Overview of Presentation

1. Who am I?
2. What is the difference between an ATAR and a UAI?
3. What is an ATAR?
4. How is the ATAR calculated?
5. What can we predict?
6. How are ATAR cut-offs set?

Part 1: Who am I?

Jacqui Ramagge

- Associate Professor in Pure Maths in the School of Maths and Applied Stats (SMAS) at the University of Wollongong
- Two colleagues have been on UAC's Technical Committee on Scaling.

Part 2: What is the difference between an ATAR and a UAI?

What is the difference between an ATAR and a UAI?

- The reference cohort is now all students who entered Year 7.
  - This increases the cohort by about 10%.
  - So the ATAR will typically be slightly higher than the corresponding UAI for students eligible for an ATAR.
- The bands have shifted down by 0.025.
- Rankings will be reported at the bottom of the band.
- The change means that all States and Territories except Queensland now report high school performance rankings on a common scale.

What are the banding implications?

UAI percentile range	reported ranking	ATAR percentile range
$[99.975, 100]$	100	—
$[99.925, 99.975)$	99.95	$[99.95, 100]$
$[99.875, 99.925)$	99.90	$[99.90, 99.95)$
$[99.875, 99.925)$	99.85	$[99.85, 99.90)$
$\vdots$	$\vdots$	$\vdots$

- The top ATAR band will be reported as 99.95.
- This table is not a UAI–ATAR conversion table.
- Individual percentile rankings change with the full inclusion of the year 7 cohort.

Part 3: What is an ATAR?

What is an ATAR?

The Australian Tertiary Admissions Rank (ATAR) is

- a number between 0 and 99.95 giving a ranking
- produced by the Universities Admission Centre (UAC) from raw marks provided by Board of Studies
- designed to be as good a predictor of university performance as any single indicator possibly can be.

The sole purpose of the ATAR is for entry to University programs.

The ATAR tells us nothing about what students know but everything about their ranking in their year group.

Contrast this to the HSC, which tells us a lot about what students know but nothing about their rank in their year.

What does an ATAR mean?

- An ATAR of 99.95 doesn't mean the student got 99.95%
- An ATAR of 60 doesn't mean the student's overall marks scaled to 60%.
- An ATAR of 60 means a student is in the 60th percentile, ie in the top 40%.

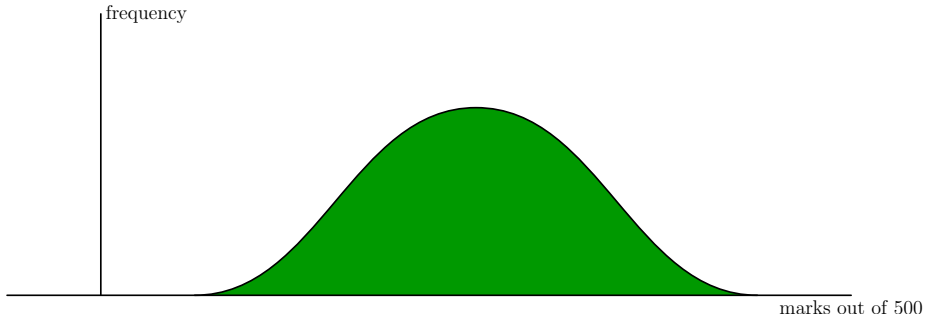
Part 4: How is the ATAR calculated?

How is the ATAR calculated?

- The Board of Studies gives UAC the raw HSC marks.
- HSC marks are scaled to reflect scores obtained if everyone sat the course (but still scored out of 100).
- A student's best 2 units of English + best 8 other units selected.
- The results are added to produce a mark out of 500.
- All students are ranked according to their score out of 500.
- A student's ATAR is their percentile position out of all students who started year 7 with them.

Spreading out the ATAR

The distribution of scores out of 500 is effectively normal.



A difference of 20 scaled marks has a different effect on the ATAR depending on which percentile you are in.

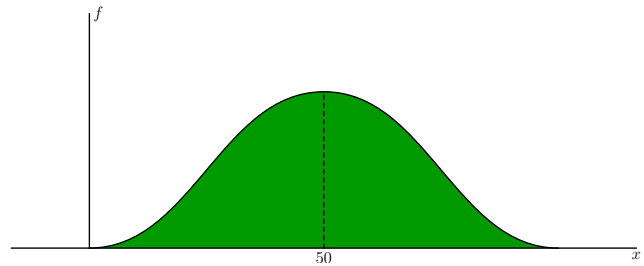
$$\text{20 scaled marks may send} \quad 60 \longrightarrow 65 \quad \text{but} \quad 99 \longrightarrow 99.5$$

Last year over 20 000 students qualified for a UAI.
Each bonus point makes you jump 200 places in the queue.
If you get 5 bonus points you're jumping over 1000 people.

