valid and reliable indicators of the socioeconomic circumstances of individuals;

2. Determine how well different contextual indicators, singly and in combination, predict success at degree level for comparatively disadvantaged students, in absolute and relative terms;

3. Predict how much impact particular contextual admissions policies can be expected to have on the goal of widening participation in higher education.

4. Offer advice on which indicators, separately or in combination should be used by HEIs.

*The structure of this paper*

In order to address these questions, the next section of this paper looks at a range of possible indicators of disadvantage, and the qualities they would need in order to be used fairly for contextualised admissions. The paper briefly describes the methods used in searching for published evidence about these indicators, and then outlines the evidence on the qualities of each. The paper ends by looking at the implications for practice and the next steps for research.


**Possible indicators of disadvantage**

*The necessary quality of indicators used in practice*

In order to be used fairly and effectively for the purpose of contextualised admissions, any indicators ought to be easily available to decision makers, accurate, reliable, and have no missing cases or values. Of course, no indicator will be perfect in all of these respects but these are the criteria by which they can be judged as part of our review. Each of these intersecting criteria is first discussed in slightly more detail.

Potential indicators of contextual disadvantage can only be used to inform admissions decisions if they are readily available at the point of admissions decision-making. A range of contextual indicators are currently available to universities via UCAS, and UCAS is looking at improving its service to universities in this regard. Some universities supplement the contextual data provided by UCAS with administrative pupil and school data such as that from the National Pupil Database of school pupils in

England, and with additional neighbourhood-level metrics available from government and commercial sources. There are, however, some potentially useful contextual indicators that are not currently available at the point of admissions decision-making. For example, universities do not have access to official family income data for applicants, but this could be made available in theory by HMRC and/or the Student Loans Company.

Any indicator of contextual disadvantage must be an accurate measure of, and isomorphic to, the concept it is intended to capture – such as socioeconomic or educational disadvantage. The validity of an indicator is compromised if it yields a significant number of false positives, whereby a number of individuals are identified as contextually disadvantaged when they are not. An example of a contextual indicator with low validity in this respect might be the use of a distinction between individuals educated in state and private schools, since many state educated pupils are not socioeconomically or educationally disadvantaged (and a few privately educated pupils *are*). The validity of an indicator is also compromised if it yields false negatives - individuals identified as not contextually disadvantaged when they are. An example might be the use of any threshold, such as for free school meal eligibility, given that although those eligible for free school meals would almost certainly count as socioeconomically disadvantaged those with family incomes just over the threshold for free school meal eligibility are likely to be experiencing very similar circumstances. Precision will also be lower for indicators measured at the aggregate rather than individual level. For example, an individual living in a disadvantaged area may not be typical of others living in the same locale. Confusing levels of aggregation like this has been termed the ecological fallacy.

A reliable indicator of contextual disadvantage would yield consistent results across different individuals or on different occasions for an individual whose circumstances have not changed. The reliability of an indicator may vary depending on the source of information – for example, self-reported information will generally be less reliable than information that has been administratively verified, due to misreporting, whether intentional or unintentional.

The usefulness of contextual indicators may be compromised by problems of missing data arising from non-response to requests for self-reported status (e.g. a university applicant may leave the 'parental higher education' field blank) or non-response in administrative data (e.g. a pupil legally eligible for free school meals may fail to have registered as such). Such missing data will therefore also *necessarily* compromise all neighbourhood-level and school-level indicators of contextual disadvantage, although this may not be immediately apparent to their users. For example, although all postcodes are assigned values on neighbourhood-level measures of disadvantage, the underlying individual-level data is likely to be subject to a degree of non-response. And in addition, the unit of aggregation, such as the postcode, will also be missing or unclear for additional cases. Missing data causes bias in any analysis and cannot be overcome by using the data we do have to try and estimate the data that is missing – such an approach usually worsens the bias (Kalton and Kasprzy 1982, Gorard 2015).

In addition to these factors, the use of any indicator for contextualised admissions should not lead to a different form of injustice, such as denying a limited place to a more deserving applicant, and ideally it should not substantially lower the retention, degree completion and degree classification rates of the HEIs concerned.

The paper looks at all of these characteristics of a good indicator for the purpose, and summarises the evidence found on their relative quality and usefulness.

*The kinds of indicators available*

There is a wide range of possible indicators of socioeconomic and personal disadvantage that could be used for contextual admissions (e.g. Moore et al. 2013, Annex C). This section of the paper lists many of them, and the qualities they would need in order to be used successfully in practice. Indicators can relate to the individual who has applied to university, to their family or peers, or to the school or neighbourhood they come from.

*Individual characteristics*

These include whether a person
- Is a mature student
- Has a disability
- Is from a potentially disadvantaged ethnic group
- Speaks English as a second or additional language
- Has a potentially disadvantaged gender status
- Is a recent immigrant
- Is a refugee/asylum seeker

Of these, the first four are available in existing official records such as those provided by HESA or NPD. The latter three are only partly available, such as whether an applicant is registered as male or female, or are only available via UCAS after an admissions decision has been made. Of course, almost none of this information is available about overseas applicants, and very little is available (such as from NPD) about home EU-domiciled applicants. Some is even missing for applicants from different home countries of the UK. Therefore, the notion of widening participation via contextualised admissions is necessarily focused on UK applicants only, and so this paper follows suit.

*Individual experiences*

These include whether a person
- Has a non-traditional qualification route to HE
- Has spent time in care
- Has suffered chronic ill health
- Is a young carer themselves
- Has suffered a recent bereavement or other disruption/adversity
- Was a participant in an outreach programme/summer school
- Attended a school targeted by an outreach programme

Of these, only the first two are available in official records such as those provided by HESA, UCAS and NPD. The latter five are only partly available, such as how often an applicant missed school, or are available via specialist lists that may become available. Most are based on self-report.

*Family characteristics*

These include
- Free school meal eligibility/receipt
- Parent/carer education and qualifications
- Parent/carer occupation or social class
- Educational maintenance allowance recipient
- Family receives income/tax credits

Of these, only the first three are available at time of application in official records such as those provided by UCAS and NPD. Only the first has any legal standing, and the others depend on self-

report where they are available. The others are only partly available, although relevant official datasets do exist. EMA is not available for England, making any UK-wide scheme impossible.

*School characteristics*

These include
- School type, such as whether fee-paying or state-funded
- School average performance at KS4 and/or KS5
- % pupils eligible for free school meals
- % pupils progressing to HE
- % pupils receiving EMA, where and when EMA is available

Of these, the first three are available in official records such as NPD. The other two are available via UCAS.

School-level measures of context, based on the educational institution currently or previously attended, are of two kinds. One set includes aggregated socioeconomic indicators such as the percentage of students eligible for free school meals in each school. These may be unreliable indicators of the circumstances of specific individuals, and have the same problems as individual measures in aggregate form, but are at least officially verified measures. The other set of school-level contextual variables refer to aggregated academic performance indicators. These may be expressed in absolute terms, such as the average GCSE or A-level or Scottish Highers (and equivalent) point score of pupils in the school, and the percentage of pupils in the school who go on to higher education. Or they may be expressed in relative terms, such as whether or not the pupil's own performance is above average for their school. The data may not be comparable UK-wide because of differences in the assessment system. There are differences between sectors (the iGCSE data is not always included in DfE figures, for example), and missing data will arise (over and above the usual level) due to movement between schools and the opening and closing of schools.

*Neighbourhood characteristics*

These include
- Income Deprivation Affecting Children Index (IDACI)
- Local HE participation rate (POLAR)
- Index of Multiple Deprivation (IMD) or Scottish IMD (SIMD)
- Neighbourhood socioeconomic demographic (ACORN, MOSAIC)

Of these, the first is available via NPD both for school attended and home. The others can be linked to applicant data via home post codes. POLAR and IMD are available via UCAS. ACORN and MOSAIC have to be specially purchased.

Neighbourhood-level indicators of context are based on students' home postcodes and identify students who live in an economically deprived area, in areas where many residents are from low socioeconomic groups, characterised by a low rate of participation in higher education, or in a rural area. These measures of areas might be more valid than self-declared and unverified individual-level indicators, but are unlikely to be valid indicators of the circumstances of specific individuals. It is an 'ecological fallacy' to assume that people have the modal characteristics of those who live in the same area (or attend the same school, of course). Anyway, most of these area-level indicators are based on the aggregation of self-reports anyway (via the Census of Population, for example), and actually have more missing data included than the individual indicators. The multiple indices use a variety of data items that were not designed for this purpose. A further problem is that several of these variables are

based on data or approaches specific to one or more home countries, meaning that a UK-wide system is not possible.

*Multiple indicators*

Students are typically flagged-up as widening participation applicants on one or multiple indicators of disadvantage. Universities may also flag up students who have participated in their outreach schemes, with selection into these schemes usually having been based on a mixture of school-level contextual indicators. Information from a university applicant's personal statement or the teacher reference submitted with their application may also be used (Moore et al. 2013). The use of multiple indicators might help institutions to identify those applicants most likely to be disadvantaged (reducing the number of false positives). Multiple indicators may also serve to hone in on those who suffer the most severe disadvantage (focusing attention where the need is greatest), a downside of which may be a significant number of false negatives. SPA (2016) says:

> The aim of using contextual information and data in admissions is to form a more complete picture of the characteristics of an individual applicant. Our 'gold standard' will therefore be data that relates directly to the individual. However, the data that is actually available in admissions is often less granular, relating to household, school or area/neighbourhood. Using this less granular data runs a risk, however - we cannot be certain that the characteristics of the neighbourhood (for example) accurately reflect the disadvantage experienced by the individual. The aim of triangulation (or intersectionality) is to mitigate this risk by combining data from several sources to reduce the likelihood of false positives.

