

# Gender gaps in teacher grades for university admissions

**Author:** Konstantina Maragkou

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**This Data Insight discusses the differences between A-level teacher-predicted grades for university admissions, and exam results, by student gender.**

**The research is based on the analysis of the Grading and Admissions Data for England (GRADE) dataset, providing administrative de-identified records from the Office of Qualifications and Examinations Regulation (Ofqual), the Universities and Colleges Admissions Service (UCAS), and the Department for Education (DfE).**

## Background

In England, university applications are based on teacher-predicted grades rather than actual exam results. This system is designed to encourage students to aim higher and achieve better outcomes. However, any biases in these predictions – whether due to gender, background, or other factors – can have a profound impact on students' opportunities to secure places in their preferred universities and courses. Such biases may also affect students' confidence and motivation, potentially influencing how hard they work towards their goals.

## What we did

We examined how accurately teachers' predictions align with students' actual exam results, focusing on differences between boys and girls. Our approach involved two key steps: first, we identified any gender-based discrepancies in predictions when accounting for actual exam performance. Second, we investigated the possible reasons behind any gaps we found.

We analysed data from all university applicants in the 2017-2019 cohorts who followed the standard A-level pathway. The GRADE dataset is very comprehensive, providing us with detailed, de-identified information on students' assessment scores directly from exam boards. It also provides a thorough record of the students' university application process, socio-demographic background, and academic achievements dating back to primary school.

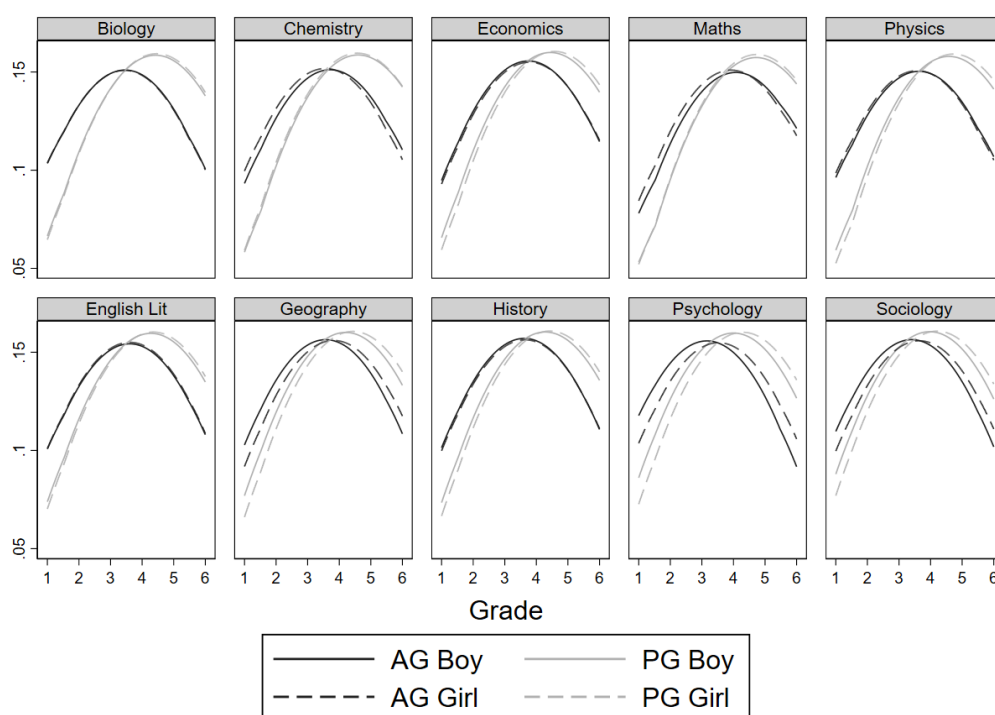
We considered 10 A-level subjects that are [most commonly required or preferred by universities](#) to accept students on to a range of degree courses. The science, technology, engineering, and mathematics (STEM)-related subjects we studied include biology, chemistry, economics, maths, and physics, while the non-STEM subjects include English literature, geography, history, psychology, and sociology. These subjects are particularly important because they often lead to better admission opportunities for more selective university courses, making our findings highly relevant for shaping educational policy.

## What we found

### *Predicted grades overestimate actual achievement*

Figure 1 illustrates that teachers frequently predict higher grades for students (represented by the dashed lines) compared to the actual exam grades they achieve (represented by the solid lines). This trend is consistent across all subjects and for both genders, indicating a general pattern where predicted grades tend to be higher than the exam results.

