NSWMSC

New South Wales Medical Students' Council

Representing 6500+ medical students from medical schools across the NSW & ACT.

Domestic Graduate Prioritisation

Modelling Domestic-Graduate Prioritisation

Companion paper outlining the methodology supporting NSWMSC's Position Paper (July 2026)

NSW Medical Student Council

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List of Acronyms and Abbreviations

Acronym	Definition
AHPRA	Australian Health Practitioner Regulation Agency
AMC	Australian Medical Council
CAP	Competent Authority Pathway
CMO	Career Medical Officer
CSP	Commonwealth Supported Place
FTE	Full-Time Equivalent
GP	General Practitioner
HWD	Health Workforce Data (Dept of Health, Disability and Ageing)
IMG	International Medical Graduate
MDANZ	Medical Deans Australia and New Zealand
MSOD	Medical Schools Outcomes Database
NHS	National Health Service (England)
PGY	Postgraduate Year
QLD	Queensland
RACP	Royal Australasian College of Physicians
RACS	Royal Australasian College of Surgeons
UKRDC	UK Resident Doctor Committee (referenced BMA briefing)

1.0 Introduction

This note sets out the methodology of an *illustrative* model that estimates how two policy paths would affect entry into specialty training in Australia. It quantifies two outcome measures - the **competition ratio** (applicants per training place) and the **postgraduate year (PGY) at intake** (the seniority at which doctors successfully enter specialty training) - over the period 2025–2048, using data drawn from the Commonwealth's Whole of Medical Workforce Supply and Demand Compendium Report (June 2026), Queensland Health's Medi-Nav specialty pages, the Medical Deans Australia and New Zealand (MDANZ) public dashboard, and published UK National Health Service (NHS) outcomes.

The model is deliberately transparent and parameter driven. It is **not a precise forecast**; it is designed to show the direction and plausible magnitude of effect under stated assumptions, with every input sourced from the Commonwealth's own published data or published UK results. Its results are conditional policy scenarios: they are not causal estimates, legal conclusions, or counts of unique doctors.

2.0 Modelling Overview

2.1 Scope

The model compares two policy paths against a common set of Commonwealth-published starting figures:

Scenario A - Prioritise domestic graduates: new international medical graduates (IMGs) are de-prioritised for specialty-training selection, with existing IMGs grandfathered (the UK design).

Scenario B - Do nothing: current settings continue, reproducing the Compendium's own projected trajectory.

The model is structured in four components, each documented in its own numbered section below: the equilibrium competition-ratio and PGY engine (§3.0); the transient backlog-clearance queue (§4.0); sensitivity and robustness testing of the queue result (§5.0); and the specialist supply pipeline used to size any place expansion (§6.0). §7.0 consolidates all model parameters into a single reference table; §8.0 sets out the named scenario definitions in full; §9.0 documents the external UK validation anchors; and Appendix A documents the derivation of the model's Australian data inputs in detail.

Results are national and system-level. Per-specialty resolution is out of scope for the headline model; Medi-Nav (Queensland-only) is used for texture and validation, not as a modelling backbone (§4.4, Appendix A.3).

2.2 The mechanism

Entry to specialty training is a bottleneck. Each year a pool of prevocational doctors (those intending to train) competes for the limited number of registrar training positions that open. The Compendium already models this as a single number - the annual prevocational → registrar transition rate - the share of the waiting pool that gets through the gate that year.

That transition rate is the inverse of the competition ratio, and it also governs how long a doctor waits, and therefore how senior (how many PGYs) they are when they finally get in. Both outcome measures therefore derive from one quantity the government already publishes. The

policy levers modelled here change that quantity by changing who is allowed to compete and how many places exist.

3.0 Competition Ratio and PGY-at-Intake Model

This section documents the equilibrium engine: the pair of formulas that convert a prevocational→registrar transition rate into the two headline outcome measures.

3.1 Key data inputs

#	Source	Description and use in model
1	Compendium Report, Table 5 (p.17)	National FTE series for prevocational supply (15,900 → 28,331 → 38,222 FTE, 2025–2048) and registrar supply (23,848 → 24,354 → 26,228 FTE); provides the pool and place trajectories the ratio and PGY formulas are evaluated against.
2	Compendium Report (p.19)	Modelled prevocational→registrar transition rate, 36% (2024) declining to 15% (2048); the engine's core input, p.
3	Compendium Report (p.25)	Published historical transition rate, 52% (2018) to 33% (2024), and the Compendium's own definition of the prevocational group as doctors "with the intention of entering specialist training"; used to confirm the modelled pool coincides with the "intending applicant" population, so no separate intent assumption is required.
4	Medi-Nav specialty pages (Queensland Health)	Observed shift in majority applicant PGY between 2017 and 2019; used to validate the PGY-at-intake formula (§3.3).

3.2 Definitions

Let p be the prevocational → registrar transition rate in a given year, defined as places ÷ applicants for that year. The **competition ratio** R is the number of applicants per available place. The **PGY-at-intake** is the expected postgraduate year at which a doctor successfully enters specialty training, measured from a specialty-specific minimum eligible postgraduate year G_0 (sourced from Medi-Nav).

3.3 Mechanics

Competition ratio

Because p = places ÷ applicants, the competition ratio is its reciprocal:

$$R = 1 / p$$

In other words: the fewer places there are per applicant, the higher the competition ratio - a transition rate of one-in-three (p = 0.33) is the same fact as a competition ratio of three applicants per place.

