



**Victorian
Skills Authority**

Aligning supply with demand for VET graduates

**Presentation to the Australian
Conference of Economists**

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VICTORIA
State
Government

Education
and Training

Full title

Aligning supply with demand for VET graduates:

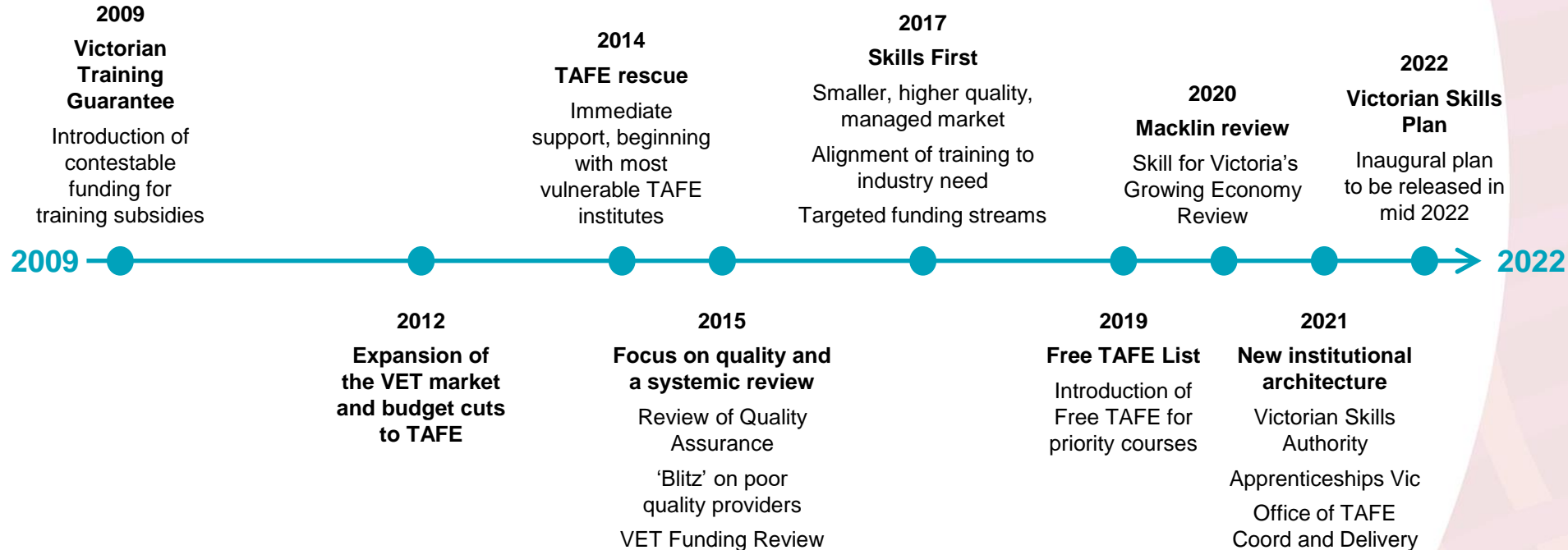
A fine-grained model of the Victorian labour market, VET system and transitions from education to employment

Some thanks

This presentation represents the cumulative work of many at the Victorian Skills Authority and the Department of Education and Training.

I wish to thank and acknowledge the significant contributions of Candice Rabusa, Serey Thir, Giang Hoang, Sulakshana Gyaneshwar, Chandra Shah and Nous consultants.

Victorian VET policy has been moving towards a more managed market, supported by labour market and VET supply insights



The Macklin review recommended the establishment of a new agency (the VSA), data improvements and the Victorian Skills Plan

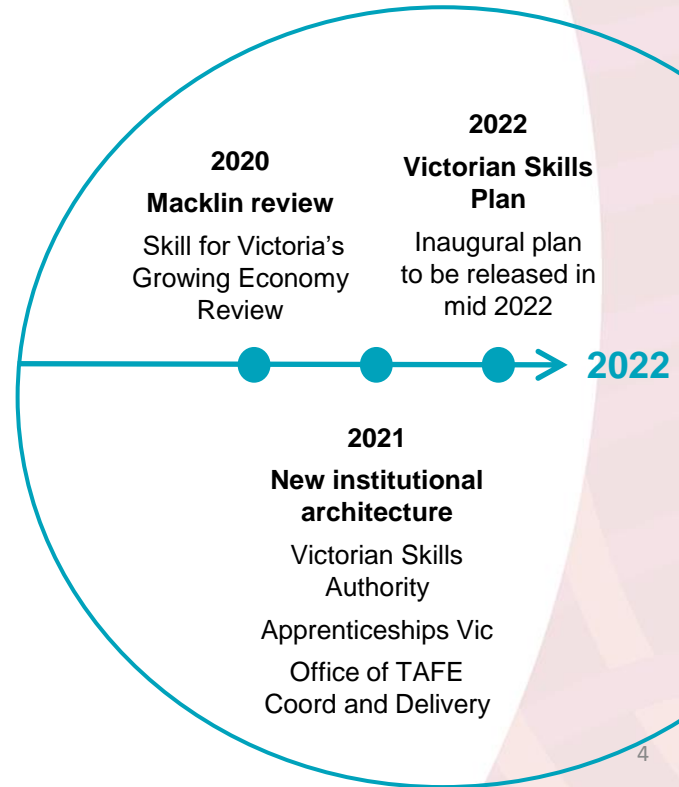
Learners must know what skill gaps are emerging, and what courses will provide the qualifications to fill them.