**Figure 1: Predicted and achieved grades distribution by gender and subject**

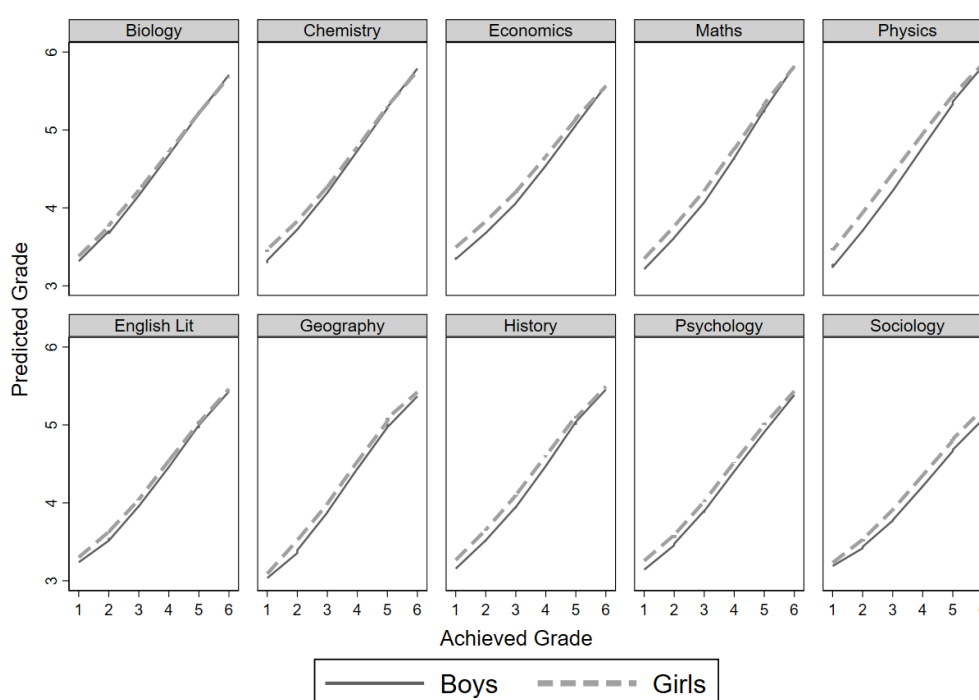


Notes: AG= Achieved Grade. PG= Predicted Grade. Grades are converted to scores as follows: A\*=6, A=5, B=4, C=3, D=2, E=1. Source: GRADE 2017-2019.

### Girls consistently receive higher predicted grades than boys

Figure 2 illustrates the relationship between teacher predictions and actual exam results, by gender and subject. A notable trend is evident: girls consistently receive higher predicted grades than boys at every achievement level. The figure also highlights the ceiling and floor effects that are inherent in the grading system. This means that lower-achieving students have more “room” for their predicted grades to be inflated. For example, those at the bottom of the A-level grade distribution are over-predicted by about 2.5 grades, on average. Conversely, top-performing students are, on average, under-predicted by approximately half a grade.

**Figure 2: Relationship between predicted and achieved grades by gender and subject**



Notes: Grades are converted to scores as follows: A\*=6, A=5, B=4, C=3, D=2, E=1. Source: GRADE 2017-2019.