**Methods**

This paper is based on a large-scale scoping review. The first selection criteria for inclusion were for papers or research reports:

- In the English language
- Published 2000-2016
- Relevant to the UK setting

The databases searched include Google Scholar, ProQuest dissertations and theses, and ERIC-EBSCOHOST.

A number of different searches were used. The most basic for Google Scholar was

> (contextual*) AND (admission*) AND ("higher education")

The most complex for ProQuest was

> ((admission* OR admit* OR educat* OR clear* OR select* OR school OR HEI* OR Degree OR tertiary* OR undergrad* OR "higher education" OR "Higher education" OR university*) AND
> (context* OR disadvantage* OR depriv* OR FSM OR ethnic* OR EAL OR gender OR sex OR SEN OR geog* OR IDACI OR postcode OR "reduced price lunch" OR disability OR WP OR "widening participation" OR outreach OR "summer school" OR "supported progression" OR IMD OR SES OR LPN OR "looked after" OR "in care" "family income" OR "parental education" OR EMA OR refugee OR "asylum seeker")
> AND

(pupil OR student OR child*)
NOT
(hospital OR medic* OR drug* OR treat* OR therapy*))

This yielded around 120,000 reports in total, from which duplicates or reports or the same research were deleted. The results were screened by title and abstract for those covering:

- The quality and measurement of any indicator of disadvantage relevant to HE admissions
- Any of the indicators in the previous section of the paper, used for admission to HE or to predict HE outcomes
- Wider or fairer access to participation
- Non-traditional students
- Predictors of completion and attainment in HE
- Affirmative action

Papers and research reports were then only included if they were relatively large-scale empirical pieces, appropriately designed, with clear descriptions, or if they were detailed discussions of the merits and difficulties of any potential indicator(s). We added to our list pieces already known to us or referred to in pieces uncovered by the search. We also conducted a few explicit searches for work in areas or on indicators that no large-scale, reasonable quality work was found in relation to. This paper cites 231 research reports.

The results cannot be complete or definitive. However, they are unlikely to be changed substantially by the uncovering of research that has been missed so far.


**Findings re indicators**

The initial findings are grouped as far as possible according to the list of indicators from the earlier section of this paper. First however, the paper looks at some of the alternatives to the use of prior attainment, whether contextualised or not, in selecting applicants to HE.

*Selection tests and other admissions tools*

A range of factors can be considered when selecting students for entry to a competitive course, and a lot of the evidence on this comes from courses such as medicine. The tools that are not clearly predictive of future performance, according to the evidence, include personal interview, personal statement, references, personality testing, emotional intelligence and situational judgment test (Goho and Blackman 2006, Siu and Reiter 2009). Boliver (2016) suggests that interviews and related processes lead to bias in selection at the most prestigious universities, but Lemav et al. (2007) show that, in admissions to highly selective medial courses, the use of multiple interviews can reduce bias.

The tools that do have robust predictive validity include academic scores like prior attainment, grade point average and aptitude tests like the Medical College Admissions Test, or the Scholastic Assessment Test/American College Testing Assessment (SAT/ACT) scores in the US (Schmitt et al. 2009). How do the two latter approaches compare?

Educational admissions tests for HE have been proposed in order to increase diversity and fairness in selecting applicants – they are supposedly blind as to individual characteristics, and independent of the social skills that can affect interviews. They have been widely adopted in the UK for applicants to courses like medicine and dentistry, and to some high prestige universities. And similar tests have been tried in Australia to try and identify students with the ability to undertake tertiary education,

despite them having discouraging or ambiguous achievement scores at the end of high school (Coates et al. 2010, Coates and Friedman 2010).

Compared to interviews, the use of UKCAT may reduce the selection bias towards students from independent and grammar schools (Wright and Bradley 2010). There was no evidence that applicants from these schools did better at medical school than those from state maintained schools. UKCAT and similar entrance tests may add slightly, but only slightly, to the predictive accuracy of prior educational attainment (McManus et al. 2013). They may be better used as a method of triaging candidates for interview (Turner and Nicholson 2011).

Educational admissions tests for HE have been accused of being biased by the SES of the candidate. SES is related to test scores, and test scores are strongly related to academic performance at university. However, controlling for SES only lowers the link between test scores and academic performance slightly (Sackett et al. 2009). Thus, the vast majority of the test:academic performance relationship is independent of SES. Most of the variation in attainment at school, at least, is explicable in terms of general 'intelligence' as assessed in childhood (Deary et al. 2007).

On the other hand, levels of preparation for the UKCAT test appear to differ for different types of students and by type of school or college attended (Lambe et al. 2012). This may disadvantage some candidate groups at present, although it could be reduced if more teachers and tutors were able to offer advice about the test. The use of step-wise and aptitude test based admissions in Sweden tended to favour upper-middle- class and Swedish applicants compared to those admitted via compared to those admitted via grades grades (Cliffordson and Askling 2006). And the students admitted via tests did less well at university than those admitted via grades. The authors conclude that using prior grades is the fairest approach.

Therefore, pre-entry qualifications remain apparently the best predictors of success in HE (Atkinson and Gleiser 2009), with much less of a link with ethnicity and socio-economic background than other measures (Barrow et al. 2009). In fact, once prior attainment is accounted for, some analyses report little or no link between performance in examinations at HE and individual background characteristics (Bodger et al. 2011). Other analyses suggest that once prior attainment is taken into account, HE outcomes are still stratified to some extent by sex, ethnicity, disability and school type (HEFCE 2014)

In the UK, the use of SAT does not add anything to the predictive power of Key Stage 4 (KS4) and KS5 prior attainment in terms of HE completions and degree classes. SAT is predictive of later outcomes but less so than prior attainment (Department for Business, Innovation and Skills 2010). It is of no help in identifying students with the potential to benefit from higher education whose ability is not adequately reflected in their prior attainment. High school GPA is preferable (Sawyer 2013). Similar results have been suggested for the UKCAT used by medical and dental schools (James et al. 2010). A-level grades (KS5) have long-term predictive validity for undergraduate and postgraduate careers. In contrast, a test of ability or aptitude (AH5) was of little predictive validity for subsequent medical careers (McManus et al. 2003). And the same lack of correlation with subsequent scores, and with student withdrawal, has been observed with UKCAT (Lynch et al. 2009).

Yates and James (2006, 2010, 2013) focus on those who struggle in studying medicine and are at risk of withdrawal. The UKCAT does not help to identify applicants who would struggle. There are more easily discerned by having lower initial grades, late offers of a place, and negative comments in references. This suggests that traditional academic selection, perhaps with academic references, is more suitable. Stringer (2008) even argues that if SAT entry tests are genuinely tutor-proof then it is unfair for applicants to be given access to HE on the basic of a score that cannot be improved or worked on. This does not accord with natural justice. Previous academic performance is a good, but not perfect, predictor of achievement in medical training. It accounts for 23% of the variance in

performance in undergraduate medical training and 6% of that in postgraduate competency (Ferguson et al. 2002).

The predicted KS5 grades as used by HEIs to set many offers of places are seen as largely accurate – 90% are within one grade, with most mis-predictions being overestimates (BIS 2011, Gill and Benton 2015), but one study suggests that the accuracy may be less, with only 16% of predictions being 'perfectly' correct (Wyness 2016). KS4 and AS level results known at time of application in the UK predict whether student will get a 2:1 or better with about 70% accuracy, with GCSE results being slightly the better of the two (DfE 2013).

Longitudinal studies have shown that children's self-concept, well-being, attitudes and behaviour in school predict achievement in school (Patalay et al. 2016), plans for HE (Ross and Lloyd 2013), and success in HE (Carneiro et al. 2007, Gregg and Washbrook 2010, Adam et al. 2012). 'Conscientiousness' is a good predictor of HE success (Ferguson et al. 2003). Some US universities in USA have tried using assessments of such non-cognitive attributes to try and widen participation in selection (Tracey and Sedlacek 1982), and the evidence is that this works in the sense of leading to a more representative intake (Thomas et al. 2007). One major drawback is that attitudes and aspirations formed earlier in life may just as stratified as SES (Chowdry et al. 2011).

*Summary*
Some of the common tools used for admissions such as interviews and tasks may lead to more bias in offers and entry. The use of additional tests does not seem to add much of value. The best predictor of success in HE for traditional entry remains prior attainment, based on KS4 at offer stage and KS5 at acceptance stage. There may be some promise in the use of non-cognitive measures, but considerable work remains to be done here.

*Individual characteristics*

This section considers possible indicators of disadvantage in accessing HE that are specific to the individual concerned, rather their family, school or local area. It discusses each of the suggested individual indicators in turn before summarising their usefulness for WP.

*Is a mature student*
Mature students are often, perhaps unintentionally, ignored in policy pronouncements and even research about widening participation to HE, which tends to focus on existing, traditional age full-time participants to the exclusion of all other relevant parties and comparators (Gorard 2013).

