

Choice of Topic

**Mail**Online | News

Working-class white boys at bottom of educational heap, warns new government report

By Laura Clark for the Daily Mail
16:57, 07 Jun 2009 , updated 07:41, 08 Jun 2009



Project 1

An Analysis of GCSE Examination Results in England

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Research Questions

- 1) Does gender, ethnicity and social class affect GCSE outcomes, and which has the biggest influence?
- 2) Is there a gender difference in the subjects that students take for their GCSEs?
- 3) Does the type of school attended affect GCSE outcomes?
- 4) Does geographical location affect students GCSE outcomes?
- 5) Was there a difference in GCSE outcomes between state and independent schools during COVID?
- 6) Are some subjects easier to get a Grade 9 in than others?

Data Source

The data was obtained from:

<https://www.gov.uk/government/collections/statistics-gcses-key-stage-4>

Data files

Guidance

Before we start

Measures of Success in Education

Attainment 8

The average measure of an individual student's progress across their 8 best performing subjects which fall into three buckets.

Progress 8

This is a measure of students' progress across 8 subjects. This is a value added measure whereby students' results are compared to students who had the same prior attainment score at KS2. It uses the same buckets as Attainment 8.

Buckets for Subjects

- Bucket 1: English and Maths
The score for Maths and English will be double weighted.
- Bucket 2: Three highest Ebacc subjects, which are as follows:
- Separate Sciences
 - Core & Additional Sciences
 - Computer Science
 - History
 - Geography
 - Languages
- Bucket 3: Three 'other' subjects in which students have received their highest grades.

An Example

Amy achieved the following grades in her examinations:

GCSEs are graded
from 1 to 9

Subject	Attainment 8 Score
English Language	7
English Literature	7
Double Science	6
Maths	6
French	5
Humanities	7
History	7
Media	9
RE	4

Bucket 1	Score	Bucket 2	Score	Bucket 3	Score
English Language	14	Science	6	Media	9
Maths	12	History	7	Humanities	7
		French	5	English Literature	7

Total Score: 67

Attainment 8 Score = Total score divided by 10

$67/10 = 6.7$

Calculating a student's Progress 8 score

Amy's Attainment 8 score = 67

Amy's estimated Attainment 8 score = 59.95

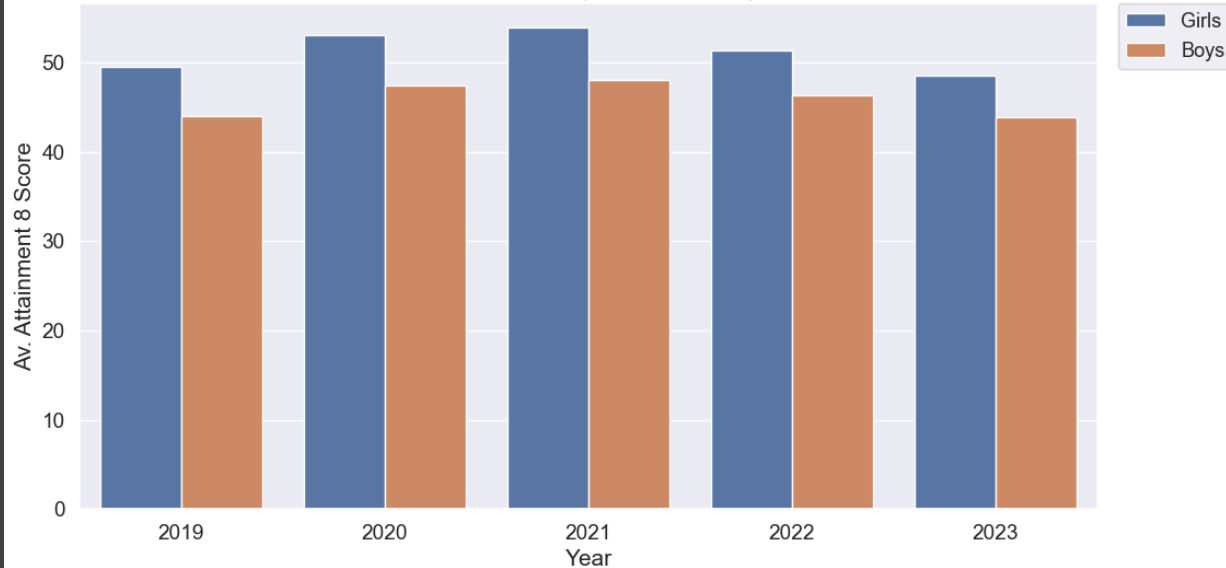
Progress 8 score = $(67 - 59.95) / 10 = 0.71$

Q1 Analysis

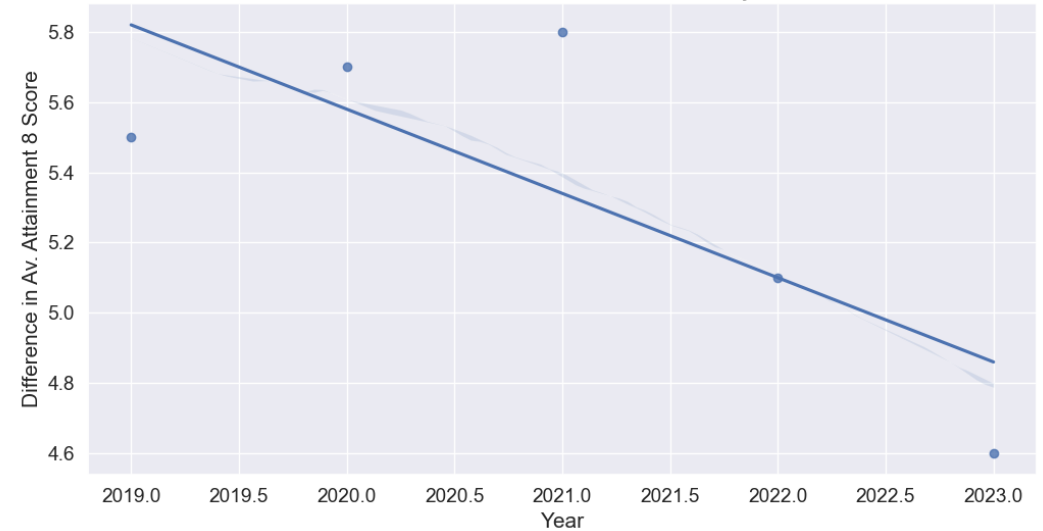
What effect do gender, ethnicity and social class have on GCSE outcomes?