Businesses must know they can hire workers with the right skills, at the right time and in the right location.

Providers must be able to plan their courses knowing what skills are needed in their region and across the state, what student flows they can expect, and what other providers are offering and charging.

Government needs data from all these sources so that it can plan with confidence to meet the immediate and longer-term needs of the economy.”

Macklin, 2020, Skills for Victoria's Growing Economy Review, p65



VETSA: the VET Skills Alignment model

We are aiming to address the identified information gaps and inform policy by analysing the alignment between supply and demand across detailed occupations and regions.

The model informs planning, management, and monitoring of VET training activity against workforce needs of the Victorian labour market.

Our historical model, **VETSA-H**, informs evaluation of course delivery and performance.

Our forecast model, **VETSA-F**, informs the annual contracting process.

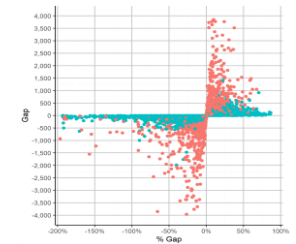
Demand: stock and flow employment model



Supply: admin data and PVAR forecast



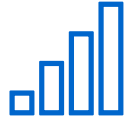
Alignment via concordance for detailed occupations and labour market regions



Three stage employment model to estimate demand

The aim is to arrive at the number of workers entering an occupation who are likely to need training.

Stock



Historical employment
2016-2021

Benchmarked to ABS Labour Force Survey for 3 digit ANZSIC (EQ06) and 4 digit ANZSCO (EQ08)

Forecast employment
2021-2027

Benchmarked to NSC Employment Projections for 1 digit ANZSIC (state) and 4 digit ANZSCO (national)

Disaggregation



Iterative proportional fitting
Region x Industry x occupation

Spatial seed: NSC Small Area Labour Markets, SA2
Ind x occ seed: ABS Census 2016, Industry x Occupation x SA2

Flow

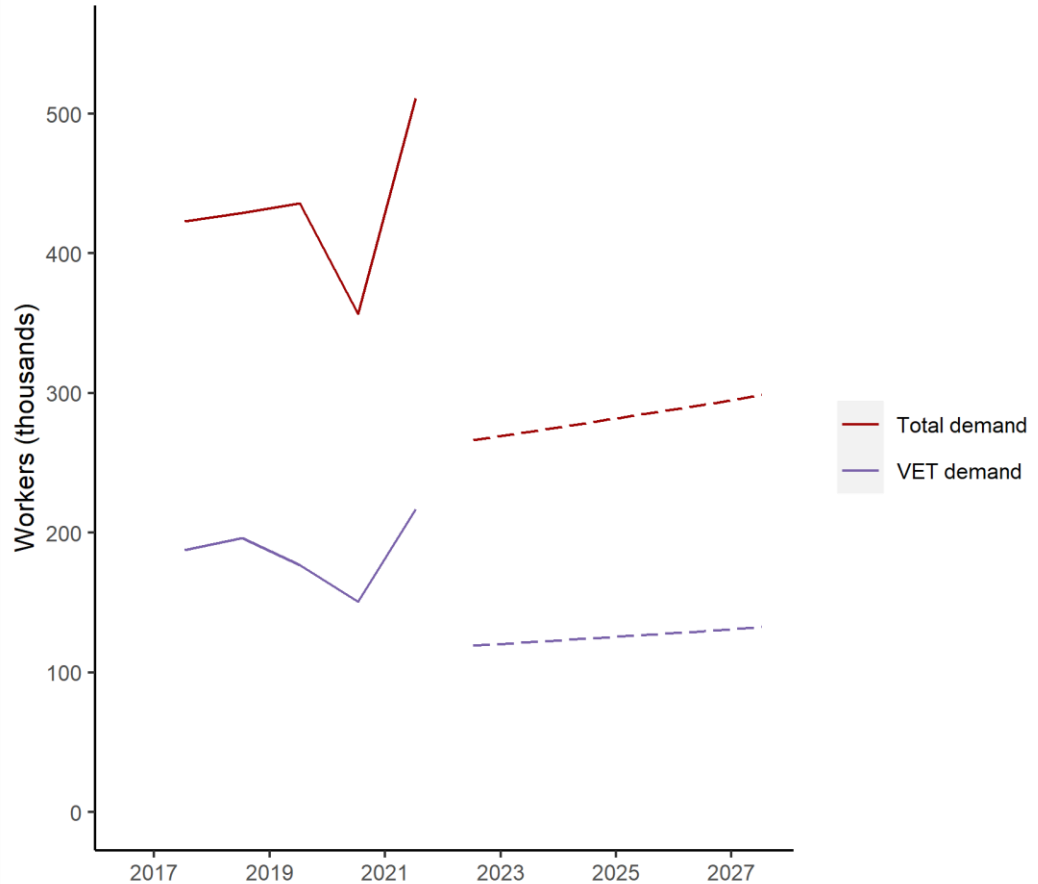


Replacement demand: separations - entrants
Total demand: employment growth + replacement demand

