

Research protocol

Kent Race Equality Gaps Pilot

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VERSION	DATE	REASON FOR REVISION/NOTES
<i>Any changes to the design to be agreed between the implementation partner(s), evaluator and TASO. Note any agreed changes in the table below.</i>		
1.1		
1.0 [original]	April 2021	NA
Pre-registration		This design has been pre-registered on the Centre for Open Science Platform 10.17605/OSF.IO/FXDS4

The QA rating system is based on the Evaluation Security tool presented in the TASO Monitoring and Evaluation Framework.¹

QA	Comments	Rating (out of 5)
Design	Matched Difference in Differences	4
Sample size	Good sample size overall. Smaller for the group of interest, which is the main focus of the findings	4
Outcome measure	Administrative data on attainment	5
Attrition	No attrition due to use of administrative data	5
Validity	Not answerable at this time	-
Overall		4.5

¹ <https://taso.org.uk/evidence/evaluation/>

1 Summary

- *Background*

The Centre for Transforming Access and Student Outcomes in Higher Education (TASO) has funded the University of Kent to run an evaluation of their project to develop a racially inclusive curriculum, with the goal of addressing the gaps in attainment between Black, Asian and minority ethnic (BAME) students and white students.

- *Aims*

To evaluate the University of Kent's 'Diversity Mark' initiative.

- *Intervention*

The 'Diversity Mark' is a collaboration between the School of Sociology, Social Policy and Social Research, students, and library services designed to include more BAME perspectives in the formal curriculum for modules in the faculty, making them more culturally sensitive. To date, five modules have achieved the Diversity Mark, all of which are first year modules.

- *Design*

The study is a matched difference-in-differences with repeated cross-sections, comparing the outcome trend of the Diversity Mark (treatment) modules with the five modules with the most similar propensities to be in treatment as the comparators.

- *Outcome measures*

The outcome measure is average module attainment.

- *Analyses*

Primary analysis will focus on students from BAME backgrounds only. The analytical unit will be the module-grade, using only 2017/18 (pre-treatment) and 2018/19 (post-treatment) data.

Secondary analysis will include

2. Repeating the primary analysis with students from non-BAME backgrounds only;
3. Repeating both the primary analysis and secondary analysis 1 using all available years of data,
4. Repeating both the primary analysis and secondary analyses 1 and 2 using data aggregated to the module level,
5. A series of robustness checks to gauge the impacts of students who are partially-treated (i.e. they take some Diversity Mark and some non-Diversity Mark modules) on the estimated treatment effects.

2 Background

This research is part of a TASO-funded project to develop our understanding of whether curricula reform can help close race equality gaps in student outcomes. The Universities of Kent (from now on referred to as 'Kent') and Leicester are both participating in a programme of mixed methods research to investigate the impact of their respective activity in this area. TASO is funding a research assistant in both universities to support this work. This protocol details a quantitative impact evaluation which is part of the research programme at Kent.

2.1 Team

King's College London (henceforth King's) colleagues from within the TASO consortium are leading quasi-experimental analysis of existing administrative data to understand whether existing curriculum reform has been successful at narrowing race equality gaps. An overview of the project team is given below.

Organisation	Name	Role and responsibilities
King's (Policy Institute)	Susannah Hume	Analytical lead
TASO	Dr Helen Lawson	TASO lead
Kent	Professor Kathleen M. Quinlan	Partner lead
Kent	Dr Barbara Adewumi	Partner co-investigator
Kent	Dr Ellen Dowie	Partner co-investigator
Kent	Dr Miyoung Ahn	Research Assistant

2.2 Project development and piloting

During the summer of 2018, the reading lists of all Stage 1 core module in the School of Sociology, Social Policy and Social Research (SSPSSR) Campus 1, and a sample of Stage 2 core Campus 1 SSPSSR modules and 2 Campus 2 modules were audited by three trained diversity mark student officers.² They identified the race (White/BME) and nationality (UK, European, US, Other International) of each of the authors on the reading list drawing on resources from the public domain such as academic webpages, social media presence, publisher's webpages, conference/workshop papers or media

² Noting that the University of Kent has two campuses.

websites. All Stage 1 modules across all SSPSSR on Campus 1 programmes were examined, which included three degree programmes: Social Sciences, Criminal Justice and Social Work. The results of each module audit is held by Barbara Adewumi at the University of Kent.

