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Do We Have the Right Metrics to Assess the Ethnicity Gaps in Education?

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Background

Higher Education Institutions (HEI) are under pressure to address gaps in access, success and progression. (Access and Participation Plans (APP), OfS)

AdvanceHE report (October 2020) highlighted the scale of the issue, suggesting that the pre-Covid attainment gap between White and Black of 22.6 percentage points would not close, without additional intervention, until the academic year 2085/2086.

The COVID-19 crisis has exposed the endemic structural inequality in England and it poses a risk to exacerbate and widen the existing ethnicity achievement gaps in education.

Educational gaps in higher education have attracted the attention of academics, practitioners, and policy makers, and generated public interest around equality, diversity and inclusion themes. (Wakeling et al, 2017; Callender and Dougherty, 2018).

Ethnic disparities in HE

Entry to HE:
- 18% of black students go to high tariff; 36% of white students

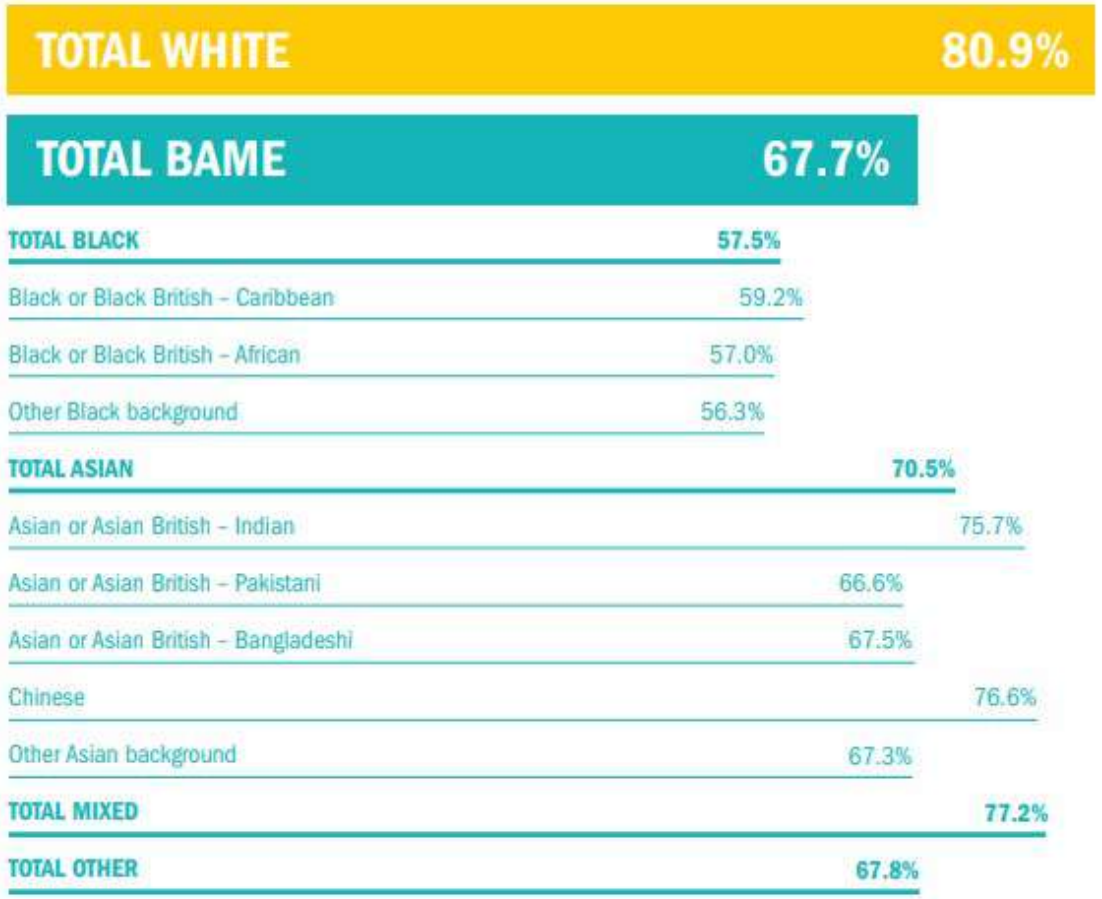
Non-continuation:
- 11% of black Caribbean students; 7% among white students

Outcomes:
- 17% pay gap between white and black male graduates

Degree attainment:
- 81% of white students got a first/2.1, 58% of black students

Attainment gap

Universities UK



Some of this is unexplained

Having the right data....

The current approach quantifies these gaps by using difference across ethnicity groups' averages (AdvanceHE 2020).

These single-indices are easy to compute and interpret, but they lack the distributional aspects of gaps, needed to truly quantify issues of inequality.

We believe that more nuanced measures, that account for dispersion, distribution, discontinuity points, can be more insightful and useful in identifying and tackling the ethnicity gaps.

BARRIERS TO SUCCESS

Having the right data

QUESTIONS FOR CONSIDERATION	SUGGESTED ACTIONS
At what level does my institution monitor the attainment gap currently?	Assess the existing mix of data and evidence used to understand the causes of the attainment gap, and identify areas less understood to enhance the robustness of the evidence.
Does this level of analysis allow us to fully comprehend the factors creating the attainment gap? If not, what else is needed?	Assess the extent to which evidence on students' lived experiences is informing any strategy to address the BAME attainment gap, and ensure this is central to informing actions.
Does my institution make sufficient use of qualitative evidence to understand students' experiences of university and how this can affect attainment?	Consider the merits of committing to a board-level engagement with the BAME attainment gap. A KPI could be set to reduce and remove the BAME attainment gap.

Research Design

Our research design follows a sequential order:

1) phase 1: we use institutional administrative data and various statistical methods to explore the properties of the micro-level data and the presence of patterns in access, performances, and success gaps through different stages of the academic cycle and for different cohort and across different institutions.

2) phase 2: we combine the micro-data to create multi levelled indexes that, better than simple averages, can capture different dimension and degrees of gaps.

3) phase 3: we explain the determinants of the ethnicity gaps, using the full distribution of the micro-data, and econometric analysis and we formulate predictions. These predictions can be used, at any stage, to orient bottom up interventions and ultimately inspire future educational policies.

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Data:

For UG (and PG) Longitudinal data set: 2014-2020 (about 7,200 observations) on several cohorts (for at least 3 cohorts complete academic cycle)

Biographical information (age, gender, ethnicity, country)

Background (entry qualification, GCSE maths, A level Maths, year of entry)

Average GPA at each level of progression (modules' grades, resits, placement etc)

Final degree classification and year of graduation

Methodology and results

Descriptive

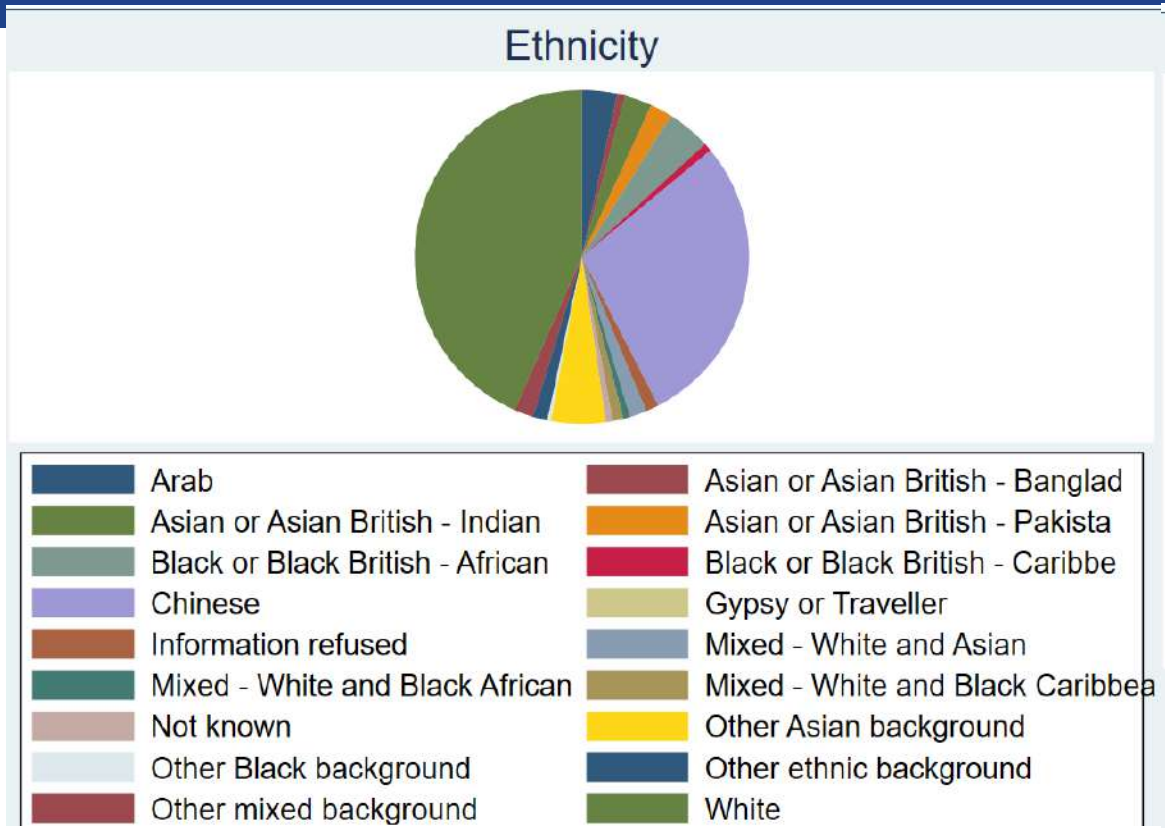
T-test on gaps; disaggregating ethnicity