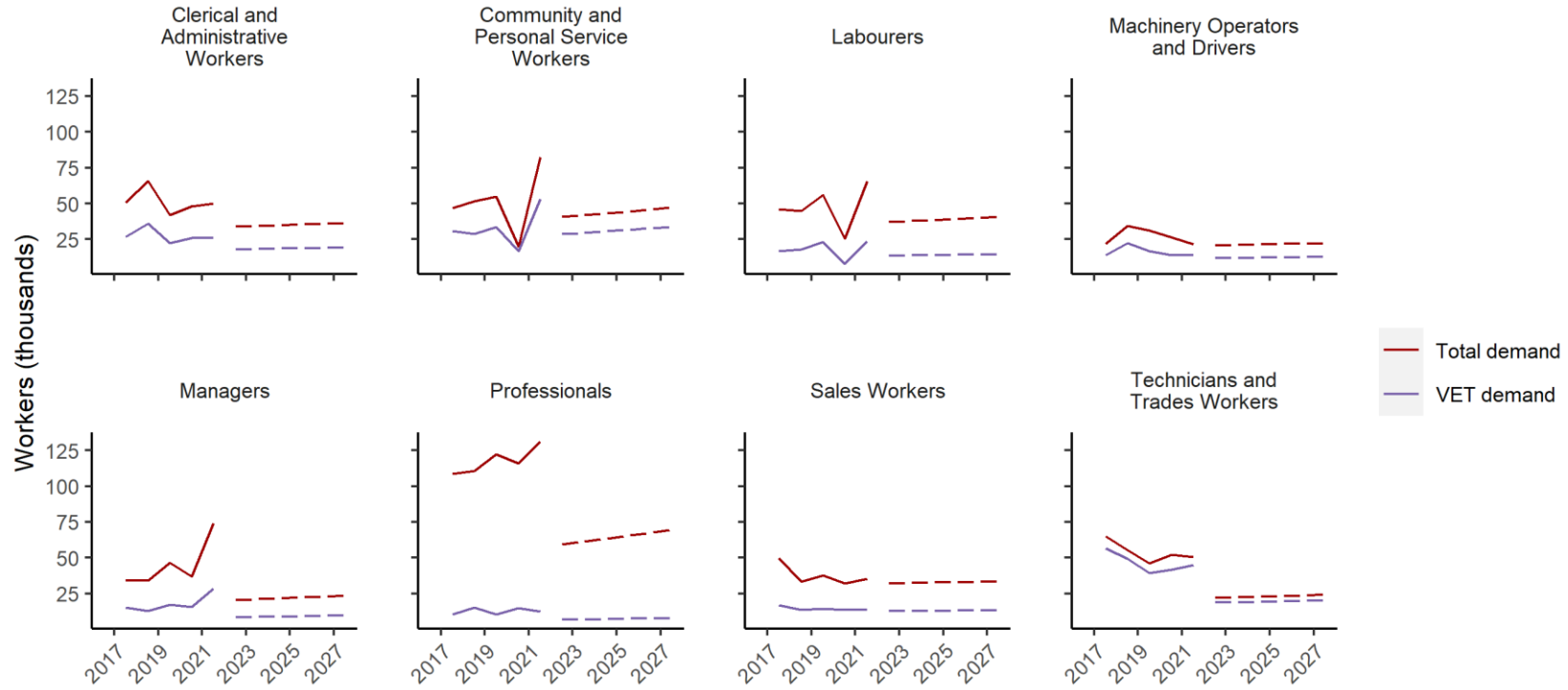
Separations: all exits from occupation
Entries: entries from employment in different occupations
Entry and exit rates modelled at the 3 digit ANZSCO level from ABS PJSM

Labour demand dived during the pandemic and quickly rose

We expect it to level out
over the coming 5 years.



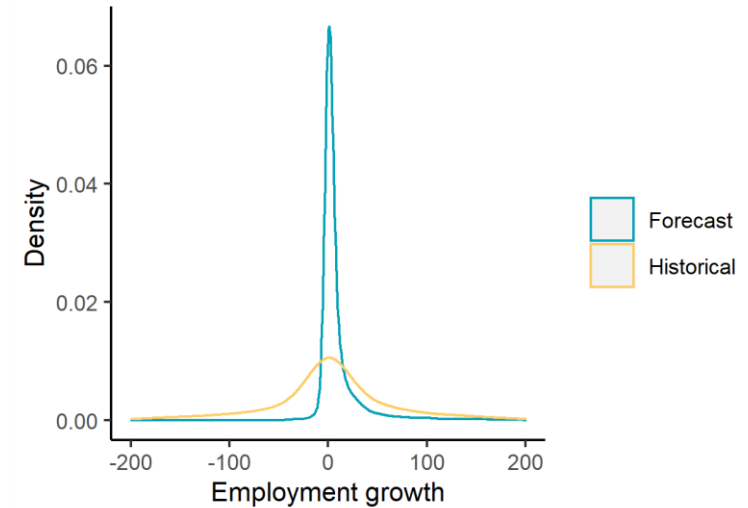
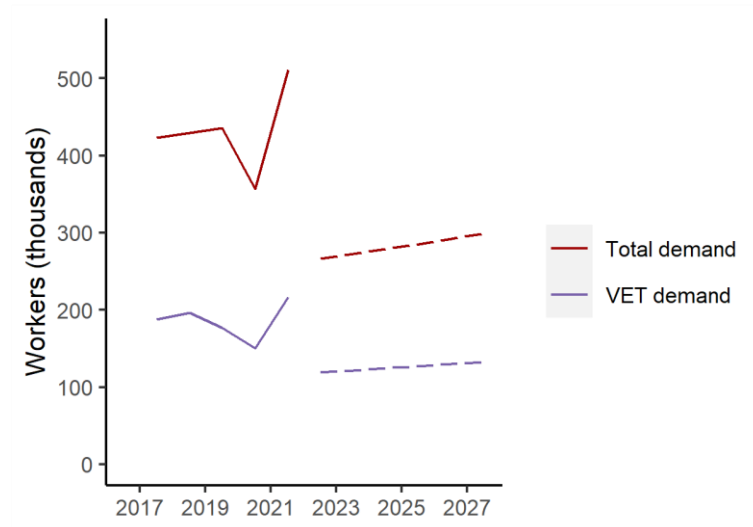
Demand has recovered in most but not all occupation groups



Historical demand estimates are higher than forecast

Partly, this is due to covid-related shocks, but it is also due to volatility in the labour force survey at the detailed occupation level and anomalies in the derived labour flow rates in the PJSM.

