

Enrolment Trends in Queensland Senior Advanced Mathematics: Comparisons for Socio-Economic Advantage and Regions

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Enrolment into advanced level mathematics in Australian high schools has been in steady decline (Wienk, 2022). Mathematics enrolment data from 2020 show a significant decline that takes mathematics participation in Year 12 in Australia to an unprecedented low. Jennings (2022,2023) suggests that contrary to the rest of the country, Queensland had an increase from 2006-2018 due to the implementation of a two-point bonus scheme for students who finished Year 12 having studied higher level mathematics (Maths C) for two years. Since the departure of the bonus point scheme, and the implementation of a new senior syllabus in line with the Australian Senior Secondary Curriculum, Queensland's data has seen significant decline on par with the remaining states and territories (Jennings, 2022). For this study, advanced level mathematics in a Queensland context groups together Queensland Curriculum and Assessment Authority (QCAA), (2018) subjects *Mathematical Methods* and *Specialist Mathematics*. Queensland is a large state with many varied educational regions. These regions vary from inner city/metropolitan to regional/remote areas. In Australia, the Index of Community Socio-Educational Advantage (ICSEA) is used as a scale to allow fair and reasonable comparisons amongst schools (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2024). In this study, school's ICSEA scores were correlated against their *Mathematical Methods* and *Specialist Mathematics* enrolment numbers in Unit 1 (Year 11) from 2019–2024. A bivariate analysis was completed with a sample size of $n=156$ using variables: ICSEA score and subject enrolment (as a percentage of the school's cohort size). Analysis of retention rates from Unit 1 (start of Year 11) to Unit 4 (end of Year 12) was also calculated using percentage enrolment in Unit 1 and Unit 4. This was also compared with ICSEA score and across different Queensland Department of Education regions. The study aimed to consider the research question: 'What impact of socio-educational advantage and education region can be seen in enrolment numbers of advanced mathematics courses in Queensland Schools?'

Variance in socio-educational schools, based on their ICSEA scores has an impact on student enrolment into advanced level Mathematics in Queensland. For *Mathematical Methods* and *Specialist Mathematics*, a weak positive correlation exists. Enrolment and retention also vary between educational regions. Findings of this study will be shared and discussed.

References

- Australian Curriculum, Assessment and Reporting Authority (ACARA). (2024). *MySchool*. ACARA. <https://www.myschool.edu.au/>
- Jennings, M. (2022). Advanced mathematics enrolment numbers: A crisis or fake news? *Australian Mathematics Education Journal*, 4(1), 33–45.
- Jennings, M. (2023). *Issues in the transition from secondary school to university mathematics: Student, teacher, and lecturer perspectives* [Unpublished doctoral dissertation]. The University of Queensland.
- Queensland Curriculum and Assessment Authority (QCAA). (2019). *Mathematics senior subjects*. <https://www.qcaa.qld.edu.au/senior/senior-subjects/mathematics>
- Queensland Department of Education. (2024). *Region maps* [Online]. <https://education.qld.gov.au/contact-us/region-maps>
- Wienk, M. (2022). *Year 12 mathematics participation report card. Mathematics enrolments reach all-time low* [Online]. Australian Mathematical Sciences Institute. <https://amsi.org.au/?publications=year-12-participation-in-calculus-based-mathematics-subjects-takes-a-dive-2>

(2024). In J. Višňovská, E. Ross, & S. Getenet (Eds.), *Surfing the waves of mathematics education. Proceedings of the 46th annual conference of the Mathematics Education Research Group of Australasia* (pp. 589). Gold Coast: MERGA.