Module convenors were sent the results of the audits of their reading list reviews, along with a survey with five open-ended questions:

1. What is your understanding of the function and purpose of the reading list in relation to the rest of teaching?
2. To what extent do you think there are challenges to the development of a more inclusive curriculum in your subject area? Please outline some of these perceived challenges.
3. Please outline some of the ways that questions of diversity and demographic difference currently feature in your teaching.
4. Are there any plans to change?
5. Do you have any wider thoughts on tackling attainment gaps and diversifying the curriculum?"

All but one of the module convenors responded. Five module convenors (out of 19 audited modules) indicated they intended to change their curriculum. In 2018-19, these modules had an average attainment gap 3.8% smaller than they had had in 2017-18. By contrast, other modules had an average increase in their attainment gap by 2.5%.

3 Aims and research questions

There has been an increasing expectation from Kent students that the curriculum will evolve to be less Eurocentric. A previous project audited the 2017-18 reading lists of 17 core undergraduate modules in SSPSSR and concluded that the curricula of these modules were overwhelmingly Eurocentric and White; BME authors typically comprised only 3% of the reading list authors (Thomas & Adewumi, 2019).

Many researchers have argued that the ‘whiteness’ of the curriculum contributes to the White/BAME attainment gap, but empirical research on this assertion is lacking (Singh, 2011; Mountford-Zimdars et al., 2015; Mcduff, Tatam, Beacock, & Ross, 2018). The present research project will evaluate the University of Kent ‘Diversity Mark’ initiative. The award is given to those course convenors that undergo a process of review and reflection with their students to ensure that they have considered authors and perspectives from diverse racial backgrounds within their discipline. Delivered at the level of modules, individual course convenors must make changes to their module to receive the award.

In the original Diversity Mark pilot in Summer 2018, reading lists of 17 modules were audited and results were fed back to module convenors along with surveys inquiring about planned changes. Making curricular revisions was optional. Five modules were judged to have diversified their curriculum in 2018-19. Further modules may be diversified in 2020-21 and this can be assessed after summer 2020.

The aim of the project is to evaluate whether reforming module curricula, in the form of Kent's Diversity Mark initiative, increases attainment among BAME students on those modules.

The primary research question for the Impact Evaluation will be the following:

- What impact does the Diversity Mark initiative have on attainment among BAME students?

Secondary research questions are the following:

- What impact does the Diversity Mark initiative have on attainment among non-BAME students?

The project will involve comparing attainment trends among students on modules who attained the Diversity Mark in 2019, with the attainment trend in other modules.

4 Intervention

5.1 The Diversity Mark initiative

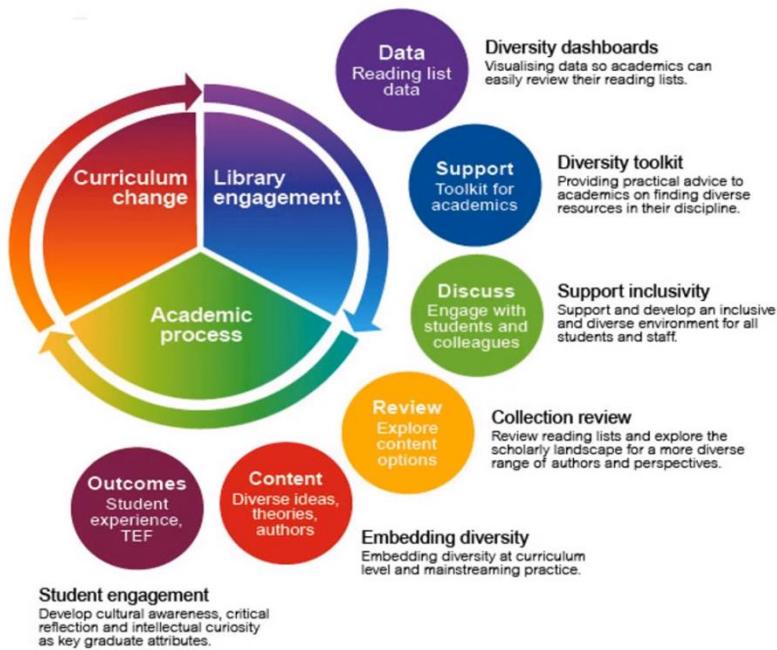
The Diversity Mark is intended to stimulate discussion and prompt curricular change that ultimately benefits BAME students. It is based on the belief that reading lists are an important representation of the legitimised ideas, theories and perspectives that dominate within a discipline and subject area. The process map below highlights how the library can support academics to diversify their reading lists according to, for example, author and perspectives. The library provides support by providing academics data on reading lists and offers support in selecting more diverse resources. Academics reflect on the data and discuss with students through focus groups, seminar discussion or co-curating bibliographies. This then leads to curriculum change as more diverse content is included which improves the overall student experience, developing graduate attributes such as cultural awareness.