Worked: p = 0.33 → R ≈ 3.0 applicants/place; p = 0.15 → R ≈ 6.7.

PGY-at-intake (queue wait)

If each year an unsuccessful applicant re-applies with success probability p, the number of attempts until entry follows a geometric distribution with mean 1/p. Starting from the minimum eligible postgraduate year G_0, the expected PGY at successful intake is:

$$\text{PGY\_intake} \approx G_0 + (1/p - 1)$$

In other words: a doctor waits, on average, one fewer than the number of attempts implied by the transition rate, added on top of the earliest year they were eligible to apply.

Worked: p = 0.50 → +1 extra year; p = 0.33 → +2 years; p = 0.15 → +5.7 years on top of the minimum.

This is an equilibrium approximation that assumes a stable transition rate and continuous re-application; during a rapidly growing backlog the real PGY creep can run ahead of this formula, so the estimate is conservative (§3.4). The increment is validated against the observed Medi-Nav shift in majority applicant PGY between 2017 and 2019.

Scenario adjustment: who may compete

The Compendium attributes 64% of all growth in registrar numbers to IMGs (p.6); those are training places the domestic queue never sees.

Let, in year *t*: N_t = registrar entry places; I_t = places taken by IMG entrants; D_t = domestic prevocational pool seeking entry; *s* = substitutability (fraction of vacated IMG places domestic doctors take up); *g* = grandfathered share of IMG entrants (protected). The domestic transition rate under each scenario:

$$\text{Do nothing: p\_dom} = (N_t - I_t) / D_t$$

$$\text{Scenario A: p\_dom}^* = \text{p\_dom} + s\cdot(1-g)\cdot I_t / D_t$$

In other words: Scenario A adds back to the domestic transition rate whatever share of newly-freed IMG places (those not grandfathered) domestic doctors are able to take up. The uplift term $s\cdot(1-g)\cdot I_t/D_t$ is the reclaimed capacity; the residual $(1-s)\cdot(1-g)\cdot I_t$ stays with IMGs - the area-of-need posts no domestic doctor takes. Competition ratio and PGY then follow from the formulas above using p_dom.

Note (reconciliation). The reclaim-share adjustment above is an equilibrium approximation: it lowers the do-nothing ratio by a fixed fraction while holding the full prevocational pool. It is retained in this note as a conservative upper bound. In practice, because accredited registrar intake (≈ 5,733/yr) already exceeds domestic graduate supply (≈ 3,812/yr), prioritisation clears the domestic queue outright, so the operative result for the priority group is the transient-queue model of §4.0, under which the competition ratio falls to about 1:1 and PGY to the minimum eligible year - not a partial reduction.

3.4 Assumptions and limitations for the equilibrium model

#	Caveat / limitation	Description and implications
1	Equilibrium formulae break at extreme ratios	R = 1/p and PGY = G_0 + (1/p − 1) assume a stable transition rate and indefinite re-application. As p → 0 (a near-closed gate) both diverge to infinity, overstating the true wait, because doctors leave through attrition, ageing or career change, and Little's Law (mean wait ≈ queue ÷ throughput) holds only for a stationary system, not a growing queue. As p → 1 the formulae are exact but trivial. They are applied

#	Caveat / limitation	Description and implications
		only in the moderate band that holds in practice (roughly p = 0.15–0.50); outside it, and during rapid backlog growth, the transient queue model (§4.0) is the appropriate tool.
2	Two engines reconciled	The equilibrium ratio and PGY relations (this section) are a conservative approximation; the transient queue (§4.0) is the operative model for the priority group; and the specialist pipeline (§6.0) sizes any place expansion. Where the equilibrium and transient results differ, the transient and pipeline models govern.
3	Compendium internal inconsistency in the 2024 transition rate	The Compendium states the 2024 transition rate as both 33% (p.25) and 36% (p.19). This note adopts 36%→15% as the modelling basis, since it is the figure that drives the Compendium's own projection model, and cites 52%→33% as the published historical decline for context.
4	Transition rate read as an application success rate	R = 1/p and PGY = G_0 + (1/p − 1) read the Compendium's prevocational→registrar transition rate as an application success rate. That reading holds under the Compendium's own definition of the prevocational group as doctors intending to enter specialist training (§3.1), but the published rate is a workforce-category transition, constrained by the registrar positions available, and its denominator can include doctors not actively applying in a given year. The ratio and PGY outputs are therefore approximations of application statistics, not observed application outcomes.
5	s is a single-cycle UK measure	The substitutability parameter s ≈ 0.98 is taken from one UK recruitment cycle. It is not a measured Australian substitution rate. §5.0 therefore treats the unreclaimed residual U, the Australian counterpart of the (1−s) term, as the binding sensitivity, and the clearance conclusion is reported as conditional on it.

4.0 Backlog Clearance Model (Transient Queue)

Section 3.0 describes the steady-state pressure at the training gate. It does not capture how long the existing queue of waiting prevocational doctors takes to clear once a policy changes who may compete. This section documents the transient queue model built to answer that question.

4.1 Key data inputs

#	Source	Description and use in model
1	Compendium Report (p.6)	IMG shares of workforce growth by practitioner type (64% registrar, 28% prevocational, 50% career medical officer); establishes that IMG entrants do not sit in the domestic prevocational queue.
2	Compendium Report (p.16)	Assumption that registrar new-entry (N_t) is held constant at its 2023 level and IMG limited/provisional entry at its 2024 level; adopted as the queue's throughput (K) and arrival (A_t) baselines respectively.