Calculating the ATAR: Step 1

First we standardise all course results.

- Board of Studies provides UAC with raw marks.
- Results in 2-unit courses are scaled to a common profile;
  - same average (mean),
  - same standard deviation (sd) and
  - same top mark.



What do the words mean? What does the scaling do?

- Note that this changes the marks but not the ranking within a course.

Calculating the ATAR: Step 2

Now we benchmark the 2-unit courses. For each 2-unit course we

- find the standardised results in all other 2-unit courses for all students taking this course;
- find the mean and standard deviation of these results and
- re-scale results in the 2-unit course to match these.

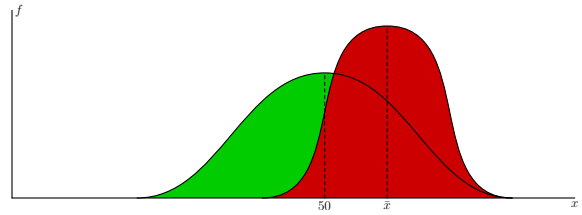
Everyone starts on an even playing field because we had standardised all the original marks.

This part of the scaling process is all about ranking according to overall performance.

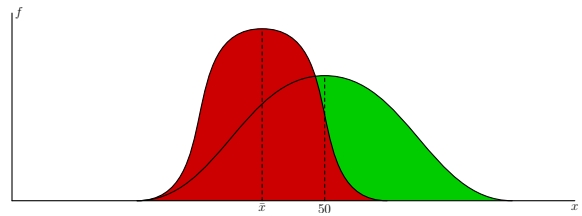
To understand the implications of this, note the effects of scaling.

Calculating the ATAR: Step 2 pictures

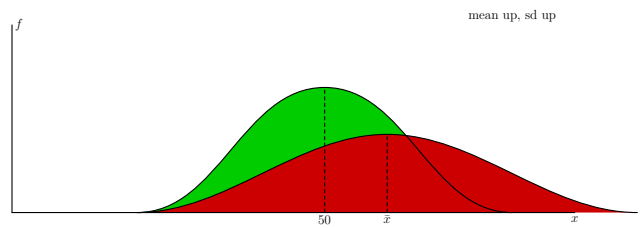
If all students in a course are performing strongly in all their other subjects this means



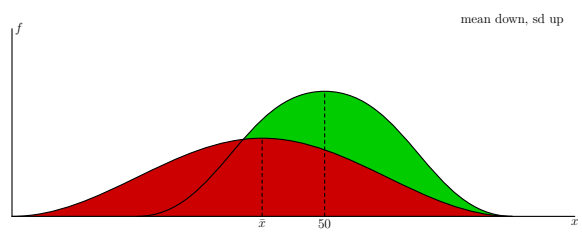
If all students in a course are performing weakly in all their other courses this means



If performance is mixed but good overall get



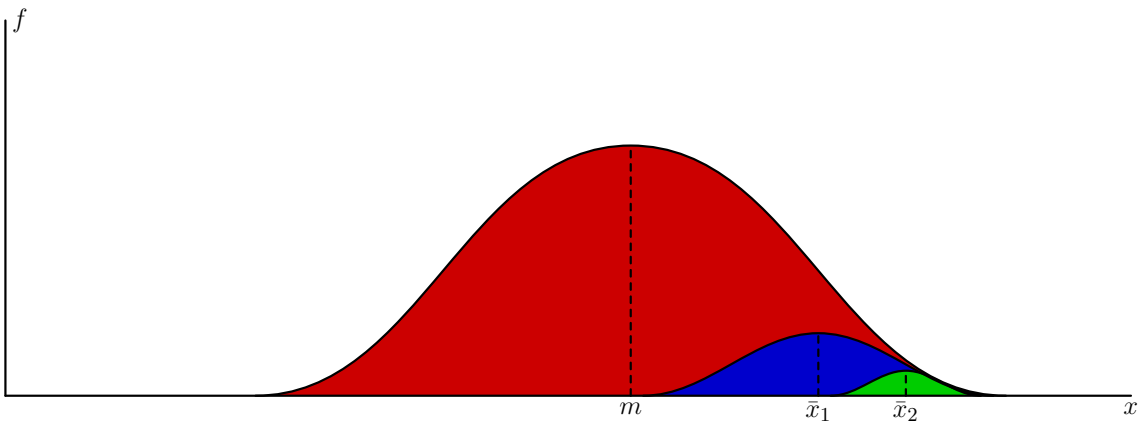
If performance is mixed and weak overall get



Calculating the ATAR: Step 3

Extension courses are scaled by comparing the cohort to to that of the underlying course.