Mature entrants are more likely to have left HE one year after entry (HEFCE 2013). But, in general, those with non-traditional entry qualifications tend to achieve higher degrees (Hoskins et al. 1997). Whether they are full or part-time, mature students tend to do well after HE, better indeed than their younger peers in terms of subsequent graduate employment and salaries (Woodfield 2011). In Scotland a very high proportion of mature students already have a higher education qualification (Winterton 2010). Therefore, this is not a high risk category for contextualised admissions (i.e. there is little or no danger for HEI performance measures), and age of birth is usually available to admissions tutors, or can be safely estimated from school qualification certificates and other records. Overall, this is easy to implement for contextualised admissions. What is not clear is that is whether mature students should be treated as disadvantaged.

*Has a disability*
Disabled students display many of the characteristics of at-risk students. Hence disability is considered an important factor for contextualising admissions in higher education institutions in the UK and elsewhere. Clearly, children and young people with special educational needs (SEN) tend to

have lower average attainment and make lower average progress in any phase of schooling (Clarke et al. 2015). This means that they will, on average, be less likely to proceed to HE.

SEN is not a simple binary indicator like eligibility for FSM (see below), and does not have such a clear legal definition (Florian et al (2004). This means that there are different levels and types of challenges faced by students. Multiple challenges are often ignored in recording the most serious one or two for any individual, and the 'identification' of these challenges can itself be stratified by other indicators of relative advantage or disadvantage.

The percentage of missing data for SEN pupils in NPD is relatively high (11% or more). Even for the data that does exist, Douglas et al. (2012) point out concerns about the quality of data entry. "The 2010 Department for Education (DfE) reporting on attainment data for SEN sub-groups, note that a (small) number of young people with 'profound and multiple learning difficulty' had achieved two A-levels or equivalent in 2008 and 2009 (p.106). Given the nature of this disability group, these data do not appear accurate. It is unclear, however, whether the initial error was at time of data collection (e.g. the incorrect categorising of a number of pupils)."

The Higher Education Statistics Agency (HESA) uses ten different categories of self-declared disability during data collection from application forms of the Universities and Colleges Admissions Service (UCAS). These are:

- dyslexia
- blind/partially sighted
- deaf/hearing impairment
- wheelchair user/mobility difficulties
- on personal care support
- mental health difficulties
- unseen disabilities such as diabetes, epilepsy, asthma
- multiple disabilities
- autism
- any other disability not listed above

There is considerable overlap between some of these categories, and many more individuals have multiple disabilities than tend to be recorded. Most might be more accurately recorded in official statistics such as those provided by schools in NPD. But the allocation to SEN categories is based on pupils' greatest needs at school (DfES 2003). This may lead to simplification of complex multiple learning difficulties as staff are forced to focus on the 'greatest difficulty'.

The indicator provided to HEIs by UCAS does not always distinguish between levels of severity of any learning challenges, and each type might arguably be more or less serious as a learning challenge anyway. The types tend to be conflated into a binary variable and used as an indicator for contextualised admission. This may not be valid for a number of reasons (below), but most obviously a student with mild dyslexia should not be treated the same as one with both severe visual impairment *and* mobility problems. It would be fairer to disaggregate this indicator into a number of categories of risk or challenge.

Historically, SEN and especially the identification of learning or behavioural problems have been more prevalent among lower SES students. This stratification may be partly accurate, reflecting multiple disadvantages, but it may also be linked to differential diagnosis. Students in disadvantaged or more social segregated school settings are more likely to be diagnosed as having a behavioural disorder, for example, whereas those in more advantaged settings may be treated as being merely 'naughty' (Gorard and See 2013). However, this historical trend has changed with the rise of dyslexia

and similar unseen disabilities. A disability statement based on dyslexia yields an increased chance in the competitive education system for the child (such as extra time in examinations), and it is clearly the middle-classes in the UK who have taken most advantage of this (Tomlinson 2012). An overall disability flag indicator, most especially a self-declared one, is therefore vulnerable to abuse.

Compared to the school and more general population, students flagged as disabled are slightly over-represented in UK higher education (Gorard 2008). They are also fairly evenly distributed across HEIs (Croxford and Raffe 2013), and are increasingly completing their first degrees successfully (Pumfrey 2008). In general, students with disabilities are as likely to continue after the first year as other students (HEFCE 2013). Perhaps, while SEN students have lower achievements at school on average, those that enter HE are more successful. However, it is also likely to be that the flag variable is not valid for the reasons suggested above. The key, therefore, is which *kinds* of students with reported disabilities enter and succeed at HE.

A study by Mamiseishvili and Koch (2011) suggests that students with dyslexia are most likely (86%) to persist with their studies (from first to second year) and those with a physical disability are least likely (70%), among students with any disability. None of the figures in this study are surprising – those with psychiatric problems were more like those with physical disabilities in terms of dropout, while other unseen disabilities were like those with dyslexia. But these substantial differences in outcomes emphasise the need to disaggregate the 'has a disability' flag, both for contextualised admissions and for the kinds of support HEIs provide after admittance.

*Is from a potentially disadvantaged ethnic group*
Ethnic origin is an important characteristic in the sense that it shows consistent variation in individuals' attainment and progression in education, and is correlated to some extent with measures of income and social class.

In the US, different application patterns are clear for ethnic minority students, especially African American and Hispanic origin, relative to White and (East) Asian (Flores and Horn 2012). This application difference explains most of the difference in intakes. Affirmative action by top tier universities, with the same aim as contextualised admissions, is linked to wider participation by ethnic minorities (Long 2007). However, students admitted under such affirmative action programmes tend to get lower GPAs, and are less likely to graduate (Rose 2005).

In the UK, participation by ethnic minorities overall is higher than might be expected from the population (Gorard et al. 2007, Chowdry et al. 2008), and this is especially so for (South) Asian applicants to areas like medicine and dentistry (Gallagher et al. 2009). However, the level of degree completion is then often lower even once age, prior attainment and subject of study are accounted for (Broecke and Nicholls 2007). In fact, the academic attainment of ethnic minority graduates at UK HEIs is generally lower than that of White UK graduates, and this only partly explained by variations in the students' qualifications on entry into higher education (HEFCE 2015). Black and Chinese minority students are most likely to have withdrawn from their course after one year (HEFCE 2013), or to have been made to withdraw (Woodfield 2017). Richardson (2008) therefore argues that it is premature to consider widening participation in terms of access to higher education for ethnic minorities until this is matched by parity in terms of educational outcomes. However, this assumes that any 'deficit' lies with ethnic minority students rather than with the pedagogical practices and cultures of universities . See also Yates and James (2006), McManus et al. (2013), and Thiele et al. (2015).

In some of the more prestigious HEIs (Russell Group) ethnic minorities with equivalent qualifications are proportionately less likely to receive an offer for courses overall (Boliver 2013), and also for courses where ethnic minority applications are more prevalent, suggesting that admissions tutors may

be attempting to create ethnic minority balance in the student body, and so creating a different kind of unfairness (Boliver 2016). There is some evidence that predicted grades at A level are more likely to be underestimated for ethnic minorities, especially Black students (BIS 2011), but Wyness (2016) reports that ethnic minority grades are actually over-predicted.

As with disability and SEN, it is probably necessary to disaggregate ethnic minority groups in order to use this indicator to widen participation in an effective manner. Some ethnic groups, such as Chinese, are well represented across the HE sector of the UK. Others, such as Black Caribbean origin students, are disproportionately in less selective or less prestigious HEIs, and others again such as travellers and White UK are under-represented in HE as a whole. The latter chiefly concerns White UK students from poorer families or less prestigious occupational backgrounds. And this is related to one of the major issues for ethnicity – how much is any disadvantage about ethnicity itself and how much about it acting as a proxy for other forms of disadvantage (Stand 2011)? Some studies suggest that ethnicity has only a minor link to educational outcomes once other factors such as SES are accounted for (Robinson, 2010, Gorard and See 2013), and others suggest that some apparently disadvantaged groups actually do better in some respects after controlling for social class and other factors (Van Dorn et al. 2006).

Ethnicity does not have a clear legal definition like FSM, and even in official statistics such as NPD or the population census it can only be based on self-report. It has a large and growing number of categories, that either fail to capture the real variation or produce unwieldy schemes and tiny cell sizes (Williams and Husk 2012). The term is used in different and contradictory ways (Salway et al. 2010). It could be based on common ancestry, memories of a shared past, a shared cultural identity which might include kinship, religion, language, shared territory, nationality or physical appearance (Lee 2003). The classification is heavily dependent on the identification of sole ethnicities, with the mixed categories intended to be for a minority. But it is hard to contend that there are any individuals who do not have a mixed ethnic origin of some kind. In NPD, ethnicity has at least as many missing values as FSM and SEN indicators do. Missing, refused or 'not known' is the largest ethnic minority classification in the UK population census, and a common response in UCAS data. All of this does not make it a particularly reliable or valid indicator (Gorard 2003).

*Speaks English as a second or additional language*
This is available via NPD, and the full indicator specifies the first language of the home or family. However, a substantial minority of cases (9% or more) are missing a valid value. It can be an indicator of disadvantage given that instruction in the UK is generally in English. However, this is usually only a temporary disadvantage and for some individuals it is not even that. Almost all of the material found in our review related to international students attending Western universities rather than about EAL students at school, or applying to university. There are suggestions that over and above any problems experienced by individual EAL students at university, having a large proportion of EAL students can create further problems (Barton et al. 2005).

*Has a potentially disadvantaged gender status*
This would currently have to be based on self-report and is not an indicator available to HEIs via UCAS. We found no evidence relating transgender students and attainment at school or HE.

One of the most chronically and systematically under-represented groups in UK HEIs is males, especially working-class males. But this is seldom if ever considered as a contextualised admissions indicator by itself.