Gender Analysis

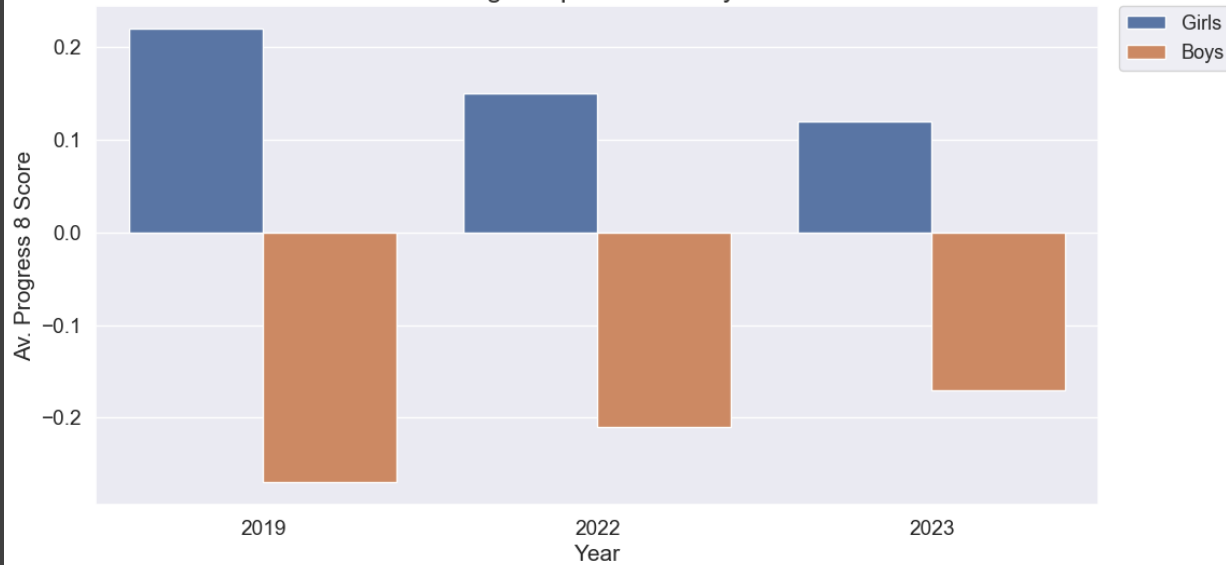
GCSE Av. Attainment per Student by Gender