#	Source	Description and use in model
3	NHS England, 21 June 2026	Prioritised-acceptance share (98% of posts, up from 72%) and non-prioritised acceptance fall (27.95% → 1.75%) observed under the UK's 2026 prioritisation policy; basis for the substitutability parameter s ≈ 0.98 (§9.0).
4	AHPRA registrant data, 2024–25	First-time international registrants, 4,947; anchors the constant IMG arrival rate A_t ≈ 5,000/yr (§A.5 documents the derivation and cross-check against the Compendium's implied 5,359/yr).

4.2 Definitions and starting stock

Three scenarios are run from a common 2025 starting queue of S_0 ≈ 15,900 FTE (the Compendium's 2025 prevocational supply figure, Table 5, p.17).

Let S_t be the number of prevocational doctors waiting in year t. The following quantities govern how the pool evolves year to year:

Symbol	Definition
G_t	Annual domestic medical graduates, ramping from 3,274 (2025) to 3,812 (2031) as the funded CSP places expands (Appendix A.4).
γ_t	Tapering grandfathered-IMG inflow: 3,000 / 1,500 / 500 over 2026–2028, then nil.
K	Annual accredited registrar intake - the gate's throughput - held at the Compendium's terminal level, 0.15 × 38,222 ≈ 5,733 places.
x	Annual exit from the waiting pool, ≈ 500.
θ	Tenured IMG re-entry share - the proportion of arriving IMGs who, after completing tenure, re-enter the priority pool (defined further below).
A_t	Annual IMG inflow, held constant at ≈ 5,000/yr (§4.1).

4.3 Mechanics

The waiting pool evolves as:

$$S_{t+1} = \max(\,0\,,\, S_t + G_{t+1} + \gamma_{t+1} + \theta \cdot A_{t+1} - K - x\,)$$

In other words: next year's queue equals this year's queue, plus new domestic graduates, plus any grandfathered or tenured-re-entrant IMGs still arriving, minus the places the gate can process and minus natural exits - floored at zero.

The 2:1 competition threshold corresponds to a queue of 2K ≈ 11,500 FTE.

Priority-group competition ratio and PGY

Because international graduates who complete five years of Australian service re-enter the same priority pool as domestic graduates (equal footing), the competition ratio the priority group faces is read directly off the queue S modelled above, over the places available to it: $R = S_t / K$. Postgraduate year at intake follows as $PGY = G_0 + \max(0, R - 1)$, with $G_0 = 2$ the minimum eligible year. In other words, the ratio and seniority the priority group experiences track the whole priority queue, not the domestic sub-pool alone; raising the tenured re-entry share θ or

IMG arrivals A therefore lifts both, and the pool re-tightens once θ exceeds the threshold θ* identified in §5.0. At the central settings the backlog clears, so R falls to about 1:1 and PGY to the minimum eligible year. (The domestic-only reclaim-share adjustment of §3.3 is retained separately as a conservative equilibrium upper bound.)

Reclaimed capacity

Under prioritisation the gate available to the priority pool is K − U, where U is the unreclaimed residual: accredited places that continue to go to newly arrived IMGs (genuine area-of-need training posts). The do-nothing baseline implies that new-IMG entry currently absorbs D ≈ 3,450 training-gate slots per year (range 3,100–4,300; derivation in Appendix A.5). The base case takes U ≈ 115–500 - bracketed by the UK's observed non-prioritised share (1.75% of posts ≈ 115) and a generous allowance for Australia's larger rural residual - i.e. a reclaim rate above 85%. U is varied as a headline sensitivity in §5.0.

Scenario A - Hard prioritise (θ = 0)

Only domestic graduates and the tapering grandfathered cohort enter the priority pool. The backlog falls below the 2:1 threshold by 2029 and drains to near zero by the late 2030s.

Scenario A - Tenured re-entry (central θ = 0.3)

A share θ of arriving IMGs is admitted back into the priority pool from 2031, once they have completed five years of Australian service. Because the backlog clears before re-entry begins, the system does not re-tighten it holds at or below 2:1 through to 2048 for every re-entry rate up to θ ≈ 0.49.

Scenario B - Do nothing

Reproduces the Compendium's own prevocational trajectory: the pool more than doubles to 38,222 FTE by 2048 (§8.0).

IMG inflow (A_t)

Arrivals are held constant at A_t ≈ 5,000 per year, anchored to AHPRA first-time international registrants (4,947 in 2024–25). This is deliberately consistent with the Compendium's own assumption that limited/provisional (IMG) entry is held at its 2024 level; the Compendium's implied figure is ≈ 5,359 per year, and substituting it shifts no result materially (§5.0). The model does not assume IMG arrivals grow, and neither does the Compendium. The split parameter θ - the share of arrivals who, after tenure, seek hospital specialty training rather than remaining in service or area-of-need roles - is not taken from the Compendium; it is the key uncertain lever and is reported as a 0.2–0.5 band.

4.4 Assumptions and limitations for the queue model

#	Caveat / limitation	Description and implications
1	Transient queue vs the Compendium's full model	The recursion is a transient queue (Little's Law: mean wait ≈ queue ÷ throughput), complementary to the equilibrium ratio of §3.0 - the ratio gives steady-state pressure, the queue gives clearance time. Unlike the do-nothing line, which is the Compendium's full microsimulation output, the intervention lines use this simpler flow accounting; the two share the 2025 starting point and the constant-IMG-inflow assumption but are not the same engine.