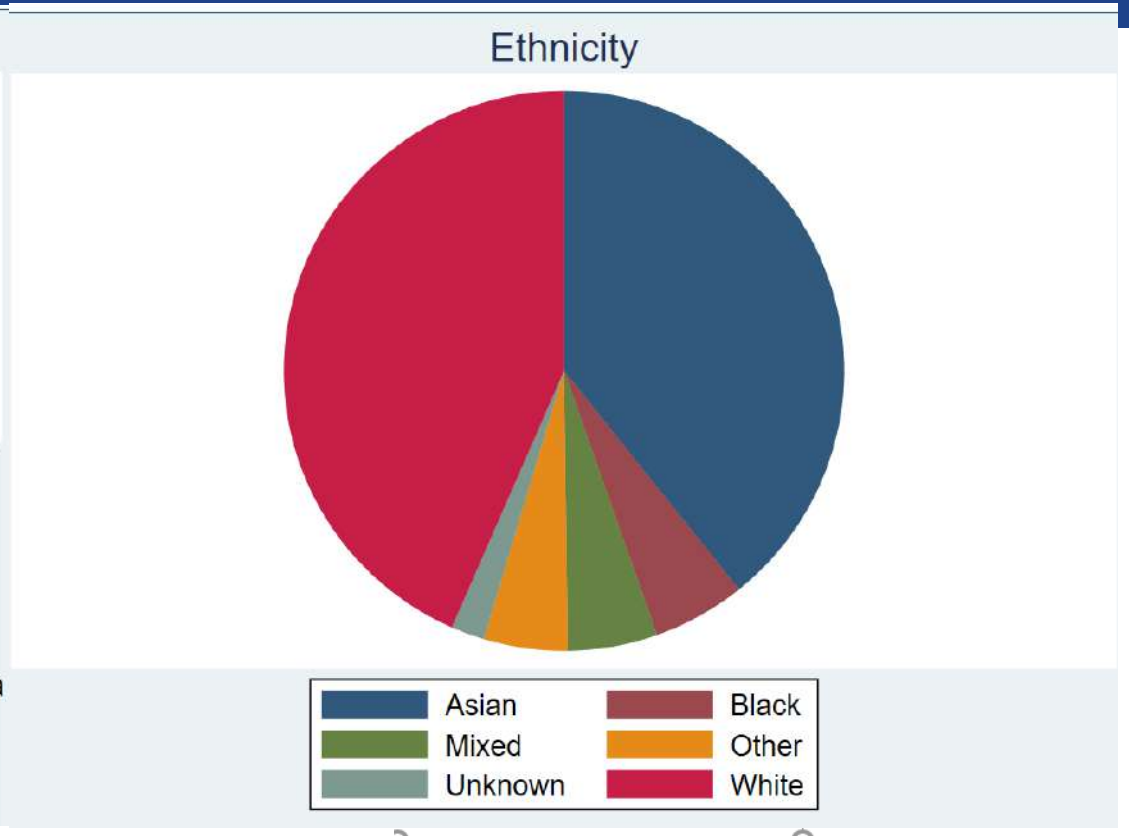
Diff in diffs: Covid intervention

Segregation index

Structural models

Ethnicity





ethnicch		Freq.	Percent
White	0	3,148	43.44
Black	1	387	5.34
Asian	2	786	10.85
Mixed	3	375	5.17
Chinese	4	491	6.78
	5	2,060	28.43
Total		7,247	100.00

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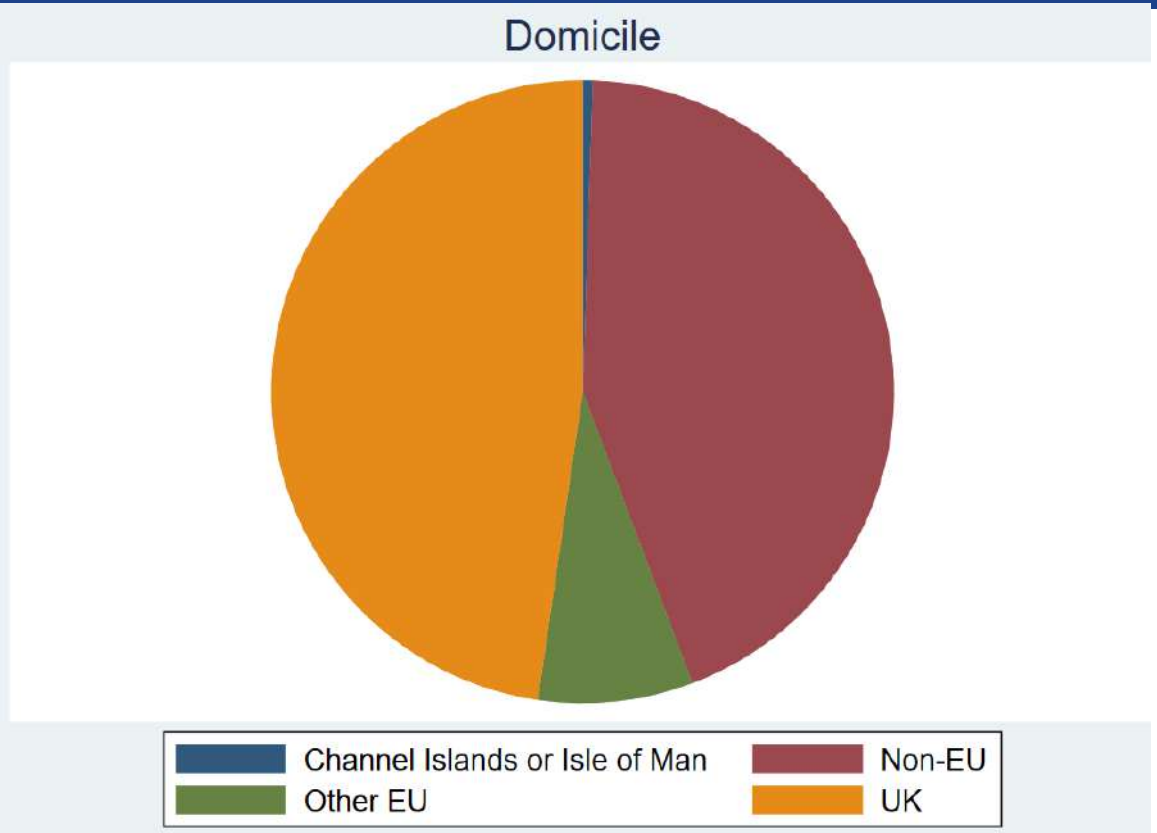
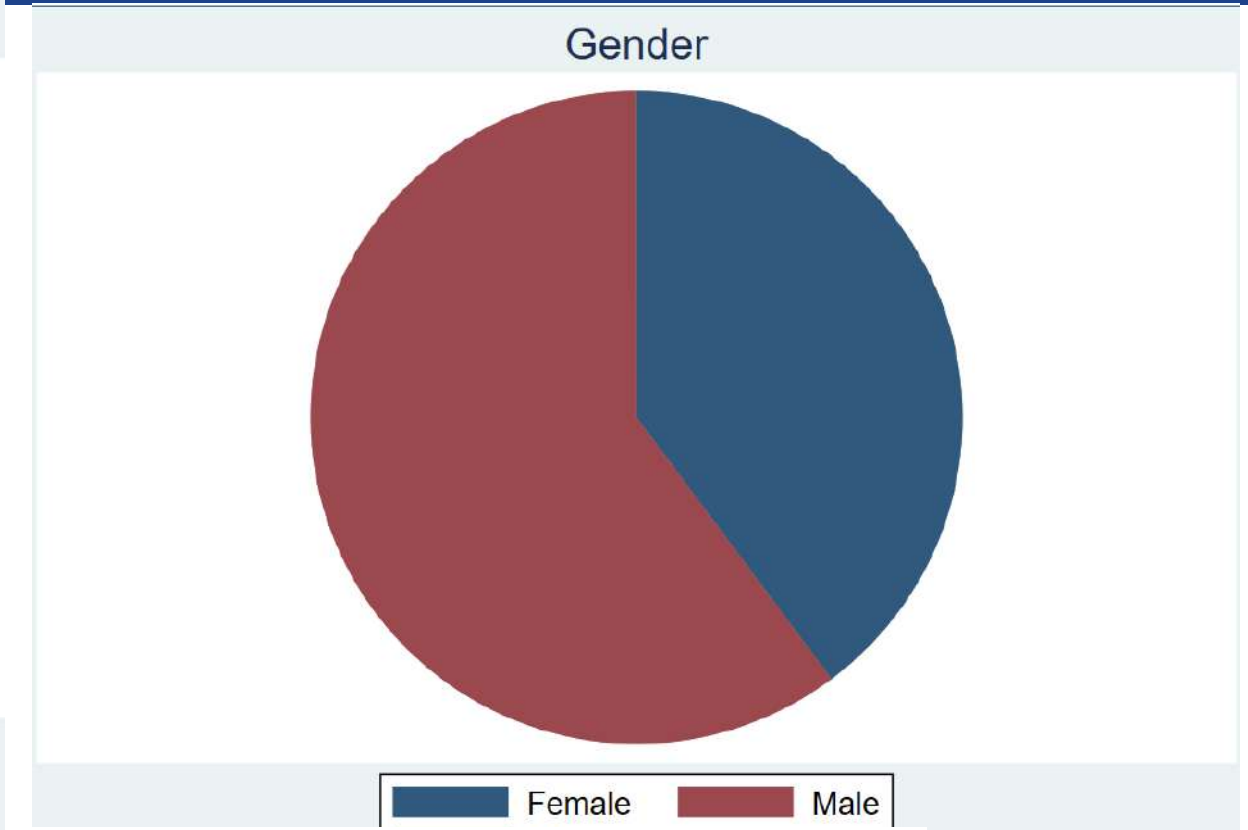
Domicile and Gender



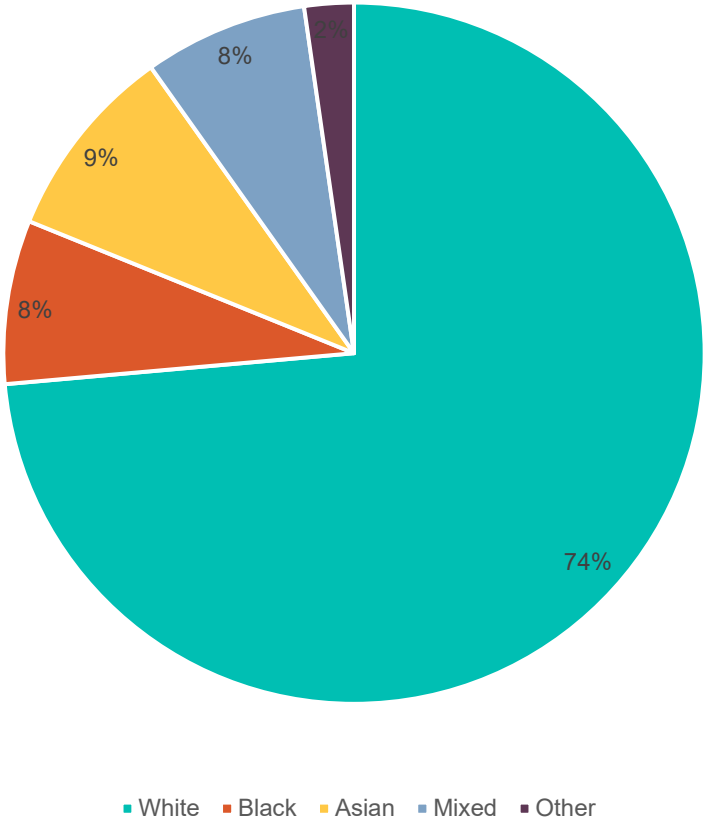
domicile	Freq.	Percent	Cum.
Channel Islands or Isle of Man	38	0.52	0.52
Non-EU	3,170	43.74	44.26
Other EU	583	8.04	52.30
UK	3,457	47.70	100.00
Total	7,248	100.00	