*Is a recent immigrant*
This would currently have to be based on self-report and is not an indicator available to HEIs via UCAS before decision on application. It is not clear that being a recent immigrant is necessarily an

indication of educational or social disadvantage. A student from an English-speaking professional family moving to the UK from the US, for example, would not be considered disadvantaged but would be a recent immigrant. Immigrant groups vary considerably in their access to and success in HE, and some face clear barriers (Erisman and Looney 2007).

*Is a refugee/asylum seeker*
This indicator represents the often disadvantaged status of recent refugees and asylum seekers. A refugee is, *ceteris paribus*, more likely to be disadvantaged than a recent immigrant more generally, but this is still not necessarily so.

Currently, HEIs only receive this data from UCAS after an institution has made a decision on the application, and the data is based only on how applicants chose to classify and identify themselves in their UCAS applications. A substantial number select 'I prefer not to say', and so there would be considerable missing data as well as uncertainty if this were used for contextualised admissions.

Our review found no large-scale or authoritative evidence relevant to this indicator. It is clear that UK universities are trying to help asylum seekers gain access to higher education (http://www.star-network.org.uk/index.php/resources/access_to_university).

*Summary of quality and usefulness*
Some of the individual characteristics deemed desirable for contextualised admissions are not readily available to HEIs, and it is not clear how they could be made available in a trustworthy form. Most have considerable missing data. Some are based on very difficult classifications, or groups that are not necessarily disadvantaged in education.

There is, as far as this review found, more evidence on the quality or the outcomes at HE of individuals with these characteristics than with individual experience indicators. But even here there is so far little or no robust work on refugee or gender status, for example.

Ethnicity is difficult to handle, with some clearly under-represented groups such as travellers but others that are over-represented in HE and perhaps attaining at least as well as expected. It is probably best to use this indicator in conjunction with another. For example, White UK is not a disadvantaged group *per se*, but White 'working-class' may be.

The easiest individual indicator to use for contextualised admissions is mature application status. This seems relatively unproblematic both in terms of identifying individuals and student outcomes. However, to be a non-traditional age student is not in itself a mark of disadvantage.

It is clear that disability and SEN *must* be taken into account. However, types of learning challenge should be disaggregated and perhaps handled differently in admissions. Dyslexia, for example, is already catered for when studying and sitting for prior qualifications in a way that visual impairment or mobility problems cannot be. It is also important that the indicator must not be based solely on self-report which is biased both by some wishing to hide or minimise their 'disadvantage' (they may rightly consider it a form of diversity perhaps not catered for by wider society rather than any kind of individual disadvantage), and by parents with the determination and resources to seek a status or statement that might, perversely, provide an educational advantage at school.

*Individual experiences*

This section considers suggested indicators for contextualised admissions based on the prior experiences of individuals, as opposed to their characteristics.

*Has a non-traditional qualification route to HE*
For UK residents applying to HE, the clearest 'non-traditional' route is that taken by mature students using prior experience as an alternative to KS5 or similar prior qualifications. Mature students are covered in the section on individual characteristics (see above).

*Has spent time in care*
This indicator covers time spent in local authority care by the applicant, and includes public care and if they lived in one or more foster care, semi-independent living or residential care homes for three months or more. Children and young people living in care, or who have previously lived in care, have among the worst educational outcomes in the UK. This covers only a relatively small number of cases, and they can all simply be tagged for contextualised admissions.

This indicator has a relatively simple, binary and official definition, and where known this indicator is sent to HEIs via UCAS with application data. However, at present the information is only self-declared by the candidate, and is unverified by governments, UCAS or HEIs. Currently, a lot of relevant data is missing or unclear. Such information is likely to yield both positive and negative misclassifications. It would be better if this data could be made available from official records to a responsible central authority. This means that the candidate would not need to declare it. Our review found very few studies relevant to this indicator and the relevant ones were perhaps necessarily small scale (e.g. Martin and Jackson 2002).

*Has suffered chronic ill health*
No medical or similar records are available to HEIs, and this indicator can only be based on self-report.

*Is a young carer themselves*
No official records are available to HEIs, and this indicator can only be based on self-report. We found no evidence relating this to HE or attainment at school despite a specific search.

*Has suffered a recent bereavement or other disruption/adversity*
No official records are available to HEIs, and this indicator can only be based on self-report.

*Was a participant in an outreach programme/summer school*
This would indicate an applicant who was part of a summer school, supported progression or HEI outreach programme. These activities are directly linked to widening participation and are usually aspiration-raising activities intended for disadvantaged students.

However, as with school and neighbourhood characteristics, participation is not in itself an indication that the participant is disadvantaged. HEIs receive data on this with applications via UCAS, but this data will be incomplete with a lot missing. The information via UCAS is self-reported, although HEIs may be in a position to check the veracity where it relates to their own activities. There has been almost no robust evaluation of the impact of these outreach programmes (Gorard et al. 2007, 2017). The criteria for participation will differ between schemes and institutions, and may not be clearly enforced (i.e. some participants may not be individually disadvantaged).

*Summary of quality and usefulness*
A majority of the individual experience indicators deemed desirable for contextualised admissions are not available to HEIs other than via self-report. UCAS or the universities themselves could, with applicants' permission, check with local authority or government records applicants' claims to refugee/asylum seeker status, having spent time in care, or being a young carer to family members. However this would not get around the problem of non-reporting by applicants who have one of these statuses but choose not to declare it. Universities could also verify applicants' claims to have been a

participant in an outreach programme/summer school or to have attended a school targeted by an outreach programme. For other variables, it is not clear how they could be made available in a more complete and trustworthy form. These include health, bereavement and other serious disruptions. Much of this data is missing or unclear.

There is, as far as this review found, little evidence on the quality of such indicators, or the HE outcomes of individuals with these characteristics. Even those that should be easily evaluated, such as the impact of outreach work, has not been. Until better research evidence is available, none of these individual experiences provides the basis for a general approach of contextualised admissions. While the number of cases in some categories is small, such as with living in care or chronic ill health, these applicants can simply be tagged as a matter of course in addition to any more general approach (in case they slip through otherwise). However, it must not be assumed that those self-reporting represent all or even most of the applicants who could be in one these categories.

*Family characteristics*

This section looks at possible indicators for contextualised admission deriving from an individual's family, such as income or parental education. These factors are most relevant to traditional age applicants, rather than those who have their own income or occupational status.

*Free school meal eligibility/receipt*
The first indicator is eligibility for (England) or receipt of (Scotland) free schools meals (FSM) representing students from the poorest families in the UK, while at school. In practice this refers to any family entitled to income support, income-based jobseekers allowance, child tax credit, the first four weeks of working tax credit following unemployment, the guaranteed element of state pension credit, employment and support allowance, and/or where part VI of the Immigration and Asylum Act 1999 applies. Equivalent variables are used in the US and elsewhere (Harwell and LeBeau 2010).

FSM is already widely used in policy and practice in the UK. In England, it influences the level of generic funding for many schools, and forms the main basis on which additional pupil premium (PP) funding is allocated to schools. It is used, therefore, to compute a pupil premium attainment gap by which school performance is monitored. And it is already an important contextual variable used by the inspection regime OFSTED when conducting statutory inspections of schools, for example. FSM is therefore a suitable candidate for being a contextual variable for admission to higher education – a measure of SES disadvantage that is strongly linked to attainment and progress in education.

The 15% or so FSM-eligible pupils have lower levels of attainment at school, on average, and are less likely to continue to post-compulsory education or training (Gorard and See 2013). Students from the poorest families are then less likely to attend HE – 66% young-age participation for the richest 20% and only 24% for the poorest 20% (Anders 2012). This is largely due to earlier educational outcomes, but even allowing for prior qualification, a small gap remains in attendance at the more prestigious universities.

Students from lower income families are also more likely to drop out of HE, although the difference has reduced since the student fees reforms from 2006 onwards (Bradley and Migali 2015). Student background has been found to make little or no difference to the chances of achieving a first class degree once prior attainment has been accounted for (Smith and White 2015), and the chances of lower income students achieving a first class degree has increased from 1998 to 2008 (Smith 2015).

FSM has many advantages as an indicator of SES background, compared to ethnicity or parental occupational class, for example. It has a clear legal definition in which a child either is or is not FSM-eligible. The inter-rater reliability for judging FSM-eligibility when in possession of the relevant

information about the benefits listed above would be very high. The chief criterion – income support – has not changed for decades, meaning that figures are reasonably comparable over time. Recording and reporting of it is a legal requirement for all state-funded schools, and the FSM-status of each child is held as part of the National Pupil Database (NPD) to which higher education institutions, or UCAS itself, could have annual access. The measure is therefore available for nearly all relevant young people, irrespective of whether that person applies to higher education or not.

On the other hand, the welfare system provides more generous assistance to the poorest in society, and the benefits include FSM itself which is of course a benefit before being a measure of SES. Those families with incomes just above the threshold for FSM do not receive these benefits, at least not to the same extent. And, once all of the benefits are taken into account, this means that some of those families eligible for FSM end up with higher actual incomes than some families not deemed eligible (Hobbs and Vignoles 2010). If the concern is for family income, favouring only FSM-eligible pupils will miss out some of the poorer families simply because, at present, there is no way of identifying those just missing out on benefits, or employed on very low wages. This could be deemed unfair – involving a new kind of unfairness that does not exist at present. Similar kinds of inequity would arise from the use of any indicator based either on a threshold, as here, or a judgement or self-report. One possibility would be that HMRC release data on incomes to UCAS, where parents have requested this.