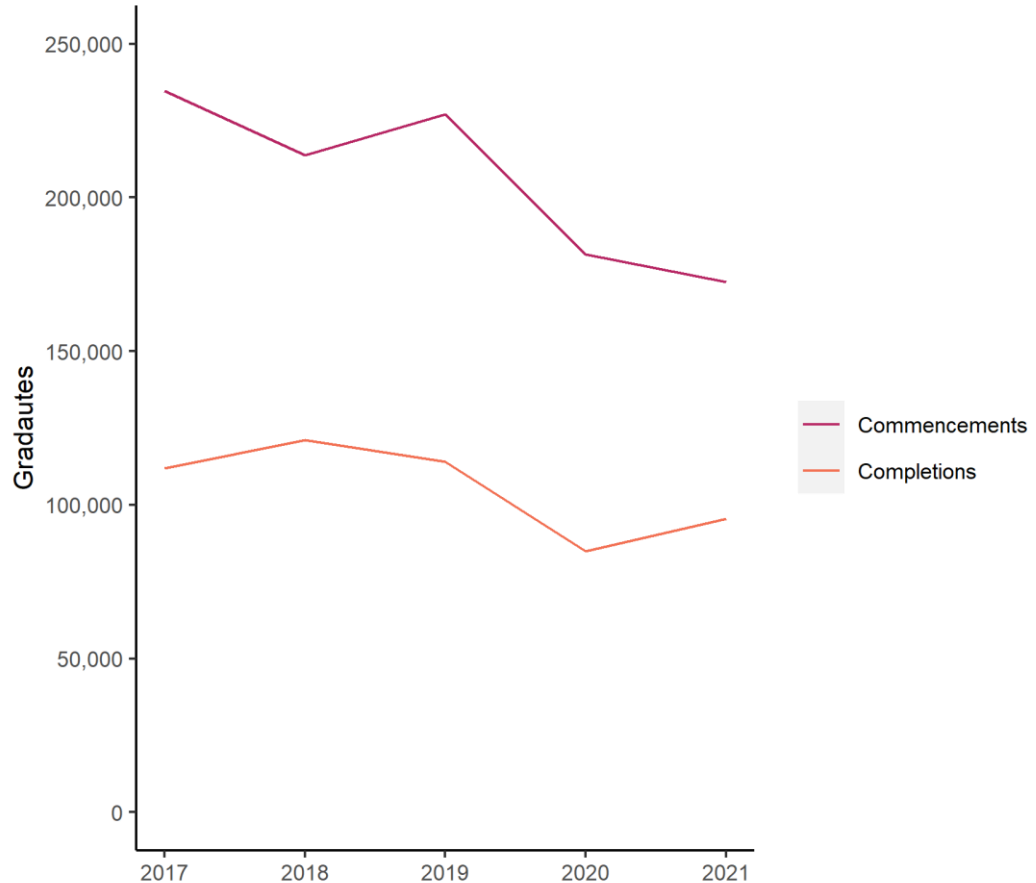
Future work will look to improve our trend series modelling and integrate the historical and forecast series.



VET supply has been falling, exacerbated by the pandemic

We use course and region-level administrative DET data on commencements and completions to estimate supply.

We make various adjustments to de-duplicate students who complete multiple courses and filter out courses that do not typically deliver a marginal employment outcome (i.e. upskilling courses).



Course to occupation concordance translates supply into demand

Courses are concorded to occupations
using:

- Occupations identified on training.gov.au
- VSA Student Satisfaction Survey
- NCVER Student Outcome Survey
- Census data on occupation by field of education

Course to occupation concordance translates supply into demand

Sometimes neatly

.

Course title	ANZSCO code	ANZSCO name	Share
Certificate IV in Transport and Logistics	4512	Driving Instructors	100%

Course to occupation concordance translates supply into demand

Often to many occupations

Course title	ANZSCO code	ANZSCO name	Share
Certificate III in Individual Support	4233	Nursing Support and Personal Care Workers	60%
	4231	Aged and Disabled Carers	30%
	4117	Welfare Support Workers	10%

Course to occupation concordance translates supply into demand

And often from many courses

Course Title	ANZSCO code	ANZSCO name	Share
Diploma of Production Horticulture	3622	Gardeners	30%
Certificate IV in Landscape Design	3622	Gardeners	50%
Certificate III in Ecology	3622	Gardeners	100%
Certificate II in Horticulture	3622	Gardeners	50%
Certificate II in Arboriculture	3622	Gardeners	34%
Certificate II in Sports Turf Management	3622	Gardeners	10%
Certificate III in Horticulture	3622	Gardeners	50%
Certificate III in Arboriculture	3622	Gardeners	70%
Certificate III in Sports Turf Management	3622	Gardeners	10%
Certificate III in Indigenous Land Management	3622	Gardeners	10%
Certificate III in Permaculture	3622	Gardeners	100%
Certificate IV in Horticulture	3622	Gardeners	85%
Certificate IV in Permaculture	3622	Gardeners	100%
Diploma of Horticulture	3622	Gardeners	85%
Diploma of Arboriculture	3622	Gardeners	100%