Difference in GCSE Attainment between Boys and Girls



GCSE Progress per Student by Gender

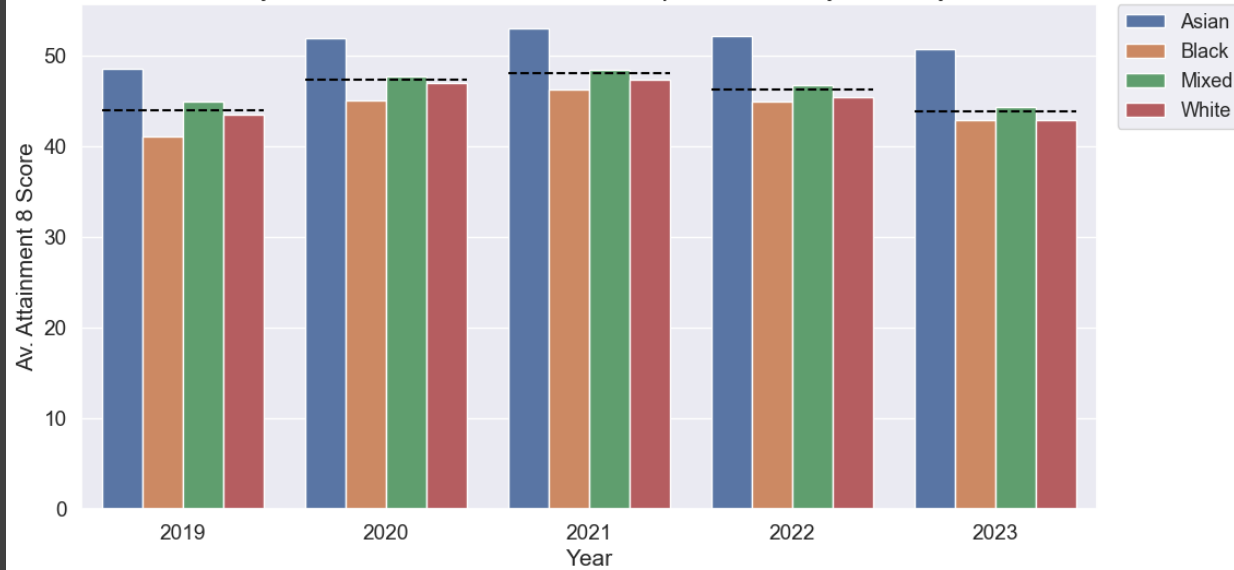


Difference in GCSE Progress between Boys and Girls

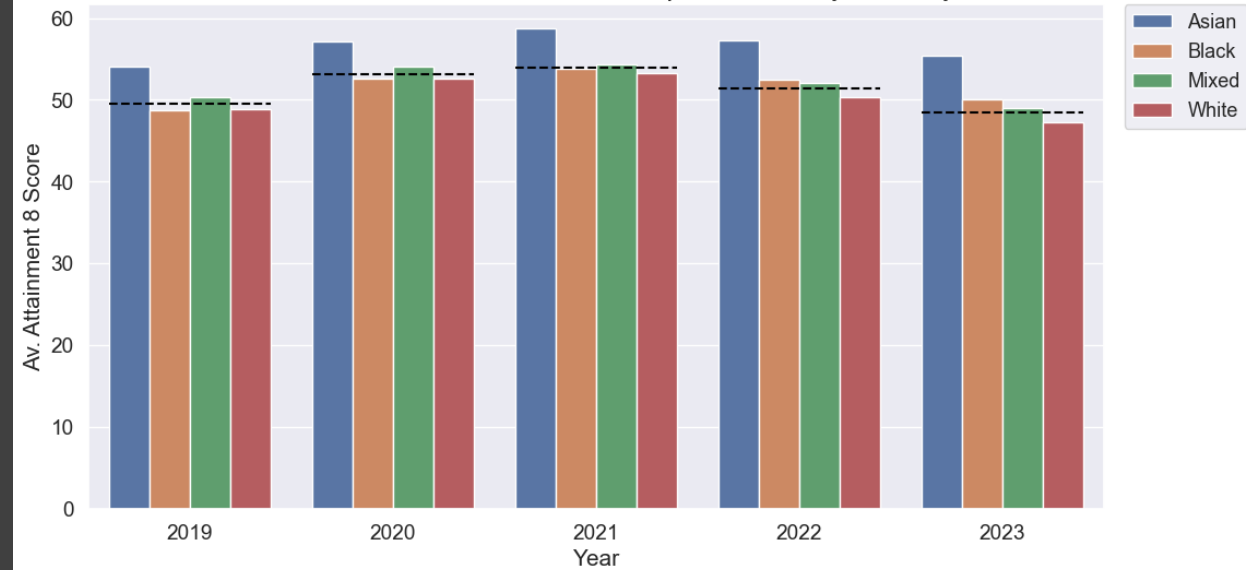


Ethnicity Analysis

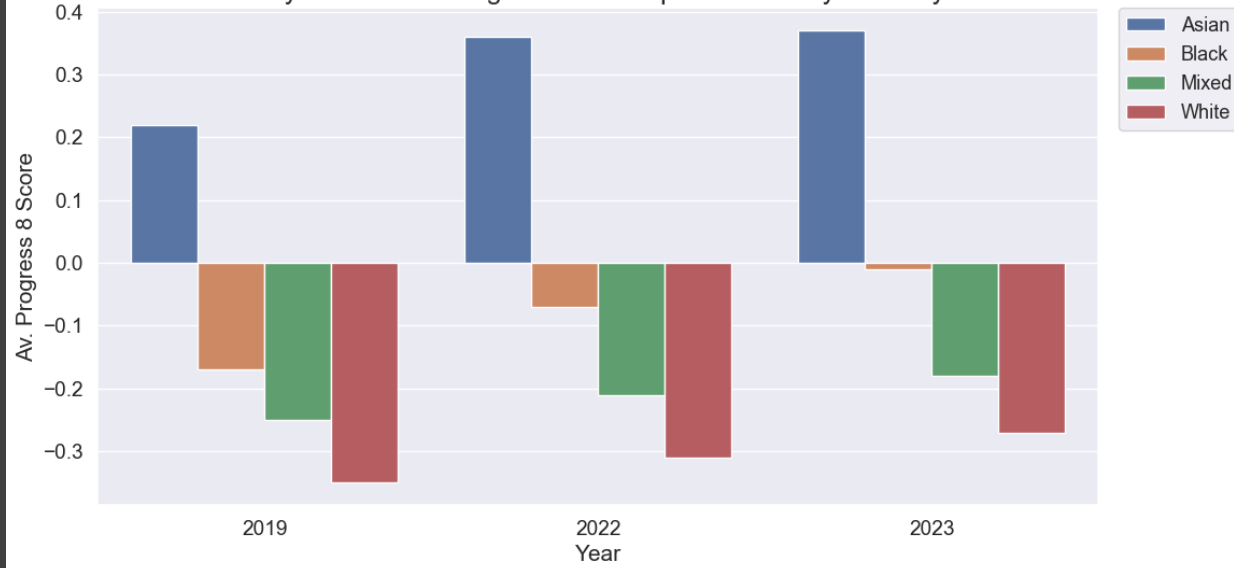
Boys GCSE Av. Attainment 8 Score per Student by Ethnicity



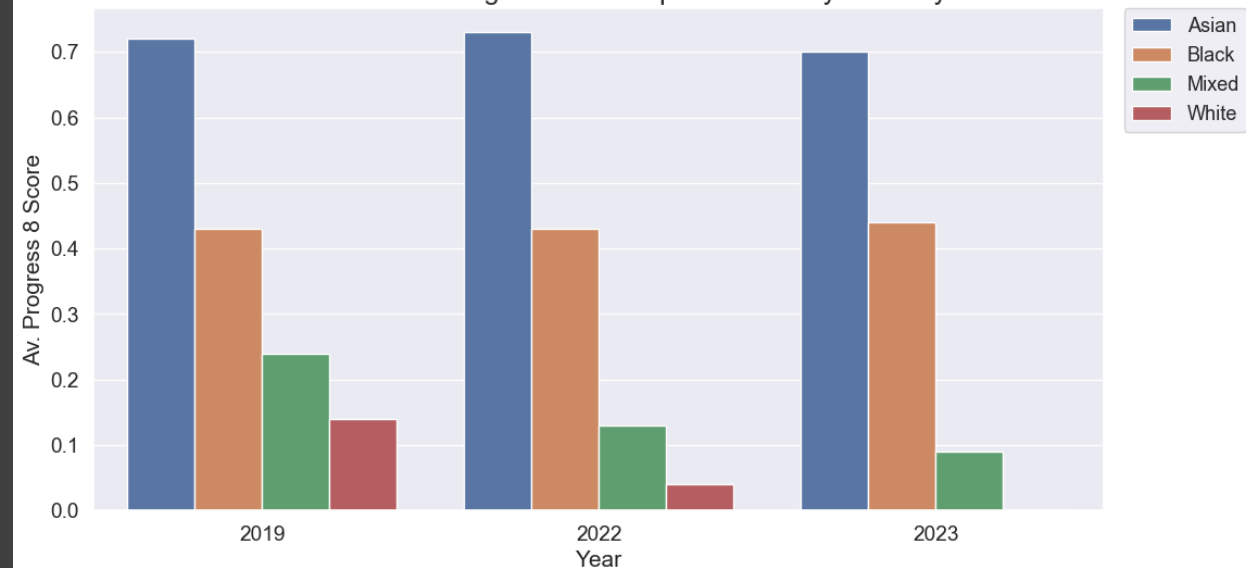
Girls GCSE Av. Attainment 8 Score per Student by Ethnicity