Even more obviously, there will be relevant data missing on some of the cases in any dataset. In the NPD, all available contextual variables are missing something like 10% to 11% of their pupil values every year (Gorard 2010). A large proportion of these missing cases are accounted for by fee-paying schools which do not have to complete the school census that state-funded schools do, but whose examination results are part of the database. To some extent, it can be argued that the 6% to 7% of the school population not in state-funded education are not relevant to an assessment of context for admission to HE. Most school fees will be paid for by their families who are therefore very unlikely to be living in relative poverty. However, before moving on to focus on the missing 4% in state schools, it is worth considering those outside the state system a little more.

A small number of children will be home-schooled or otherwise simply missing from the register, rather than in fee-paying schools. Some of these can be assumed to be among the poorest in society. Of the 6% to 7% actually in fee-paying schools, a small number will also be among the poorest in society, and attending via a free place, bursary, scholarship or assisted place. Some fee-paying schools are registered as charities and in recent years, since the demise of the state-sponsored Assisted Places Scheme, the Charity Commission has been pushing these schools to take their charitable status more seriously. One way in which these schools have reacted is by taking more pupils on free places from poorer backgrounds. It would reduce the validity of this policy if it then clashed with the use of school type as a contextual indicator, unless a child from a poor family is no longer considered to be disadvantaged if at private school (which reverses the usual logic).

It is also the case that some very small private schools have only nominal fees, and serve some of the poorest communities in the UK (Gorard 1997), as they do in developing countries. The number of all such pupils from genuinely poor families will still be small, but they would all be ignored in any process using FSM-eligibility as a criterion for contextualised admission to HE. They and the home-schooled could actually be worse off than currently since their place at any university would be slightly more likely to be taken by a student who had been known to be FSM-eligible (even though that family might have had a slightly *higher* income overall). If more detail were available on the exact nature of each schools (more than appears in NPD/SLASC) then these factors could be addressed. But it might be easier simply to use the characteristics of the pupils in each school to define it for CA purposes (since this data can be made available easily via NPD/SLASC).

The remaining 4% of pupils missing data on FSM-eligibility in state-funded schools would also be ignored and so disadvantaged by a system that used FSM as a context variable for HE admissions. It has been shown from what we do know about these pupils is that they could be among the most disadvantaged in society (Gorard 2012). They take even fewer public examinations than FSM pupils, and are generally the least qualified students in the country. Leaving this 4% out of a process that is intended to improve conditions for people just like them would be unjust. They are already treated unfairly (inadvertently). Their schools do not receive their full pupil premium funding (because the pupils are not known to be FSM-eligible), and their schools are disadvantaged in school performance figures and OFSTED inspections that use contextualised figures, and in their apparent PP attainment gap. It may be that the use of multiple indicators would be able to overcome several of these issues, and we will investigate this in our own analyses.

All of the latter three issues can affect school reputation and so which families use that school. This influences the mix of students that poorer pupils have as their peers. Who one goes to school with, especially for poorer children, could be important for a number of outcomes – including attainment (Danhier and Martin 2014), emotional and behavioural problems (Muller and Hofmann 2014), the nature of relationships with teachers (Vieluf et al. 2014), aspirations (Gorard and See 2013), and so whether one continues to participate in education once it becomes post-compulsory (Palardy 2013). Pupils from families in poverty but who are not known to be FSM-eligible are therefore doubly- or trebly-disadvantaged. Using FSM for HE admissions as well would make that disadvantage considerably worse.

A reasonable proportion of the young people missing data on their FSM-eligibility are in special schools (while many of the rest are mobile pupils such as Travellers, or recent arrivals such as asylum-seekers perhaps without official papers). Given the level of inclusion of children with special needs in mainstream settings, those in special schools are more often those with very severe learning and other challenges. All of these groups – SEN, Travellers and asylum-seekers – could be among the most deserving of consideration in a contexualised admissions system, yet all would be ignored if they were missing FSM data, and FSM was the sole criterion used.

It is important to note that FSM-eligibility is not a permanent characteristic for any individual. If eligibility at the time of application to HE were used, then this would ignore what Noden and West (2009, p.4) termed a 'hidden poor' of those pupils previously eligible for FSM but not subsequently. Such pupils may still be suffering the impacts of earlier disadvantage. Partly for this kind of reason, the Department for Education in England now produces a measure 'EverFSM6', included in the NPD, which covers pupils both currently and previously eligible for FSM over the last six years, and this is what is now used for pupil premium calculations. However, Treadaway (2014) considers that even this may not be enough. EverFSM6 still ignores pupils in secondary school who had been eligible more than six years previously. This further 'invisible' group has attainment results that are in some ways more similar to the EverFSM6 pupils than those who have never been eligible.

On the other hand, giving an equal advantage in admissions to all applicants who had ever been eligible for FSM would not be fair for those from the poorest families. FSM-eligibility is only a threshold characteristic. Some individuals will be from families only just below the income threshold while others will be permanently below it. Some will have trajectories of moving in an out of FSM, while others will not. Some of this will be due to differences and changes in personal circumstances. Some will be what studies of the Assisted Places Scheme called the 'artificially poor', or due to reasons of diet and religious observance (Gorard et al. 2003). Some will be sensitive to variations in the national or global economy, or to changes in the incentives for registering as FSM-eligible or for schools to collect accurate information about it. This matters because there is a hierarchy of poverty 'effects'. Those currently eligible for FSM but not previously, or previously but not now, are in many respects more like those not eligible at all than those permanently poor (Crawford et al. 2014). This is

true of their other background characteristics like their ethnic origin and SEN status, and their attainment at school (Gorard 2016). Those permanently eligible are the most disadvantaged, meaning that using EverFSM as a context variable would continue to be unfair to them. Instead using the number of years a student has been known to be FSM-eligible while at school would be a more sensitive metric. This has proved to be a better indicator of relative poverty (Gorard 2016b).

Data on FSM for individual applicants is available to HEIs via UCAS or via NPD. The data comes from official records held by government, based on returns initially checked and held by schools. Documentation of family income (below the poverty line) or living in care is required to be eligible for FSM at school. Thus, it is a reasonably secure indicator of official relative poverty (there will be few if any false positives). FSM is one of the most comprehensive and accurate measures of SES available. All other potential indicators have exactly the same kinds of problems as above, and for nearly all of them the problems are even worse.

### *Parent/carer education and qualification*
Mothers' education is a useful predictor of attainment at school (Dearden et al. 2011), perhaps because more educated mothers exhibit higher levels of early education-oriented parental practices which are linked in turn to higher pupil attainment in early schooling (Greenman et al. 2011).

In the 2014 linked NPD/HESA dataset, around 14% of students state that their parents are not educated to degree level, and a further 6% have not given a valid response. Of those students leaving HE without an award, 69% are from these two categories related to parental education. However, most of these fit into other categories of possible disadvantage as well, such as FSM-eligibility or living in low participation neighbourhoods. This confirms the lower attainment in and higher dropout from HE for first generation students in the US (Riehl 1994, Nunez and Cuccaro-Alamin 1998).

Parental education is available to HEIs via UCAS and stemming from the self-report of the applicant. It is likely to be inaccurate because young people are often not aware of their parents' highest qualification (Gorard 1997), and it generally has a substantial number of missing values. As with all unvalidated self-report variables, if it becomes a key variable for contextualised admissions it is open to abuse.

### *Parent/carer occupation or social class*
Social class background, based on the classification of parents' occupations, is another important characteristic in the sense that it shows consistent variation in individuals' attainment and progression in education, and is correlated to some extent with measures of income and parental education. From a young age, children from more occupationally advantaged families are more ambitious, achieve better educationally and have better occupational outcomes than other children (Croll 2008).

UCAS collected and reported information about the social class of home university applicants (Bolton 2010). Applicants were asked to give details of either their parental occupation (formerly father's occupation) or, in the case of mature students, the occupation of the highest income earner in their household. This information was then coded and a social class assigned to each applicant based on the National Statistician socio-economic classification (NS-SEC).

The predicted A-level grades provided to HEIs by schools are most accurate for students of Higher Managerial backgrounds, and weakest for students of Routine backgrounds (BIS 2011). Applicants from disadvantaged backgrounds (lower SES) are then less likely to obtain good degree grades (Harris, 2010).

HE participation is stratified by social class, especially for the most prestigious universities and the most competitive courses (Seyan et al. 2004, Zimdars 2007, 2010, Gallagher et al. 2009, Harris 2010).

In fact, educational inequality associated with differences in parental occupation appears to be comparatively strong in the UK, and maybe even worsening over time (Vona 2011). UCAS applicants from lower class backgrounds are less likely to apply to Russell Group universities than their comparably qualified counterparts from higher class backgrounds (Anders 2012, Boliver 2013). But the gap in HE more generally is largely because prior attainment is equally stratified (Raffe et al, 2006, Gorard et al. 2007, Harris 2010). Once prior attainment is taken into account, HE participation rates in terms of socio-economic status are usually about equal (Marcenaro-Gutierrez et al. 2007, Chowdry et al. 2008, Noble and Davies 2009, Chowdry et al. 2013).

SES data (specifically NS-SEC 4-7) is not currently available to HEIs during the application process, and is only available after the end of the application cycle as part of the UCAS*J data transfer transaction in the autumn.