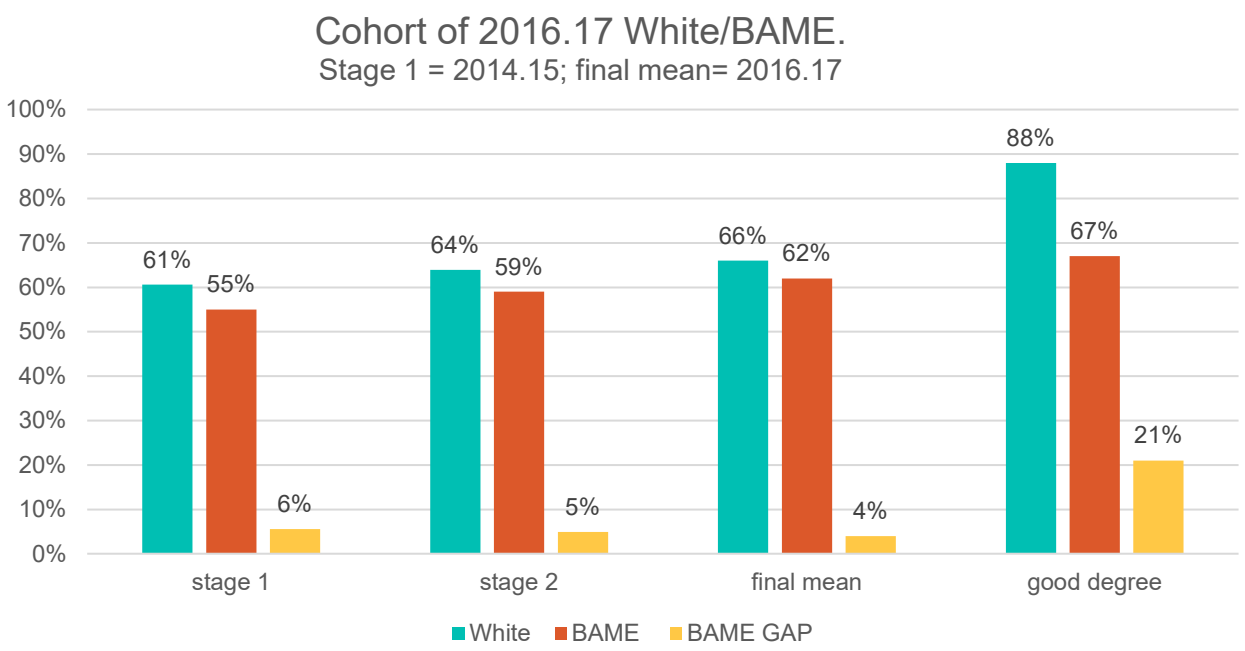
sex	Freq.	Percent	Cum.
Female	2,885	39.80	39.80
Male	4,362	60.18	99.99
Other	1	0.01	100.00
Total	7,248	100.00	

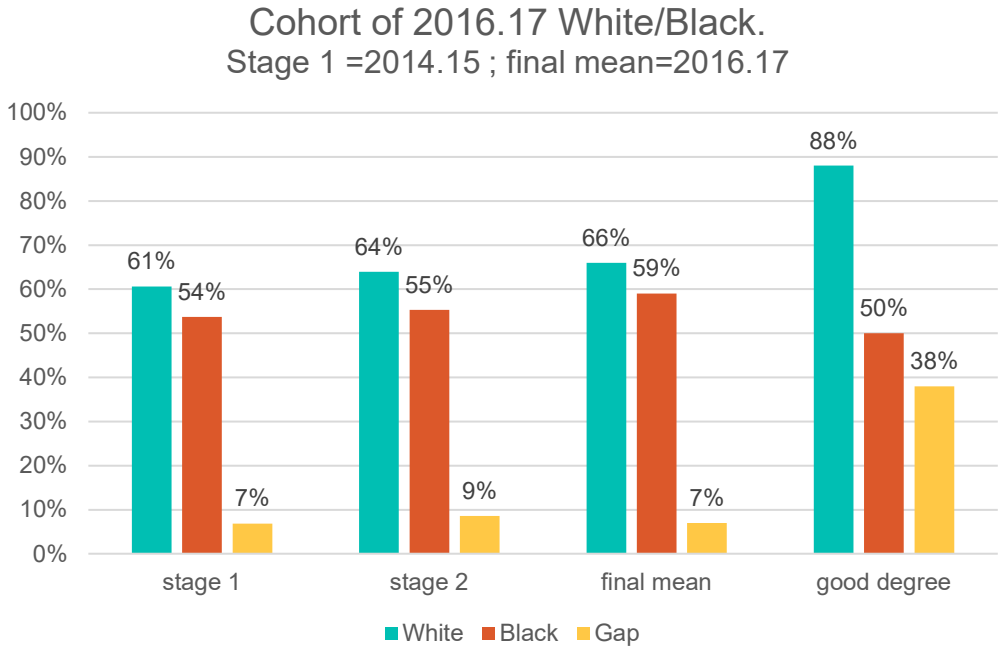
Ethnicity and domicile

Group: UK domicile. Ethnic groups average years 2014.15-2019.20



Cohort of 2016.17





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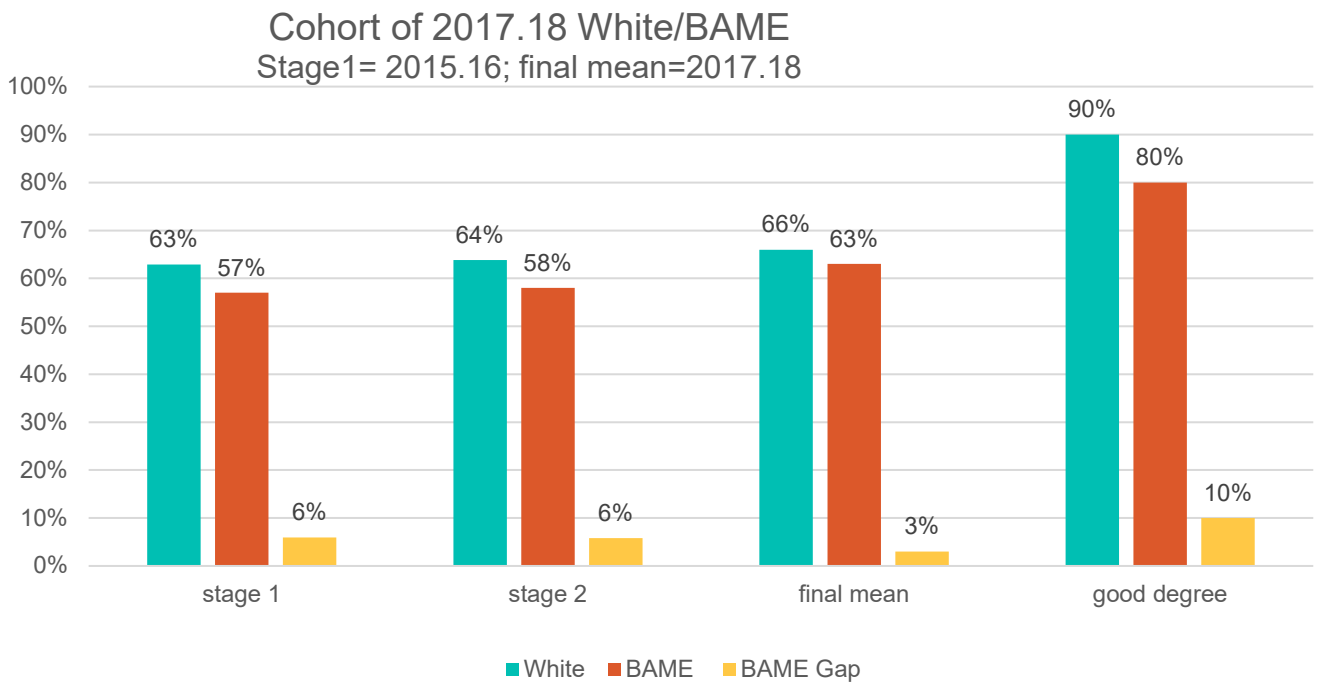
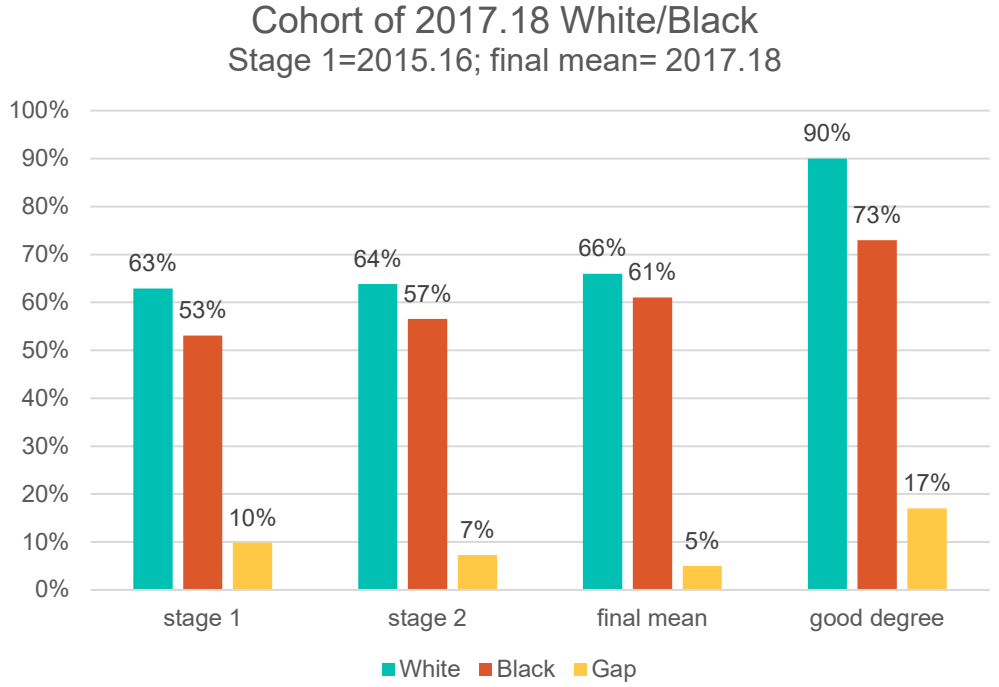
Cohort of 2017.18