The Diversity Toolkit supports academics to consider diversity and find resources that can increase a sense of belonging for students. The toolkit includes:

- Alternative suppliers of content from diverse authors, curated using a tool called Padlet and which is open to contributions
- Tips on finding diverse authors and perspectives in existing collections
- The initiative also draws on best practice to include videos, sample reading lists and cases studies

The Diversity Mark process involves a) reviewing reading lists and b) feeding back findings with reflective questions to module convenors was effective at prompting several early adopting (Rogers, 1962) module convenors to diversify their modules. The initial audit of 19 modules prompted changes in 5 modules in SSPSSR in Stage 1 (see Table 1).

Diversity Mark Pilot



Presentation of the pilot process and its key finding that reading lists authors were overwhelmingly Eurocentric and White has prompted further interest beyond the initial pilot group. The innovation has already been taken up more widely by SSPSSR on the Canterbury campus and in other Schools (e.g. School of European Culture and Languages). Dissemination is already occurring, and Kent has recommended further uptake of the Diversity Mark process. Doing so is likely to capture early adopters in other parts of the institution.

Please see Theory of Change in Appendix A.

Of the original 19 modules audited in 2017-18 (17 on Campus 1; 2 on Campus 2), 5 modules were excluded from the White/BME attainment gap analysis because they did not meet the criteria as described in Section 7.1 below. Modules were deemed “revised” in the following year (2018-19) if module convenors reported changes to the modules on the follow-up surveys and in subsequent interviews.

5 Design

The Impact Evaluation will use a matched difference-in-differences approach, where comparator modules are matched to project modules on pre-2019 characteristics, and then the attainment of pupils within the modules pre- and post-2019 will be compared to gauge whether there is a difference in the trends of attainment between the modules.

5.1 Matching Modules

Kent has provided aggregated, module-level data with data on number of students, number of BAME students, number of white students, attainment rate of BAME students and white students, and standard deviations of attainment, for the years 2015-16 to 2018-19, with reformed modules changing their curriculum for the 2018-19 academic

year. Second- and third-year modules (of which there were three audited for the Diversity Mark) have been excluded from the analysis going forward.

Using this dataset, each Module was assigned a propensity score, indicating the fitted likelihood that that module would be in the Diversity Mark initiative, given its characteristics. This was used to identify the Modules that were similarly likely to have the Diversity Mark, based on their campus and enrolment numbers in 2018. Given the scarcity of data available, including having only one pre-period data point for two of the treated modules (as they were introduced in 2018), the matching strategy has been deliberately conservative. Matching was done on a 1:1 basis, without replacement, as this offered both the best performance on parallel trends in the pre-period (per Figure 3 on pg 8), and is interpretively simplest. As per section 5.2, when additional data is available, the matching strategy will be reviewed and any modifications documented.

The procedure yielded a set of five comparator modules whose propensity scores were closest to those of the five treated modules (see Table 1). This matching protocol was done in R using the MatchIt package.³

Table 1: propensity scores for treated and comparator modules

Diversity Mark modules		Comparator modules	
Reference	Propensity Score	Reference	Propensity Score
Module 1	0.3164681	Module 6	0.3234598
Module 2	0.3184575	Module 8	0.3234598
Module 3	0.2663252	Module 13	0.2663252
Module 4	0.2398631	Module 17	0.1897226
Module 5	0.1820814	Module 20	0.2324114

Propensity score matching collapses a multi-dimensional matching problem into a single dimension, which simplifies the matching problem compared to alternatives such as exact or nearest-neighbour matching. However, it can also mask low levels of common support (i.e. overlap) between groups, as pairs with very different underlying characteristics can end up with the same propensity score and hence be classified as good matches. In the present case, though, inspection of the data suggests that the PS matching has resulted in good levels of common support between treated and comparator modules (see Figure 1 and Figure 2).