#	Caveat / limitation	Description and implications
2	IMG flow accounting is reconciled, not assumed	The IMG flow accounting is reconciled to the Compendium baseline by back-solving the displacement it implies (Appendix A.5); the Compendium's stock-based net-growth shares (28% of prevocational and 64% of registrar growth) are no longer load-bearing inputs to this component.
3	System-level model	Results are illustrative and system-level, and do not resolve per-specialty heterogeneity (§2.1, Appendix A.3).
4	Medi-Nav applicant pools are not split by origin	Medi-Nav applicant pools are not split by domestic/IMG origin, and only one ratio-year exists per specialty; hence reliance on the Compendium's system-level IMG growth shares rather than Medi-Nav for this component.
5	Medi-Nav is Queensland-only	Medi-Nav is Queensland-only; the backbone of this model is national. The two are kept separate and labelled throughout.
6	Queue measured in FTE, not headcount	The queue is measured in FTE on the Compendium's Table 5 basis (p.17). The same table's headcount series is lower: 13,740 hospital prevocational doctors in 2025 against 15,900 FTE, an average of 1.2 FTE per doctor. Not every doctor in the pool is an active applicant in every year. Both effects mean the modelled queue overstates the number of doctors waiting, so the clearance conclusion is conservative on this axis.
7	Clearance is a scenario result, not an observation	The clearance of the backlog and the return to 2:1 are conditional outcomes of the stated parameters. They are not observed events, and no Australian cohort has yet faced the proposed rule, so the intervention paths cannot be validated against outcome data; the UK anchors in §9.0 are the nearest available evidence.
8	New Zealand graduates unresolved	The domestic inflow G_t counts Australian medical graduates (Appendix A.4). The model does not resolve the treatment of New Zealand-trained doctors under trans-Tasman arrangements; that is a legal and drafting question for any legislative design, not a modelling input, and it is flagged rather than assumed here.

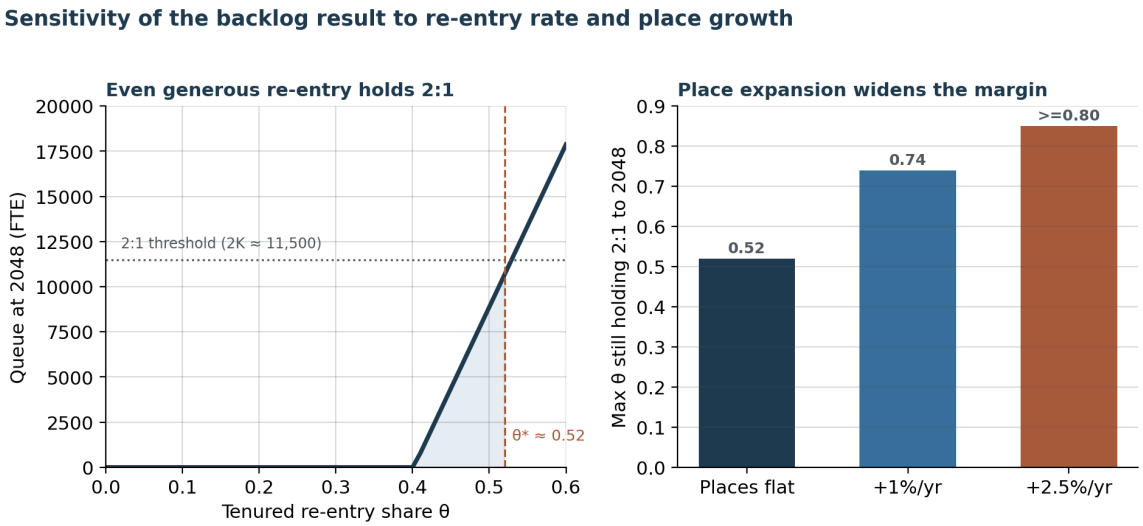
5.0 Sensitivity and Robustness

This section draws only on the parameters already introduced in §3.0–4.0; no additional external data sources are used. Because the backlog result depends on parameters that are uncertain - chiefly the unreclaimed residual U (accredited places that continue to flow to newly-arrived IMGs, §4.3), the tenured re-entry share θ, and whether accredited registrar places grow - the model was re-run across a grid of values.

5.1 Mechanics

Two findings emerge from the grid. First, the return to a 2:1 competition level is insensitive to the auxiliary assumptions: it falls in 2028–2029 whether IMG arrivals are taken at 5,000 or the Compendium's 5,359 per year, whether annual pool exit is 250 or 750, and whether places are held flat or grown.

Variation	Setting	Returns to 2:1	Holds ≤2:1 to 2048
Central case	θ = 0.3, places flat	2029	Yes - queue clears
IMG arrivals	5,359/yr (Compendium)	2029	Yes
Pool exit	250 / 750 per yr	2029	Yes
Max re-entry, places flat	θ* ≈ 0.52	2029	Yes (at the limit)
Max re-entry, +1%/yr places	θ* ≈ 0.74	2028–29	Yes (at the limit)
Max re-entry, +2.5%/yr places	θ* ≥ 0.80	2028	Yes (at the limit)



Transient queue model, 2025–2048. Left: with places held flat, the queue fully clears for θ below ~0.5 and the system stays at/below a 2:1 competition level for θ up to ~0.52. Right: expanding accredited places lifts the re-entry share the system can absorb to ~0.74 (+1%/yr) and ≥0.80 (+2.5%/yr). Return to 2:1 occurs in 2028–2029 across all variants (IMG arrivals 5,000 vs 5,359/yr; pool exit 250–750/yr).

