

Module-level grade awarding gaps at LSE

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Context

Across the UK higher education sector, student degree outcomes are correlated with demographic characteristics. The Office for Students has set [sector targets](#) for reducing certain grade awarding gaps; they also require individual institutions to set their own targets in areas they consider to be a priority. Although the highest profile and most persistent grade awarding gaps are, at a sector level, identified in relation to ethnicity and disability, there are a [whole raft of factors](#) that may affect student outcomes – the impact of these factors may vary across and even within institutions, disciplines and study levels.

This paper presents new analysis of the grade-awarding gap at module level at LSE for Home UK undergraduates. It uses a linear mixed model to explore how student characteristics affect module-level marks within LSE departments. Unlike the modelling used for setting national targets (for example, via Access and Participation Plans), this approach allows us to control for different characteristics and thereby achieve a more nuanced understanding of what underlies the grade awarding gaps we see in student outcomes.¹

Previous work at LSE, and in the sector as a whole, has focused on final degree outcomes. However, teaching on an LSE programme often occurs outside the student's home department, meaning that it may not be possible for the awarding department to fully address systemic differences in outcomes.

This analysis therefore examines the impact of student characteristics on module-level marks over the five academic years 2014/5 to 2018/9. Modules are grouped by teaching department, and the models include all Home UK undergraduate students who took modules in that department regardless of their programme department. This means that the results are much more closely linked to teaching and learning within the department, and more useful in informing any changes that the department may wish to consider in, for example, implementing the [Inclusive Education Action Plan](#).

The findings presented here highlight patterns in the data, but cannot explain why grade awarding gaps exist. Qualitative research already undertaken at LSE can provide insight into many of the gaps, and the Inclusive Education Action Plan provides actions that can be taken to address them. Eden will work with departments to gather any further research should it be needed.

Key messages for Education and Student Experience

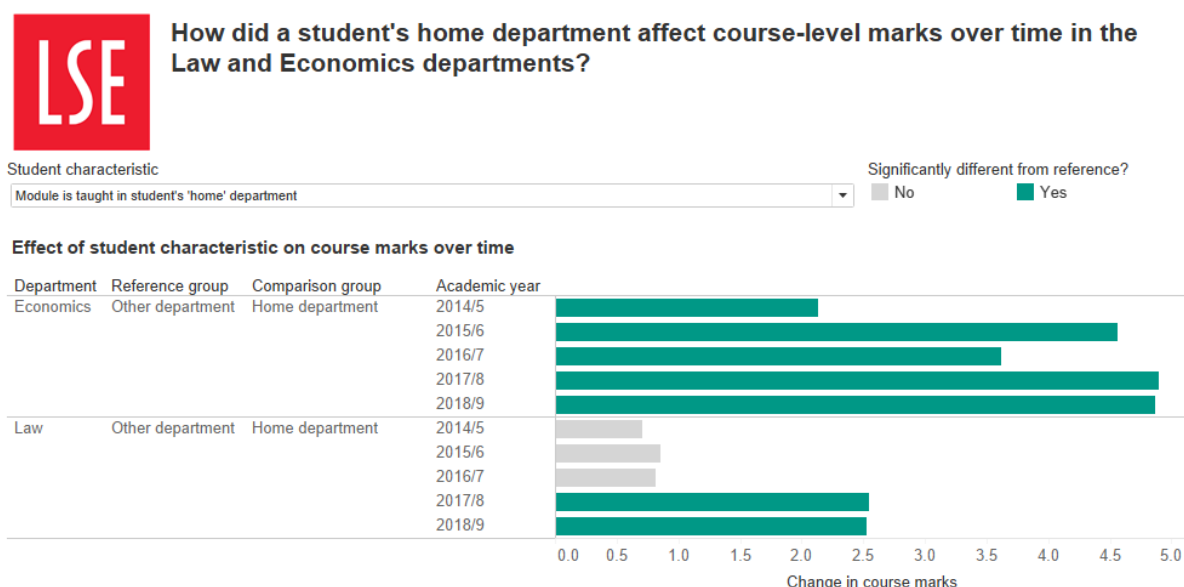
Optionality and guided choice

In many departments and years, students taking a module from their programme's 'home' department experienced better outcomes than their peers taking the same course from an 'outside' department. This was true every year for both Economics and Law (statistically significant all five years for Economics, and for the last two years in Law). In some departments (e.g. Management,

¹ To explore the data produced by the Office for Students in relation to LSE's Access and Participation Plan, use the dashboards available on Tableau [here](#).

Sociology, Social Policy) students coming from outside programmes generally did better than those who were in their ‘home’ department, but these effects were not significant.