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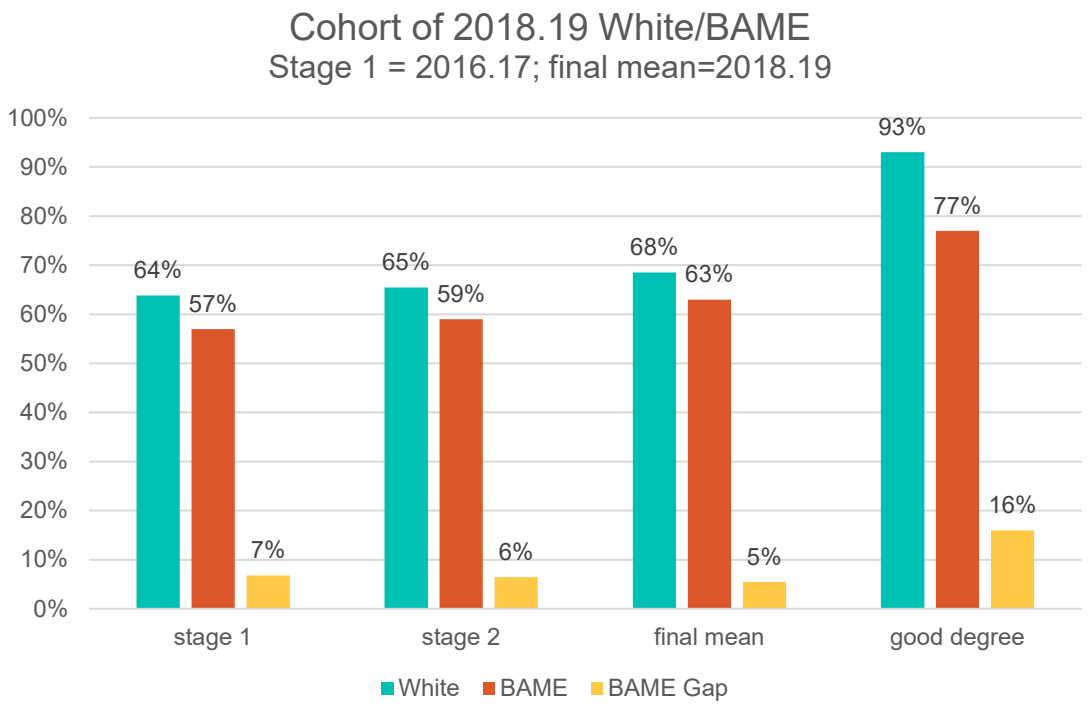
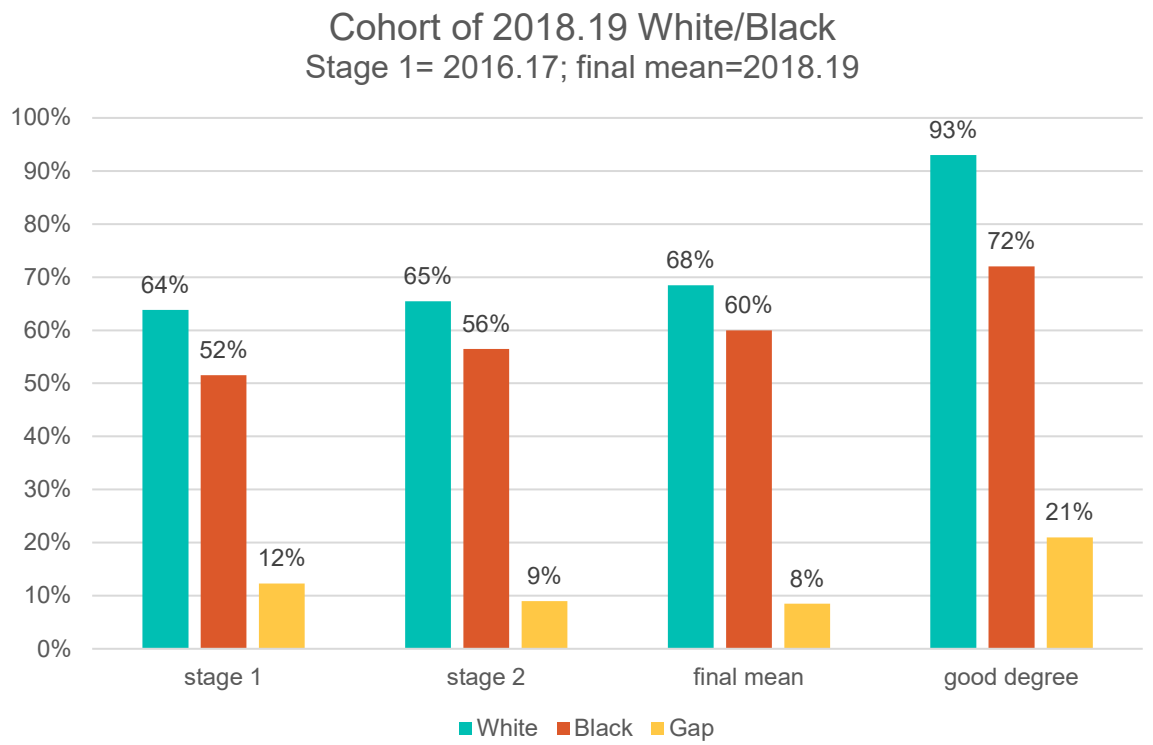
Cohort (year before Covid)





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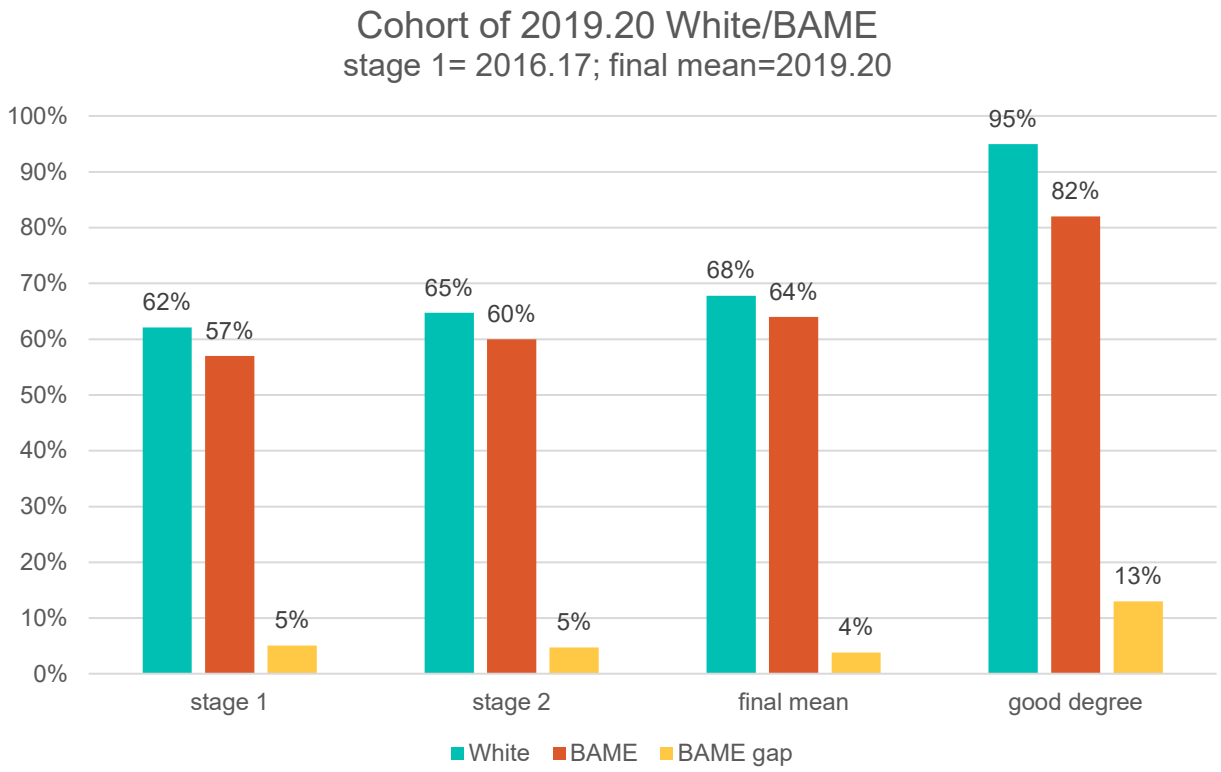
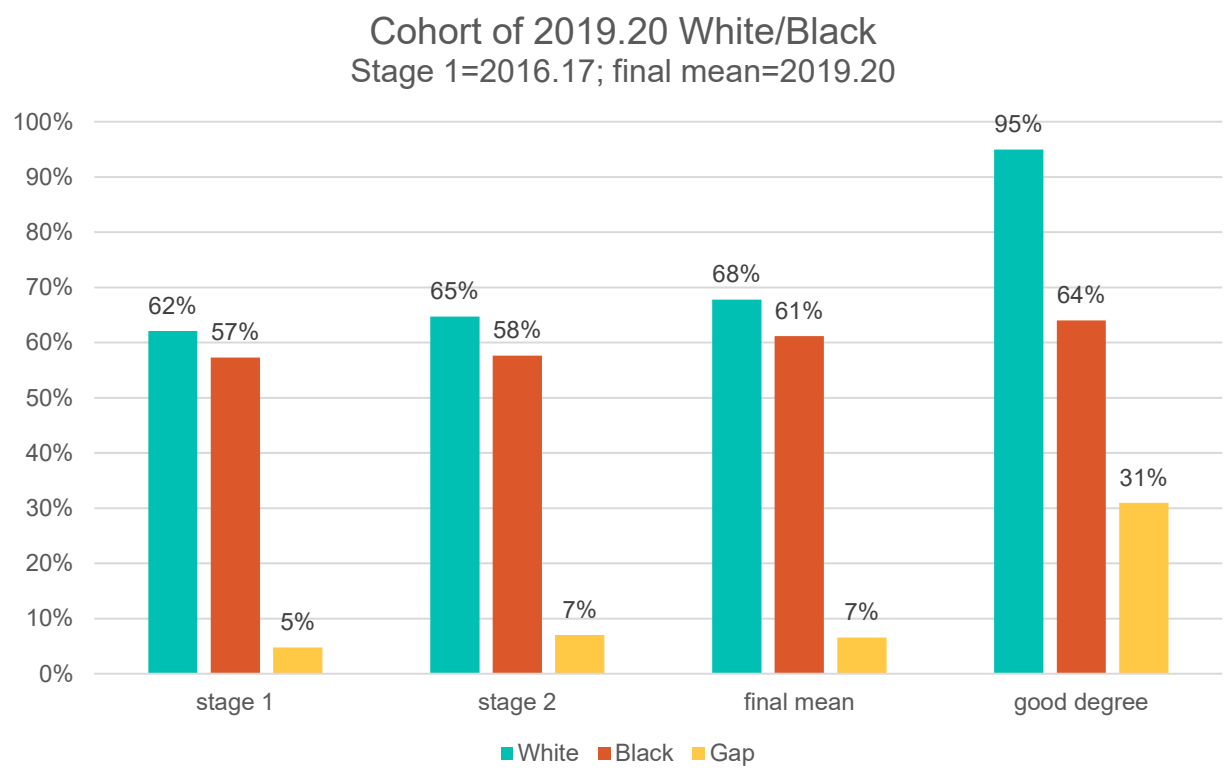
Cohort (Covid year)