Figure 1: Sensitivity of the backlog result. Left: queue at 2048 versus tenured re-entry share θ (places flat), with the 2:1 threshold and θ marked. Right: maximum θ that still holds 2:1 to 2048, by place-growth assumption. Produced by backlog_sensitivity.py and Figure 6 of the R script.*

Second, the "holds at 2:1 through 2048" result carries a wide margin in θ. The central conclusion - that prioritisation clears the existing backlog within a few years and the system does not re-tighten - survives every variation tested, but is contingent on a high reclaim rate. On the θ axis it fails only if more than roughly half of all arriving IMGs re-enter the priority pool while accredited places are simultaneously held flat (θ* ≈ 0.52); expanding places to +1%/yr lifts that limit to θ* ≈ 0.74, and to +2.5%/yr beyond 0.80.

The binding sensitivity: U, not θ

With places flat and central re-entry (θ = 0.3), the system holds at or below 2:1 through 2048 only while U ≤ ≈ 650–830 places per year - a reclaim rate of roughly 76% or better on the central displacement of 3,450 slots/yr (Appendix A.5). Return-to-2:1 timing is unaffected: 2029–2030 for all U ≤ 500. The two levers trade off, and place growth relaxes both. U* (the maximum unreclaimed residual holding ≤2:1 from 2032 to 2048) is tabulated below.

Re-entry share θ	U* - places flat	U* - places +1%/yr	U* - places +2.5%/yr
0.0 (hard prioritise)	980	1,250	1,690
0.2	760	1,030	1,470
0.3 (central)	650	920	1,360
0.5	100	670	1,130

The plausible range for U (≈ 115–500, anchored to the UK's 1.75% non-prioritised residual and Australia's area-of-need limited-registration stock of just 309 practitioners) sits well inside U* at central assumptions.

5.2 Assumptions and limitations for the sensitivity analysis

#	Caveat / limitation	Description and implications
1	Grid re-run, not a full joint distribution	Parameters are varied individually and in the combinations tabulated above, not as a full joint probability distribution. Correlated movement between U and θ beyond the combinations shown is not tested.
2	Conclusion is conditional on reclaim rate	The central clearance conclusion holds across the tested grid but is contingent on U remaining below the U* thresholds tabulated in §5.1; this is the explicit basis on which the UK's 98% first-cycle outcome is being used to support the Australian projection, not an unconditional result.
3	Envelope, not a confidence interval	The grid is a structured envelope of scenarios, not a confidence interval. No defensible joint probability distributions exist for U and θ, so a probabilistic (Monte Carlo) overlay would create false precision rather than add rigour.
4	θ is a judgement band	The tenured re-entry share θ has no observed Australian anchor: no cohort has yet faced the proposed rule. The 0.2–0.5 band is a judgement, which is why results are reported across the full band and at the failure threshold θ*.

5.3 Internal consistency checks

The workbook behind this note was checked against the results reported here. The queue recursion reproduces the workbook's year-by-year values exactly; all queue paths remain non-negative; the do-nothing path reproduces the Compendium's published prevocational trajectory (15,900 → 28,331 → 38,222 FTE); the tenured re-entry path first returns to the 2:1 threshold in 2029, as reported in §5.1; and the displacement back-solved in Appendix A.5 (Route 1) averages ≈ 3,450 per year, inside the ≈ 3,100–4,300 band established independently by Route 2.

These checks establish internal consistency between this note and the workbook; they do not validate the model against observed outcomes, which is the role of the external anchors in §9.0.

6.0 Specialist Supply and Demand (Sizing the Place Expansion)

Prioritisation determines who trains, not how many specialists the system produces - total specialist output is governed by the number of accredited registrar places, which the

Compendium holds roughly constant. This section documents the pipeline used to size the place expansion that would be needed to meet projected demand.

6.1 Key data inputs

#	Source	Description and use in model
1	Compendium Report (p.22)	Specialist FTE supply projection (75,888 FTE 2025 → 132,584 FTE 2048) and specialist undersupply projection (2,250 FTE 2025; 6,981 FTE 2033; 12,812 FTE 2048); the demand-side target the pipeline is sized against.

6.2 Definitions

The pipeline converts an increase in registrar places, $\Delta N(\tau)$, into additional specialist FTE after a training lag $L \approx 6$ years, a completion rate $c \approx 0.85$, and a full-time-equivalence factor $\varphi = 0.9$ FTE per specialist.

6.3 Mechanics

Each extra registrar place adds specialist FTE only after the training lag:

$$\text{extra FTE}(t) = c \cdot \varphi \cdot \Sigma[\, \Delta N(\tau) : \tau \leq t - L \,]$$

In other words: an additional registrar place shows up as additional specialist FTE only L years later, and only $c \cdot \varphi \approx 0.77$ FTE of it does, once attrition to completion and part-time practice are accounted for.

With training lag L ≈ 6 years, completion c ≈ 0.85 and φ = 0.9 FTE per specialist, each extra place yields ≈ 0.77 FTE. A sustained increase of ≈ 1,150 accredited registrar places per year (about +20% on the ≈ 5,733 baseline), phased in from 2027, closes the 12,812 FTE gap by 2048. Because trainees Fellow only after the lag, expansion would need to begin by ≈ 2031–32 at the latest to take effect in time.