Course to occupation concordance translates supply into demand

...many courses

Course Title	ANZSCO code	ANZSCO name	Share
Diploma of Sports Turf Management	3622	Gardeners	50%
Advanced Diploma of Horticulture	3622	Gardeners	100%
Advanced Diploma of Arboriculture	3622	Gardeners	100%
Certificate II in Production Horticulture	3622	Gardeners	50%
Certificate III in Conservation and Ecosystem Management	3622	Gardeners	70%

VETSA-H gives us alignment of supply and demand by region, occupation and year

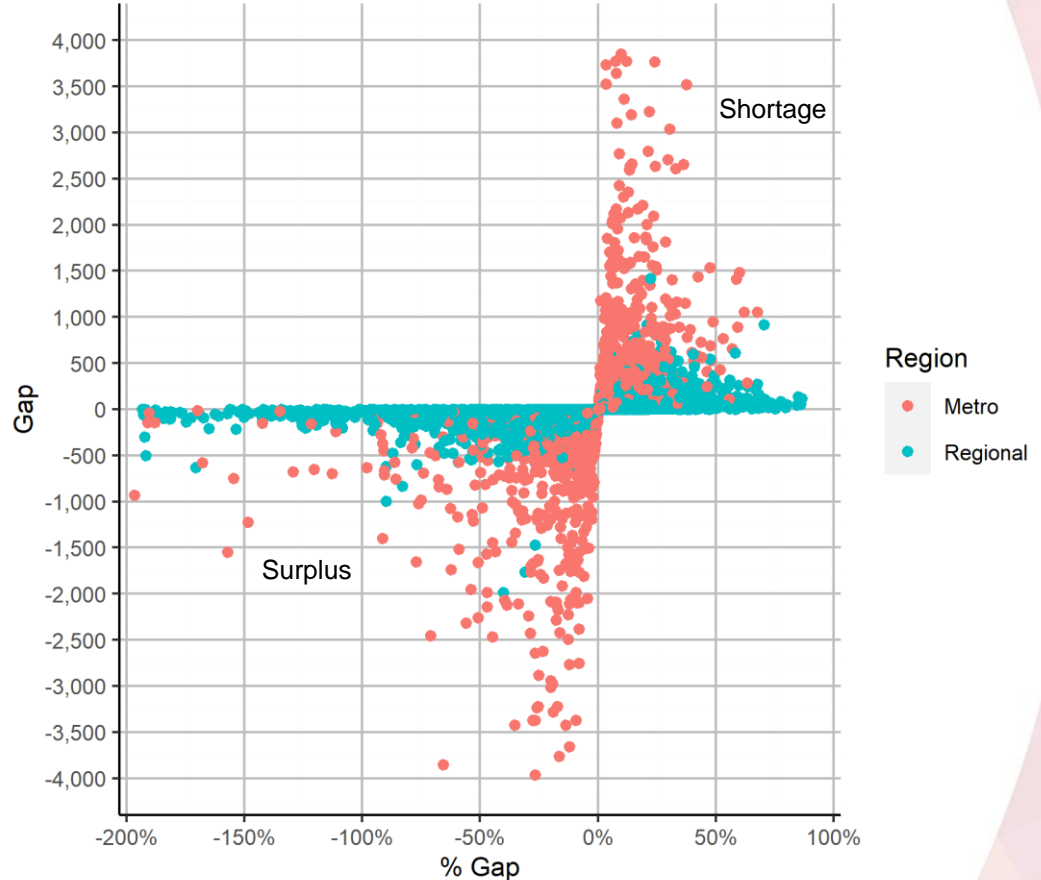
A simple subtraction of supply from demand generates the 'gap' in the market for VET skills.

We have two metrics of interest:

- $gap = demand - supply$
- $\% gap = gap / employment$

Underpinned by two key assumptions:

- *zero labour mobility across regions*
- *skills must be used within the year of completion.*



Taking a 3-year aggregate reduces the noise

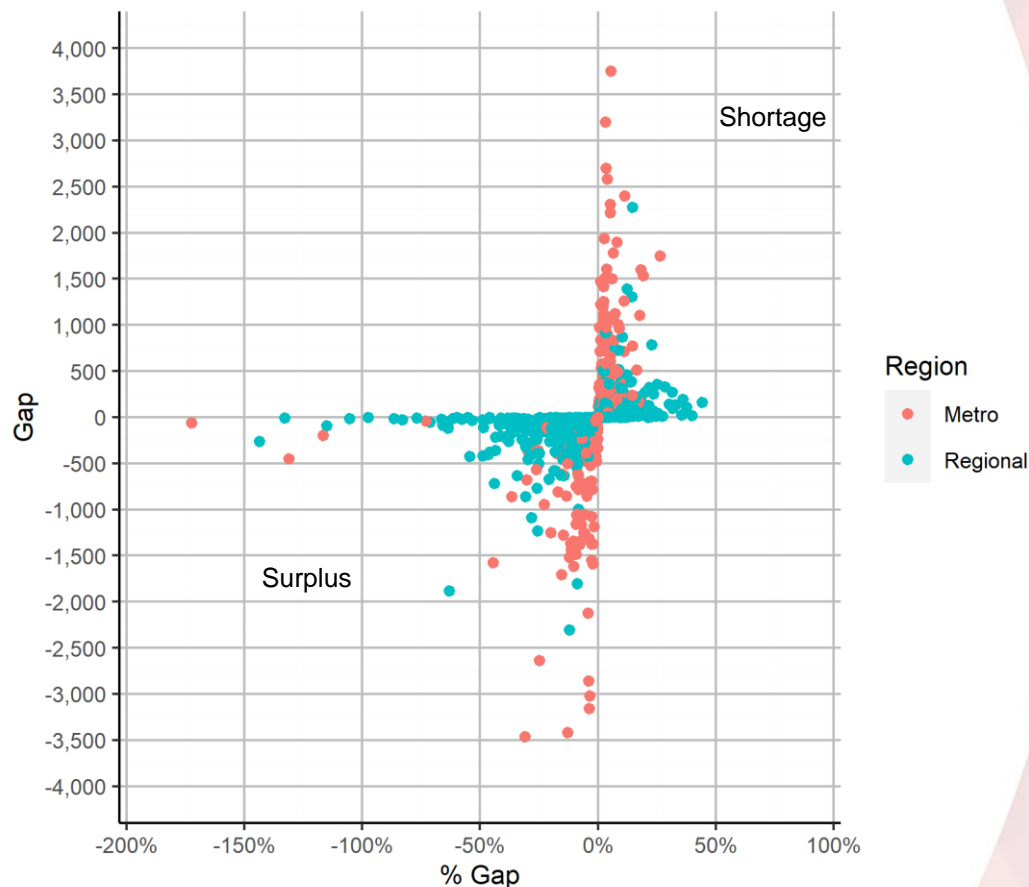
Relaxing the time constraint, that skills must be used within the year of completion, creates much more workable and realistic results.