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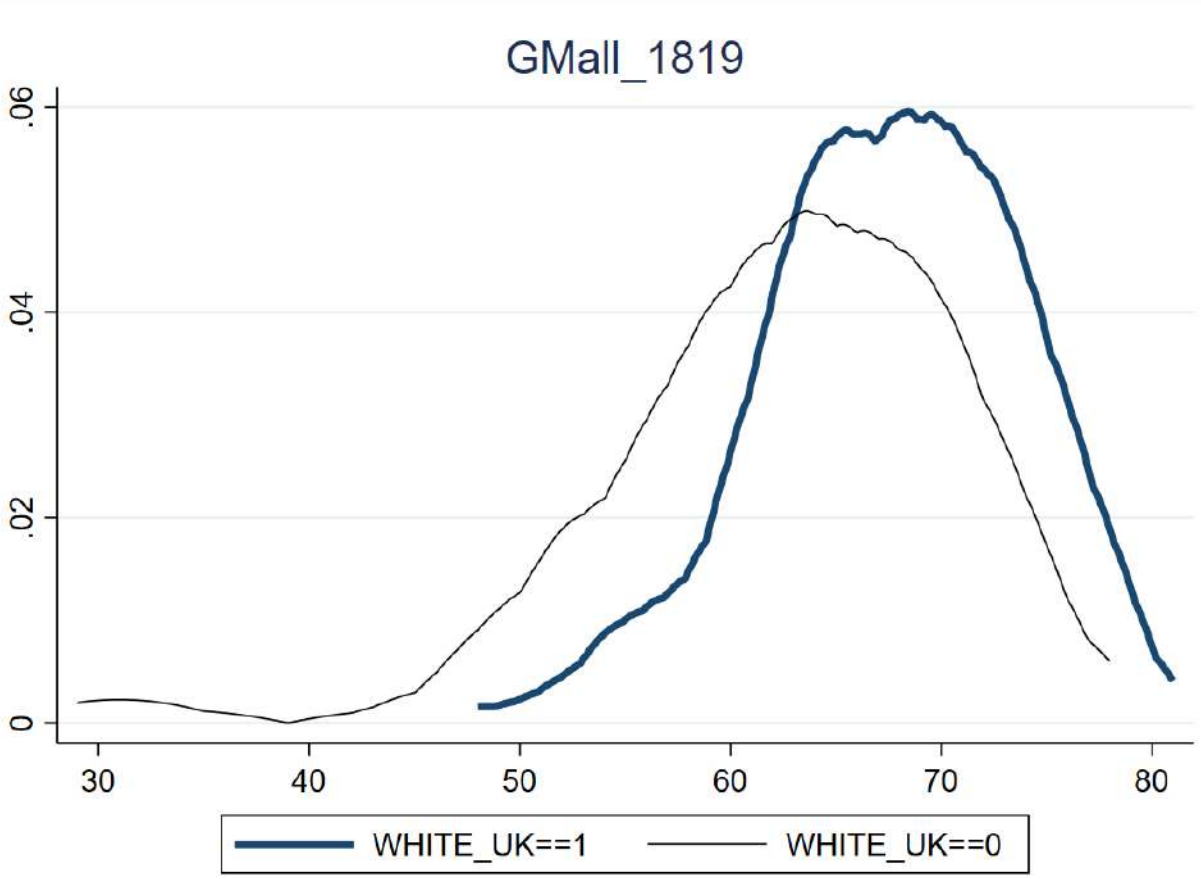
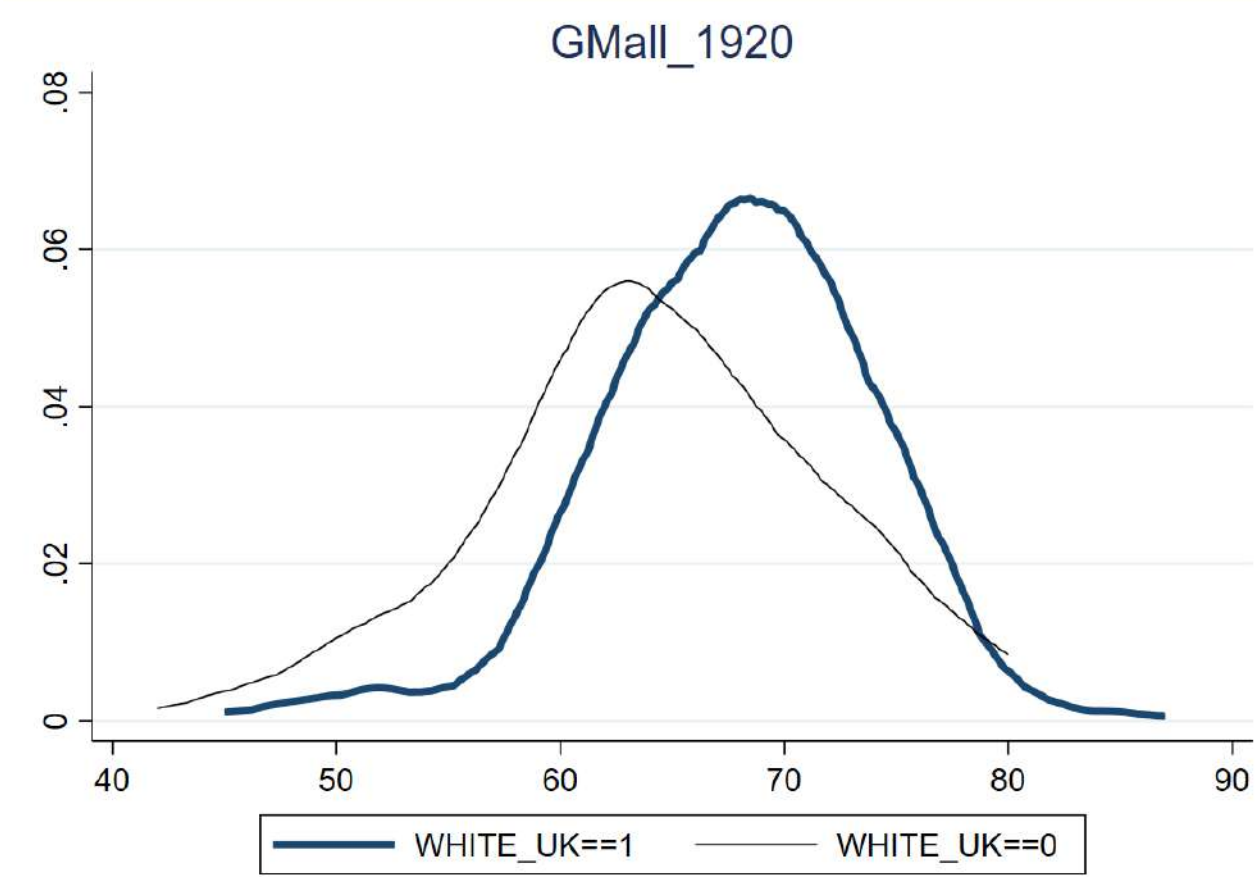
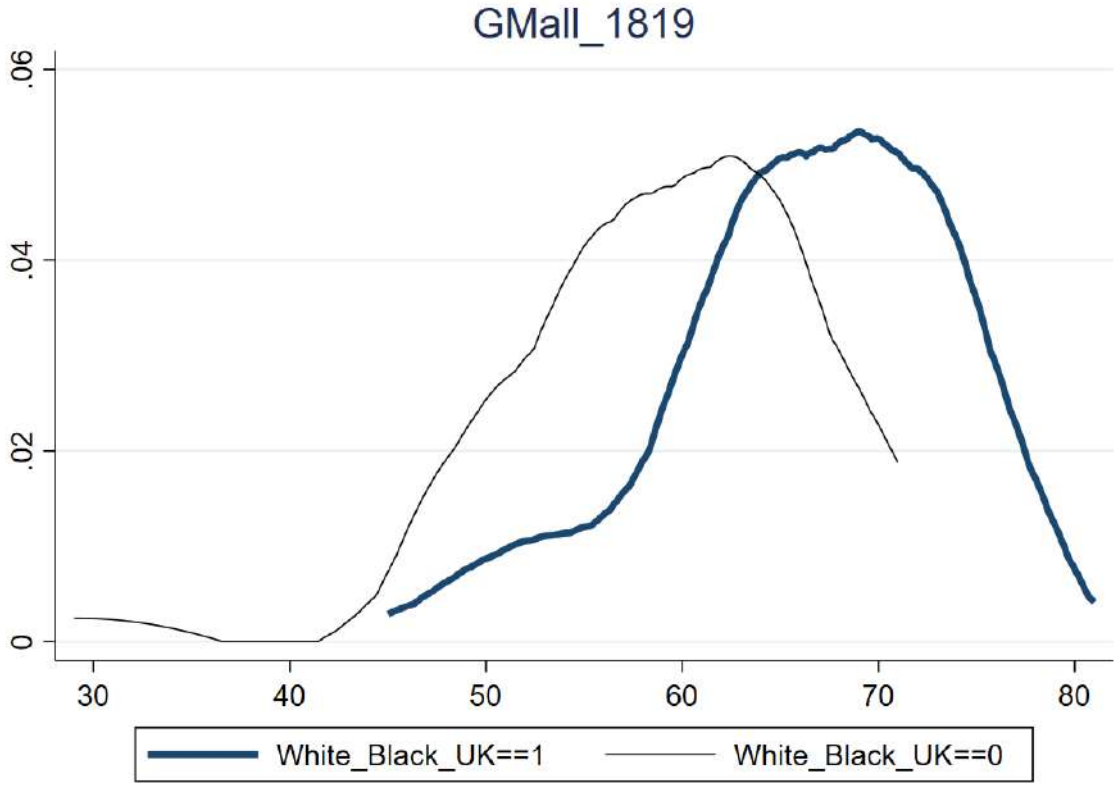
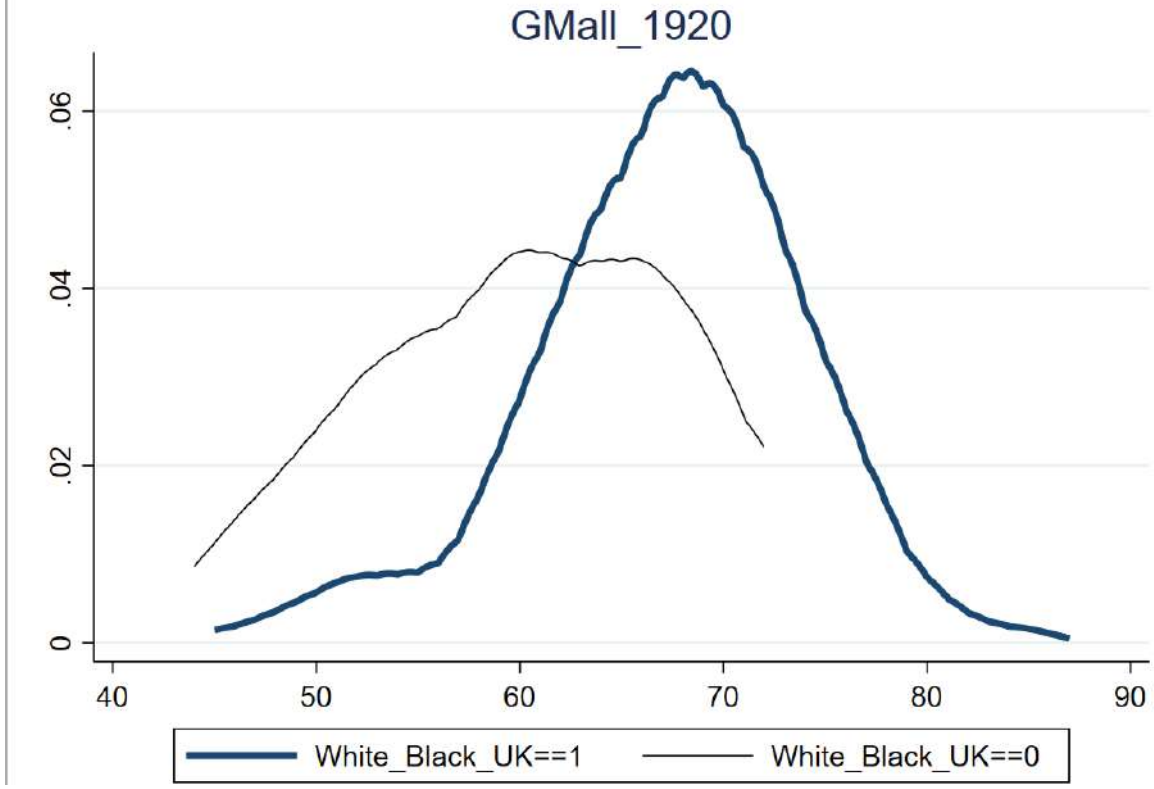
White / BAME 2018.19/2019.20