Boys GCSE Av. Progress 8 Score per Student by Ethnicity

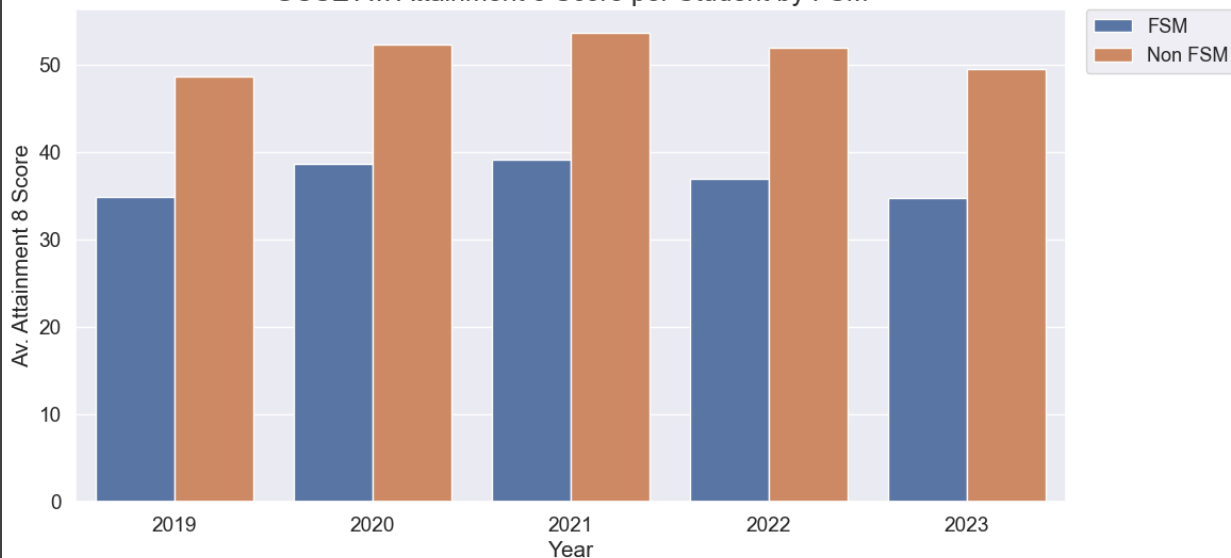


Girls GCSE Av. Progress 8 Score per Student by Ethnicity

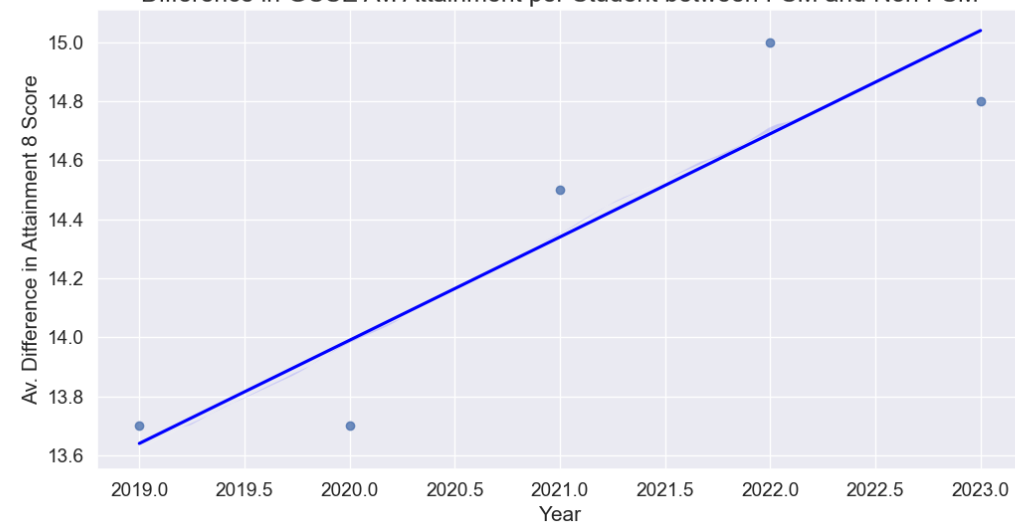


Social Class Analysis

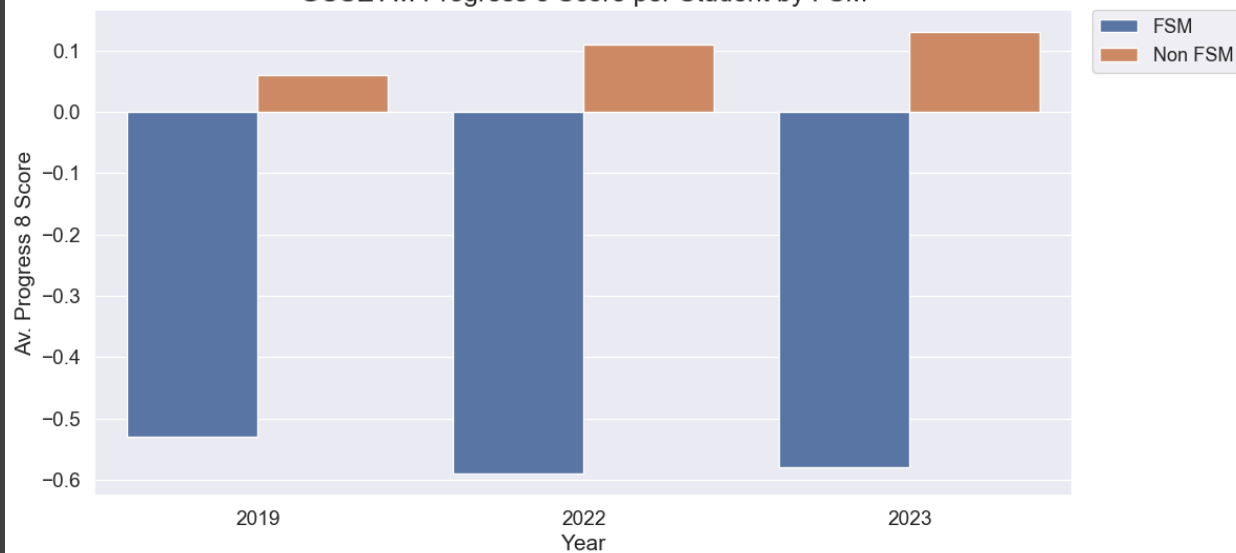
GCSE Av. Attainment 8 Score per Student by FSM