Domestic-supply constraint. Domestic graduates (≈ 3,812/yr) already fall short of even the current ≈ 5,733 places, and the expanded intake (≈ 6,900/yr) widens that gap. The balance would need to be met by IMGs directed to area-of-need roles, or by later, calibrated CSP growth. In summary: prioritisation addresses the competition ratio (§4.0); place expansion addresses the specialist shortage (this section); and long-run self-sufficiency would require domestic graduate numbers to rise toward the expanded intake.

6.4 Assumptions and limitations for the specialist pipeline

#	Caveat / limitation	Description and implications
1	Simplified pipeline	The pipeline uses a fixed lag and completion rate and does not model specialty heterogeneity.
2	Attrition not netted out	Specialist attrition over the projection horizon is not netted out of the extra-FTE calculation, which makes the required place expansion a modest under-estimate.

7.0 Consolidated Model Parameters

Table 7 below consolidates every parameter introduced in §3.0–6.0 into a single reference table. All workforce values are national FTE from the Whole of Medical Workforce Supply and Demand Compendium Report (June 2026) unless otherwise noted; policy parameters are anchored to published UK results. Each parameter is classified by evidence status: observed (a published figure or published model output), derived (arithmetic on published values), proxy (a transferred measure used where the national measure is absent), policy assumption (a design choice of the proposed framework), or scenario assumption (an unobserved value varied in §5.0).

Table 7: Consolidated model parameters

Parameter	Symbol	Value	Source	Classification
Prevocational supply (FTE)	D / P	15,900 (2025) → 28,331 (2033) → 38,222 (2048)	Table 5, p.17	Observed
Registrar supply (FTE)	-	23,848 → 24,354 → 26,228 (≈ +10% over 25 yrs)	Table 5, p.17	Observed
Transition prevoc→registrar (engine)	p	36% (2024) → 15% (2048)	p.19	Observed
Transition prevoc→registrar (historical)	p	52% (2018) → 33% (2024)	p.25	Observed
IMG share of registrar growth	→ I_t	64%	p.6	Observed
IMG share of prevocational growth	-	28%	p.6	Observed
IMG share of CMO growth	-	50%	p.6	Observed
Registrar new entry	N_t	held constant at 2023 level (model assumption)	p.16	Scenario assumption (Compendium's)
IMG (limited/provisional) entry	-	held constant at 2024 level	p.16	Scenario assumption (Compendium's)
IMG share of applicant pool	f	0.36 (stock) – 0.55 (entry flow); central 0.42	MDANZ 2024; AHPRA AR 2024–25	Proxy
Substitutability at training gate	s	≈ 0.98 (98% of posts went to prioritised)	NHS England, 21 Jun 2026	Proxy (single UK cycle)
Grandfathered IMG share	g	scenario input (existing-IMG cohort)	UK Act design	Policy assumption
Minimum eligible PGY	G_0	specialty-specific (e.g. PGY1–PGY3)	Medi-Nav	Observed
Training lag	L	≈ 6 years	§6.2	Scenario assumption

Parameter	Symbol	Value	Source	Classification
Completion rate	c	≈ 0.85	§6.2	Scenario assumption
FTE per specialist	φ	0.9	§6.2	Scenario assumption

8.0 Scenario Definitions

8.1 Scenario B - Do nothing (baseline)

Scenario B uses the Compendium's own transition-rate path (36%→15%) directly. This yields a competition ratio rising from ≈ 3:1 toward ≈ 6.7:1 and PGY-at-intake climbing several years by 2048 - the government's own projection, re-expressed in the terms in which students experience it.

8.2 Scenario A - Prioritise domestic + grandfather

Scenario A prioritises the domestic queue (§4.0). Because registrar intake already exceeds domestic graduate supply, prioritisation clears the existing backlog within a few years: the priority-group competition ratio falls from ≈ 2.8:1 to about 1:1 and PGY-at-intake to the minimum eligible year, and holds there.

Grandfathered IMGs and, from 2031, IMGs who complete five years' Australian service (tenured re-entry) share the places; the allocation settles at roughly 66% to domestic and grandfathered doctors, 26% to tenured re-entrants and 7% to newly-arrived IMGs - directionally consistent with the UK's first-cycle 98%/2% split, though the two are different constructs (a steady-state capacity split versus a one-cycle offer-acceptance share). The five-year tenure rule itself is the Council's own design: the UK Act supplies the precedent for prioritisation and grandfathering, but contains no equivalent eligibility period. The §3.3 reclaim-share calculation is retained as a conservative upper bound.

8.3 Sensitivity scenario - place expansion alone

This scenario grows N_t to close the specialist shortage documented in §6.0. Place expansion is not required to fix the competition ratio - prioritisation does that (§8.2) - but is required to close the projected specialist undersupply of 12,812 FTE by 2048. A sustained ≈ 1,150 additional registrar places per year, phased in from 2027, closes the gap; expansion would need to begin by the early 2030s to take effect in time. Given the parameter sensitivity documented in §5.0, this note reports these results as ranges rather than single-point estimates.

9.0 External Validation

The UK applied the policy modelled in Scenario A in its 2026 training cycle. Its published outcomes both inform the parameter choices used above and provide an external check on the direction and size of the modelled effect:

- Competition ratio halved: 4:1 → 2:1 when restricted to prioritised candidates.
- 98% of posts filled by prioritised doctors, up from 72% in 2025 - the basis for s ≈ 0.98 (§4.1).