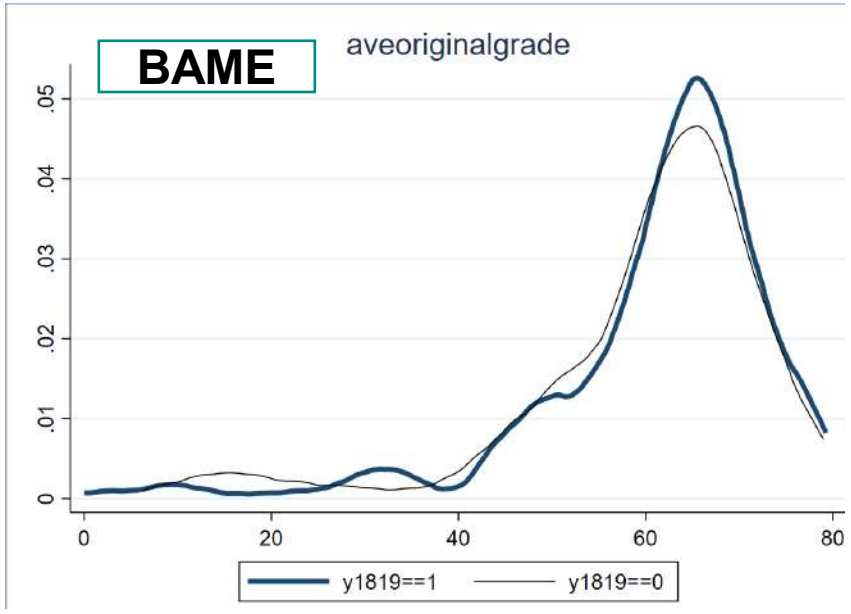


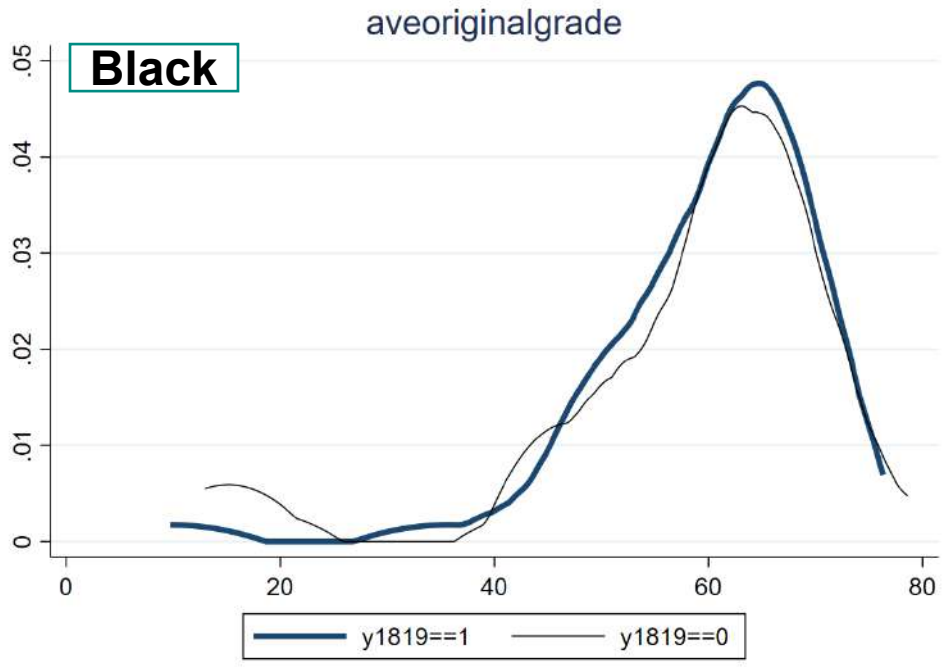
White/ Black students UK 2018.19 – 2019.20

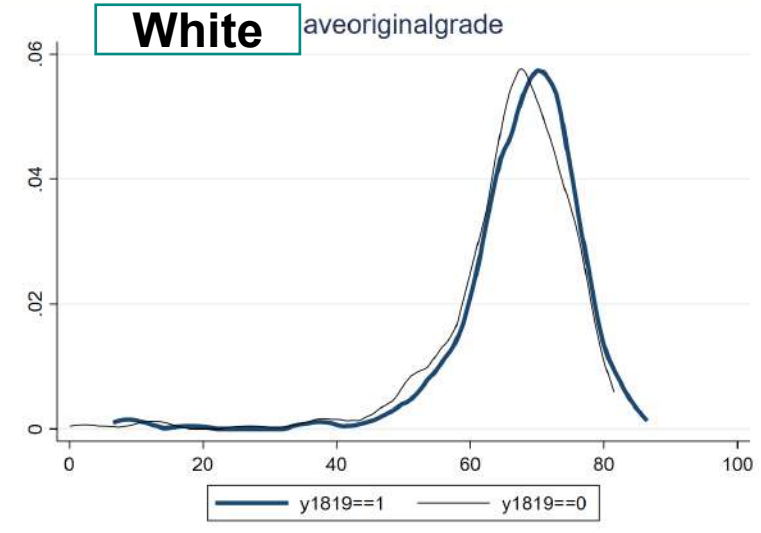




Pre-COVID .DiD results







DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: **1133**

	Before	After	
Control:	**254**	**268**	522
Treated:	**297**	**314**	611
	551	582	

Outcome var.	aveor~e	S. Err.	|t|	P>|t|
Before				
Control	**63.639**			
Treated	**65.721**			
Diff (T-C)	**2.081**	**1.009**	**2.06**	**0.039****
After				
Control	**64.428**			
Treated	**65.411**			
Diff (T-C)	**0.982**	**1.012**	**0.97**	**0.332**
Diff-in-Diff	**-1.099**	**1.429**	**0.77**	**0.442**

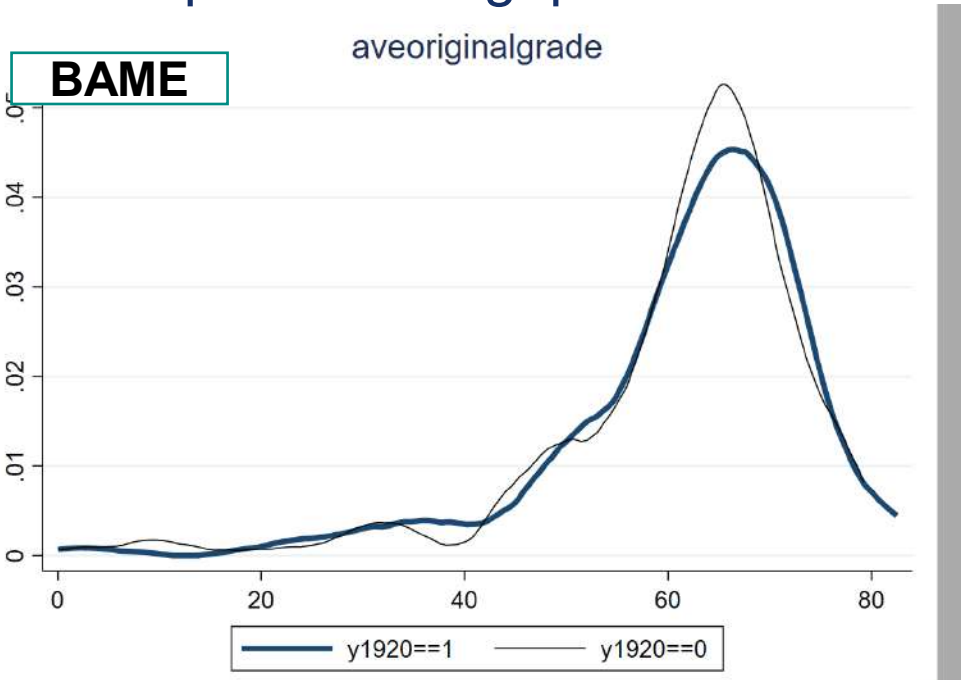
R-square: **0.00**

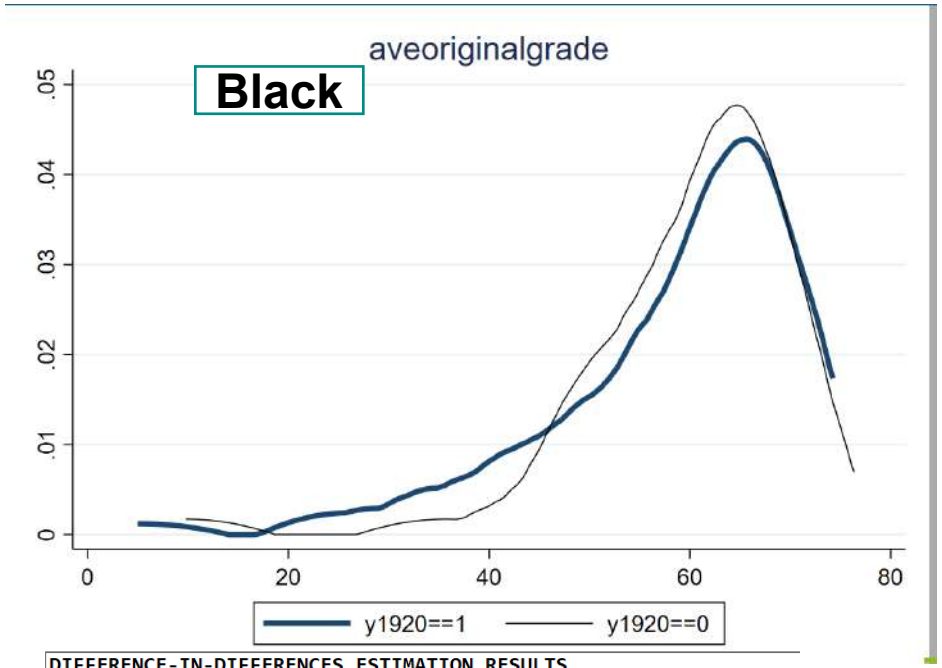
* Means and Standard Errors are estimated by linear regression