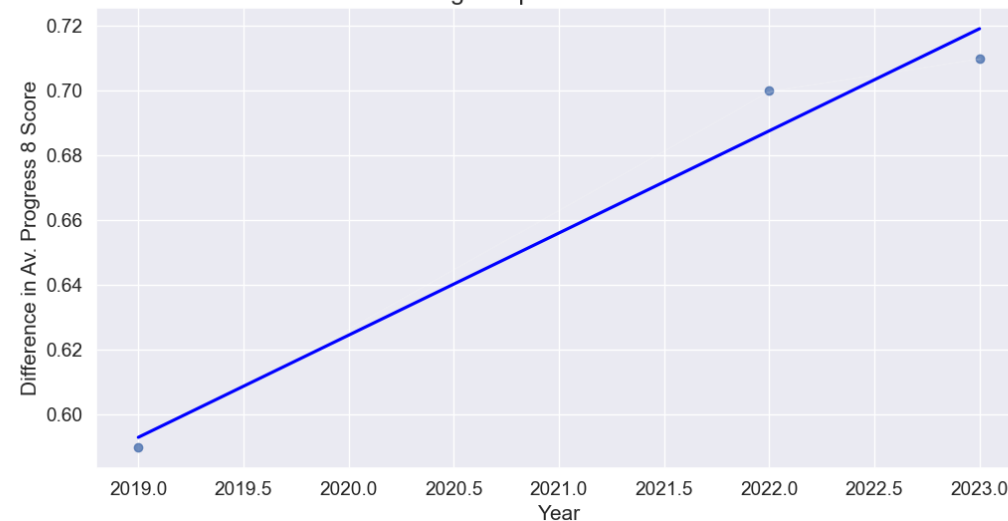
Difference in GCSE Av. Attainment per Student between FSM and Non FSM