- Non-prioritised acceptances fell from 27.95% to 1.75% in one cycle, indicating near-complete domestic substitutability at the competitive gate.
- 100% of GP training places accepted by UK graduates or NHS doctors, up from 62%; remaining non-prioritised posts were in the specialties/locations others did not want - the area-of-need residual, i.e. the (1−s) term (§3.3).

These outcomes are a single recruitment cycle. They are used to anchor parameter choices and to check the direction of the modelled effect; they are not evidence of long-run magnitudes, and the 98% share is a one-cycle offer-acceptance measure rather than a steady-state capacity split (§8.2).

Appendix A - Data Sources and Derivation

This appendix documents the external Australian data underlying the model, principally the Medical Deans Australia & New Zealand (MDANZ) public dashboard, and the derivation of the model's IMG-share and IMG-intake parameters.

A.1 MDANZ dashboard

Medical Deans publish a public Power BI dashboard with four datasets: Medical Student Numbers (enrolments and graduations, 2013–2026), Doctors registered in Australia (2014–2025), MSOD survey results, and linked MSOD–AHPRA data. It is canvas-rendered, so figures were read from the live visuals (extracted 27 June 2026). These are registration headcounts (including non-practising practitioners unless filtered), a different basis from the Compendium's FTE figures, so they are used for shares, trends and corroboration, and are not mixed with FTE counts.

A.2 Anchoring f (IMG share of the applicant pool)

Three independent measures bracket f. The model adopts a central f = 0.42, between the workforce-stock floor and the recent entry-flow measure.

Anchor	IMG share	Basis
Junior / non-specialist pool, 2024 (stock floor)	36.0%	MDANZ: (68,626−43,944)/68,626
AHPRA first-time registrants, 2024–25 (entry flow)	54.5%	4,947 IMG / (4,947+4,125)
Graduate basis, 2023–24 (upper)	64.8%	Compendium p.2: 5,717 / (5,717+3,110)
Adopted central f	42%	between stock floor and entry flow

The junior-pool IMG share is also broadly stable over time - 38.2% (2014), 32.8% (2019), 36.0% (2024) - while the pool itself grew +53% (44,852 → 68,626), corroborating the model's pool-growth assumption with observed data.

A.3 IMG share by specialty, 2024

Cross-filtering the MDANZ dashboard by specialty gives the IMG share of each college group:

Specialty	IMG share	Specialty	IMG share
Emergency Medicine	46%	Anaesthesia	31%
Psychiatry	43%	Pathology	30%
General Practice	42%	Physician (RACP)	28%
Obstetrics & Gynaecology	39%	Surgery (RACS)	26%

Specialty	IMG share	Specialty	IMG share
Radiology	38%	Ophthalmology	22%
Paediatrics	37%	No specialty (junior)	36%

IMG penetration runs inverse to competitiveness: the hardest-to-enter specialties (ophthalmology 22%, with a ≈22:1 ratio; surgery 26%) have the lowest IMG share, while the high-IMG specialties (emergency medicine, psychiatry, general practice) are the less-competitive, service-heavy ones. A corollary of this pattern is that prioritisation reduces the competition ratio most where competition is already lowest, and least in the specialties with the tightest bottlenecks - which is why place expansion (§6.0) is documented as a separate, complementary lever rather than a substitute for prioritisation. The 'Per-specialty' sheet in the accompanying workbook quantifies this for each specialty.

A.4 Domestic graduate pipeline

MDANZ gives the domestic graduate series excluding international students: 3,274 domestic graduates in 2025, which reconciles with the Compendium's 3,110 (FY23–24). Forward indicators are locked in: domestic final-year enrolment of 3,409 (2026) and commencements of 3,812 (2026, graduating ≈ 2031), implying ≈ +16% domestic graduate growth over six years, driven by Commonwealth Supported Place expansion. This series feeds the prevocational pool inflow G_t (§4.2) and corroborates - rather than replaces - the Compendium's own pool projection.

A.5 IMG gross intake at the training gate - the reclaimed-capacity parameter

The clearance result of §4.0 rests on prioritisation returning to the domestic queue the capacity that new-IMG entry currently absorbs. This quantity is estimated here by two independent routes, which converge.

Route 1 - top-down, back-solved from the Compendium's own baseline. The do-nothing recursion must reproduce the Compendium's prevocational trajectory (15,900 → 38,222 FTE, 2025–2048) given the known flows: domestic graduate inflow (3,274 → 3,812/yr), accredited intake (K ≈ 5,733/yr) and pool exit (≈ 500/yr). The balancing term - the displacement D_t attributable to new-IMG entry - is then fully determined: D_t ≈ 4,100/yr through the early 2030s, declining to ≈ 3,100/yr by 2048; mean ≈ 3,450/yr.

D_t is the sum of two flows the published data cannot separate: accredited places taken directly by new-IMG entrants (X) and new-IMG inflow into the prevocational pool itself (M). The split does not matter for the clearance result: in the priority-queue recursion, reclaiming a place (X) and diverting a pool entrant (M) each improve the annual balance by exactly one slot, so only the sum X + M is identified, and that sum is pinned by the Compendium baseline itself. This means the flow accounting no longer relies on the Compendium's stock-based growth shares at all (§4.4).