Extension 1 is scaled directly against 2-unit, and Extension 2 is scaled directly against Extension 1. The net effect of this is



red = 2-unit
blue = Extn 1
green = Extn 2

Finally, results in all courses are tweaked to cap top marks.

Part 5: What can we predict?

Predictions and Observations

- You can't predict someone's ATAR unless you know everybody's raw mark on all the courses for that cohort.
- UAC scales people, not courses.
  - No subject will guarantee a student a high ATAR.
  - No subject will condemn a student to a low ATAR.
- The worse the overall performance of the students taking a course, the nearer the top you have to be in order to benefit from scaling.
- General Maths will only "scale higher" than 2-unit Maths if the General Maths students as a group outperform the Maths students as a group in their other courses.
- Students should do subjects they enjoy, because they are likely to perform better in them.

Part 6: How are ATAR cut-offs set?

What are ATAR cut-offs?

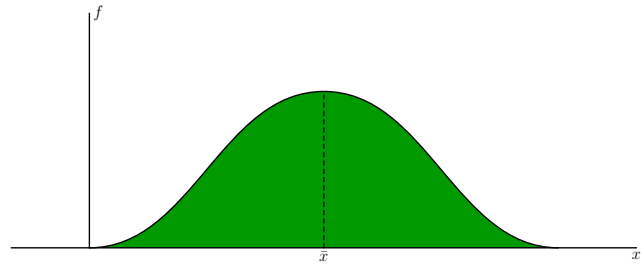
- Each university sets a minimum ATAR for and a quota of students for each university course.
- The ATAR cut-off for a course each year is the ATAR of the person with the lowest ATAR who was admitted to the course that year.
- ATAR cut-offs reflect supply and demand more than the intellectual capacity needed to undertake the studies.

Any Questions?

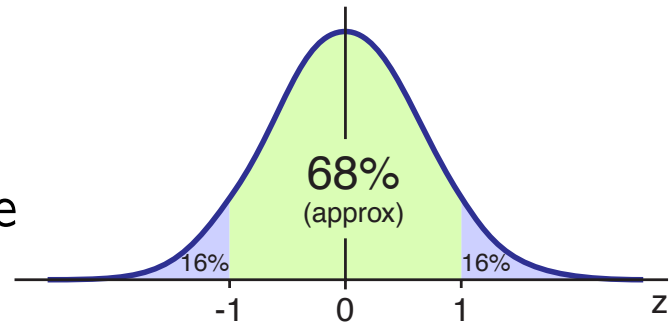
Thank you for your attention.

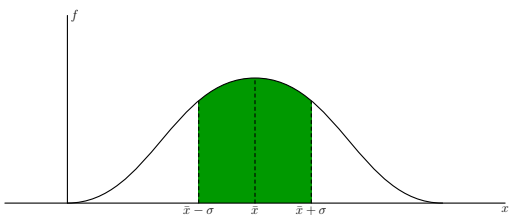
Features of a normal distribution

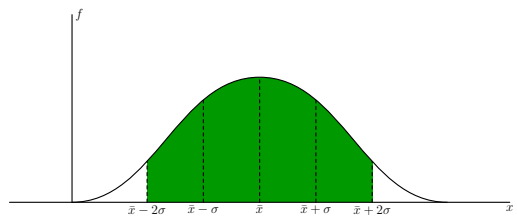
The mean, or average, of a normal distribution is a measure of centre; its value is usually denoted by $\bar{x}$.

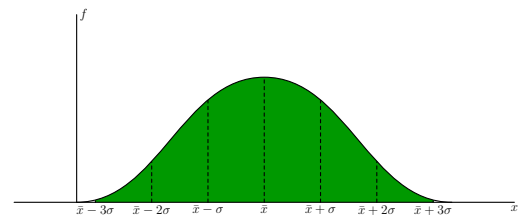


The standard deviation, σ, of a normal distribution is a measure of spread; $\approx 68\%$ of data is within one standard deviation of the mean.





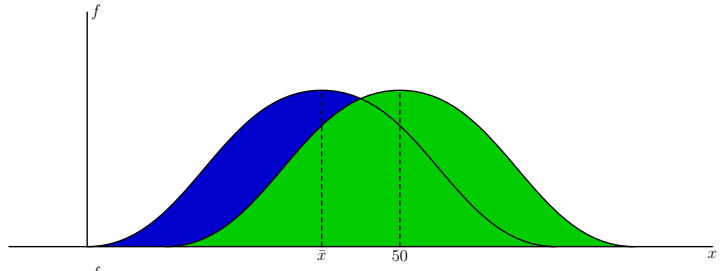




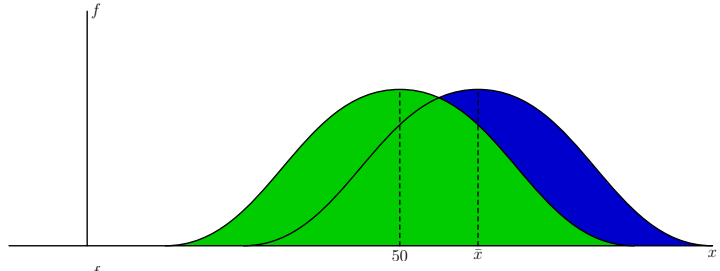
◂ Scaling subjects

What does this scaling do?