Figure 1: Effect of ‘home’ department on student module results in Law and Economics



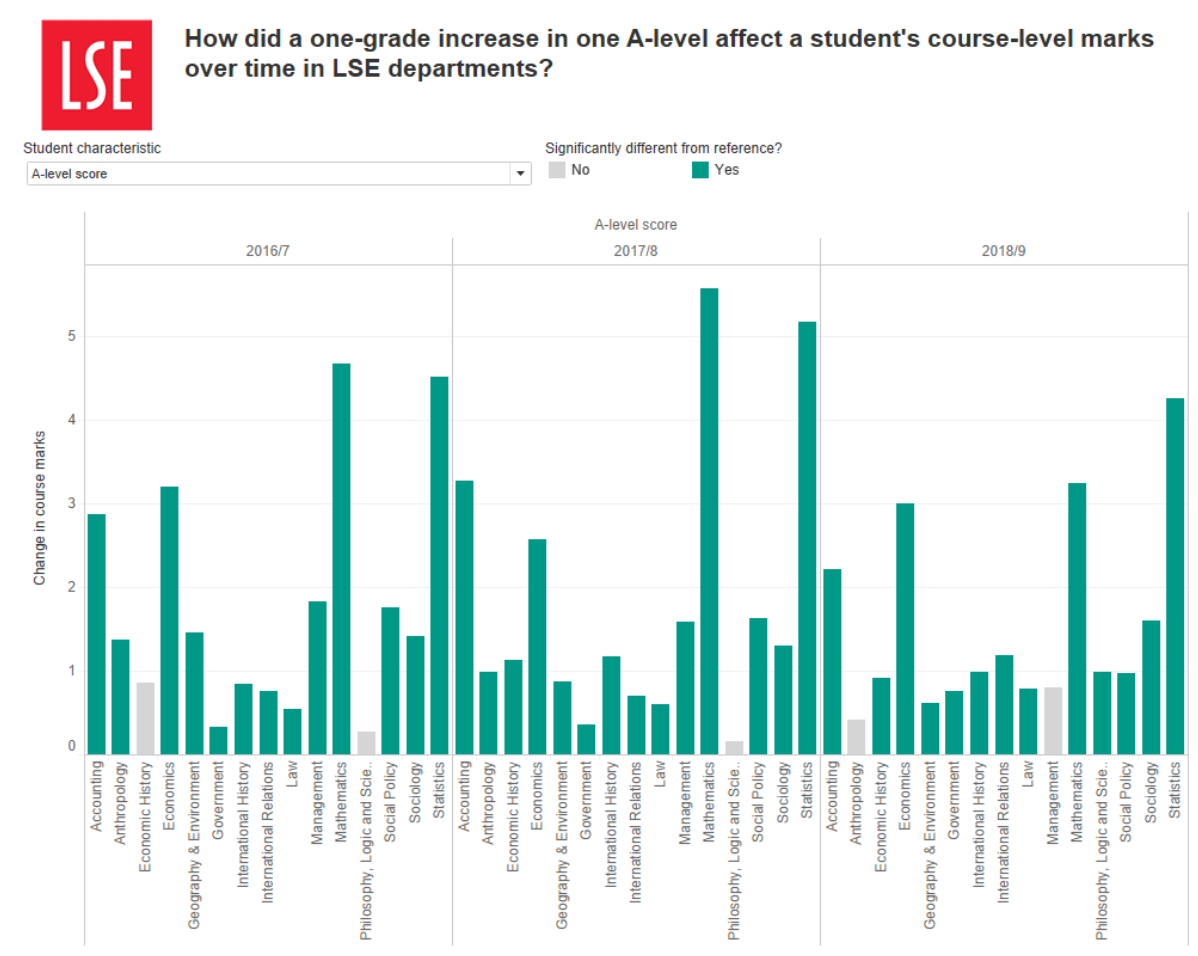
Prior mathematics attainment also had a significant effect in numerate departments. Holding an A* or A in Further Maths A-level had a consistently positive effect in the departments of Management, Mathematics, Philosophy, Logic and Scientific Method and Statistics across most years; this was sometimes significant. Holding a B,C,D or E grade in Further Maths A-level had a consistently negative effect across most numerate departments, as did not holding a Maths A-level at all.

These findings raise important questions about the structures and support provided to help students navigate LSE’s programmes – and, indeed, the structures of programmes themselves. It may be that some students on some programmes need more preparation to ‘visit’ external departments as part of their study; on other programmes the interdisciplinary approach may already be incorporated to such an extent that their ‘external’ perspective confers an advantage over students studying the same course from the home department. Future analysis will incorporate a more sophisticated understanding of ‘joint’ programmes, which may help answer some of these questions.