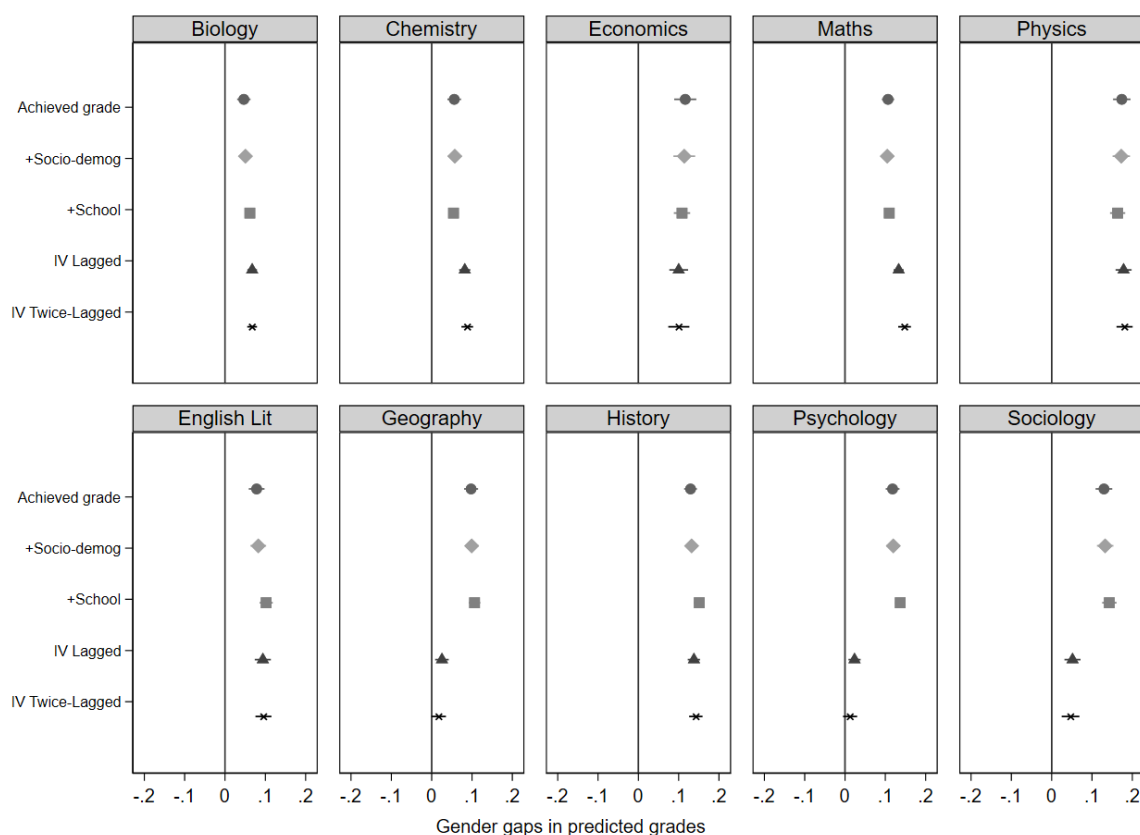
We then examined whether the observed gender differences in grade predictions persist after controlling for key factors such as students' socio-demographic characteristics and the secondary school they attend. Our findings reveal that, conditional on exam performance, girls, on average, receive higher grade predictions than boys with similar socio-demographic backgrounds and who attend the same school, in both STEM and non-STEM subjects.

We illustrate these results in Figure 3, which shows that the gender gap in predicted grades ranges from approximately 0.054 to 0.164 grade points across subjects, consistently favouring girls. To put this into perspective, a 1-point difference corresponds to a full qualification at the lowest passing grade, indicating that these gaps are considerable.

To ensure the reliability of our findings, we applied advanced statistical techniques that utilise past exam scores to “correct” our measures of A-level exam performance. In these adjusted estimates, we observed similar patterns, but with slightly larger gender gaps in subjects where girls typically score lower (like chemistry and maths) and smaller gaps in subjects where they tend to score higher (such as geography, psychology, and sociology). These consistent findings strengthen our confidence in the accuracy of our results.

In summary, our analysis reveals substantial gender differences in predicted grades, particularly in STEM fields, highlighting a critical issue within the current university admissions system.

**Figure 3: Predicted-achieved grade gaps by student gender**



Notes: Each point on the plot shows the difference in predicted grades between girls and boys, conditional on their actual exam results. If a point is positioned to the right of the middle line, it means that girls, on average, receive higher predicted grades than boys with the same exam achievement. The lines around the points represent the level of confidence in the result, the shorter the line, the more confident we are. The first point (circle symbol) represents the gender gap in predicted grades conditional only on the grade achieved in the exam. The second point (rhombus symbol) represents results that also account for parental occupation and ethnic background. The third point (square symbol) conditions also on the secondary school attended. Finally, the last two points (triangle and oblong symbols) correct for possible inaccuracies in exam results, using students' prior exam scores at ages 16 and 11, respectively. Source: GRADE 2017-2019.

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### ***Explaining the gender gaps in grade predictions***

To understand why predicted grades differ between boys and girls, we need to dig deeper and ask: Are these disparities a result of teachers unfairly favouring one gender, or are there other underlying factors influencing these predictions?