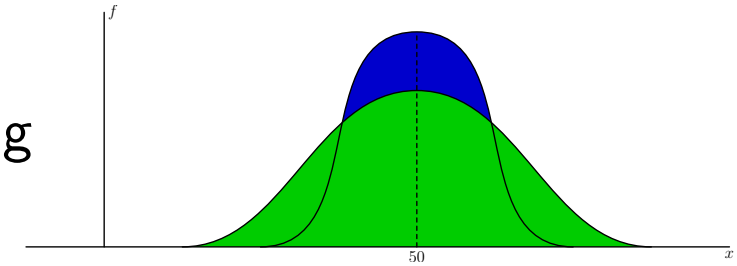
The mean can move up to 50



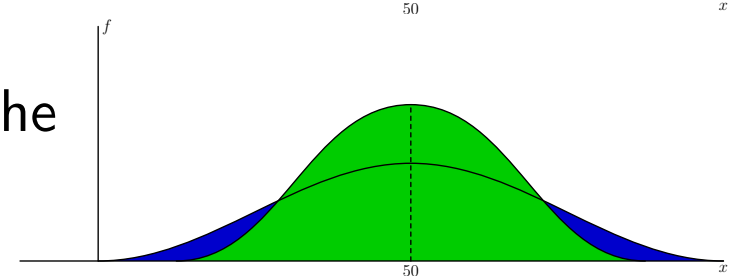
or down to 50.



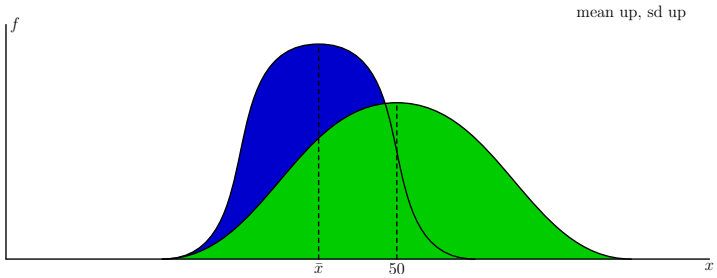
The standard deviation can increase, flattening and stretching the distribution out,

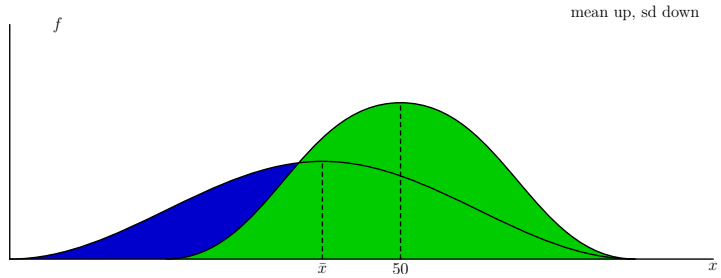


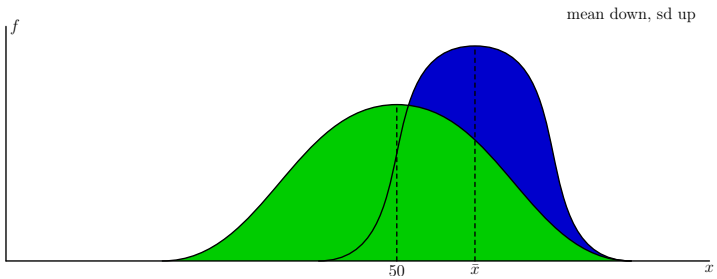
or it can decrease, compressing the distribution.

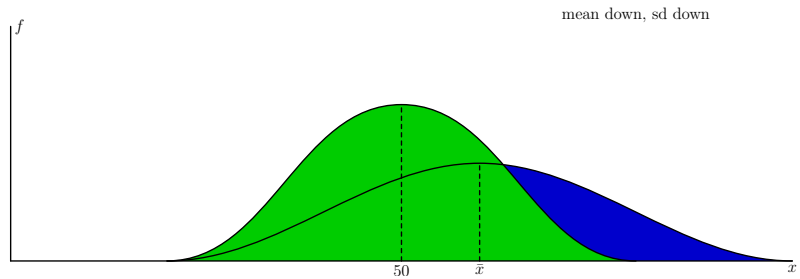


The combined effects fall into four classes...









◂ Scaling subjects