GCSE Av. Progress 8 Score per Student by FSM

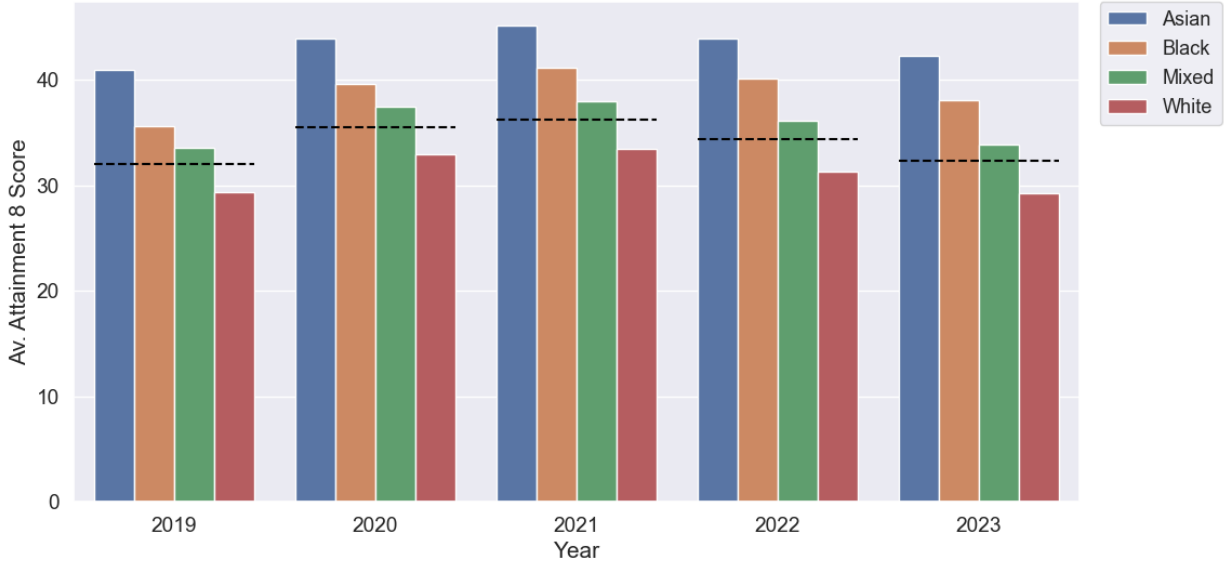


Difference in GCSE Av. Progress per Student between FSM and Non FSM

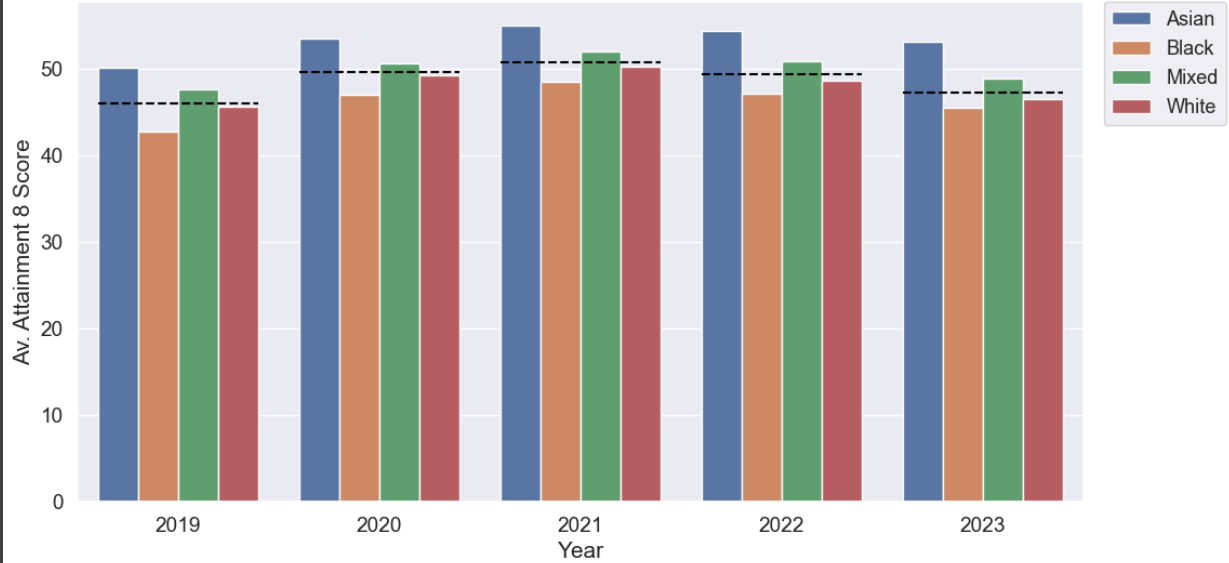


Social Class and Ethnicity Analysis

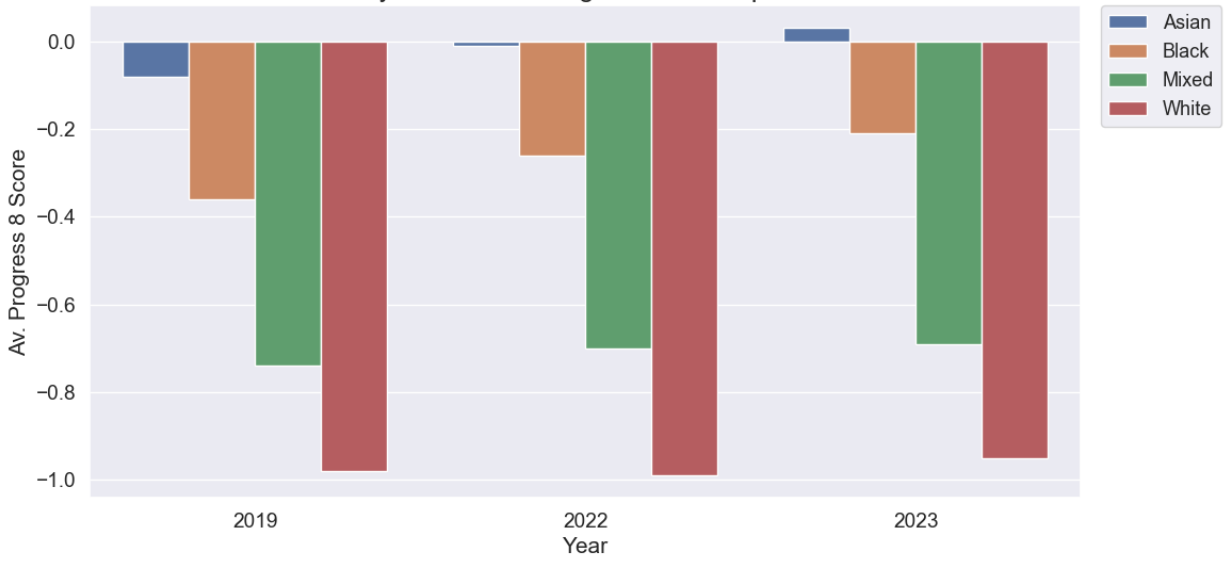
FSM Boys GCSE Av. Attainment 8 Score per Student



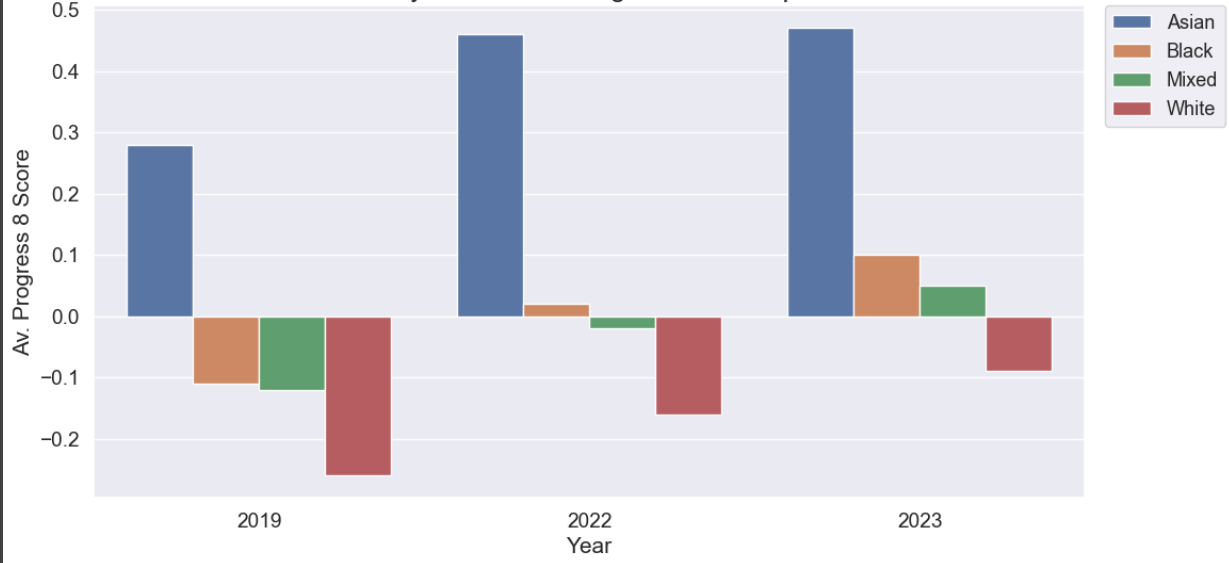
Non FSM Boys GCSE Av. Attainment 8 Score per Student