We examined several key possibilities:

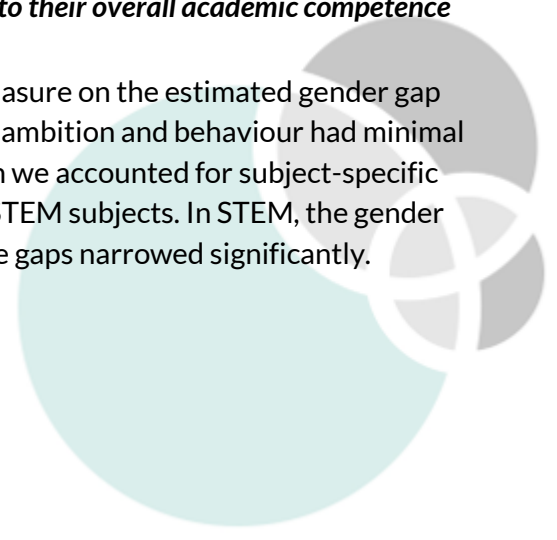
1. **Ambition:** Are students who are aiming for top universities or more challenging courses receiving higher predictions, because they are perceived as more driven?
2. **Behaviour:** Do teachers base their predictions on students' classroom behaviour rather than solely on their academic performance?
3. **Academic progress:** Do predicted grades reflect students' performance right before the exams, suggesting that some students may show unexpected improvements?
4. **Overall competence:** Are teachers evaluating students' general academic abilities, rather than just their performance in specific subjects?

If any of these factors play a role, and if there are gender differences in how students demonstrate these attributes, they could help explain the trends we observe in predicted grades. Essentially, if boys and girls vary in ambition, behaviour, academic progress, or overall competence, these differences might account for the discrepancies in the grades teachers predict for them.

We used several measures as indicators of these student attributes. We assessed the role of ambition by considering whether students applied to competitive universities or courses. To evaluate behaviour, we took into account any learning-related or other disabilities and teacher assessments from primary school, as these measures can provide insight into a student's discipline in the classroom. To evaluate the role of academic progress, we used students' prior achievement at ages 11 and 16. Finally, to assess overall competence, we considered cross-disciplinary performance. We used prior attainment in English for STEM subjects and prior maths achievement for non-STEM subjects, as well as the average exam points students earned at age 16.

***Predicted grades often favour students who demonstrate strong cross-disciplinary performance; in particular, girls are more likely to receive higher predictions due to their overall academic competence***

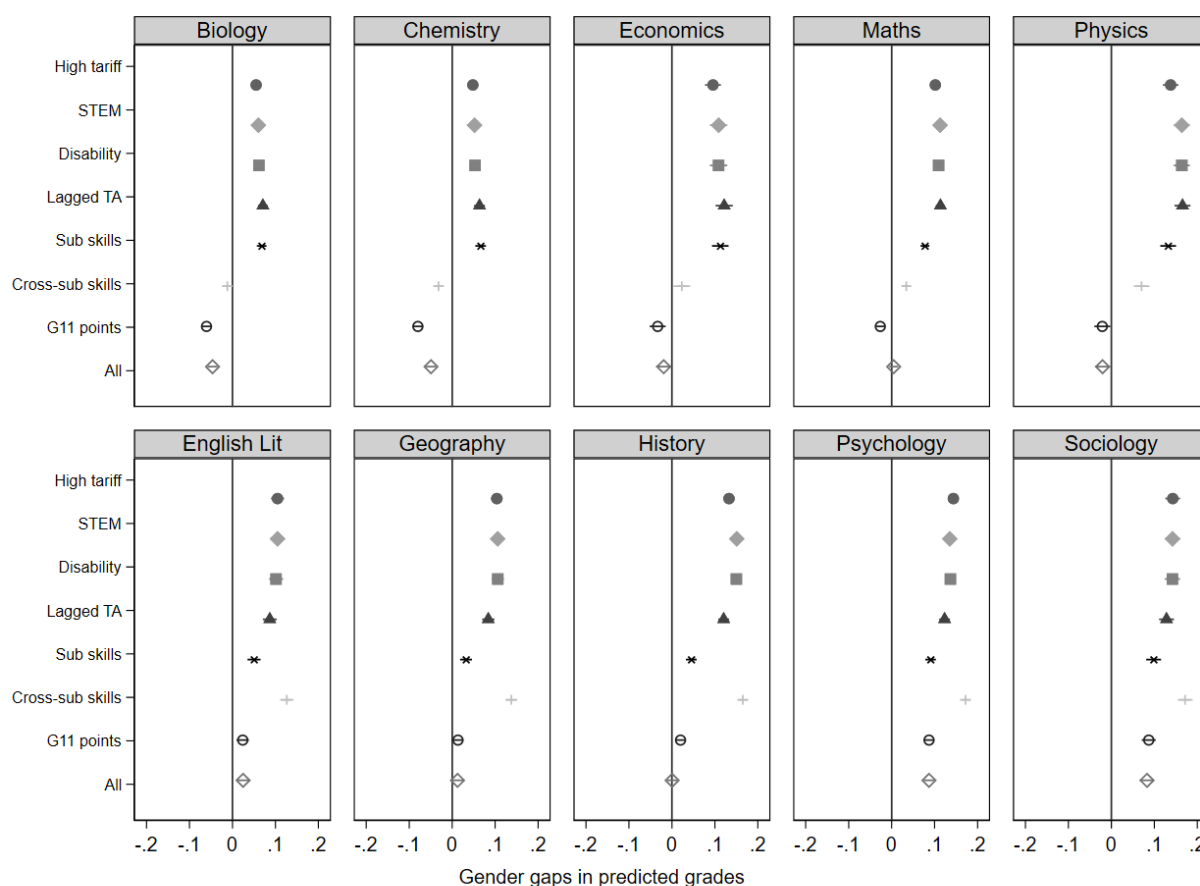
Figure 4 illustrates the impact of including each additional measure on the estimated gender gap in predicted grades. We found that our indicators for student ambition and behaviour had minimal impact on the gender gap in predicted grades. However, when we accounted for subject-specific prior attainment, the results varied between STEM and non-STEM subjects. In STEM, the gender gaps remained largely unchanged. However, in non-STEM, the gaps narrowed significantly.



