LMH FOUNDATION YEAR

Using individual-level contextual indicators to identify disadvantaged applicants: Evidence from the Foundation Year at Lady Margaret Hall, a college of Oxford University

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This briefing provides a working example of how individual-level contextual indicators could be used to target widening-participation interventions specifically for students from low socioeconomic status (low-SES) groups. It is based on the experience of developing selection criteria to identify disadvantaged students for a Foundation Year at Lady Margaret Hall (LMH), a college of Oxford University, The process built on the body of published academic work looking at the most suitable contextual indicators, and the outcome offers a case study of how suitable individual-level indicators can be effectively collected and verified.

The LMH Foundation Year

The LMH Foundation Year is a one-year fully-funded course designed to enable students from low-socio-economic status backgrounds to reach their academic potential and progress either to Oxford or to another high tariff university. While the standard entry grades for undergraduate study at the University of Oxford are between AAA – A*AA at A-Level (depending on degree programme), the offer for the LMH Foundation Year is between BBB – ABB at A-Level in recognition that socio-economic background can impact on school educational attainment. The LMH Foundation Year application procedure therefore needs to identify a student's individual socio-economic circumstances, and specifically those that inform an individual's educational attainment. To do this, LMH makes extensive use of contextual information. This briefing demonstrates how LMH has collected, used and verified individual-level data for applications for this specific intervention over three rounds of admissions between 2017 - 2019.

Why use individual-level rather than group (e.g. area) level measures to determine eligibility?

As group-level area measures aggregate a heterogeneous mix of people, they cannot identify an individual student who is from a low-SES background. Furthermore, there is not sufficient evidence to suggest that coming from a specific area impacts significantly on an individual student's educational attainment [1,2,3].

The heterogeneous nature of the population captured by group-level measures means that their use as indicators for specific widening-participation interventions risks *false positives* (students indicated as disadvantaged but from a high-SES background); and *false negatives* (students from low-SES backgrounds but not indicated to be disadvantaged by the group-level measure). False positives in this situation can be overcome by the use of additional individual-level contextual indicators. More worrying are the false negatives, as these students would be excluded from the intervention by using a group-level measure as a key eligibility criterion.

The data collected over three application rounds for the LMH Foundation Year confirms concerns over false negatives (Table 1). Of 257 applicants who were in receipt of Free School Meals (FSM), only 13% would have been eligible if the POLAR4 Quintile 1 measure was used to determine eligibility. Similarly of 369 applicants from low socio-economic groups (NS-SEC 4-8) only 14% would have been eligible; and when SEG and FSM are combined, only 15% of 182 applicants would have been eligible (Table 1). This would leave more than 85% of applicants with verifiable individual-level indicators of disadvantage excluded from the intervention if POLAR4 Quintile 1 was a key eligibility criterion. From these data the most promising group-level indicator was the Income Deprivation Affecting Children Index (IDACI), but even here a high proportion of students from low-SES backgrounds would have been ineligible and therefore excluded (Table 1). The LMH Foundation Year application process has resulted in few ineligible candidates (high-SES) meaning that it has not been possible to test for false positives.

Table 1: Proportion of LMH Foundation Year applicants (2017-2019) by individual-level indicator of low-socio-economic status who meet group-level area indicators

	In receipt of FSM (n=257)	**NS-SEC 4-8 (n=369)**	**NS-SEC 4-8 *and* in receipt of FSM (n=182)**
POLAR4 Quintile 1	13%	14%	15%
ACORN Category 5	35%	36%	37%
IMD Deciles 1 or 2	42%	40%	45%
IDACI Deciles 1 or 2	45%	40%	48%

Practical use of individual-level indicators to determine eligibility for the programme

The LMH Foundation Year applicant socio-economic data (Table 1) suggest that group-level contextual indicators are not good measures to identify individual students from low-SES backgrounds. Published research suggests that two individual-level measures - low household-income and parental occupation in job with a low socio-economic classification - are the most relevant indicators to identify an individual student who is from a low-SES background *and* who is likely to have faced educational disadvantage[1] [4,5,6,7,8]. There are a number of concerns voiced around the practical use of these specific indicators, meaning that they are not currently widely employed.

One problem is that the individual-level data is not easily available: in its current form the data does not exist as a single data-set: some data are collected through UCAS and released to universities after admissions; some are collected by the National Pupil Database (NPD) and are not disclosed for admissions purposes. A second problem is the completeness of the data that is available, with a high proportion of missing values and unclassified data [2,9,10]. Separate to these concerns, there is a perceived lack of robustness in the verification of self-declared data [2].

To address these issues in using individual-level data, the LMH Foundation Year application procedure is designed to maximise data collection, classification and verification (see next page for detail). Through direct collection of the data as an integral part of the application, the proportion of missing values and un-classified data is very low (Table 2). These individual-level data points could subsequently be verified, and to a greater degree than the group-level data (see next page for detail). It is important to note that the LMH Foundation Year is a small-scale intervention, which has meant that we can test the use of individual-level indicators for this specific purpose. The low number of false negatives, particularly in comparison with group-level indicators, highlights the benefit of using individual-level data such as FSM.

The LMH Foundation Year data highlight the importance of correctly targeting a specific widening-participation intervention (Table 1), and that it is possible to use individual-level indicators to do so (Table 2). Based on these findings we recommend that individual-level indicators rather than group-level indicators be used in such targeted interventions. To facilitate this in the long-term, universities and other organisations involved in widening-participation interventions should push for more robust and verifiable centralised databases to be made available.

[1] Parental education levels are also evidenced to impact upon attainment but are not discussed here as they cannot be verified.

Table 2: Proportion of missing values and unclassified data points in: national data (UCAS/NPD/Postcode); LMH Foundation Year applications before contacting applicant for further explanation (pre-clarification); and after further explanation (post-clarification).

