



2024 ASOC x Taylor Fry

Actuarial Case Competition

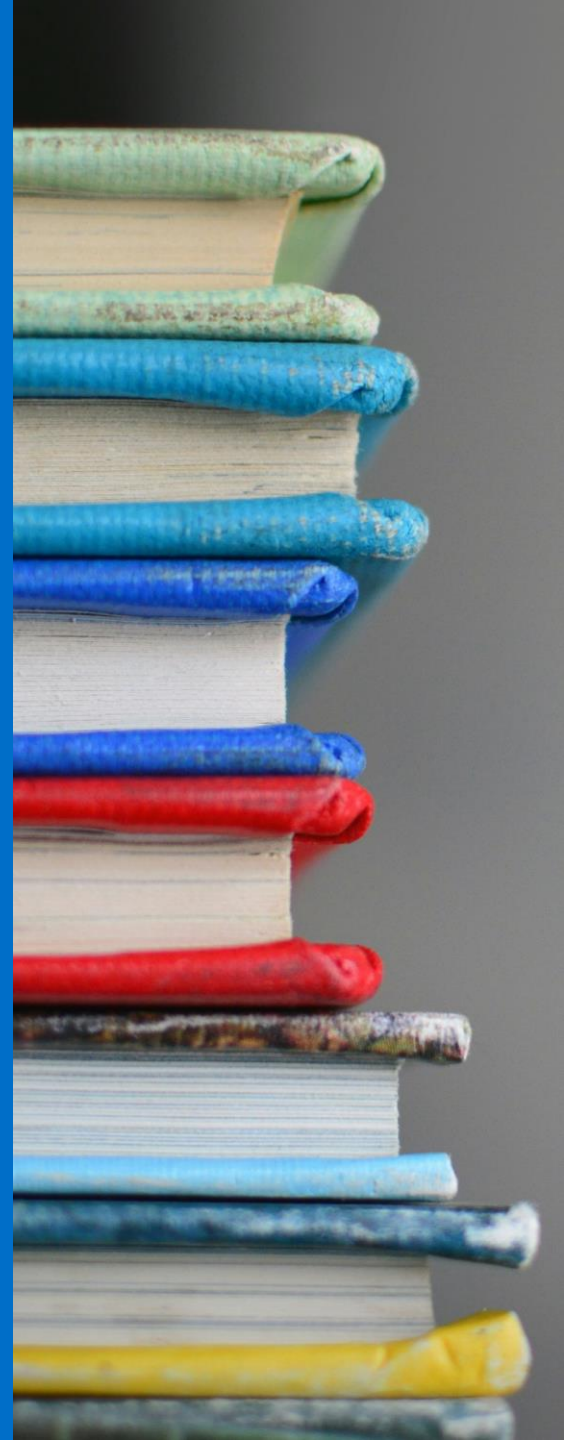
June 2024

We find the patterns that matter



1

Background



Background

- A recent international review has revealed Australia's mean numeracy levels in 2023 were below the OECD average.
- The Australian government would like to invest further funds into government primary schools to uplift their numeracy levels.
- Future's Education is the federal government's education strategy agency. Future's Education believe reducing the ratio of students to teachers (i.e. increasing the number of teachers relative to students) will result in an uplift in numeracy levels amongst primary school students.
- The Australian Government has agreed to grant \$500k for the 2025 school year to invest in teachers. Future's Education will advise the government on how to spend the \$500k, to demonstrate the potential impact of student-to-teacher ratio on academic performance.
- The Australian Government and Future's Education have agreed to rely upon Year 5 NAPLAN numeracy results by school as a measure of numeracy levels.
- Your team is contracted by Future's Education to analyse Year 5 NAPLAN results and advise them where to invest funds. You will present your findings to the Future Education's Data Analytics team.

Disclaimer: All data and information provided in this case competition is fictional and generated for the purpose of this exercise. The data and information provided will not reflect current or past Australian school characteristics nor academic performance.

2

Your task



Task 1

Task 1: Given Future's Education has been given a small amount of funding, it has decided only one government primary school will receive funding for the year 2025 as a test case.

- a) Based on the data provided, how will changing the student to teacher ratio affect NAPLAN results overall? Control for other factors.
- b) Advise which Australian school should receive funding from Future's Education to demonstrate a positive impact on NAPLAN results. Assume all other external factors remain unchanged, such as net student movement, teacher tenure, teacher education index and other student, teacher and school characteristics.

Note: While selecting the school, consider the overall business implications, as well as the potential improvement in NAPLAN results. What kind of school would be most valuable as a test case?



Task 2

Task 2: Future's Education would like a recommendation on other key areas for development to improve Australian numeracy levels in the future, again based on NAPLAN results.

- a) Based on your analysis of the data provided, what are the key drivers of NAPLAN results? In what way do they affect NAPLAN results?
- b) Propose another specific initiative Future's Education can request funding for in the future, with the aim of improving overall Australian NAPLAN results.



Data provided

Future's Education have provided you with the following datasets:

1. **School Location 2023.xlsx** and **School Profile 2023.xlsx**: 2023 school-based data containing a list of all Australian schools and their characteristics.
2. **2021Census_G01_AUST_SA2.xlsx** (ABS data): Geography based data for Australia by SA2s¹. It includes data on median income, median weekly rent, etc. in year 2021.
3. **School_metrics_2023.xlsx**: Dataset on indices measuring other school characteristics devised by Future's Education. Indices include technology index, sporting equipment, average teacher tenure, and more.
4. **2023NAPLAN_scores_yr5.csv**: Result dataset of average Year 5 NAPLAN results in numeracy for a school.