From here, we apply two thresholds to classify the market alignment.

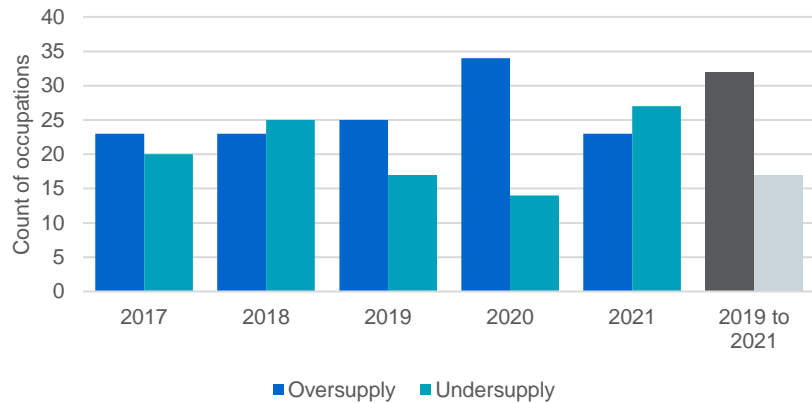
Each occupation and region combination is rated as in shortage or surplus if it meets these conditions:

Location	Shortage	Surplus
Metro Melb	Gap > 1000 & 5%	Gap < -1000 & -5%
Regional Vic	Gap > 50 & 5%	Gap < -50 & -5%

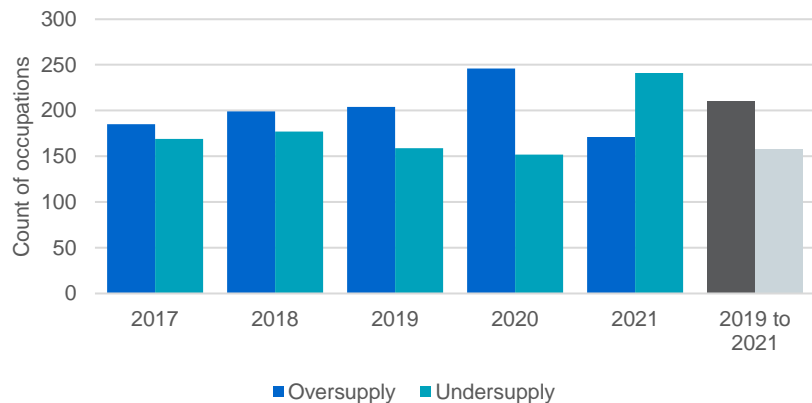
This is, admittedly, very arbitrary.