³ Ho, D., Imai, K., King, G., Stuart, E., & Whitworth, A. (2018). Package ‘MatchIt’.

Figure 1: Plot of modules by campus

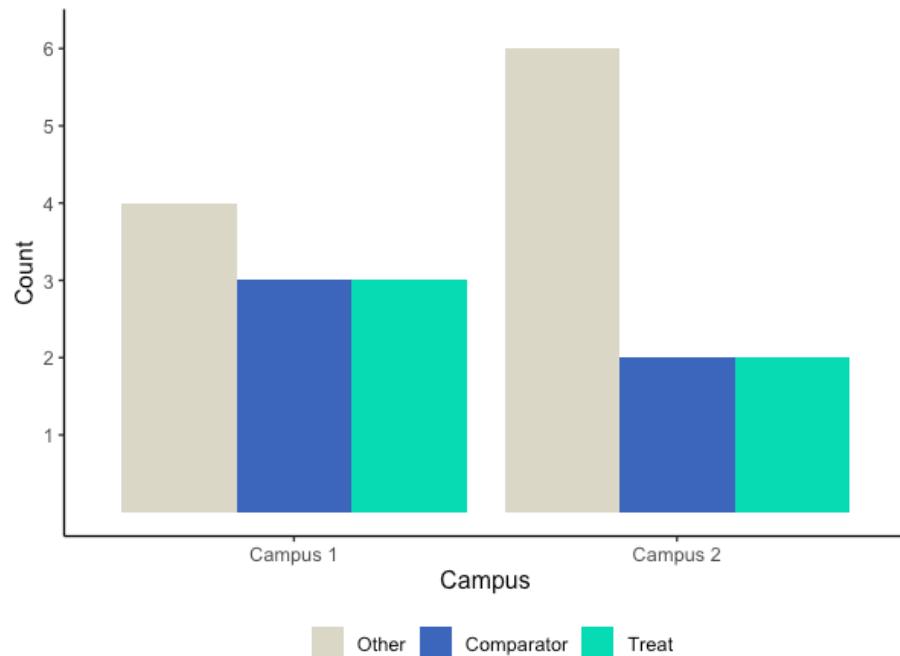
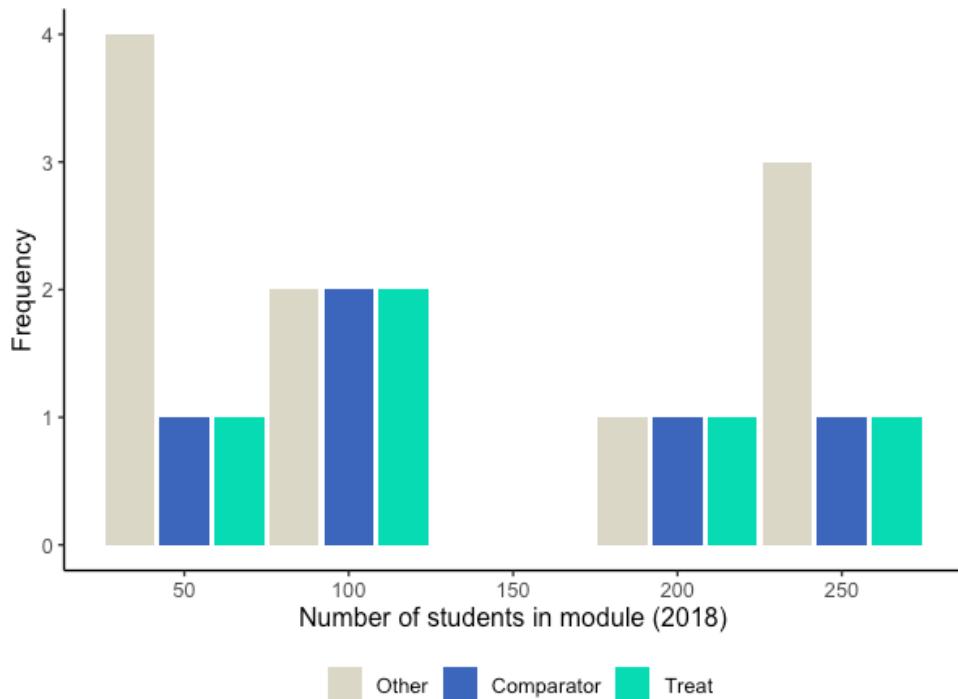
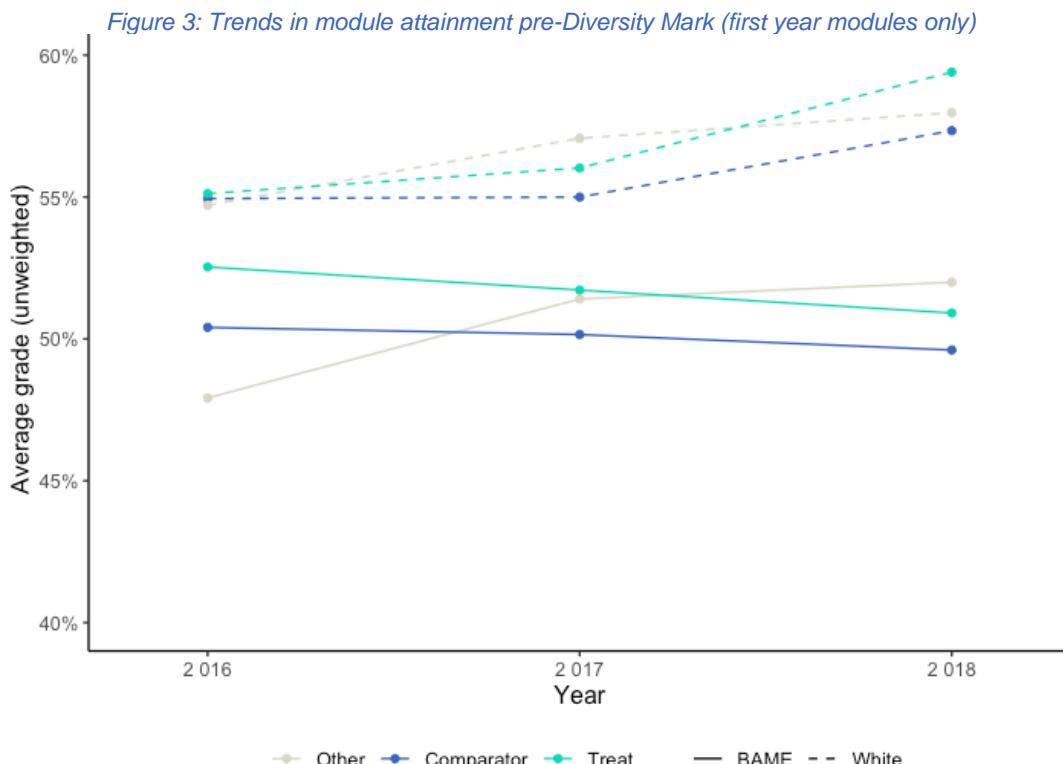