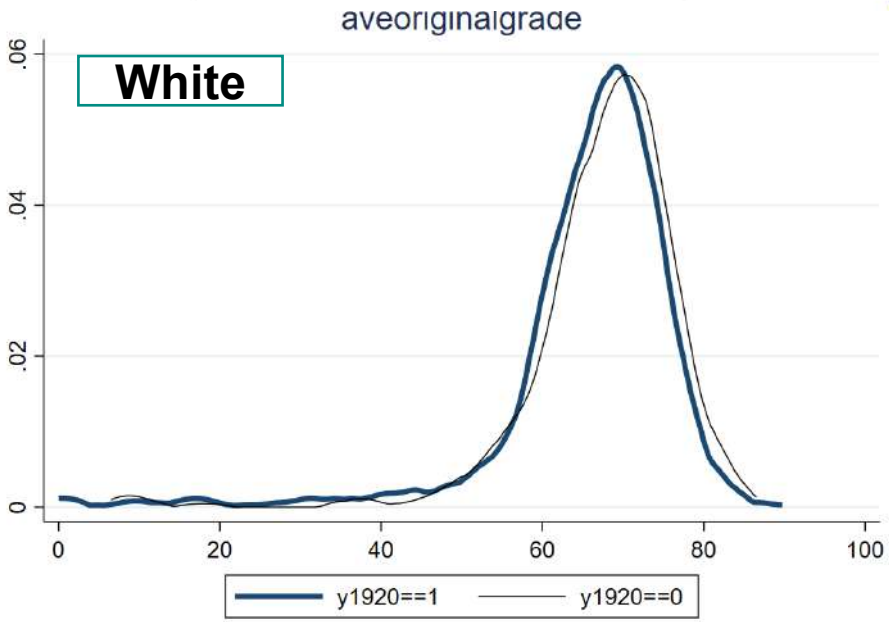
**Robust Std. Errors

**Inference: *** p<0.01; ** p<0.05; * p<0.1

Did COVID help close the gap? DiD results - Assessment policy (online)







DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: **1479**

	Before	After	
Control:	**297**	**314**	611
Treated:	**425**	**443**	868
	722	757	

Outcome var.	aveor~e	S. Err.	|t|	P>|t|
Before				
Control	**66.131**			
Treated	**64.471**			
Diff (T-C)	**-1.660**	**0.884**	**-1.88**	**0.061***
After				
Control	**65.659**			
Treated	**65.206**			
Diff (T-C)	**-0.453**	**0.806**	**0.56**	**0.574**
Diff-in-Diff	**1.207**	**1.196**	**1.01**	**0.313**

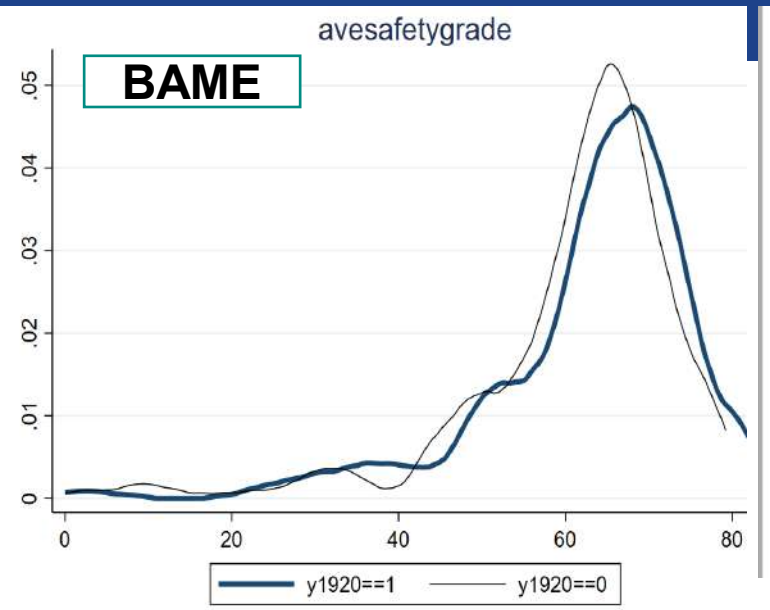
R-square: **0.00**

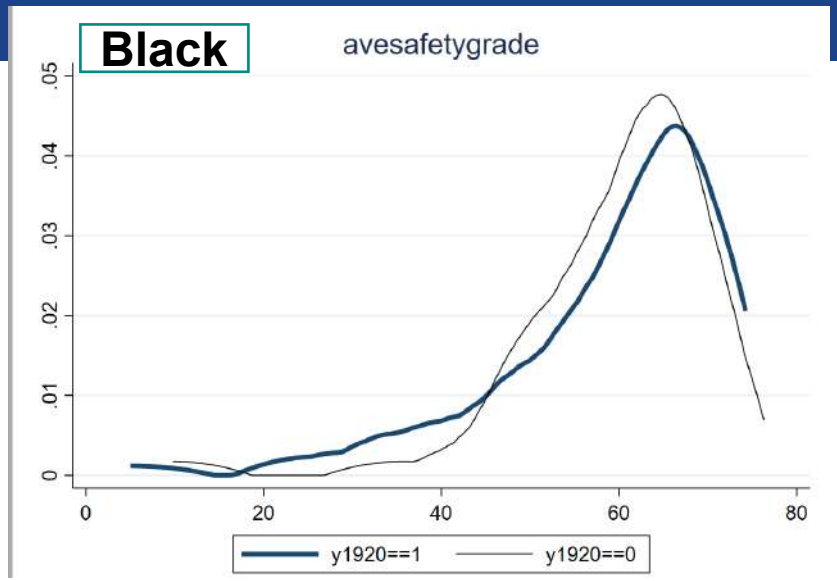
* Means and Standard Errors are estimated by linear regression

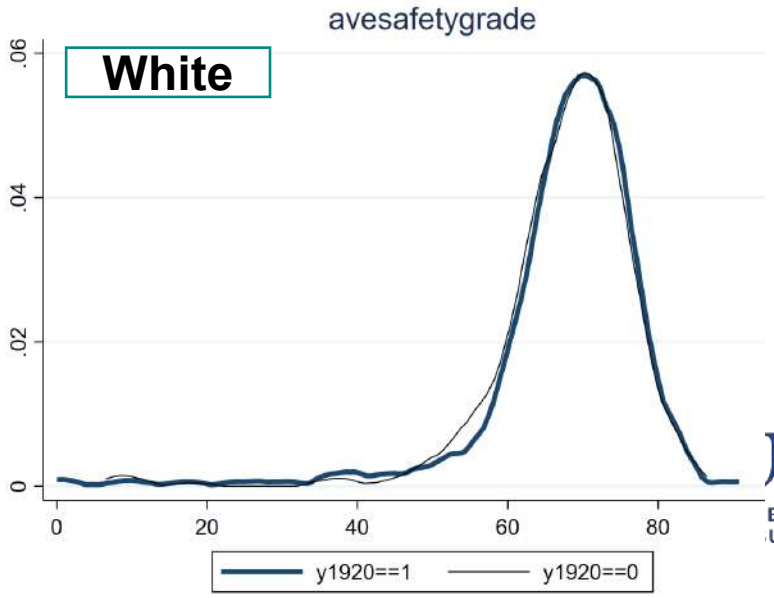
**Robust Std. Errors

**Inference: *** p<0.01; ** p<0.05; * p<0.1

Or was it the no-detriment policy?







	Before	After	
Control:	297	314	611
Treated:	425	443	868
	722	757	

Outcome var.	avesa~e	S. Err.	|t|	P>|t|
Before				
Control	66.131			
Treated	64.518			
Diff (T-C)	-1.613	0.880	-1.83	0.067*
After				
Control	65.659			
Treated	68.454			
Diff (T-C)	2.794	0.790	3.54	0.000***
Diff-in-Diff	4.407	1.183	3.73	0.000***

R-square: 0.02
* Means and Standard Errors are estimated by linear regression
**Robust Std. Errors

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International and domestic students assessments and no-detriment policy: level 6

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: **3018**

	Before	After	
Control:	745	714	1459
Treated:	775	784	1559
	1520	1498	

Outcome var.	aveor~e	S. Err.	|t|	P>|t|
Before				
Control	59.778			
Treated	59.856			
Diff (T-C)	0.078	0.585	0.13	0.894
After				
Control	61.197			
Treated	60.457			
Diff (T-C)	-0.739	0.604	1.22	0.221
Diff-in-Diff	-0.818	0.841	0.97	0.331

R-square: **0.00**

* Means and Standard Errors are estimated by linear regression

**Robust Std. Errors

**Inference: *** p<0.01; ** p<0.05; * p<0.1

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: **3400**

	Before	After	
Control:	775	784	1559
Treated:	919	922	1841
	1694	1706	

Outcome var.	aveor~e	S. Err.	|t|	P>|t|
Before				
Control	60.612			
Treated	59.494			
Diff (T-C)	-1.118	0.604	-1.85	0.064*
After				
Control	61.052			
Treated	62.007			
Diff (T-C)	0.955	0.577	1.66	0.098*
Diff-in-Diff	2.073	0.835	2.48	0.013**

R-square: **0.01**

* Means and Standard Errors are estimated by linear regression

**Robust Std. Errors

**Inference: *** p<0.01; ** p<0.05; * p<0.1

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: **3400**

	Before	After	
Control:	775	784	1559
Treated:	919	922	1841
	1694	1706	

Outcome var.	avesa~e	S. Err.	|t|	P>|t|
Before				
Control	60.612			
Treated	59.599			
Diff (T-C)	-1.013	0.600	-1.69	0.091*
After				
Control	61.052			
Treated	64.845			
Diff (T-C)	3.794	0.573	6.62	0.000***
Diff-in-Diff	4.807	0.830	5.79	0.000***