FSM Boys GCSE Av. Progress 8 Score per Student

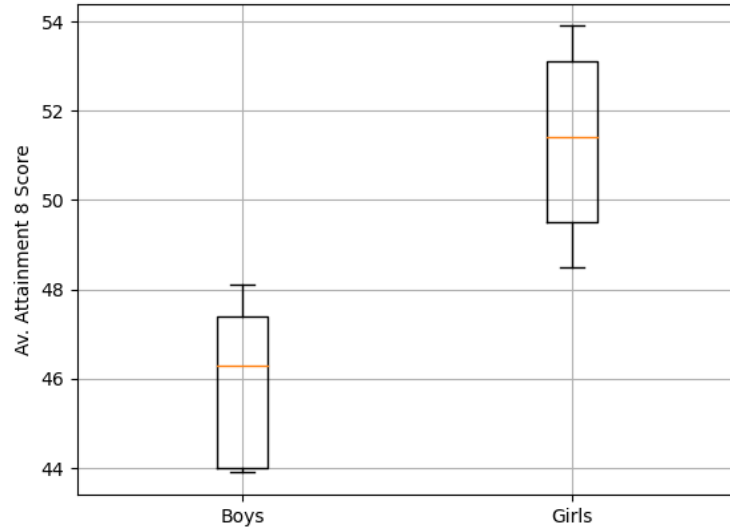


Non FSM Boys GCSE Av. Progress 8 Score per Student

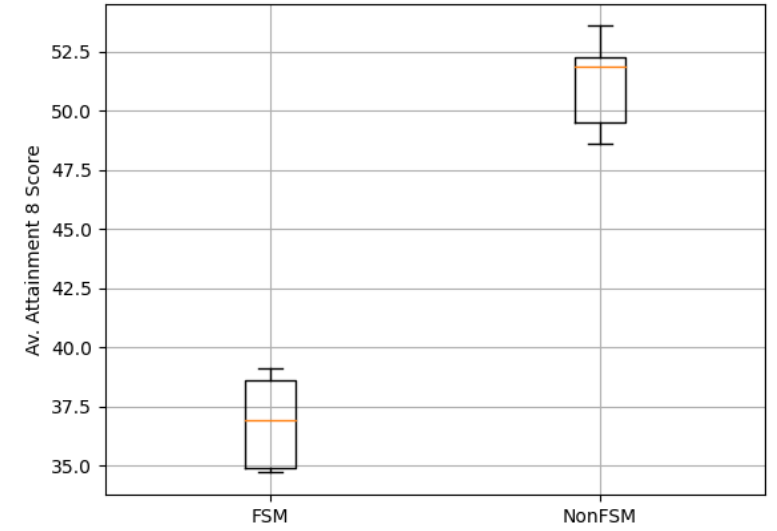


Box Plots

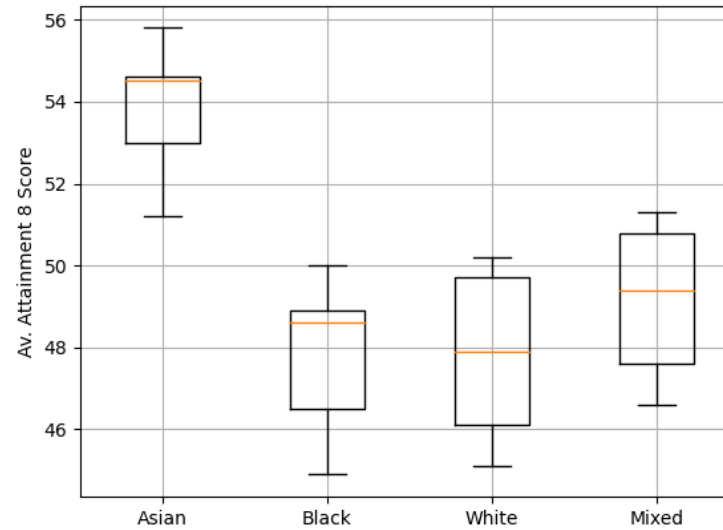
Variation in Attainment 8 Score by Gender



Variation in Attainment 8 Score by FSM



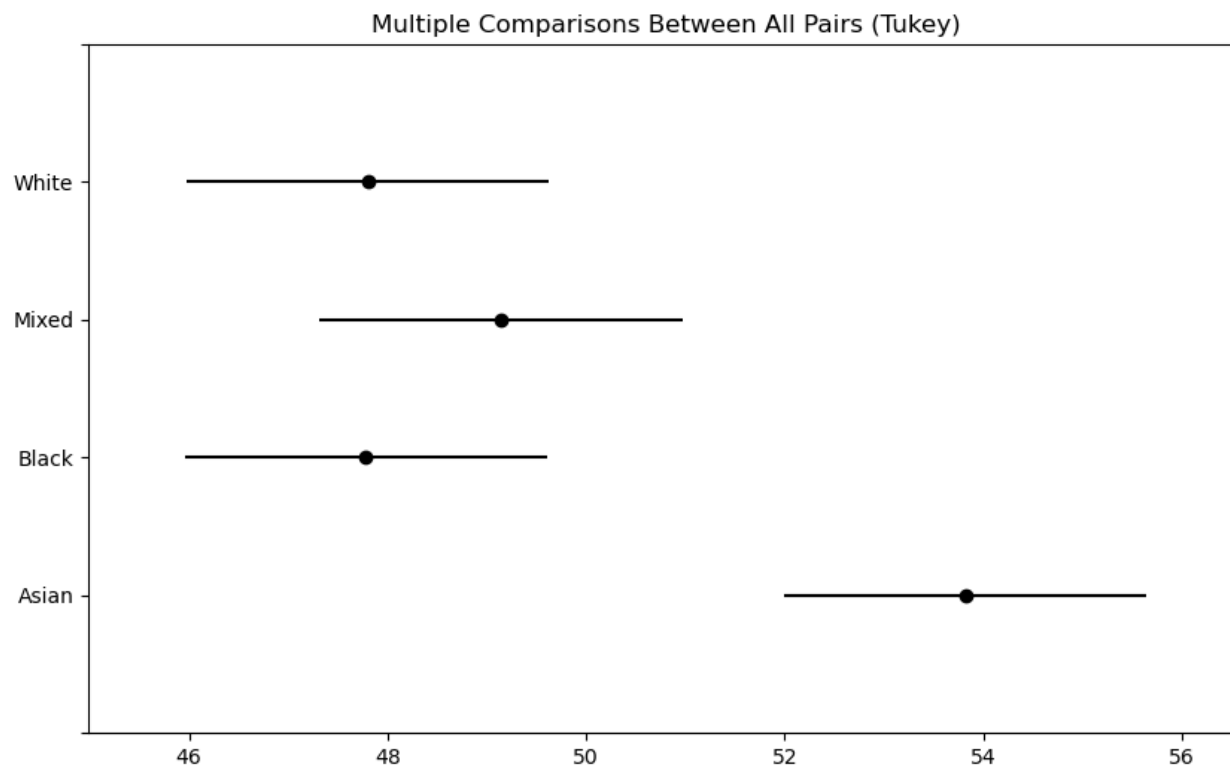
Variation in Attainment 8 Score by Ethnicity