Please see the provided data dictionaries in each spreadsheet for more information on the datasets provided.

1 – Statistical Areas Level 2, medium sized general-purpose areas that represent a community that interacts socially and economically



Assumptions

You can make the following assumptions in your analysis:

- There will be no change in school demographics or student profile from 2023 to 2025. In other words, you can assume indicators like ICSEA, number of students and sporting index will stay constant from 2023 to 2025.
- NAPLAN will occur at the end of the 2025 school year.
- There will be no significant policy changes or external interventions affecting the schools during this period.

Additionally, you should consider:

- The assumptions you have formed for your responses.
- Any limitations that might affect your analysis.



3

Submission details



How do you enter?

What's required?

- Teams are required to submit a 10-minute presentation and 10-minute Q&A as a slide deck.

Where do you send your submission?

- Email your response to careers@asoc.unsw.edu.au
- Attach your response with the subject *Taylor Fry Case Competition – [Team Name]*.
- Include your team's name and members in the body of your email.

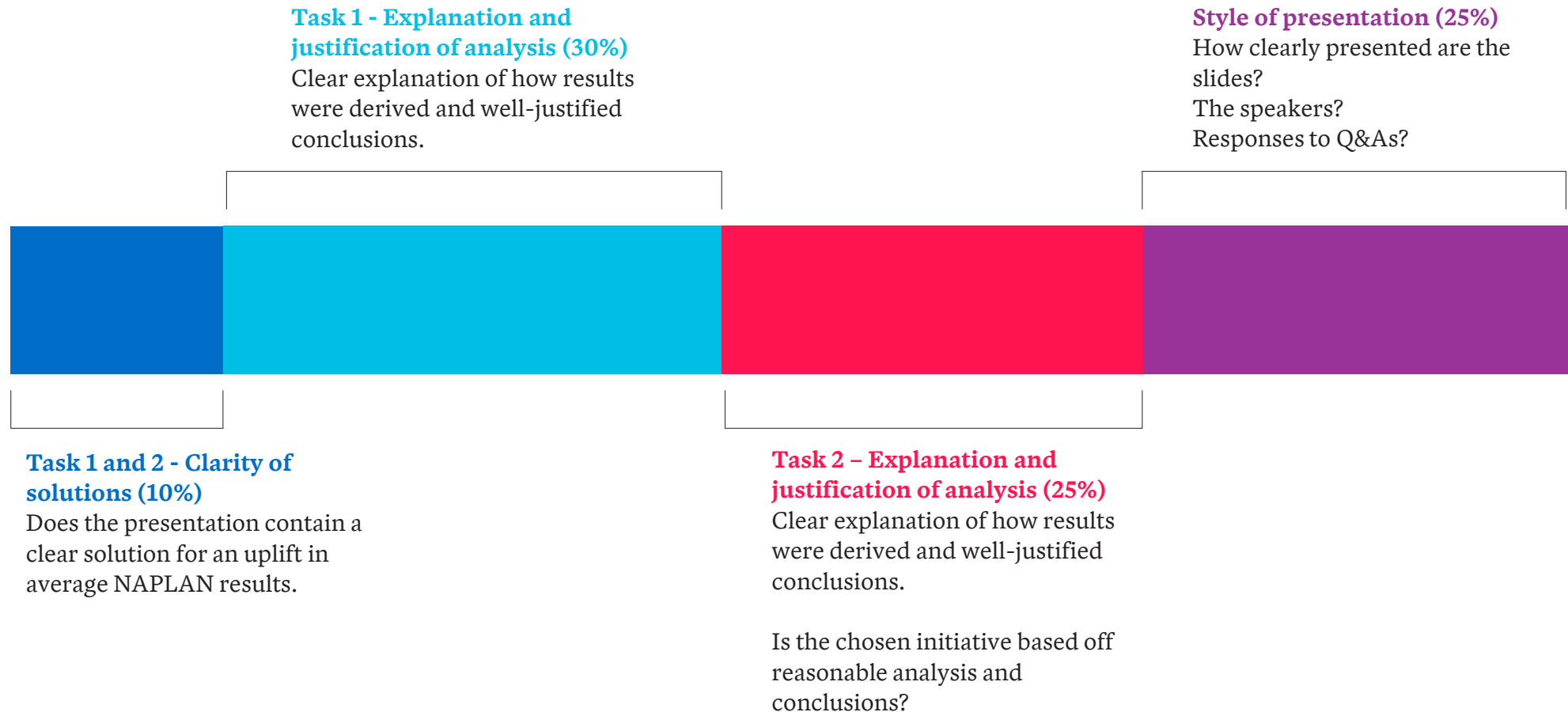
What's the deadline?

- 11:55pm, Friday, 12 July 2024.



Assessment criteria

Your presentation will be judged using the following assessment criteria:





Sydney

Level 22

45 Clarence Street
Sydney NSW 2000

Melbourne

Level 27

459 Collins Street
Melbourne VIC 3000

Wellington

Level 6

22 The Terrace
Wellington 6011

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