Shortage and surplus, Metropolitan Melbourne



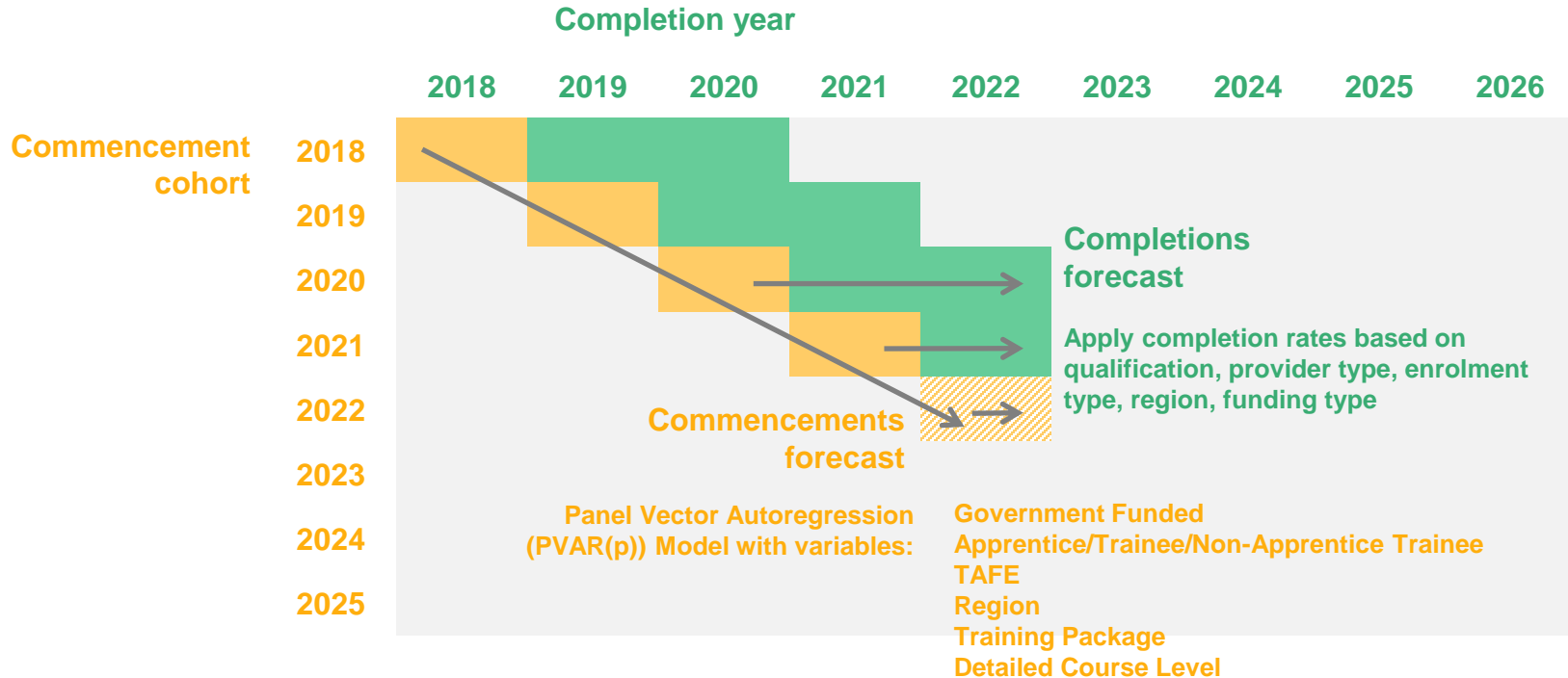
Shortage and surplus, Regional Victoria



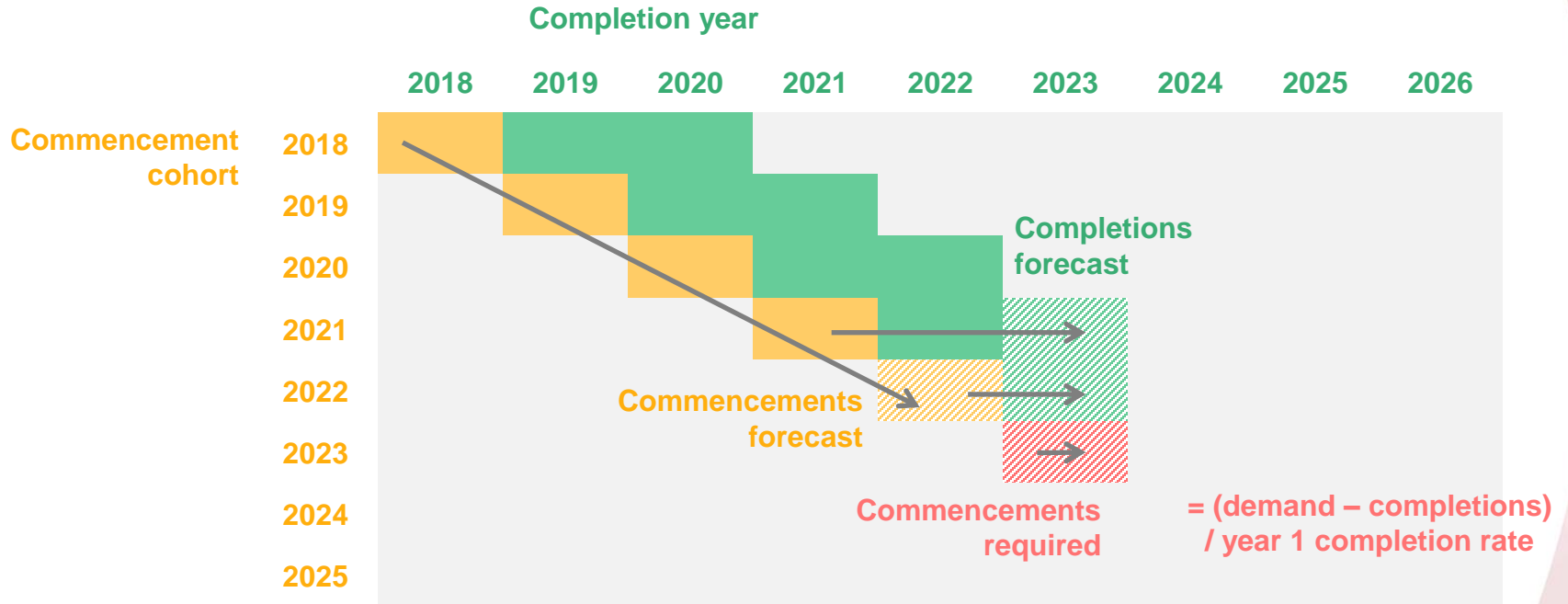
Metropolitan Melbourne: Top 10 shortages

Occupation	Gap	% Gap
Aged and Disabled Carers	7939	8.3%
Kitchenhands	3757	5.4%
Credit and Loans Officers	2403	11.3%
Other Hospitality, Retail and Service Managers	2309	5.1%
Delivery Drivers	2221	5.3%
Inspectors and Regulatory Officers	1900	8.0%
Insurance, Money Market and Statistical Clerks	1783	6.4%
Civil Engineering Draftspersons and Technicians	1754	26.4%
Panel beaters	1603	18.2%
Vehicle Painters	1535	19.1%