Annova Test on Gender, Ethnicity and Class

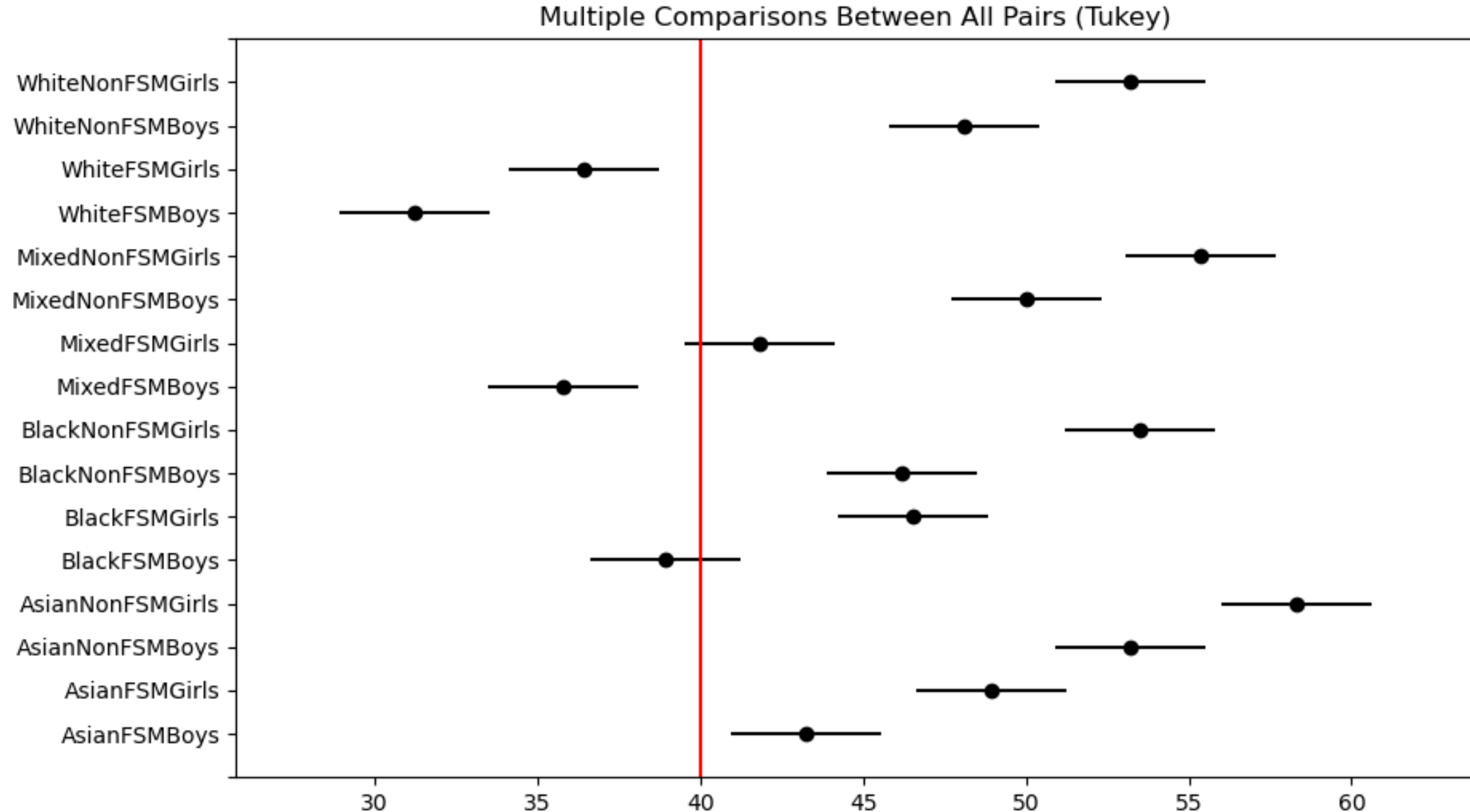
	p-value
Gender	0.004
Ethnicity	0.0006
Free school meals	4.0×10^{-6}

Tukey Test on Gender, Ethnicity and Class



group1	group2	meandiff	p-adj	lower	upper	reject
Asian	Black	-6.04	0.0012	-9.6924	-2.3876	True
Asian	Mixed	-4.68	0.0101	-8.3324	-1.0276	True
Asian	White	-6.02	0.0012	-9.6724	-2.3676	True
Black	Mixed	1.36	0.7147	-2.2924	5.0124	False
Black	White	0.02	1.0	-3.6324	3.6724	False
Mixed	White	-1.34	0.7236	-4.9924	2.3124	False

Tukey Test on All Combinations



[Link](#)

Q1. Summary

Gender, ethnicity and social class all have an effect on GCSE outcomes but the largest effect is due to social class.