The proportion of HE applicants in the UK who did not state a parental (or other) occupation on their application has been growing over time (5% in 1996 to 18% in 2003), and these non-responders are stratified by age and ethnicity (Do et al. 2006, Parry et al. 2006). By 2007, 26% of HE applicants had unknown or undeclared SES (Harrison and Hatt 2009). Indeed, one of the largest social class groups applying for admission to HE in the UK is generally 'none/not known'. These tend to be ignored in contextualised admissions and WP figures more generally. This hampers analysis and of course makes it harder to say whether any WP measures are actually working or not (The National Audit Office 2008). However, the cases with genuinely missing SES clearly tend to be even more disadvantaged than the flagged disadvantaged students, on the basis of other available indicators - and were disproportionately drawn from areas of high deprivation and low participation in higher education. The situation is similar to those missing FSM status (Gorard 2012). The use of parental occupation or area-based measures to monitor widening participation programmes requires caution, given the proportion of applicants who do not provide this information and the age and ethnic group differences noted.

Parental occupation does not have a legal definition, and every classification is notoriously hard to code, and has relatively low inter-rater reliability (Lambert 2002). Its use to give an advantage in contextualised admissions would likely lead to a growth of self-reporting in those categories deemed disadvantaged by admissions tutors (Gorard et al. 2007).

*Educational maintenance allowance recipient*
Pupils in receipt of Education maintenance allowance (EMA) are considered disadvantaged. Entitlement depends on meeting certain threshold criteria. And so this is largely an aggregate proxy variable based on more complete and valid indicators. This scheme is no longer operating in England. In Scotland, government records provide this information which is initially checked by schools, and then made available by UCAS in a common basket of data.

Like FSM, the status of an individual could vary every year, and there is likely to be considerable missing data.

*Family income/tax credits*
The 'risk' to educational attainment associated with low levels of family income (poverty) is larger than that of low levels of school resources, regardless of national income level (Nonoyama-Tarumi and Willms 2010).

Family income is often treated as an indicator of poverty and material deprivation, and rightly so. However, it is important to recall that it does not reflect important information about living standards, or include savings, gifts, borrowing, and assets (Bradshaw 2013). Thus there could be households who are income poor but not deprived.

Official data on family income is not readily available, which is why FSM and other indicators flagging financial disadvantage are preferred. The self-reported family income data can be available to HEIs via UCAS, but only after the institution has made a decision on the application. And even then there is a very high proportion of missing data – including unknown, unclear, and 'I prefer not to say'.

*Summary of quality and usefulness*
Some of these family indicators are not easily available, could be misleading, or are hard to classify and have a high number of missing values. Eligibility for, or receipt of, FSM is clearly the best indicator available at the individual level. In Scotland, receipt of EMA could also be useful. Parental income data could be used in theory although this would require applicants to supply information that would enable universities to verify parental income, via HMRC, which would be logistically difficult and have important privacy implications.

*School characteristics*

This section considers possible contextualised admissions indicators based on the characteristics of the school attended by the applicant. It is assumed in all of the research cited here that the school (or college) attended is the one from which the application for HE came. However, it is worth considering that the school attended early on, or for most of the applicant's school career, might be more important, and might be less susceptible to games-playing if school attended becomes a key indicator.

As with neighbourhood level measures, school-level measures are likely to be affected to some degree by the ecological fallacy – the average characteristics of pupils attending the same school are unlikely to hold for each and every individual, such that some pupils in schools labelled 'disadvantaged' may not themselves be disadvantaged and vice versa.

*School type, such as whether fee-paying or state-funded*
Probably the simplest school characteristic to judge is its type, and the most common distinction is drawn between applicants from state-maintained and fee-paying or private schools.

If prior qualifications are ignored, students from private schools are over-represented in UK HEIs, and especially in the most prestigious and selective ones. This is almost entirely due to the higher average prior qualifications of those students. In fact, it may now be slightly harder for private school students to gain access to prestigious universities than their state school peers with the same qualifications (Bhattacharya et al. 2013, Stevens et al. 2013), but see Boliver (2013, 2016). Students with similar prior attainment who applied to one of the most academically demanding degree courses, were as likely to get an offer, regardless of the type of school or college they attended. The difference in participation stems largely from differences in application rates (Sutton Trust and BIS 2009).

Once accepted in HE, students from state schools generally perform at least as well as those from private schools (Chetwynd 2011, Sumnall 2015, Parks 2011, Partington et al 2011). In fact, perhaps because they have more potential to develop, many studies find that non-selective state school students outperform their private peers with the same levels of prior qualification (Smith and Naylor 2001, 2005, Naylor and Smith 2004, McNabb et al. 2002, HEFCE 2003, Shulruf et al. 2008, Ogg et al. 2009, Kirkup et al. 2010, Hoare and Johnston 2011, Lasselle et al. 2013, HEFCE 2014, and Crawford 2014). The same is true for non-selective school students in comparison to grammar school students (Kirkup and Morrison 2011). *Ceteris paribus*, private school students are about 6% less likely to obtain a `good' degree (2:1 or first) than a student who attended a state school (Naylor and Smith 2005). Another study suggested that state school students even did as well as private school students who had two grades higher at A-level (Sutton Trust 2009).

There is, however, some evidence that state school students are more likely (7.4%) not to continue to their second year of HE than their private school peers (3.7%), but this could be explained by differences in prior qualifications and subject studied (HEFCE 2013).

It is therefore relatively safe for HEIs to use school type as a contextualised indicator. Even with slightly lower intake qualifications, students from non-selective state schools will tend to perform better. And the relevant data should be available to HEIs from applications.

However, information about the type of the school attended by each applicant also has limitations (see section on FSM). It needs a clear definition which of several schools a student might have attended counts for this purpose. Using categories such as private (as opposed to state) schools conflates the major public schools with cheap (less than the price of a daily newspaper) small sectarian schools. It ignores the fact that many special schools are private, and some mainstream private schools have good facilities for children with special educational needs. It does not really relate to mature students, or those educated outside mainstream school settings, such as the home-schooled. It will be silent about anyone otherwise not appearing in NPD such as those recently arrived from other countries, even other home countries, and so could have considerable missing data.

*School average performance at KS4 and KS5*
Some HEIs are now using the average performance of the school attended by the applicant as a contextualised indicator (Lasselle et al. 2012). In the US, applicants from high performing schools may be less likely to be accepted (Espenshade et al. 2005).

Some studies suggest that students from secondary schools with greater average attainment at A-level (irrespective of type) perform less well at university (Lasselle et al. 2014, Partington 2011, McManus et al. 2013). Others find no link between the average A-level performance of the school, the A-level results of an individual candidate within that school, and subsequent degree performance (Smithers 2004, Hoare and Johnston 2011, Hammond et al. 2012), or even a negative link with coming from a low-performing school (Croxford et al. 2013, HEFCE 2003, Smith and Naylor 2001). In the US, a high GPA for the school attended was linked to college retention and performance (Lotkowski et al. 2004). Smithers (2004) concluded that "any rigid system which seeks to adjust in some way any given individual offer by reference to the average A-level performance of the school would be less fair than the arrangements which operate now". One study suggests that it is not the absolute level of the school results that matters. Degree performances were higher for students who achieved A-level grades that were above the average for their school (HEFCE 2014, see also Smith and Naylor 2001). Garlick and Brown (2008) show that AAB at A level is not necessary for studying medicine at a high prestige HEI as long as the applicant was from a low achieving school.

The situation is therefore unclear, and there may be dangers in using this indicator. It can be available to HEIs who sign up to use it. Where comparative attainment data is not available or is unusually low, it is often inferred that this could be due to schools offering alternative qualification systems that are not comparable to national data sets. In such cases, the attainment data for that year is flagged as not applicable. Data collected from government agencies does not include independent schools in Scotland, which is an important limitation. These schools cannot be given a flag and applicants will therefore receive a 'Missing' flag next to the relevant indicator. There is other missing data, most notably from new schools or those that have closed or merged. This indicator also suffers from most of the same defects as school type (see above).

It is important to note that although the indicator refers to school 'performance' it really relates to raw score indicators. These are not really a measure of school performance at all. However, attempts to create truer measures of school performance via value-added or progress scores have led to unreliable,

unstable and untrustworthy results (Leckie and Goldstein 2009, Gorard 2010, Kim and Lalancette 2013). Incidentally, attempted value-added assessments of HE outcomes are even worse as there is no core curriculum, and no moderation of outcomes between courses and HEIs.

### *% pupils eligible for free school meals*
Applicants from schools with high concentrations of low SES students are less likely to go to university than similarly qualified students in other schools (Frempong et al. 2011). The effects of coming from a school with a high percentage of free school meal recipients was found to be positively associated with degree performance after taking prior attainment into account (Crawford 2014b). This suggests that the overall level of deprivation in a school could be used as a contextualised admissions indicator, without HEIs having to worry about weaker results. Crawford and Greaves (2013) suggest that the level of deprivation in a school is a better measure of context than area measures such as IDACI (see below).

The percentage of pupils eligible for FSM (or registered for FSM in Scotland) is available either from the School-level Annual Schools Census (SLASC) or via UCAS. Around 4% of cases are missing a value for FSM eligibility in current NPD versions, plus all private schools (a further 7%). Some commentators have described FSM as a coarse and unreliable indicator for judging school performance that leads to biased estimates of the effect of poverty on pupils' academic progress (Kounali et al. 2008).

### *% pupils progressing to HE*
This indicator can be available to HEIs via UCAS, and can be averaged over several years to reduce volatility. It is strongly correlated with school outcomes (see above).