Figure 2: Module size



Inspecting the match parallel trends using module-level average attainment pre-treatment yields promising results (see Figure 3 following), particularly for BAME students, who are the primary outcome group.



The principal limitation of this approach stems from the risk that (a) there exists selection into treatment on unobservable variables, and (b) that the relationship between these unobservable variables and the outcomes changes discontinuously at or around the point where the interventions are introduced. These assumptions are difficult or impossible to verify, but is, we believe, reasonable.

5.2 Review of matching protocol and further checks on assumptions

Once individual-level data is received, we will re-run the matching process to confirm that the most appropriate modules have been selected as comparators, incorporating 2013 and 2014 into the pre-period, and taking advantage of the increased granularity of data to explore whether a different matching strategy more strongly satisfies the parallel trends and common support requirements. If this process results in a change to the matching strategy or comparator modules, the rationale for this change and comparisons between the two matched comparators will be reported on as part of the analysis.

5.3 Analysis

The analysis will proceed at the module-grade level. This means that there will be multiple observations for each individual student, representing their grades in each of their modules. The difference-in-differences will compare the trend in module grades in treated modules to the trend in module grades in comparator modules. There may be

some students who will be treated in all the modules we observe in the dataset, but we expect that the majority will be sometimes- or never-treated, and will conduct robustness checks to gauge the impact that this has on the analysis.

As we are focusing on first-year modules, we also expect that the majority of students will be observed in only one year of data, although there may be some students who are observed across multiple years of data; for example, if they take first-year modules in second year, or are studying part-time.

We are also interested in the impact on white students: does the Diversity Mark reduce or flatten attainment among white students (which would also contribute to closing the gap) or do they also benefit from a more diverse curriculum? Accordingly, we will conduct partitioned analysis on the white student population separately to make sure to capture this dynamic.

The Analytical Strategy is outlined in Section 11.

6 Outcome measures

Outcome measure	Data to be collected	Point of collection
Individual percentage grade in module	Percentage grades in modules for all students in selected modules. Data to be anonymised before sharing.	To be provided by Kent as part of a transfer of administrative data before project starts. This data is routinely collected and stored by the university.

7 Sample selection

7.1 Sample

The sample comprises all students taking core first year social science modules at one of two campuses at the University of Kent. In 2017-18, there were 147 Stage 1 undergraduates enrolled in SSPSSR degree courses offered by the University of Kent at Campus 1, with 47 percent of those students BAME students. The second campus is larger, enrolling 337 Stage 1 undergraduates in SSPSSR degree courses (42% BME in 2018-19). While the named degree courses are similar and follow the same assessment patterns and overall School and University policies, the two campus cohorts are separate.

Participants are all students enrolled in 20 core social science modules at the University of Kent in the following Academic Years: 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19 or 2019-20. All modules were worth 15 credits and taught over 12 weeks by an SSPSSR staff member in one of the degree programmes in SSPSSR. All fit a standard assessment pattern which typically consisted of essay assignments, short research projects, presentations and an end of module exam, and fit a typical reading list pattern. All participated in the reading list audit procedure in Summer 2018.

In each year, there are between 150 and 250 BAME and 230 and 280 white students enrolled in the Diversity Mark modules, and similar numbers in the identified comparator modules. This leads to the following approximate sample sizes.

	BAME		White	
	Diversity Mark	Comparator	Diversity Mark	Comparator
Pre-treatment	850	900	1300	1500
Post-treatment	500	600	600	600
Total	1,350	1,500	1,900	2,100

8 Data collection

8.1 Administrative data collection

All student data has already been collected and is part of the University of Kent's institutional dataset. Data will be used for this analysis under the standard "in the public interest" terms of the University of Kent's data protection agreement with its students.

Data has been drawn from the University of Kent's institutional data set and subject to all the normal data quality processes used for HESA and OfS returns. It will be stored on a SharePoint site at the University of Kent, with permission granted for King's staff to access it.

Data item	Collected	Collector
Module attainment	2013-2020, extracted January 2021	University of Kent
Student covariates		
Module characteristics		

9 Procedure

See the Project Plan for detailed outlines.

Timeframe	Action
Summer 2020	<ul style="list-style-type: none"> Grant funding agreement confirmed Research assistant recruited at Kent Initial module-level data provided
Autumn 2020	<ul style="list-style-type: none"> Ethics processes scoped out and appropriate approval gained Module-level data cleaned and reviewed
Winter 2020/21	<ul style="list-style-type: none"> Data protection arrangements made Trial Protocol finalised Individual-level data provided Analysis commences

Spring 2021	<ul style="list-style-type: none">• Interim report (March 2021)
Autumn 2021	<ul style="list-style-type: none">• Second DiD analysis using new data (TASO/evaluator)• Final report (November 2021)