Route 2 - bottom-up, gross regulator flows. The junior-stream IMG entry available to occupy those slots each year: Competent Authority Pathway provisional registrations granted, 2,467 (2024) and 2,001 (2025) (HWD Table 5.4); plus AMC certificates awarded (Standard Pathway completions), 1,126 (FY2024–25). Junior-stream total ≈ 3,100–4,200/yr. The residual against AHPRA's 4,947 first-time international registrants (2024–25) is ≈ 1,350/yr, which matches the specialist pathway - doctors entering at consultant level who never compete at the registrar gate, and are correctly excluded.

The two routes are independent - Route 1 uses only the Compendium's projection arithmetic, Route 2 only regulator flow counts - and they overlap at ≈ 3,100–4,300 per year. Medical Board stock data corroborate the level and trend: Competent Authority Pathway provisional stock 1,938 (2023) → 2,882 (2025) → 2,772 (2026); limited supervised-practice registration 2,427 (2022) → 5,655 (2025) → 5,973 (2026).

Adopted parameters. Central displacement D = 3,450/yr (range 3,100–4,300). The unreclaimed residual U (§4.3) is taken at 115–500/yr: the UK's non-prioritised share implies ≈ 115 (1.75% of ≈ 5,733 posts), and one stock figure disciplines the upper end - limited registration for area of need stands at just 309 practitioners nationally, because most IMG service work occurs in unaccredited supervised-practice roles (5,655), which are not training places and are unaffected by prioritisation. The binding sensitivity of U* is reported in §5.1.

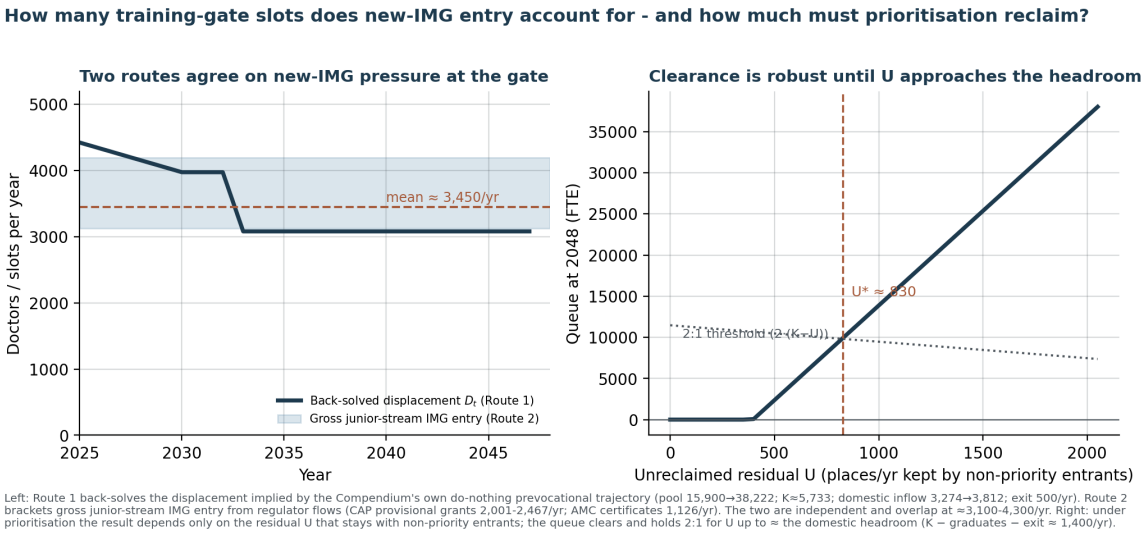


Figure 2: IMG intake estimate. Left: the back-solved displacement (Route 1) against the gross junior-stream entry band (Route 2). Right: queue at 2048 versus the unreclaimed residual U. Produced by img_intake_estimate.py.

A.6 Priority data acquisition

The proxies documented in this appendix would be superseded by a single linked national collection: applicant-level records of specialty-training applications carrying training origin, years of Australian practice at application, and application, offer and acceptance outcomes, with privacy-preserving unique identifiers so that repeat applications can be distinguished from unique applicants, and per-specialty competition ratios reported by origin. No such collection is currently published; its absence is why the shares and flows above are estimated from regulator stocks, dashboard extracts and the Compendium's aggregates.

References

1. Department of Health, Disability and Ageing (Cth), Whole of Medical Workforce Supply and Demand Compendium Report, June 2026 (pp. 2–6, 16–17, 19, 25).

2. Department of Health (Cth), Whole of Medical Workforce Supply and Demand Model - Methodology Paper, June 2026 (practitioner categories; transition-rate microsimulation).

3. NHS England, "Impact of Medical Training Prioritisation Act on specialty training recruitment," 21 June 2026 (competition ratios; prioritised-acceptance shares).

4. BMA UKRDC, briefing on specialty training places policy, 2025 (grandfathering design; UK applicant–place figures).

5. Medical Deans Australia & New Zealand, public Power BI dashboard (Medical Student Numbers; Doctors registered in Australia), extracted 27 June 2026.

6. Queensland Health, Medi-Nav specialty pages (competition ratios, applicant PGY, workforce stocks), scraped 26 June 2026.

7. Medical Board of Australia / AHPRA & AMC, Competent Authority and Standard Pathway data, 2019–2026, including the 31 March 2025 registrant data table (IMG registration flows; provisional and limited registration stocks).

8. Australian Medical Council, Annual Report 2024–25 (AMC certificates awarded - Standard Pathway completions).