Three studies, all focused on Edinburgh University, explored the effects of coming from a school with a low rate of progression to HE, with mixed results (Croxford et al. 2013a, 2013b, 2013c). Among those with Scottish Highers, students from schools with low HE progression rates performed no differently to comparably qualified peers from schools with a stronger tradition of sending students to university. However, among students with English A-levels, those from low HE progression schools performed worse at degree level. A problem with this indicator currently is that it assumes equivalence between entries to all HEIs.

### *% pupils receiving EMA*
The Educational Maintenance Allowance (EMA) is no longer available in England (see section on EMA).

### *%IMD/SIMD 20/40*
Attending a school in a disadvantaged area is amongst an initial set of contextual items provided via UCAS. It suffers from many of the same drawbacks as the indicator based on an individual living in a disadvantaged area (see section on neighbourhood characteristics).

### *Attended a school targeted by an outreach programme*
This indicator suffers from several drawbacks. It is not about the individual, a very large number of schools are now targeted by outreach programmes, and most pupils in outreach schools may not be eligible for the programme.

### *Summary of quality and usefulness*
At the university level, none of a school's characteristics is clearly related to students' achievements at the higher end of the achievement scale (Shulruf et al. 2008). Therefore, interventions targeting at-risk populations based on demographic factors should probably focus on individuals or groups rather than on institutions. There is also an argument that no one should be disadvantaged in their *own*

application to HE by decisions taken by others (such as which school they attended, or where they lived, as a child), or which is beyond anyone's control (such as their ethnic origin). This could be an issue in the future for Human Rights.

School-level indicators have many of the same drawbacks as those based on neighbourhood characteristics, because they are not necessarily appropriate for the individual concerned. The safest to use is probably whether a pupil attended a private, selective state or non-selective state school, followed by the percentage of FSM pupils in the school attended. There is no clear reason to use the average results of the school instead. In our own analyses, we will look at the performance of each individual relative to the average for their school/college.

*Neighbourhood characteristics*

This section considers the extent to which we can use knowledge of the area in which a person resides to identify them as disadvantaged accurately. It includes descriptions of the common area indicators of disadvantage, and a summary of their usefulness for contextualised admissions.

*Local HE participation rate (POLAR)*
POLAR is a measure of past and present HE participation of the residents in any area – electoral wards of around 5,500 residents on average. All electoral wards are assigned to quintiles based on local progression to HE (POLAR). Those wards in the lowest quintile according to HE progression are classified as Low Participation Neighbourhoods, and HE applicants from those areas are tagged accordingly. This information is made available to HEIs as part of an initial set of contextual items via UCAS.

However, it is clear that most disadvantaged families in the UK do *not* live in low HE participation neighbourhoods (i.e. many more live in total in the 80% of wards not in the lowest POLAR quintile), whereas a substantial minority of the wealthiest residents do (Harrison and McCraig 2015). The use of POLAR may therefore lead to increased injustice, and even examples of misuse by admissions staff, where wealthy students from deprived areas are preferred and treated as WP students while poorer students from higher participation areas are disadvantaged. It would also be possible to 'game' indicators based on postcode since wealthy families may be able to obtain an address in a disadvantaged neighbourhood for the purposes of increasing their child's university admissions chances. This ecological fallacy is a problem for all area-based measures used in this way, and is discussed further below.

In the UK, long before formal discussion of contextualised admissions, admissions to universities elite (as defined by the funders) from low participation neighbourhoods showed rapid growth over and above the general increase in HE numbers at that time (Sutton Trust 2005). In fact, the latter may not be coincidental. Historically, the eras of most dramatically widened participation in the UK occurred when numbers have increased, and progress has been lower when widening participation policies, as such, have been prioritised over simply increasing participation.

Those attending university from low participation areas have been found to be more likely to withdraw by the end of the first year (HEFCE 2013), and to perform less well in terms of eventual degree class than those from high participation areas (HEFCE 2014). But studies exploring the impact of coming from a low HE participation neighbourhood have generally found degree outcomes to be little or no different for these students (Croxford et al 2013a, 2013b, 2013c, Hoare and Johnston 2011, Taylor et al. 2013, Crawford 2014a).

*Index of Multiple Deprivation (IMD and SIMD)*

The IMD (SIMD in Scotland) is more complex than POLAR, with seven domains weighted to provide an overall figure of disadvantage for any area, only one of which concerns education. The weights are employment (28%), income (28%), health (14%), education (14%), access (9%), crime (5%) and housing (2%). The data comes from publicly held and official datasets. It also operates on a smaller geographical area than POLAR – a population census Lower-layer Super Output Area of around 1,500 residents.

Although these data zones are small they are not uniform in nature. For example, a high-income family living in a large house on the periphery of an otherwise deprived area and a low-income family in a small home with child support as the only income may be treated identically by IMD/SIMD. The same lack of straightforward link between an individual's social class and where they live also appears with the Townsend index (Do et al. 2006). The IMD approach works particularly poorly with large rural areas of low population density, and certain areas of Scotland (such as Shetland). As with all area indicators, this one is only available to admissions tutors via UCAS if the relevant address details of the HE applicant are known and accurate. In practice a large proportion of this data is missing. However we then decide to treat missing data it will lead to injustice (see below).

*Neighbourhood socioeconomic demographics (ACORN and MOSAIC)*
The ACORN neighbourhood aggregate measure provides an even smaller unit of analysis, based on the full address postcode with detailed descriptors for each type. ACORN reduces each postcode area to around 10 to 15 households rather than other systems that cover whole wards or 'super-output' areas. ACORN draws on a wide range of data sources, both commercial and public sector open and administrative data. These include the Land Registry, Registers of Scotland, commercial sources of information on age of residents, ethnicity profiles, benefits data, population density, and data on social housing and other rental property. The developing company CACI has created proprietary databases, including the location of prisons, traveller sites, age-restricted housing, care homes, high-rise buildings and student accommodation. It also uses more traditional data sources such as the Census of Population and large-volume lifestyle surveys.

This information is not automatically available, and universities and researchers would need to pay to access and use it. As with all area measures of this kind, if home post codes are not available, these indicators cannot be used.

MOSAIC information is created by Experian, a global information services group with operations in 40 countries including the UK. It is based on a range of variables including gender, age, household composition, marital status, number of children, age of children, motherhood, time living as a couple, length of residency, social grade, religion, region of birth, ethnicity, type of property, problems in accommodation, age of property, number of rooms, urbanity, home ownership, council taxation bands, house value, employment, occupation code, industry, net household income, wealth, insurance, debt, car ownership, social attitudes, drug, alcohol, pub and clubs usage, criminal records, qualifications, HE records, health, sports, mobile, TV and internet usage, readership, sports, expenditure, grocery and shopping habits. It is based on large sample size, and aggregated either to postcode or more recently to household level.

This data is only available from Experian, and Universities and researchers would need to pay to use this facility. Nothing like it is currently available to all HEIs at time of admission.

*Income Deprivation Affecting Children Index (IDACI)*
IDACI, available for the UK, is another aggregated index based on multiple data sources and figures – including family income, number of people living in a household, and the proportion of children living in low income households, for any area. Like IMD it is based on census super output areas. The

figure represents the proportion of children under the age of 16 in each super output area living in a low income household.

An IDACI rank or score is currently not readily available through UCAS, but it is an automatic part of NPD that could be made available (or it could be created from the applicants' home postcode). As with all such figures a substantial number of cases will have missing postcodes. For example, in NPD between 11 and 13% of cases are missing postcodes and so IDACI scores in each year. And this means that the scores themselves, even for those people whose postcodes are known, will tend to be biased by that missing data. Children previously living in care and some ethnic minorities such as traveller communities may have frequent changes of postcodes, meaning that at any moment their postcode is not known or incorrect. So, if applicants with missing addresses are ignored as contextualised candidates this may omit some of the most disadvantaged. If instead, applicants with no clear address data are automatically treated as disadvantaged this will privilege some students unfairly, and will tend to encourage missing data in applications. The only way to resolve this would be to use other factors indicating disadvantage, but if these are known then there is little point in using any area-aggregated measure as well.

*Summary of quality and usefulness*
Growing up in a poorer neighbourhood is linked to lower attainment at school (Greenman et al. 2011). Nevertheless, there is some debate as to whether growing up in a more disadvantaged area in a developed country leads to poorer higher educational attainment and labour market success (Mollenkopf and Champeny 2009, Galster et al. 2007, Thiele et al. 2015). Sometimes the relevant results are different for different indicators of potential disadvantage such as poverty and ethnicity. Either way the evidence for some kind of area- or peer-effect is weak (although we will investigate this further in our own analyses). At school, one estimate of the predictive quality of neighbourhoods once prior attainment was taken into account was about 3% (Thompson 2002). The general pattern of findings for degree outcomes for students coming from a low HE participation neighbourhood can be summarised more easily – neighbourhood level contextual indicators tend to be associated with degree performance comparable to or poorer than other students (Croxford et al 2013a, 2103b, 2013c, Hoare and Johnston 2011, Taylor et al. 2013, Crawford 2014a, HEFCE 2014).

Based on the 1990 U.S. Census, the inter-correlations between area measures of possible disadvantage themselves such as income, occupation and education were reasonable – in the range 0.5 to 0.8 (Roux et al. 2001). However, there was important variation *within* each area measure at the individual student level. Put another way, predicting the occupational or income average for an area based on the average education would be between 25% and 60% accurate. But predicting the occupation or education of an individual from the average for their area of residence would be far less accurate (considerably lower than 25% accuracy). Clearly, neighbourhood characteristics are often a misleading indicator of individual status.