R-square: **0.03**

* Means and Standard Errors are estimated by linear regression

**Robust Std. Errors

**Inference: *** p<0.01; ** p<0.05; * p<0.1

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Pre-covid all students

Covid: Assessments all students

Covid: no-detriment policy all students

University of Sussex Business School

University of Greenwich

International students: assessments and no-detriment policy: level 6

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: **1885**

	Before	After	
Control:	**491**	**446**	937
Treated:	**478**	**470**	948
	969	916	

Outcome var.	aveor~e	S. Err.	|t|	P>|t|
Before				
Control	57.572			
Treated	56.338			
Diff (T-C)	-1.234	0.645	-1.91	0.056*
After				
Control	58.983			
Treated	57.148			
Diff (T-C)	-1.835	0.690	2.66	0.008***
Diff-in-Diff	-0.600	0.945	0.64	0.525

R-square: **0.01**

* Means and Standard Errors are estimated by linear regression

**Robust Std. Errors

**Inference: *** p<0.01; ** p<0.05; * p<0.1

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: **1921**

	Before	After	
Control:	**478**	**470**	948
Treated:	**494**	**479**	973
	972	949	

Outcome var.	aveor~e	S. Err.	|t|	P>|t|
Before				
Control	56.512			
Treated	55.575			
Diff (T-C)	-0.937	0.717	-1.31	0.191
After				
Control	57.335			
Treated	59.048			
Diff (T-C)	1.713	0.748	2.29	0.022**
Diff-in-Diff	2.650	1.036	2.56	0.011**

R-square: **0.01**

* Means and Standard Errors are estimated by linear regression

**Robust Std. Errors

**Inference: *** p<0.01; ** p<0.05; * p<0.1

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DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS

Number of observations in the DIFF-IN-DIFF: **1921**

	Before	After	
Control:	**478**	**470**	948
Treated:	**494**	**479**	973
	972	949	

Outcome var.	avesa~e	S. Err.	|t|	P>|t|
Before				
Control	56.512			
Treated	55.729			
Diff (T-C)	-0.784	0.710	-1.10	0.270
After				
Control	57.335			
Treated	61.508			
Diff (T-C)	4.173	0.746	5.59	0.000***
Diff-in-Diff	4.957	1.030	4.81	0.000***

R-square: **0.04**

* Means and Standard Errors are estimated by linear regression

**Robust Std. Errors

**Inference: *** p<0.01; ** p<0.05; * p<0.1

Pre-covid international students

Covid: Assessments international students

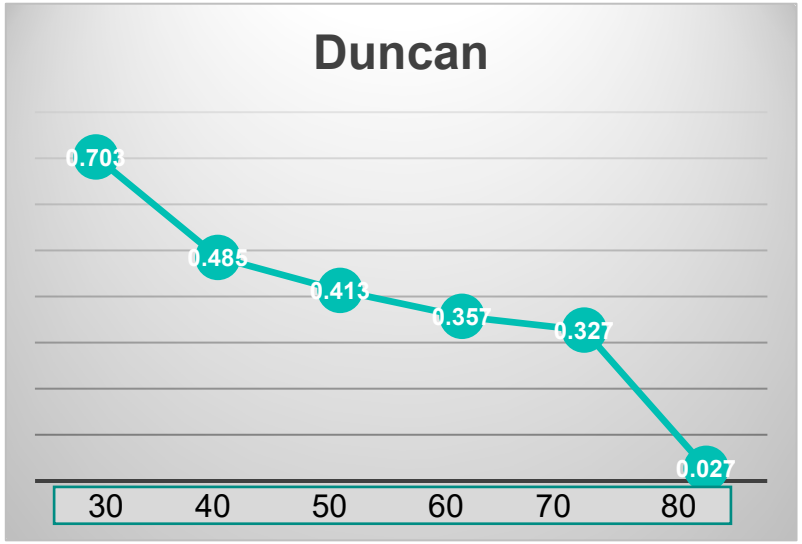
Covid: no-detriment policy international students

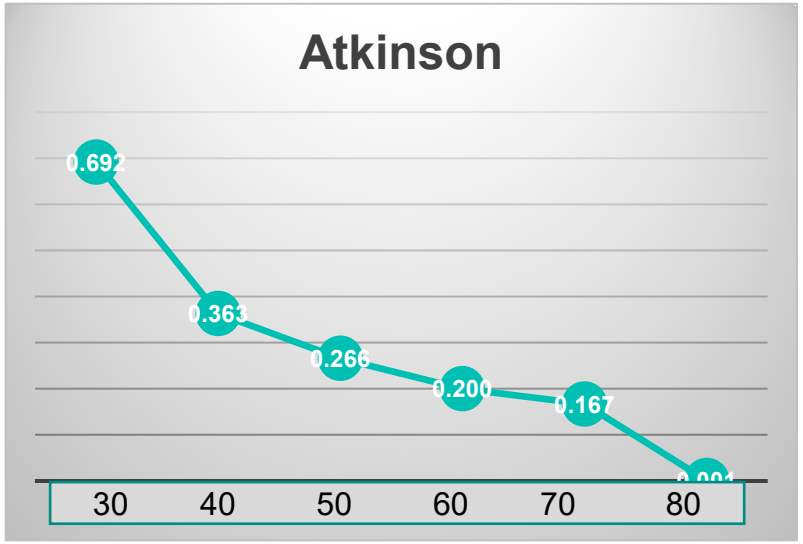
Sussex's no-detriment policy?

Term 1 (MT1=average term1) IA= initial attempt	Term 2 (MT2= average term 2)
Term 1 modules passed: **Average MT1 of IA applies as floor for term 2**	All Passes: Average MT2 ≥ MT1
	Any Fail no EC: MT2 ≥ MT1 applies after July to T2 to the uncapped modules (to IA T2)
	Any Fail EC: MT2 ≥ MT1 applies after July to T2 to the all modules (as if all was IA)
Any Term 1 module failed and resits (no EC) : **Average MT1 of IA applies as floor for term 2**	All Passes: Average MT2 ≥ MT1 (IA)
	Any Fail no EC: MT2 ≥ MT1 (IA) applies after July to T2 to the uncapped modules
	Any Fail EC: MT2 ≥ MT1 applies after July to T2 to the all modules T2
Any Term 1 module failed and EC: **Average MT1 is used temporarily** **Average T1 after sit is used as floor for T2 (new MT1 average)**	All Passes: Average MT2 ≥ new MT1 (after July)
	Any Fail no EC: MT2 ≥ new MT1 applies after July to T2 to the uncapped modules
	Any Fail EC: MT2 ≥ new MT1 applies after July to T2 to the all modules T2

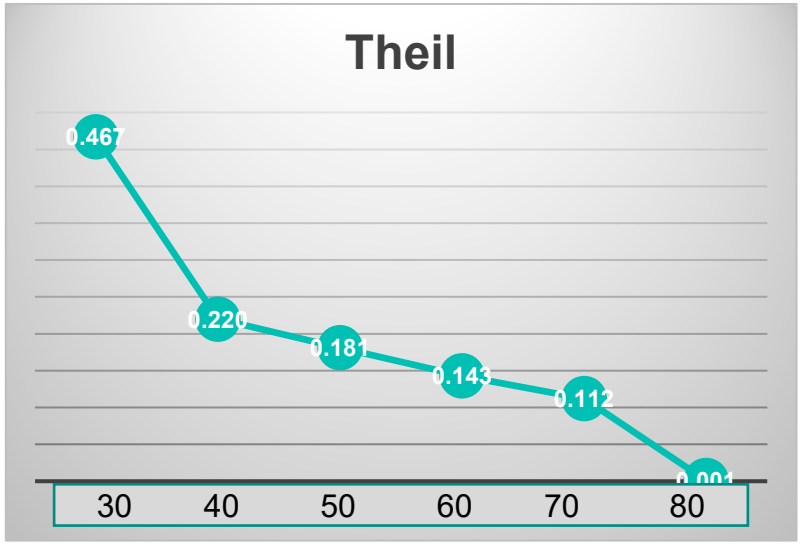
Where does it go wrong? 58 or 60?

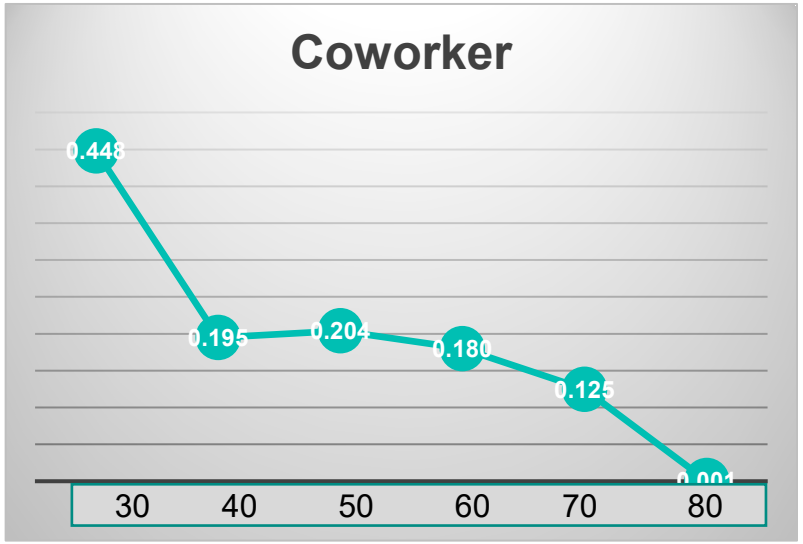
Segregation Indexes for small proportions





A score of 1 is perfect segregation
A score of 0 if no segregation





Microaggressions, microaffirmations

		Pass year 1	Average Grade year 2	Average Grade year 3
Ethnic Group				
	Asian	-0.15	-2.10	-3.27
	Black	-0.14	-2.06	-6.36
	Mixed	-0.14	-0.97	-1.23
	Other	-0.57	-0.52	-2.92
	Unknown	3.47	0.06	-4.32
Female		-0.10	1.61	2.74
cohort 5		3.72	0.24	-2.63
cohort 6		-0.02	-1.29	-1.49
foundation year		0.40		
polar 1/2		-0.27		
averagestage1			0.71	
impaired performance				-1.78
constant		yes	yes	yes

10%
5%
1%

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Conclusions

- We need to look beyond the average and move towards distributional measures and causal models to explore the awarding gap

- Our results suggest:
- Distributional models confirm there are insights to gain from looking at the distribution
- Diff-in-diff showed that assessments design really matters for international students whilst institutional policy responses to COVID (non-determinant policy) matter for all but not uniformly.
- Segregation indices confirm we need to develop practice to support BAME students to excel
- Triple Hurdle Model shows that we need to look at the impacts across programmes of study, NOT just at the individual module level

- Overall – we can confirm there is a lot of scope with Institutional Data to do more than tables of averages and real opportunity for Education Economists to undertake impactful research within their institutions to contribute to Institutional Objectives such as the Access and Participation Plan (APP) and various BAME Awarding gap initiatives.

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Thank you