Prior attainment and A-levels

Prior attainment, based on A-level students’ UCAS tariff, had a consistently positive and significant effect on module marks. This applied in almost all departments and cycles: a single grade increase in one A-level could lead to as much as a six mark advantage in module marks. This was particularly noticeable in numerate departments such as Mathematics and Statistics and, to a slightly lesser degree, Economics and Accounting.

Figure 2: Effect of prior attainment on student module results



A-level marks are an imperfect proxy for ability or potential, because a student's attainment in their Level 3 assessments will be affected by external factors – for example, whether the learning and assessment model for A-levels suited them; whether they chose subjects based on their interest or ability; whether they had a significant disruptive life experience during year 12 or 13.

At present, we can't say how much of the prior attainment effect is due to ability, and how much is down to LSE's teaching and assessment methods being well-aligned with the way that students develop and demonstrate learning under an A-level curriculum. Work underway to develop a prior attainment measure for students joining LSE with non-A-level qualifications will allow us to explore this more thoroughly.

Student-level effects

In every department, some of the variation in outcomes was due to individual student attributes that couldn't be accounted for by control variables in the model. These might include attributes that are very difficult to 'measure', such as motivation, stress levels, aptitude for a particular study style, as well as events or circumstances that can be measured but are difficult to capture within the data, such as an illness, a family emergency or financial problems.

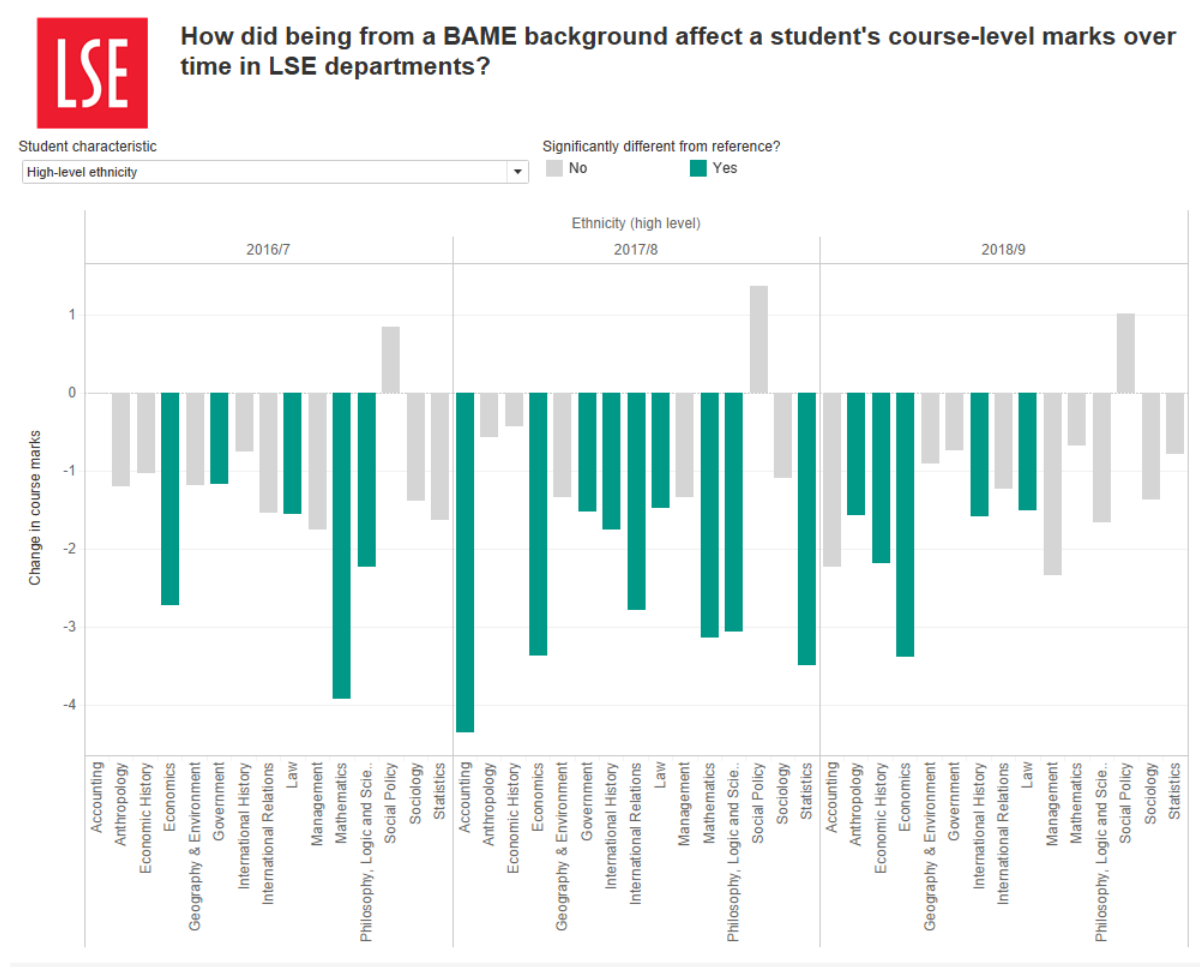
This finding emphasises that statistical modelling can only go so far in exploring and explaining gaps in outcomes. Further qualitative work would help clarify some of the issues.