	Missing or unclassified values (UCAS/NPD/Postcode)	Missing values (LMH FY) pre-clarification	Missing or unmatched values (LMH FY) post-clarification
Parental Occupation	21-59% [10]	12%	1.6%
Household-income	Not collected	0%	0%
Receipt of Free School Meals	12% [2]	4%	1%
POLAR4	17% [11]	3%	2%
ACORN	1-6% [12]	3%	2.3%
IMD/IDACI	6-12% [2,13]	3%	2.2%

How does the LMH Foundation Year collect individual data?

As the LMH Foundation Year is a small-scale intervention, not recruiting through UCAS, a separate application form is used that elicits information about the following:

Free School Meals: Receipt of Free School Meals is established with a binary yes/no question.

Household income[2]: Applicants are asked to provide information on who contributed to household income in the tax-year preceding the application and how this income was derived. They are asked to state the total amount received from earnings (self-employed or employed); benefit payments; interest from investment or savings; pensions; redundancy payment; child maintenance; or other.

Parental occupation: Applicants are asked to provide information on their parent(s)/guardian(s) type of employment (self-employed/employed); job title; duration of job. Where secure NS-SEC classification is not possible from the information provided, candidates are contacted to ask for clarification with additional information on job description; size of organisation and supervisory status: the Office for National Statistics (ONS) User Manual for NS-SEC classicisation is used to determine information needed. Open-source data from the ONS is used to fully code NS-SEC data[3].

How does the LMH Foundation Year verify individual data?

It is important to note that verification of individual-level data is only carried out for candidates invited for interview.

Free School Meals: At this scale, receipt of Free School Meals can be 100% verified through the school. Applicants called for interview must request that their school send confirmation of their receipt of FSM to the LMH Foundation Year admissions department on school-headed paper, signed and stamped from a school email-address. There were no cases of falsification of FSM status.

[2] LMH currently determine 'low' household income based on the bursary threshold set by the University of Oxford. We would recommend that the eligibility threshold for household income is determined each year by using the UK Government definition of a low-income household: currently, this is a household that live on less than 60% of the UK's median household income.
[3] https://onsdigital.github.io/dp-classification-tools/standard-occupational-classification/ONS_SOC_occupation_coding_tool.html

Household income: Where applicants indicate that they are in receipt of FSM, this is taken as a proxy for low household income. Applicants not in receipt of FSM who are invited to interview are asked to provide evidence of household income by submitting their Annual Tax Summary from HMRC. This provides details of total taxable income from employment, self-employment, pensions, state benefits, savings, pensioner bonds, dividends and rental income. To mitigate further against fraudulent reporting of household-income applicants are asked to sign an agreement that they would be liable for the full cost of the LMH Foundation Year if they are found to have provided significant false information on household-income. 100% of interviewed applicants provided evidence of their income. 87% of evidence matched the information provided exactly. The remaining 13% were found not to have significantly under or over-estimated their household income.

Parental Occupation: Evidence of employment is verified through a letter of confirmation from the employer. It is recognised that parental occupation cannot be fully verified as a student may report a parent as 'unemployed' or 'home-maker' when in reality they may be employed elsewhere. It is also not possible to fully verify the job title of a self-employed individual. Overall, 82% of LMH Foundation Year interviewees could be matched with a verifiable parental occupation. To mitigate against risk of false information, applicants are asked to sign an agreement that they would be liable for the full cost of the LMH Foundation Year if they are found to have provided false information on parental occupation.

What resources are needed to collect, classify and verify individual data?

From experience of the small-scale procedure for the LMH Foundation Year, to collect, classify, clarify where necessary and verify individual data takes 42 human-hours for processing 220 applications. Aside from human-hours needed, no additional financial outlay is required for data collection, classification, clarification or verification. All data is managed using computer software already licensed to the University (Microsoft Office).

Augmenting individual–level data with group-level contextual information

As outlined earlier in this briefing, the heterogeneity of the population captured by group-level measures makes them unsuitable indicators to determine the eligibility of an individual low-SES background student for a specific widening-participation intervention. However, there is evidence to suggest that two group-level measures – IDACI, and the proportion of students in a school progressing to Higher Education - *may* relate to educational attainment and successful applications to Higher Education [14,15,16]. The LMH Foundation Year application procedure therefore takes additional group-level measures into account to enable more nuanced comparison of two eligible applicants with similar socio-economic profile. For example, the applicant cohort is divided into quintiles according to the proportion of students progressing to HE from their school, and candidates assigned to the relevant quintile. This allows the team processing the applications to compare eligible candidates, and the process is repeated across a number of group-level indicators. It is important to note, however, that this is intended to provide additional information only where two candidates have already been deemed to be from a low-SES background through individual-level indicators.

Conclusion

The LMH Foundation Year is a stand-alone widening-participation intervention that operates at small scale. The target population are students from low SES backgrounds, whose academic attainment at school is likely to have been impacted by their circumstances. Data collected over three rounds of applications to the LMH Foundation Year suggest that:

1. Group-level area indicators should not be used to determine the eligibility of individual students for schemes targeted at low-SES participants. Table 1 demonstrates the high probability of false negatives, which would result in the exclusion of students from low-SES backgrounds from such a widening-participation intervention.

2. The LMH Foundation Year shows that it is possible to collect, categorise and verify data related to individual-level indicators. Such a process allows for greater certainty over an individual student's socio-economic status than is possible with group-level area indicators.

3. Of the individual-level data collected for the LMH Foundation Year that relates to low-SES and educational disadvantage, Free School Meals is the most robust measure. Table 2 demonstrates that two other measures: parental occupation, and household income can be collected, classified and verified to a greater extent than previously thought.

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