The most substantial shifts in the gender gap occurred when we included measures of cross-subject skills and overall academic competence. In STEM subjects, when accounting for prior English performance or overall competence, the gender gap reversed, favouring boys, particularly in biology and chemistry. In non-STEM subjects, the gap nearly closed, except in psychology and sociology, where girls still received higher predictions.

These findings suggest that predicted grades often favour students who demonstrate strong cross-disciplinary performance. Specifically, girls are more likely to receive higher predictions due to their overall academic competence, which likely influences how teachers perceive their potential, especially in STEM fields. Interestingly, the most pronounced gender gaps, whether favouring boys or girls, are observed in subjects that girls typically choose more often.

**Figure 4: Predicted-achieved grade gaps by student gender conditional on student attributes and prior attainment**



Notes: Each point on the plot represents the difference in predicted grades between girls and boys, adjusted for their actual exam results, socio-demographic characteristics, and the secondary school they attended. Points to the right of the middle line indicate that girls, on average, receive higher predicted grades than boys with similar academic performance, background, and school. The lines around the points show the confidence level in the results, the shorter the line, the greater the confidence. Each point on the plot accounts for one additional factor, as explained in the labels, with the final point incorporating all factors together. Source: GRADE 2017-2019.

## Why it matters

Our results show that teachers' predictions for university admissions are influenced by factors beyond students' subject-specific skills and performance. This has important implications for university admissions, which rely on subjective assessments of student abilities. It appears that teachers consider various broader attributes when making these predictions, which can skew opportunities for students. Consequently, the educational system may inadvertently reinforce gender disparities, leading to unequal chances for students. This research highlights a need to reassess university admissions practices to ensure fairness for all applicants.

One potential solution is to reconsider the post-qualification admission approach. Under this system, students would apply to universities after receiving their actual exam results, ensuring that offers are based on actual performance rather than predictions. Implementing post-qualification admission could enhance fairness by minimising the influence of subjective judgments and ensuring that admissions decisions reflect students' true capabilities.

## What next?

This Data Insight uses newly linked administrative records from GRADE to uncover gender gaps in teacher-predicted grades, which tend to favour girls. This gap is traced to gender differences in overall competence, with girls demonstrating notably stronger cross-disciplinary skills. When we control for these skill differences, the gender gap in predicted grades narrows significantly in non-STEM subjects. However, in STEM, the gap shifts in favour of boys, revealing a stereotypical pattern of gender-based prediction bias.

Moving forward, our research will further investigate how gender impacts predicted grades and the implications this has for university application outcomes.



## Acknowledgements

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This Data Insight is based on collaborative research effort with George Leckie from the University of Bristol. For a detailed look at our findings, read the working paper: Leckie, G., Maragkou, K. (2024) [Tracing the Origins of Gender Bias in Teacher Grades](#). Cambridge Working Papers in Economics CWPE2457

Additional work based on our analysis of the GRADE data includes:

[1] Leckie, G. and Maragkou, K., 2024. [Student sociodemographic and school type differences in teacher-predicted vs. achieved grades for university admission](#). *Higher Education*, pp.1-27.

[2] Ilie, S., Maragkou, K. (2024) [University admissions during a pandemic](#). Cambridge Working Papers in Economics CWPE2458

## Contact

Name: Konstantina Maragkou  
Email: km844@cam.ac.uk