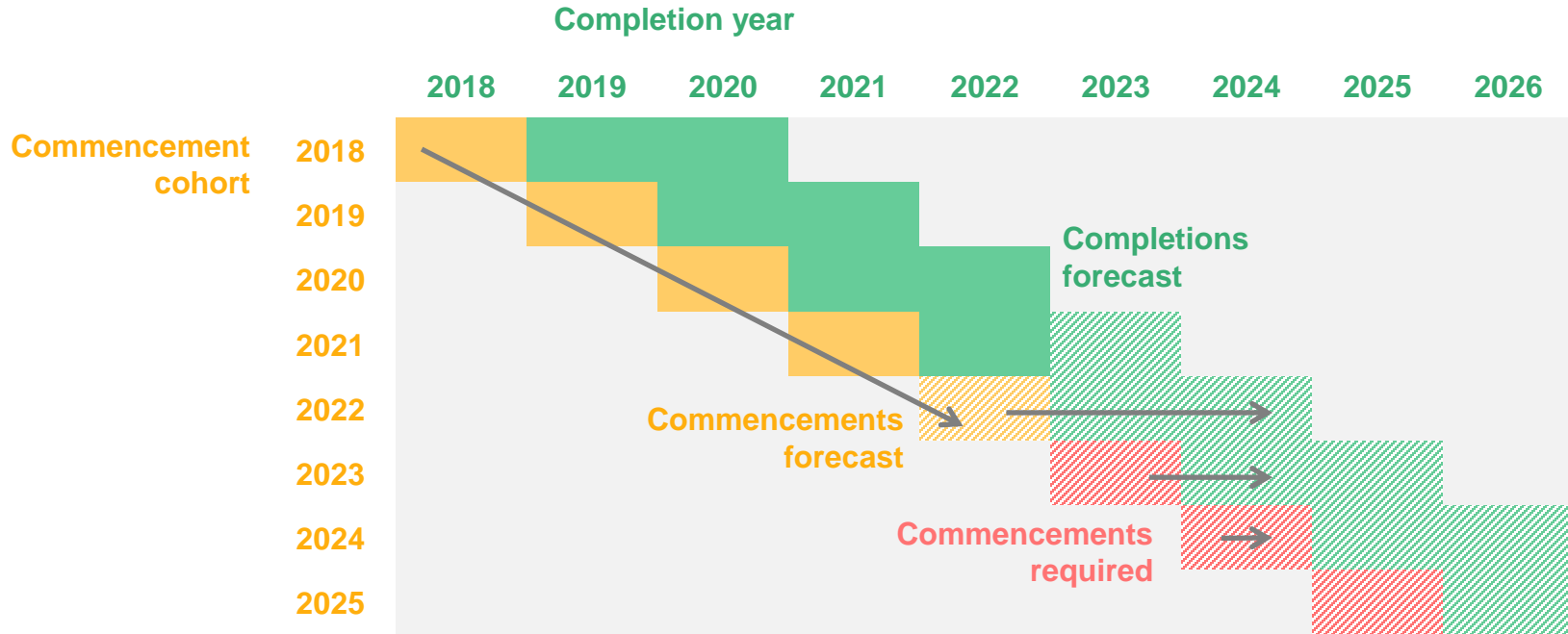
VETSA-F forecasts the remaining completions for the current year and applies completion rates to estimate future supply



...then subtracts next year's forecast completions from demand to estimate commencements required for 2023



...and repeats iteratively to obtain 3-year forecasts of the commencements required to meet future demand



‘Jobs and Training Needs Reports’ signal demand to providers and inform the annual contracting process

VETSA outputs also inform assessment of the economic value of courses for inclusion in the Victorian Government’s Funded Course List.

The outputs are also used in our regular labour market analysis and advice.

VET-related occupations	Employment 2021 (Region)	Anticipated training needs for 2022 (Region)	Anticipated training needs for 2022 (State)	Courses that are directly linked to, associated with or in support of the occupation group
Child Carers	29,600	3,700 – 4,700	4,300 – 5,500	Certificate II in Community Services Certificate III in Early Childhood Education and Care Certificate IV in School Age Education and Care Diploma of Early Childhood Education and Care
Meat, Poultry and Seafood Process Workers	2,800	100 – 200	200 – 300	Certificate II in Meat Processing (Abattoirs) Certificate II in Meat Processing (Food Services) Certificate II in Meat Processing (Meat Retailing) Certificate III in Seafood Post Harvest Operations

Excerpt from DET (2021), Jobs and Training Needs Report, Metropolitan Melbourne, 2022

A wish list of future enhancements

- Modelling the actual training needs for new entrants to occupations
- Trending of historical employment model and understanding the policy implications of seasonality
- Improve demand forecasting methodology to account for known or expected shocks, likely using CGE
- Accounting for inter-regional, interstate and international migration
- Forecasting actual commencements and evaluate against 'required commencements'
- Review of course to occupation concordance, in light of NSC work and weaknesses around fixed occupation allocations
- Exploration of detailed 6 digit occupation data for large and diverse 4 digit occupations, and where the concordance has many courses to many occupations
- Better integration of the 'H' and 'F' models, possibly including an extinction function for surplus demand or shortage
- Model validation, e.g. comparison to alternate measures of demand, like vacancies

Thank you! Questions?