MEM – summary report

October 2018

Security marking: PUBLIC

Introduction

The purpose of this report is to provide an introduction to the UCAS multiple equality measure (MEM). It serves as a companion piece to the **MEM technical report**, which provides detailed methodology behind the construction of the MEM. UCAS is committed to the development of the MEM – the intention of these reports is to engender confidence in the accuracy and usefulness of the MEM as a standard equality measure across the higher education sector.

What is the MEM?

The multiple equality measure (MEM) is an equality metric for higher education (HE), combining the effects of many of the measures currently used in the analysis of equality in HE into a single value. It is based on statistical modelling techniques, using UCAS' data on progression to HE, linked with National Pupil Database (NPD) data on English school student characteristics, to produce an evidence-based measure of equality at either individual or aggregate-level.

The MEM takes the form of one to five group value. An individual who is in MEM group one is among the most disadvantaged in terms of their likelihood to enter higher education, based on their set of background characteristics. Conversely, an individual in MEM group five is among the most advantaged.

Why was the MEM created?

Research at UCAS[1] suggested that the analysis of equality based solely on single equality measures was leading to blind spots at finer resolutions, where subgroups of students who were most disadvantaged in terms of their likelihood of enter HE were at risk of not being identified. A more individual-specific analysis of equality – where a student's full complement of background information was considered – was required, to have the potential to capture equality completely.

The MEM aims to capture this more complete picture by examining multiple background characteristics simultaneously, using a data-driven method.

How does the MEM work?

A logistic model is run on a base dataset of students in English schools who were aged 18 between 2006 and 2010 (source: National Pupil Database and School Census, Department for Education), linked to UCAS' data on the progression of these students to HE. The model predicts the likelihood of each student to enter HE through UCAS, based on that student's set of equality variables (sex, ethnic group, POLAR3 quintile, school type, Index of Multiple Deprivation (IMD), and free school meals (FSM) status at age 15). The equality variables selected are those in which there should be no differential in the likelihood of entering university (i.e. should not alter an individual's likelihood of entering), but where analysis of aggregate groups show there is a differential. From this model, based on data from 2006 to 2010, the

[1] UCAS Undergraduate End of Cycle Report 2015, Figures 96 and 97

likelihood of entry to HE can then be estimated for students who were aged 18 in later years. All students are then aggregated into groups based on these modelled likelihoods of entering HE, where group one contains those with the lowest modelled likelihoods of entering higher education ('most disadvantaged' in this context), and group five contains those with the highest modelled likelihoods of entering higher education ('most advantaged' in this context).

This benefits of this methodology for the task of measuring equality are fourfold:

1. **Accuracy** – the MEM is specific to higher education. It defines disadvantage in terms of the likelihood to enter HE, and as such, only those effects relevant to equality in HE will be accounted for. The modelling approach allows analysis of multiple equality characteristics simultaneously.
2. **Data-driven** – the model is constructed from an individual-level dataset, and so will only identify effects that are genuinely significantly present in the data.
3. **Individual-level** – the use of the individual-level dataset means the model produces modelled likelihoods for each individual in that dataset. The modelling approach allows for the inclusion of multiple equality characteristics, ensuring a high degree of individual specificity in the result.
4. **Flexible** – the model approach provides flexibility both in the equality characteristics that are included, and the level at which equality is measured – provider, subject, or provider group, as examples.

Key results

Analysis of entry rates (the proportion of the population entering higher education) by MEM group shows that the entry rate of MEM group one students in 2017 was 12.2 per cent, compared to 56.2 per cent for MEM group five. The MEM entry rate gap, defined as the ratio of the MEM group five entry rate to that of MEM group one, was 4.7 – on the MEM measure, the most advantaged students were 4.7 times more likely to enter university than the most disadvantaged students. This is a wider gap than is shown by analysis of POLAR3 quintile alone, where the most advantaged students on this measure (POLAR3 quintile 5) were 2.3 times more likely to enter university than the most disadvantaged (POLAR3 quintile 1). We also see a difference in the progress made in reducing the size of these equality gaps over recent years – where on the POLAR3 measure the gap has decreased steadily from 2.4 since 2014, the MEM equality gap has remained constant over this period.

Coverage

The version of the MEM outlined in this report covers 18 year old English school students only, and is suitable only for use in aggregate-level reporting and analysis.

Flexibility

The use of a modelling-based approach confers great flexibility to the construction of the MEM, with the possibility to vary both the equality characteristics that are included, and the level at which equality is measured. Consequently, it is possible to

create different versions of the MEM for different purposes. For example, the model could be altered to predict the likelihood of a student entering a particular provider, allowing analysis of equality in relation to this specific provider, rather than across the whole HE sector. Alteration of the equality characteristics included would allow the production of a MEM that is suitable for use at the level of individual students, as well as in aggregate reporting – this MEM could, for example, be used by providers in contextual offer-making processes. Lastly, the flexibility means that additional equality variables can be included as the data required for these variables becomes available, ensuring the MEM is always accounting for the effects of as many equality measures as possible.