Each of the indicators described above has relative advantages and disadvantages. For example, MOSAIC is computed at the lowest level of area, and is in many ways the most detailed. However, it is not easily available to HEIs and is the most expensive to purchase. On the other hand, POLAR is free and readily available, but only concerns participation itself and uses the same classification for all 5,500 people in any area, which cannot be anywhere near correct. All of these indicators suffer from all or most of the following disadvantages compared to data about individuals themselves.

Most of these area indicators aggregate the scores on completely different factors using incompatible metrics – such as population density and cost of housing. How can an average property price in sterling be validly added or otherwise aggregated with a proportion such as the number of disabled people living in a unit area? These indicators are generally based on a kind of pseudo-quantification that is largely unnoticed and unremarked.

All have problems of definition of the address. It is not clear whose address is used, or which, if there is more than one. For some HE applicants their parental residence might be appropriate. For others it would be their own address that matters (Gorard 2008). Since the self-reported address has no clear legal status, as soon as it was used as context for admissions there would be an incentive for individuals to claim preferential 'post-restante' addresses, as has happened already to some extent in school admission procedures (Gorard et al. 2003).

All require knowledge of the home address anyway. Where this is not known or is unclear, no indicator can be used. If the indicator with incomplete coverage is then used for contextualised admissions, this will disadvantage those whose address is unknown who will tend to be among the most disadvantaged already anyway. If an unknown address is used as a marker of disadvantage then there will be an incentive for people not to provide clear information on their home address.

The modal characteristics of the area in which a person lives are anyway only weakly related to their own characteristics, and to use the former instead of the latter is a clear analytical error. There is no point in using both area and individual characteristics to identify disadvantage for the same reason. If an individual is known to be disadvantaged there is little to be gained by also knowing that there are others nearby like them. The approach is also unfair to those individuals who are disadvantaged but happen not to live in an area that is estimated as being among the most deprived. If more specific factors, such as the parental occupation for each individual, are controlled for then the 'socioecological' environment is not relevant in explaining participation in higher education (Heintze 2004).

In fact, using area data in this way appears to be widespread merely because it is currently convenient, relatively simple, and addresses one symptom of widening participation – increasing the number of participants from deprived areas (regardless of whether the individual is deprived or not).

Universities Scotland (2012, title page) is therefore not alone in arguing, correctly, that "Widening access is about creating opportunities for individuals not postcodes or data-zones", and that once entry qualifications are taken into account, pupils from disadvantaged areas are as likely to go to HE as anyone else. But the rest of their document is all about zones of residence and the average intake to schools, rather than about individuals as their introduction would have suggested – and this is what HEIs are responding to. In Scotland, SIMD is *the* contextualized indicator used by most HEIs, and is being promoted by the Scottish Government and the Commission on Widening Access. There must be a better alternative.


**Conclusions**

At present, the situation for use of contextual indicators in HE admissions is unsatisfactory. Not all universities and colleges use the approach, or to the same extent, or with the same indicators. In the absence of a centralised procedure or a commonly agreed set of indicators universities use a range of different indicators to identify hardships faced by learners for admissions decision making. And most do not report, or are not able to report, how they do it (McCaig and Adnett 2009). To some extent, they are simply using WP as part of a larger competition to promote enrolment to their own programmes rather than to promote system-wide objectives. Older universities tend to ask for high A-level grades and demonstrate a willingness to be more flexible where there is a low demand for courses. Less prestigious institutions tend to recruit more students from working class backgrounds because of the markets they were able to recruit in rather than because of their widening participation policies as such (Greenbank 2006). Often the rhetoric and justification for selection on the basis of merit or otherwise does not fit the observed practice in the same institution (Pitman 2016). And

universities rarely use or used the same system for selecting candidates anyway, whether they use context as part of it or not (Equality Challenge Unit 2012).

The information on context that HEIs have is often based on self-declared information from UCAS forms. This usually has a high level of missing data, is hard to verify and 'open to abuse' (Moore et al. 2013 Annex C). In the event of unavailability of administrative data this raises questions about the validity, reliability and appropriateness for use of such indicators. It is not clear to what extent this is much different from the long-standing situation where individual admissions authorities used information in references, personal statements, interviews and elsewhere to make judgements about the suitability of candidates over and above their predicted and prior qualifications (Smithers 2004).

Some of the findings here cast doubt on what could easily be an unexamined assumption of an "access threshold" approach: that the as-yet-not-fully-realised potential of contextually disadvantaged university applicants will be readily unleashed once these applicants enter university. Deeper reflection on the meaning of "contextual disadvantage", however, makes it clear that there is no reason to expect all contextual disadvantages to simply evaporate once an individual gets to university. On the contrary, such students may continue to perform at a level below their true potential at university if, as is likely for many, they continue to experience socioeconomic disadvantage, and/or if their academic knowledge and skills continue to lag behind those of their more advantaged peers.

This raises important questions about the appropriateness of validating judgements about potential to succeed in higher education solely on the basis of relative performance at degree level, given that contextual disadvantage may prevent students from fully realising their potential at degree level as well as at earlier stages of their educational careers (BIS 2014; OFFA 2015).

This implies that access thresholds for contextually disadvantaged students cannot be set or justified simply on the basis of evidence about the performance at university of contextually disadvantaged students relative to that of advantaged students with comparable entry qualifications. By the same token, it means that access thresholds cannot be held to be unjustifiable simply because contextually disadvantaged students do not perform as well or better at university than comparably qualified students from more advantaged backgrounds

Of course, this review should not be taken to mean that contextualised admissions are necessarily the way forward for WP. Contextualised admissions focus on those who apply, or might apply to HE, and this can never be the majority of young people in the current system. They will not solve the most serious problems of access for those not even in a position to apply (Hale 2006). None of this may matter for children from the most disadvantaged families who may not want to attend HE, and who may be so far from attaining the necessary prior qualifications that their inclusion would currently be unthinkable. The latter would include some children with the most serious learning challenges. Widening participation is currently aimed at the 'usual suspects' of those most like existing and prior participants (Gorard 2013). And this would remain true if context were used to drop a few grade or point requirements for admissions. It would have little or no impact on those outside the mainstream system. Contextualised admissions focus, as all WP schemes do, on those missing access by a few grades or points, not on the really challenged and disadvantaged in society at all. They are also very limited by geography. All of the indicators discussed so far apply only to the home countries of the UK, and sometimes not even all of them. WP is very parochial in this respect (Tannock 2013). Contextualised admissions currently ignore non-cognitive factors in educational trajectories such as motivation and determination.

They are also not intended to be a replacement for work to reduce the impact of disadvantage on educational outcomes earlier in life. Such work could not only have benefits for WP but would overcome some of the limitations above – by helping those never likely to go to HE under any system,

for example. And we repeat something we have said several times before. If we use prior attainment to select student for HE then the HE system will inevitably have much of the same stratification as prior attainment patterns do – and this will be so even with contextualised admissions unless they are extreme and prolonged enough to tackle this stubborn problem. But that would raise a new problem of who was intended to miss out in a system of limited places (Barr 2011), especially at more competitive HEIs (a situation likely to worsen with the AAB+ threshold quotas linked to fees - Thompson and Bekhradnia 2014). It is clear that making it easier for disadvantaged students to gain entry squeezes out others and that those losing out are not the most advantaged but those just above whatever level of disadvantage is operationalised (Adventures in Evidence 2017). If it is fair to deny a place to one student with noticeably higher grades in favour of another, this suggests a lack of trust in the prior assessment system. One logical response would therefore be not to use prior assessment to select for HE (even though the evidence suggests that it is the best available predictor of success), and have open enrolment instead (Gorard et al. 2007).

There is no single indicator or basket of indicators that is clearly fit for purpose in terms of validity, completeness, lack of bias and with no danger of introducing new but perhaps less visible inequities. The latter is important. HEIs must do more than treat the symptoms (such as 'we are below quota in one category so we must admit more from that category regardless'). There are some very small categories that can be used relatively un-problematically as long as the data can be made available at time of selection, and these include being a recent refugee or asylum-seeker and having spent time living in care. It would be better if these indicators could be independently verified or taken from official datasets. However, neither of these is a solution to the more general issue of contextualised admissions.

School type attended (private or state-funded) could also be used relatively safely, but could lead to some inadvertent injustice, and might not be necessary if good individual data were available. The category of mature applicant is also relatively unproblematic, but it is not clear that simply being older than traditional age is a disadvantage. The two most general indicators, most suitable for use, are considered to be eligibility for (or receipt of) free school meals, and having a disability or special educational need. Both are clearly measures of relative disadvantage. However, both need care and some adjustment from how they are currently used or recorded. FSM should be based on a more refined measure than the usual yes/no threshold – and we propose the number of years an applicant has been known to be FSM-eligible. The range of recorded disabilities is now so great that again a simple yes/no flag is not appropriate. Instead, more detailed work would need to be done on how to use the disaggregated sub-categories in the most appropriate manner

Our next step is to learn more about each plausible indicator, disaggregated, singly and in combination, using official secondary datasets. We will also model the likely impacts from using one or more of these indicators on levels of participation, retention and degree outcomes – starting with a consideration of the size of the pool of candidates with any indicator and at least minimum entry qualifications not currently attending HE. For this purpose we will use the newly linked dataset comprising NPD records for all school pupils in England (and Scotland) from primary school entry up to KS5, and HESA data on university participation and outcomes.

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