10 Power calculations

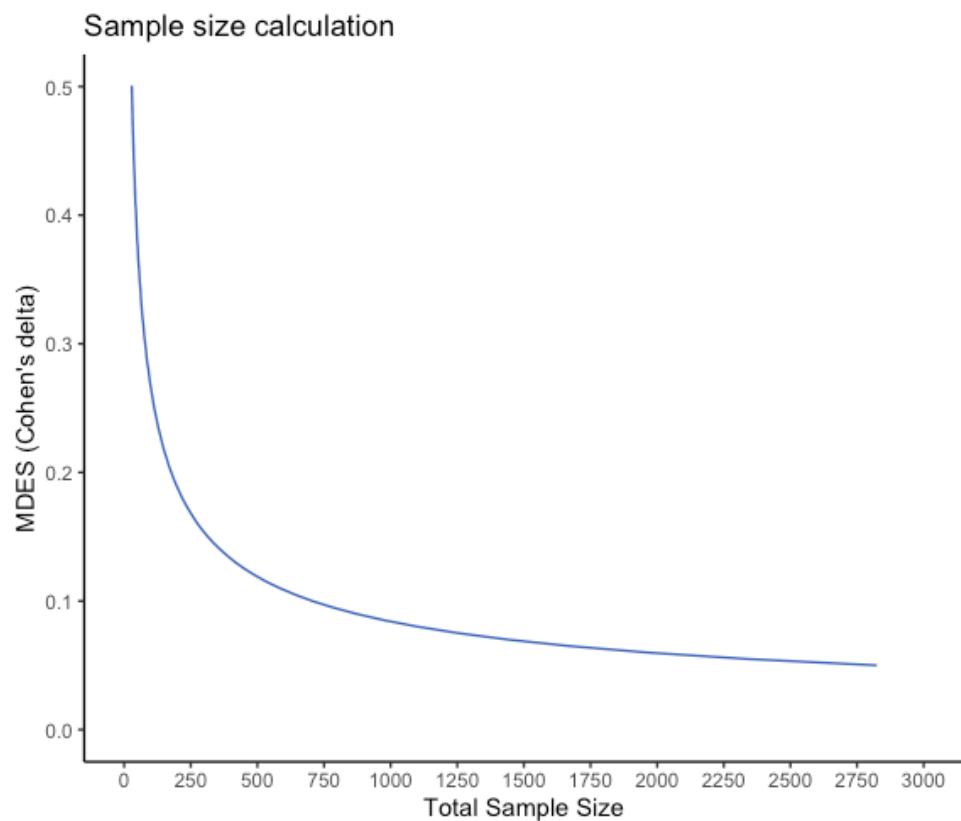
Power calculations have been produced using a test of difference between two means, and based around our primary outcome, which focuses on BAME students only. Therefore, the sample size is the number of BAME students in the treated and comparator modules in the academic years ending 2018 and 2019. Our assumptions are:

- Significance level: 0.05
- Power: 0.8
- Intra-cluster correlation (within module): 0.02⁴
- Average cluster size: 50
- Covariate adjustment: 0.2⁵

⁴ The ICC is a measure of the similarity of clustered data. Based on the broader evaluation literature, in secondary education, the intra-cluster correlation coefficient (ICC) is normally 0.02-0.10; we assume that in HE the ICC will be towards the lower end of this spectrum because the module membership is arguably a less meaningful grouping than classes within schools.

⁵ This is set relatively low as the data is repeated cross-sections rather than panel data. Year-on-year correlations in average attainment rates for modules in the aggregated data are between 0.2 and 0.3.

Sample size	Size of treatment group	Size of comparator group	MDES
Approx. 500	250 in 2019 (post)	250 in 2019 (post)	Cohen's d of 0.18, equivalent to approximately 6% (or 3%p) higher average attainment in the treated modules vs. comparator.



11 Analytical strategy

11.1 Primary analysis

The primary analysis will be for students from BAME backgrounds only, and for the academic years ending in 2018 and 2019 only. The analysis will take the form of a difference-in-difference with repeated cross-sections, and following analytical specification:

$$Y_{imt} = \alpha + \gamma M_m + \lambda T_t + \delta(M_m * T_t) + \beta_{1:4} X_{im} + v_{mt} + \epsilon_{imt}$$

Where:

- Y_{imt} is individual i 's attainment on module m in time t .
- α is the constant.
- M_m is a module fixed effect.
- T_t is a binary, set to 1 if t is 2018-19 (or later) and 0 otherwise.
- X_{im} is a vector of individual-level characteristics of student i (gender and overall attainment in first year), and module-level characteristics of module m (average size over 2014-2020, and campus).
- v_{mt} is a robust error term, clustered at the level of the module-year combination.
- ϵ_{imt} is a robust individual-level error term.