High-level ethnicity

Students from Black, Asian and Minority Ethnic² backgrounds experience a consistent grade awarding gap across departments and years: in almost half of departments and years this gap was statistically significant. This is the most persistent, significant and impactful grade awarding gap, aside from prior attainment, across the five years of data analysed. The gap has been identified in previous research at LSE: this analysis confirms that it persists even when taking other known factors such as prior attainment into account.

This negative effect, taken at the highest level of comparison (BAME and non-BAME students) may also be obscuring more complex differences between ethnic groups. Detailed analysis may need to be tailored at the departmental level, to reflect the profile of students within a department. Central divisions will seek to consult with departments prior to the next iteration of this analysis next year to enable such tailored modelling.

Figure 3: Effect of high-level ethnicity on student module results



² We recognise that this terminology may not be the best reflection of how students and staff at LSE would identify themselves; we use it here as it is the sector standard for student data.

Other student characteristics

Students with a declared disability often experience a grade awarding gap. Although the size and significance varies over departments and years, the direction is consistently negative.

Gaps based on sex are generally less sizeable than those identified for ethnicity and disability, and frequently non-significant although some departments show a consistent pattern over the years in the study – sometimes positive, sometimes negative. Other departments have no clear trend.

Similarly, socio-economic characteristics such as the type of school a student attended, the characteristics of the area around their home postcode or whether they hold an LSE bursary, have a consistent and sometimes significant effect in some departments, while in others they do not show a clear trend over time.

Other student characteristics such as religion, sexual orientation, gender identity, parental higher education or student residence (at home, in halls or private accommodation) could not be captured in this iteration of the model because data are not currently readily available for analysis. We will continue to review the data coverage (in line with [emerging sector research](#)) with the aim of incorporating these variables within our analysis if coverage improves.

Next steps for analysis

We plan to update the analysis annually, using this work as a baseline for future work. At the same time, we will look at refining the models – possibly on a departmental basis – to provide more tailored information that can support a more nuanced understanding of how student characteristics affect outcomes, and of the impact of changes made within a department on those outcomes. Areas that we might consider in consultation with departments are:

- Breaking down the ethnicity variable to detailed sub-groups within departments, bearing in mind that small numbers of students from a particular ethnicity within a department will affect options available for modelling.
- Incorporate other student characteristics if data coverage and quality become good enough.
- Refining departmental models further to reflect departments' own questions and hypotheses about grade awarding gaps.
- Developing a prior attainment measure for non-HUK undergraduates so we can incorporate them into the analysis.
- Developing a definition of 'jointly experienced' programmes to permit further analysis of students who 'visit' other departments.
- Developing a measure for student residence to understand any differences experienced by students living at home, commuter students and/or those living at a distance from LSE.

Recommendations for next steps and implementation

This analysis should support planning by teams within the School who are responsible for education and student experience to develop and/or refine a set of interventions which departments could use to address the various grade awarding gaps identified within the research.

Once these interventions have been identified, the research findings should form the basis of collaborative conversations between departments and School-wide teams to understand how the interventions can work within departments, and what changes we would expect to see as a result of the interventions.

The conversations should also explore future analysis of the data that incorporates departments' own observations about their students, and ways in which data analysis could support the evaluation of any interventions made.

This activity should be connected to a task and finish group, which should be established to ensure that the work is joined-up and provides the maximum benefit to both students and the School.

If you would like access to the data, or have any questions about this analysis, please contact planning.division@lse.ac.uk

The model

We used a mixed effects linear regression to model student outcomes by department. We applied fixed effects at the module level and a student-level random effect to account for differences between students that could not be captured by variables included in the model.

Departments were split into those where the majority of students taking modules held a maths A-level qualification (numerate) and those where they did not (non-numerate). For numerate departments, the model included a variable for the type of maths qualification held, while in non-numerate departments the model used a binary variable for students with any maths qualification or no maths qualification. Because of these differences in the model, comparisons between departments (across all variables) must be drawn separately for numerate and non-numerate departments.

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