In this specification, δ is the causal effect of interest, representing the difference in attainment trend for Diversity Mark modules in the post-treatment period(s).

11.2 Secondary analysis

11.2.1 Impact on non-BAME students

The primary analysis will be re-run with the sample of non-BAME students only.

11.2.2 Other secondary analysis and robustness checks

The primary analysis conducts the analysis at the module-grade level and takes only 2018 (immediately pre-treatment) and 2019 (immediately post-treatment) data, but this discards additional data we have from other years pre- and post-treatment. We have taken this approach for the primary as it is the most conservative approach and also there is a risk that 2020 data is affected by the pandemic in a way that impacts the credibility of the parallel trends assumption. Further analysis will include:

1. Re-running the analysis using all available data – from 2013 to 2020. This approach gives us more analytical power, but is at risk of bias arising from other unobserved factors as the time moves further away from the point of intervention.
2. We will aggregate the data to the module level, and run the analysis of impact on BAME and white students at the aggregate level, both on 2018/2019 only, and on all years of data.

The following analyses will be run, either on the full sample (if effects on BAME and non-BAME students are in the same direction), or on the BAME and non-BAME partitions separately.

3. Inclusion of an individual fixed effect I_i , to gauge the extent to which different profiles of students across the treated and comparator modules might be driving the trends we observe; e.g. if, over time, more higher-achieving students are gravitating towards the treated modules.

We will be observing module grades from the same students across both treated and comparator modules. We are interested in both the analytical and substantive implications of this, particularly for sometimes-treated students: do these students invest differentially in treated vs comparator modules (for example, does increased attainment in treated modules accompany decreased attainment in non-treated modules), or is there a general impact (for example, an uplift in overall sense of engagement and belonging that has a beneficial impact across modules)? Accordingly, we will also conduct the following analysis:

4. Removal of all sometimes-treated individuals' untreated module results – this gives us a comparator baseline of students who have never encountered Diversity Mark in their modules.
5. Comparison of sometimes-treated and never-treated students' grades in comparator modules – to gauge the extent to which sometimes-treated students may have changed levels of engagement with non-treated modules.
6. Removal of all individuals (if any) who appear across multiple years because they took first year modules in second or subsequent years of study, or because they are part-time.

12 Ethical considerations

This study uses anonymised individual data that also anonymises the modules, their convenors and their campuses. Consent is addressed through the university's standard data protection agreement with students, rather than separate consent for this study. The data will be retained until the end of the project in March 2022 or until after publication. At that point, the document linking the student IDs to the unique study code will be destroyed and the fully anonymised data will be archived.

Given that data is fully anonymised, there are no risks to the students. Given that modules and campuses will be anonymised, the risks to module convenors are also minimal. It is possible that colleagues within the participating school would be able to guess the treated modules through presentations or internal discussions. This exposure may cause some self-consciousness for module convenors of included modules. Nonetheless, with five treated modules (and fifteen potential comparator modules), identifying a specific module from the group of treated or comparator modules is unlikely.

There will be a range of attainment gaps evident across the modules. If the modules become identified (even simply as being within the "treatment" vs "comparator" modules), there is a small risk of the information being used in staff appraisals of

module convenors. This risk can be mitigated by putting reported data into a broader context of ranges of typical degree-attaining gaps.

Attainment gap data is sensitive. The team have explored here the potential risks and benefits of identifying the institution and school in the context of these sensitivities. Given the prevalence of attainment gaps and the fact that aggregated data is subject to freedom of information requests, the risks of de-anonymising the University and School are not high. On the other hand, the potential for benefits to the school and institution of publicising positive outcomes from this intervention are considerable. These risks and benefits have been discussed with the Head of School and the Head of Division at the University of Kent who have approved naming the school and the university, while anonymising modules, module convenors and campuses.

13 Risks

Risk	Mitigation strategy	Risk owner
The pandemic has a major impact on tutors' ability to teach their courses which means fewer courses are reformed which may impact quantity and quality of data to be evaluated.	Consider a no-cost extension to the project in order to be able to evaluate courses at a time when pressure caused by the impact of the pandemic is much less.	TASO

14 References

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15 Appendix A

Theory of Change

